CICS Transaction Server for z/OS
Version 5 Release 3

C++ OO Class Libraries

SC34-7405-00

CICS Transaction Server for z/OS
Version 5 Release 3

C++ OO Class Libraries

SC34-7405-00

Note
Before using this information and the product it supports, read the information in "Notices" on page 317.

This edition applies to the IBM CICS Transaction Server for z/OS Version 5 Release 3 (product number 5655-Y04) and to all subsequent releases and modifications until otherwise indicated in new editions.

© Copyright IBM Corporation 1989, 2015.
US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Preface xiii
Who this manual is for xiii
What this manual is about xiii
What you need to know before reading this manual xiii
Location of topics in the Knowledge Center . . xiii
Terminology xiv

Changes in CICS Transaction Server for z/OS, Version 5 Release 3 xv

Part 1. Installation and setup . . . 1

Chapter 1. Getting ready for object oriented CICS 3

Chapter 2. Installed contents 5
Header files 5
Location 6
Dynamic link library 6
Location 6
Sample source code 6
Location 6
Running the sample applications 6
Other data sets for CICS Transaction Server for z/OS 7

Chapter 3. C++ Hello World sample . . . 9
Compile and link "Hello World" 10
Running "Hello World" on your CICS server . . 10
Expected Output from "Hello World" 11

Part 2. Using the CICS foundation classes 13

Chapter 4. C++ Objects. 15
Creating an object 15
Using an object 16
Deleting an object 16

Chapter 5. Overview of the foundation classes 17
Base classes 17
Resource identification classes 18
Resource classes 19
Support Classes 20
Using CICS resources 21
Creating a resource object 21
Calling methods on a resource object 22

Chapter 6. Buffer objects 25
IccBuf class 25
Data area ownership 25
Data area extensibility 25
IccBuf constructors 26
IccBuf methods 27
Working with IccResource subclasses 27

Chapter 7. Using CICS Services 29
File control 29
Reading records 29
Writing records 30
Updating records 31
Deleting records 31
Browsing records 32
Example of file control 32
Program control 34
Starting transactions asynchronously 36
Starting transactions 36
Accessing start data 36
Cancelling unexpired start requests 36
Example of starting transactions 36
Transient Data 39
Reading data 39
Writing data 39
Deleting queues 40
Example of managing transient data 40
Temporary storage 41
Reading items 41
Writing items 41
Updating items 41
Deleting items 42
Example of Temporary Storage 42
Terminal control 43
Sending data to a terminal 43
Receiving data from a terminal 43
Finding out information about a terminal . . 44
Example of terminal control 44
Time and date services 45
Example of time and date services 45

Chapter 8. Compiling, executing, and debugging 47
Compiling Programs 47
Header files 47
Executing Programs 48
Program debugging 48

Chapter 9. Conditions, errors, and exceptions 51
Foundation Class Abend codes 51
C++ Exceptions and the Foundation Classes . . 51
CICS conditions 53
Manual condition handling (noAction) . . . 54
Automatic condition handling (callHandleEvent) 54
Exception handling (throwException) 55
Severe error handling (abendTask) 56
Platform differences 56

© Copyright IBM Corp. 1989, 2015

Object level .. 56
Method level .. 57
Parameter level .. 57

Chapter 10. Polymorphic Behavior .. 59
Example of polymorphic behavior .. 60

Chapter 11. Storage management .. 63

Chapter 12. Parameter passing conventions .. 65

Chapter 13. Scope of data in IccBuf reference returned from 'read' methods 67

Part 3. Foundation Classes—reference .. 69

Chapter 14. Icc structure .. 71
Functions .. 71
boolText .. 71
catchException .. 71
conditionText .. 71
initializeEnvironment .. 72
isClassMemoryMgmtOn .. 72
isEDFOn .. 72
isFamilySubsetEnforcementOn .. 72
returnToCICS .. 72
setEDF .. 73
unknownException .. 73
Enumerations .. 73
Bool .. 73
BoolSet .. 73
ClassMemoryMgmt .. 74
FamilySubset .. 74
GetOpt .. 74
Platforms .. 74

Chapter 15. IccAbendData class .. 77
IccAbendData constructor (protected) .. 77
Constructor .. 77
Public methods .. 77
abendCode .. 77
ASRAInterrupt .. 77
ASRAKeyType .. 78
ASRAPSW .. 78
ASRARegisters .. 78
ASRASpaceType .. 79
ASRAStorageType .. 79
instance .. 80
isDumpAvailable .. 80
originalAbendCode .. 80
programName .. 80
Inherited public methods .. 81
Inherited protected methods .. 81

Chapter 16. IccAbsTime class .. 83
IccAbsTime constructor .. 83
Constructor (1) .. 83
Constructor (2) .. 83
Public methods .. 83
date .. 83
dayOfMonth .. 84
dayOfWeek .. 84
daysSince1900 .. 84
hours .. 84
milliSeconds .. 84
minutes .. 84
monthOfYear .. 84
operator= .. 85
packedDecimal .. 85
seconds .. 85
time .. 85
timeInHours .. 85
timeInMinutes .. 85
timeInSeconds .. 86
year .. 86
Inherited public methods .. 86
Inherited protected methods .. 86

Chapter 17. IccAlarmRequestId class 87
IccAlarmRequestId constructors .. 87
Constructor (1) .. 87
Constructor (2) .. 87
Constructor (3) .. 87
Public methods .. 87
isExpired .. 88
operator= (1) .. 88
operator= (2) .. 88
operator= (3) .. 88
setTimerECA .. 88
timerECA .. 88
Inherited public methods .. 88
Inherited protected methods .. 89

Chapter 18. IccBase class .. 91
IccBase constructor (protected) .. 91
Constructor .. 91
Public methods .. 91
classType .. 91
className .. 91
customClassNum .. 92
operator delete .. 92
operator new .. 92
Protected methods .. 92
setClassName .. 92
setCustomClassNum .. 92
Enumerations .. 93
ClassType .. 93
NameOpt .. 94

Chapter 19. IccBuf class .. 95
IccBuf constructors .. 95
Constructor (1) .. 95
Constructor (2) .. 95
Constructor (3) .. 95
Constructor (4) .. 96
Public methods .. 96

append (1) .. 96
append (2) .. 96
assign (1) .. 97
assign (2) .. 97
cut .. 97
dataArea .. 97
dataAreaLength .. 97
dataAreaOwner .. 98
dataAreaType .. 98
dataLength .. 98
insert .. 98
isFMHContained .. 98
operator const char* .. 98
operator= (1) .. 99
operator= (2) .. 99
operator+= (1) .. 99
operator+= (2) .. 99
operator== .. 99
operator!= .. 100
operator« (1) .. 100
operator« (2) .. 100
operator« (3) .. 100
operator« (4) .. 100
operator« (5) .. 100
operator« (6) .. 100
operator« (7) .. 100
operator« (8) .. 101
operator« (9) .. 101
operator« (10) .. 101
operator« (11) .. 101
operator« (12) .. 101
operator« (13) .. 101
operator« (14) .. 101
operator« (15) .. 101
overlay .. 102
replace .. 102
setDataLength .. 102
setFMHContained .. 102
Inherited public methods .. 103
Inherited protected methods .. 103
Enumerations .. 103
DataAreaOwner .. 103
DataAreaType .. 103

Chapter 20. IccClock class .. 105
IccClock constructor .. 105
Constructor .. 105
Public methods .. 105
absTime .. 105
cancelAlarm .. 105
date .. 106
dayOfMonth .. 106
dayOfWeek .. 106
daysSince1900 .. 106
milliSeconds .. 106
monthOfYear .. 107
setAlarm .. 107
time .. 107
update .. 108
year .. 108
Inherited public methods .. 108
Inherited protected methods .. 108
Enumerations .. 109
DateFormat .. 109
DayOfWeek .. 109
MonthOfYear .. 109
UpdateMode .. 109

Chapter 21. IccCondition structure .. 111
Enumerations .. 111
Codes .. 111
Range .. 112

Chapter 22. IccConsole class .. 113
IccConsole constructor (protected) .. 113
Constructor .. 113
Public methods .. 113
instance .. 113
put .. 113
replyTimeout .. 113
resetRouteCodes .. 114
setAllRouteCodes .. 114
setReplyTimeout (1) .. 114
setReplyTimeout (2) .. 114
setRouteCodes .. 114
write .. 115
writeAndGetReply .. 115
Inherited public methods .. 115
Inherited protected methods .. 116
Enumerations .. 116
SeverityOpt .. 116

Chapter 23. IccControl class .. 117
IccControl constructor (protected) .. 117
Constructor .. 117
Public methods .. 117
callingProgramId .. 117
cancelAbendHandler .. 117
commArea .. 118
console .. 118
initData .. 118
instance .. 118
isCreated .. 118
programId .. 118
resetAbendHandler .. 119
returnProgramId .. 119
run .. 119
session .. 119
setAbendHandler (1) .. 119
setAbendHandler (2) .. 119
startRequestQ .. 120
system .. 120
task .. 120
terminal .. 120
Inherited public methods .. 120
Inherited protected methods .. 121

Chapter 24. IccConvId class .. 123
IccConvId constructors .. 123
Constructor (1) .. 123
Constructor (2) .. 123

Public methods 123
operator= (1) 123
operator= (2) 123
Inherited public methods 124
Inherited protected methods 124

Chapter 25. IccDataQueue class . . . 125
IccDataQueue constructors 125
Constructor (1) 125
Constructor (2) 125
Public methods 125
clear 125
empty 125
get 126
put 126
readItem 126
writeItem (1) 126
writeItem (2) 126
Inherited public methods 127
Inherited protected methods 127

Chapter 26. IccDataQueueId class . . 129
IccDataQueueId constructors 129
Constructor (1) 129
Constructor (2) 129
Public methods 129
operator= (1) 129
operator= (2) 129
Inherited public methods 130
Inherited protected methods 130

Chapter 27. IccEvent class 131
IccEvent constructor 131
Constructor 131
Public methods 131
className 131
classType 131
condition 131
conditionText 132
methodName 132
summary 132
Inherited public methods 132
Inherited protected methods 132

Chapter 28. IccException class 133
IccException constructor 133
Constructor 133
Public methods 134
className 134
classType 134
message 134
methodName 134
number 134
summary 134
type 135
typeText 135
Inherited public methods 135
Inherited protected methods 135
Enumerations 135
Type 135

Chapter 29. IccFile class 137
IccFile constructors 137
Constructor (1) 137
Constructor (2) 137
Public methods 137
access 138
accessMethod 138
beginInsert (VSAM only) 138
deleteLockedRecord 138
deleteRecord 139
enableStatus 139
endInsert (VSAM only) 139
isAddable 139
isBrowsable 140
isDeletable 140
isEmptyOnOpen 140
isReadable 140
isRecoverable 141
isUpdatable 141
keyLength 141
keyPosition 141
openStatus 142
readRecord 142
recordFormat 142
recordIndex 143
recordLength 143
registerRecordIndex 143
rewriteRecord 143
setAccess 144
setEmptyOnOpen 144
setStatus 144
type 144
unlockRecord 145
writeRecord 145
Inherited public methods 146
Inherited protected methods 146
Enumerations 146
Access 146
ReadMode 147
SearchCriterion 147
Status 147

Chapter 30. IccFileId class 149
IccFileId constructors 149
Constructor (1) 149
Constructor (2) 149
Public methods 149
operator= (1) 149
operator= (2) 149
Inherited public methods 150
Inherited protected methods 150

Chapter 31. IccFileIterator class . . . 151
IccFileIterator constructor 151
Constructor 151
Public methods 151
readNextRecord 151
readPreviousRecord 152
reset 152
Inherited public methods 152

Inherited protected methods 153

Chapter 32. IccGroupId class . . . 155
IccGroupId constructors 155
Constructor (1) 155
Constructor (2) 155
Public methods 155
operator= (1) 155
operator= (2) 155
Inherited public methods 156
Inherited protected methods 156

Chapter 33. IccJournal class 157
IccJournal constructors 157
Constructor (1) 157
Constructor (2) 157
Public methods 157
clearPrefix 157
journalTypeId 158
put 158
registerPrefix 158
setJournalTypeId (1) 158
setJournalTypeId (2) 158
setPrefix (1) 158
setPrefix (2) 158
wait 159
writeRecord (1) 159
writeRecord (2) 159
Inherited public methods 159
Inherited protected methods 160
Enumerations 160
Options 160

Chapter 34. IccJournalId class . . . 161
IccJournalId constructors 161
Constructor (1) 161
Constructor (2) 161
Public methods 161
number 161
operator= (1) 161
operator= (2) 162
Inherited public methods 162
Inherited protected methods 162

Chapter 35. IccJournalTypeId class 163
IccJournalTypeId constructors 163
Constructor (1) 163
Constructor (2) 163
Public methods 163
operator= (1) 163
operator= (2) 163
Inherited public methods 164
Inherited protected methods 164

Chapter 36. IccKey class 165
IccKey constructors 165
Constructor (1) 165
Constructor (2) 165
Constructor (3) 165
Public methods 165
assign 165
completeLength 166
kind 166
operator= (1) 166
operator= (2) 166
operator= (3) 166
operator== (1) 166
operator== (2) 166
operator== (3) 166
operator!= (1) 166
operator!= (2) 167
operator!= (3) 167
setKind 167
value 167
Inherited public methods 167
Inherited protected methods 167
Enumerations 168
Kind 168

Chapter 37. IccLockId class 169
IccLockId constructors 169
Constructor (1) 169
Constructor (2) 169
Public methods 169
operator= (1) 169
operator= (2) 169
Inherited public methods 170
Inherited protected methods 170

Chapter 38. IccMessage class . . . 171
IccMessage constructor 171
Constructor 171
Public methods 171
className 171
methodName 171
number 172
summary 172
text 172
Inherited public methods 172
Inherited protected methods 172

Chapter 39. IccPartnerId class . . . 173
IccPartnerId constructors 173
Constructor (1) 173
Constructor (2) 173
Public methods 173
operator= (1) 173
operator= (2) 173
Inherited public methods 174
Inherited protected methods 174

Chapter 40. IccProgram class . . . 175
IccProgram constructors 175
Constructor (1) 175
Constructor (2) 175
Public methods 175
address 175
clearInputMessage 175
entryPoint 176
length 176

link 176
load 177
registerInputMessage 177
setInputMessage 177
unload 177
Inherited public methods 177
Inherited protected methods 178
Enumerations 178
CommitOpt 178
LoadOpt 178

Chapter 41. IccProgramId class . . 179
IccProgramId constructors 179
Constructor (1) 179
Constructor (2) 179
Public methods 179
operator= (1) 179
operator= (2) 179
Inherited public methods 180
Inherited protected methods 180

Chapter 42. IccRBA class 181
IccRBA constructor 181
Constructor 181
Public methods 181
operator= (1) 181
operator= (2) 181
operator== (1) 181
operator== (2) 182
operator!= (1) 182
operator!= (2) 182
number 182
Inherited public methods 182
Inherited protected methods 182

Chapter 43. IccRecordIndex class . . 183
IccRecordIndex constructor (protected) 183
Constructor 183
Public methods 183
length 183
type 183
Inherited public methods 184
Inherited protected methods 184
Enumerations 184
Type 184

Chapter 44. IccRequestId class 185
IccRequestId constructors 185
Constructor (1) 185
Constructor (2) 185
Constructor (3) 185
Public methods 185
operator= (1) 185
operator= (2) 186
Inherited public methods 186
Inherited protected methods 186

Chapter 45. IccResource class 187
IccResource constructor (protected) 187
Constructor 187
Public methods 187
actionOnCondition 187
actionOnConditionAsChar 187
actionsOnConditionsText 188
clear 188
condition 188
conditionText 189
get 189
handleEvent 189
id 189
isEDFOn 189
isRouteOptionOn 190
name 190
put 190
routeOption 190
setActionOnAnyCondition 190
setActionOnCondition 191
setActionsOnConditions 191
setEDF 191
setRouteOption (1) 191
setRouteOption (2) 191
Inherited public methods 192
Inherited protected methods 192
Enumerations 192
ActionOnCondition 192
HandleEventReturnOpt 192
ConditionType 193

Chapter 46. IccResourceId class . . 195
IccResourceId constructors (protected) 195
Constructor (1) 195
Constructor (2) 195
Public methods 195
name 195
nameLength 196
Protected methods 196
operator=. 196
Inherited public methods 196
Inherited protected methods 196

Chapter 47. IccRRN class 197
IccRRN constructors 197
Constructor 197
Public methods 197
operator= (1) 197
operator= (2) 197
operator== (1) 197
operator== (2) 198
operator!= (1) 198
operator!= (2) 198
number 198
Inherited public methods 198
Inherited protected methods 198

Chapter 48. IccSemaphore class . . 199
IccSemaphore constructor 199
Constructor (1) 199
Constructor (2) 199
Public methods 199
lifeTime 199

lock .. 200
tryLock .. 200
type .. 200
unlock .. 200
Inherited public methods .. 200
Inherited protected methods .. 201
Enumerations .. 201
LockType .. 201
LifeTime .. 201

Chapter 49. IccSession class .. 203
IccSession constructors (public) .. 203
Constructor (1) .. 203
Constructor (2) .. 203
Constructor (3) .. 203
IccSession constructor (protected) .. 204
Constructor .. 204
Public methods .. 204
allocate .. 204
connectProcess (1) .. 204
connectProcess (2) .. 204
connectProcess (3) .. 205
converse .. 205
convId .. 205
errorCode .. 206
extractProcess .. 206
flush .. 206
free .. 206
get .. 206
isErrorSet .. 206
isNoDataSet .. 207
isSignalSet .. 207
issueAbend .. 207
issueConfirmation .. 207
issueError .. 207
issuePrepare .. 208
issueSignal .. 208
PIPList .. 208
process .. 208
put .. 208
receive .. 208
send (1) .. 209
send (2) .. 209
sendInvite (1) .. 209
sendInvite (2) .. 209
sendLast (1) .. 210
sendLast (2) .. 210
state .. 210
stateText .. 211
syncLevel .. 211
Inherited public methods .. 211
Inherited protected methods .. 212
Enumerations .. 212
AllocateOpt .. 212
SendOpt .. 212
StateOpt .. 212
SyncLevel .. 213

Chapter 50. IccStartRequestQ class 215
IccStartRequestQ constructor (protected) .. 215
Constructor .. 215
Public methods .. 215
cancel .. 215
clearData .. 216
data .. 216
instance .. 216
queueName .. 216
registerData .. 216
reset .. 216
retrieveData .. 217
returnTermId .. 217
returnTransId .. 217
setData .. 217
setQueueName .. 217
setReturnTermId (1) .. 218
setReturnTermId (2) .. 218
setReturnTransId (1) .. 218
setReturnTransId (2) .. 218
setStartOpts .. 218
start .. 218
Inherited public methods .. 219
Inherited protected methods .. 220
Enumerations .. 220
RetrieveOpt .. 220
ProtectOpt .. 220
CheckOpt .. 220

Chapter 51. IccSysId class .. 221
IccSysId constructors .. 221
Constructor (1) .. 221
Constructor (2) .. 221
Public methods .. 221
operator= (1) .. 221
operator= (2) .. 221
Inherited public methods .. 222
Inherited protected methods .. 222

Chapter 52. IccSystem class .. 223
IccSystem constructor (protected) .. 223
Constructor .. 223
Public methods .. 223
applName .. 223
beginBrowse (1) .. 223
beginBrowse (2) .. 224
dateFormat .. 224
endBrowse .. 224
freeStorage .. 224
getFile (1) .. 224
getFile (2) .. 225
getNextFile .. 225
getStorage .. 225
instance .. 225
operatingSystem .. 226
operatingSystemLevel .. 226
release .. 226
releaseText .. 226
sysId .. 226
workArea .. 227
Inherited public methods .. 227
Inherited protected methods .. 227

Enumerations .. 227
ResourceType .. 227

Chapter 53. IccTask class .. 229
IccTask Constructor (protected) .. 229
Constructor .. 229
Public methods .. 229
abend .. 229
abendData .. 230
commitUOW .. 230
delay .. 230
dump .. 230
enterTrace .. 231
facilityType .. 231
freeStorage .. 232
getStorage .. 232
instance .. 232
isCommandSecurityOn .. 232
isCommitSupported .. 232
isResourceSecurityOn .. 233
isRestarted .. 233
isStartDataAvailable .. 233
number .. 233
principalSysId .. 233
priority .. 234
rollBackUOW .. 234
setDumpOpts .. 234
setPriority .. 234
setWaitText .. 234
startType .. 235
suspend .. 235
transId .. 235
triggerDataQueueId .. 235
userId .. 235
waitExternal .. 235
waitOnAlarm .. 236
workArea .. 236
Inherited public methods .. 236
Inherited protected methods .. 237
Enumerations .. 237
AbendHandlerOpt .. 237
AbendDumpOpt .. 237
DumpOpts .. 237
FacilityType .. 238
StartType .. 238
StorageOpts .. 238
TraceOpt .. 239
WaitPostType .. 239
WaitPurgeability .. 239

Chapter 54. IccTempStore class .. 241
IccTempStore constructors .. 241
Constructor (1) .. 241
Constructor (2) .. 241
Public methods .. 241
clear .. 242
empty .. 242
get .. 242
numberOfItems .. 242
put .. 242
readItem .. 242
readNextItem .. 243
rewriteItem .. 243
writeItem (1) .. 243
writeItem (2) .. 243
Inherited public methods .. 244
Inherited protected methods .. 244
Enumerations .. 245
Location .. 245
NoSpaceOpt .. 245

Chapter 55. IccTempStoreId class. .. 247
IccTempStoreId constructors .. 247
Constructor (1) .. 247
Constructor (2) .. 247
Public methods .. 247
operator= (1) .. 247
operator= (2) .. 247
Inherited public methods .. 248
Inherited protected methods .. 248

Chapter 56. IccTermId class .. 249
IccTermId constructors .. 249
Constructor (1) .. 249
Constructor (2) .. 249
Public methods .. 249
operator= (1) .. 249
operator= (2) .. 249
Inherited public methods .. 250
Inherited protected methods .. 250

Chapter 57. IccTerminal class .. 251
IccTerminal constructor (protected) .. 251
Constructor .. 251
Public methods .. 251
AID .. 251
clear .. 251
cursor .. 251
data .. 252
erase .. 252
freeKeyboard .. 252
get .. 252
height .. 252
inputCursor .. 252
instance .. 253
line .. 253
netName .. 253
operator« (1) .. 253
operator« (2) .. 253
operator« (3) .. 253
operator« (4) .. 253
operator« (5) .. 253
operator« (6) .. 254
operator« (7) .. 254
operator« (8) .. 254
operator« (9) .. 254
operator« (10) .. 254
operator« (11) .. 254
operator« (12) .. 254
operator« (13) .. 254

operator« (14) .. 255
operator« (15) .. 255
operator« (16) .. 255
operator« (17) .. 255
operator« (18) .. 255
put .. 255
receive .. 255
receive3270Data .. 256
send (1) .. 256
send (2) .. 256
send (3) .. 256
send (4) .. 256
send3270Data (1) .. 257
send3270Data (2) .. 257
send3270Data (3) .. 257
send3270Data (4) .. 257
sendLine (1) .. 258
sendLine (2) .. 258
sendLine (3) .. 258
sendLine (4) .. 258
setColor .. 259
setCursor (1) .. 259
setCursor (2) .. 259
setHighlight .. 259
setLine .. 260
setNewLine .. 260
setNextCommArea .. 260
setNextInputMessage .. 260
setNextTransId .. 260
signoff .. 261
signon (1) .. 261
signon (2) .. 261
waitForAID (1) .. 262
waitForAID (2) .. 262
width .. 262
workArea .. 262
Inherited public methods .. 262
Inherited protected methods .. 263
Enumerations .. 263
AIDVal .. 263
Case .. 263
Color .. 263
Highlight .. 263
NextTransIdOpt .. 264

Chapter 58. IccTerminalData class .. 265
IccTerminalData constructor (protected) .. 265
Constructor .. 265
Public methods .. 265
alternateHeight .. 265
alternateWidth .. 265
defaultHeight .. 266
defaultWidth .. 266
graphicCharCodeSet .. 266
graphicCharSetId .. 266
isAPLKeyboard .. 266
isAPLText .. 267
isBTrans .. 267
isColor .. 267
isEWA .. 267
isExtended3270 .. 267
isFieldOutline .. 268
isGoodMorning .. 268
isHighlight .. 268
isKatakana .. 268
isMSRControl .. 268
isPS .. 269
isSOSI .. 269
isTextKeyboard .. 269
isTextPrint .. 269
isValidation .. 269
Inherited public methods .. 270
Inherited protected methods .. 270

Chapter 59. IccTime class .. 271
IccTime constructor (protected) .. 271
Constructor .. 271
Public methods .. 271
hours .. 271
minutes .. 271
seconds .. 271
timeInHours .. 272
timeInMinutes .. 272
timeInSeconds .. 272
type .. 272
Inherited public methods .. 272
Inherited protected methods .. 273
Enumerations .. 273
Type .. 273

Chapter 60. IccTimeInterval class .. 275
IccTimeInterval constructors .. 275
Constructor (1) .. 275
Constructor (2) .. 275
Public methods .. 275
operator= .. 275
set .. 275
Inherited public methods .. 276
Inherited protected methods .. 276

Chapter 61. IccTimeOfDay class .. 277
IccTimeOfDay constructors .. 277
Constructor (1) .. 277
Constructor (2) .. 277
Public methods .. 277
operator= .. 277
set .. 277
Inherited public methods .. 278
Inherited protected methods .. 278

Chapter 62. IccTPNameId class .. 279
IccTPNameId constructors .. 279
Constructor (1) .. 279
Constructor (2) .. 279
Public methods .. 279
operator= (1) .. 279
operator= (2) .. 279
Inherited public methods .. 280
Inherited protected methods .. 280

Chapter 63. IccTransId class 281
IccTransId constructors 281
Constructor (1) 281
Constructor (2) 281
Public methods. 281
operator= (1) 281
operator= (2) 281
Inherited public methods 282
Inherited protected methods 282

Chapter 64. IccUser class 283
IccUser constructors 283
Constructor (1) 283
Constructor (2) 283
Public methods. 283
changePassword 283
daysUntilPasswordExpires 284
ESMReason 284
ESMResponse 284
groupId 284
invalidPasswordAttempts 284
language 284
lastPasswordChange 285
lastUseTime 285
passwordExpiration 285
setLanguage. 285
verifyPassword. 285
Inherited public methods 285
Inherited protected methods 286

Chapter 65. IccUserId class 287
IccUserId constructors 287
Constructor (1) 287
Constructor (2) 287
Public methods. 287
operator= (1) 287
operator= (2) 287
Inherited public methods 288
Inherited protected methods 288

Chapter 66. IccValue structure 289
Enumeration 289
Listing of valid CVDAs 289

Chapter 67. main function 291

Part 4. Appendixes 293

Appendix A. Mapping EXEC CICS calls to Foundation Class methods .. 295

Appendix B. Mapping Foundation Class methods to EXEC CICS calls .. 301

Appendix C. C++ sample programs 309
ICC$BUF (IBUF) 309
ICC$CLK (ICLK) 310
ICC$DAT (IDAT) 310
ICC$EXC1 (IEX1) 310
ICC$EXC2 (IEX2) 310
ICC$EXC3 (IEX3) 310
ICC$FIL (IFIL) 311
ICC$HEL (IHEL) 311
ICC$JRN (IJRN) 311
ICC$PRG1 (IPR1) 311
First Screen 311
Second Screen 312
ICC$RES1 (IRS1) 312
ICC$RES2 (IRS2) 312
ICC$SEM (ISEM) 313
ICC$SES1 (ISE1) 313
ICC$SES2 (ISE2) 313
ICC$SRQ1 (ISR1) 313
ICC$SRQ2 (ISR2) 314
ICC$SYS (ISYS). 314
ICC$TMP (ITMP) 314
ICC$TRM (ITRM) 315
ICC$TSK (ITSK) 315

Notices 317
Trademarks 319

Bibliography 321
CICS books for CICS Transaction Server for z/OS 321
CICSPlex SM books for CICS Transaction Server for z/OS 322
Other CICS publications. 322
Other IBM publications 322

Accessibility 325

Index 327

Preface

The CICS® family provides robust transaction processing capabilities across the major hardware platforms that IBM® offers, and also across key non-IBM platforms.

It is not intended to be a product in its own right.

The CICS C++ foundation classes, as described here, allow an application programmer to access many of the CICS services that are available via the EXEC CICS procedural application programming interface (API). They also provide an object model, making OO application development simpler and more intuitive.

Who this manual is for

This manual documents intended Programming Interfaces that allow the customer to write programs to obtain the services of IBM CICS Transaction Server Version 5 Release 3.

This manual is for CICS application programmers who want to know how to use the CICS foundation classes.

What this manual is about

This manual is divided into three parts and three appendixes:

- Part 1, "Installation and setup," on page 1 describes how to install the product and check that the installation is complete.
- Part 2, "Using the CICS foundation classes," on page 13 describes the classes and how to use them.
- Part 3, "Foundation Classes—reference," on page 69 contains the reference material: the class descriptions and their methods.
- For those of you familiar with the EXEC CICS calls, Appendix A, "Mapping EXEC CICS calls to Foundation Class methods," on page 295 maps EXEC CICS calls to the foundation class methods detailed in this manual.
- Appendix B, "Mapping Foundation Class methods to EXEC CICS calls," on page 301 maps them the other way — foundation class methods to EXEC CICS calls.
- Appendix C, "C++ sample programs," on page 309 contains the output from the sample programs.

What you need to know before reading this manual

Chapter 1, "Getting ready for object oriented CICS," on page 3 describes what you need to know to understand this manual.

Location of topics in the Knowledge Center

The topics in this publication can also be found in the CICS Transaction Server for z/OS Knowledge Center. The Knowledge Center uses content types to structure how the information is displayed.

© Copyright IBM Corp. 1989, 2015

The Knowledge Center content types are generally task-oriented, for example: upgrading, configuring, and installing. Other content types include reference, overview, and scenario or tutorial-based information. The following mapping shows the relationship between topics in this publication and the Knowledge Center content types, with links to the external Knowledge Center:

Table 1. Mapping of PDF topics to Knowledge Center content types. This table lists the relationship between topics in the PDF and topics in the content types in the Knowledge Center

Set of topics in this publication	Location in the Knowledge Center
• Chapter 3, "C++ Hello World sample," on page 9 • Part 2, "Using the CICS foundation classes," on page 13 • Part 3, "Foundation Classes—reference," on page 69	• Hello World in Samples • Using the CICS foundation classes in Developing applications • Application development reference in Reference

Terminology

"CICS" is used throughout this manual to mean the CICS element of the IBM CICS Transaction Server for z/OS®, Version 5 Release 3 .

"RACF" is used throughout this book to mean the z/OS Resource Access Control Facility (RACF®) or any other external security manager that provides equivalent function.

In the programming examples in this book, the dollar symbol ($) is used as a national currency symbol. In countries where the dollar is not the national currency, the local currency symbol should be used.

Changes in CICS Transaction Server for z/OS, Version 5 Release 3

For information about changes that have been made in this release, please refer to *What's New* in the Knowledge Center, or the following publications:

- *CICS Transaction Server for z/OS What's New*
- *CICS Transaction Server for z/OS Upgrading to CICS TS Version 5.3*

Any technical changes that are made to the text after release are indicated by a vertical bar (|) to the left of each new or changed line of information.

© Copyright IBM Corp. 1989, 2015

Part 1. Installation and setup

This section describes the CICS foundation classes installed on your CICS server.

© Copyright IBM Corp. 1989, 2015

Chapter 1. Getting ready for object oriented CICS

You must be familiar with object oriented concepts and technology, the C++ language and with CICS in order to understand the topics that follow.

This is not intended to be an introduction to any of these subjects.

© Copyright IBM Corp. 1989, 2015

Chapter 2. Installed contents

The CICS foundation classes package consists of several files or data sets.

The CICS foundation classes package consists of several files or data sets. These contain the:

- header files
- executables (DLL's)
- samples
- other CICS Transaction Server for z/OS files

This section describes the files that comprise the CICS C++ Foundation Classes and explains where you can find them on your CICS server.

Header files

The header files are the C++ class definitions needed to compile CICS C++ Foundation Class programs.

C++ Header File	Classes Defined in this Header
ICCABDEH	IccAbendData
ICCBASEH	IccBase
ICCBUFEH	IccBuf
ICCCLKEH	IccClock
ICCCNDEH	IccCondition (struct)
ICCCONEH	IccConsole
ICCCTLEH	IccControl
ICCDATEH	IccDataQueue
ICCEH	see 1 on page 6
ICCEVTEH	IccEvent
ICCEXCEH	IccException
ICCFILEH	IccFile
ICCFLIEH	IccFileIterator
ICCGLBEH	Icc (struct) (global functions)
ICCJRNEH	IccJournal
ICCMSGEH	IccMessage
ICCPRGEH	IccProgram
ICCRECEH	IccRecordIndex, IccKey, IccRBA and IccRRN
ICCRESEH	IccResource
ICCRIDEH	IccResourceId + subclasses (such as IccConvId)
ICCSEMEH	IccSemaphore
ICCSESEH	IccSession
ICCSRQEH	IccStartRequestQ
ICCSYSEH	IccSystem
ICCTIMEH	IccTime, IccAbsTime, IccTimeInterval, IccTimeOfDay
ICCTMDEH	IccTerminalData
ICCTMPEH	IccTempStore
ICCTRMEH	IccTerminal
ICCTSKEH	IccTask
ICCUSREH	IccUser
ICCVALEH	IccValue (struct)

© Copyright IBM Corp. 1989, 2015

Note:

1. A single header that #includes all the listed header files is supplied as ICCEH
2. The file ICCMAIN is also supplied with the C++ header files. This contains the **main** function stub that should be used when you build a Foundation Class program.
3. Header files are located in CICSTS53.CICS.SDFHC370.

Location

PDS: CICSTS53.CICS.SDFHC370.

Dynamic link library

The Dynamic Link Library is the runtime environment that is needed to support a CICS C++ Foundation Class program.

Location

ICCFCDLL module in PDS: CICSTS53.CICS.SDFHLOAD.

Sample source code

The samples are provided to help you understand how to use the classes to build object oriented applications.

Location

PDS: CICSTS53.CICS.SDFHSAMP.

Running the sample applications

If you have installed the resources defined in the member DFHCURDS, you should be ready to run some of the sample applications.

The sample programs are supplied as source code in library CICSTS53.CICS.SDFHSAMP and before you can run the sample programs, you need to compile, pre-link and link them. To do this, use the procedure ICCFCCL in data set CICSTS53.CICS.SDFHPROC.

ICCFCCL contains the Job Control Language needed to compile, pre-link and link a CICS user application. Before using ICCFCCL you may find it necessary to perform some customization to conform to your installation standards. See also “Compiling Programs” on page 47.

Sample programs such as ICCBUF, ICCCLK and ICC$HEL require no additional CICS resource definitions, and should now execute successfully.

Other sample programs, in particular the DTP samples named ICC$SES1 and ICC$SES2, require additional CICS resource definitions. Refer to the prologues in the source of the sample programs for information about these additional requirements.

Other data sets for CICS Transaction Server for z/OS

CICSTS53.CICS.SDFHSDCK contains the member

- ICCFCIMP - 'sidedeck' containing import control statements

CICSTS53.CICS.SDFHPROC contains the members

- ICCFCC - JCL to compile a CFC user program
- ICCFCCL - JCL to compile, prelink and link a CFC user program
- ICCFCGL - JCL to compile and link an XPLINK program that uses CFC libraries.
- ICCFCL - JCL to prelink and link a CFC user program

CICSTS53.CICS.SDFHLOAD contains the members

- DFHCURDS - program definitions required for CICS system definition.
- DFHCURDI - program definitions required for CICS system definition.

Chapter 3. C++ Hello World sample

This example writes a simple message to the CICS terminal and shows how to get started with CICS OO programming.

Chapter 5, “Overview of the foundation classes,” on page 17 is a more formal introduction and you should read it before you attempt advanced OO programming.

Running the sample applications

The sample programs are supplied as source code in library CICSTS53.CICS.SDFHSAMP and before you can run the sample programs, you need to compile, pre-link and link them. To do this, use the procedure `ICCFCCL` in data set CICSTS53.CICS.SDFHPROC.

`ICCFCCL` contains the Job Control Language needed to compile, pre-link and link a CICS user application. Before using `ICCFCCL` you may find it necessary to perform some customization to conform to your installation standards. See also “Compiling Programs” on page 47.

Sample programs such as `ICC$BUF`, `ICC$CLK` and `ICC$HEL` require no additional CICS resource definitions, and should now execute successfully.

Other sample programs, in particular the DTP samples named `ICC$SES1` and `ICC$SES2`, require additional CICS resource definitions. Refer to the prologues in the source of the sample programs for information about these additional requirements.

C++ sample

The source for this program can be found in sample `ICC$HEL`. There are a series of program fragments interspersed with commentary.

```
#include "icceh.hpp"
#include "iccmain.hpp"
```

The first line includes the header file, `ICCEH`, which includes the header files for all the CICS Foundation Class definitions. Note that it is coded as `"icceh.hpp"` to preserve cross-platform, C++ language conventions.

The second line includes the supplied program stub. This stub contains the **main** function, which is the point of entry for any program that uses the supplied classes and is responsible for initializing them correctly. (See Chapter 67, “main function,” on page 291 for more details). You are strongly advised to use the stub provided but you may in certain cases tailor this stub to your own requirements. The stub initializes the class environment, creates the program control object, then invokes the **run** method, which is where the application program should 'live'.

```
void IccUserControl::run()
{
```

© Copyright IBM Corp. 1989, 2015

The code that controls the program flow resides not in the **main** function but in the **run** method of a class derived from **IccControl** (see Chapter 23, “IccControl class,” on page 117). The user can define their own subclass of **IccControl** or, as here, use the default one – **IccUserControl**, which is defined in ICCMAIN – and just provide a definition for the **run** method.

```
    IccTerminal* pTerm = terminal();
```

The **terminal** method of **IccControl** class is used to obtain a pointer to the terminal object for the application to use.

```
    pTerm->erase();
```

The **erase** method clears the current contents of the terminal.

```
    pTerm->send(10, 35, "Hello World");
```

The **send** method is called on the terminal object. This causes "Hello World" to be written to the terminal screen, starting at row 10, column 35.

```
    pTerm->waitForAID();
```

This waits until the terminal user hits an AID (Action Identifier) key.

```
    return;
}
```

Returning from the **run** method causes program control to return to CICS.

Compile and link "Hello World"

The "Hello World" sample is provided as sample `ICC$HEL` (see C++ sample programs in Samples). Find this sample and copy it to your own work area.

To compile and link any CICS C++ Foundation program you need access to:

1. The source of the program, here `ICC$HEL`.
2. The Foundation Classes header files (see “Header files” on page 5).
3. The Foundation Classes dynamic link library (DLL). The `ICCFCDLL` module is in CICSTS53.CICS.SDFHLOAD.

See Chapter 8, “Compiling, executing, and debugging,” on page 47 for the JCL required to compile the sample program.

Running "Hello World" on your CICS server

To run the program you have just compiled on your CICS server, you need to make the executable program available to CICS (that is, make sure it is in a suitable directory or load library).

Then, depending on your server, you may need to create a CICS program definition for your executable. Finally, you may logon to a CICS terminal and run the program.

To do this,

1. Logon to a CICS terminal and enter either:
   ```
   IHEL
   ```

or

```
CECI LINK PROGRAM(ICC$HEL)
```

2. If you are not using program autoinstall on your CICS region, define the program ICC$HEL to CICS using the supplied transaction CEDA.
3. Log on to a CICS terminal.
4. On CICS terminal run: `CECI LINK PROGRAM(ICC$HEL)`

Expected Output from "Hello World"

This is what you should see on the CICS terminal if program `ICC$HEL` has been built and executed successfully.

```
Hello World
```

Hit an Action Identifier, such as the ENTER key, to return.

Part 2. Using the CICS foundation classes

This section describes the CICS foundation classes and how to use them. There is a formal listing of the user interface in Part 3, "Foundation Classes—reference," on page 69.

© Copyright IBM Corp. 1989, 2015

Chapter 4. C++ Objects

This section describes how to create, use, and delete objects.

This section describes how to create, use, and delete objects. In our context an object is an instance of a class. An object cannot be an instance of a base or abstract base class. It is possible to create objects of all the concrete (non-base) classes described in the reference part of this book.

Creating an object

If a class has a constructor it is executed when an object of that class is created. This constructor typically initializes the state of the object. Foundation Classes' constructors often have mandatory positional parameters that the programmer must provide at object creation time.

C++ objects can be created in one of two ways:

1. Automatically, where the object is created on the C++ stack. For example: Here, objX and objY are automatically created on the stack. Their lifetime is

```
{
   ClassX     objX
   ClassY     objY(parameter1);
}     //objects deleted here
```

   limited by the context in which they were created; when they go out of scope they are automatically deleted (that is, their destructors run and their storage is released).
2. Dynamically, where the object is created on the C++ heap. For example: Here we deal with pointers to objects instead of the objects themselves. The

```
{
   ClassX*   pObjX = new ClassX;
   ClassY*   pObjY = new ClassY(parameter1);
}     //objects NOT deleted here
```

   lifetime of the object outlives the scope in which it was created. In the previous sample the pointers (pObjX and pObjY) are 'lost' as they go out of scope but the objects they pointed to still exist! The objects exist until they are explicitly deleted as shown here:

```
{
   ClassX*     pObjX = new ClassX;
   ClassY*     pObjY = new ClassY(parameter1);

⋮
   pObjX->method1();
   pObjY->method2();

⋮
   delete pObjX;
   delete pObjY;
}
```

Most of the samples in this book use automatic storage. You are ***advised*** to use automatic storage, because you do not have remember to explicitly delete objects,

© Copyright IBM Corp. 1989, 2015

but you are free to use either style for CICS C++ Foundation Class programs. For more information on Foundation Classes and storage management see Chapter 11, “Storage management,” on page 63.

Using an object

Any of the class public methods can be called on an object of that class.

Any of the class public methods can be called on an object of that class. The following example creates object *obj* and then calls method **doSomething** on it:

```
ClassY   obj("TEMP1234");
obj.doSomething();
```

Alternatively, you can do this using dynamic object creation:

```
ClassY*   pObj = new ClassY("parameter1");
pObj->doSomething();
```

Deleting an object

When an object is destroyed its destructor function, which has the same name as the class preceded with ~(tilde), is automically called. (You cannot call the destructor explicitly).

If the object was created automatically it is automatically destroyed when it goes out of scope.

If the object was created dynamically it exists until an explicit **delete** operator is used.

Chapter 5. Overview of the foundation classes

This topic is a formal introduction to what the Foundation Classes can do for you.

See Chapter 3, "C++ Hello World sample," on page 9 for a simple example to get you started. The section takes a brief look at the CICS C++ Foundation Class library by considering the categories in turn.

See Part 3, "Foundation Classes—reference," on page 69 for more detailed information on the Foundation Classes.

Every class that belongs to the CICS Foundation Classes is prefixed by **Icc**.

Base classes

All classes inherit, directly or indirectly, from **IccBase**.

IccBase
- **IccRecordIndex**
- **IccResource**
  - **IccControl**
  - **IccTime**
- **IccResourceId**

Figure 1. Base classes

All resource identification classes, such as **IccTermId**, and **IccTransId**, inherit from **IccResourceId** class. These are typically CICS table entries.

All CICS resources—in fact any class that needs access to CICS services—inherit from **IccResource** class.

Base classes enable common interfaces to be defined for categories of class. They are used to create the foundation classes, as provided by IBM, and they can be used by application programmers to create their own derived classes.

IccBase
: The base for every other foundation class. It enables memory management and allows objects to be interrogated to discover which type they are.

IccControl
: The abstract base class that the application program has to subclass and provide with an implementation of the **run** method.

IccResource
: The base class for all classes that access CICS resources or services. See "Resource classes" on page 19.

IccResourceId
: The base class for all table entry (resource name) classes, such as **IccFileId** and **IccTempStoreId**.

© Copyright IBM Corp. 1989, 2015

IccTime
The base class for the classes that store time information: **IccAbsTime**, **IccTimeInterval** and **IccTimeOfDay**.

Resource identification classes

Resource identification classes are as follows.

IccBase
- **IccResourceId**
  - **IccConvId**
  - **IccDataQueueId**
  - **IccFileId**
  - **IccGroupId**
  - **IccJournalId**
  - **IccJournalTypeId**
  - **IccLockId**
  - **IccPartnerId**
  - **IccProgramId**
  - **IccRequestId**
    - **IccAlarmRequestId**
  - **IccSysId**
  - **IccTempStoreId**
  - **IccTermId**
  - **IccTPNameId**
  - **IccTransId**
  - **IccUserId**

Figure 2. Resource identification classes

CICS resource identification classes define CICS resource identifiers – typically the name of the resource as specified in its RDO resource definition. For example an **IccFileId** object represents a CICS file name. All concrete resource identification classes have the following properties:

- The name of the class ends in **Id**.
- The class is a subclass of the **IccResourceId** class.
- The constructors check that any supplied resource identifier meets CICS standards. For example, an **IccFileId** object must contain a 1 to 8 byte character field; providing a 9-byte field is not tolerated.

The resource identification classes improve type checking; methods that expect an **IccFileId** object as a parameter do not accept an **IccProgramId** object instead. If character strings representing the resource names are used instead, the compiler cannot check for validity – it cannot check whether the string is a file name or a program name.

Many of the resource classes, described in "Resource classes" on page 19, contain resource identification classes. For example, an **IccFile** object contains an **IccFileId** object. You must use the resource object, not the resource identification object, to operate on a CICS resource. For example, you must use **IccFile**, rather than **IccFileId** to read a record from a file.

Class	CICS resource
IccAlarmRequestId	alarm request
IccConvId	conversation

Class	CICS resource
IccDataQueueId	transient data queue
IccFileId	file
IccGroupId	group
IccJournalId	journal
IccJournalTypeId	journal type
IccLockId	(Not applicable)
IccPartnerId	APPC partner definition files
IccProgramId	program
IccRequestId	request
IccSysId	remote system
IccTempStoreId	temporary storage queue
IccTermId	terminal
IccTPNameId	remote APPC TP name
IccTransId	transaction
IccUserId	user

Resource classes

All CICS resource classes inherit from the **IccResource** base class.

IccBase
- **IccResource**
  - **IccAbendData**
  - **IccClock**
  - **IccConsole**
  - **IccControl**
  - **IccDataQueue**
  - **IccFile**
  - **IccFileIterator**
  - **IccJournal**
  - **IccProgram**
  - **IccSemaphore**
  - **IccSession**
  - **IccStartRequestQ**
  - **IccSystem**
  - **IccTask**
  - **IccTempStore**
  - **IccTerminal**
  - **IccTerminalData**
  - **IccUser**

Figure 3. Resource classes

These classes model the behavior of the major CICS resources, for example:

- Terminals are modelled by **IccTerminal**.
- Programs are modelled by **IccProgram**.
- Temporary Storage queues are modelled by **IccTempStore**.
- Transient Data queues are modelled by **IccDataQueue**.

Any operation on a CICS resource may raise a CICS condition; the **condition** method of **IccResource** (see page "condition" on page 188) can interrogate it.

(Any class that accesses CICS services ***must*** be derived from **IccResource**).

Class	CICS resource
IccAbendData	task abend data
IccClock	CICS time and date services
IccConsole	CICS console
IccControl	control of executing program
IccDataQueue	transient data queue
IccFile	file
IccFileIterator	file iterator (browsing files)
IccJournal	user or system journal
IccProgram	program (outside executing program)
IccSemaphore	semaphore (locking services)
IccSession	session
IccStartRequestQ	start request queue; asynchronous transaction starts
IccSystem	CICS system
IccTask	current task
IccTempStore	temporary storage queue
IccTerminal	terminal belonging to current task
IccTerminalData	attributes of **IccTerminal**
IccTime	time specification
IccUser	user (security attributes)

Support Classes

Support classes are as follows.

IccBase
- **IccBuf**
- **IccEvent**
- **IccException**
- **IccMessage**
- **IccRecordIndex**
  - **IccKey**
  - **IccRBA**
  - **IccRRN**
- **IccResource**
  - **IccTime**
    - **IccAbsTime**
    - **IccTimeInterval**
    - **IccTimeOfDay**

Figure 4. Support classes

These classes are tools that complement the resource classes: they make life easier for the application programmer and thus add value to the object model.

Resource class	Description
IccAbsTime	Absolute time (milliseconds since January 1 1900)
IccBuf	Data buffer (makes manipulating data areas easier)
IccEvent	Event (the outcome of a CICS command)
IccException	Foundation Class exception (supports the C++ exception handling model)
IccTimeInterval	Time interval (for example, five minutes)
IccTimeOfDay	Time of day (for example, five minutes past six)

IccAbsTime, IccTimeInterval and **IccTimeOfDay** classes make it simpler for the application programmer to specify time measurements as objects within an application program. **IccTime** is a base class: **IccAbsTime**, **IccTimeInterval**, and **IccTimeOfDay** are derived from **IccTime**.

Consider method **delay** in class **IccTask**, whose signature is as follows:

```
void delay(const IccTime& time, const IccRequestId* reqId = 0);
```

To request a delay of 1 minute and 7 seconds (that is, a time interval) the application programmer can do this:

```
IccTimeInterval time(0, 1, 7);
task()->delay(time);
```

Note: The task method is provided in class **IccControl** and returns a pointer to the application's task object.

Alternatively, to request a delay until 10 minutes past twelve (lunchtime?) the application programmer can do this:

```
IccTimeOfDay lunchtime(12, 10);
task()->delay(lunchtime);
```

The **IccBuf** class allows easy manipulation of buffers, such as file record buffers, transient data record buffers, and COMMAREAs (for more information on **IccBuf** class see Chapter 6, “Buffer objects,” on page 25).

IccMessage class is used primarily by **IccException** class to encapsulate a description of why an exception was thrown. The application programmer can also use **IccMessage** to create their own message objects.

IccException objects are thrown from many of the methods in the Foundation Classes when an error is encountered.

The **IccEvent** class allows a programmer to gain access to information relating to a particular CICS event (command).

Using CICS resources

To use a CICS resource, such as a file or program, you must first create an appropriate object and then call methods on the object.

Creating a resource object

When you create a resource object you create a representation of the actual CICS resource (such as a file or program). You do not create the CICS resource; the object is the application's view of the resource. The same is true of destroying objects.

Use an accompanying resource identification object when creating a resource object. For example:

```
IccFileId  id("XYZ123");
IccFile    file(id);
```

This allows the C++ compiler to protect you against doing something wrong such as:

```
IccDataQueueId  id("WXYZ");
IccFile         file(id);       //gives error at compile time
```

The alternative of using the text name of the resource when creating the object is also permitted:

```
IccFile  file("XYZ123");
```

Singleton classes

Many resource classes, such as **IccFile**, can be used to create multiple resource objects within a single program.

```
IccFileId   id1("File1");
IccFileId   id2("File2");
IccFile     file1(id1);
IccFile     file2(id2);
```

However, some resource classes are designed to allow the programmer to create only ***one*** instance of the class; these are called singleton classes. The following Foundation Classes are singleton:

- **IccAbendData** provides information about task abends.
- **IccConsole**, or a derived class, represents the system console for operator messages.
- **IccControl**, or a derived class, such as **IccUserControl**, controls the executing program.
- **IccStartRequestQ**, or a derived class, allows the application program to start CICS transactions (tasks) asynchronously.
- **IccSystem**, or a derived class, is the application view of the CICS system in which it is running.
- **IccTask**, or a derived class, represents the CICS task under which the executing program is running.
- **IccTerminal**, or a derived class, represents your task's terminal, provided that your principal facility is a 3270 terminal.

Any attempt to create more than one object of a singleton class results in an error – a C++ exception is thrown.

A class method, **instance**, is provided for each of these singleton classes, which returns a pointer to the requested object and creates one if it does not already exist. For example:

```
IccControl* pControl = IccControl::instance();
```

Calling methods on a resource object

Any of the public methods can be called on an object of that class.

For example:

```
IccTempStoreId id("TEMP1234");
IccTempStore   temp(id);
temp.writeItem("Hello TEMP1234");
```

Method **writeItem** writes the contents of the string it is passed ("Hello TEMP1234") to the CICS Temporary Storage queue "TEMP1234".

Chapter 6. Buffer objects

The Foundation Classes make extensive use of **IccBuf** objects – buffer objects that simplify the task of handling pieces of data or records.

Understanding the use of these objects is a necessary precondition for much of the rest of this book.

Each of the CICS Resource classes that involve passing data to CICS (for example by writing data records) and getting data from CICS (for example by reading data records) make use of the **IccBuf** class. Examples of such classes are **IccConsole**, **IccDataQueue**, **IccFile**, **IccFileIterator**, **IccJournal**, **IccProgram**, **IccSession**, **IccStartRequestQ**, **IccTempStore**, and **IccTerminal**.

IccBuf class

IccBuf, which is described in detail in the reference part of this book, provides generalized manipulation of data areas.

Because it can be used in a number of ways, there are several **IccBuf** constructors that affect the behavior of the object. Two important attributes of an **IccBuf** object are now described.

Data area ownership

IccBuf has an attribute indicating whether the data area has been allocated inside or outside of the object.

The possible values of this attribute are 'internal' and 'external'. It can be interrogated by using the **dataAreaOwner** method.

Internal/External ownership of buffers

When **DataAreaOwner** = external, it is the application programmer's responsibility to ensure the validity of the storage on which the **IccBuf** object is based. If the storage is invalid or inappropriate for a particular method applied to the object, unpredictable results will occur.

Data area extensibility

This attribute defines whether the length of the data area within the **IccBuf** object, once created, can be increased.

The possible values of this attribute are 'fixed' and 'extensible'. It can be interrogated by using the **dataAreaType** method.

As an object that is 'fixed' cannot have its data area size increased, the length of the data (for example, a file record) assigned to the **IccBuf** object must not exceed the data area length, otherwise a C++ exception is thrown.

Note: By definition, an 'extensible' buffer ***must*** also be 'internal'.

© Copyright IBM Corp. 1989, 2015

IccBuf constructors

There are several forms of the **IccBuf** constructor, used when creating **IccBuf** objects.

Some examples are shown here.

```
IccBuf buffer;
```

This creates an 'internal' and 'extensible' data area that has an initial length of zero. When data is assigned to the object the data area length is automatically extended to accommodate the data being assigned.

```
IccBuf buffer(50);
```

This creates an 'internal' and 'extensible' data area that has an initial length of 50 bytes. The data length is zero until data is assigned to the object. If 50 bytes of data are assigned to the object, both the data length and the data area length return a value of 50. When more than 50 bytes of data are assigned into the object, the data area length is automatically (that is, without further intervention) extended to accommodate the data.

```
IccBuf buffer(50, IccBuf::fixed);
```

This creates an 'internal' and 'fixed' data area that has a length of 50 bytes. If an attempt is made to assign more than 50 bytes of data into the object, the data is truncated and an exception is thrown to notify the application of the error situation.

```
struct MyRecordStruct
{
    short id;
    short code;
    char  data(30);
    char  rating;
};
MyRecordStruct myRecord;
IccBuf buffer(sizeof(MyRecordStruct), &myRecord);
```

This creates an **IccBuf** object that uses an 'external' data area called myRecord. By definition, an 'external' data area is also 'fixed'. Data can be assigned using the methods on the **IccBuf** object or using the `myRecord` structure directly.

```
IccBuf buffer("Hello World");
```

This creates an 'internal' and 'extensible' data area that has a length equal to the length of the string "Hello World". The string is copied into the object's data area. This initial data assignment can then be changed using one of the manipulation methods (such as **insert**, **cut**, or **replace**) provided.

```
IccBuf buffer("Hello World");
buffer << " out there";
IccBuf buffer2(buffer);
```

Here the copy constructor creates the second buffer with almost the same attributes as the first; the exception is the data area ownership attribute – the second object always contains an 'internal' data area that is a copy of the data area in the first. In the given example buffer2 contains "Hello World out there" and has both data area length and data length of 21.

IccBuf methods

An **IccBuf** object can be manipulated using a number of supplied methods; for example you can append data to the buffer, change the data in the buffer, cut data out of the buffer, or insert data into the middle of the buffer.

The operators **const char***, **=**, **+=**, **==**, **!=**, and **<<** have been overloaded in class **IccBuf**. There are also methods that allow the **IccBuf** attributes to be queried. For more details see the reference section.

Working with IccResource subclasses

To illustrate working with IccResource subclasses, consider writing a queue item to CICS temporary storage using **IccTempstore** class.

```
IccTempStore store("TEMP1234");
IccBuf       buffer(50);
```

The **IccTempStore** object created is the application's view of the CICS temporary storage queue named "TEMP1234". The **IccBuf** object created holds a 50-byte data area (it also happens to be 'extensible').

```
buffer = "Hello Temporary Storage Queue";
store.writeItem(buffer);
```

The character string "Hello Temporary Storage Queue" is copied into the buffer. This is possible because the **operator=** method has been overloaded in the **IccBuf** class.

The **IccTempStore** object calls its **writeItem** method, passing a reference to the **IccBuf** object as the first parameter. The contents of the **IccBuf** object are written out to the CICS temporary storage queue.

Now consider the inverse operation, reading a record from the CICS resource into the application program's **IccBuf** object:

```
buffer = store.readItem(5);
```

The **readItem** method reads the contents of the fifth item in the CICS Temporary Storage queue and returns the data as an **IccBuf** reference.

The C++ compiler resolves the given line of code into two method calls, **readItem** defined in class **IccTempStore** and **operator=** which has been overloaded in class **IccBuf**. This second method takes the contents of the returned **IccBuf** reference and copies its data into the buffer.

The given style of reading and writing records using the foundation classes is typical. The final example shows how to write code – using a similar style to the above example – but this time accessing a CICS transient data queue.

```
IccDataQueue queue("DATQ");
IccBuf       buffer(50);
buffer = queue.readItem();
buffer << "Some extra data";
queue.writeItem(buffer);
```

The **readItem** method of the **IccDataQueue** object is called, returning a reference to an **IccBuf** which it then assigns (via **operator=** method, overloaded in class **IccBuf**)

to the `buffer` object. The character string – "Some extra data" – is appended to the buffer (via **operator chevron** « method, overloaded in class **IccBuf**). The **writeItem** method then writes back this modified buffer to the CICS transient data queue.

You can find further examples of this syntax in the samples presented in the following sections, which describe how to use the foundation classes to access CICS services.

Please refer to the reference section for further information on the **IccBuf** class. You might also find the supplied sample – `ICC$BUF` – helpful.

Chapter 7. Using CICS Services

This section describes how to use CICS services. The services are considered in turn.

File control

The file control classes **IccFile**, **IccFileId**, **IccKey**, **IccRBA**, and **IccRRN** allow you to read, write, update and delete records in files.

In addition, **IccFileIterator** class allows you to browse through all the records in a file.

An **IccFile** object is used to represent a file. It is convenient, but not necessary, to use an **IccFileId** object to identify a file by name.

An application program reads and writes its data in the form of individual records. Each read or write request is made by a method call. To access a record, the program must identify both the file and the particular record.

VSAM (or VSAM-like) files are of the following types:

KSDS
: Key-sequenced: each record is identified by a key – a field in a predefined position in the record. Each key must be unique in the file.

  The logical order of records within a file is determined by the key. The physical location is held in an index which is maintained by VSAM.

  When browsing, records are found in their logical order.

ESDS Entry-sequenced: each record is identified by its relative byte address (RBA).

  Records are held in an ESDS in the order in which they were first loaded into the file. New records are always added at the end and records may not be deleted or have their lengths altered.

  When browsing, records are found in the order in which they were originally written.

RRDS file
: Relative record: records are written in fixed-length slots. A record is identified by the relative record number (RRN) of the slot which holds it.

Reading records

A read operation uses two classes – **IccFile** to perform the operation and one of **IccKey**, **IccRBA**, and **IccRRN** to identify the particular record, depending on whether the file access type is KSDS, ESDS, or RRDS.

The **readRecord** method of **IccFile** class reads the record.

Reading KSDS records

Before reading a record you must use the **registerRecordIndex** method of **IccFile** to associate an object of class **IccKey** with the file.

© Copyright IBM Corp. 1989, 2015

You must use a key, held in the **IccKey** object, to access records. A 'complete' key is a character string of the same length as the physical file's key. Every record can be separately identified by its complete key.

A key can also be 'generic'. A generic key is shorter than a complete key and is used for searching for a set of records.The **IccKey** class has methods that allow you to set and change the key.

IccFile class has methods **isReadable**, **keyLength**, **keyPosition**, **recordIndex**, and **recordLength**, which help you when reading KSDS records.

Reading ESDS records

You must use a relative byte address (RBA) held in an **IccRBA** object to access the beginning of a record.

Before reading a record you must use the **registerRecordIndex** method of **IccFile** to associate an object of class **IccRBA** with the file.

IccFile class has methods **isReadable**, **recordFormat**, **recordIndex**, and **recordLength** that help you when reading ESDS records.

Reading RRDS records

You must use a relative record number (RRN) held in an **IccRRN** object to access a record.

Before reading a record you must use **registerRecordIndex** method of **IccFile** to associate an object of class **IccRRN** with the file.

IccFile class has methods **isReadable**, **recordFormat**, **recordIndex**, and **recordLength** which help you when reading RRDS records.

Writing records

Writing records is also known as “adding records”.

This topic describes writing records that have not previously been written. Writing records that already exist is not permitted unless they have been previously been put into 'update' mode. See “Updating records” on page 31 for more information.

Before writing a record you must use **registerRecordIndex** method of **IccFile** to associate an object of class **IccKey**, **IccRBA**, or **IccRRN** with the file. The **writeRecord** method of **IccFile** class writes the record.

A write operation uses two classes – **IccFile** to perform the operation and one of **IccKey**, **IccRBA**, and **IccRRN** to identify the particular record, depending on whether the file access type is KSDS, ESDS, or RRDS.

If you have more than one record to write, you can improve the speed of writing by using mass insertion of data. You begin and end this mass insertion by calling the **beginInsert** and **endInsert** methods of **IccFile**.

Writing KSDS records

You must use a key, held in an **IccKey** object to access records.

A 'complete' key is a character string that uniquely identifies a record. Every record can be separately identified by its complete key.

The **writeRecord** method of **IccFile** class writes the record.

IccFile class has methods **isAddable**, **keyLength**, **keyPosition**, **recordIndex**, **recordLength**, and **registerRecordIndex** which help you when writing KSDS records.

Writing ESDS records

You must use a relative byte address (RBA) held in an **IccRBA** object to access the beginning of a record.

IccFile class has methods **isAddable**, **recordFormat**, **recordIndex**, **recordLength**, and **registerRecordIndex** that help you when writing ESDS records.

Writing RRDS records

Use the **writeRecord** method to add a new ESDS record.

IccFile class has methods **isAddable**, **recordFormat**, **recordIndex**, **recordLength**, and **registerRecordIndex** that help you when writing RRDS records.

Updating records

Updating a record is also known as “rewriting a record”.

Before updating a record you must first read it, using **readRecord** method in 'update' mode. This locks the record so that nobody else can change it.

Use **rewriteRecord** method to update the record. Note that the **IccFile** object remembers which record is being processed and this information is not passed in again.

For an example, see code fragment: "Read record for update".

The base key in a KSDS file must not be altered when the record is modified. If the file definition allows variable-length records, the length of the record can be changed.

The length of records in an ESDS, RRDS, or fixed-length KSDS file must not be changed on update.

For a file defined to CICS as containing fixed-length records, the length of record being updated must be the same as the original length. The length of an updated record must not be greater than the maximum defined to VSAM.

Deleting records

Records can never be deleted from an ESDS file.

Deleting normal records

The **deleteRecord** method of **IccFile** class deletes one or more records, provided they are not locked by virtue of being in 'update' mode.

The records to be deleted are defined by the **IccKey** or **IccRRN** object.

Deleting locked records

The **deleteLockedRecord** method of **IccFile** class deletes a record which has been previously locked by virtue of being put in 'update' mode by the **readRecord** method.

Browsing records

Browsing, or sequential reading of files uses another class – **IccFileIterator**.

An object of this class must be associated with an **IccFile** object and an **IccKey**, **IccRBA**, or **IccRRN** object. After this association has been made the **IccFileIterator** object can be used without further reference to the other objects.

Browsing can be done either forwards, using **readNextRecord** method or backwards, using **readPreviousRecord** method. The **reset** method resets the **IccFileIterator** object to point to the record specified by the **IccKey** or **IccRBA** object.

Examples of browsing files are shown in page Code fragment "List all records in assending order of key" .

Example of file control

This sample program demonstrates how to use the **IccFile** and **IccFileIterator** classes.

The source for this sample can be found in C++ sample programs in Samples, in file `ICC$FIL`. Here the code is presented without any of the terminal input and output that can be found in the source file.

```
#include "icceh.hpp"
#include "iccmain.hpp"
```

The first two lines include the header files for the Foundation Classes and the standard **main** function which sets up the operating environment for the application program.

```
const char* fileRecords[] =
{
   //NAME          KEY  PHONE     USERID
   "BACH, J S      003  00-1234   BACH      ",
   "BEETHOVEN, L   007  00-2244   BEET      ",
   "CHOPIN, F      004  00-3355   CHOPIN    ",
   "HANDEL, G F    005  00-4466   HANDEL    ",
   "MOZART, W A    008  00-5577   WOLFGANG  "
};
```

This defines several lines of data that are used by the sample program.

```
void IccUserControl::run()
{
```

The **run** method of **IccUserControl** class contains the user code for this example. As a terminal is to be used, the example starts by creating a terminal object and clearing the associated screen.

```
     short        recordsDeleted = 0;
     IccFileId    id("ICCKFILE");
     IccKey       key(3,IccKey::generic);
     IccFile      file( id );
     file.registerRecordIndex( &key );
     key = "00";
     recordsDeleted = file.deleteRecord();
```

The *key* and *file* objects are first created and then used to delete all the records whose key starts with "00" in the KSDS file "ICCKFILE". *key* is defined as a generic key having 3 bytes, only the first two of which are used in this instance.

```
IccBuf       buffer(40);
key.setKind( IccKey::complete );
for (short j = 0; j < 5; j++)
{
    buffer = fileRecords[j];
    key.assign(3, fileRecords[j]+15);
    file.writeRecord( buffer );
}
```

This next fragment writes all the data provided into records in the file. The data is passed by means of an **IccBuf** object that is created for this purpose. **setKind** method is used to change *key* from 'generic' to 'complete'.

The **for** loop between these calls loops round all the data, passing the data into the buffer, using the **operator=** method of **IccBuf**, and thence into a record in the file, by means of **writeRecord**. On the way the key for each record is set, using **assign**, to be a character string that occurs in the data (3 characters, starting 15 characters in).

```
IccFileIterator fIterator( &file, &key );
key = "000";
buffer = fIterator.readNextRecord();
while (fIterator.condition() == IccCondition::NORMAL)
{
    term->sendLine("- record read: [%s]",(const char*) buffer);
    buffer = fIterator.readNextRecord();
}
```

The loop shown here lists to the terminal, using **sendLine**, all the records in ascending order of key. It uses an **IccFileIterator** object to browse the records. It starts by setting the minimum value for the key which, as it happens, does not exist in this example, and relying on CICS to find the first record in key sequence.

The loop continues until any condition other than NORMAL is returned.

```
key = "\xFF\xFF\xFF";
fIterator.reset( &key );
buffer = fIterator.readPreviousRecord();
while (fIterator.condition() == IccCondition::NORMAL)
{
    buffer = fIterator.readPreviousRecord();
}
```

The next loop is nearly identical to the last, but lists the records in reverse order of key.

```
key = "008";
buffer = file.readRecord( IccFile::update );
buffer.replace( 4, "5678", 23);
file.rewriteRecord( buffer );
```

This fragment reads a record for update, locking it so that others cannot change it. It then modifies the record in the buffer and writes the updated record back to the file.

```
buffer = file.readRecord();
```

The same record is read again and sent to the terminal, to show that it has indeed been updated.

```
    return;
}
```

The end of **run**, which returns control to CICS.

See Appendix C, "C++ sample programs," on page 309 for the expected output from this sample.

Program control

This section describes how to access and use a program other than the one that is currently executing.

Program control uses **IccProgram** class, one of the resource classes.

Programs may be loaded, unloaded and linked to, using an **IccProgram** object. An **IccProgram** object can be interrogated to obtain information about the program. See Chapter 40, "IccProgram class," on page 175 for more details.

The example shown here shows one program calling another two programs in turn, with data passing between them via a COMMAREA. One program is assumed to be local, the second is on a remote CICS system. The programs are in two files, `ICC$PRG1` and `ICC$PRG2`. See C++ sample programs in Samples for the location of these files and the expected output from these sample programs.

Most of the terminal IO in these samples has been omitted from the code that follows.

```
#include "icceh.hpp"
#include "iccmain.hpp"
void IccUserControl::run()
{
```

The code for both programs starts by including the header files for the Foundation Classes and the stub for **main** method. The user code is located in the **run** method of the **IccUserControl** class for each program.

```
IccSysId      sysId( "ICC2" );
IccProgram    icc$prg2( "ICC$PRG2" );
IccProgram    remoteProg( "ICC$PRG3" );
IccBuf        commArea( 100, IccBuf::fixed );
```

The first program (ICC$PRG1) creates an **IccSysId** object representing the remote region, and two **IccProgram** objects representing the local and remote programs that will be called from this program. A 100 byte, fixed length buffer object is also created to be used as a communication area between programs.

```
icc$prg2.load();
if (icc$prg2.condition() == IccCondition::NORMAL)
{
  term->sendLine( "Loaded program: %s <%s> Length=%ld Address=%x",
                  icc$prg2.name(),
                  icc$prg2.conditionText(),
                  icc$prg2.length(),
                  icc$prg2.address() );
  icc$prg2.unload();
}
```

The program then attempts to load and interrogate the properties of program ICC$PRG2.

```
 commArea = "DATA SET BY ICC$PRG1";
 icc$prg2.link( &commArea );
```

The communication area buffer is set to contain some data to be passed to the first program that ICC$PRG1 links to (ICC$PRG2). ICC$PRG1 is suspended while ICC$PRG2 is run.

The called program, ICC$PRG2, is a simple program, the gist of which is as follows:

```
IccBuf& commArea = IccControl::commArea();
commArea = "DATA RETURNED BY ICC$PRG2";
return;
```

ICC$PRG2 gains access to the communication area that was passed to it. It then modifies the data in this communication area and passes control back to the program that called it.

The first program (ICC$PRG1) now calls another program, this time on another system, as follows:

```
remoteProg.setRouteOption( sysId );
commArea = "DATA SET BY ICC$PRG1";
remoteProg.link( &commArea );
```

The **setRouteOption** requests that calls on this object are routed to the remote system. The communication area is set again (because it will have been changed by ICC$PRG2) and it then links to the remote program (ICC$PRG3 on system ICC2).

The called program uses CICS temporary storage but the three lines we consider are:

```
IccBuf& commArea = IccControl::commArea();
commArea = "DATA RETURNED BY ICC$PRG3";
return;
```

Again, the remote program (ICC$PRG3) gains access to the communication area that was passed to it. It modifies the data in this communication area and passes control back to the program that called it.

```
  return;
};
```

Finally, the calling program itself ends and returns control to CICS.

Starting transactions asynchronously

The **IccStartRequestQ** class enables a program to start another CICS transaction instance asynchronously (and optionally pass data to the started transaction).

The same class is used by a started transaction to gain access to the data that the task that issued the start request passed to it. Finally start requests (for some time in the future) can be cancelled.

Starting transactions

You can use any of the following methods to establish what data will be sent to the started transaction.

- **registerData** or **setData**
- **setQueueName**
- **setReturnTermId**
- **setReturnTransId**

The actual start is requested using the **start** method.

Accessing start data

A started transaction can access its start data by invoking the **retrieveData** method.

This method stores all the start data attributes in the **IccStartRequestQ** object such that the individual attributes can be accessed using the following methods:

- **data**
- **queueName**
- **returnTermId**
- **returnTransId**

Cancelling unexpired start requests

Unexpired start requests (that is, start requests for some future time that has not yet been reached) can be cancelled using the **cancel** method.

Example of starting transactions

start transaction ISR1 on terminal PEO1 on system ICC1.

CICS system	**ICC1**	**ICC2**
Transaction	ISR1/ITMP	ISR2
Program	ICC$SRQ1/ICC$TMP	ICC$SRQ2
Terminal	PEO1	PEO2

This issues two start requests; the first is cancelled before it has expired. The second starts transaction ISR2 on terminal PEO2 on system ICC2. This transaction accesses its start data and finishes by starting transaction ITMP on the original terminal (PEO1 on system ICC1).

The programs and the expected output from them, can be found in C++ sample programs in Samples as files `ICC$SRQ1` and `ICC$SRQ2`. Here the code is presented without the terminal IO requests.

Transaction ISR1 runs program ICC$SRQ1 on system ICC1. Let us consider this program first:

```
#include "icceh.hpp"
#include "iccmain.hpp"
void IccUserControl::run()
{
```

These lines include the header files for the Foundation Classes, and the **main** function needed to set up the class library for the application program. The **run** method of **IccUserControl** class contains the user code for this example.

```
  IccRequestId          req1;
  IccRequestId          req2("REQUEST1");
  IccTimeInterval       ti(0,0,5);
  IccTermId             remoteTermId("PE02");
  IccTransId            ISR2("ISR2");
  IccTransId            ITMP("ITMP");
  IccBuf                buffer;
  IccStartRequestQ* startQ = startRequestQ();
```

Here we are creating a number of objects:

req1 An empty **IccRequestId** object ready to identify a particular start request.

req2 An **IccRequestId** object containing the user-supplied identifier "REQUEST1".

ti An **IccTimeInterval** object representing 0 hours, 0 minutes, and 5 seconds.

remoteTermId
An **IccTermId** object; the terminal on the remote system where we start a transaction.

ISR2 An **IccTransId** object; the transaction we start on the remote system.

ITMP An **IccTransId** object; the transaction that the started transaction starts on this program's terminal.

buffer
An **IccBuf** object that holds start data.

Finally, the **startRequestQ** method of **IccControl** class returns a pointer to the single instance (singleton) class **IccStartRequestQ**.

```
 startQ->setRouteOption( "ICC2" );
 startQ->registerData( &buffer );
 startQ->setReturnTermId( terminal()->name() );
 startQ->setReturnTransId( ITMP );
 startQ->setQueueName( "startqnm" );
```

This code fragment prepares the start data that is passed when we issue a start request. The **setRouteOption** says we will issue the start request on the remote system, ICC2. The **registerData** method associates an **IccBuf** object that will contain the start data (the contents of the **IccBuf** object are not extracted until we issue the start request). The **setReturnTermId** and **setReturnTransId** methods allow the start requester to pass a transaction and terminal name to the started transaction. These fields are typically used to allow the started transaction to start ***another*** transaction (as specified) on another terminal, in this case ours.

The **setQueueName** is another piece of information that can be passed to the started transaction.

```
  buffer = "This is a greeting from program 'icc$srq1'!!";
  req1 = startQ->start( ISR2, &remoteTermId, &ti );
  startQ->cancel( req1 );
```

Here we set the data that we pass on the start requests. We start transaction ISR2 after an interval *ti* (5 seconds). The request identifier is stored in *req1*. Before the five seconds has expired (that is, immediately) we cancel the start request.

```
  req1 = startQ->start( ISR2, &remoteTermID, &ti, &req2 );
  return;
}
```

Again we start transaction ISR2 after an interval *ti* (5 seconds). This time the request is allowed to expire so transaction ISR2 is started on the remote system. Meanwhile, we end by returning control to CICS.

Let us now consider the started program, `ICC$SRQ2`.

```
  IccBuf                buffer;
  IccRequestId          req("REQUESTX");
  IccTimeInterval       ti(0,0,5);
  IccStartRequestQ* startQ = startRequestQ();
```

Here, as in `ICC$SRQ1`, we create a number of objects:

buffer
: An **IccBuf** object to hold the start data we were passed by our caller (ICC$SRQ1).

req
: An **IccRequestId** object to identify the start we will issue on our caller's terminal.

ti
: An **IccTimeInterval** object representing 0 hours, 0 minutes, and 5 seconds.

The **startRequestQ** method of **IccControl** class returns a pointer to the singleton class **IccStartRequestQ**.

```
  if ( task()->startType() != IccTask::startRequest )
  {
    term->sendLine(
          "This program should only be started via the StartRequestQ");
    task()->abend( "OOPS" );
  }
```

Here we use the **startType** method of **IccTask** class to check that `ICC$SRQ2` was started by the **start** method, and not in any other way (such as typing the transaction name on a terminal). If it was not started as intended, we abend with an "OOPS" abend code.

```
  startQ->retrieveData();
```

We retrieve the start data that we were passed by `ICC$SRQ1` and store within the **IccStartRequestQ** object for subsequent access.

```
buffer = startQ->data();
term->sendLine( "Start buffer contents = [%s]", buffer.dataArea() );
term->sendLine( "Start queue= [%s]", startQ->queueName() );
term->sendLine( "Start rtrn = [%s]", startQ->returnTransId().name());
term->sendLine( "Start rtrm = [%s]", startQ->returnTermId().name() );
```

The start data buffer is copied into our **IccBuf** object. The other start data items (queue, returnTransId, and returnTermId) are displayed on the terminal.

```
task()->delay( ti );
```

We delay for five seconds (that is, we sleep and do nothing).

```
startQ->setRouteOption( "ICC1" );
```

The **setRouteOption** signals that we will start on our caller's system (ICC1).

```
startQ->start( startQ->returnTransId(),startQ->returnTermId());
return;
```

We start a transaction called ITMP (the name of which was passed by `ICC$SRQ1` in the returnTransId start information) on the originating terminal (where `ICC$SRQ1` completed as it started this transaction). Having issued the start request, `ICC$SRQ1` ends, by returning control to CICS.

Finally, transaction ITMP runs on the first terminal. This is the end of this demonstration of starting transactions asynchronously.

Transient Data

The transient data classes, **IccDataQueue** and **IccDataQueueId**, allow you to store data in transient data queues for subsequent processing.

You can:

- Read data from a transient data queue (**readItem** method)
- Write data to a transient data queue (**writeItem** method)
- Delete a transient data queue (**empty** method)

An **IccDataQueue** object is used to represent a temporary storage queue. An **IccDataQueueId** object is used to identify a queue by name. Once the **IccDataQueueId** object is initialized it can be used to identify the queue as an alternative to using its name, with the advantage of additional error detection by the C++ compiler.

The methods available in **IccDataQueue** class are similar to those in the **IccTempStore** class. For more information on these see “Temporary storage” on page 41.

Reading data

The **readItem** method is used to read items from the queue.

It returns a reference to the **IccBuf** object that contains the information.

Writing data

The **writeItem** method of **IccDataQueue** adds a new item of data to the queue, taking the data from the buffer specified.

Deleting queues

The **empty** method deletes all items on the queue.

Example of managing transient data

This sample program demonstrates how to use the **IccDataQueue** and **IccDataQueueId** classes.

It can be found, along with the expected output, in C++ sample programs in Samples as file ICC$DAT. Here the code is presented without the terminal IO requests.

```
#include "icceh.hpp"
#include "iccmain.hpp"
```

The first two lines include the header files for the foundation classes and the standard **main** function that sets up the operating environment for the application program.

```
const char* queueItems[] =
{
  "Hello World - item 1",
  "Hello World - item 2",
  "Hello World - item 3"
};
```

This defines some buffer for the sample program.

```
void IccUserControl::run()
{
```

The **run** method of **IccUserControl** class contains the user code for this example.

```
  short itemNum =1;
  IccBuf              buffer( 50 );
  IccDataQueueId      id( "ICCQ" );
  IccDataQueue        queue( id );
  queue.empty();
```

This fragment first creates an identification object, of type IccDataQueueId containing "ICCQ". It then creates an **IccDataQueue** object representing the transient data queue "ICCQ", which it empties of data.

```
  for (short i=0 ; i<3 ; i++)
  {
    buffer = queueItems[i];
    queue.writeItem( buffer );
  }
```

This loop writes the three data items to the transient data object. The data is passed by means of an **IccBuf** object that was created for this purpose.

```
  buffer = queue.readItem();
  while ( queue.condition() == IccCondition::NORMAL )
  {
    buffer = queue.readItem();
  }
```

Having written out three records we now read them back in to show they were successfully written.

```
  return;
}
```

The end of **run**, which returns control to CICS.

Temporary storage

The temporary storage classes, **IccTempStore** and **IccTempStoreId**, allow you to store data in temporary storage queues.

You can:

- Read an item from the temporary storage queue (**readItem** method)
- Write a new item to the end of the temporary storage queue (**writeItem** method)
- Update an item in the temporary storage queue (**rewriteItem** method)
- Read the next item in the temporary storage queue (**readNextItem** method)
- Delete all the temporary data (**empty** method)

An **IccTempStore** object is used to represent a temporary storage queue. An **IccTempStoreId** object is used to identify a queue by name. Once the **IccTempStoreId** object is initialized it can be used to identify the queue as an alternative to using its name, with the advantage of additional error detection by the C++ compiler.

The methods available in **IccTempStore** class are similar to those in the **IccDataQueue** class. For more information on these see “Transient Data” on page 39.

Reading items

The **readItem** method of **IccTempStore** reads the specified item from the temporary storage queue.

It returns a reference to the **IccBuf** object that contains the information.

Writing items

Writing items is also known as "adding" items.

This section describes writing items that have not previously been written. Writing items that already exist can be done using the **rewriteItem** method. See “Updating items” for more information.

The **writeItem** method of **IccTempStore** adds a new item at the end of the queue, taking the data from the buffer specified. If this is done successfully, the item number of the record added is returned.

Updating items

Updating an item is also known as "rewriting" an item.

The **rewriteItem** method of **IccTempStore** class is used to update the specified item in the temporary storage queue.

Deleting items

You cannot delete individual items in a temporary storage queue.

To delete *all* the temporary data associated with an **IccTempStore** object use the **empty** method of **IccTempStore** class.

Example of Temporary Storage

This sample program demonstrates how to use the **IccTempStore** and **IccTempStoreId** classes.

This program, and the expected output from it, can be found in C++ sample programs in Samples, as file `ICC$TMP`. The sample is presented here without the terminal IO requests.

```
#include "icceh.hpp"
#include "iccmain.hpp"
#include <stdlib.h>
```

The first three lines include the header files for the foundation classes, the standard **main** function that sets up the operating environment for the application program, and the standard library.

```
const char* bufferItems[] =
{
  "Hello World - item 1",
  "Hello World - item 2",
  "Hello World - item 3"
};
```

This defines some buffer for the sample program.

```
void IccUserControl::run()
{
```

The **run** method of **IccUserControl** class contains the user code for this example.

```
  short itemNum = 1;
  IccTempStoreId id("ICCSTORE");
  IccTempStore   store( id );
  IccBuf         buffer( 50 );
  store.empty();
```

This fragment first creates an identification object, **IccTempStoreId** containing the field "ICCSTORE". It then creates an **IccTempStore** object representing the temporary storage queue "ICCSTORE", which it empties of records.

```
  for (short j=1 ; j <= 3 ; j++)
  {
    buffer = bufferItems[j-1];
    store.writeItem( buffer );
  }
```

This loop writes the three data items to the Temporary Storage object. The data is passed by means of an **IccBuf** object that was created for this purpose.

```
  buffer = store.readItem( itemNum );
  while ( store.condition() == IccCondition::NORMAL )
  {
    buffer.insert( 9, "Modified " );
    store.rewriteItem( itemNum, buffer );
    itemNum++;
    buffer = store.readItem( itemNum );
  }
```

This next fragment reads the items back in, modifies the item, and rewrites it to the temporary storage queue. First, the **readItem** method is used to read the buffer from the temporary storage object. The data in the buffer object is changed using the **insert** method of **IccBuf** class and then the **rewriteItem** method overwrites the buffer. The loop continues with the next buffer item being read.

```
  itemNum = 1;
  buffer = store.readItem( itemNum );
  while ( store.condition() == IccCondition::NORMAL )
  {
    term->sendLine( " - record #%d = [%s]", itemNum,
                    (const char*)buffer );
    buffer = store.readNextItem();
  }
```

This loop reads the temporary storage queue items again to show they have been updated.

```
  return;
}
```

The end of **run**, which returns control to CICS.

Terminal control

The terminal control classes, **IccTerminal**, **IccTermId**, and **IccTerminalData**, allow you to send data to, receive data from, and find out information about the terminal belonging to the CICS task.

An **IccTerminal** object is used to represent the terminal that belongs to the CICS task. It can only be created if the transaction has a 3270 terminal as its principal facility. The **IccTermId** class is used to identify the terminal. **IccTerminalData**, which is owned by **IccTerminal**, contains information about the terminal characteristics.

Sending data to a terminal

The **send** and **sendLine** methods of **IccTerminal** class are used to write data to the screen.

The **set...** methods allow you to do this. You may also want to erase the data currently displayed at the terminal, using the **erase** method, and free the keyboard so that it is ready to receive input, using the **freeKeyboard** method.

Receiving data from a terminal

The **receive** and **receive3270data** methods of **IccTerminal** class are used to receive data from the terminal.

Finding out information about a terminal

You can find out information about both the characteristics of the terminal and its current state.

The **data** object points to the **IccTerminalData** object that contains information about the characteristics of the terminal. The methods described in **IccTerminalData** on page Chapter 58, "IccTerminalData class," on page 265 allow you to discover, for example, the height of the screen or whether the terminal supports Erase Write Alternative. Some of the methods in **IccTerminal** also give you information about characteristics, such as how many lines a screen holds.

Other methods give you information about the current state of the terminal. These include **line**, which returns the current line number, and **cursor**, which returns the current cursor position.

Example of terminal control

This sample program demonstrates how to use the **IccTerminal**, **IccTermId**, and **IccTerminalData** classes.

This program, and the expected output from it, can be found in C++ sample programs in Samples, as file `ICC$TRM`.

```
#include "icceh.hpp"
#include "iccmain.hpp"
```

The first two lines include the header files for the Foundation Classes and the standard **main** function that sets up the operating environment for the application program.

```
void IccUserControl::run()
{
  IccTerminal& term = *terminal();
  term.erase();
```

The **run** method of **IccUserControl** class contains the user code for this example. As a terminal is to be used, the example starts by creating a terminal object and clearing the associated screen.

```
  term.sendLine( "First part of the line..." );
  term.send( "... a continuation of the line." );
  term.sendLine( "Start this on the next line" );
  term.sendLine( 40, "Send this to column 40 of current line" );
  term.send( 5, 10, "Send this to row 5, column 10" );
  term.send( 6, 40, "Send this to row 6, column 40" );
```

This fragment shows how the **send** and **sendLine** methods are used to send data to the terminal. All of these methods can take **IccBuf** references (const IccBuf&) instead of string literals (const char*).

```
  term.setNewLine();
```

This sends a blank line to the screen.

```
  term.setColor( IccTerminal::red );
  term.sendLine( "A Red line of text.");
  term.setColor( IccTerminal::blue );
  term.setHighlight( IccTerminal::reverse );
  term.sendLine( "A Blue, Reverse video line of text.");
```

The **setColor** method is used to set the color of the text on the screen and the **setHighlight** method to set the highlighting.

```
  term << "A cout sytle interface... " << endl;
  term << "you can " << "chain input together; "
       << "use different types, eg numbers: " << (short)123 << " "
       << (long)4567890 << " " << (double)123456.7891234 << endl;
  term << "... and everything is buffered till you issue a flush."
       << flush;
```

This fragment shows how to use the iostream–like interface **endl** to start data on the next line. To improve performance, you can buffer data in the terminal until **flush** is issued, which sends the data to the screen.

```
  term.send( 24,1, "Program 'icc$trm' complete: Hit PF12 to End" );
  term.waitForAID( IccTerminal::PF12 );
  term.erase();
```

The **waitForAID** method causes the terminal to wait until the specified key is hit, before calling the **erase** method to clear the display.

```
  return;
}
```

The end of **run**, which returns control to CICS.

Time and date services

The **IccClock** class controls access to the CICS time and date services.

IccAbsTime holds information about absolute time (the time in milliseconds that have elapsed since the beginning of 1900), and this can be converted to other forms of date and time. The methods available on **IccClock** objects and on **IccAbsTime** objects are very similar.

Example of time and date services

This sample program demonstrates how to use **IccClock** class.

The source for this program, and the expected output from it, can be found in C++ sample programs in Samples, as file `ICC$CLK`. The sample is presented here without the terminal IO requests.

```
#include "icceh.hpp"
#include "iccmain.hpp"
void IccUserControl::run()
{
```

The first two lines include the header files for the Foundation Classes and the standard **main** function that sets up the operating environment for the application program.

The **run** method of **IccUserControl** class contains the user code for this example.

```
  IccClock clock;
```

This creates a clock object.

```
  term->sendLine( "date() = [%s]",
                  clock.date() );
  term->sendLine( "date(DDMMYY) = [%s]",
                  clock.date(IccClock::DDMMYY) );
  term->sendLine( "date(DDMMYY,':') = [%s]",
                  clock.date(IccClock::DDMMYY,':'));
  term->sendLine( "date(MMDDYY) = [%s]",
                  clock.date(IccClock::MMDDYY));
  term->sendLine( "date(YYDDD) = [%s]",
                  clock.date(IccClock::YYDDD));
```

Here the **date** method is used to return the date in the format specified by the *format* enumeration. In order the formats are system, DDMMYY, DD:MM:YY, MMDDYY and YYDDD. The character used to separate the fields is specified by the *dateSeparator* character (that defaults to nothing if not specified).

```
  term->sendLine( "daysSince1900() = %ld",
                  clock.daysSince1900());
  term->sendLine( "dayOfWeek() = %d",
                  clock.dayOfWeek());
  if ( clock.dayOfWeek() == IccClock::Friday )
    term->sendLine( 40, "Today IS Friday" );
  else
    term->sendLine( 40, "Today is NOT Friday" );
```

This fragment demonstrates the use of the **daysSince1900** and **dayOfWeek** methods. **dayOfWeek** returns an enumeration that indicates the day of the week. If it is Friday, a message is sent to the screen, 'Today IS Friday'; otherwise the message 'Today is NOT Friday' is sent.

```
  term->sendLine( "dayOfMonth() = %d",
                  clock.dayOfMonth());
  term->sendLine( "monthOfYear() = %d",
                  clock.monthOfYear());
```

This demonstrates the **dayOfMonth** and **monthOfYear** methods of **IccClock** class.

```
  term->sendLine( "time() = [%s]",
                  clock.time() );
  term->sendLine( "time('-') = [%s]",
                  clock.time('-') );
  term->sendLine( "year() = [%ld]",
                  clock.year());
```

The current time is sent to the terminal, first without a separator (that is HHMMSS format), then with '-' separating the digits (that is, HH-MM-SS format). The year is sent, for example 1996.

```
  return;
};
```

The end of **run**, which returns control to CICS.

Chapter 8. Compiling, executing, and debugging

This section describes how to compile, execute, and debug a CICS Foundation Class program.

Compiling Programs

To compile and link a CICS Foundation Class program you need access to the program source, a compiler, header files and a dynamic link library.

You need access to the following items:

- The source of the program you are compiling

  Your C++ program source code needs `#include` statements for the Foundation Class headers and the Foundation Class `main()` program stub:

  ```
  #include "icceh.hpp"
  #include "iccmain.hpp"
  ```

- The IBM C++ compiler
- The Foundation Classes header files (see "Header files" on page 5)
- The Foundation Classes dynamic link library (DLL). The `ICCFCDLL` module is in CICSTS53.CICS.SDFHLOAD.

Note that, when using the Foundation Classes, you do not need to translate the "EXEC CICS" API so the translator program should not be used.

The following sample job statements show how to compile, prelink and link a program called `ICC$HEL`:

```
//ICC$HEL   JOB 1,user_name,MSGCLASS=A,CLASS=A,NOTIFY=userid
//PROCLIB  JCLLIB ORDER=(CICSTS53.CICS.SDFHPROC)
//ICC$HEL   EXEC ICCFCCL,INFILE=indatasetname(ICC$HEL),OUTFILE=outdatasetname(ICC$HEL)
//
```

Header files

The header files are the C++ class definitions needed to compile CICS C++ Foundation Class programs.

C++ Header File	Classes Defined in this Header
ICCABDEH	IccAbendData
ICCBASEH	IccBase
ICCBUFEH	IccBuf
ICCCLKEH	IccClock
ICCCNDEH	IccCondition (struct)
ICCCONEH	IccConsole
ICCCTLEH	IccControl
ICCDATEH	IccDataQueue
ICCEH	see 1 on page 6
ICCEVTEH	IccEvent
ICCEXCEH	IccException
ICCFILEH	IccFile
ICCFLIEH	IccFileIterator
ICCGLBEH	Icc (struct) (global functions)
ICCJRNEH	IccJournal

© Copyright IBM Corp. 1989, 2015

C++ Header File	Classes Defined in this Header
ICCMSGEH	IccMessage
ICCPRGEH	IccProgram
ICCRECEH	IccRecordIndex, IccKey, IccRBA and IccRRN
ICCRESEH	IccResource
ICCRIDEH	IccResourceId + subclasses (such as IccConvId)
ICCSEMEH	IccSemaphore
ICCSESEH	IccSession
ICCSRQEH	IccStartRequestQ
ICCSYSEH	IccSystem
ICCTIMEH	IccTime, IccAbsTime, IccTimeInterval, IccTimeOfDay
ICCTMDEH	IccTerminalData
ICCTMPEH	IccTempStore
ICCTRMEH	IccTerminal
ICCTSKEH	IccTask
ICCUSREH	IccUser
ICCVALEH	IccValue (struct)

Note:

1. A single header that #includes all the listed header files is supplied as `ICCEH`
2. The file `ICCMAIN` is also supplied with the C++ header files. This contains the **main** function stub that should be used when you build a Foundation Class program.
3. Header files are located in CICSTS53.CICS.SDFHC370.

Executing Programs

To run a compiled and linked (that is, executable) Foundation Classes program you need to do the following.

1. Make the executable program available to CICS. This involves making sure the program is in a suitable directory or load library. Depending on your server, you may also need to create a CICS program definition (using CICS resource definition facilities) before you can execute the program.
2. Logon to a CICS terminal.
3. Run the program.

Program debugging

Having successfully compiled, linked, and attempted to run your Foundation Classes program, you might need to debug it.

There are three options available to help debug a CICS Foundation Classes program:

- Use a symbolic debugger
- Run the Foundation Class Program with tracing active
- Run the Foundation Class Program with the CICS Execution Diagnostic Facility

Symbolic debugger

You can use a symbolic debugger to step through the source of your CICS Foundation Classes program. Debug Tool is shipped as a feature with IBM C/C++. To debug a CICS Foundation Classes program with a symbolic debugger, compile

the program with a flag that adds debugging information to your executable program. For CICS Transaction Server for z/OS, this flag is TEST(ALL).

For more information, see the *Debug Tool for z/OS and OS/390 User's Guide*.

Tracing

You can configure the CICS Foundation Classes to write a trace file for debugging purposes.

Exception tracing is always active. The CETR transaction controls the auxiliary and internal traces for all CICS programs including those developed using the C++ classes.

Execution diagnostic facility

You can use the Execution Diagnostic Facility (EDF) to step through your CICS program, stopping at each **EXEC CICS** call. The display screen shows the procedural **EXEC CICS** call interface rather than the CICS Foundation Class type interface.

To enable EDF, use the preprocessor macro `ICC_EDF` in your source code before including the file `ICCMAIN`.

```
#define ICC_EDF       //switch EDF on
#include "iccmain.hpp"
```

Alternatively use the appropriate flag on your compiler CPARM to declare ICC_EDF.

Chapter 9. Conditions, errors, and exceptions

This section describes how the Foundation Classes have been designed to respond to various error situations they might encounter.

Foundation Class Abend codes

For serious errors (such as insufficient storage to create an object) the Foundation Classes immediately terminate the CICS task.

All CICS Foundation Class abend codes are of the form ACLx. If your application is terminated with an abend code starting 'ACL' then please refer to .

C++ Exceptions and the Foundation Classes

C++ exceptions are managed using the reserved words **try**, **throw**, and **catch**.

Refer to your compiler's documentation or one of the C++ books in the bibliography for more information.

Here is sample `ICC$EXC1` (see C++ sample programs in Samples):

```
#include "icceh.hpp"
#include "iccmain.hpp"
class Test {
public:
  void  tryNumber( short num ) {
    IccTerminal* term = IccTerminal::instance();
    *term << "Number passed = " << num << endl << flush;
    if ( num > 10 ) {
      *term << ">>Out of Range - throwing exception" << endl << flush;
      throw "!!Number is out of range!!";
    }
  }
};
```

The first two lines include the header files for the Foundation Classes and the standard **main** function that sets up the operating environment for the application program.

We then declare class **Test**, which has one public method, **tryNumber**. This method is implemented inline so that if an integer greater than ten is passed an exception is thrown. We also write out some information to the CICS terminal.

© Copyright IBM Corp. 1989, 2015

```
void IccUserControl::run()
{
  IccTerminal* term = IccTerminal::instance();
  term->erase();
  *term << "This is program 'icc$exc1' ..." << endl;
  try  {
    Test test;
    test.tryNumber( 1 );
    test.tryNumber( 7 );
    test.tryNumber( 11 );
    test.tryNumber( 6 );
  }
  catch( const char* exception )   {
    term->setLine( 22 );
    *term << "Exception caught: " << exception << endl << flush;
  }
  term->send( 24,1,"Program 'icc$exc1' complete: Hit PF12 to End" );
  term->waitForAID( IccTerminal::PF12 );
  term->erase();
  return;
}
```

The **run** method of **IccUserControl** class contains the user code for this example.

After erasing the terminal display and writing some text, we begin our **try** block. A **try** block can scope any number of lines of C++ code.

Here we create a **Test** object and invoke our only method, **tryNumber**, with various parameters. The first two invocations (1, 7) succeed, but the third (11) causes **tryNumber** to throw an exception. The fourth **tryNumber** invocation (6) is not executed because an exception causes the program execution flow to leave the current **try** block.

We then leave the **try** block and look for a suitable **catch** block. A suitable **catch** block is one with arguments that are compatible with the type of exception being thrown (here a **char***). The **catch** block writes a message to the CICS terminal and then execution resumes at the line after the **catch** block.

The output from this CICS program is as follows:

```
This is program 'icc$exc1' ...
Number passed = 1
Number passed = 7
Number passed = 11
>>Out of Range - throwing exception
Exception caught: !!Number is out of range!!
Program 'icc$exc1' complete: Hit PF12 to End
```

The CICS C++ Foundation Classes do not throw **char*** exceptions as in the previous sample but they do throw **IccException** objects instead.

There are several types of **IccException**. The **type** method returns an enumeration that indicates the type. Here is a description of each type in turn.

objectCreationError
: An attempt to create an object was invalid. This happens, for example, if an attempt is made to create a second instance of a singleton class, such as **IccTask**.

invalidArgument
: A method was called with an invalid argument. This happens, for example,

if an **IccBuf** object with too much data is passed to the **writeItem** method of the **IccTempStore** class by the application program.

It also happens when attempting to create a subclass of **IccResourceId**, such as **IccTermId**, with a string that is too long.

The following sample can be found in C++ sample programs in Samples, as file `ICC$EXC2`. The sample is presented here without many of the terminal IO requests.

```
#include "icceh.hpp"
#include "iccmain.hpp"
void IccUserControl::run()
{
  try
  {
    IccTermId id1( "1234" );
    IccTermId id2( "12345");
  }
  catch( IccException& exception )
  {
    terminal()->send( 21, 1, exception.summary() );
  }
  return;
}
```

In the previous example the first **IccTermId** object is successfully created, but the second caused an **IccException** to be thrown, because the string "12345" is 5 bytes where only 4 are allowed. See C++ sample programs in Samples for the expected output from this sample program.

invalidMethodCall
A method cannot be called. A typical reason is that the object cannot honor the call in its current state. For example, a **readRecord** call on an **IccFile** object is only honored if an **IccRecordIndex** object, to specify ***which*** record is to be read, has already been associated with the file.

CICSCondition
A CICS condition, listed in the **IccCondition** structure, has occurred in the object and the object was configured to throw an exception.

familyConformanceError
Family subset enforcement is on for this program and an operation that is not valid on all supported platforms has been attempted.

internalError
The CICS foundation classes have detected an internal error. Please call service.

CICS conditions

The CICS foundation classes provide a powerful framework for handling conditions that happen when executing an application.

Accessing a CICS resource can raise a number of CICS conditions as documented in Part 3, “Foundation Classes—reference,” on page 69.

A condition might represent an error or information being returned to the calling application; the deciding factor is often the context in which the condition is raised.

The application program can handle the CICS conditions in a number of ways. Each CICS resource object, such as a program, file, or data queue, can handle CICS conditions differently, if required.

A resource object can be configured to take one of the following actions for each condition it can encounter:

noAction
Manual condition handling

callHandleEvent
Automatic condition handling

throwException
Exception handling

abendTask
Severe error handling.

Manual condition handling (noAction)

This is the default action for all CICS conditions (for any resource object).

This means that the condition must be handled manually, using the **condition** method. For example:

```
IccTempStore   temp("TEMP1234");
IccBuf         buf(40);
temp.setActionOnCondition(IccResource::noAction,
                          IccCondition::QIDERR);
buf = temp.readNextItem();
switch (temp.condition())
{
case IccCondition::QIDERR:
    //do whatever here
:
:
default:
    //do something else here
}
```

Automatic condition handling (callHandleEvent)

Activate this for any CICS condition, such as QIDERR, as follows.

```
IccTempStore   temp("TEMP1234");
temp.setActionOnCondition(IccResource::callHandleEvent,
                          IccCondition::QIDERR);
```

When a call to any method on object 'temp' causes CICS to raise the QIDERR condition, **handleEvent** method is automatically called. As the **handleEvent** method is only a virtual method, this call is only useful if the object belongs to a subclass of **IccTempStore** and the **handleEvent** method has been overridden.

Make a subclass of **IccTempStore**, declare a constructor, and override the **handleEvent** method.

```
class MyTempStore : public IccTempStore
{
public:
    MyTempStore(const char* storeName) : IccTempStore(storeName) {}
    HandleEventReturnOpt handleEvent(IccEvent& event);
};
```

Now implement the **handleEvent** method.

```
IccResource::HandleEventReturnOpt MyTempStore::handleEvent(IccEvent& event)
{
    switch (event.condition())
    {
    case ...

.
.
.
    case IccCondition::QIDERR:
        //Handle QIDERR condition here.

.
.
.
        //
    default:
        return rAbendTask;
    }
}
```

This code is called for any **MyTempStore** object which is configured to 'callHandleEvent' for a particular CICS condition.

Exception handling (throwException)

Activate this for any CICS condition, such as QIDERR, as follows.

```
IccTempStore   temp("TEMP1234");
temp.setActionOnCondition(IccResource::throwException,
                          IccCondition::QIDERR);
```

Exception handling is by means of the C++ exception handling model using **try**, **throw**, and **catch**. For example:

```
try
{
    buf = temp.readNextItem();

.
.
.
}
catch (IccException& exception)
{
    //Exception handling code

.
.
.
}
```

An exception is thrown if any of the methods inside the try block raise the QIDERR condition for object 'temp'. When an exception is thrown, C++ unwinds the stack and resumes execution at an appropriate **catch** block – it is not possible to resume within the **try** block. For a fuller example, see sample `ICC$EXC3`.

Note: Exceptions can be thrown from the Foundation Classes for many reasons other than this example – see "C++ Exceptions and the Foundation Classes" on page 51 for more details.

Severe error handling (abendTask)

This option allows CICS to terminate the task when certain conditions are raised.

Activate this for any CICS condition, such as QIDERR, as follows:

```
IccTempStore   temp("TEMP1234");
temp.setActionOnCondition(IccResource::abendTask,
                          IccCondition::QIDERR);
```

If CICS raises the QIDERR condition for object 'temp' the CICS task terminates with an ACL3 abend.

Platform differences

The CICS Foundation Classes, as described here, are designed to be independent of the particular CICS platform on which they are running. There are however some differences between platforms; these, and ways of coping with them, are described here.

Note: References in this section to other CICS platforms are included for completeness. There have been Technology Releases of the CICS Foundation Classes on those platforms.

Applications can be run in one of two modes:

fsAllowPlatformVariance
: Applications written using the CICS Foundation Classes are able to access all the functions available on the target CICS server.

fsEnforce
: Applications are restricted to the CICS functions that are available across all CICS Servers (z/OS and UNIX).

The default is to allow platform variance and the alternative is to force the application to only use features which are common to all CICS platforms.

The class headers are the same for all platforms and they "support" (that is, define) all the CICS functions that are available through the Foundation Classes on any of the CICS platforms. The restrictions on each platform are documented in Part 3, “Foundation Classes—reference,” on page 69. Platform variations exist at:

- object level
- method level
- parameter level

Object level

Some objects are not supported on certain platforms.

For example, **IccConsole** objects cannot be created on CICS(r) for AIX® as CICS(r) for AIX(r) does not support console services.

Any attempt to create an **IccConsole** object on CICS(r) for AIX(r) causes an **IccException** object of type 'platformError' to be thrown, but would be acceptable on the other platforms

```
IccConsole* cons = console();  //No good on CICS for AIX
```

If you initialize your application with 'fsEnforce' selected (see “initializeEnvironment” on page 72) the previous examples both cause an **IccException** object, of type 'familyConformanceError' to be thrown on all platforms.

Unlike objects of the **IccConsole** and **IccJournal** classes, most objects can be created on any CICS server platform. However the use of the methods can be restricted. Part 3, “Foundation Classes—reference,” on page 69 fully documents all platform restrictions.

Method level

Methods that run successfully on one platform can cause a problem on another platform.

Consider, for example method **programId** in the **IccControl** class:

```
void IccUserControl::run()
{
    if (strcmp(programId.name(), "PROG1234") == 0)
        //do something
}
```

Here method **programId** executes correctly on CICS TS for z/OS but throws an **IccException** object of type 'platformError' on CICS(r) for AIX(r).

Alternatively, if you initialize your application with family subset enforcement on (see **initializeEnvironment** function of **Icc** structure), method **programId** throws an **IccException** object of type 'familyConformanceError' on *any* CICS server platform.

Parameter level

At this level a method is supported on all platforms, but a particular positional parameter has some platform restrictions.

Consider method **abend** in **IccTask** class.

```
task()->abend();                                          1

task()->abend("WXYZ");                                    2

task()->abend("WXYZ", IccTask::respectAbendHandler);      3

task()->abend("WXYZ", IccTask::ignoreAbendHandler);       4

task()->abend("WXYZ", IccTask::ignoreAbendHandler,        5

              IccTask::suppressDump);
```

Abends **1** to **4** run successfully on all CICS server platforms.

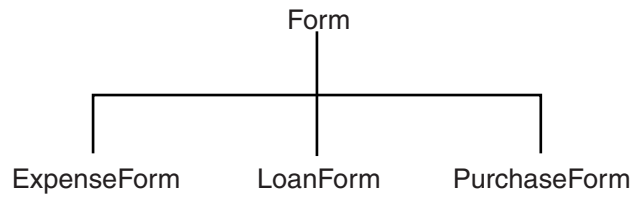
If family subset enforcement is off, abend **5** throws an **IccException** object of type 'platformError' on a CICS(r) for AIX(r) platform, but not on a CICS Transaction Server for z/OS platform.

If family subset enforcement is on, abend **5** throws an **IccException** object of type 'familyConformanceError', irrespective of the target CICS platform.

Chapter 10. Polymorphic Behavior

Polymorphism (*poly* = many, *morphe* = form) is the ability to treat many different forms of an object as if they were the same.

Polymorphism is achieved in C++ by using inheritance and virtual functions. Consider the scenario where we have three forms (ExpenseForm, LoanForm, PurchaseForm) that are specializations of a general Form:



Each form needs printing at some time. In procedural programming, we would either code a print function to handle the three different forms or we would write three different functions (printExpenseForm, printLoanForm, printPurchaseForm).

In C++ this can be achieved far more elegantly as follows:

```
class   Form   {
public:
   virtual void print();
};
class ExpenseForm : public Form {
public:
   virtual void print();
};
class LoanForm : public Form {
public:
   virtual void print();
};
class PurchaseForm : public Form {
public:
   virtual void print();
};
```

Each of these overridden functions is implemented so that each form prints correctly. Now an application using form objects can do this:

```
Form* pForm[10]
//create Expense/Loan/Purchase Forms...
for (short i=0 ; i < 9 ; i++)
   pForm->print();
```

Here we create ten objects that might be any combination of Expense, Loan, and Purchase Forms. However, because we are dealing with pointers to the base class, **Form**, we do not need to know which sort of form object we have; the correct **print** method is called automatically.

© Copyright IBM Corp. 1989, 2015

Limited polymorphic behavior is available in the Foundation Classes. Three virtual functions are defined in the base class **IccResource**:

```
virtual void clear();
virtual const IccBuf& get();
virtual void put(const IccBuf& buffer);
```

These methods have been implemented in the subclasses of **IccResource** wherever possible:

Class	clear	get	put
IccConsole	×	×	✓
IccDataQueue	✓	✓	✓
IccJournal	×	×	✓
IccSession	×	✓	✓
IccTempStore	✓	✓	✓
IccTerminal	✓	✓	✓

These virtual methods are ***not*** supported by any subclasses of **IccResource** except those in the table.

Note: The default implementations of **clear**, **get**, and **put** in the base class **IccResource** throw an exception to prevent the user from calling an unsupported method.

Example of polymorphic behavior

The following sample can be found in the samples directory as file `ICC$RES2`.

It is presented here without the terminal IO requests. See C++ sample programs in Samples.

```
#include "icceh.hpp"
#include "iccmain.hpp"
char* dataItems[] =
{
  "Hello World - item 1",
  "Hello World - item 2",
  "Hello World - item 3"
};
void IccUserControl::run()
{
```

Here we include Foundation Class headers and the **main** function. **dataItems** contains some sample data items. We write our application code in the **run** method of **IccUserControl** class.

```
  IccBuf buffer( 50 );
  IccResource* pObj[2];
```

We create an **IccBuf** object (50 bytes initially) to hold our data items. An array of two pointers to **IccResource** objects is declared.

```
  pObj[0] = new IccDataQueue("ICCQ");
  pObj[1] = new IccTempStore("ICCTEMPS");
```

We create two objects whose classes are derived from **IccResource – IccDataQueue** and **IccTempStore**.

```
  for ( short index=0; index <= 1 ; index++ )
  {
    pObj[index]->clear();
  }
```

For both objects we invoke the **clear** method. This is handled differently by each object in a way that is transparent to the application program; this is polymorphic behavior.

```
  for ( index=0; index <= 1 ; index++ )
  {
    for (short j=1 ; j <= 3 ; j++)
    {
      buffer = dataItems[j-1];
      pObj[index]->put( buffer );
    }
  }
```

Now we **put** three data items in each of our resource objects. Again the **put** method responds to the request in a way that is appropriate to the object type.

```
  for ( index=0; index <= 1 ; index++ )
  {
    buffer = pObj[index]->get();
    while (pObj[index]->condition() == IccCondition::NORMAL)
    {
      buffer = pObj[index]->get();
    }
    delete pObj[index];
  }
  return;
}
```

The data items are read back in from each of our resource objects using the **get** method. We delete the resource objects and return control to CICS.

Chapter 11. Storage management

C++ objects are usually stored on the stack or heap.

Objects on the stack are automatically destroyed when they go out of scope, but objects on the heap are not.

Many of the objects that the CICS Foundation Classes create internally are created on the heap rather than the stack. This can cause a problem in some CICS server environments.

On CICS Transaction Server for z/OS,, CICS and Language Environment® manage all task storage so that it is released at task termination (normal or abnormal).

In a CICS for AIX environment, storage allocated on the heap is not automatically released at task termination. This can lead to "memory leaks" if the application programmer forgets to explicitly delete an object on the heap, or, more seriously, if the task abends.

This problem has been overcome in the CICS Foundation Classes by providing operators **new** and **delete** in the base Foundation Class, **IccBase**. These can be configured to map dynamic storage allocation requests to CICS task storage, so that ***all*** storage is automatically released at task termination. The disadvantage of this approach is a performance hit as the Foundation Classes typically issue a large number of small storage allocation requests rather than a single, larger allocation request.

This facility is affected by the **Icc::initializeEnvironment** call that must be issued before using the Foundation Classes. (This function is called from the default **main** function—see Chapter 67, “main function,” on page 291.)

The first parameter passed to the **initializeEnvironment** function is an enumeration that takes one of these three values:

cmmDefault
: The default action is platform dependent:

  z/OS same as 'cmmNonCICS' - see the 'cmmNonCICS' section.

  UNIX same as 'cmmCICS' - see the 'cmmCICS' section.

cmmNonCICS
: The **new** and **delete** operators in class **IccBase** ***do not*** map dynamic storage allocation requests to CICS task storage; instead the C++ default **new** and **delete** operators are invoked.

cmmCICS
: The **new** and **delete** operators in class **IccBase** map dynamic storage allocation requests to CICS task storage (which is automatically released at normal or abnormal task termination).

The default **main** function supplied with the Foundation Classes calls **initializeEnvironment** with an enum of 'cmmDefault'. You can change this in your program without changing the supplied "header file" `ICCMAIN` as follows:

© Copyright IBM Corp. 1989, 2015

```
#define ICC_CLASS_MEMORY_MGMT Icc::cmmNonCICS
#include "iccmain.hpp"
```

Alternatively, set the option **DEV(ICC_CLASS_MEMORY_MGMT)** when compiling.

Chapter 12. Parameter passing conventions

The convention used for passing objects on Foundation Classes method calls is if the object is mandatory, pass by reference; if it is optional pass by pointer.

For example, consider method **start** of class **IccStartRequestQ**, which has the following signature:

```
const IccRequestId& start( const IccTransId& transId,
                           const IccTime* time=0,
                           const IccRequestId* reqId=0 );
```

Using the preceding convention, we see that an **IccTransId** object is mandatory, while an **IccTime** and an **IccRequestId** object are both optional. This enables an application to use this method in any of the following ways:

```
  IccTransId      trn("ABCD");
  IccTimeInterval int(0,0,5);
  IccRequestId    req("MYREQ");
  IccStartRequestQ* startQ = startRequestQ();
  startQ->start( trn );
  startQ->start( trn, &int );
  startQ->start( trn, &int, &req );
  startQ->start( trn, 0, &req );
```

© Copyright IBM Corp. 1989, 2015

Chapter 13. Scope of data in IccBuf reference returned from 'read' methods

Many of the subclasses of **IccResource** have 'read' methods that return **const IccBuf** references; for example, **IccFile::readRecord**, **IccTempStore::readItem** and **IccTerminal::receive**.

Care should be taken if you choose to maintain a reference to the **IccBuf** object, rather than copy the data from the **IccBuf** reference into your own **IccBuf** object. For example, consider the following

```
IccBuf       buf(50);
IccTempStore store("TEMPSTOR");
buf = store.readNextItem();
```

Here, the data in the **IccBuf** reference returned from **IccTempStore::readNextItem** is ***immediately*** copied into the application's own **IccBuf** object, so it does not matter if the data is later invalidated. However, the application might look like this

```
IccTempStore store("TEMPSTOR");
const IccBuf& buf = store.readNextItem();
```

Here, the **IccBuf** reference returned from **IccTempStore::readNextItem** is ***not*** copied into the application's own storage and care must therefore be taken.

Note: You are recommended not to use this style of programming to avoid using a reference to an **IccBuf** object that does not contain valid data.

The returned **IccBuf** reference typically contains valid data until one of the following conditions is met:

- Another 'read' method is invoked on the **IccResource** object (for example, another **readNextItem** or **readItem** method in the example).
- The resource updates are committed (see method **IccTask::commitUOW**).
- The task ends (normally or abnormally).

© Copyright IBM Corp. 1989, 2015

Part 3. Foundation Classes—reference

This section contains the reference information on the foundation classes and structures that are provided as part of CICS. The classes and structures are arranged in alphabetic order. All the functionality you require to create object-oriented CICS programs is included within these classes and structures.

All of the classes and structures begin with the unique prefix **Icc**. Do not create your own classes with this prefix.

Icc structure contains some functions and enumerations that are widely applicable. **IccValue** structure consists of a large enumeration of all the CVDA values used in traditional CICS programs.

The description of each class starts with a simple diagram that shows how it is derived from **IccBase** class, the basis of all the other classes. This is followed by a short description and an indication of the name of the header file that includes it and, where appropriate, a sample source file that uses it.

Within each class or structure description are, where appropriate, the following sections:

1. Inheritance diagram
2. Brief description of class
3. Header file where class is defined. For the location of the C++ header files on your system see "Header files" on page 5.
4. Sample program demonstrating class. For the location of the supplied C++ sample programs on your system see C++ sample programs in Samples.
5. Icc... constructors
6. Public methods (in alphabetic order)
7. Protected methods (in alphabetic order)
8. Inherited public methods (in tabular form)
9. Inherited protected methods (in tabular form)
10. Enumerations

Methods, including constructors, start with a formal function prototype that shows what a call returns and what the parameters are. There follows a description, in order, of the parameters. To avoid duplication, inherited methods just have an indication of the class from which they are derived (and where they are described).

The convention for names is:

1. Variable names are shown as *variable*.
2. Names of classes, structures, enumerations and methods are shown as **method**
3. Members of enumerations are shown as 'enumMember'.
4. The names of all the supplied classes and structures begin with **Icc**.
5. Compound names have no separators, but have capital letters to demark the beginning of second and subsequent words, as in **IccJournalTypeId**.
6. Class and structure names and enumeration types begin with capital letters. Other names begin with lowercase letters.

© Copyright IBM Corp. 1989, 2015

For further information on how to use these classes, see Part 2, “Using the CICS foundation classes,” on page 13.

Chapter 14. Icc structure

This structure holds global enumerations and functions for the CICS Foundation Classes. These globals are defined within this structure to avoid name conflicts.

Header file: ICCGLBEH

Functions

Functions in Icc structure are as follows.

boolText

Returns the text that represents the boolean value described by the parameters, such as "yes" or "on".

static const char* boolText (Bool *test*,
BoolSet *set* **=** trueFalse**)**

test
A boolean value, defined in this structure, that has one of two values, chosen from a set of values given by *set*.

set
An enumeration, defined in this structure, that indicates from which pair of values *test* is selected. The default is to use true and false.

catchException

This is the function of last resort, used to intercept **IccException** objects that the application fails to catch. It can be called from the **main** function in the stub program, listed in ICCMAIN header file, and described in Chapter 67, “main function,” on page 291. All OO CICS programs should use this stub or a close equivalent.

static void catchException(IccException&*exception*)

exception
A reference to an **IccException** object that holds information about a particular type of exception.

conditionText

Returns the symbolic name associated with a condition value. For example, if **conditionText** is called with *condition* of IccCondition::NORMAL, it returns "NORMAL", if it is called with *condition* of IccCondition::IOERR, it returns "IOERR", and so on.

static const char* conditionText(IccCondition::Codes *condition***)**

© Copyright IBM Corp. 1989, 2015

condition
An enumeration, defined in the **IccCondition** structure, that indicates the condition returned by a call to CICS.

initializeEnvironment

Initializes the CICS Foundation Classes. The rest of the class library can only be called after this function has been called. It is called from the **main** function in the stub program, listed in `ICCMAIN` header file, and described in Chapter 67, "main function," on page 291. All OO CICS programs should use this stub or a close equivalent.

```
static void initializeEnvironment (ClassMemoryMgmt mem = cmmDefault,
                                   FamilySubset fam = fsDefault,
                                   Icc::Bool EDF)
```

mem
An enumeration, defined in this structure, that indicates the memory management policy for the foundation classes.

fam
An enumeration, defined in this structure, that indicates whether the use of CICS features that are not available on all platforms is permitted.

EDF
A boolean that indicates whether EDF tracing is initially on.

isClassMemoryMgmtOn

Returns a boolean value, defined in this structure, that indicates whether class memory management is on.

```
static Bool isClassMemoryMgmtOn()
```

isEDFOn

Returns a Boolean value, defined in this structure, that indicates whether EDF tracing is on at the global level.

static Bool isEDFOn()

See **setEDF** in this structure, **isEDFOn** and **setEDF** in **IccResource** class on Chapter 45, "IccResource class," on page 187 and "Program debugging" on page 48.

isFamilySubsetEnforcementOn

Returns a boolean value, defined in this structure, that indicates whether it is permitted to use CICS features that are not available on all platforms.

```
static Bool isFamilySubsetEnforcementOn()
```

returnToCICS

This call returns the program flow to CICS.

static void returnToCICS()

It is called by the **main** function in the stub program, listed in `ICCMAIN` header file, and described in Chapter 67, "main function," on page 291. All OO CICS programs should use this stub or a close equivalent.

setEDF

Sets EDF tracing on or off at the global level.

static void setEDF(Icc::Bool *onOff* **=** off**)**

onOff
A boolean, defined in this structure, that indicates whether EDF tracing is enabled. As EDF is more suitable for tracing programs that use EXEC CICS calls than object oriented programs, the default is off.

unknownException

This function is called by the **main** function in `ICCMAIN` header file and is used to intercept unknown exceptions.

static void unknownException()

See Chapter 67, "main function," on page 291 and **catchException** in this structure).

Enumerations

References in this section to other CICS platforms, such as CICS(r) for AIX, are included for completeness. There have been Technology Releases of the CICS Foundation Classes on those platforms.

Bool

Three equivalent pairs of boolean values are as follows.

- true, yes, on
- false, no, off

true, yes, and on evaluate to 1, while false, no, and off evaluate to zero. Thus you can code test functions as follows:

```
if (task()->isStartDataAvailable())
{
    //do something
}
```

Note: 'true' and 'false' are compiler keywords in the z/OS 1.2 C/C++ compiler and will not be generated by ICCGLBEH when using this compiler, or any later version.

BoolSet

BoolSet enumerations are as follows.

- trueFalse
- yesNo
- onOff

ClassMemoryMgmt

ClassMemoryMgmt enumerations are as folows.

cmmDefault
The defaults for the different platforms are:

z/OS cmmNonCICS

UNIX cmmCICS

cmmNonCICS
The C++ environment performs the memory management required by the program.

In z/OS Language Environment ensures that the storage for CICS tasks is released at the end of the task, or if the task terminates abnormally.

On CICS for AIX dynamic storage release does not occur at normal or abnormal task termination. This means that programs are susceptible to memory leaks.

cmmCICS
The **new** and **delete** operators defined in **IccBase** class map storage allocations to CICS; storage is automatically released at task termination.

FamilySubset

FamilySubset enumerations are as follows.

fsDefault
The defaults for the different platforms are all the same: fsAllowPlatformVariance

fsEnforce
Enforces Family Subset conformance; that is, it disallows use of any CICS features that are not available on all CICS servers (OS/2, AIX, and z/OS).

Note: CICS OS/2 is no longer supported.

fsAllowPlatformVariance
Allows each platform to access all the CICS features available on that platform.

GetOpt

This enumeration is used on a number of methods throughout the classes. It indicates whether the value held internally by the object is to be returned to the caller, or whether it has to be refreshed from CICS first.

object
If the value has been previously retrieved from CICS and stored within the object, return this stored value. Otherwise, get a copy of the value from CICS and store within the object.

CICS Force the object to retrieve a fresh value from CICS (and store it within the object) even if there is already a value stored within the object from a previous invocation.

Platforms

Indicates on which operating system the program is being run.

Possible values are:

- OS2
- UNIX
- MVS™

Chapter 15. IccAbendData class

This is a singleton class used to retrieve diagnostic information from CICS about a program abend.

IccBase
  IccResource
    IccAbendData

Header file: ICCABDEH

IccAbendData constructor (protected)

IccAbendData constructor in IccAbendData class

Constructor

IccAbendData()

Public methods

These are the public methods in this class.

The opt parameter

Many methods have the same parameter, *opt*, which is described under the **abendCode** method.

abendCode

Returns the current 4-character abend code.

const char* abendCode(Icc::GetOpt *opt* **=** Icc::object**)**

opt
An enumeration, defined in the **Icc** structure, that indicates whether a value should be refreshed from CICS or whether the existing value should be retained. The possible values are described under the **GetOpt** enumeration in the **Icc** structure in "GetOpt" on page 74.

Conditions

INVREQ

ASRAInterrupt

Returns 8 characters of status word (PSW) interrupt information at the point when the latest abend with a code of ASRA, ASRB, ASRD, or AICA occurred.The field contains binary zeroes if no ASRA or ASRB abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program.

© Copyright IBM Corp. 1989, 2015

const char* ASRAInterrupt(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

ASRAKeyType

Returns an enumeration, defined in **IccValue**, that indicates the execution key at the time of the last ASRA, ASRB, AICA, or AEYD abend, if any.

The possible values are:

CICSEXECKEY
The task was executing in CICS-key at the time of the last ASRA, ASRB, AICA, or AEYD abend. Note that all programs execute in CICS key if CICS subsystem storage protection is not active.

USEREXECKEY
The task was executing in user-key at the time of the last ASRA, ASRB, AICA, or AEYD abend. Note that all programs execute in CICS key if CICS subsystem storage protection is not active.

NONCICS
The execution key at the time of the last abend was not one of the CICS keys; that is, not key 8 or key 9.

NOTAPPLIC
There has not been an ASRA, ASRB, AICA, or AEYD abend.

IccValue::CVDA ASRAKeyType(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

ASRAPSW

Returns an 8-character status word (PSW) at the point when the latest abend with a code of ASRA, ASRB, ASRD, or AICA occurred.The field contains nulls if no ASRA, ASRB, ASRD, or AICA abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server.

const char* ASRAPSW(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

ASRARegisters

Returns the contents of general registers 0–15, as a 64-byte data area, at the point when the latest ASRA, ASRB, ASRD, or AICA abend occurred. The contents of the registers are returned in the order 0, 1, ..., 15.Note that nulls are returned if no ASRA, ASRB, ASRD, or AICA abend occurred during the execution of the issuing transaction, or if the abend originally occurred in a remote DPL server program.

const char* ASRARegisters(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

ASRASpaceType

Returns an enumeration, defined in **IccValue** structure, that indicates what type of space, if any, was in control at the time of the last ASRA, ASRB, AICA, or AEYD abend.

Possible values are:

SUBSPACE
The task was executing in either its own subspace or the common subspace at the time of the last ASRA, ASRB, AICA, or AEYD abend.

BASESPACE
The task was executing in the base space at the time of the last ASRA, ASRB, AICA, or AEYD abend. Note that all tasks execute in the base space if transaction isolation is not active.

NOTAPPLIC
There has not been an ASRA, ASRB, AICA, or AEYD abend.

IccValue::CVDA ASRASpaceType(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

ASRAStorageType

Returns an enumeration, defined in **IccValue** structure, that indicates what type of storage, if any, was being addressed at the time of the last ASRA, ASRB, AICA, or AEYD abend.

Possible values are:

CICS CICS-key storage is being addressed. This can be in one of the CICS dynamic storage areas (CDSA or ECDSA), or in one of the read-only dynamic storage areas (RDSA or ERDSA) if either of the following apply:

- CICS is running with the NOPROTECT option on the RENTPGM system initialization parameter
- storage protection is not active

USER
User-key storage in one of the user dynamic storage areas (RDSA or ERDSA) is being addressed.

READONLY
Read-only storage in one of the read-only dynamic storage areas (RDSA or ERDSA) when CICS is running with the PROTECT option on the RENTPGM system initialization parameter.

NOTAPPLIC
One of:

- No ASRA or AEYD abend has been found for this task.
- The storage affected by an abend is not managed by CICS.
- The ASRA abend is not caused by a 0C4 abend.
- An ASRB or AICA abend has occurred since the last ASRA or AEYD abend.

IccValue::CVDA ASRAStorageType(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

instance

Returns a pointer to the single **IccAbendData** object. If the object does not already exist, it is created by this method.

static IccAbendData* instance()

isDumpAvailable

Returns a boolean, defined in **Icc** structure, that indicates whether a dump has been produced. If it has, use **programName** method to find the name of the failing program of the latest abend.

Icc::Bool isDumpAvailable(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

originalAbendCode

Returns the original abend code for this task in case of repeated abends.

const char* originalAbendCode(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

programName

Returns the name of the program that caused the abend.

const char* programName(Icc::GetOpt *opt* **=** Icc::oldValue**)**

Conditions

INVREQ

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 16. IccAbsTime class

This class holds information about absolute time, the time in milliseconds that has elapsed since the beginning of the year 1900.

IccBase
IccResource
IccTime
IccAbsTime

Header file: ICCTIMEH

IccAbsTime constructor

IccAbsTime constructor in IccAbsTime class.

Constructor (1)

IccAbsTime(const char* *absTime***)**

absTime
The 8-byte value of time, in packed decimal format.

Constructor (2)

The copy constructor.

IccAbsTime(const IccAbsTime& *time***)**

Public methods

These are the public methods in this class.

date

Returns the date, as a character string.

const char* date (IccClock::DateFormat *format* **=** IccClock::defaultFormat**,**
char *dateSeparator* **= '\0')**

format
An enumeration, defined in **IccClock** class, that indicates the format of the date. The default is to use the installation default, the value set when the CICS region is initialized.

dateSeparator
The character that separates the different fields of the date The default is no separation character.

Conditions

INVREQ

© Copyright IBM Corp. 1989, 2015

dayOfMonth

Returns the day of the month in the range 1 to 31.

unsigned long dayOfMonth()

Conditions

INVREQ

dayOfWeek

Returns an enumeration, defined in **IccClock** class, that indicates the day of the week.

IccClock::DayOfWeek dayOfWeek()

Conditions

INVREQ

daysSince1900

Returns the number of days that have elapsed since the first day of 1900.

unsigned long daysSince1900()

Conditions

INVREQ

hours

Returns the hours component of the time.

virtual unsigned long hours() const

milliSeconds

Returns the number of milliseconds that have elapsed since the first day of 1900.

long double milliSeconds()

minutes

Returns the minutes component of the time.

virtual unsigned long minutes() const

monthOfYear

Returns an enumeration, defined in **IccClock** class, that indicates the month of the year.

IccClock::MonthOfYear monthOfYear()

Conditions

INVREQ

operator=

Assigns one **IccAbsTime** object to another.

IccAbsTime& operator=(const IccAbsTime& *absTime***)**

packedDecimal

Returns the time as an 8-byte packed decimal string that expresses the number of milliseconds that have elapsed since the beginning of the year 1900.

const char* packedDecimal() const

seconds

Returns the seconds component of the time.

virtual unsigned long seconds() const

time

Returns the time as a text string.

const char* time(char *timeSeparator* **= '\0')**

timeSeparator
The character that delimits the time fields. The default is no time separation character.

Conditions

INVREQ

timeInHours

Returns the number of hours that have elapsed since the day began.

unsigned long timeInHours()

timeInMinutes

Returns the number of minutes that have elapsed since the day began.

unsigned long timeInMinutes()

timeInSeconds

Returns the number of seconds that have elapsed since the day began.

unsigned long timeInSeconds()

year

Returns the year as a 4-digit integer, e.g. 1996.

unsigned long year()

Conditions

INVREQ

Inherited public methods

These are the inherited public methods in IccAbsTime class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
hours	IccTime
isEDFOn	IccResource
minutes	IccTime
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource
timeInHours	IccTime
timeInMinutes	IccTime
timeInSeconds	IccTime
type	IccTime

Inherited protected methods

Inherited protected methods in IccAbsTime class:

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 17. IccAlarmRequestId class

An **IccAlarmRequestId** object represents a unique alarm request.

IccBase
IccResourceId
IccRequestId
IccAlarmRequestId

It contains the 8-character name of the request identifier and a pointer to a 4-byte timer event control area. **IccAlarmRequestId** is used by the **setAlarm** method of **IccClock** class when setting an alarm, and the **waitOnAlarm** method of **IccTask** when waiting for an alarm.

Header file: ICCRIDEH

IccAlarmRequestId constructors

IccAlarmRequestId constructors IccAlarmRequestId constructors:

Constructor (1)

Creates a new object with no information present.

IccAlarmRequestId()

Constructor (2)

Creates an object with information already set.

IccAlarmRequestId (const char* *nam*,
const void* *timerECA*)

name
The 8-character name of the request.

timerECA
A pointer to a 4-byte timer event control area.

Constructor (3)

The copy constructor.

IccAlarmRequestId(const IccAlarmRequestId& *id*)

id
A reference to an **IccAlarmRequestId** object.

Public methods

These methods are used to copy information into an **IccAlarmRequestId** object.

© Copyright IBM Corp. 1989, 2015

isExpired

Returns a boolean, defined in **Icc** structure, that indicates whether the alarm has expired.

Icc::Bool isExpired()

operator= (1)

IccAlarmRequestId& operator=(const IccRequestId& *id***)**

id
A reference to an **IccRequestId** object.

operator= (2)

IccAlarmRequestId& operator=(const IccAlarmRequestId& *id***)**

id
A reference to an **IccAlarmRequestId** object.

operator= (3)

IccAlarmRequestId& operator=(const char* *requestName***)**

requestName
The 8-character name of the alarm request.

setTimerECA

void setTimerECA(const void* *timerECA***)**

timerECA
A pointer to a 4-byte timer event control area.

timerECA

Returns a pointer to the 4-byte timer event control area.

const void* timerECA() const

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 18. IccBase class

IccBase class is the base class from which ***all*** CICS Foundation Classes are derived.

IccBase

(The methods associated with **IccBase** are described here although, in practice, they can only be called on objects of the derived classes).

Header file: `ICCBASEH`

IccBase constructor (protected)

IccBase constructor (protected) in IccBase class

Constructor

IccBase(ClassType *type***)**

type
An enumeration that indicates what the subclass type is. For example, for an **IccTempStore** object, the class type is 'cTempStore'.

Public methods

These are the public methods in this class.

The opt parameter

Many methods have the same parameter, *opt*, which is described under the **abendCode** method in“abendCode” on page 77.

classType

Returns an enumeration that indicates what the subclass type is. For example, for an **IccTempStore** object, the class type is 'cTempStore'. The possible values are listed under **ClassType** on page “ClassType” on page 93.

ClassType classType() const

className

Returns the name of the class. For example, an **IccTempStore** object returns "IccTempStore".Suppose a class **MyDataQueue** inherits from **IccDataQueue**. If **MyDataQueue** calls **setClassName("MyDataQueue")**, **MyDataQueue::className(IccBase::customName)** returns "MyDataQueue" and **MyDataQueue::className(IccBase::baseName)** returns "IccDataQueue". An **IccDataQueue** object returns "IccDataQueue" for both *opt* values.

const char* className(NameOpt *opt*=customName)

© Copyright IBM Corp. 1989, 2015

opt
An enumerator, defined in this class, that indicates whether to return the base name of the class or the name as customized by a derived class.

customClassNum

Returns the number that an application designer has associated with a subclass that he or she has designed.

unsigned short customClassNum() const

operator delete

Destroys an object in an orderly manner.

void operator delete(void* *object*)

object
A pointer to an object that is to be destroyed.

operator new

Creates a new object of given size. This operator enables the Foundation Classes to use CICS storage allocation (see "initializeEnvironment" on page 72).

void* operator new(size_t *size*)

size
The size of the object that is to be created, in bytes.

Protected methods

setClassName

Sets the name of the class. It is useful for diagnostic purposes to be able to get a string representation of the name of the class to which an object belongs.

void setClassName(const char* *className*)

className
The name of the class. For example, if you create a class **MyTempStore** that is a specialization of **IccTempStore**, you might call **setClassName("MyTempStore")**.

setCustomClassNum

Assigns an identification number to a subclass that is not an original part of the classes, as supplied.

void setCustomClassNum(unsigned short *number*)

number

The number that an application designer associates with a subclass for identification purposes.

Enumerations

Enumerations in IccBase class:

ClassType

The names are derived by deleting the first two characters from the name of the class.

The possible values are:

- cAbendData
- cAlarmRequestId
- cBuf
- cClock
- cConsole
- cControl
- cConvId
- cCUSTOM
- cDataQueue
- cDataQueueId
- cEvent
- cException
- cFile
- cFileId
- cFileIterator
- cGroupId
- cJournal
- cJournalId
- cJournalTypeId
- cLockId
- cMessage
- cPartnerId
- cProgram
- cProgramId
- cRecordIndex
- cRequestId
- cSemaphore
- cSession
- cStartRequestQ
- cSysId

- cSystem
- cTask
- cTempStore
- cTempStoreId
- cTermId
- cTerminal
- cTerminalData
- cTime
- cTPNameId
- cTransId
- cUser
- cUserId

Note: cCUSTOM allows the class library to be extended by non-IBM developers.

NameOpt

NameOpt in Enumerations:

See“className” on page 91.

baseName
Returns the default name assigned to the class as provided by IBM.

customName
Returns the name assigned using **setClassName** method from a subclass *or*, if **setClassName** has not been invoked, the same as *baseName*.

Chapter 19. IccBuf class

IccBuf class is supplied for the general manipulation of buffers.

IccBase
    IccBuf

This class is used by other classes that make calls to CICS, but does not itself call CICS services. See Chapter 6, "Buffer objects," on page 25.

Header file: ICCBUFEH

Sample: ICC$BUF

IccBuf constructors

IccBuf constructors in IccBuf class:

Constructor (1)

Creates an **IccBuf** object, allocating its own data area with the given length and with all the bytes within it set to NULL.

IccBuf (unsigned long *length* **= 0,**
DataAreaType *type* **=** extensible**)**

length
The initial length of the data area, in bytes. The default length is 0.

type
An enumeration that indicates whether the data area can be dynamically extended. Possible values are extensible or fixed. The default is extensible.

Constructor (2)

Creates an **IccBuf** object that cannot be extended, adopting the given data area as its own.See warning about "Internal/External ownership of buffers" on page 25.

IccBuf (unsigned long *length***,**
void* *dataArea***)**

length
The length of the supplied data area, in bytes

dataArea
The address of the first byte of the supplied data area.

Constructor (3)

Creates an **IccBuf** object, allocating its own data area with the same length as the *text* string, and copies the string into its data area.

© Copyright IBM Corp. 1989, 2015

IccBuf (const char* *text*,
DataAreaType *type* = extensible**)**

text
A null-terminated string to be copied into the new **IccBuf** object.

type
An enumeration that indicates whether the data area can be extended. Possible values are **extensible** or **fixed**. The default is **extensible**.

Constructor (4)

The copy constructor—creates a new **IccBuf** object that is a copy of the given object. The created **IccBuf** object ***always*** has an internal data area.

IccBuf(const IccBuf& *buffer***)**

buffer
A reference to an **IccBuf** object that is to be copied into the new object.

Public methods

These are the public methods in this class.

append (1)

Appends data from the given data area to the data area in the object.

IccBuf& append (unsigned long *length*,
const void* *dataArea***)**

length
The length of the source data area, in bytes

dataArea
The address of the source data area.

append (2)

Append data, in the form of format string and variable argument, to the data area in the object. This is the same as the form used by **printf** in the standard C library. Note that it is the responsibility of the application programmer to ensure that the optional parameters are consistent with the format string.

IccBuf& append (const char* *format*,
...)

format
The null-terminated format string

...
The optional parameters.

assign (1)

Assigns data from the given data area to the data area in the object.

IccBuf& assign (unsigned long *length*,
const void* *dataArea***)**

length
The length of the source data area, in bytes

dataArea
The address of the source data area.

assign (2)

Assigns data, in the form of format string and variable argument, to the data area in the object. This is the same as the form used by **printf** in the standard C library.

IccBuf& assign (const char* *format*,
...)

format
The format string

...
The optional parameters.

cut

Makes the specified cut to the data in the data area and returns a reference to the **IccBuf** object.

IccBuf& cut (unsigned long *length*,
unsigned long *offset* **= 0)**

length
The number of bytes to be cut from the data area.

offset
The offset into the data area. The default is no offset.

dataArea

Returns the address of data at the given offset into the data area.

const void* dataArea(unsigned long *offset* **= 0) const**

offset
The offset into the data area. The default is no offset.

dataAreaLength

Returns the length of the data area in bytes.

unsigned long dataAreaLength() const

dataAreaOwner

Returns an enumeration that indicates whether the data area has been allocated by the **IccBuf** constructor or has been supplied from elsewhere.

DataAreaOwner dataAreaOwner() const

The possible values are listed under "DataAreaOwner" on page 103.

dataAreaType

DataAreaType dataAreaType() const

Returns an enumeration that indicates whether the data area can be extended. The possible values are listed under "DataAreaType" on page 103.

dataLength

Returns the length of data in the data area. This cannot be greater than the value returned by **dataAreaLength**

unsigned long dataLength() const

insert

Inserts the given data into the data area at the given offset and returns a reference to the **IccBuf** object.

IccBuf& insert (unsigned long *length*,
const void* *dataArea*,
unsigned long *offset* **= 0)**

length
The length of the data, in bytes, to be inserted into the **IccBuf** object

dataArea
The start of the source data to be inserted into the **IccBuf** object

offset
The offset in the data area where the data is to be inserted. The default is no offset.

isFMHContained

Icc::Bool isFMHContained() const

Returns a boolean, defined in **Icc** structure, that indicates whether the data area contains FMHs (function management headers).

operator const char*

operator const char*() const

Casts an **IccBuf** object to a null terminated string.

```
IccBuf data("Hello World");
cout « (const char*) data;
```

operator= (1)

Assigns data from another buffer object and returns a reference to the **IccBuf** object.

IccBuf& operator=(const IccBuf& *buffer***)**

buffer
A reference to an **IccBuf** object.

operator= (2)

Assigns data from a null-terminated string and returns a reference to the **IccBuf** object. See also the **assign** method.

IccBuf& operator=(const char* *text***)**

text
The null-terminated string to be assigned to the **IccBuf** object.

operator+= (1)

Appends data from another buffer object and returns a reference to the **IccBuf** object.

IccBuf& operator+=(const IccBuf& *buffer***)**

buffer
A reference to an **IccBuf** object.

operator+= (2)

Appends data from a null-terminated string and returns a reference to the **IccBuf** object. See also the **append** method.

IccBuf& operator+=(const char* *text***)**

text
The null-terminated string to be appended to the **IccBuf** object.

operator==

Returns a boolean, defined in **Icc** structure, that indicates whether the data contained in the buffers of the two **IccBuf** objects is the same. It is true if the current lengths of the two data areas are the same and the contents are the same.

Icc::Bool operator==(const IccBuf& *buffer***) const**

buffer
A reference to an **IccBuf** object.

operator!=

Returns a boolean, defined in **Icc** structure, that indicates whether the data contained in the buffers of the two **IccBuf** objects is different. It is true if the current lengths of the two data areas are different or if the contents are different.

Icc::Bool operator!=(const IccBuf& *buffer***) const**

buffer
A reference to an **IccBuf** object.

operator« (1)

Appends another buffer.

operator«(const IccBuf& *buffer***)**

operator« (2)

Appends a string.

operator«(const char* *text***)**

operator« (3)

Appends a character.

operator«(char *ch***)**

operator« (4)

Appends a character.

operator«(signed char *ch***)**

operator« (5)

Appends a character.

operator«(unsigned char *ch***)**

operator« (6)

Appends a string.

operator«(const signed char* *text***)**

operator« (7)

Appends a string.

operator«(const unsigned char* *text***)**

operator« (8)

Appends a short.

operator«(short *num***)**

operator« (9)

Appends an unsigned short.

operator«(unsigned short *num***)**

operator« (10)

Appends a long.

operator«(long *num***)**

operator« (11)

Appends an unsigned long.

operator«(unsigned long *num***)**

operator« (12)

Appends an integer.

operator«(int *num***)**

operator« (13)

Appends a float.

operator«(float *num***)**

operator« (14)

Appends a double.

operator«(double *num***)**

operator« (15)

Appends a long double.

operator«(long double *num***)**

Appends data of various types to the **IccBuf** object. The types are converted to a 'readable' format, for example from a long to a string representation.

overlay

Makes the data area external and fixed. Any existing internal data area is destroyed.See warning about “Internal/External ownership of buffers” on page 25.

IccBuf& overlay (unsigned long *length*,
void* *dataArea***)**

length
The length of the existing data area.

dataArea
The address of the existing data area.

replace

Replaces the current contents of the data area at the given offset with the data provided and returns a reference to the **IccBuf** object.

IccBuf& replace (unsigned long *length*,
const void* *dataArea*,
unsigned long *offset* **= 0)**

length
The length of the source data area, in bytes.

dataArea
The address of the start of the source data area.

offset
The position where the new data is to be written, relative to the start of the **IccBuf** data area. The default is no offset.

setDataLength

Changes the current length of the data area and returns the new length. If the **IccBuf** object is not extensible, the data area length is set to either the original length of the data area or *length* , whichever is less.

unsigned long setDataLength(unsigned long *length***)**

length
The new length of the data area, in bytes

setFMHContained

Allows an application program to indicate that a data area contains function management headers.

void setFMHContained(Icc::Bool *yesNo* **=** Icc::yes**)**

yesNo
A boolean, defined in **Icc** structure, that indicates whether the data area contains FMHs. The default value is yes.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

DataAreaOwner

Indicates whether the data area of a **IccBuf** object has been allocated outside the object.

Possible values are:

internal
The data area has been allocated by the **IccBuf** constructor.

external
The data area has been allocated externally.

DataAreaType

Indicates whether the data area of a **IccBuf** object can be made longer than its original length.

Possible values are:

extensible
The data area can be automatically extended to accommodate more data.

fixed The data area cannot grow in size. If you attempt to assign too much data, the data is truncated, and an exception is thrown.

Chapter 20. IccClock class

The **IccClock** class controls access to the CICS time and date services.

IccBase
  IccResource
    IccClock

Header file: ICCCLKEH

Sample: ICC$CLK

IccClock constructor

Constructor

IccClock(UpdateMode *update* **=** manual**)**

update
An enumeration, defined in this class, that indicates whether the clock is to update its time automatically whenever a time or date service is used, or whether it is to wait until an explicit **update** method call is made. If the time is updated manually, the initial clock time is the time when the **IccClock object** object is created.

Public methods

These are the public methods in this class.

absTime

Returns a reference to an **IccAbsTime** object that contains the absolute time as provided by CICS.

IccAbsTime& absTime()

cancelAlarm

Cancels a previous **setAlarm** request if the alarm time has not yet been reached, that is, the request has not expired.

void cancelAlarm(const IccRequestId* *reqId* **= 0)**

reqId
An optional pointer to the **IccRequestId** object that holds information on an alarm request.

Conditions

ISCINVREQ, NOTAUTH, NOTFND, SYSIDERR

© Copyright IBM Corp. 1989, 2015

date

Returns the date as a string.

```
const char* date (DateFormat format = defaultFormat,
                  char dateSeparator = '\0')
```

format
An enumeration, defined in this class, that indicates in which format you want the date to be returned.

dateSeparator
The character that is used to separate different fields in the date. The default is no separation character.

Conditions

INVREQ

dayOfMonth

Returns the day component of the date, in the range 1 to 31.

```
unsigned long dayOfMonth()
```

Conditions

INVREQ

dayOfWeek

Returns an enumeration, defined in this class, that indicates the day of the week.

```
DayOfWeek dayOfWeek()
```

Conditions

INVREQ

daysSince1900

Returns the number of days that have elapsed since 1st January, 1900.

```
unsigned long daysSince1900()
```

Conditions

INVREQ

milliSeconds

Returns the number of milliseconds that have elapsed since 00:00 on 1st January, 1900.

long double milliSeconds()

monthOfYear

MonthOfYear monthOfYear()

Returns an enumeration, defined in this class, that indicates the month of the year.

Conditions

INVREQ

setAlarm

Sets an alarm at the time specified in *time*. It returns a reference to an **IccAlarmRequestId** object that can be used to cancel the alarm—see **cancelAlarm** method.

See also the **"waitOnAlarm" on page 236** method of class **IccTask**.

const IccAlarmRequestId& setAlarm (const IccTime& *time*,
const IccRequestId* *reqId* **= 0)**

time
A reference to an **IccTime** object that contains time information. As **IccTime** is an abstract class *time* is, in practise, an object of class **IccAbsTime**, **IccTimeOfDay**, or **IccTimeInterval**.

reqId
An optional pointer to an **IccRequestId** object that is used to identify this particular alarm request.

Conditions

EXPIRED, INVREQ

time

Returns the time as a text string.

const char* time(char *timeSeparator* **= '\0')**

timeSeparator
The character that delimits the time fields. The default is no separation character.

Conditions

INVREQ

update

Updates the clock time and date from CICS. See the **IccClock** constructor.

void update()

year

unsigned long year()

Returns the 4-figure year number, such as 1996.

Conditions

INVREQ

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

DateFormat

- defaultFormat
- DDMMYY
- MMDDYY
- YYDDD
- YYDDMM
- YYMMDD
- DDMMYYYY
- MMDDYYYY
- YYYYDDD
- YYYYDDMM
- YYYYMMDD

DayOfWeek

Indicates the day of the week.

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

MonthOfYear

Indicates the month of the year.

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

UpdateMode

Indicates whether the clock is automatically updated.

manual
The clock initially holds the time at which it was created. It is subsequently updated only when an **update** method call is made.

automatic

The clock is updated to the current CICS time and date whenever any time or date method is called (for example, **daysSince1900**).

Chapter 21. IccCondition structure

This structure contains an enumeration of all the CICS condition codes.

Header file: `ICCCNDEH`

Enumerations

Codes

The possible values are:

	Value		Value		Value
0	NORMAL	35	TSIOERR	70	NOTAUTH
1	ERROR	36	MAPFAIL	__	
2	RDATT	37	INVERRTERM	72	SUPPRESSED
3	WRBRK	38	INVMPSZ	__	
4	ICCEOF	39	IGREQID	__	
5	EODS	40	OVERFLOW	75	RESIDERR
6	EOC	41	INVLDC	__	
7	INBFMH	42	NOSTG	__	
8	ENDINPT	43	JIDERR	__	
9	NONVAL	44	QIDERR	__	
10	NOSTART	45	NOJBUFSP	80	NOSPOOL
11	TERMIDERR	46	DSSTAT	81	TERMERR
12	FILENOTFOUND	47	SELNERR	82	ROLLEDBACK
13	NOTFND	48	FUNCERR	83	END
14	DUPREC	49	UNEXPIN	84	DISABLED
15	DUPKEY	50	NOPASSBKRD	85	ALLOCERR
16	INVREQ	51	NOPASSBKWR	86	STRELERR
17	IOERR	__		87	OPENERR
18	NOSPACE	53	SYSIDERR	88	SPOLBUSY
19	NOTOPEN	54	ISCINVREQ	89	SPOLERR
20	ENDFILE	55	ENQBUSY	90	NODEIDERR
21	ILLOGIC	56	ENVDEFERR	91	TASKIDERR
22	LENGERR	57	IGREQCD	92	TCIDERR
23	QZERO	58	SESSIONERR	93	DSNNOTFOUND
24	SIGNAL	59	SYSBUSY	94	LOADING
25	QBUSY	60	SESSBUSY	95	MODELIDERR
26	ITEMERR	61	NOTALLOC	96	OUTDESCERR
27	PGMIDERR	62	CBIDERR	97	PARTNERIDERR
28	TRANSIDERR	63	INVEXITREQ	98	PROFILEIDERR
29	ENDDATA	64	INVPARTNSET	99	NETNAMEIDERR
30	INVTSREQ	65	INVPARTN	100	LOCKED
31	EXPIRED	66	PARTNFAIL	101	RECORDBUSY
32	RETPAGE	__		102	UOWNOTFOUND
33	RTEFAIL	__		103	UOWLNOTFOUND
34	RTESOME	69	USERIDERR		

© Copyright IBM Corp. 1989, 2015

Range

maxValue
The highest CICS condition, currently 103.

Chapter 22. IccConsole class

This is a singleton class that represents the CICS console.

IccBase
IccResource
IccConsole

Header file: ICCCONEH

Sample: ICC$CON

IccConsole constructor (protected)

Constructor

No more than one of these objects is permitted in a task. An attempt to create more objects causes an exception to be thrown.

IccConsole()

Public methods

These are the public methods in this class.

The opt parameter

Many methods have the same parameter, *opt*, which is described under the **abendCode** method in"abendCode" on page 77.

instance

Returns a pointer to the single **IccConsole** object that represents the CICS console. If the object does not already exist, it is created by this method.

static IccConsole* instance()

put

Writes the data in *send* to the CICS console. **put** is a synonym for **write**. See Chapter 10, "Polymorphic Behavior," on page 59.

virtual void put(const IccBuf& *send***)**

send
A reference to an **IccBuf** object that contains the data that is to be written to the console.

replyTimeout

© Copyright IBM Corp. 1989, 2015

unsigned long replyTimeout() const

Returns the length of the reply timeout in milliseconds.

resetRouteCodes

void resetRouteCodes()

Removes all route codes held in the **IccConsole** object.

setAllRouteCodes

void setAllRouteCodes()

Sets all possible route codes in the **IccConsole** object, that is, 1 through 28.

setReplyTimeout (1)

void setReplyTimeout(IccTimeInterval& *interval***)**

interval
A reference to a **IccTimeInterval** object that describes the length of the time interval required.

setReplyTimeout (2)

The two different forms of this method are used to set the length of the reply timeout.

void setReplyTimeout(unsigned long *seconds***)**

seconds
The length of the time interval required, in seconds.

setRouteCodes

Saves route codes in the object for use on subsequent **write** and **writeAndGetReply** calls. Up to 28 codes can be held in this way.

void setRouteCodes (unsigned short *numRoutes*,
...)

numRoutes
The number of route codes provided in this call—the number of arguments that follow this one.

...
One or more arguments, the number of which is given by *numRoutes*. Each argument is a route code, of type **unsigned short**, in the range 1 to 28.

write

Writes the data in *send* to the CICS console.

```
void write (const IccBuf& send,
            SeverityOpt opt = none)
```

send
A reference to an **IccBuf** object that contains the data that is to be written to the console.

opt
An enumeration that indicates the severity of the console message.

Conditions

INVREQ, LENGERR, EXPIRED

writeAndGetReply

Writes the data in *send* to the CICS console and returns a reference to an **IccBuf** object that contains the reply from the CICS operator.

```
const IccBuf& writeAndGetReply (const IccBuf& send,
                                SeverityOpt opt= none)
```

send
A reference to an **IccBuf** object that contains the data that is to be written to the console.

opt
An enumeration that indicates the severity of the console message.

Conditions

INVREQ, LENGERR, EXPIRED

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase

Method	Class
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

SeverityOpt

Possible values are:

- none
- warning
- error
- severe

Chapter 23. IccControl class

IccControl class controls an application program that uses the supplied Foundation Classes.

IccBase
  IccResource
    IccControl

This class is a singleton class in the application program; each program running under a CICS task has a single **IccControl** object.

IccControl has a pure virtual **run** method, where application code is written, and is therefore an abstract base class. The application programmer must subclass **IccControl**, and implement the **run** method.

Header file: `ICCCTLEH`

IccControl constructor (protected)

Constructor

IccControl()

Public methods

These are the public methods in this class.

callingProgramId

Returns a reference to an **IccProgramId** object that represents the program that called this program. The returned **IccProgramId** reference contains a null name if the executing program was not called by another program.

const IccProgramId& callingProgramId()

Conditions

INVREQ

cancelAbendHandler

Cancels a previously established exit at this logical program level.

void cancelAbendHandler()

Conditions

NOTAUTH, PGMIDERR

© Copyright IBM Corp. 1989, 2015

commArea

Returns a reference to an **IccBuf** object that encapsulates the COMMAREA—the communications area of CICS memory that is used for passing data between CICS programs and transactions.

IccBuf& commArea()

Conditions

INVREQ

console

Returns a pointer to the single **IccConsole** object. If this object has not yet been created, this method creates the object before returning a pointer to it.

IccConsole* console()

initData

const IccBuf& initData()

Returns a reference to an **IccBuf** object that contains the initialization parameters specified for the program in the INITPARM system initialization parameter.

Conditions

INVREQ

instance

Returns a pointer to the single **IccControl** object. The object is created if it does not already exist.

static IccControl* instance()

isCreated

static Icc::Bool isCreated()

Returns a boolean value that indicates whether the **IccControl** object already exists. Possible values are true or false.

programId

const IccProgramId& programId()

Returns a reference to an **IccProgramId** object that refers to this executing program.

Conditions

INVREQ

resetAbendHandler

Reactivates a previously cancelled abend handler for this logical program level. (See **cancelAbendHandler on page** "cancelAbendHandler" on page 117).

void resetAbendHandler()

Conditions

NOTAUTH, PGMIDERR

returnProgramId

Returns a reference to an **IccProgramId** object that refers to the program that resumes control when this logical program level issues a return.

const IccProgramId& returnProgramId()

run

virtual void run() = 0

This method should be implemented in a subclass of **IccControl** by the application programmer.

session

IccSession* session()

Returns a pointer to the **IccSession** object that represents the principal facility for this program. An exception is thrown if this program does not have a session as its principal facility.

setAbendHandler (1)

void setAbendHandler(const IccProgramId& *programId***)**

programId
A reference to the **IccProgramId** object that indicates which program is affected.

setAbendHandler (2)

These methods set the abend handler to the named program for this logical program level.

void setAbendHandler(const char* *programName***)**

programName
The name of the program affected.

Conditions

NOTAUTH, PGMIDERR

startRequestQ

Returns a pointer to the **IccStartRequestQ** object. If this object has not yet been created, this method creates the object before returning a pointer to it.

IccStartRequestQ* startRequestQ()

system

IccSystem* system()

Returns a pointer to the **IccSystem** object. If this object has not yet been created, this method creates the object before returning a pointer to it.

task

IccTask* task()

Returns a pointer to the **IccTask** object. If this object has not yet been created, this method creates the object before returning a pointer to it.

terminal

IccTerminal* terminal()

Returns a pointer to the **IccTerminal** object. If this object has not yet been created, this method creates the object before returning a pointer to it.

This method has a condition, that the transaction must have a terminal as its principal facility. That is, there must be a physical terminal involved.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource

Method	Class
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 24. IccConvId class

IccConvId class is used to identify an APPC conversation.

IccBase
  IccResourceId
    IccConvId

IccConvId class is used to identify an APPC conversation.

Header file: ICCRIDEH

IccConvId constructors

Constructor (1)

IccConvId(const char* *convName***)**

convName
The 4-character name of the conversation.

Constructor (2)

The copy constructor.

IccConvId(const IccConvId& *convId***)**

convId
A reference to an **IccConvId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccConvId& operator=(const char* *convName***)**

operator= (2)

Assigns new value.

IccConvId& operator=(const IccConvId *id***)**

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 25. IccDataQueue class

This class represents a CICS transient data queue.

IccBase
IccResource
IccDataQueue

Header file: ICCDATEH

Sample: ICC$DAT

IccDataQueue constructors

Constructor (1)

IccDataQueue(const IccDataQueueId& *id***)**

id
A reference to an **IccDataQueueId** object that contains the name of the CICS transient data queue.

Constructor (2)

IccDataQueue(const char* *queueName***)**

queueName
The 4-byte name of the queue that is to be created. An exception is thrown if *queueName* is not valid.

Public methods

These are the public methods in this class.

clear

A synonym for **empty**. See Chapter 10, "Polymorphic Behavior," on page 59.

virtual void clear()

empty

void empty()

Empties the queue, that is, deletes all items on the queue.

© Copyright IBM Corp. 1989, 2015

Conditions

ISCINVREQ, NOTAUTH, QIDERR, SYSIDERR, DISABLED, INVREQ

get

A synonym for **readItem**. See Chapter 10, “Polymorphic Behavior,” on page 59.

virtual const IccBuf& get()

put

A synonym for **writeItem**. See Chapter 10, “Polymorphic Behavior,” on page 59.

virtual void put(const IccBuf& *buffer***)**

buffer
A reference to an **IccBuf** object that contains data to be put into the queue.

readItem

const IccBuf& readItem()

Returns a reference to an **IccBuf** object that contains one item read from the data queue.

Conditions

IOERR, ISCINVREQ, LENGERR, NOTAUTH, NOTOPEN, QBUSY, QIDERR, QZERO, SYSIDERR, DISABLED, INVREQ

writeItem (1)

void writeItem(const IccBuf& *item***)**

item
A reference to an **IccBuf** object that contains data to be written to the queue.

writeItem (2)

Writes an item of data to the queue.

void writeItem(const char* *text***)**

text
Text that is to be written to the queue.

Conditions

IOERR, ISCINVREQ, LENGERR, NOSPACE, NOTAUTH, NOTOPEN, QIDERR, SYSIDERR, DISABLED, INVREQ

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
className	IccBase
classType	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
isRouteOptionOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
routeOption	IccResource
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource
setRouteOption	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 26. IccDataQueueId class

IccDataQueueId is used to identify a CICS Transient Data Queue name.

IccBase
  IccResourceId
    IccDataQueueId

IccDataQueueId is used to identify a CICS Transient Data Queue name.

Header file: ICCRIDEH

IccDataQueueId constructors

Constructor (1)

IccDataQueueId(const char* *queueName***)**

queueName
The 4-character name of the queue

Constructor (2)

IccDataQueueId(const IccDataQueueId& *id***)**

id A reference to an **IccDataQueueId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccDataQueueId& operator=(const char* *queueName***)**

queueName
The 4-character name of the queue

operator= (2)

Assigns new value.

IccDataQueueId& operator=(const IccDataQueueId& *id***)**

id A reference to an **IccDataQueueId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 27. IccEvent class

The **IccEvent** class contains information on a specific CICS call, called a CICS event.

IccBase
    IccEvent

Header file: ICCEVTEH

Sample: ICC$RES1

IccEvent constructor

Constructor

IccEvent (const IccResource* *object*,
const char* *methodName*)

object
A pointer to the **IccResource** object that is responsible for this event.

methodName
The name of the method that caused the event to be created.

Public methods

These are the public methods in this class.

className

Returns the name of the class responsible for this event.

const char* className() const

classType

IccBase::ClassType classType() const

Returns an enumeration, described under **classType** on page "classType" on page 91 in **IccBase** class, that indicates the type of class that is responsible for this event.

condition

Returns an enumerated type that indicates the condition returned from this CICS event. The possible values are described under the **Codes** type in the **IccCondition** structure.

© Copyright IBM Corp. 1989, 2015

IccCondition::Codes condition(IccResource::ConditionType *type* **=**
IccResource::majorCode**) const**

type
An enumeration that indicates whether a major code or minor code is being requested. Possible values are 'majorCode' or 'minorCode'. 'majorCode' is the default value.

conditionText

const char* conditionText() const

Returns the text of the CICS condition code, such as "NORMAL" or "LENGERR".

methodName

const char* methodName() const

Returns the name of the method responsible for this event.

summary

const char* summary()

Returns a summary of the CICS event in the form:

```
CICS event summary: IccDataQueue::readItem condition=23 (QZERO) minor=0
```

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 28. IccException class

IccException class contains information about CICS Foundation Class exceptions.

IccBase
    IccException

It is used to create objects that are 'thrown' to application programs. They are generally used for error conditions such as invalid method calls, but the application programmer can also request an exception is thrown when CICS raises a particular condition.

Header file: ICCEXCEH

Samples: ICC$EXC1, ICC$EXC2, ICC$EXC3

IccException constructor

Constructor

```
IccException (Type exceptionType,
              IccBase::ClassType classType,
              const char* className,
              const char* methodName,
              IccMessage* message,
              IccBase* object = 0,
              unsigned short exceptionNum = 0)
```

exceptionType
    An enumeration, defined in this class, that indicates the type of the exception

classType
    An enumeration, defined in this class, that indicates from which type of class the exception was thrown

className
    The name of the class from which the exception was thrown

methodName
    The name of the method from which the exception was thrown

message
    A pointer to the **IccMessage** object that contains information about why the exception was created.

object
    A pointer to the object that threw the exception

exceptionNum
    The unique exception number.

Note: When the **IccException** object is created it takes ownership of the **IccMessage** given on the constructor. When the **IccException** is deleted, the

© Copyright IBM Corp. 1989, 2015

IccMessage object is deleted automatically by the **IccException** destructor. Therefore, do not delete the **IccMessage** object before deleting the **IccException** object.

Public methods

These are the public methods in this class.

className

Returns the name of the class responsible for throwing this exception.

const char* className() const

classType

IccBase::ClassType classType() const

Returns an enumeration, described under **ClassType** in **IccBase** class, that indicates the type of class which threw this exception.

message

IccMessage* message() const

Returns a pointer to an **IccMessage** object that contains information on any message associated with this exception.

methodName

const char* methodName() const

Returns the name of the method responsible for throwing this exception.

number

unsigned short number() const

Returns the unique exception number.

This is a useful diagnostic for IBM service. The number uniquely identifies from where in the source code the exception was thrown.

summary

const char* summary()

Returns a string containing a summary of the exception. This combines the **className**, **methodName**, **number**, **Type**, and **IccMessage::text** methods into the following form:

```
CICS exception summary: 094 IccTempStore::readNextItem type=CICSCondition
```

type

Type type() const

Returns an enumeration, defined in this class, that indicates the type of exception.

typeText

const char* typeText() const

Returns a string representation of the exception type, for example, "objectCreationError", "invalidArgument".

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

Type

objectCreationError
An attempt to create an object was invalid. This happens, for example, if an attempt is made to create a second instance of a singleton class, such as **IccTask**.

invalidArgument
A method was called with an invalid argument. This happens, for example, if an **IccBuf** object with too much data is passed to the **writeItem** method of the **IccTempStore** class by the application program. An attempt to create an **IccFileId** object with a 9-character filename also generates an exception of this type.

invalidMethodCall
A method call cannot proceed. A typical reason is that the object cannot honor the call in its current state. For example, a **readRecord** call on an **IccFile** object is only honored if an **IccRecordIndex** object, to specify ***which*** record is to be read, has already been associated with the file.

CICSCondition
A CICS condition, listed in the **IccCondition** structure, has occurred in the object and the object was configured to throw an exception.

platformError
An operation is invalid because of limitations of this particular platform.

A platformError exception can occur at 3 levels:

1. An object is not supported on this platform.
2. An object is supported on this platform, but a particular method is not.
3. A method is supported on this platform, but a particular positional parameter is not.

See "Platform differences" on page 56 for more details.

familyConformanceError
Family subset enforcement is on for this program and an operation that is not valid on all supported platforms has been attempted.

internalError
The CICS Foundation Classes have detected an internal error. Please call your support organization.

Chapter 29. IccFile class

IccFile class enables the application program to access CICS files.

IccBase
  IccResource
    IccFile

Header file: ICCFILEH

Sample: ICC$FIL

IccFile constructors

Constructor (1)

IccFile (const IccFileId& *id*,
  IccRecordIndex* *index* **= 0)**

id
A reference to the **IccFileId** object that identifies which file is being operated on

index
An optional pointer to the **IccRecordIndex** object that identifies which record in the file is being operated on.

Constructor (2)

To access files using an **IccFile** object, it must have an **IccRecordIndex** object associated with it. If this association is not made when the object is created, use the **registerRecordIndex** method.

IccFile (const char* *fileName*,
  IccRecordIndex* *index* **= 0)**

fileName
The 8-character name of the file

index
An optional pointer to the **IccRecordIndex** object that identifies which record in the file is being operated on.

Public methods

These are the public methods in this class.

The opt parameter

Many methods have the same parameter, *opt*, which is described under the **abendCode** method in"abendCode" on page 77.

© Copyright IBM Corp. 1989, 2015

access

Returns a composite number indicating the access properties of the file. See also **isReadable**, **isBrowsable**, **isAddable**, **isDeletable**, and **isUpdatable** methods.

unsigned long access(Icc::GetOpt *opt* **=Icc::object)**

opt
An enumeration, defined in **Icc** structure, that indicates whether you can use a value previously retrieved from CICS (object), or whether the object should retrieve a fresh value from CICS.

accessMethod

Returns an enumeration, defined in **IccValue**, that represents the access method for this file.

Possible values are:

- VSAM
- BDAM
- SFS

IccValue::CVDA accessMethod(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

beginInsert (VSAM only)

Signals the start of a mass insertion of data into the file.

void beginInsert()

deleteLockedRecord

Deletes a record that has been previously locked by **readRecord** method in update mode. (See also **readRecord** method.)

void deleteLockedRecord(unsigned long *updateToken* **= 0)**

updateToken
A token that indicates which previously read record is to be deleted. This is the token that is returned from **readRecord** method when in update mode.

Conditions

DISABLED, DUPKEY, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, NOTAUTH, NOTFIND, NOTOPEN, SYSIDERR, LOADING

deleteRecord

Deletes one or more records, as specified by the associated **IccRecordIndex** object, and returns the number of deleted records.

unsigned short deleteRecord()

Conditions

DISABLED, DUPKEY, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, NOTAUTH, NOTFIND, NOTOPEN, SYSIDERR, LOADING

enableStatus

Returns an enumeration, defined in **IccValue**, that indicates whether the file is enabled to be used by programs.

Possible values are:

- DISABLED
- DISABLING
- ENABLED
- UNENABLED

IccValue::CVDA enableStatus(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

endInsert (VSAM only)

Marks the end of a mass insertion operation. See **beginInsert**.

void endInsert()

isAddable

Indicates whether more records can be added to the file.

Icc::Bool isAddable(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

isBrowsable

Indicates whether the file can be browsed.

Icc::Bool isBrowsable(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

isDeletable

Indicates whether the records in the file can be deleted.

Icc::Bool isDeletable(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

isEmptyOnOpen

Returns a Boolean that indicates whether the EMPTYREQ option is specified. EMPTYREQ causes the object associated with this file to be set to empty when opened, if it is a VSAM data set defined as reusable.

Icc::Bool isEmptyOnOpen(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

isReadable

Indicates whether the file records can be read.

Icc::Bool isReadable(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

isRecoverable

Icc::Bool isRecoverable(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions: END, FILENOTFOUND, ILLOGIC, NOTAUTH

isUpdatable

Indicates whether the file can be updated.

Icc::Bool isUpdatable(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

keyLength

Returns the length of the search key.

unsigned long keyLength(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

keyPosition

Returns the position of the key field in each record relative to the beginning of the record. If there is no key, zero is returned.

long keyPosition(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

openStatus

Returns a CVDA that indicates the open status of the file. Possible values are:

IccValue::CVDA openStatus(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

CLOSED
The file is closed.

CLOSING
The file is in the process of being closed. Closing a file may require dynamic deallocation of data sets and deletion of shared resources, so the process may last a significant length of time.

CLOSEREQUEST
The file is open and one or more application tasks are using it. A request has been received to close it.

OPEN
The file is open.

OPENING
The file is in the process of being opened.

Conditions: END, FILENOTFOUND, ILLOGIC, NOTAUTH

readRecord

Reads a record and returns a reference to an **IccBuf** object that contains the data from the record.

const IccBuf& readRecord (ReadMode *mode* **=** normal**,**
unsigned long* *updateToken* **= 0)**

mode
An enumeration, defined in this class, that indicates in which mode the record is to be read.

updateToken
A pointer to an **unsigned long** token that will be updated by the method when *mode* is update and you want to make multiple read updates. The token uniquely identifies the update request and is passed to the **deleteLockedRecord**, **rewriteRecord**, or **unlockRecord** methods

Conditions

DISABLED, DUPKEY, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, LENGERR, NOTAUTH, NOTFND, NOTOPEN, SYSIDERR, LOADING

recordFormat

Returns a CVDA that indicates the format of the data. Possible values are:

IccValue::CVDA recordFormat(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

FIXED
The records are of fixed length.

UNDEFINED (BDAM data sets only)
The format of records on the file is undefined.

VARIABLE
The records are of variable length. If the file is associated with a data table, the record format is always variable length, even if the source data set contains fixed-length records.

Conditions: END, FILENOTFOUND, ILLOGIC, NOTAUTH

recordIndex

Returns a pointer to an **IccRecordIndex** object that indicates which records are to be accessed when using methods such as **readRecord**, **writeRecord**, and **deleteRecord**.

IccRecordIndex* recordIndex() const

recordLength

Returns the length of the current record.

unsigned long recordLength(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

registerRecordIndex

void registerRecordIndex(IccRecordIndex* *index***)**

index
A pointer to an **IccKey**, **IccRBA**, or **IccRRN** object that will be used by methods such as **readRecord**, **writeRecord**, etc..

rewriteRecord

Updates a record with the contents of *buffer*.

void rewriteRecord (const IccBuf& *buffer*,
unsigned long *updateToken* **= 0)**

buffer
A reference to the **IccBuf** object that holds the new record data to be written to the file.

updateToken
The token that identifies which previously read record is to be rewritten. See **readRecord**.

Conditions

DISABLED, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, NOTAUTH, NOTFND, NOTOPEN, SYSIDERR, LOADING

setAccess

Sets the permitted access to the file.

For example:

```
file.setAccess(IccFile::readable + IccFile::notUpdatable);
```

void setAccess(unsigned long *access***)**

access
A positive integer value created by ORing (or adding) one or more of the values of the Access enumeration, defined in this class.

Conditions

FILENOTFOUND, INVREQ, IOERR, NOTAUTH

setEmptyOnOpen

void setEmptyOnOpen(Icc::Bool *trueFalse***)**

Specifies whether or not to make the file empty when it is next opened.

Conditions

FILENOTFOUND, INVREQ, IOERR, NOTAUTH

setStatus

Sets the status of the file.

void setStatus(Status *status***)**

status
An enumeration, defined in this class, that indicates the required status of the file after this method is called.

Conditions

FILENOTFOUND, INVREQ, IOERR, NOTAUTH

type

Returns a CVDA that identifies the type of data set that corresponds to this file. Possible values are:

IccValue::CVDA type(Icc::GetOpt *opt* **=** Icc::object**)**

opt
See **access** method.

ESDS
The data set is an entry-sequenced data set.

KEYED
The data set is addressed by physical keys.

KSDS
The data set is a key-sequenced data-set.

NOTKEYED
The data set is not addressed by physical keys.

RRDS
The data set is a relative record data set.

VRRDS
The data set is a variable relative record data set.

Conditions: END, FILENOTFOUND, ILLOGIC, NOTAUTH

unlockRecord

Unlock a record, previously locked by reading it in update mode. See **readRecord**.

void unlockRecord(unsigned long *updateToken* **= 0)**

updateToken
A token that indicates which previous **readRecord** update request is to be unlocked.

Conditions

DISABLED, FILENOTFOUND, ILLOGIC, IOERR, ISCINVREQ, NOTAUTH, NOTOPEN, SYSIDERR, INVREQ

writeRecord

Write either a single record or a sequence of records, if used with the **beginInsert** and **endInsert** methods.

void writeRecord(const IccBuf& *buffer***)**

buffer
A reference to the **IccBuf** object that holds the data that is to be written into the record.

Conditions

DISABLED, DUPREC, FILENOTFOUND, ILLOGIC, INVREEQ, IOERR, ISCINVREQ, LENGERR, NOSPACE, NOTAUTH, NOTOPEN, SYSIDERR, LOADING, SUPPRESSED

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
className	IccBase
classType	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
isRouteOptionOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
routeOption	IccResource
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource
setRouteOption	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

Access

readable
File records can be read by CICS tasks.

notReadable
File records cannot be read by CICS tasks.

browsable
File records can be browsed by CICS tasks.

notBrowsable
File records cannot be browsed by CICS tasks.

addable
Records can be added to the file by CICS tasks.

notAddable
Records cannot be added to the file by CICS tasks.

updatable
Records in the file can be updated by CICS tasks.

notUpdatable
Records in the file cannot be updated by CICS tasks.

deletable
Records in the file can be deleted by CICS tasks.

notDeletable
Records in the file cannot be deleted by CICS tasks.

fullAccess
Equivalent to readable AND browsable AND addable AND updatable AND deletable.

noAccess
Equivalent to notReadable AND notBrowsable AND notAddable AND notUpdatable AND notDeletable.

ReadMode

ReadMode is the mode in which a file is read.

normal
No update is to be performed (that is, read-only mode)

update
The record is to be updated. The record is locked by CICS until:

- it is rewritten using the **rewriteRecord** method *or*
- it is deleted using the **deleteLockedRecord** method *or*
- it is unlocked using the **unlockRecord** method *or*
- the task commits or rolls back its resource updates *or*
- the task is abended.

SearchCriterion

equalToKey
The search only finds an exact match.

gteqToKey
The search finds either an exact match or the next record in search order.

Status

open File is open, ready for read/write requests by CICS tasks.

closed
File is closed, and is therefore not currently being used by CICS tasks.

enabled
File is enabled for access by CICS tasks.

disabled
File is disabled from access by CICS tasks.

Chapter 30. IccFileId class

IccFileId is used to identify a file name in the CICS system.

IccBase
  IccResourceId
    IccFileId

Header file: ICCRIDEH

IccFileId constructors

Constructor (1)

IccFileId(const char* *fileName***)**

fileName
The name of the file.

Constructor (2)

IccFileId(const IccFileId& *id***)**

id
A reference to an **IccFileId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccFileId& operator=(const char* *fileName***)**

fileName
The 8-byte name of the file.

operator= (2)

Assigns new value.

IccFileId& operator=(const IccFileId& *id***)**

id
A reference to an **IccFileId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 31. IccFileIterator class

This class is used to create **IccFileIterator** objects that can be used to browse through the records of a CICS file, represented by an **IccFile** object.

IccBase
  IccResource
    IccFileIterator

Header file: ICCFLIEH

Sample: ICC$FIL

IccFileIterator constructor

Constructor

The **IccFile** and **IccRecordIndex** object must exist before the **IccFileIterator** is created.

```
IccFileIterator (IccFile* file,
                 IccRecordIndex* index,
                 IccFile::SearchCriterion search = IccFile::gteqToKey)
```

file
A pointer to the **IccFile** object that is to be browsed

index
A pointer to the **IccRecordIndex** object that is being used to select a record in the file

search
An enumeration, defined in **IccFile**, that indicates the criterion being used to find a search match. The default is gteqToKey.

Conditions

DISABLED, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, NOTAUTH, NOTFND, NOTOPEN, SYSIDERR, LOADING

Public methods

These are the public methods in this class.

readNextRecord

Read the record that follows the current record.

```
const IccBuf& readNextRecord (IccFile::ReadMode mode = IccFile::normal,
                              unsigned long* updateToken = 0)
```

mode
An enumeration, defined in **IccFile** class, that indicates the type of read request

© Copyright IBM Corp. 1989, 2015

updateToken
A returned token that is used to identify this unique update request on a subsequent **rewriteRecord**, **deleteLockedRecord**, or **unlockRecord** method on the file object.

Conditions

DUPKEY, ENDFILE, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, LENGERR, NOTAUTH, NOTFIND, SYSIDERR

readPreviousRecord

Read the record that precedes the current record.

```
const IccBuf& readPreviousRecord (IccFile::ReadMode mode = IccFile::normal,
                                  unsigned long* updateToken = 0)
```

mode
An enumeration, defined in **IccFile** class, that indicates the type of read request.

updateToken
See **readNextRecord**.

Conditions

DUPKEY, ENDFILE, FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, LENGERR, NOTAUTH, NOTFIND, SYSIDERR

reset

Resets the **IccFileIterator** object to point to the record identified by the **IccRecordIndex** object and the specified search criterion.

```
void reset (IccRecordIndex* index,
            IccFile::SearchCriterion search = IccFile::gteqToKey)
```

index
A pointer to the **IccRecordIndex** object that is being used to select a record in the file.

search
An enumeration, defined in **IccFile**, that indicates the criterion being used to find a search match. The default is gteqToKey.

Conditions

FILENOTFOUND, ILLOGIC, INVREQ, IOERR, ISCINVREQ, NOTAUTH, NOTFND, SYSIDERR

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource

Method	Class
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
className	IccBase
classType	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
isRouteOptionOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
routeOption	IccResource
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource
setRouteOption	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 32. IccGroupId class

IccGroupId class is used to identify a CICS group.

IccBase
  IccResourceId
    IccGroupId

IccGroupId class is used to identify a CICS group.

Header file: ICCRIDEH

IccGroupId constructors

Constructor (1)

IccGroupId(const char* *groupName***)**

groupName
The 8-character name of the group.

Constructor (2)

The copy constructor.

IccGroupId(const IccGroupId& *id***)**

id A reference to an **IccGroupId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccGroupId& operator=(const char* *groupName***)**

groupName
The 8-character name of the group.

operator= (2)

Assigns new value.

IccGroupId& operator=(const IccGroupId& *id***)**

id A reference to an **IccGroupId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 33. IccJournal class

IccJournal class represents a user or system CICS journal.

IccBase
  IccResource
    IccJournal

Header file: ICCJRNEH

Sample: ICC$JRN

IccJournal constructors

Constructor (1)

IccJournal (const IccJournalId& *id*,
unsigned long *options* **= 0)**

id
A reference to an **IccJournalId** object that identifies which journal is being used.

options
An integer, constructed from the **Options** enumeration defined in this class, that affects the behavior of **writeRecord** calls on the **IccJournal** object. The values may be combined by addition or bitwise ORing, for example:

```
IccJournal::startIO | IccJournal::synchronous
```

The default is to use the system default.

Constructor (2)

IccJournal (unsigned short *journalNum*,
unsigned long *options* **= 0)**

journalNum
The journal number (in the range 1-99)

options
See above.

Public methods

These are the public methods in this class.

clearPrefix

Clears the current prefix as set by **registerPrefix** or **setPrefix**.If the current prefix was set using **registerPrefix**, then the **IccJournal** class only removes its own

© Copyright IBM Corp. 1989, 2015

reference to the prefix. The buffer itself is left unchanged.If the current prefix was set by **setPrefix**, then the **IccJournal**'s copy of the buffer is deleted.

void clearPrefix()

journalTypeId

Returns a reference to an **IccJournalTypeId** object that contains a 2-byte field used to identify the origin of journal records.

const IccJournalTypeId& journalTypeId() const

put

A synonym for **writeRecord**—puts data into the journal. See Chapter 10, "Polymorphic Behavior," on page 59 for information on polymorphism.

virtual void put(const IccBuf& *buffer***)**

buffer
A reference to an **IccBuf** object that holds data to be put into the journal.

registerPrefix

void registerPrefix(const IccBuf* *prefix***)**

Stores pointer to prefix object for use when the **writeRecord** method is called on this **IccJournal** object.

setJournalTypeId (1)

void setJournalTypeId(const IccJournalTypeId& *id***)**

setJournalTypeId (2)

Sets the journal type—a 2 byte identifier—included in the journal record created when using the **writeRecord** method.

void setJournalTypeId(const char* *jtypeid***)**

setPrefix (1)

void setPrefix(const IccBuf& *prefix***)**

setPrefix (2)

void setPrefix(const char* *prefix***)**

Stores the *current* contents of *prefix* for inclusion in the journal record created when the **writeRecord** method is called.

wait

Waits until a previous journal write has completed.

void wait (unsigned long *requestNum*=**0,**
unsigned long *option* **= 0)**

requestNum
The write request. Zero indicates the last write on this journal.

option
An integer that affects the behaviour of **writeRecord** calls on the **IccJournal** object. Values other than 0 should be made from the **Options** enumeration, defined in this class. The values may be combined by addition or bitwise ORing, for example `IccJournal::startIO + IccJournal::synchronous`. The default is to use the system default.

writeRecord (1)

unsigned long writeRecord (const IccBuf& *record*,
unsigned long *option* **= 0)**

record
A reference to an **IccBuf** object that holds the record

option
See above.

writeRecord (2)

Writes the data in the record to the journal.The returned number represents the particular write request and can be passed to the **wait** method in this class.

unsigned long writeRecord (const char* *record*,
unsigned long *option* **= 0)**

record
The name of the record

option
See above.

Conditions

IOERR, JIDERR, LENGERR, NOJBUFSP, NOTAUTH, NOTOPEN

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase

Method	Class
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

Options

The behaviour of **writeRecord** calls on the **IccJournal** object.

The values can be combined in an integer by addition or bitwise ORing.

startIO
Specifies that the output of the journal record is to be initiated immediately. If 'synchronous' is specified for a journal that is not frequently used, you should also specify 'startIO' to prevent the requesting task waiting for the journal buffer to be filled. If the journal is used frequently, startIO is unnecessary.

noSuspend
Specifies that the NOJBUFSP condition does not suspend an application program.

synchronous
Specifies that synchronous journal output is required. The requesting task waits until the record has been written.

Chapter 34. IccJournalId class

IccJournalId is used to identify a journal number in the CICS sytem.

IccBase
  IccResourceId
    IccJournalId

Header file: ICCRIDEH

IccJournalId constructors

Constructor (1)

IccJournalId(unsigned short *journalNum***)**

journalNum
The number of the journal, in the range 1 to 99

Constructor (2)

The copy constructor.

IccJournalId(const IccJournalId& *id***)**

id
A reference to an **IccJournalId** object.

Public methods

These are the public methods in this class.

number

Returns the journal number, in the range 1 to 99.

unsigned short number() const

operator= (1)

IccJournalId& operator=(unsigned short *journalNum***)**

journalNum
The number of the journal, in the range 1 to 99

© Copyright IBM Corp. 1989, 2015

operator= (2)

Assigns new value.

IccJournalId& operator=(const IccJournalId& *id***)**

id
A reference to an **IccJournalId** object.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 35. IccJournalTypeId class

An **IccJournalTypeId** class object is used to help identify the origin of a journal record—it contains a 2-byte field that is included in the journal record.

IccBase
  IccResourceId
    IccJournalTypeId

An **IccJournalTypeId** class object is used to help identify the origin of a journal record—it contains a 2-byte field that is included in the journal record.

Header file: ICCRIDEH

IccJournalTypeId constructors

Constructor (1)

IccJournalTypeId(const char* *journalTypeName***)**

journalTypeName
A 2-byte identifier used in journal records.

Constructor (2)

IccJournalTypeId(const IccJournalId& *id***)**

id A reference to an **IccJournalTypeId** object.

Public methods

These are the public methods in this class.

operator= (1)

void operator=(const IccJournalTypeId& *id***)**

id A reference to an **IccJournalTypeId** object.

operator= (2)

Sets the 2-byte field that is included in the journal record.

void operator=(const char* *journalTypeName***)**

journalTypeName
A 2-byte identifier used in journal records.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 36. IccKey class

IccKey class is used to hold a search key for an indexed (KSDS) file.

IccBase
  IccRecordIndex
    IccKey

Header file: ICCRECEH

Sample: ICC$FIL

IccKey constructors

Constructor (1)

IccKey (const char* *initValue*,
  Kind *kind* = complete**)**

Constructor (2)

IccKey (unsigned short *completeLength*,
  Kind *kind*= complete**)**

Constructor (3)

IccKey(const IccKey& *key***)**

Public methods

These are the public methods in this class.

assign

Copies the search key into the **IccKey** object.

void assign (unsigned short *length*,
  const void* *dataArea***)**

length
The length of the data area

dataArea
A pointer to the start of the data area that holds the search key.

© Copyright IBM Corp. 1989, 2015

completeLength

Returns the length of the key when it is complete.

unsigned short completeLength() const

kind

Kind kind() const

Returns an enumeration, defined in this class, that indicates whether the key is generic or complete.

operator= (1)

IccKey& operator=(const IccKey& *key***)**

operator= (2)

IccKey& operator=(const IccBuf& buffer)

operator= (3)

Assigns new value to key.

IccKey& operator=(const char* *value***)**

operator== (1)

Icc::Bool operator==(const IccKey& *key***) const**

operator== (2)

Icc::Bool operator==(const IccBuf& *text***) const**

operator== (3)

Tests equality.

Icc::Bool operator==(const char* *text***) const**

operator!= (1)

Icc::Bool operator !=(const IccKey& *key***) const**

operator!= (2)

Icc::Bool operator!=(const IccBuf& *text***) const**

operator!= (3)

Tests inequality.

Icc::Bool operator!=(const char* *text***) const**

setKind

Changes the type of key from generic to complete or vice versa.

void setKind(Kind *kind***)**

kind
An enumeration, defined in this class, that indicates whether the key is generic or complete.

value

const char* value()

Returns the start of the data area containing the search key.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
length	IccRecordIndex
operator delete	IccBase
operator new	IccBase
type	IccRecordIndex
value	IccRecordIndex

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

Kind

complete
Specifies that the supplied key is not generic.

generic
Specifies that the search key is generic. A search is satisfied when a record is found with a key whose prefix matches the supplied key.

Chapter 37. IccLockId class

IccLockId class is used to identify a lock request.

IccBase
IccResourceId
IccLockId

IccLockId class is used to identify a lock request.

Header file: ICCRIDEH

IccLockId constructors

Constructor (1)

IccLockId(const char* *name***)**

name
The 8-character name of the lock request.

Constructor (2)

The copy constructor.

IccLockId(const IccLockId& *id***)**

id A reference to an **IccLockId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccLockId& operator=(const char* *name***)**

name
The 8-character name of the lock request.

operator= (2)

Assigns new value.

IccLockId& operator=(const IccLockId& *id***)**

id A reference to an **IccLockId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 38. IccMessage class

IccMessage can be used to hold a message description.

IccBase
    IccMessage

It is used primarily by the **IccException** class to describe why the **IccException** object was created.

Header file: ICCMSGEH

IccMessage constructor

Constructor

IccMessage (unsigned short *number*,
const char* *text*,
const char* *className* **= 0**,
const char* *methodName* **= 0)**

number
The number associated with the message

text
The text associated with the message

className
The optional name of the class associated with the message

methodName
The optional name of the method associated with the message.

Public methods

These are the public methods in this class.

className

Returns the name of the class with which the message is associated, if any. If there is no name to return, a null pointer is returned.

const char* className() const

methodName

const char* methodName() const

Returns the name of the method with which the message is associated, if any. If there is no name to return, a null pointer is returned.

© Copyright IBM Corp. 1989, 2015

number

unsigned short number() const

Returns the number of the message.

summary

const char* summary()

Returns the text of the message.

text

const char* text() const

Returns the text of the message in the same way as summary.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 39. IccPartnerId class

IccPartnerId class represents CICS remote (APPC) partner transaction definitions.

IccBase
  IccResourceId
    IccPartnerId

IccPartnerId class represents CICS remote (APPC) partner transaction definitions.

Header file: ICCRIDEH

IccPartnerId constructors

Constructor (1)

IccPartnerId(const char* *partnerName***)**

partnerName
The 8-character name of an APPC partner.

Constructor (2)

The copy constructor.

IccPartnerId(const IccPartnerId& *id***)**

id A reference to an **IccPartnerId** object.

Public methods

operator= (1)

IccPartnerId& operator=(const char* *partnerName***)**

partnerName
The 8-character name of an APPC partner.

operator= (2)

Assigns new value.

IccPartnerId& operator=(const IccPartnerId& *id***)**

id A reference to an **IccPartnerId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 40. IccProgram class

The **IccProgram** class represents any CICS program outside of your currently executing one, which the **IccControl** object represents.

IccBase
  IccResource
    IccProgram

Header file: ICCPRGEH

Sample: ICC$PRG1, ICC$PRG2, ICC$PRG3

IccProgram constructors

Constructor (1)

IccProgram(const IccProgramId& *id***)**

id
A reference to an **IccProgramId** object.

Constructor (2)

IccProgram(const char* *progName***)**

progName
The 8-character name of the program.

Public methods

The opt parameter

Many methods have the same parameter, *opt*, which is described under the **abendCode** method in"abendCode" on page 77.

address

Returns the address of a program module in memory. This is only valid after a successful **load** call.

const void* address() const

clearInputMessage

Clears the current input message which was set by **setInputMessage** or **registerInputMessage**.If the current input message was set using **registerInputMessage** then only the pointer is deleted: the buffer is left unchanged.If the current input message was set using **setInputMessage** then **clearInputMessage** releases the memory used by that buffer.

© Copyright IBM Corp. 1989, 2015

void clearInputMessage()

entryPoint

const void* entryPoint() const

Returns a pointer to the entry point of a loaded program module. This is only valid after a successful **load** call.

length

unsigned long length() const

Returns the length of a program module. This is only valid after a successful **load** call.

link

void link (const IccBuf* *commArea* **= 0,**
const IccTransId* *transId* **= 0,**
CommitOpt *opt* **=** noCommitOnReturn**)**

commArea
An optional pointer to the **IccBuf** object that contains the COMMAREA—the buffer used to pass information between the calling program and the program that is being called

transId
An optional pointer to the **IccTransId** object that indicates the name of the mirror transaction under which the program is to run if it is a remote (DPL) program link

opt
An enumeration, defined in this class, that affects the behavior of the link when the program is remote (DPL). The default (noCommitOnReturn) is not to commit resource changes on the remote CICS region until the current task commits its resources. The alternative (commitOnReturn) means that the resources of the remote program are committed whether or not this task subsequently abends or encounters a problem.

Conditions: INVREQ, NOTAUTH, PGMIDERR, SYSIDERR, LENGERR, ROLLEDBACK, TERMERR

Restrictions

Links may be nested, that is, a linked program may **link** to another program. However, due to implementation restrictions, you may only nest such programs 15 times. If this is exceeded, an exception is thrown.

load

void load(LoadOpt *opt* **=** releaseAtTaskEnd**)**

opt
An enumeration, defined in this class, that indicates whether CICS should automatically allow the program to be unloaded at task termination (releaseAtTaskEnd), or not (hold).

Conditions: NOTAUTH, PGMIDERR, INVREQ, LENGERR

registerInputMessage

Store pointer to InputMessage for when the **link** method is called.

void registerInputMessage(const IccBuf& *msg***)**

setInputMessage

Specifies data to be made available, by the **IccSession::receive()** method, to the called program, when using the **link** method in this class.

void setInputMessage(const IccBuf& *msg***)**

unload

Allow a program to be unloaded. It can be reloaded by a call to **load**.

void unload()

Conditions

NOTAUTH, PGMIDERR, INVREQ

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
className	IccBase
classType	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
isRouteOptionOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase

Method	Class
routeOption	IccResource
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource
setRouteOption	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

CommitOpt

noCommitOnReturn
Changes to resources on the remote CICS region are not committed until the current task commits its resources. This is the default setting.

commitOnReturn
Changes to resources on the remote CICS region are committed whether or not the current task subsequently abends or encounters a problem.

LoadOpt

releaseAtTaskEnd
Indicates that CICS should automatically allow the program to be unloaded at task termination.

hold Indicates that CICS should not automatically allow the program to be unloaded at task termination. (In this case, this or another task must explicitly use the **unload** method).

Chapter 41. IccProgramId class

IccProgramId objects represent program names in the CICS system.

IccBase
  IccResourceId
    IccProgramId

Header file: ICCRIDEH

IccProgramId constructors

Constructor (1)

IccProgramId(const char* *progName***)**

progName
The 8-character name of the program.

Constructor (2)

The copy constructor.

IccProgramId(const IccProgramId& *id***)**

id
A reference to an **IccProgramId** object.

Public methods

operator= (1)

IccProgramId& operator=(const char* *progName***)**

progName
The 8-character name of the program.

operator= (2)

Assigns new value.

IccProgramId& operator=(const IccProgramId& *id***)**

id
A reference to an **IccProgramId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 42. IccRBA class

An **IccRBA** object holds a relative byte address which is used for accessing VSAM ESDS files.

IccBase
IccRecordIndex
IccRBA

An **IccRBA** object holds a relative byte address which is used for accessing VSAM ESDS files.

Header file: ICCRECEH

IccRBA constructor

Constructor

IccRBA(unsigned long *initRBA* **= 0)**

initRBA
An initial value for the relative byte address.

Public methods

operator= (1)

IccRBA& operator=(const IccRBA& *rba***)**

operator= (2)

Assigns a new value for the relative byte address.

IccRBA& operator=(unsigned long *num***)**

num
A valid relative byte address.

operator== (1)

Icc::Bool operator== (const IccRBA& *rba***) const**

© Copyright IBM Corp. 1989, 2015

operator== (2)

Tests equality

Icc::Bool operator== (unsigned long *num***) const**

operator!= (1)

Icc!:Bool operator== (const IccRBA& *rba***) const**

operator!= (2)

Tests inequality

Icc::Bool operator!=(unsigned long *num***) const**

number

unsigned long number() const

Returns the relative byte address.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
length	IccRecordIndex
operator delete	IccBase
operator new	IccBase
type	IccRecordIndex
value	IccRecordIndex

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 43. IccRecordIndex class

CICS File Control Record Identifier.

IccBase
  IccRecordIndex
    IccKey
    IccRBA
    IccRRN

CICS File Control Record Identifier. Used to tell CICS which particular record the program wants to retrieve, delete, or update. **IccRecordIndex** is a base class from which **IccKey**, **IccRBA**, and **IccRRN** are derived.

Header file: ICCRECEH

IccRecordIndex constructor (protected)

Constructor

IccRecordIndex(Type *type***)**

type
An enumeration, defined in this class, that indicates whether the index type is key, RBA, or RRN.

Note: This is protected because you should not create **IccRecordIndex** objects; see subclasses **IccKey**, **IccRBA**, and **IccRRN**.

Public methods

length

Returns the length of the record identifier.

unsigned short length() const

type

Type type() const

Returns an enumeration, defined in this class, that indicates whether the index type is key, RBA, or RRN.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

Type

Type indicates the access method.

Possible values are:

- key
- RBA
- RRN

Chapter 44. IccRequestId class

An **IccRequestId** is used to hold the name of a request.

IccBase
IccResourceId
IccRequestId

An **IccRequestId** is used to hold the name of a request. This request identifier can subsequently be used to cancel a request—see, for example, **start** and **cancel** methods in **IccStartRequestQ** class.

Header file: ICCRIDEH

IccRequestId constructors

Constructor (1)

An empty **IccRequestId** object.

IccRequestId()

Constructor (2)

IccRequestId(const char* *requestName***)**

requestName
The 8-character name of the request.

Constructor (3)

The copy constructor.

IccRequestId(const IccRequestId& *id***)**

id A reference to an **IccRequestId**.

Public methods

operator= (1)

IccRequestId& operator=(const IccRequestId& *id***)**

id A reference to an **IccRequestId** object whose properties are copied into this object.

© Copyright IBM Corp. 1989, 2015

operator= (2)

Assigns new value.

IccRequestId& operator=(const char* *reqestName***)**

requestName
An 8-character string which is copied into this object.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 45. IccResource class

IccResource class is a base class that is used to derive other classes.

IccBase
    IccResource

The methods associated with **IccResource** are described here although, in practise, they are only called on objects of derived classes.

IccResource is the parent class for all CICS resources—tasks, files, programs, etc. Every class inherits from **IccBase**, but only those that use CICS services inherit from **IccResource**.

Header file: `ICCRESEH`

Sample: `ICC$RES1`, `ICC$RES2`

IccResource constructor (protected)

Constructor

IccResource(IccBase::ClassType *classType***)**

`classType`
    An enumeration that indicates what the subclass type is. For example, for an **IccTempStore** object, the class type is cTempStore. The possible values are listed under **ClassType** in the description of the **IccBase** class.

Public methods

actionOnCondition

Returns an enumeration that indicates what action the class will take in response to the specified condition being raised by CICS. The possible values are described in this class.

ActionOnCondition actionOnCondition(IccCondition::Codes *condition*)

`condition`
    The name of the condition as an enumeration. See **IccCondition** structure for a list of the possible values.

actionOnConditionAsChar

char actionOnConditionAsChar(IccCondition::Codes *condition***)**

© Copyright IBM Corp. 1989, 2015

This method is the same as **actionOnCondition** but returns a character, rather than an enumeration, as follows:

0 (zero)
No action is taken for this CICS condition.

H The virtual method **handleEvent** is called for this CICS condition.

X An exception is generated for this CICS condition.

A This program is abended for this CICS condition.

actionsOnConditionsText

Returns a string of characters, one character for each possible condition. Each character indicates the actions to be performed for that corresponding condition. .

The characters used in the string are described in "actionOnConditionAsChar" on page 187. For example, the string: `0X00H0A ...` shows the actions for the first seven conditions are as follows:

condition 0 (NORMAL)
action=0 (noAction)

condition 1 (ERROR)
action=X (throwException)

condition 2 (RDATT)
action=0 (noAction)

condition 3 (WRBRK)
action=0 (noAction)

condition 4 (ICCEOF)
action=H (callHandleEvent)

condition 5 (EODS)
action=0 (noAction)

condition 6 (EOC)
action=A (abendTask)

const char* actionsOnConditionsText()

clear

Clears the contents of the object. This method is virtual and is implemented, wherever appropriate, in the derived classes. See Chapter 10, "Polymorphic Behavior," on page 59 for a description of polymorphism. The default implementation in this class throws an exception to indicate that it has not been overridden in a subclass.

virtual void clear()

condition

Returns a number that indicates the condition code for the most recent CICS call made by this object.

unsigned long condition(ConditionType *type* **=** majorCode**) const**

type
An enumeration, defined in this class, that indicates the type of condition requested. Possible values are majorCode (the default) and minorCode.

conditionText

const char* conditionText() const

Returns the symbolic name of the last CICS condition for this object.

get

virtual const IccBuf& get()

Gets data from the **IccResource** object and returns it as an **IccBuf** reference. This method is virtual and is implemented, wherever appropriate, in the derived classes. See Chapter 10, "Polymorphic Behavior," on page 59 for a description of polymorphism. The default implementation in this class throws an exception to indicate that it has not been overridden in a subclass.

handleEvent

This virtual function may be re-implemented in a subclass (by the application programmer) to handle CICS events (see **IccEvent** class on page Chapter 27, "IccEvent class," on page 131).

virtual HandleEventReturnOpt handleEvent(IccEvent& *event*)

event
A reference to an **IccEvent** object that describes the reason why this method is being called.

id

const IccResourceId* id() const

Returns a pointer to the **IccResourceId** object associated with this **IccResource** object.

isEDFOn

Icc::Bool isEDFOn() const

Returns a boolean value that indicates whether EDF trace is active. Possible values are yes or no.

isRouteOptionOn

Icc::Bool isRouteOptionOn() const

Returns a boolean value that indicates whether the route option is active. Possible values are yes or no.

name

const char* name() const

Returns a character string that gives the name of the resource that is being used. For an **IccTempStore** object, the 8-character name of the temporary storage queue is returned. For an **IccTerminal** object, the 4-character terminal name is returned. This is equivalent to calling **id()→name**.

put

Puts information from the buffer into the **IccResource** object. This method is virtual and is implemented, wherever appropriate, in the derived classes. See Chapter 10, "Polymorphic Behavior," on page 59 for more information on polymorphism. The default implementation in this class throws an exception to indicate that it has not been overridden in a subclass.

virtual void put(const IccBuf& *buffer*)

buffer
A reference to an **IccBuf** object that contains data that is to be put into the object.

routeOption

const IccSysId& routeOption() const

Returns a reference to an **IccSysId** object that represents the system to which all CICS requests are routed—explicit function shipping.

setActionOnAnyCondition

Specifies the default action to be taken by the CICS foundation classes when a CICS condition occurs.

void setActionOnAnyCondition(ActionOnCondition *action***)**

action
The name of the action as an enumeration. The possible values are listed under the description of this class.

setActionOnCondition

Specifies what action is automatically taken by the CICS foundation classes when a given CICS condition occurs.

void setActionOnCondition (ActionOnCondition *action*,
IccCondition::Codes *condition*)

action
The name of the action as an enumeration. The possible values are listed under the description of this class.

condition
See **IccCondition** structure.

setActionsOnConditions

void setActionsOnConditions(const char* *actions* **= 0)**

actions
A string that indicates what action is to be taken for each condition. The default is not to indicate any actions, in which case each condition is given a default **ActionOnCondition** of noAction. The string should have the same format as the one returned by the **actionsOnConditionsText** method.

setEDF

Switches EDF on or off for this resource object. These methods force the object to route CICS requests to the named remote system. This is called explicit function shipping.

void setEDF(Icc::Bool *onOff*)

onOff
A boolean value that selects whether EDF trace is switched on or off.

setRouteOption (1)

The parameters are:

void setRouteOption(const IccSysId& *sysId*)

sysId
The **IccSysId** object that represents the remote system to which commands are routed.

setRouteOption (2)

This option is only valid for certain classes: Attempting to use this method on other subclasses of **IccResource** causes an exception to be thrown.

Valid classes are:

- **IccDataQueue**
- **IccFile**
- **IccFileIterator**

- **IccProgram**
- **IccStartRequestQ**
- **IccTempStore**

To turn off the route option specify no parameter, for example:

```
obj.setRouteOption()
```

void setRouteOption(const char* *sysName* **= 0)**

sysName
The 4-character name of the system to which commands are routed.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

ActionOnCondition

Possible values are:

noAction
Carry on as normal; it is the application program's responsibility to test CICS conditions using the **condition** method, after executing a method that calls CICS services.

callHandleEvent
Call the virtual **handleEvent** method.

throwException
An **IccException** object is created and thrown. This is typically used for more serious conditions or errors.

abendTask
Abend the CICS task.

HandleEventReturnOpt

Possible values are:

rContinue
The CICS event proceeded satisfactorily and normal processing is to resume.

rThrowException
The application program could not handle the CICS event and an exception is to be thrown.

rAbendTask
The application program could not handle the CICS event and the CICS task is to be abended.

ConditionType

Possible values are:

majorCode
The returned value is the CICS RESP value. This is one of the values in IccCondition::codes.

minorCode
The returned value is the CICS RESP2 value.

Chapter 46. IccResourceId class

This is a base class from which **IccTransId** and other classes, whose names all end in "Id", are derived.

IccBase
  IccResourceId

Many of these derived classes represent CICS resource names.

Header file: ICCRIDEH

IccResourceId constructors (protected)

Constructor (1)

IccResourceId (IccBase::ClassType *typ*,
const IccResourceId& *id***)**

type
An enumeration, defined in **IccBase** class, that indicates the type of class.

id
A reference to an **IccResourceId** object that is used to create this object.

Constructor (2)

IccResourceId (IccBase::ClassType *type*,
const char* *resName***)**

type
An enumeration, defined in **IccBase** class, that indicates the type of class.

resName
The name of a resource that is used to create this object.

Public methods

These are the public methods in this class.

name

Returns the name of the resource identifier as a string. Most **...Id** objects have 4- or 8-character names.

const char* name() const

© Copyright IBM Corp. 1989, 2015

nameLength

unsigned short nameLength() const

Returns the length of the name returned by the **name** method.

Protected methods

operator=

Set an **IccResourceId** object to be identical to *id*.

IccResourceId& operator=(const IccResourceId& *id*)

id
A reference to an **IccResourceId** object.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 47. IccRRN class

An **IccRRN** object holds a relative record number and is used to identify records in VSAM RRDS files.

IccBase
  IccRecordIndex
    IccRRN

An **IccRRN** object holds a relative record number and is used to identify records in VSAM RRDS files.

Header file: ICCRECEH

IccRRN constructors

Constructor

IccRRN(unsigned long *initRRN* **= 1)**

initRRN
The initial relative record number—an integer greater than 0. The default is 1.

Public methods

These are the public methods in this class.

operator= (1)

IccRRN& operator=(const IccRRN& *rrn***)**

operator= (2)

Assigns a new value for the relative record number.

IccRRN& operator=(unsigned long *num***)**

num
A relative record number—an integer greater than 0.

operator== (1)

Icc::Bool operator== (const IccRRN& *rrn***) const**

© Copyright IBM Corp. 1989, 2015

operator== (2)

Tests equality

Icc::Bool operator== (unsigned long num) const

operator!= (1)

Icc::Bool operator!= (const IccRRN& *rrn*) const

operator!= (2)

Tests inequality

Icc::Bool operator!=(unsigned long num) const

number

unsigned long number() const

Returns the relative record number.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
className	IccBase
classType	IccBase
customClassNum	IccBase
length	IccRecordIndex
operator delete	IccBase
operator new	IccBase
type	IccRecordIndex
value	IccRecordIndex

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 48. IccSemaphore class

This class enables synchronization of resource updates.

IccBase
IccResource
IccSemaphore

Header file: ICCSEMEH

Sample: ICC$SEM

IccSemaphore constructor

Constructor (1)

IccSemaphore (const char* *resource*,
LockType *type* **= byValue,**
LifeTime *life* **= UOW)**

resource
A text string, if *type* is byValue, otherwise an address in storage.

type
An enumeration, defined in this class, that indicates whether locking is by value or by address. The default is by value.

life
An enumeration, defined in this class, that indicates how long the semaphore lasts. The default is to last for the length of the UOW.

Constructor (2)

IccSemaphore (const IccLockId& *id*,
LifeTime *life* **= UOW)**

id
A reference to an **IccLockId** object

life
An enumeration, defined in this class, that indicates how long the semaphore lasts. The default is to last for the length of the UOW.

Public methods

These are the public methods in this class.

lifeTime

Returns an enumeration, defined in this class, that indicates whether the lock lasts for the length of the current unit-of-work ('UOW') or until the task terminates('task').

© Copyright IBM Corp. 1989, 2015

LifeTime lifeTime() const

lock

void lock()

Attempts to get a lock. This method blocks if another task already owns the lock.

Conditions

ENQBUSY, LENGERR, INVREQ

tryLock

Attempts to get a lock. This method does not block if another task already owns the lock. It returns a boolean that indicates whether it succeeded.

Icc::Bool tryLock()

Conditions

ENQBUSY, LENGERR, INVREQ

type

Returns an enumeration, defined in this class, that indicates what type of semaphore this is.

LockType type() const

unlock

void unlock()

Release a lock.

Conditions

LENGERR, INVREQ

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource

Method	Class
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

LockType

byValue
The lock is on the contents (for example, name).

byAddress
The lock is on the memory address.

LifeTime

UOW The semaphore lasts for the length of the current unit of work.

task The semaphore lasts for the length of the task.

Chapter 49. IccSession class

This class enables APPC and DTP programming.

IccBase
  IccResource
    IccSession

Header file: ICCSESEH

Sample: ICC$SES1, ICC$SES2

IccSession constructors (public)

Constructor (1)

IccSession(const IccPartnerId& *id***)**

id
A reference to an **IccPartnerId** object

Constructor (2)

IccSession (const IccSysId& *sysId***,**
const char* *profile* **= 0)**

sysId
A reference to an **IccSysId** object that represents a remote CICS system

profile
The 8-character name of the profile.

Constructor (3)

IccSession (const char* *sysName***,**
const char* *profile* **= 0)**

sysName
The 4-character name of the remote CICS system with which this session is associated

profile
The 8-character name of the profile.

© Copyright IBM Corp. 1989, 2015

IccSession constructor (protected)

Constructor

This constructor is for back end DTP CICS tasks that have a session as their principal facility. In this case the application program uses the **session** method on the **IccControl** object to gain access to their **IccSession** object.

IccSession()

Public methods

These are the public methods in this class.

allocate

Establishes a session (communication channel) to the remote system.

void allocate(AllocateOpt *option* **= queue)**

option
An enumeration, defined in this class, that indicates what action CICS is to take if a communication channel is unavailable when this method is called.

Conditions

INVREQ, SYSIDERR, CBIDERR, NETNAMEIDERR, PARTNERIDERR, SYSBUSY

connectProcess (1)

This method can only be used if an **IccPartnerId** object was used to construct this session object.

void connectProcess (SyncLevel *level*,
const IccBuf* *PIP* **= 0)**

level
An enumeration, defined in this class, that indicates what sync level is to be used for this conversation

PIP
An optional pointer to an **IccBuf** object that contains the PIP data to be sent to the remote system

connectProcess (2)

void connectProcess (SyncLevel *level*,
const IccTransId& *transId*,
const IccBuf* *PIP* **= 0)**

level
An enumeration, defined in this class, that indicates what sync level is to be used for this conversation

transId
A reference to an **IccTransId** object that holds the name of the transaction to be started on the remote system

PIP
An optional pointer to an **IccBuf** object that contains the PIP data to be sent to the remote system

connectProcess (3)

Starts a partner process on the remote system in preparation for sending and receiving information.

void connectProcess (SyncLevel *level*,
const IccTPNameId& *TPName*,
const IccBuf* *PIP* **= 0)**

level
An enumeration, defined in this class, that indicates what sync level is to be used for this conversation

TPName
A reference to an **IccTPNameId** object that contains the 1–64 character TP name.

PIP
An optional pointer to an **IccBuf** object that contains the PIP data to be sent to the remote system

Conditions

INVREQ, LENGERR, NOTALLOC, PARTNERIDERR, NOTAUTH, TERMERR, SYSBUSY

converse

converse sends the contents of *send* and returns a reference to an **IccBuf** object that holds the reply from the remote APPC partner.

const IccBuf& converse(const IccBuf& *send***)**

send
A reference to an **IccBuf** object that contains the data that is to be sent.

Conditions

EOC, INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

convId

Returns a reference to an **IccConvId** object that contains the 4-byte conversation identifier.

const IccConvId& convId()

errorCode

const char* errorCode() const

Returns the 4-byte error code received when **isErrorSet** returns true. See the relevant DTP Guide for more information.

extractProcess

void extractProcess()

Retrieves information from an APPC conversation attach header and holds it inside the object. See **PIPList**, **process**, and **syncLevel** methods to retrieve the information from the object. This method should be used by the back end task if it wants access to the PIP data, the process name, or the synclevel under which it is running.

Conditions

INVREQ, NOTALLOC, LENGERR

flush

Ensure that accumulated data and control information are transmitted on an APPC mapped conversation.

void flush()

Conditions

INVREQ, NOTALLOC

free

Return the APPC session to CICS so that it may be used by other tasks.

void free()

Conditions

INVREQ, NOTALLOC

get

A synonym for **receive**. See Chapter 10, “Polymorphic Behavior,” on page 59 for information on polymorphism.

virtual const IccBuf& get()

isErrorSet

Icc::Bool isErrorSet() const

Returns a boolean variable, defined in **Icc** structure, that indicates whether an error has been set.

isNoDataSet

Icc::Bool isNoDataSet() const

Returns a boolean variable, defined in **Icc** structure, that indicates if no data was returned on a **send**—just control information.

isSignalSet

Icc::Bool isSignalSet() const

Returns a boolean variable, defined in **Icc** structure, that indicates whether a signal has been received from the remote process.

issueAbend

void issueAbend()

Abnormally ends the conversation. The partner transaction sees the TERMERR condition.

Conditions

INVREQ, NOTALLOC, TERMERR

issueConfirmation

Sends positive response to a partner's **send** request that specified the confirmation option.

void issueConfirmation()

Conditions

INVREQ, NOTALLOC, TERMERR, SIGNAL

issueError

Signals an error to the partner process.

void issueError()

Conditions

INVREQ, NOTALLOC, TERMERR, SIGNAL

issuePrepare

This only applies to DTP over APPC links. It enables a syncpoint initiator to prepare a syncpoint slave for syncpointing by sending only the first flow ('prepare to commit') of the syncpoint exchange.

void issuePrepare()

Conditions

INVREQ, NOTALLOC, TERMERR

issueSignal

Signals that a mode change is needed.

void issueSignal()

Conditions

INVREQ, NOTALLOC, TERMERR

PIPList

Returns a reference to an **IccBuf** object that contains the PIP data sent from the front end process. A call to this method should be preceded by a call to **extractProcess** on back end DTP processes.

IccBuf& PIPList()

process

const IccBuf& process() const

Returns a reference to an **IccBuf** object that contains the process data sent from the front end process. A call to this method should be preceded by a call to **extractProcess** on back end DTP processes.

put

A synonym for **send**. See Chapter 10, “Polymorphic Behavior,” on page 59 for information on polymorphism.

virtual void put(const IccBuf& *data*)

data
A reference to an **IccBuf** object that holds the data to be sent to the remote process.

receive

const IccBuf& receive()

Returns a reference to an **IccBuf** object that contains the data received from the remote system.

Conditions

EOC, INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

send (1)

void send (const IccBuf& *send*,
SendOpt *option* = normal**)**

send
A reference to an **IccBuf** object that contains the data that is to be sent.

option
An enumeration, defined in this class, that affects the behavior of the **send** method. The default is normal.

send (2)

Sends data to the remote partner.

void send(SendOpt *option* = normal**)**

option
An enumeration, defined in this class, that affects the behavior of the **send** method. The default is normal.

Conditions

INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

sendInvite (1)

void sendInvite (const IccBuf& *send*,
SendOpt *option* = normal**)**

send
A reference to an **IccBuf** object that contains the data that is to be sent.

option
An enumeration, defined in this class, that affects the behavior of the **sendInvite** method. The default is normal.

sendInvite (2)

Sends data to the remote partner and indicates a change of direction, that is, the next method on this object will be **receive**.

void sendInvite(SendOpt *option* = normal**)**

option
An enumeration, defined in this class, that afffects the behavior of the **sendInvite** method. The default is normal.

Conditions

INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

sendLast (1)

void sendLast (const IccBuf& *send*,
SendOpt *option* **=** normal**)**

send
A reference to an **IccBuf** object that contains the data that is to be sent.

option
An enumeration, defined in this class, that affects the behavior of the **sendLast** method. The default is normal.

sendLast (2)

Sends data to the remote partner and indicates that this is the final transmission. The **free** method must be invoked next, unless the sync level is 2, when you must commit resource updates before the **free**. (See **commitUOW** on page "commitUOW" on page 230 in **IccTaskClass**).

void sendLast(SendOpt *option* **=** normal**)**

option
An enumeration, defined in this class, that affects the behavior of the **sendLast** method. The default is normal.

Conditions

INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

state

Returns a CVDA, defined in **IccValue** structure, that indicates the current state of the APPC conversation.

Possible values are:
- ALLOCATED
- CONFFREE
- CONFSEND
- FREE
- PENDFREE
- PENDRECEIVE
- RECEIVE
- ROLLBACK
- SEND
- SYNCFREE

- SYNCRECEIVE
- SYNCSEND
- NOTAPPLIC

IccValue::NOTAPPLIC is returned if there is no APPC conversation state.

IccValue::CVDA state(StateOpt *option* **=** lastCommand**)**

option
An enumeration, defined in this class, that indicates how to report the state of the conversation

Conditions

INVREQ, NOTALLOC

stateText

Returns the symbolic name of the state that **state** method would return. For example, if **state** returns IccValue::ALLOCATED, **stateText** would return "ALLOCATED".

const char* stateText(StateOpt *option* **=** lastCommand**)**

option
An enumeration, defined in this class, that indicates how to report the state of the conversation

syncLevel

SyncLevel syncLevel() const

Returns an enumeration, defined in this class, that indicates the synchronization level that is being used in this session. A call to this method should be preceded by a call to **extractProcess** on back end DTP processes.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource

Method	Class
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

AllocateOpt

queue
If all available sessions are in use, CICS is to queue this request (and block the method) until it can allocate a session.

noQueue
Control is returned to the application if it cannot allocate a session. CICS raises the SYSBUSY condition.

Indicates whether queuing is required on an **allocate** method.

SendOpt

normal
The default.

confirmation
Indicates that a program using SyncLevel level1 or level2 requires a response from the remote partner program. The remote partner can respond positively, using the **issueConfirmation** method, or negatively, using the **issueError** method. The sending program does not receive control back from CICS until the response is received.

wait Requests that the data is sent and not buffered internally. CICS is free to buffer requests to improve performance if this option is not specified.

StateOpt

Use StateOpt to indicate how the state of a conversation is to be reported.

lastCommand
Return the state at the time of the completion of the last operation on the session.

extractState
Return the explicitly extracted current state.

SyncLevel

level0
Sync level 0

level1
Sync level 1

level2
Sync level 2

Chapter 50. IccStartRequestQ class

This is a singleton class that enables the application programmer to request an asynchronous start of another CICS transaction.

IccBase
  IccResource
    IccStartRequestQ

(see the **start** method on page "start" on page 218).

An asynchronously started transaction uses the **IccStartRequestQ** class method **retrieveData** to gain the information passed to it by the transaction that issued the **start** request.

An unexpired start request can be cancelled by using the **cancel** method.

Header file: ICCSRQEH

Sample: ICC$SRQ1, ICC$SRQ2

IccStartRequestQ constructor (protected)

Constructor

IccStartRequestQ()

Public methods

These are the public methods in this class.

cancel

Cancels a previously issued **start** request that has not yet expired.

void cancel (const IccRequestId& *reqId*,
const IccTransId* *transId* **= 0)**

reqId
A reference to an **IccRequestId** object that represents the request to be cancelled

transId
An optional pointer to an **IccTransId** object that represents the transaction that is to be cancelled.

Conditions

ISCINVREQ, NOTAUTH, NOTFND, SYSIDERR

© Copyright IBM Corp. 1989, 2015

clearData

clearData clears the current data that is to be passed to the started transaction.

void clearData()

The data was set using **setData** or **registerData**.

If the data was set using **registerData**, only the pointer to the data is removed, the data in the buffer is left unchanged.

If the data was set using **setData**, then **clearData** releases the memory used by the buffer.

data

Returns a reference to an **IccBuf** object that contains data passed on a start request. A call to this method should be preceded by a call to **retrieveData** method.

const IccBuf& data() const

instance

static IccStartRequestQ* instance()

Returns a pointer to the single **IccStartRequestQ** object. If the object does not exist it is created. See also **startRequestQ** method on page "startRequestQ" on page 120 of **IccControl**.

queueName

const char* queueName() const

Returns the name of the queue that was passed by the start requester. A call to this method should be preceded by a call to **retrieveData** method.

registerData

Registers an **IccBuf** object to be interrogated for start data on each subsequent **start** method invocation.This just stores the address of the **IccBuf** object within the **IccStartRequestQ** so that the **IccBuf** object can be found when using the **start** method. This differs from the **setData** method, which takes a copy of the data held in the **IccBuf** object during the time that it is invoked.

void registerData(const IccBuf* *buffer*)

buffer
A pointer to the **IccBuf** object that holds data to be passed on a **start** request.

reset

void reset()

Clears any associations previously made by **set...** methods in this class.

retrieveData

Used by a task that was started, via an async start request, to gain access to the information passed by the start requester. The information is returned by the **data**, **queueName**, **returnTermId**, and **returnTransId** methods.

void retrieveData(RetrieveOpt *option* **=** noWait**)**

option
An enumeration, defined in this class, that indicates what happens if there is no start data available.

Conditions

ENDDATA, ENVDEFERR, IOERR, LENGERR, NOTFND, INVREQ

Note: The ENVDEFERR condition will be raised if all the possible options (**setData**, **setQueueName**, **setReturnTermId**, and **setReturnTransId**) are not used before issuing the **start** method. This condition is therefore not necessarily an error condition and your program should handle it accordingly.

returnTermId

Returns a reference to an **IccTermId** object that identifies which terminal is involved in the session. A call to this method should be preceded by a call to **retrieveData** method.

const IccTermId& returnTermId() const

returnTransId

const IccTransId& returnTransId() const

Returns a reference to an **IccTransId** object passed on a start request. A call to this method should be preceded by a call to **retrieveData** method.

setData

void setData(const IccBuf& *buf*)

Copies the data in *buf* into the **IccStartRequestQ**, which passes it to the started transaction when the **start** method is called. See also **registerData** on page "registerData" on page 216 for an alternative way to pass data to started transactions.

setQueueName

Requests that this queue name be passed to the started transaction when the **start** method is called.

void setQueueName(const char* *queueName*)

queueName
An 8-character queue name.

setReturnTermId (1)

void setReturnTermId(const IccTermId& *termId*)

termId
A reference to an **IccTermId** object that identifies which terminal is involved in the session.

setReturnTermId (2)

Requests that this return terminal ID be passed to the started transaction when the **start** method is called.

void setReturnTermId(const char* *termName***)**

termName
The 4-character name of the terminal that is involved in the session.

setReturnTransId (1)

void setReturnTransId(const IccTransId& *transId*)

transId
A reference to an **IccTransId** object.

setReturnTransId (2)

Requests that this return transaction ID be passed to the started transaction when the **start** method is called.

void setReturnTransId(const char* *transName***)**

transName
The 4-character name of the return transaction.

setStartOpts

Sets whether the started transaction is to have protection and whether it is to be checked.

void setStartOpts (ProtectOpt *popt* **=** none**,**
CheckOpt *copt* **=** check**)**

popt
An enumeration, defined in this class, that indicates whether start requests are to be protected

copt
An enumeration, defined in this class, that indicates whether start requests are to be checked.

start

Asynchronously starts the named CICS transaction. The returned reference to an **IccRequestId** object identifies the **start** request and can be used subsequently to **cancel** the **start** request.

```
const IccRequestId& start (const IccTransId& transId,
                           const IccTermId* termId,
                           const IccTime* time = 0,
                           const IccRequestId* reqId = 0)
```

or

```
const IccRequestId& start (const IccTransId& transId,
                           const IccUserId* userId,
                           const IccTime* time = 0,
                           const IccRequestId* reqId = 0)
```

or

```
const IccRequestId& start (const IccTransId& transId,
                           const IccTime* time = 0,
                           const IccRequestId* reqId = 0)
```

transId
A reference to an **IccTransId** object that represents the transaction to be started

termId
A reference to an **IccTermId** object that identifies which terminal is involved in the session.

userId
A reference to an **IccUserId** object that represents the user ID.

time
An (optional) pointer to an **IccTime** object that specifies when the task is to be started. The default is for the task to be started immediately.

reqId
An (optional) pointer to an **IccRequestId** object that is used to identify this start request so that the **cancel** can cancel the request.

Conditions

INVREQ, IOERR, ISCINVREQ, LENGERR, NOTAUTH, SYSIDERR, TERMIDERR, TRANSIDERR, USERIDERR

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
className	IccBase
classType	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
isRouteOptionOn	IccResource

Method	Class
name	IccResource
operator delete	IccBase
operator new	IccBase
routeOption	IccResource
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource
setRouteOption	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

RetrieveOpt

- noWait
- wait

ProtectOpt

- none
- protect

CheckOpt

- check
- noCheck

Chapter 51. IccSysId class

IccSysId class is used to identify a remote CICS system.

IccBase
  IccResourceId
    IccSysId

IccSysId class is used to identify a remote CICS system.

Header file: ICCRIDEH

IccSysId constructors

Constructor (1)

IccSysId(const char* *name***)**

name
The 4-character name of the CICS system.

Constructor (2)

The copy constructor.

IccSysId(const IccSysId& *id***)**

id A reference to an **IccSysId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccSysId& operator=(const IccSysId& *id*)

id A reference to an existing **IccSysId** object.

operator= (2)

Sets the name of the CICS system held in the object.

IccSysId& operator=(const char* *name***)**

name
The 4-character name of the CICS system.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 52. IccSystem class

This is a singleton class that represents the CICS system. It is used by an application program to discover information about the CICS system on which it is running.

IccBase
IccResource
IccSystem

Header file: ICCSYSEH

Sample: ICC$SYS

IccSystem constructor (protected)

Constructor

IccSystem()

Public methods

These are the public methods in this class.

applName

Returns the 8-character name of the CICS region.

const char* applName()

Conditions

INVREQ

beginBrowse (1)

void beginBrowse (ResourceType *resource*,
const IccResourceId* *resId* **= 0)**

resource
An enumeration, defined in this class, that indicates the type of resource to be browsed within the CICS system.

resId
An optional pointer to an **IccResourceId** object that indicates the starting point for browsing through the resources.

© Copyright IBM Corp. 1989, 2015

beginBrowse (2)

Signals the start of a browse through a set of CICS resources.

void beginBrowse (ResourceType *resource*,
const char* *resName*)

resource
An enumeration, defined in this class, that indicates the type of resource to be browsed within the CICS system.

resName
The name of the resource that is to be the starting point for browsing the resources.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

dateFormat

Returns the default dateFormat for the CICS region.

const char* dateFormat()

Conditions

INVREQ

endBrowse

Signals the end of a browse through a set of CICS resources.

void endBrowse(ResourceType *resource*)

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

freeStorage

Releases the storage obtained by the **IccSystem getStorage** method.

void freeStorage(void* *pStorage*)

Conditions

INVREQ

getFile (1)

IccFile* getFile(const IccFileId& *id*)

id
A reference to an **IccFileId** object that identifies a CICS file.

getFile (2)

Returns a pointer to the **IccFile** object identified by the argument.

IccFile* getFile(const char* *fileName***)**

fileName
The name of a CICS file.

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

getNextFile

This method is only valid after a successful **beginBrowse(IccSystem::file)** call. It returns the next file object in the browse sequence in the CICS system.

IccFile* getNextFile()

Conditions

END, FILENOTFOUND, ILLOGIC, NOTAUTH

getStorage

Obtains a block of storage of the requested size and returns a pointer to it. The storage is not released automatically at the end of task; it is only released when a **freeStorage** operation is performed.

void* getStorage (unsigned long *size*,
char *initByte* **= -1,**
unsigned long *storageOpts* **= 0)**

size
The amount of storage being requested, in bytes

initByte
The initial setting of all bytes in the allocated storage

storageOpts
An enumeration, defined in **IccTask** class, that affects the way that CICS allocates storage.

Conditions

LENGERR, NOSTG

instance

Returns a pointer to the singleton **IccSystem** object. The object is created if it does not already exist.

static IccSystem* instance()

operatingSystem

char operatingSystem()

Returns a 1-character value that identifies the operating system under which CICS is running:

A AIX

N Windows

X z/OS

Conditions

NOTAUTH

operatingSystemLevel

Returns a halfword binary field giving the release number of the operating system under which CICS is running. The value returned is ten times the formal release number (the version number is not represented). For example, MVS/ESA Version 3 Release 2.1 would produce a value of 21.

unsigned short operatingSystemLevel()

Conditions

NOTAUTH

release

Returns the level of the CICS system as an integer set to 100 multiplied by the version number plus 10 multiplied by the release level. For example, CICS Transaction Server for z/OS Version 4 Release 2 returns 670.

unsigned long release()

Conditions

NOTAUTH

releaseText

Returns the same as **release**, except as a 4-character string. For example, CICS Transaction Server for z/OS [Version 1] Release 3 would return "0130".

const char* releaseText()

Conditions

NOTAUTH

sysId

Returns a reference to the **IccSysId** object that identifies this CICS system.

IccSysId& sysId()

Conditions

INVREQ

workArea

Returns a reference to the **IccBuf** object that holds the work area for the CICS system.

const IccBuf& workArea()

Conditions

INVREQ

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

ResourceType

- autoInstallModel
- connection
- dataQueue

- exitProgram
- externalDataSet
- file
- journal
- modename
- partner
- profile
- program
- requestId
- systemDumpCode
- tempStore
- terminal
- transactionDumpCode
- transaction
- transactionClass

Chapter 53. IccTask class

IccTask is a singleton class used to invoke task related CICS services.

IccBase
  IccResource
    IccTask

Header file: ICCTSKEH

Sample: ICC$TSK

IccTask Constructor (protected)

Constructor

IccTask()

Public methods

These are the public methods in this class.

The opt parameter

Many methods have the same parameter, *opt*, which is described under the **abendCode** method in"abendCode" on page 77.

abend

Requests CICS to abend this task.

void abend (const char* *abendCode* **= 0,**
AbendHandlerOpt *opt1* **=** respectAbendHandler**,**
AbendDumpOpt *opt2* **=** createDump**)**

abendCode
The 4-character abend code

opt1
An enumeration, defined in this class, that indicates whether to respect or ignore any abend handling program specified by **setAbendHandler** method in **IccControl** class

opt2
An enumeration, defined in this class, that indicates whether a dump is to be created.

© Copyright IBM Corp. 1989, 2015

abendData

IccAbendData* abendData()

Returns a pointer to an **IccAbendData** object that contains information about the program abends, if any, that relate to this task.

commitUOW

void commitUOW()

Commit the resource updates within the current UOW for this task. This also causes a new UOW to start for subsequent resource update activity.

Conditions

INVREQ, ROLLEDBACK

delay

Requests that this task be delayed for an interval of time, or until a specific time.

```
void delay (const IccTime& time,
            const IccRequestId* reqId = 0)
```

time
A reference to an object that contains information about the delay time. The object can be one of these types:

IccAbsTime
Expresses time as the number of milliseconds since the beginning of the year 1900.

IccTimeInterval
Expresses an interval of time, such as 3 hours, 2 minutes, and 1 second.

IccTimeOfDay
Expresses a time of day, such as 13 hours, 30 minutes (1-30 pm).

reqId
An optional pointer to an **IccRequestId** object that can be used to cancel an unexpired delay request.

Conditions

EXPIRED, INVREQ

dump

Requests CICS to take a memory dump for this task. (See also **setDumpOpts**.) Returns the character identifier of the dump.

```
const char* dump (const char* dumpCode,
                  const IccBuf* buf = 0)
```

dumpCode
A 4-character label that identifies this dump

buf
A pointer to the **IccBuf** object that contains additional data to be included in the dump.

Conditions

INVREQ, IOERR, NOSPACE, NOSTG, NOTOPEN, OPENERR, SUPPRESSED

enterTrace

Writes a user trace entry in the CICS trace table.

```
void enterTrace (unsigned short traceNum,
                 const char* resource = 0,
                 IccBuf* data = 0,
                 TraceOpt opt = normal)
```

traceNum
The trace identifier for a user trace table entry; a value in the range 0 through 199.

resource
An 8-character name to be entered in the resource field of the trace table entry.

data
A pointer to the **IccBuf** object containing data to be included in the trace record.

opt
An enumeration, defined in this class, that indicates whether tracing should be normal or whether only exceptions should be traced.

Conditions

INVREQ, LENGERR

facilityType

Returns an enumeration, defined in this class, that indicates what type of principal facility this task has. This is usually a terminal, such as when the task was started by someone keying a transaction name on a CICS terminal. It is a session if the task is the back end of a mapped APPC conversation.

FacilityType facilityType()

Conditions

INVREQ

freeStorage

Releases the storage obtained by the **IccTask getStorage** method.

void freeStorage(void* pStorage)

Conditions

INVREQ

getStorage

Obtains a block of storage of the requested size. The storage is released automatically at the end of task, or when the **freeStorage** operation is performed. See also **getStorage** on page "getStorage" on page 225 in **IccSystem**class.

```
void* getStorage (unsigned long size,
                  char initByte = -1,
                  unsigned short storageOpts = 0)
```

size
The amount of storage being requested, in bytes

initByte
The initial setting of all bytes in the allocated storage

storageOpts
An enumeration, defined in this class, that affects the way that CICS allocates storage.

Conditions

LENGERR, NOSTG

instance

Returns a pointer to the singleton **IccTask** object. The object is created if it does not already exist.

static IccTask* instance();

isCommandSecurityOn

Icc::Bool isCommandSecurityOn()

Returns a boolean, defined in **Icc** structure, that indicates whether this task is subject to command security checking.

Conditions

INVREQ

isCommitSupported

Returns a boolean, defined in **Icc** structure that indicates whether this task can support the **commit** method. This method returns true in most environments; the exception to this is in a DPL environment (see **link** on page "link" on page 176 in **IccProgram**).

Icc::Bool isCommitSupported()

Conditions

INVREQ

isResourceSecurityOn

Returns a boolean, defined in **Icc** structure, that indicates whether this task is subject to resource security checking.

Icc::Bool isResourceSecurityOn()

Conditions

INVREQ

isRestarted

Returns a boolean, defined in **Icc** structure, that indicates whether this task has been automatically restarted by CICS.

Icc::Bool isRestarted()

Conditions

INVREQ

isStartDataAvailable

Returns a boolean, defined in **Icc** structure, that indicates whether start data is available for this task. See the **retrieveData** method in **IccStartRequestQ** class if start data is available.

Icc::Bool isStartDataAvailable()

Conditions

INVREQ

number

Returns the number of this task, unique within the CICS system.

unsigned long number() const

principalSysId

IccSysId& principalSysId(Icc::GetOpt *opt* **=** Icc::object**)**

Returns a reference to an **IccSysId** object that identifies the principal system identifier for this task.

Conditions

INVREQ

priority

Returns the priority for this task.

unsigned short priority(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

rollBackUOW

Roll back (backout) the resource updates associated with the current UOW within this task.

void rollBackUOW()

Conditions

INVREQ, ROLLEDBACK

setDumpOpts

Set the dump options for this task. This method affects the behavior of the **dump** method defined in this class.

void setDumpOpts(unsigned long *opts* = dDefault)

opts
An integer, made by adding or logically ORing values from the **DumpOpts** enumeration, defined in this class.

setPriority

Changes the dispatch priority of this task.

void setPriority(unsigned short *pri*)

pri
The new priority.

Conditions

INVREQ

setWaitText

Sets the text that will appear when someone inquires on this task while it is suspended as a result of a **waitExternal** or **waitOnAlarm** method call.

void setWaitText(const char* *name*)

name
The 8-character string label that indicates why this task is waiting.

startType

StartType startType()

Returns an enumeration, defined in this class, that indicates how this task was started.

Conditions

INVREQ

suspend

Suspend this task, allowing other tasks to be dispatched.

void suspend()

transId

const IccTransId& transId()

Returns the **IccTransId** object representing the transaction name of this CICS task.

triggerDataQueueId

const IccDataQueueId& triggerDataQueueId()

Returns a reference to the **IccDataQueueId** representing the trigger queue, if this task was started as a result of data arriving on an **IccDataQueue**. See **startType** method.

Conditions

INVREQ

userId

Returns the ID of the user associated with this task.

const IccUserId& userId(Icc::GetOpt *opt* = Icc::object)

opt
An enumeration, defined in **Icc** structure, that indicates whether the information already existing in the object is to be used or whether it is to be refreshed from CICS.

Conditions

INVREQ

waitExternal

Waits for events that post Event Control Blocks (ECBs). The call causes the issuing task to be suspended until one of the ECBs has been posted—that is, one of the events has occurred. The task can wait on more than one ECB and can be dispatched as soon as any of them are posted.

for more information about ECB, see WAIT EXTERNAL.

void waitExternal (long** *ECBList*,
unsigned long *numEvents*,
WaitPurgeability *opt* **=** purgeable,
WaitPostType *type* **=** MVSPost**)**

ECBList
A pointer to a list of ECBs that represent events.

numEvents
The number of events in *ECBList*.

opt
An enumeration, defined in this class, that indicates whether the wait is purgeable.

type
An enumeration, defined in this class, that indicates whether the post type is a standard MVS POST.

Conditions

INVREQ

waitOnAlarm

Suspends the task until the alarm goes off (expires).

See also "setAlarm" on page 107 in **IccClock**.

void waitOnAlarm(const IccAlarmRequestId& *id*)

id
A reference to the **IccAlarmRequestId** object that identifies a particular alarm request.

Conditions

INVREQ

workArea

Returns a reference to the **IccBuf** object that holds the work area for this task.

IccBuf& workArea()

Conditions

INVREQ

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource

Method	Class
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

AbendHandlerOpt

respectAbendHandler
Allows control to be passed to an abend handling program if one is in effect.

ignoreAbendHandler
Does not allow control to be passed to any abend handling program that may be in effect.

AbendDumpOpt

createDump
Take a transaction dump when servicing an abend request.

suppressDump
Do not take a transaction dump when servicing an abend request.

DumpOpts

The values may be added, or bitwise ORed, together to get the intended combination.

The values may be added, or bitwise ORed, together to get the intended combination. For example `IccTask::dProgram + IccTask::dDCT + IccTask::dSIT`.

dDefault

dComplete

dTask

dStorage

dProgram

dTerminal

dTables

dDCT

dFCT

dPCT

dPPT

dSIT

dTCT

dTRT

FacilityType

none The task has no principal facility, that is, it is a background task.

terminal
This task has a terminal as its principal facility.

session
This task has a session as its principal facility, that is, it was probably started as a back-end DTP program.

dataqueue
This task has a transient data queue as its principal facility.

StartType

DPL Distributed program link request

dataQueueTrigger
Trigger by data arriving on a data queue

startRequest
Started as a result of an asynchronous start request. See **IccStartRequestQ** class.

FEPIRequest
Front end programming interface. See *CICS Front End Programming Interface User's Guide*.

terminalInput
Started via a terminal input

CICSInternalTask
Started by CICS.

StorageOpts

ifSOSReturnCondition
If insufficient space is available, return NOSTG condition instead of blocking the task.

below
Allocate storage below the 16Mb line.

userDataKey
Allocate storage in the USER data key.

CICSDataKey
Allocate storage in the CICS data key.

TraceOpt

normal
The trace entry is a standard entry.

exception
The trace entry is an exception entry.

WaitPostType

MVSPost
ECB is posted using the MVS POST service.

handPost
ECB is hand posted (that is, using some method other than the MVS POST service).

WaitPurgeability

purgeable
Task can be purged via a system call.

notPurgeable
Task cannot be purged via a system call.

Chapter 54. IccTempStore class

IccTempStore objects are used to manage the temporary storage of data.

IccBase
  IccResource
    IccTempStore

(**IccTempStore** data can exist between transaction calls.)

Header file: ICCTMPEH

Sample: ICC$TMP

IccTempStore constructors

Constructor (1)

IccTempStore (const IccTempStoreId& *id*,
Location *loc* **= auxStorage)**

id
Reference to an **IccTempStoreId** object

loc
An enumeration, defined in this class, that indicates where the storage is to be located when it is first created. The default is to use auxiliary storage (disk).

Constructor (2)

IccTempStore (const char* *storeName*,
Location *loc* **= auxStorage)**

storeName
Specifies the 8-character name of the queue to be used. The name must be unique within the CICS system.

loc
An enumeration, defined in this class, that indicates where the storage is to be located when it is first created. The default is to use auxiliary storage (disk).

Public methods

These are the public methods in this class.

The opt parameter

Many methods have the same parameter, *opt*, which is described under the **abendCode** method in"abendCode" on page 77.

© Copyright IBM Corp. 1989, 2015

clear

A synonym for **empty**. See Chapter 10, "Polymorphic Behavior," on page 59 for information on polymorphism.

virtual void clear()

empty

void empty()

Deletes all the temporary data associated with the **IccTempStore** object and deletes the associated TD queue.

Conditions

INVREQ, ISCINVREQ, NOTAUTH, QIDERR, SYSIDERR

get

A synonym for **readNextItem**. See Chapter 10, "Polymorphic Behavior," on page 59 for information on polymorphism.

virtual const IccBuf& get()

numberOfItems

unsigned short numberOfItems() const

Returns the number of items in temporary storage. This is only valid after a successful **writeItem** call.

put

A synonym for **writeItem**. See Chapter 10, "Polymorphic Behavior," on page 59 for information on polymorphism.

virtual void put(const IccBuf& *buffer*)

buffer
A reference to an **IccBuf** object that contains the data that is to be added to the end of the temporary storage queue.

readItem

Reads the specified item from the temporary storage queue and returns a reference to the **IccBuf** object that contains the information.

const IccBuf& readItem(unsigned short *itemNum*)

itemNum
Specifies the item number of the logical record to be retrieved from the queue.

Conditions

INVREQ, IOERR, ISCINVREQ, ITEMERR, LENGERR, NOTAUTH, QIDERR, SYSIDERR

readNextItem

Reads the next item from a temporary storage queue and returns a reference to the **IccBuf** object that contains the information.

const IccBuf& readNextItem()

Conditions

INVREQ, IOERR, ISCINVREQ, ITEMERR, LENGERR, NOTAUTH, QIDERR, SYSIDERR

rewriteItem

The parameters are:This method updates the specified item in the temporary storage queue.

void rewriteItem (unsigned short *itemNum*,
const IccBuf& *item*,
NoSpaceOpt *opt* = suspend**)**

itemNum
Specifies the item number of the logical record that is to be modified

item
The name of the **IccBuf** object that contains the update data.

opt
An enumeration, defined in this class, that indicates whether the application program is to be suspended if a shortage of space in the queue prevents the record being added. suspend is the default.

Conditions

INVREQ, IOERR, ISCINVREQ, ITEMERR, LENGERR, NOSPACE, NOTAUTH, QIDERR, SYSIDERR

writeItem (1)

unsigned short writeItem (const IccBuf& *item*,
NoSpaceOpt *opt* = suspend**)**

item
The name of the **IccBuf** object that contains the data that is to added to the end of the temporary storage queue.

opt
An enumeration, defined in this class, that indicates whether the application program is to be suspended if a shortage of space in the queue prevents the record being added. suspend is the default.

writeItem (2)

This method adds a new record at the end of the temporary storage queue. The returned value is the item number that was created (if this was done successfully).

unsigned short writeItem (const char* *text*,
NoSpaceOpt *opt* = suspend**)**

text
The text string that is to added to the end of the temporary storage queue.

opt
An enumeration, defined in this class, that indicates whether the application program is to be suspended if a shortage of space in the queue prevents the record being added. suspend is the default.

Conditions

INVREQ, IOERR, ISCINVREQ, ITEMERR, LENGERR, NOSPACE, NOTAUTH, QIDERR, SYSIDERR

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
className	IccBase
classType	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
isRouteOptionOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
routeOption	IccResource
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource
setRouteOption	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

Location

auxStorage
Temporary store data is to reside in auxiliary storage (disk).

memory
Temporary store data is to reside in memory.

NoSpaceOpt

Take this action if a shortage of space in the queue prevents the record being added immediately.

suspend
Suspend the application program.

returnCondition
Do not suspend the application program, but raise the NOSPACE condition instead.

Chapter 55. IccTempStoreId class

IccTempStoreId class is used to identify a temporary storage name in the CICS system.

IccBase
  IccResourceId
    IccTempStoreId

Header file: ICCRIDEH

IccTempStoreId constructors

Constructor (1)

IccTempStoreId(const char* *name***)**

name
The 8-character name of the temporary storage entry.

Constructor (2)

The copy constructor.

IccTempStoreId(const IccTempStoreId& *id***)**

id
A reference to an **IccTempStoreId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccTempStoreId& operator=(const char* *name*)

name
The 8-character name of the temporary storage entry.

operator= (2)

Assigns a new value.

IccTempStoreId& operator=(const IccTempStoreId& *id***)**

id
A reference to an **IccTempStoreId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 56. IccTermId class

IccTermId class is used to identify a terminal name in the CICS system.

IccBase
  IccResourceId
    IccTermId

Header file: ICCRIDEH

IccTermId constructors

Constructor (1)

IccTermId(const char* *name***)**

name
The 4-character name of the terminal

Constructor (2)

The copy constructor.

IccTermId(const IccTermId& *id***)**

id
A reference to an **IccTermId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccTermId& operator=(const char* *name*)

name
The 4-character name of the terminal

operator= (2)

Assigns a new value.

IccTermId& operator=(const IccTermId& *id***)**

id
A reference to an **IccTermId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 57. IccTerminal class

This is a singleton class that represents the terminal that belongs to the CICS task. It can only be created if the transaction has a 3270 terminal as its principal facility, otherwise an exception is thrown.

IccBase
IccResource
IccTerminal

Header file: ICCTRMEH

Sample: ICC$TRM

IccTerminal constructor (protected)

Constructor

IccTerminal()

Public methods

These are the public methods in this class.

The opt parameter

Many methods have the same parameter, *opt*, which is described under the **abendCode** method in"abendCode" on page 77.

AID

Returns an enumeration, defined in this class, that indicates which AID (action identifier) key was last pressed at this terminal.

AIDVal AID()

clear

virtual void clear()

A synonym for **erase**. See Chapter 10, "Polymorphic Behavior," on page 59 for information on polymorphism.

cursor

unsigned short cursor()

Returns the current cursor position as an offset from the upper-left corner of the screen.

© Copyright IBM Corp. 1989, 2015

data

IccTerminalData* data()

Returns a pointer to an **IccTerminalData** object that contains information about the characteristics of the terminal. The object is created if it does not already exist.

erase

void erase()

Erase all the data displayed at the terminal.

Conditions

INVREQ, INVPARTN

freeKeyboard

Frees the keyboard so that the terminal can accept input.

void freeKeyboard()

Conditions

INVREQ, INVPARTN

get

A synonym for **receive**. See Chapter 10, “Polymorphic Behavior,” on page 59 for information on polymorphism.

virtual const IccBuf& get()

height

unsigned short height(Icc::getopt *opt* = Icc::object)

Returns how many lines the screen holds.

Conditions

INVREQ

inputCursor

Returns the position of the cursor on the screen.

unsigned short inputCursor()

instance

static IccTerminal* instance()

Returns a pointer to the single **IccTerminal** object. The object is created if it does not already exist.

line

unsigned short line()

Returns the current line number of the cursor from the beginning of the screen.

netName

const char* netName()

Returns the 8-byte string representing the network logical unit name of the principal facility.

operator« (1)

Sets the foreground color for data subsequently sent to the terminal.

IccTerminal& operator « (Color *color*)

operator« (2)

Sets the highlighting used for data subsequently sent to the terminal.

IccTerminal& operator « (Highlight *highlight***)**

operator« (3)

Writes another buffer.

IccTerminal& operator « (const IccBuf& *buffer***)**

operator« (4)

Writes a character.

IccTerminal& operator « (char *ch***)**

operator« (5)

Writes a character.

IccTerminal& operator « (signed char *ch***)**

operator« (6)

Writes a character.

IccTerminal& operator « (unsigned char *ch***)**

operator« (7)

Writes a string.

IccTerminal& operator « (const char* *text***)**

operator« (8)

Writes a string.

IccTerminal& operator « (const signed char* *text***)**

operator« (9)

Writes a string.

IccTerminal& operator « (const unsigned char* *text***)**

operator« (10)

Writes a short.

IccTerminal& operator « (short *num***)**

operator« (11)

Writes an unsigned short.

IccTerminal& operator « (unsigned short *num***)**

operator« (12)

Writes a long.

IccTerminal& operator « (long *num***)**

operator« (13)

Writes an unsigned long.

IccTerminal& operator « (unsigned long *num***)**

operator« (14)

Writes an integer.

IccTerminal& operator « (int *num***)**

operator« (15)

Writes a float.

IccTerminal& operator « (float *num***)**

operator« (16)

Writes a double.

IccTerminal& operator « (double *num***)**

operator« (17)

Writes a long double.

IccTerminal& operator « (long double *num***)**

operator« (18)

IccTerminal& operator « (IccTerminal& (*f)(IccTerminal&))

Enables the following syntax:

```
Term « "Hello World" « endl;
Term « "Hello again" « flush;
```

put

virtual void put(const IccBuf& *buf*)

A synonym for **sendLine**. See Chapter 10, “Polymorphic Behavior,” on page 59 for information on polymorphism.

receive

Receives data from the terminal

const IccBuf& receive(Case *caseOpt* **=** upper**)**

caseOpt
An enumeration, defined in this class, that indicates whether text is to be converted to uppercase.

Conditions

EOC, INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

receive3270Data

Receives the 3270 data buffer from the terminal

const IccBuf& receive3270Data(Case *caseOpt* **=** upper**)**

caseOpt
An enumeration, defined in this class, that indicates whether text is to be converted to uppercase.

Conditions

INVREQ, LENGERR, TERMERR

send (1)

void send(const IccBuf& *buffer*)

buffer
A reference to an **IccBuf** object that holds the data that is to be sent.

send (2)

void send (const char* *format***,**
...)

format
A format string, as in the **printf** standard library function.

...
The optional arguments that accompany *format*.

send (3)

void send (unsigned short *row***,**
unsigned short *col***,**
const IccBuf& *buffer***)**

row
The row where the writing of the data is started.

col
The column where the writing of the data is started.

buffer
A reference to an **IccBuf** object that holds the data that is to be sent.

send (4)

Writes the specified data to either the current cursor position or to the cursor position specified by the arguments.

void send (unsigned short *row*,
unsigned short *col*,
const char* *format*,
...)

row
The row where the writing of the data is started.

col
The column where the writing of the data is started.

format
A format string, as in the **printf** standard library function.

...
The optional arguments that accompany *format*.

Conditions

INVREQ, LENGERR, TERMERR

send3270Data (1)

void send3270Data(const IccBuf& *buffer*)

buffer
A reference to an **IccBuf** object that holds the data that is to be sent.

send3270Data (2)

void send3270 Data(const char* *format*,
...)

format
A format string, as in the **printf** standard library function

...
The optional arguments that accompany *format*.

send3270Data (3)

void send3270Data (unsigned short *col*,
const IccBuf& *buf***)**

col
The column where the writing of the data is started

buffer
A reference to an **IccBuf** object that holds the data that is to be sent.

send3270Data (4)

Writes the specified data to either the next line of the terminal or to the specified column of the current line.

void send3270Data (unsigned short *col*,
const char* *format*,
...)

col
The column where the writing of the data is started

format
A format string, as in the **printf** standard library function

...
The optional arguments that accompany *format*.

Conditions

INVREQ, LENGERR, TERMERR

sendLine (1)

void sendLine(const IccBuf&*buffer***)**

buffer
A reference to an **IccBuf** object that holds the data that is to be sent.

sendLine (2)

void sendLine (const char* *format*,
...)

format
A format string, as in the **printf** standard library function

...
The optional arguments that accompany *format*.

sendLine (3)

void sendLine (unsigned short *col*,
const IccBuf& *buf***)**

col
The column where the writing of the data is started

buffer
A reference to an **IccBuf** object that holds the data that is to be sent.

sendLine (4)

Writes the specified data to either the next line of the terminal or to the specified column of the current line.

void sendLine (unsigned short *col*,
const char* *format*,
...)

col
The column where the writing of the data is started

format
A format string, as in the **printf** standard library function

...
The optional arguments that accompany *format*.

Conditions

INVREQ, LENGERR, TERMERR

setColor

Changes the color of the text subsequently sent to the terminal.

void setColor(Color *color*=defaultColor)

color
An enumeration, defined in this class, that indicates the color of the text that is written to the screen.

setCursor (1)

void setCursor(unsigned short *offset*)

offset
The position of the cursor where the upper-left corner is 0.

setCursor (2)

Two different ways of setting the position of the cursor on the screen.

void setCursor (unsigned short *row*,
unsigned short *col*)

row
The row number of the cursor where the top row is 1

col
The column number of the cursor where the left column is 1

Conditions

INVREQ, INVPARTN

setHighlight

Changes the higlighting of the data subsequently sent to the terminal.

void setHighlight(Highlight *highlight* = normal)

highlight
An enumeration, defined in this class, that indicates the highlighting of the text that is written to the screen.

setLine

Moves the cursor to the start of line *lineNum*, where 1 is the first line of the terminal. The default is to move the cursor to the start of line 1.

void setLine(unsigned short *lineNum* = 1)

lineNum
The line number, counting from the start.

Conditions

INVREQ, INVPARTN

setNewLine

Requests that *numLines* blank lines be sent to the terminal.

void setNewLine(unsigned short *numLines* = 1)

numLines
The number of blank lines.

Conditions

INVREQ, INVPARTN

setNextCommArea

Specifies the COMMAREA that is to be passed to the next transaction started on this terminal.

void setNextCommArea(const IccBuf& *commArea*)

commArea
A reference to the buffer that is to be used as a COMMAREA.

setNextInputMessage

Specifies data that is to be made available, by the **receive** method, to the next transaction started at this terminal.

void setNextInputMessage(const IccBuf& *message*)

message
A reference to the buffer that holds the input message.

setNextTransId

Specifies the next transaction that is to be started on this terminal.

void setNextTransId (const IccTransId& *transid*,
NextTransIdOpt *opt* = queue**)**

transid
A reference to the **IccTransId** object that holds the name of a transaction

opt
An enumeration, defined in this class, that indicates whether *transId* should be queued or started immediately (that is, it should be the very next transaction) at this terminal.

signoff

void signoff()

Signs off the user who is currently signed on. Authority reverts to the default user.

Conditions

INVREQ

signon (1)

```
void signon (const IccUserId& id,
             const char* password = 0,
             const char* newPassword = 0)
```

id
A reference to an **IccUserId** object

password
The 8-character existing password.

newPassword
An optional 8-character new password.

signon (2)

Signs the user on to the terminal.

```
void signon (IccUser& user,
             const char* password = 0,
             const char* newPassword = 0)
```

user
A reference to an **IccUser** object

password
The 8-character existing password.

newPassword
An optional 8-character new password. This method differs from the first **signon** method in that the **IccUser** object is interrogated to discover **IccGroupId** and language information. The object is also updated with language and ESM return and response codes.

Conditions

INVREQ, NOTAUTH, USERIDERR

waitForAID (1)

Waits for any input and returns an enumeration, defined in this class, that indicates which AID key is expected.

AIDVal waitForAID()

waitForAID (2)

Waits for the specified AID key to be pressed, before returning control. This method loops, receiving input from the terminal, until the correct AID key is pressed by the operator.

void waitForAID(AIDVal *aid***)**

aid
An enumeration, defined in this class, that indicates which AID key was last pressed.

Conditions

EOC, INVREQ, LENGERR, NOTALLOC, SIGNAL, TERMERR

width

Returns the width of the screen in characters.

unsigned short width(Icc::getopt *opt* **=** Icc::object**)**

Conditions

INVREQ

workArea

Returns a reference to the **IccBuf** object that holds the terminal work area.

IccBuf& workArea()

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource

Method	Class
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

AIDVal

ENTER

CLEAR

PA1 to PA3

PF1 to PF24

Case

upper

mixed

Color

defaultColor

blue

red

pink

green

cyan

yellow

neutral

Highlight

defaultHighlight

blink

reverse

underscore

NextTransIdOpt

queue
Queue the transaction with any other outstanding starts queued on the terminal.

immediate
Start the transaction immediately, that is, before any other outstanding starts queued on the terminal.

Chapter 58. IccTerminalData class

IccBase
IccResource
IccTerminalData

IccTerminalData is a singleton class owned by **IccTerminal** (see **data** on page "data" on page 252 in **IccTerminal** class). **IccTerminalData** contains information about the terminal characteristics.

Header file: ICCTMDEH

Sample: ICC$TRM

IccTerminalData constructor (protected)

Constructor

IccTerminalData()

Public methods

These are the public methods in this class.

The opt parameter

Many methods have the same parameter, *opt*, which is described under the **abendCode** method in"abendCode" on page 77.

alternateHeight

Returns the alternate height of the screen, in lines.

unsigned short alternateHeight(Icc::GetOpt *opt* **=** Icc::object**)**

opt
An enumeration that indicates whether the information in the object should be refreshed from CICS before being extracted. The default is not to refresh.

Conditions

INVREQ

alternateWidth

Returns the alternate width of the screen, in characters.

unsigned short alternateWidth(Icc::GetOpt *opt* **=** Icc::object**)**

© Copyright IBM Corp. 1989, 2015

Conditions

INVREQ

defaultHeight

Returns the default height of the screen, in lines.

unsigned short defaultHeight(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

defaultWidth

Returns the default width of the screen, in characters.

unsigned short defaultWidth(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

graphicCharCodeSet

Returns the binary code page global identifier as a value in the range 1 to 65534, or 0 for a non-graphics terminal.

unsigned short graphicCharCodeSet(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

graphicCharSetId

Returns the graphic character set global identifier as a number in the range 1 to 65534, or 0 for a non-graphics terminal.

unsigned short graphicCharSetId(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isAPLKeyboard

Returns a boolean that indicates whether the terminal has the APL keyboard feature.

Icc::Bool isAPLKeyboard(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isAPLText

Returns a boolean that indicates whether the terminal has the APL text feature.

Icc::Bool isAPLText(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isBTrans

Returns a boolean that indicates whether the terminal has the background transparency capability.

Icc::Bool isBTrans(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isColor

Returns a boolean that indicates whether the terminal has the extended color capability.

Icc::Bool isColor(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isEWA

Returns a Boolean that indicates whether the terminal supports Erase Write Alternative.

Icc::Bool isEWA(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isExtended3270

Returns a Boolean that indicates whether the terminal supports the 3270 extended data stream.

Icc::Bool isExtended3270(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isFieldOutline

Returns a boolean that indicates whether the terminal supports field outlining.

Icc::Bool isFieldOutline(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isGoodMorning

Returns a boolean that indicates whether the terminal has a 'good morning' message.

Icc::Bool isGoodMorning(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isHighlight

Returns a boolean that indicates whether the terminal has extended highlight capability.

Icc::Bool isHighlight(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isKatakana

Returns a boolean that indicates whether the terminal supports Katakana.

Icc::Bool isKatakana(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isMSRControl

Returns a boolean that indicates whether the terminal supports magnetic slot reader control.

Icc::Bool isMSRControl(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isPS

Returns a boolean that indicates whether the terminal supports programmed symbols.

Icc::Bool isPS(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isSOSI

Returns a boolean that indicates whether the terminal supports mixed EBCDIC/DBCS fields.

Icc::Bool isSOSI(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isTextKeyboard

Returns a boolean that indicates whether the terminal supports TEXTKYBD.

Icc::Bool isTextKeyboard(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isTextPrint

Returns a boolean that indicates whether the terminal supports TEXTPRINT.

Icc::Bool isTextPrint(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

isValidation

Returns a boolean that indicates whether the terminal supports validation.

Icc::Bool isValidation(Icc::GetOpt *opt* **=** Icc::object**)**

Conditions

INVREQ

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 59. IccTime class

IccTime is used to contain time information and is the base class from which **IccAbsTime**, **IccTimeInterval**, and **IccTimeOfDay** classes are derived.

IccBase
    IccResource
        IccTime

Header file: ICCTIMEH

IccTime constructor (protected)

Constructor

```
IccTime (unsigned long hours = 0,
         unsigned long minutes = 0,
         unsigned long seconds = 0)
```

hours
The number of hours

minutes
The number of minutes

seconds
The number of seconds

Public methods

These are the public methods in this class.

hours

Returns the hours component of time—the value specified in the constructor.

virtual unsigned long hours() const

minutes

virtual unsigned long minutes() const

Returns the minutes component of time—the value specified in the constructor.

seconds

virtual unsigned long seconds() const

Returns the seconds component of time—the value specified in the constructor.

© Copyright IBM Corp. 1989, 2015

timeInHours

virtual unsigned long timeInHours()

Returns the time in hours.

timeInMinutes

virtual unsigned long timeInMinutes()

Returns the time in minutes.

timeInSeconds

virtual unsigned long timeInSeconds()

Returns the time in seconds.

type

Type type() const

Returns an enumeration, defined in this class, that indicates what type of subclass of **IccTime** this is.

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
className	IccBase
classType	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
isEDFOn	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Enumerations

Type

absTime
The object is of **IccAbsTime** class. It is used to represent a current date and time as the number of milliseconds that have elapsed since the beginning of the year 1900.

timeInterval
The object is of **IccTimeInterval** class. It is used to represent a length of time, such as 5 minutes.

timeOfDay
The object is of **IccTimeOfDay** class. It is used to represent a particular time of day, such as midnight.

Chapter 60. IccTimeInterval class

This class holds information about a time interval.

IccBase
IccResource
IccTime
IccTimeInterval

Header file: ICCTIMEH

IccTimeInterval constructors

Constructor (1)

IccTimeInterval (unsigned long *hours* **= 0,**
unsigned long *minutes* **= 0,**
unsigned long *seconds* **= 0)**

hours
The initial hours setting. The default is 0.

minutes
The initial minutes setting. The default is 0.

seconds
The initial seconds setting. The default is 0.

Constructor (2)

The copy constructor.

IccTimeInterval(const IccTimeInterval& *time***)**

Public methods

These are the public methods in this class.

operator=

Assigns one **IccTimeInterval** object to another.

IccTimeInterval& operator=(const IccTimeInterval& *timeInterval*)

set

Changes the time held in the **IccTimeInterval** object.

void set (unsigned long *hours*,
unsigned long *minutes*,
unsigned long *seconds***)**

© Copyright IBM Corp. 1989, 2015

hours
The new hours setting

minutes
The new minutes setting

seconds
The new seconds setting

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
hours	IccTime
isEDFOn	IccResource
minutes	IccTime
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource
timeInHours	IccTime
timeInMinutes	IccTime
timeInSeconds	IccTime
type	IccTime

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 61. IccTimeOfDay class

This class holds information about the time of day.

IccBase
  IccResource
    IccTime
      IccTimeOfDay

Header file: ICCTIMEH

IccTimeOfDay constructors

Constructor (1)

IccTimeOfDay (unsigned long *hours* **= 0,**
unsigned long *minutes* **= 0,**
unsigned long *seconds* **= 0)**

hours
The initial hours setting. The default is 0.

minutes
The initial minutes setting. The default is 0.

seconds
The initial seconds setting. The default is 0.

Constructor (2)

The copy constructor

IccTimeOfDay(const IccTimeOfDay& *time***)**

Public methods

These are the public methods in this class.

operator=

Assigns one **IccTimeOfDay** object to another.

IccTimeOfDay& operator=(const IccTimeOfDay& *timeOfDay*)

set

Changes the time held in the **IccTimeOfDay** object.

void set (unsigned long *hours*,
unsigned long *minutes*,
unsigned long *seconds*)

© Copyright IBM Corp. 1989, 2015

hours
The new hours setting

minutes
The new minutes setting

seconds
The new seconds setting

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
hours	IccTime
isEDFOn	IccResource
minutes	IccTime
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource
timeInHours	IccTime
timeInMinutes	IccTime
timeInSeconds	IccTime
type	IccTime

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 62. IccTPNameId class

IccTPNameId class holds a 1-64 byte TP partner name.

IccBase
  IccResourceId
    IccTPNameId

IccTPNameId class holds a 1-64 byte TP partner name.

Header file: ICCRIDEH

IccTPNameId constructors

Constructor (1)

IccTPNameId(const char* *name***)**

name
The 1- to 64-character TP name.

Constructor (2)

The copy constructor.

IccTPNameId(const IccTPNameId& *id***)**

id A reference to an **IccTPNameId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccTPNameId& operator=(const char* *name*)

name
The 1- to 64-character TP name.

operator= (2)

Assigns a new value.

IccTPNameId& operator=(const IccTPNameId& *id***)**

id A reference to an **IccTPNameId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 63. IccTransId class

IccTransId class identifies a transaction name in the CICS system.

IccBase
  IccResourceId
    IccTransId

Header file: ICCRIDEH

IccTransId constructors

Constructor (1)

IccTransId(const char* *name***)**

name
The 4-character transaction name.

Constructor (2)

The copy constructor.

IccTransId(const IccTransId& *id***)**

id
A reference to an **IccTransId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccTransId& operator=(const char* *name*)

name
The 4-character transaction name.

operator= (2)

Assigns a new value.

IccTransId& operator=(const IccTransId& *id***)**

id
A reference to an **IccTransId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 64. IccUser class

This class represents a CICS user.

IccBase
IccResource
IccUser

Header file: ICCUSREH

Sample: ICC$USR

IccUser constructors

Constructor (1)

IccUser (const IccUserId& *id*,
const IccGroupId* *gid* **= 0)**

id
A reference to an **IccUserId** object that contains the user ID name

gid
An optional pointer to an **IccGroupId** object that contains information about the user's group ID.

Constructor (2)

IccUser (const char* *userName*,
const char* *groupName* **= 0)**

userName
The 8-character user ID

gid
The optional 8-character group ID.

Public methods

These are the public methods in this class.

changePassword

Attempts to change the user's password.

void changePassword (const char* *password*,
const char* *newPassword***)**

password
The user's existing password—a string of up to 8 characters

© Copyright IBM Corp. 1989, 2015

newPassword
The user's new password—a string of up to 8 characters.

Conditions

INVREQ, NOTAUTH, USERIDERR

daysUntilPasswordExpires

Returns the number of days before the password expires. This method is valid after a successful **verifyPassword** method call in this class.

unsigned short daysUntilPasswordExpires() const

ESMReason

unsigned long ESMReason() const

Returns the external security reason code of interest if a **changePassword** or **verifyPassword** method call is unsuccessful.

ESMResponse

unsigned long ESMResponse() const

Returns the external security response code of interest if a **changePassword** or **verifyPassword** method call is unsuccessful.

groupId

const IccGroupId& groupId() const

Returns a reference to the **IccGroupId** object that holds information on the user's group ID.

invalidPasswordAttempts

unsigned long invalidPasswordAttempts() const

Returns the number of times the wrong password has been entered for this user since the last successful signon. This method should only be used after a successful **verifyPassword** method.

language

const char* language() const

Returns the user's language after a successful call to **signon** in **IccTerminal**.

lastPasswordChange

const IccAbsTime& lastPasswordChange() const

Returns a reference to an **IccAbsTime** object that holds the time when the password was last changed. This method should only be used after a successful **verifyPassword** method.

lastUseTime

const IccAbsTime& lastUseTime() const

Returns a reference to an **IccAbsTime** object that holds the time when the user ID was last used. This method should only be used after a successful **verifyPassword** method.

passwordExpiration

const IccAbsTime& passwordExpiration() const

Returns a reference to an **IccAbsTime** object that holds the time when the password will expire. This method should only be used after a successful **verifyPassword** method.

setLanguage

void setLanguage(const char* *language*)

Sets the IBM-defined national language code that is to be associated with this user. This should be a three character value.

verifyPassword

void verifyPassword(const char* *password*)

Checks that the supplied password matches the password recorded by the external security manager for this **IccUser**.

Conditions

INVREQ, NOTAUTH, USERIDERR

Inherited public methods

These are the public methods inherited by this class.

Method	Class
actionOnCondition	IccResource
actionOnConditionAsChar	IccResource

Method	Class
actionsOnConditionsText	IccResource
classType	IccBase
className	IccBase
condition	IccResource
conditionText	IccResource
customClassNum	IccBase
handleEvent	IccResource
id	IccResource
isEDFOn	IccResource
name	IccResource
operator delete	IccBase
operator new	IccBase
setActionOnAnyCondition	IccResource
setActionOnCondition	IccResource
setActionsOnConditions	IccResource
setEDF	IccResource

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 65. IccUserId class

IccUserId class represents an 8-character user name.

IccBase
  IccResourceId
    IccUserId

IccUserId class represents an 8-character user name.

Header file: ICCRIDEH

IccUserId constructors

Constructor (1)

IccUserId(const char* *name***)**

name
The 8-character name of the user ID.

Constructor (2)

The copy constructor.

IccUserId(const IccUserId& *id***)**

id A reference to an **IccUserId** object.

Public methods

These are the public methods in this class.

operator= (1)

IccUserId& operator=(const char* *name*)

name
The 8-character name of the user ID.

operator= (2)

Assigns a new value.

IccUserId& operator=(const IccUserId& *id***)**

id A reference to an **IccUserId** object.

© Copyright IBM Corp. 1989, 2015

Inherited public methods

These are the public methods inherited by this class.

Method	Class
classType	IccBase
className	IccBase
customClassNum	IccBase
name	IccResourceId
nameLength	IccResourceId
operator delete	IccBase
operator new	IccBase

Inherited protected methods

These are the protected methods inherited by this class.

Method	Class
operator=	IccResourceId
setClassName	IccBase
setCustomClassNum	IccBase

Chapter 66. IccValue structure

This structure contains CICS-value data areas (CVDAs) as an enumeration.

Header file: ICCVALEH

Enumeration

Listing of valid CVDAs

Valid CVDAs are listed in the CVDAs and numeric values topics in the System Programming reference information.

© Copyright IBM Corp. 1989, 2015

Chapter 67. main function

You are recommended to include this code in your application.

It initializes the CICS Foundation Classes correctly, provides default exception handling, and releases allocated memory after it is finished. You may substitute your own variation of this **main** function, but this should rarely be necessary.

Source file: ICCMAIN

The stub has three functions:

1. It initializes the Foundation Classes environment. You can customize the way it does this by using #defines that control:
   - Memory management (see Chapter 11, "Storage management," on page 63)
   - Family Subset enforcement (see "FamilySubset" on page 74)
   - EDF enablement (see "Program debugging" on page 48)
2. It provides a default definition of a class **IccUserControl**, derived from **IccControl**, that includes a default constructor and **run** method.
3. It invokes the **run** method of the user's control object using a try-catch construct.

The following information is the functional part of the **main** code:

```
int main()                                          1

{
    Icc::initializeEnvironment(ICC_CLASS_MEMORY_MGMT,     2

                               ICC_FAMILY_SUBSET,
                               ICC_EDF_BOOL);
    try                                             3

    {
        ICC_USER_CONTROL control;                   4

        control.run();                              5

    }
    catch(IccException& exc)                        6

    {
        Icc::catchException(exc);                   7

    }
    catch(...)                                      8

    {
        Icc::unknownException();                    9

    }
    Icc::returnToCICS();                            10

}
```

1 This is the main C++ entry point.

© Copyright IBM Corp. 1989, 2015

2 This call initializes the environment and is essential. The three parameters have previously been defined to the defaults for the platform.

3 Run the user's application code, using **try** and **catch**, in case the application code does not catch exceptions.

4 Create control object.

5 Invoke **run** method of control object (defined as pure virtual in **IccControl**.

6 Catch any **IccException** objects not caught by the application.

7 Call this function to abend task.

8 Catch any other exceptions not caught by application.

9 Call this function to abend task.

10 Return control to CICS.

Part 4. Appendixes

© Copyright IBM Corp. 1989, 2015

Appendix A. Mapping EXEC CICS calls to Foundation Class methods

The following table shows the correspondence between CICS calls made using the EXEC CICS API and the equivalent calls from the Foundation Classes.

EXEC CICS	Class	Method
ABEND	IccTask	abend
ADDRESS COMMAREA	IccControl	commArea
ADDRESS CWA	IccSystem	workArea
ADDRESS EIB	No direct access to EIB: please use appropriate method on appropriate class.	
ADDRESS TCTUA	IccTerminal	workArea
ADDRESS TWA	IccTask	workArea
ALLOCATE	IccSession	allocate
ASKTIME	IccClock	update
ASSIGN ABCODE	IccAbendData	abendCode
ASSIGN ABDUMP	IccAbendData	isDumpAvaliable
ASSIGN ABPROGRAM	IccAbendData	programName
ASSIGN ALTSCRNHT	IccTerminalData	alternateHeight
ASSIGN ALTSCRNWD	IccTerminalData	alternateWidth
ASSIGN APLKYBD	IccTerminalData	isAPLKeyboard
ASSIGN APLTEXT	IccTerminalData	isAPLText
ASSIGN ASRAINTRPT	IccAbendData	ASRAInterrupt
ASSIGN ASRAKEY	IccAbendData	ASRAKeyType
ASSIGN ASRAPSW	IccAbendData	ASRAPSW
ASSIGN ASRAREGS	IccAbendData	ASRARegisters
ASSIGN ASRASPC	IccAbendData	ASRASpaceType
ASSIGN ASRASTG	IccAbendData	ASRAStorageType
ASSIGN APPLID	IccSystem	applName
ASSIGN BTRANS	IccTerminalData	isBTrans
ASSIGN CMDSEC	IccTask	isCommandSecurityOn
ASSIGN COLOR	IccTerminalData	isColor
ASSIGN CWALENG	IccSystem	workArea
ASSIGN DEFSCRNHT	IccTerminalData	defaultHeight
ASSIGN DEFSCRNWD	IccTerminalData	defaultWidth
ASSIGN EWASUPP	IccTerminalData	isEWA
ASSIGN EXTDS	IccTerminalData	isExtended3270
ASSIGN FACILITY	IccTerminal	name
ASSIGN FCI	IccTask	facilityType
ASSIGN GCHARS	IccTerminalData	graphicCharSetId

© Copyright IBM Corp. 1989, 2015

EXEC CICS	Class	Method
ASSIGN GCODES	IccTerminalData	graphicCharCodeSet
ASSIGN GMMI	IccTerminalData	isGoodMorning
ASSIGN HILIGHT	IccTerminalData	isHighlight
ASSIGN INITPARM	IccControl	initData
ASSIGN INITPARMLEN	IccControl	initData
ASSIGN INVOKINGPROG	IccControl	callingProgramId
ASSIGN KATAKANA	IccTerminalData	isKatakana
ASSIGN NETNAME	IccTerminal	netName
ASSIGN OUTLINE	IccTerminalData	isFieldOutline
ASSIGN ORGABCODE	IccAbendData	originalAbendCode
ASSIGN PRINSYSID	IccTask	principalSysId
ASSIGN PROGRAM	IccControl	programId
ASSIGN PS	IccTerminalData	isPS
ASSIGN QNAME	IccTask	triggerDataQueueId
ASSIGN RESSEC	IccTask	isResourceSecurityOn
ASSIGN RESTART	IccTask	isRestarted
ASSIGN SCRNHT	IccTerminal	height
ASSIGN SCRNWD	IccTerminal	width
ASSIGN SOSI	IccTerminalData	isSOSI
ASSIGN STARTCODE	IccTask	startType, isCommitSupported, isStartDataAvailable
ASSIGN SYSID	IccSystem	sysId
ASSIGN TASKPRIORITY	IccTask	priority
ASSIGN TCTUALENG	IccTerminal	workArea
ASSIGN TEXTKYBD	IccTerminalData	isTextKeyboard
ASSIGN TEXTPRINT	IccTerminalData	isTextPrint
ASSIGN TWALENG	IccTask	workArea
ASSIGN USERID	IccTask	userId
ASSIGN VALIDATION	IccTerminalData	isValidation
CANCEL	IccClock	cancelAlarm
CANCEL	IccStartRequestQ	cancel
CHANGE PASSWORD	IccUser	changePassword
CHANGE TASK	IccTask	setPriority
CONNECT PROCESS	IccSession	connectProcess
CONVERSE	IccSession	converse
DELAY	IccTask	delay
DELETE	IccFile	deleteRecord
DELETE	IccFile	deleteLockedRecord
DELETEQ TD	IccDataQueue	empty
DELETEQ TS	IccTempStore	empty

EXEC CICS	Class	Method
DEQ	IccSemaphore	unlock
DUMP TRANSACTION	IccTask	dump
DUMP TRANSACTION	IccTask	setDumpOpts
ENDBR	IccFileIterator	IccFileIterator (destructor)
ENQ	IccSemaphore	lock
ENQ	IccSemaphore	tryLock
ENTER TRACENUM	IccTask	enterTrace
EXTRACT ATTRIBUTES	IccSession	state, stateText
EXTRACT PROCESS	IccSession	extractProcess
FORMATTIME YYDDD, YYMMDD, etc	IccClock	date
FORMATTIME DATE	IccClock	date
FORMATTIME DATEFORM	IccSystem	dateFormat
FORMATTIME DAYCOUNT	IccClock	daysSince1900
FORMATTIME DAYOFWEEK	IccClock	dayOfWeek
FORMATTIME DAYOFMONTH	IccClock	dayOfMonth
FORMATTIME MONTHOFYEAR	IccClock	monthOfYear
FORMATTIME TIME	IccClock	time
FORMATTIME YEAR	IccClock	year
FREE	IccSession	free
FREEMAIN	IccTask	freeStorage
GETMAIN	IccTask	getStorage
HANDLE ABEND	IccControl	setAbendHandler, cancelAbendHandler, resetAbendHandler
INQUIRE FILE ACCESSMETHOD	IccFile	accessMethod
INQUIRE FILE ADD	IccFile	isAddable
INQUIRE FILE BROWSE	IccFile	isBrowsable
INQUIRE FILE DELETE	IccFileControl	isDeletable
INQUIRE FILE EMPTYSTATUS	IccFile	isEmptyOn
INQUIRE FILE ENABLESTATUS	IccFile	enableStatus
INQUIRE FILE KEYPOSITION	IccFile	keyPosition
INQUIRE FILE OPENSTATUS	IccFile	openStatus
INQUIRE FILE READ	IccFile	isReadable
INQUIRE FILE RECORDFORMAT	IccFile	recordFormat
INQUIRE FILE RECORDSIZE	IccFile	recordLength

EXEC CICS	Class	Method
INQUIRE FILE RECOVSTATUS	IccFile	isRecoverable
INQUIRE FILE TYPE	IccFile	type
INQUIRE FILE UPDATE	IccFile	isUpdatable
ISSUE ABEND	IccSession	issueAbend
ISSUE CONFIRMATION	IccSession	issueConfirmation
ISSUE ERROR	IccSession	issueError
ISSUE PREPARE	IccSession	issuePrepare
ISSUE SIGNAL	IccSession	issueSignal
LINK	IccProgram	link
LINK INPUTMSG INPUTMSGLEN	IccProgram	setInputMessage
LOAD	IccProgram	load
POST	IccClock	setAlarm
READ	IccFile	readRecord
READNEXT	IccFileIterator	readNextRecord
READPREV	IccFileIterator	readPreviousRecord
READQ TD	IccDataQueue	readItem
READQ TS	IccTempStore	readItem
RECEIVE (APPC)	IccSession	receive
RECEIVE (3270)	IccTerminal	receive, receive3270Data
RELEASE	IccProgram	unload
RESETBR	IccFileIterator	reset
RETRIEVE	IccStartRequestQ	retrieveData [1]
Note: The **retrieveData** method gets the start information from CICS and stores it in the IccStartRequestQ object: the information can then be accessed using **data, queueName, returnTermId and returnTransId** methods.		
RETRIEVE INTO, LENGTH	IccStartRequestQ	data
RETRIEVE QUEUE	IccStartRequestQ	queueName
RETRIEVE RTRANSID	IccStartRequestQ	returnTransId
RETRIEVE RTERMID	IccStartRequestQ	returnTermId
RETURN	IccControl	main [2]
Note: Returning (using C++ reserved word **return**) from method **run** in class **IccControl** results in an EXEC CICS RETURN.		
RETURN TRANSID	IccTerminal	setNextTransId [3]
RETURN IMMEDIATE	IccTerminal	setNextTransId [3]
RETURN COMMAREA LENGTH	IccTerminal	setNextCommArea [3]
RETURN INPUTMSG, INPUTMSGLEN	IccTerminal	setNextInputMessage [3]
Note: Issue this call before returning from **IccControl::run**.		
REWRITE	IccFile	rewriteRecord
SEND (APPC)	IccSession	send, sendInvite, sendLast

EXEC CICS	Class	Method
SEND (3270)	IccTerminal	send, sendLine
SEND CONTROL CURSOR	IccTerminal	setCursor setLine, setNewLine
SEND CONTROL ERASE	IccTerminal	erase
SEND CONTROL FREEKB	IccTerminal	freeKeyboard
SET FILE ADD|BROWSE|DELETE|...	IccFile	setAccess
SET FILE EMPTYSTATUS	IccFile	setEmptyOnOpen
SET FILE OPEN STATUS|ENABLESTATUS	IccFile	setStatus
SIGNOFF	IccTerminal	signoff
SIGNON	IccTerminal	signon
START TRANSID AT/AFTER	IccStartRequestQ	start [4]
START TRANSID FROM LENGTH	IccStartRequestQ	setData, registerDataBuffer [4]
START TRANSID NOCHECK	IccStartRequestQ	setStartOpts [4]
START TRANSID PROTECT	IccStartRequestQ	setStartOpts [4]
START TRANSID QUEUE	IccStartRequestQ	setQueueName [4]
START TRANSID REQID	IccStartRequestQ	start [4]
START TRANSID TERMID	IccStartRequestQ	start [4]
START TRANSID USERID	IccStartRequestQ	start [4]
START TRANSID RTERMID	IccStartRequestQ	setReturnTermId [4]
START TRANSID RTRANSID	IccStartRequestQ	setReturnTransId [4]
Note: Use methods **setData, setQueueName, setReturnTermId, setReturnTransId, setStartOpts** to set the state of the **IccStartRequestQ** object before issuing start requests with the **start** method.		
STARTBR	IccFileIterator	IccFileIterator (constructor)
SUSPEND	IccTask	suspend
SYNCPOINT	IccTask	commitUOW
SYNCPOINT ROLLBACK	IccTask	rollBackUOW
UNLOCK	IccFile	unlockRecord
VERIFY PASSWORD	IccUser	verifyPassword
WAIT CONVID	IccSession	flush
WAIT EVENT	IccTask	waitOnAlarm
WAIT EXTERNAL	IccTask	waitExternal
WAIT JOURNALNUM	IccJournal	wait
WRITE	IccFile	writeRecord
WRITE OPERATOR	IccConsole	write, writeAndGetReply
WRITEQ TD	IccDataQueue	writeItem
WRITEQ TS	IccTempStore	writeItem, rewriteItem

Appendix B. Mapping Foundation Class methods to EXEC CICS calls

The following table shows the correspondence between CICS calls made using the Foundation Classes and the equivalent EXEC CICS API calls.

Table 2. IccAbendData Class

Method	**EXEC CICS**
abendCode	ASSIGN ABCODE
ASRAInterrupt	ASSIGN ASRAINTRPT
ASRAKeyType	ASSIGN ASRAKEY
ASRAPSW	ASSIGN ASRAPSW
ASRARegisters	ASSIGN ASRAREGS
ASRASpaceType	ASSIGN ASRASPC
ASRAStorageType	ASSIGN ASRASTG
isDumpAvailable	ASSIGN ABDUMP
originalAbendCode	ASSIGN ORGABCODE
programName	ASSIGN ABPROGRAM

Table 3. IccAbsTime Class

Method	**EXEC CICS**
date	FORMATTIME YYDDD/YYMMDD/etc.
dayOfMonth	FORMATTIME DAYOFMONTH
dayOfWeek	FORMATTIME DAYOFWEEK
daysSince1900	FORMATTIME DAYCOUNT
monthOfYear	FORMATTIME MONTHOFYEAR
time	FORMATTIME TIME
year	FORMATTIME YEAR

Table 4. IccClock Class

Method	**EXEC CICS**
cancelAlarm	CANCEL
date	FORMATTIME YYDDD/YYMMDD/etc.
dayOfMonth	FORMATTIME DAYOFMONTH
dayOfWeek	FORMATTIME DAYOFWEEK
daysSince1900	FORMATTIME DAYCOUNT
monthOfYear	FORMATTIME MONTHOFYEAR
setAlarm	POST
time	FORMATTIME TIME
update	ASKTIME
year	FORMATTIME YEAR

© Copyright IBM Corp. 1989, 2015

Table 5. IccConsole Class

Method	EXEC CICS
write	WRITE OPERATOR
writeAndGetReply	WRITE OPERATOR

Table 6. IccControl Class

Method	EXEC CICS
callingProgramId	ASSIGN INVOKINGPROG
cancelAbendHandler	HANDLE ABEND CANCEL
commArea	ADDRESS COMMAREA
initData	ASSIGN INITPARM & INITPARMLEN
programId	ASSIGN PROGRAM
resetAbendHandler	HANDLE ABEND RESET
setAbendHandler	HANDLE ABEND PROGRAM

Table 7. IccDataQueue Class

Method	EXEC CICS
empty	DELETEQ TD
readItem	READQ TD
writeItem	WRITEQ TD

Table 8. IccFile Class

Method	EXEC CICS
access	INQUIRE FILE ADD | BROWSE | DELETE | READ | UPDATE
accessMethod	INQUIRE FILE ACCESSMETHOD
deleteRecord	DELETE FILE RIDFLD
deleteLockedRecord	DELETE FILE
enableStatus	INQUIRE FILE ENABLESTATUS
isAddable	INQUIRE FILE ADD
isBrowsable	INQUIRE FILE BROWSE
isDeletable	INQUIRE FILE DELETE
isEmptyOnOpen	INQUIRE FILE EMPTYSTATUS
isReadable	INQUIRE FILE READ
isRecoverable	INQUIRE FILE RECOVSTATUS
isUpdatable	INQUIRE FILE UPDATE
keyPosition	INQUIRE FILE KEYPOSITION
openStatus	INQUIRE FILE OPENSTATUS
readRecord	READ FILE
recordFormat	INQUIRE FILE RECORDFORMAT
recordLength	INQUIRE FILE RECORDSIZE
rewriteRecord	REWRITE FILE
setAccess	SET FILE ADD BROWSE DELETE etc.

Table 8. IccFile Class (continued)

Method	EXEC CICS
setEmptyOnOpen	SET FILE EMPTYSTATUS
setStatus	SET FILE OPENSTATUS ENABLESTATUS
type	INQUIRE FILE TYPE
unlockRecord	UNLOCK FILE
writeRecord	WRITE FILE

Table 9. IccFileIterator Class

Method	EXEC CICS
IccFileIterator (constructor)	STARTBR FILE
~IccFileIterator (destructor)	ENDBR FILE
readNextRecord	READNEXT FILE
readPreviousRecord	READPREV FILE
reset	RESETBR FILE

Table 10. IccJournal Class

Method	EXEC CICS
wait	WAIT JOURNALNUM
writeRecord	WRITE JOURNALNUM

Table 11. IccProgram Class

Method	EXEC CICS
link	LINK PROGRAM
load	LOAD PROGRAM
unload	RELEASE PROGRAM

Table 12. IccResource Class

Method	EXEC CICS
condition	(RESP & RESP2)
setRouteOption	(SYSID)

Table 13. IccSemaphore Class

Method	EXEC CICS
lock	ENQ RESOURCE
tryLock	ENQ RESOURCE NOSUSPEND
unlock	DEQ RESOURCE

Table 14. IccSession Class

Method	EXEC CICS
allocate	ALLOCATE
connectProcess	CONNECT PROCESS CONVID
converse	CONVERSE CONVID

Table 14. IccSession Class (continued)

Method	EXEC CICS
extractProcess	EXTRACT PROCESS CONVID
flush	WAIT CONVID
free	FREE CONVID
issueAbend	ISSUE ABEND CONVID
issueConfirmation	ISSUE CONFIRMATION CONVID
issueError	ISSUE ERROR CONVID
issuePrepare	ISSUE PREPARE CONVID
issueSignal	ISSUE SIGNAL CONVID
receive	RECEIVE CONVID
send	SEND CONVID
sendInvite	SEND CONVID INVITE
sendLast	SEND CONVID LAST
state	EXTRACT ATTRIBUTES

Table 15. IccStartRequestQ Class

Method	EXEC CICS
cancel	CANCEL
retrieveData	RETRIEVE
start	START TRANSID

Table 16. IccSystem Class

Method	EXEC CICS
applName	ASSIGN APPLID
beginBrowse	INQUIRE (FILE, TDQUEUE, etc) START
dateFormat	FORMATTIME DATEFORM
endBrowse	INQUIRE (FILE, TDQUEUE, etc) END
freeStorage	FREEMAIN
getFile	INQUIRE FILE
getNextFile	INQUIRE FILE NEXT
getStorage	GETMAIN SHARED
operatingSystem	INQUIRE SYSTEM OPSYS
operatingSystemLevel	INQUIRE SYSTEM OPREL
release	INQUIRE SYSTEM RELEASE
releaseText	INQUIRE SYSTEM RELEASE
sysId	ASSIGN SYSID
workArea	ADDRESS CWA

Table 17. IccTask Class

Method	EXEC CICS
abend	ABEND

Table 17. IccTask Class (continued)

Method	EXEC CICS
commitUOW	SYNCPOINT
delay	DELAY
dump	DUMP TRANSACTION
enterTrace	ENTER TRACENUM
facilityType	ASSIGN STARTCODE, TERMCODE, PRINSYSID, FCI
freeStorage	FREEMAIN
isCommandSecurityOn	ASSIGN CMDSEC
isCommitSupported	ASSIGN STARTCODE
isResourceSecurityOn	ASSIGN RESSEC
isRestarted	ASSIGN RESTART
isStartDataAvailable	ASSIGN STARTCODE
principalSysId	ASSIGN PRINSYSID
priority	ASSIGN TASKPRIORITY
rollBackUOW	SYNCPOINT ROLLBACK
setPrioity	CHANGE TASK PRIORITY
startType	ASSIGN STARTCODE
suspend	SUSPEND
triggerDataQueueId	ASSIGN QNAME
userId	ASSIGN USERID
waitExternal	WAIT EXTERNAL / WAITCICS
waitOnAlarm	WAIT EVENT
workArea	ADDRESS TWA

Table 18. IccTempStore Class

Method	EXEC CICS
empty	DELETEQ TS
readItem	READQ TS ITEM
readNextItem	READQ TS NEXT
rewriteItem	WRITEQ TS ITEM REWRITE
writeItem	WRITEQ TS ITEM

Table 19. IccTerminal Class

Method	EXEC CICS
erase	SEND CONTROL ERASE
freeKeyboard	SEND CONTROL FREEKB
height	ASSIGN SCRNHT
netName	ASSIGN NETNAME
receive	RECEIVE
receive3270Data	RECEIVE BUFFER

Table 19. IccTerminal Class (continued)

Method	EXEC CICS
send	SEND
sendLine	SEND
setCursor	SEND CONTROL CURSOR
setLine	SEND CONTROL CURSOR
setNewLine	SEND CONTROL CURSOR
signoff	SIGNOFF
signon	SIGNON
waitForAID	RECEIVE
width	ASSIGN SCRNWD
workArea	ADDRESS TCTUA

Table 20. IccTerminalData Class

Method	EXEC CICS
alternateHeight	ASSIGN ALTSCRNHT
alternateWidth	ASSIGN ALTSCRNWD
defaultHeight	ASSIGN DEFSCRNHT
defaultWidth	ASSIGN DEFSCRNWD
graphicCharSetId	ASSIGN GCHARS
graphicCharCodeSet	ASSIGN GCODES
isAPLKeyboard	ASSIGN APLKYBD
isAPLText	ASSIGN APLTEXT
isBTrans	ASSIGN BTRANS
isColor	ASSIGN COLOR
isEWA	ASSIGN ESASUPP
isExtended3270	ASSIGN EXTDS
isGoodMorning	ASSIGN GMMI
isHighlight	ASSIGN HILIGHT
isKatakana	ASSIGN KATAKANA
isMSRControl	ASSIGN MSRCONTROL
isFieldOutline	ASSIGN OUTLINE
isPS	ASSIGN PS
isSOSI	ASSIGN SOSI
isTextKeyboard	ASSIGN TEXTKYBD
isTextPrint	ASSIGN TEXTPRINT
isValidation	ASSIGN VALIDATION

Table 21. IccUser Class

Method	EXEC CICS
changePassword	CHANGE PASSWORD

Table 21. IccUser Class (continued)

Method	EXEC CICS
verifyPassword	VERIFY PASSWORD

Appendix C. C++ sample programs

The typical screen output is given from the supplied sample programs.

Running the sample applications

The sample programs are supplied as source code in library CICSTS53.CICS.SDFHSAMP and before you can run the sample programs, you need to compile, pre-link and link them. To do this, use the procedure `ICCFCCL` in data set CICSTS53.CICS.SDFHPROC.

`ICCFCCL` contains the Job Control Language needed to compile, pre-link and link a CICS user application. Before using `ICCFCCL` you may find it necessary to perform some customization to conform to your installation standards. See also "Compiling Programs" on page 47.

Sample programs such as `ICC$BUF`, `ICC$CLK` and `ICC$HEL` require no additional CICS resource definitions, and should now execute successfully.

Other sample programs, in particular the DTP samples named `ICC$SES1` and `ICC$SES2`, require additional CICS resource definitions. Refer to the prologues in the source of the sample programs for information about these additional requirements.

ICC$BUF (IBUF)

```
This is program 'icc$buf'...
IccBuf buf1                          dal= 0 dl= 0 E+I []
IccBuf buf2(50)                      dal=50 dl= 0 E+I []
IccBuf buf3(30,fixed)                dal=30 dl= 0 F+I []
IccBuf buf4(sizeof(AStruct),&aStruc) dal=24 dl=24 F+E [!Some text for aStruc]
IccBuf buf5("A String Literal")      dal=19 dl=19 E+I [Some data somewhere]
IccBuf buf6(buf5)                    dal=19 dl=19 E+I [Some data somewhere]
buf1 = "Some XXX data for buf1"      dal=22 dl=22 E+I [Some XXX data for buf1]
buf2.assign(strlen(data),data)       dal=50 dl=19 E+I [Some data somewhere]
buf1.cut(4,5)                        dal=22 dl=18 E+I [Some data for buf1]
buf5.insert(5,more,5)                dal=24 dl=24 E+I [Some more data somewhere]
buf5.replace(4,xtra,5)               dal=24 dl=24 E+I [Some xtra data somewhere]
buf2 << ".ext"                       dal=50 dl=23 E+I [Some data somewhere.ext]
buf3 = buf4                          dal=30 dl=24 F+I [!Some text for aStruc]
(buf3 == buf4) returns true (OK).
buf3 = "garbage"                     dal=30 dl= 7 F+I [garbage]
(buf3 != buf4) returns true (OK).
Program 'icc$buf' complete: Hit PF12 to End
```

© Copyright IBM Corp. 1989, 2015

ICC$CLK (ICLK)

```
This is program 'icc$clk' ...
date() = [220296  ]
date(DDMMYY) = [220296  ]
date(DDMMYY,':') = [22:02:96]
date(MMDDYY) = [022296  ]
date(YYDDD) = [96053   ]
daysSince1900() = 35116
dayOfWeek() = 4                         Today is NOT Friday
dayOfMonth() = 22
monthOfYear() = 2
time() = [143832  ]
time('-') = [14-38-32]
year() = [1996]
Program 'icc$clk' complete: Hit PF12 to End
```

ICC$DAT (IDAT)

```
This is program 'icc$dat'...
Writing records to 'ICCQ'...
 - writing record #1: 'Hello World - item 1' <NORMAL>
 - writing record #2: 'Hello World - item 2' <NORMAL>
 - writing record #3: 'Hello World - item 3' <NORMAL>
Reading records back in...
 - reading record #1: 'Hello World - item 1' <NORMAL>
 - reading record #2: 'Hello World - item 2' <NORMAL>
 - reading record #3: 'Hello World - item 3' <NORMAL>
Program 'icc$dat' complete: Hit PF12 to End
```

ICC$EXC1 (IEX1)

```
This is program 'icc$exc1' ...
Number passed = 1
Number passed = 7
Number passed = 11
>>Out of Range - throwing exception
Exception caught: !!Number is out of range!!
Program 'icc$exc1' complete: Hit PF12 to End
```

ICC$EXC2 (IEX2)

```
This is program 'icc$exc2'...
Creating IccTermId id1...
Creating IccTermId id2...
IccException: 112 IccTermId::IccTermId type=invalidArgument (IccMessage: 030 Ic
cTermId::IccTermId <Invalid string length passed to 'IccTermId' constructor.
Spec ified: 5, Maximum allowed: 4>)
Program 'icc$exc2' complete: Hit PF12 to End
```

ICC$EXC3 (IEX3)

```
This is program 'icc$exc3'...
About to read Temporary Storage 'UNKNOWN!'...
IccException: 094 IccTempStore::readNextItem type=CICSCondition (IccMessage: 008
 IccTempStore::readNextItem <CICS returned the 'QIDERR' condition.>)
Program 'icc$exc3' complete: Hit PF12 to End
```

ICC$FIL (IFIL)

```
This is program 'icc$fil'...
Deleting records in file 'ICCKFILE...
5 records were deleted.
Writing records to file 'ICCKFILE'...
- writing record number 1.    <NORMAL>
- writing record number 2.    <NORMAL>
- writing record number 3.    <NORMAL>
- writing record number 4.    <NORMAL>
- writing record number 5.    <NORMAL>
Browsing records...
 - record read: [BACH, J S      003  00-1234   BACH      ]
 - record read: [CHOPIN, F      004  00-3355   CHOPIN    ]
 - record read: [HANDEL, G F    005  00-4466   HANDEL    ]
 - record read: [BEETHOVEN, L   007  00-2244   BEET      ]
 - record read: [MOZART, W A    008  00-5577   WOLFGANG  ]
 - record read: [MOZART, W A    008  00-5577   WOLFGANG  ]
 - record read: [BEETHOVEN, L   007  00-2244   BEET      ]
 - record read: [HANDEL, G F    005  00-4466   HANDEL    ]
 - record read: [CHOPIN, F      004  00-3355   CHOPIN    ]
 - record read: [BACH, J S      003  00-1234   BACH      ]
Updating record 1...
readRecord(update)<NORMAL>    rewriteRecord()<NORMAL>
 - record read: [MOZART, W A    008  00-5678   WOLFGANG  ]
Program 'icc$fil' complete: Hit PF12 to End
```

ICC$HEL (IHEL)

```
                                Hello World
```

ICC$JRN (IJRN)

```
This is program 'icc$jrn'...
Writing  3 records to  journal number 77...
 - writing record 1: [Hello World - item 1]      <NORMAL>
 - writing record 2: [Hello World - item 2]      <NORMAL>
 - writing record 3: [Hello World - item 3]      <NORMAL>
Program 'icc$jrn' complete: Hit PF12 to End
```

ICC$PRG1 (IPR1)

First Screen

```
This is program 'icc$prg1'...
Loaded program: ICC$PRG2  <NORMAL> Length=0 Address=ff000000
Unloading program: ICC$PRG2        <NORMAL>
 - Hit ENTER to continue...
```

Second Screen

```
About to link to program 'ICC$PRG2 '
 - commArea before link is [DATA SET BY ICC$PRG1]
 - Hit ENTER to continue...
   This is program 'icc$prg2'...
   commArea received from caller =[DATA SET BY ICC$PRG1]
   Changed commArea to [DATA RETURNED BY ICC$PRG2]
   - Hit ENTER to return to caller...
 - link call returned <NORMAL>
 - commArea after link is [DATA RETURNED BY ICC$PRG2]
About to link to program 'ICC$PRG3 ' on system 'ICC2'
 - commArea before link is [DATA SET BY ICC$PRG1]
 - Hit ENTER to continue...
 - link call returned <NORMAL>
 - commArea after link is [DATA RETURNED BY ICC$PRG3]
Program 'icc$prg1' complete: Hit PF12 to End
```

ICC$RES1 (IRS1)

```
This is program 'icc$res1'...
Writing items to CustomDataQueue 'ICCQ' ...
 - writing item #1: 'Hello World - item 1'  <NORMAL>
 - writing item #2: 'Hello World - item 2'  <NORMAL>
 - writing item #3: 'Hello World - item 3'  <NORMAL>
Reading items from CustomDataQueue 'ICCQ' ...
 - item = 'Hello World - item 1'
 - item = 'Hello World - item 2'
 - item = 'Hello World - item 3'
Reading loop complete.
> In handleEvent().
Summary=IccEvent: CustomDataQueue::readItem condition=23 (QZ ERO) minor=0
Program 'icc$res1' complete: Hit PF12 to End
```

ICC$RES2 (IRS2)

```
This is program 'icc$res2'...
invoking clear() method for IccDataQueue object
invoking clear() method for IccTempStore object
put() item #1 in IccDataQueue object
put() item #2 in IccDataQueue object
put() item #3 in IccDataQueue object
put() item #1 in IccTempStore object
put() item #2 in IccTempStore object
put() item #3 in IccTempStore object
Now get items from IccDataQueue object
get() from IccDataQueue object returned 'Hello World - item 1'
get() from IccDataQueue object returned 'Hello World - item 2'
get() from IccDataQueue object returned 'Hello World - item 3'
Now get items from IccTempStore object
get() from IccTempStore object returned 'Hello World - item 1'
get() from IccTempStore object returned 'Hello World - item 2'
get() from IccTempStore object returned 'Hello World - item 3'
Program 'icc$res2' complete: Hit PF12 to End
```

ICC$SEM (ISEM)

```
This is program 'icc$sem'...
Constructing IccSemaphore object (lock by value)...
Issuing lock request...     <NORMAL>
Issuing unlock request...   <NORMAL>
Constructing Semaphore object (lock by address)...
Issuing tryLock request...  <NORMAL>
Issuing unlock request...   <NORMAL>


Program 'icc$sem' complete: Hit PF12 to End
```

ICC$SES1 (ISE1)

```
This is program 'icc$ses1'...
allocate session...                       <NORMAL>
STATE=81 ALLOCATED ERR=0 connectProcess...<NORMAL>
STATE=90 SEND ERR=0 sendInvite ...        <NORMAL>
STATE=87 PENDRECEIVE ERR=0 receive ...    <NORMAL>
STATE=85 FREE ERR=0  - data from back end=[Hi there this is from backEnd
TIME=14:49:18 on 22/02/96]
free...                                   <NORMAL>
STATE=1 NOTAPPLIC ERR=0

Program 'icc$ses1' complete: Hit PF12 to End
```

ICC$SES2 (ISE2)

This panel is typical output after running "CEBR DTPBKEND" on the back-end CICS system.

```
 CEBR  TSQ DTPBKEND       SYSID ABCD REC     1 OF    11    COL     1 OF    78
 ENTER COMMAND ===>
     ************************  TOP OF QUEUE  ******************************
00001 Transaction 'ISE2' starting.
00002 extractProcess...
00003 <NORMAL> STATE=88 RECEIVE ERR=0
00004 process=[ISE2] syncLevel=1 PIP=[Hello World]
00005 receive...
00006 <NORMAL> STATE=90 SEND ERR=0 NoData=0
00007 data from front end=[Hi there this is from frontEnd TIME=16:03:18 on 04/0
00008 sendLast ...
00009 <NORMAL>        STATE=86 PENDFREE ERR=0
00010 free...
00011 <NORMAL>        STATE=1 NOTAPPLIC ERR=0
     ************************  BOTTOM OF QUEUE  ***************************
PF1 : HELP                PF2 : SWITCH HEX/CHAR     PF3 : TERMINATE BROWSE
PF4 : VIEW TOP            PF5 : VIEW BOTTOM         PF6 : REPEAT LAST FIND
PF7 : SCROLL BACK HALF    PF8 : SCROLL FORWARD HALF PF9 : VIEW RIGHT
PF10: SCROLL BACK FULL    PF11: SCROLL FORWARD FULL PF12: UNDEFINED
```

ICC$SRQ1 (ISR1)

```
This is program 'icc$srq1'...
Starting Tran 'ISR2' on terminal 'PE12' after 5 seconds... - <NORMAL>
request='DF!U0000'
Issuing cancel for start request='DF!U0000'...             - <NORMAL>
request='DF!U0000'
Starting Tran 'ISR2' on terminal 'PE12' after 5 seconds... - <NORMAL>
request='REQUEST1'
Program 'icc$srq1' complete.
```

ICC$SRQ2 (ISR2)

```
This is program 'icc$srq2'...
retrieveData()...                                        <NORMAL>
Start buffer contents = [This is a greeting from program 'icc$srq1'!!]
Start queue= [startqnm]
Start rtrn = [ITMP]
Start rtrm = [PE11]
Sleeping for 5 seconds...
Starting tran 'ITMP' on terminal 'PE11' on system ICC1...<NORMAL>

Program 'icc$srq2' complete: Hit PF12 to end
```

ICC$SYS (ISYS)

```
This is program 'icc$sys'...
applName=ICC$REG01 operatingSystem=A operatingSystemLevel=41
releaseText=[0210] sysidnt=ICC1
getStorage( 5678, 'Y')...                                <NORMAL>
freeStorage( p )...                                      <NORMAL>
Checking attributes of a named file (ICCKFILE)...
>ICCKFILE< Add=true Brw=true Del=true Read=true Upd=true op=18 en=23
accessMethod=3 isRecoverable=true keyLength=3 keyPosition=16
setStatus( closed ) ...                                  <NORMAL>
setStatus( disabled ) ...                                <NORMAL>
setAccess( notUpdatable ) ...                            <NORMAL>
>ICCKFILE< Add=true Brw=true Del=true Read=true Upd=false op=19 en=24
setAccess( updateable ) & setStatus( enabled, open ) ...
>ICCKFILE< Add=true Brw=true Del=true Read=true Upd=true op=18 en=23
Beginning browse of all file objects in CICS system...   <NORMAL>
 - >ICCEFILE< type=1                                     <NORMAL>
 - >ICCKFILE< type=6                                     <NORMAL>
 - >ICCRFILE< type=1                                     <NORMAL>
Program 'icc$sys' complete: Hit PF12 to End
```

ICC$TMP (ITMP)

```
This is program 'icc$tmp'...
Writing 3 records to IccTempStore object 'ICCSTORE'...
 - writing record #1: 'Hello World - item 1'     <NORMAL>
 - writing record #2: 'Hello World - item 2'     <NORMAL>
 - writing record #3: 'Hello World - item 3'     <NORMAL>
Reading records back in & rewriting new buffer contents...
 - record #1 = [Hello World - item 1]       - rewriteItem #1   <NORMAL>
 - record #2 = [Hello World - item 2]       - rewriteItem #2   <NORMAL>
 - record #3 = [Hello World - item 3]       - rewriteItem #3   <NORMAL>
Reading records back in one last time...
 - record #1 = [Modified Hello World - item 1]
 - record #1 = [Modified Hello World - item 2]
 - record #1 = [Modified Hello World - item 3]
Program 'icc$tmp' complete: Hit PF12 to end
```

ICC$TRM (ITRM)

```
This is program 'icc$trm'...
First part of the line..... a continuation of the line.
Start this on the next line            Send this to col 40 of current line

         Send this to row 5, column 10
                                       Send this to row 6, column 40

A Red line!
A Blue, reverse video line!

A cout style interface...
you can chain input together; use different types, eg numbers: 123 4567890 12345
6.789123
... and everything is buffered till you issue a flush.



Program 'icc$trm' complete: Hit PF12 to End
```

ICC$TSK (ITSK)

```
This is program 'icc$tsk'...
startType() = terminalInput
number() = 0598
isStartDataSupplied() = true
isCommitSupported() = true
userId() = [rabcics ]
enterTrace( 77, "ICCENTRY", buffer )        <NORMAL>
suspend()...                                <NORMAL>
delay( ti ) (for 2 seconds)...              <NORMAL>
getStorage( 1234, 'X')...                   <NORMAL>
freeStorage( p )...                         <NORMAL>
commitUOW()...                              <NORMAL>
rollBackUOW()...                            <NORMAL>


Program 'icc$tsk' complete: Hit PF12 to End OR PF24 to ABEND
```

Notices

This information was developed for products and services offered in the U.S.A. IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan, Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

The following paragraph does not apply in the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore this statement may not apply to you.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Licensees of this program who want to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact IBM United Kingdom Laboratories, MP151, Hursley Park, Winchester, Hampshire, England, SO21 2JN.

© Copyright IBM Corp. 1989, 2015

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Programming License Agreement, or any equivalent agreement between us.

Privacy Policy Considerations

IBM Software products, including software as a service solutions, ("Software Offerings") may use cookies or other technologies to collect product usage information, to help improve the end user experience, to tailor interactions with the end user or for other purposes. In many cases no personally identifiable information is collected by the Software Offerings. Some of our Software Offerings can help enable you to collect personally identifiable information. If this Software Offering uses cookies to collect personally identifiable information, specific information about this offering's use of cookies is set forth below.

CICSPlex® SM Web User Interface :

For the WUI main interface: Depending upon the configurations deployed, this Software Offering may use session and persistent cookies that collect each user's user name and other personally identifiable information for purposes of session management, authentication, enhanced user usability, or other usage tracking or functional purposes. These cookies cannot be disabled.

For the WUI Data Interface: Depending upon the configurations deployed, this Software Offering may use session cookies that collect each user's user name and other personally identifiable information for purposes of session management, authentication, or other usage tracking or functional purposes. These cookies cannot be disabled.

For the WUI Hello World page: Depending upon the configurations deployed, this Software Offering may use session cookies that collect no personally identifiable information. These cookies cannot be disabled.

For CICS Explorer®: Depending upon the configurations deployed, this Software Offering may use session and persistent preferences that collect each user's user name and password, for purposes of session management, authentication, and single sign-on configuration. These preferences cannot be disabled, although storing a user's password on disk in encrypted form can only be enabled by the user's explicit action to check a check box during sign-on.

If the configurations deployed for this Software Offering provide you as customer the ability to collect personally identifiable information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for notice and consent.

For more information about the use of various technologies, including cookies, for these purposes, see IBM's Privacy Policy at http://www.ibm.com/privacy and IBM's Online Privacy Statement at http://www.ibm.com/privacy/details the section entitled "Cookies, Web Beacons and Other Technologies" and the "IBM Software Products and Software-as-a-Service Privacy Statement" at http://www-01.ibm.com/software/info/product-privacy/.

Trademarks

IBM, the IBM logo, and ibm.com® are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

Java™ and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Bibliography

CICS books for CICS Transaction Server for z/OS

General

CICS Transaction Server for z/OS Program Directory - base, GI13-3375
CICS Transaction Server for z/OS Program Directory activation module - base, GI13-3376
CICS Transaction Server for z/OS Program Directory activation module - Developer Trial, GI13-3377
CICS Transaction Server for z/OS Program Directory activation module - Value Unit Edition, GI13-3378
CICS Transaction Server for z/OS What's New, GC34-7437
CICS Transaction Server for z/OS Upgrading to CICS TS Version 5.3, GC34-7436
CICS Transaction Server for z/OS Installation Guide, GC34-7414

Access to CICS

CICS Internet Guide, SC34-7416
CICS Web Services Guide, SC34-7452

Administration

CICS System Definition Guide, SC34-7428
CICS Customization Guide, SC34-7404
CICS Resource Definition Guide, SC34-7425
CICS Operations and Utilities Guide, SC34-7420
CICS RACF Security Guide, SC34-7423
CICS Supplied Transactions, SC34-7427

Programming

CICS Application Programming Guide, SC34-7401
CICS Application Programming Reference, SC34-7402
CICS System Programming Reference, SC34-7429
CICS Front End Programming Interface User's Guide, SC34-7412
CICS C++ OO Class Libraries, SC34-7405
CICS Distributed Transaction Programming Guide, SC34-7410
CICS Business Transaction Services, SC34-7403
Java Applications in CICS, SC34-7417

Diagnosis

CICS Problem Determination Guide, GC34-7422
CICS Performance Guide, SC34-7421
CICS Messages and Codes Vol 1, GC34-7418
CICS Messages and Codes Vol 2, GC34-7419
CICS Diagnosis Reference, GC34-7409
CICS Recovery and Restart Guide, SC34-7424
CICS Data Areas, GC34-7406
CICS Trace Entries, SC34-7430
CICS Debugging Tools Interfaces Reference,GC34-7408

Communication

CICS Intercommunication Guide, SC34-7415
CICS External Interfaces Guide, SC34-7411

© Copyright IBM Corp. 1989, 2015

Databases

CICS DB2® Guide, SC34-7407

CICS IMS™ Database Control Guide, SC34-7413

CICS Shared Data Tables Guide, SC34-7426

CICSPlex SM books for CICS Transaction Server for z/OS

General

CICSPlex SM Concepts and Planning, SC34-7441
CICSPlex SM Web User Interface Guide, SC34-7451

Administration and Management

CICSPlex SM Administration, SC34-7438
CICSPlex SM Operations Views Reference, SC34-7447
CICSPlex SM Monitor Views Reference, SC34-7446
CICSPlex SM Managing Workloads, SC34-7444
CICSPlex SM Managing Resource Usage, SC34-7443
CICSPlex SM Managing Business Applications, SC34-7442

Programming

CICSPlex SM Application Programming Guide, SC34-7439
CICSPlex SM Application Programming Reference, SC34-7440

Diagnosis

CICSPlex SM Resource Tables Reference Vol 1, SC34-7449
CICSPlex SM Resource Tables Reference Vol 2, SC34-7450
CICSPlex SM Messages and Codes, GC34-7445
CICSPlex SM Problem Determination, GC34-7448

Other CICS publications

The following publications contain further information about CICS, but are not provided as part of CICS Transaction Server for z/OS, Version 5 Release 3 .

Designing and Programming CICS Applications, SR23-9692

CICS Application Migration Aid Guide, SC33-0768

CICS Family: API Structure, SC33-1007

CICS Family: Client/Server Programming, SC33-1435

CICS Family: Interproduct Communication, SC34-6853

CICS Family: Communicating from CICS on System/390, SC34-6854

CICS Transaction Gateway for z/OS Administration, SC34-5528

CICS Family: General Information, GC33-0155

CICS 4.1 Sample Applications Guide, SC33-1173

CICS/ESA 3.3 XRF Guide , SC33-0661

Other IBM publications

The following publications contain information about related IBM products.

CICS Client manuals

CICS Clients: Administration, SC33-1792
CICS Clients: Messages, SC33-1793
CICS Clients: Gateways, SC33-1821

CICS Family: OO Programming in C++ for CICS Clients, SC33-1923
CICS Family: OO Programming in BASIC for CICS Clients, SC33-1924

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

You can perform most tasks required to set up, run, and maintain your CICS system in one of these ways:

- using a 3270 emulator logged on to CICS
- using a 3270 emulator logged on to TSO
- using a 3270 emulator as an MVS system console

IBM Personal Communications provides 3270 emulation with accessibility features for people with disabilities. You can use this product to provide the accessibility features you need in your CICS system.

© Copyright IBM Corp. 1989, 2015

Index

Special characters

... (parameter)
  in sendLine 259

Numerics

0 (zero)
  in actionOnConditionAsChar 188

A

A
  in actionOnConditionAsChar 188
  in operatingSystem 226
abend
  in IccTask class 229
  in Parameter level 57
abend codes 51
abendCode
  in IccAbendData class 77
abendCode (parameter)
  in abend 229
abendData
  in IccTask class 230
AbendDumpOpt
  in Enumerations 237
  in IccTask class 237
AbendHandlerOpt
  in Enumerations 237
  in IccTask class 237
abendTask
  in ActionOnCondition 192
  in CICS conditions 54
absTime
  in IccClock class 105
  in Type 273
absTime (parameter)
  in Constructor 83
  in operator= 85
access
  in IccFile class 138
Access
  in Enumerations 146
  in IccFile class 146
access (parameter)
  in setAccess 144
Accessing start data
  in Starting transactions asynchronously 36
  in Using CICS Services 36
accessMethod
  in IccFile class 138
action (parameter)
  in setActionOnAnyCondition 190
  in setActionOnCondition 191
actionOnCondition
  in IccResource class 187
ActionOnCondition
  in Enumerations 192
  in IccResource class 192
actionOnConditionAsChar
  in IccResource class 187
actions (parameter)
  in setActionsOnConditions 191
actionsOnConditionsText
  in IccResource class 188
addable
  in Access 146
address
  in IccProgram class 175
AID
  in IccTerminal class 251
aid (parameter)
  in waitForAID 262
AIDVal
  in Enumerations 263
  in IccTerminal class 263
AIX, CICS for
  in Platform differences 56
allocate
  in IccSession class 204
AllocateOpt
  in Enumerations 212
  in IccSession class 212
alternateHeight
  in IccTerminalData class 265
  in Public methods 265
alternateWidth
  in IccTerminalData class 265
  in Public methods 265
append
  in IccBuf class 96
applName
  in IccSystem class 223
ASRAInterrupt
  in IccAbendData class 78
  in Public methods 78
ASRAKeyType
  in IccAbendData class 78
  in Public methods 78
ASRAPSW
  in IccAbendData class 78
ASRARegisters
  in IccAbendData class 79
  in Public methods 79
ASRASpaceType
  in IccAbendData class 79
  in Public methods 79
ASRAStorageType
  in IccAbendData class 80
  in Public methods 80
assign
  in Example of file control 33
  in IccBuf class 97
  in IccKey class 165
automatic
  in UpdateMode 110
Automatic condition handling (callHandleEvent)
  in CICS conditions 54
Automatic condition handling (callHandleEvent) *(continued)*
  in Conditions, errors, and exceptions 54
automatic creation 15
automatic deletion 15
auxStorage
  in Location 245

B

base class
  overview 17
Base classes
  in Overview of the foundation classes 17
baseName (parameter)
  in NameOpt 94
BASESPACE
  in ASRASpaceType 79
BDAM 29
beginBrowse
  in IccSystem class 223, 224
beginInsert
  in Writing records 30
beginInsert (VSAM only)
  in IccFile class 138
  in Public methods 138
below
  in StorageOpts 239
blink
  in Highlight 263
blue
  in Color 263
Bool
  in Enumerations 73
  in Icc structure 73
BoolSet
  in Enumerations 73
  in Icc structure 73
boolText
  in Functions 71
  in Icc structure 71
browsable
  in Access 146
browsing records 32
Browsing records
  in File control 32
  in Using CICS Services 32
buf (parameter)
  in dump 231
  in put 255
  in send3270Data 257
  in sendLine 258
  in setData 217
buffer
  in Example of starting transactions 37, 38
buffer (parameter)
  in Constructor 96
  in operator!= 100

© Copyright IBM Corp. 1989, 2015

buffer (parameter) *(continued)*
in operator« 100, 253
in operator+= 99
in operator= 99
in operator== 99
in Polymorphic Behavior 60
in put 126, 158, 190, 242
in registerData 216
in rewriteRecord 143
in send 256
in send3270Data 257
in sendLine 258
in writeRecord 145
Buffer objects
Data area extensibility 25
Data area ownership 25
IccBuf constructors 26
IccBuf methods 27
Working with IccResource subclasses 27
buffers 25, 28
byAddress
in LockType 201
byValue
in LockType 201

C

C++ exceptions 51
C++ Exceptions and the Foundation Classes
in Conditions, errors, and exceptions 51
callHandleEvent
in ActionOnCondition 192
in CICS conditions 54
calling conventions 65
Calling methods on a resource object
in Overview of the foundation classes 22
in Using CICS resources 22
callingProgramId
in IccControl class 117
in Public methods 117
cancel
in Cancelling unexpired start requests 36
in IccRequestId class 185
in IccStartRequestQ class 215
cancelAbendHandler
in IccControl class 117
cancelAlarm
in IccClock class 105
Cancelling unexpired start requests
in Starting transactions asynchronously 36
in Using CICS Services 36
Case
in Enumerations 263
in IccTerminal class 263
caseOpt (parameter)
in receive 255
in receive3270Data 256
catch
in C++ Exceptions and the Foundation Classes 51, 52
catch *(continued)*
in Exception handling (throwException) 55
in main function 292
catchException
in Functions 71
in Icc structure 71
ch (parameter)
in operator« 100, 253, 254
changePassword
in IccUser class 283
in Public methods 283
char*
in C++ Exceptions and the Foundation Classes 52
CheckOpt
in Enumerations 220
in IccStartRequestQ class 220
CICS
in ASRAStorageType 79
in GetOpt 74
in Platform differences 56
CICS conditions
abendTask 56
automatic condition handling 54
Automatic condition handling (callHandleEvent) 54
callHandleEvent 54
exception handling 55
Exception handling (throwException) 55
in Conditions, errors, and exceptions 53
manual condition handling 54
Manual condition handling (noAction) 54
noAction 54
severe error handling 56
Severe error handling (abendTask) 56
throwException 55
CICS for AIX
in Platform differences 56
CICS resources 21
CICSCondition
in C++ Exceptions and the Foundation Classes 53
in Type 136
CICSDataKey
in StorageOpts 239
CICSEXECKEY
in ASRAKeyType 78
CICSInternalTask
in StartType 238
class
base 17
resource 19
resource identification 18
singleton 22
support 20
ClassMemoryMgmt
in Enumerations 74
in Icc structure 74
className
in IccBase class 91
in IccEvent class 131
in IccException class 134
in IccMessage class 171
className (parameter)
in Constructor 133, 171
in setClassName 92
classType
in IccBase class 91
in IccEvent class 131
in IccException class 134
ClassType
in Enumerations 93
in IccBase class 93
classType (parameter)
in Constructor 133, 187
clear
in Example of polymorphic behavior 61
in IccDataQueue class 125
in IccResource class 188
in IccTempStore class 242
in IccTerminal class 251
in Polymorphic Behavior 60
CLEAR
in AIDVal 263
clearData
in IccStartRequestQ class 216
clearInputMessage
in IccProgram class 176
clearPrefix
in IccJournal class 158
closed
in Status 147
cmmCICS
in ClassMemoryMgmt 74
in Storage management 63
cmmDefault
in ClassMemoryMgmt 74
in Storage management 63
cmmNonCICS
in ClassMemoryMgmt 74
in Storage management 63
Codes
in Enumerations 111
in IccCondition structure 111
col (parameter)
in send 256, 257
in send3270Data 257, 258
in sendLine 258, 259
in setCursor 259
Color
in Enumerations 263
in IccTerminal class 263
color (parameter)
in operator« 253
in setColor 259
commArea
in IccControl class 118
commArea (parameter)
in link 176
in setNextCommArea 260
commitOnReturn
in CommitOpt 178
CommitOpt
in Enumerations 178
in IccProgram class 178
commitUOW
in IccTask class 230
Compile and link "Hello World"
in Hello World 10

compiling programs 47
Compiling Programs
in Compiling, executing, and debugging 47
complete
in Kind 168
complete key 30
completeLength
in IccKey class 166
in Public methods 166
completeLength (parameter)
in Constructor 165
condition
in IccEvent class 131
in IccResource class 188
in Manual condition handling (noAction) 54
in Resource classes 19
condition (parameter)
in actionOnCondition 187
in actionOnConditionAsChar 188
in conditionText 71, 72
in setActionOnCondition 191
condition 0 (NORMAL)
in actionsOnConditionsText 188
condition 1 (ERROR)
in actionsOnConditionsText 188
condition 2 (RDATT)
in actionsOnConditionsText 188
condition 3 (WRBRK)
in actionsOnConditionsText 188
condition 4 (ICCEOF)
in actionsOnConditionsText 188
condition 5 (EODS)
in actionsOnConditionsText 188
condition 6 (EOC)
in actionsOnConditionsText 188
Conditions, errors, and exceptions
Automatic condition handling (callHandleEvent) 54
Exception handling (throwException) 55
Manual condition handling (noAction) 54
Method level 57
Object level 56
Parameter level 57
Severe error handling (abendTask) 56
conditionText
in Functions 71
in Icc structure 71
in IccEvent class 132
in IccResource class 189
ConditionType
in Enumerations 193
in IccResource class 193
confirmation
in SendOpt 212
connectProcess
in IccSession class 204, 205
in Public methods 204, 205
console
in IccControl class 118
Constructor
in IccAbendData class 77
in IccAbendData constructor (protected) 77
Constructor *(continued)*
in IccAbsTime class 83
in IccAbsTime constructor 83
in IccAlarmRequestId class 87
in IccAlarmRequestId constructors 87
in IccBase class 91
in IccBase constructor (protected) 91
in IccBuf class 95, 96
in IccBuf constructors 95, 96
in IccClock class 105
in IccClock constructor 105
in IccConsole class 113
in IccConsole constructor (protected) 113
in IccControl class 117
in IccControl constructor (protected) 117
in IccConvId class 123
in IccConvId constructors 123
in IccDataQueue class 125
in IccDataQueue constructors 125
in IccDataQueueId class 129
in IccDataQueueId constructors 129
in IccEvent class 131
in IccEvent constructor 131
in IccException class 133
in IccException constructor 133
in IccFile class 137
in IccFile constructors 137
in IccFileId class 149
in IccFileId constructors 149
in IccFileIterator class 151
in IccFileIterator constructor 151
in IccGroupId class 155
in IccGroupId constructors 155
in IccJournal class 157
in IccJournal constructors 157
in IccJournalId class 161
in IccJournalId constructors 161
in IccJournalTypeId class 163
in IccJournalTypeId constructors 163
in IccKey class 165
in IccKey constructors 165
in IccLockId class 169
in IccLockId constructors 169
in IccMessage class 171
in IccMessage constructor 171
in IccPartnerId class 173
in IccPartnerId constructors 173
in IccProgram class 175
in IccProgram constructors 175
in IccProgramId class 179
in IccProgramId constructors 179
in IccRBA class 181
in IccRBA constructor 181
in IccRecordIndex class 183
in IccRecordIndex constructor (protected) 183
in IccRequestId class 185
in IccRequestId constructors 185
in IccResource class 187
in IccResource constructor (protected) 187
in IccResourceId class 195
in IccResourceId constructors (protected) 195
Constructor *(continued)*
in IccRRN class 197
in IccRRN constructors 197
in IccSemaphore class 199
in IccSemaphore constructor 199
in IccSession class 203, 204
in IccSession constructor (protected) 204
in IccSession constructors (public) 203
in IccStartRequestQ class 215
in IccStartRequestQ constructor (protected) 215
in IccSysId class 221
in IccSysId constructors 221
in IccSystem class 223
in IccSystem constructor (protected) 223
in IccTask class 229
in IccTask Constructor (protected) 229
in IccTempStore class 241
in IccTempStore constructors 241
in IccTempStoreId class 247
in IccTempStoreId constructors 247
in IccTermId class 249
in IccTermId constructors 249
in IccTerminal class 251
in IccTerminal constructor (protected) 251
in IccTerminalData class 265
in IccTerminalData constructor (protected) 265
in IccTime class 271
in IccTime constructor (protected) 271
in IccTimeInterval class 275
in IccTimeInterval constructors 275
in IccTimeOfDay class 277
in IccTimeOfDay constructors 277
in IccTPNameId class 279
in IccTPNameId constructors 279
in IccTransId class 281
in IccTransId constructors 281
in IccUser class 283
in IccUser constructors 283
in IccUserId class 287
in IccUserId constructors 287
content type mapping xiv
content types xiv
converse
in IccSession class 205
convId
in IccSession class 205
convId (parameter)
in Constructor 123
convName (parameter)
in Constructor 123
in operator= 123
copt (parameter)
in setStartOpts 218
createDump
in AbendDumpOpt 237
creating a resource object 21
Creating a resource object
in Overview of the foundation classes 21

Creating a resource object *(continued)*
in Using CICS resources 21
Singleton classes 22
Creating an object
in C++ Objects 15
creating object 15
current (parameter)
in setPrefix 158
cursor
in Finding out information about a terminal 44
in IccTerminal class 251
customClassNum
in IccBase class 92
in Public methods 92
cut
in IccBuf class 97
in IccBuf constructors 26
CVDA
in Enumeration 291
in IccValue structure 291
cyan
in Color 263

D

data
in Accessing start data 36
in Finding out information about a terminal 44
in IccStartRequestQ class 216
in IccTerminal class 252
data (parameter)
in enterTrace 231
in put 208
data area extensibility 25
Data area extensibility
in Buffer objects 25
in IccBuf class 25
data area ownership 25
Data area ownership
in Buffer objects 25
in IccBuf class 25
dataArea
in IccBuf class 97
dataArea (parameter)
in append 96
in assign 97, 165
in Constructor 95
in insert 98
in overlay 102
in replace 102
dataAreaLength
in IccBuf class 97
in Public methods 97
dataAreaOwner
in Data area ownership 25
in IccBuf class 98
DataAreaOwner
in Enumerations 103
in IccBuf class 103
dataAreaType
in Data area extensibility 25
in IccBuf class 98
DataAreaType
in Enumerations 103
in IccBuf class 103
dataItems
in Example of polymorphic behavior 60
dataLength
in IccBuf class 98
dataqueue
in FacilityType 238
dataQueueTrigger
in StartType 238
date
in IccAbsTime class 83
in IccClock class 106
date services 45
dateFormat
in IccSystem class 224
DateFormat
in Enumerations 109
in IccClock class 109
dateSeparator (parameter)
in date 83, 106
in Example of time and date services 46
dayOfMonth
in Example of time and date services 46
in IccAbsTime class 84
in IccClock class 106
dayOfWeek
in Example of time and date services 46
in IccAbsTime class 84
in IccClock class 106
DayOfWeek
in Enumerations 109
in IccClock class 109
daysSince1900
in Example of time and date services 46
in IccAbsTime class 84
in IccClock class 106
daysUntilPasswordExpires
in IccUser class 284
dComplete
in DumpOpts 238
dDCT
in DumpOpts 238
dDefault
in DumpOpts 238
debugging programs 48
Debugging Programs
in Compiling, executing, and debugging 48
defaultColor
in Color 263
defaultHeight
in IccTerminalData class 266
in Public methods 266
defaultHighlight
in Highlight 263
defaultWidth
in IccTerminalData class 266
in Public methods 266
delay
in IccTask class 230
in Support Classes 21
deletable
in Access 147
delete
in Deleting an object 16
in Storage management 63
delete operator 15
deleteLockedRecord 32
in Deleting locked records 32
in IccFile class 138
deleteRecord
in Deleting normal records 31
in IccFile class 139
deleteRecord method 31
Deleting an object
in C++ Objects 16
deleting items 42
Deleting items
in Temporary storage 42
in Using CICS Services 42
Deleting locked records
in Deleting records 32
in File control 32
Deleting normal records
in Deleting records 31
in File control 31
deleting queues 40
Deleting queues
in Transient Data 40
in Using CICS Services 40
deleting records 31
Deleting records
Deleting locked records 32
Deleting normal records 31
in File control 31
in Using CICS Services 31
dFCT
in DumpOpts 238
DFHCURDI 7
DFHCURDS 6, 7
disabled
in Status 147
doSomething
in Using an object 16
dPCT
in DumpOpts 238
DPL
in StartType 238
dPPT
in DumpOpts 238
dProgram
in DumpOpts 238
dSIT
in DumpOpts 238
dStorage
in DumpOpts 238
dTables
in DumpOpts 238
dTask
in DumpOpts 238
dTCT
in DumpOpts 238
dTerminal
in DumpOpts 238
dTRT
in DumpOpts 238
dump
in IccTask class 231
dumpCode (parameter)
in dump 231

DumpOpts
in Enumerations 237
in IccTask class 237
dynamic creation 15
dynamic deletion 15
dynamic link library 6
Dynamic link library
in Installed contents 6
Location 6

E

ECBList (parameter)
in waitExternal 236
EDF (parameter)
in initializeEnvironment 72
empty
in Deleting items 42
in Deleting queues 40
in IccDataQueue class 125
in IccTempStore class 242
in Temporary storage 41
in Transient Data 39
enabled
in Status 147
enableStatus
in IccFile class 139
endBrowse
in IccSystem class 224
endInsert
in Writing records 30
endInsert (VSAM only)
in IccFile class 139
in Public methods 139
endl
in Example of terminal control 45
ENTER
in AIDVal 263
enterTrace
in IccTask class 231
entryPoint
in IccProgram class 176
Enumeration
CVDA 291
in IccValue structure 289
Enumerations
AbendDumpOpt 237
AbendHandlerOpt 237
Access 146
ActionOnCondition 192
AIDVal 263
AllocateOpt 212
Bool 73
BoolSet 73
Case 263
CheckOpt 220
ClassMemoryMgmt 74
ClassType 93
Codes 111
Color 263
CommitOpt 178
ConditionType 193
DataAreaOwner 103
DataAreaType 103
DateFormat 109
DayOfWeek 109
DumpOpts 237
Enumerations *(continued)*
FacilityType 238
FamilySubset 74
GetOpt 74
HandleEventReturnOpt 192
Highlight 263
in Icc structure 73
in IccBase class 93
in IccBuf class 103
in IccClock class 109
in IccCondition structure 111
in IccConsole class 116
in IccException class 135
in IccFile class 146
in IccJournal class 160
in IccKey class 168
in IccProgram class 178
in IccRecordIndex class 184
in IccResource class 192
in IccSemaphore class 201
in IccSession class 212
in IccStartRequestQ class 220
in IccSystem class 227
in IccTask class 237
in IccTempStore class 245
in IccTerminal class 263
in IccTime class 273
Kind 168
LifeTime 201
LoadOpt 178
Location 245
LockType 201
MonthOfYear 109
NameOpt 94
NextTransIdOpt 264
NoSpaceOpt 245
Options 160
Platforms 74
ProtectOpt 220
Range 112
ReadMode 147
ResourceType 227
RetrieveOpt 220
SearchCriterion 147
SendOpt 212
SeverityOpt 116
StartType 238
StateOpt 212
Status 147
StorageOpts 238
SyncLevel 213
TraceOpt 239
Type 135, 184, 273
UpdateMode 109
WaitPostType 239
WaitPurgeability 239
equalToKey
in SearchCriterion 147
erase
in Example of terminal control 45
in Hello World 10
in IccTerminal class 252
in Sending data to a terminal 43
errorCode
in IccSession class 206
ESDS
in File control 29
ESDS file 29
ESMReason
in IccUser class 284
ESMResponse
in IccUser class 284
event (parameter)
in handleEvent 189
Example of file control
in File control 32
in Using CICS Services 32
Example of managing transient data
in Transient Data 40
in Using CICS Services 40
Example of polymorphic behavior
in Miscellaneous 60
in Polymorphic Behavior 60
Example of starting transactions
in Starting transactions asynchronously 36
in Using CICS Services 36
Example of Temporary Storage
in Temporary storage 42
in Using CICS Services 42
Example of terminal control
in Terminal control 44
in Using CICS Services 44
Example of time and date services
in Time and date services 45
in Using CICS Services 45
exception
in TraceOpt 239
exception (parameter)
in catchException 71
Exception handling (throwException)
in CICS conditions 55
in Conditions, errors, and exceptions 55
exceptionNum (parameter)
in Constructor 133
exceptions 51
exceptionType (parameter)
in Constructor 133
Executing Programs
in Compiling, executing, and debugging 48
Expected Output from "Hello World"
in Hello World 11
in Running "Hello World" on your CICS server 11
extensible
in DataAreaType 103
external
in DataAreaOwner 103
extractProcess
in IccSession class 206
extractState
in StateOpt 212

F

facilityType
in IccTask class 231
FacilityType
in Enumerations 238
in IccTask class 238
fam (parameter)
in initializeEnvironment 72

familyConformanceError
in C++ Exceptions and the Foundation Classes 53
in Type 136
FamilySubset
in Enumerations 74
in Icc structure 74
FEPIRequest
in StartType 238
file (parameter)
in Constructor 151
in Example of file control 33
file control
browsing records 32
deleting records 31
example 32
rewriting records 31
updating records 31
File control
Browsing records 32
Deleting locked records 32
Deleting normal records 31
Deleting records 31
Example of file control 32
in Using CICS Services 29
Reading ESDS records 30
Reading KSDS records 30
Reading records 29
Reading RRDS records 30
Updating records 31
Writing ESDS records 31
Writing KSDS records 30
Writing records 30
Writing RRDS records 31
fileName (parameter)
in Constructor 137, 149
in getFile 225
in operator= 149
Finding out information about a terminal
in Terminal control 44
in Using CICS Services 44
First Screen
in ICC$PRG1 (IPR1) 311
in Output from sample programs 311
fixed
in DataAreaType 103
flush
in Example of terminal control 45
in IccSession class 206
for
in Example of file control 33
Form
in Polymorphic Behavior 59
format (parameter)
in append 96
in assign 97
in date 83, 106
in Example of time and date services 46
in send 256, 257
in send3270Data 257, 258
in sendLine 258, 259
Foundation Class Abend codes
in Conditions, errors, and exceptions 51
free
in IccSession class 206
freeKeyboard
in IccTerminal class 252
in Sending data to a terminal 43
freeStorage
in IccSystem class 224
in IccTask class 232
fsAllowPlatformVariance
in FamilySubset 74
in Platform differences 56
fsDefault
in FamilySubset 74
fsEnforce
in FamilySubset 74
in Platform differences 56
fullAccess
in Access 147
Functions
boolText 71
catchException 71
conditionText 71
in Icc structure 71
initializeEnvironment 72
isClassMemoryMgmtOn 72
isEDFOn 72
isFamilySubsetEnforcementOn 72
returnToCICS 72
setEDF 73
unknownException 73

G

generic
in Kind 168
generic key 30
get
in Example of polymorphic behavior 61
in IccDataQueue class 126
in IccResource class 189
in IccSession class 206
in IccTempStore class 242
in IccTerminal class 252
in Polymorphic Behavior 60
getFile
in IccSystem class 224, 225
getNextFile
in IccSystem class 225
GetOpt
in Enumerations 74
in Icc structure 74
getStorage
in IccSystem class 225
in IccTask class 232
gid (parameter)
in Constructor 283
graphicCharCodeSet
in IccTerminalData class 266
graphicCharSetId
in IccTerminalData class 266
green
in Color 263
groupId
in IccUser class 284
groupName (parameter)
in Constructor 155, 283
in operator= 155
gteqToKey
in SearchCriterion 147

H

H
in actionOnConditionAsChar 188
handleEvent
in Automatic condition handling (callHandleEvent) 54, 55
in IccResource class 189
HandleEventReturnOpt
in Enumerations 192
in IccResource class 192
handPost
in WaitPostType 239
Header files
in Installed contents 5, 47
Location 6
height
in IccTerminal class 252
Hello World
commentary 9
Compile and link 10
Expected Output from "Hello World" 11
running 10
Highlight
in Enumerations 263
in IccTerminal class 263
highlight (parameter)
in operator« 253
in setHighlight 259, 260
hold
in LoadOpt 178
hours
in IccAbsTime class 84
in IccTime class 271
hours (parameter)
in Constructor 271, 275, 277
in set 276, 278

I

Icc
in Foundation Classes—reference 69
in Method level 57
in Overview of the foundation classes 17
Icc structure
Bool 73
BoolSet 73
boolText 71
catchException 71
ClassMemoryMgmt 74
conditionText 71
FamilySubset 74
GetOpt 74
initializeEnvironment 72
isClassMemoryMgmtOn 72
isEDFOn 72
isFamilySubsetEnforcementOn 72
Platforms 74
returnToCICS 72
setEDF 73
unknownException 73

Icc::initializeEnvironment
in Storage management 63
ICC$BUF 6, 9
ICC$BUF (IBUF)
in Output from sample programs 309
ICC$CLK 6, 9
ICC$CLK (ICLK)
in Output from sample programs 310
ICC$DAT (IDAT)
in Output from sample programs 310
ICC$EXC1 (IEX1)
in Output from sample programs 310
ICC$EXC2 (IEX2)
in Output from sample programs 310
ICC$EXC3 (IEX3)
in Output from sample programs 310
ICC$FIL (IFIL)
in Output from sample programs 311
ICC$HEL 6, 9
ICC$HEL (IHEL)
in Output from sample programs 311
ICC$JRN (IJRN)
in Output from sample programs 311
ICC$PRG1 (IPR1)
First Screen 311
in Output from sample programs 311
Second Screen 312
ICC$RES1 (IRS1)
in Output from sample programs 312
ICC$RES2 (IRS2)
in Output from sample programs 312
ICC$SEM (ISEM)
in Output from sample programs 313
ICC$SES1 6, 9
ICC$SES1 (ISE1)
in Output from sample programs 313
ICC$SES2 6, 9
in Output from sample programs 313
ICC$SRQ1 (ISR1)
in Output from sample programs 313
ICC$SRQ2 (ISR2)
in Output from sample programs 314
ICC$SYS (ISYS)
in Output from sample programs 314
ICC$TMP (ITMP)
in Output from sample programs 314
ICC$TRM (ITRM)
in Output from sample programs 315
ICC$TSK (ITSK)
in Output from sample programs 315
IccAbendData
in Singleton classes 22
IccAbendData class
abendCode 77
ASRAInterrupt 78
ASRAKeyType 78
ASRAPSW 78
ASRARegisters 79
ASRASpaceType 79
ASRAStorageType 80
Constructor 77
instance 80
isDumpAvailable 80
originalAbendCode 80
programName 80
IccAbendData constructor (protected)
Constructor 77
in IccAbendData class 77
IccAbsTime
in Base classes 18
in delay 230
in IccTime class 271
in Support Classes 21
in Time and date services 45
IccAbsTime class
Constructor 83
date 83
dayOfMonth 84
dayOfWeek 84
daysSince1900 84
hours 84
milliSeconds 84
minutes 84
monthOfYear 84
operator= 85
packedDecimal 85
seconds 85
time 85
timeInHours 85
timeInMinutes 85
timeInSeconds 86
year 86
IccAbsTime constructor
Constructor 83
in IccAbsTime class 83
IccAbsTime,
in Support Classes 21
IccAlarmRequestId
in IccAlarmRequestId class 87
IccAlarmRequestId class
Constructor 87
isExpired 88
operator= 88
setTimerECA 88
timerECA 88
IccAlarmRequestId constructors
Constructor 87
in IccAlarmRequestId class 87
IccBase
in Base classes 17
in Foundation Classes—reference 69
in IccAbendData class 77
in IccAbsTime class 83
in IccAlarmRequestId class 87
in IccBase class 91
in IccBuf class 95
in IccClock class 105
IccBase *(continued)*
in IccConsole class 113
in IccControl class 117
in IccConvId class 123
in IccDataQueue class 125
in IccDataQueueId class 129
in IccEvent class 131
in IccException class 133
in IccFile class 137
in IccFileId class 149
in IccFileIterator class 151
in IccGroupId class 155
in IccJournal class 157
in IccJournalId class 161
in IccJournalTypeId class 163
in IccKey class 165
in IccLockId class 169
in IccMessage class 171
in IccPartnerId class 173
in IccProgram class 175
in IccProgramId class 179
in IccRBA class 181
in IccRecordIndex class 183
in IccRequestId class 185
in IccResource class 187
in IccResourceId class 195
in IccRRN class 197
in IccSemaphore class 199
in IccSession class 203
in IccStartRequestQ class 215
in IccSysId class 221
in IccSystem class 223
in IccTask class 229
in IccTempStore class 241
in IccTempStoreId class 247
in IccTermId class 249
in IccTerminal class 251
in IccTerminalData class 265
in IccTime class 271
in IccTimeInterval class 275
in IccTimeOfDay class 277
in IccTPNameId class 279
in IccTransId class 281
in IccUser class 283
in IccUserId class 287
in Resource classes 19
in Resource identification classes 18
in Storage management 63
in Support Classes 20
IccBase class
className 91
classType 91
ClassType 93
Constructor 91
customClassNum 92
NameOpt 94
operator delete 92
operator new 92
overview 17
setClassName 92
setCustomClassNum 93
IccBase constructor (protected)
Constructor 91
in IccBase class 91
IccBuf
in Buffer objects 25

IccBuf *(continued)*
in C++ Exceptions and the Foundation Classes 53
in Data area extensibility 25
in Data area ownership 25
in Example of file control 33
in Example of managing transient data 40
in Example of polymorphic behavior 60
in Example of starting transactions 37, 38, 39
in Example of Temporary Storage 42, 43
in Example of terminal control 44
in IccBuf class 25, 95
in IccBuf constructors 26
in IccBuf methods 27
in Reading data 39
in Reading items 41
in Scope of data in IccBuf reference returned from 'read' methods 67
in Support Classes 21
in Working with IccResource subclasses 27, 28
IccBuf class
append 96
assign 97
Constructor 95, 96
constructors 26
cut 97
data area extensibility 25
Data area extensibility 25
data area ownership 25
Data area ownership 25
dataArea 97
dataAreaLength 97
dataAreaOwner 98
DataAreaOwner 103
dataAreaType 98
DataAreaType 103
dataLength 98
IccBuf constructors 26
IccBuf methods 27
in Buffer objects 25
insert 98
isFMHContained 98
methods 27
operator const char* 98
operator!= 100
operator« 100, 101
operator+= 99
operator= 99
operator== 99
overlay 102
replace 102
setDataLength 102
setFMHContained 102
Working with IccResource subclasses 27
IccBuf constructors 26
Constructor 95, 96
in Buffer objects 26
in IccBuf class 26, 95
IccBuf methods 27
in Buffer objects 27
in IccBuf class 27
IccBuf reference 67
IccClock
in Example of time and date services 45, 46
in IccAlarmRequestId class 87
in IccClock class 105
in Time and date services 45
IccClock class
absTime 105
cancelAlarm 105
Constructor 105
date 106
DateFormat 109
dayOfMonth 106
dayOfWeek 106
DayOfWeek 109
daysSince1900 106
milliSeconds 107
monthOfYear 107
MonthOfYear 109
setAlarm 107
time 107
update 108
UpdateMode 109
year 108
IccClock constructor
Constructor 105
in IccClock class 105
IccCondition
in C++ Exceptions and the Foundation Classes 53
IccCondition structure
Codes 111
Range 112
IccConsole
in Buffer objects 25
in Object level 56, 57
in Singleton classes 22
IccConsole class
Constructor 113
instance 113
overview 22
put 113
replyTimeout 113
resetRouteCodes 114
setAllRouteCodes 114
setReplyTimeout 114
setRouteCodes 114
SeverityOpt 116
write 115
writeAndGetReply 115
IccConsole constructor (protected)
Constructor 113
in IccConsole class 113
IccControl
in Base classes 17
in Example of starting transactions 37, 38
in Hello World 10
in IccControl class 117
in IccProgram class 175
in main function 291, 292
in Mapping EXEC CICS calls to Foundation Class methods 295
in Method level 57
in Singleton classes 22
in Support Classes 21
IccControl class
callingProgramId 117
cancelAbendHandler 117
commArea 118
console 118
Constructor 117
initData 118
instance 118
isCreated 118
overview 17, 22
programId 118
resetAbendHandler 119
returnProgramId 119
run 119
session 119
setAbendHandler 119
startRequestQ 120
system 120
task 120
terminal 120
IccControl constructor (protected)
Constructor 117
in IccControl class 117
IccControl::run
in Mapping EXEC CICS calls to Foundation Class methods 295
IccConvId
in IccConvId class 123
IccConvId class
Constructor 123
operator= 123
IccConvId constructors
Constructor 123
in IccConvId class 123
IccDataQueue
in Buffer objects 25
in Example of managing transient data 40
in Example of polymorphic behavior 61
in Resource classes 19
in Temporary storage 41
in Transient Data 39
in Working with IccResource subclasses 28
in Writing data 40
IccDataQueue class
clear 125
Constructor 125
empty 125
get 126
put 126
readItem 126
writeItem 126
IccDataQueue constructors
Constructor 125
in IccDataQueue class 125
IccDataQueueId
in Example of managing transient data 40
in IccDataQueueId class 129
in Transient Data 39
IccDataQueueId class
Constructor 129
operator= 129
IccDataQueueId constructors
Constructor 129

IccDataQueueId constructors *(continued)*
in IccDataQueueId class 129
IccEvent
in IccEvent class 131
in Support Classes 21
IccEvent class
className 131
classType 131
condition 131
conditionText 132
Constructor 131
methodName 132
summary 132
IccEvent constructor
Constructor 131
in IccEvent class 131
IccException
in C++ Exceptions and the Foundation Classes 52, 53
in IccException class 133
in IccMessage class 171
in main function 292
in Method level 57
in Object level 56, 57
in Parameter level 57
in Support Classes 21
IccException class
CICSCondition type 53
className 134
classType 134
Constructor 133
familyConformanceError type 53
internalError type 53
invalidArgument type 52
invalidMethodCall type 53
message 134
methodName 134
number 134
objectCreationError type 52
summary 134
type 135
Type 135
typeText 135
IccException constructor
Constructor 133
in IccException class 133
ICCFCC 7
ICCFCCL 6, 7, 9
ICCFCGL 7
ICCFCIMP 7
ICCFCL 7
IccFile
in Browsing records 32
in Buffer objects 25
in C++ Exceptions and the Foundation Classes 53
in Deleting locked records 32
in Deleting normal records 31
in Example of file control 32
in File control 29
in IccFile class 137
in IccFileIterator class 151
in Reading ESDS records 30
in Reading KSDS records 30
in Reading records 29
in Reading RRDS records 30
in Resource identification classes 18
IccFile *(continued)*
in Singleton classes 22
in Updating records 31
in Writing ESDS records 31
in Writing KSDS records 31
in Writing records 30
in Writing RRDS records 31
IccFile class
access 138
Access 146
accessMethod 138
beginInsert (VSAM only) 138
Constructor 137
deleteLockedRecord 32, 138
deleteRecord 139
deleteRecord method 31
enableStatus 139
endInsert (VSAM only) 139
isAddable 139
isBrowsable 140
isDeletable 140
isEmptyOnOpen 140
isReadable 140
isReadable method 30
isRecoverable 141
isUpdatable 141
keyLength 141
keyLength method 30
keyPosition 141
keyPosition method 30
openStatus 142
ReadMode 147
readRecord 142
readRecord method 29
recordFormat 142
recordFormat method 30
recordIndex 143
recordIndex method 30
recordLength 143
recordLength method 30
registerRecordIndex 30, 143
registerRecordIndex method 30
rewriteRecord 143
rewriteRecord method 31
SearchCriterion 147
setAccess 144
setEmptyOnOpen 144
setStatus 144
Status 147
type 145
unlockRecord 145
writeRecord 145
writeRecord method 30
IccFile constructors
Constructor 137
in IccFile class 137
IccFile::readRecord
in Scope of data in IccBuf reference returned from 'read' methods 67
IccFileId
in Base classes 17
in File control 29
in IccFileId class 149
in Resource identification classes 18
IccFileId class
Constructor 149
operator= 149
IccFileId class *(continued)*
overview 17, 29
reading records 29
IccFileId constructors
Constructor 149
in IccFileId class 149
IccFileIterator
in Browsing records 32
in Buffer objects 25
in Example of file control 32, 33
in File control 29
in IccFileIterator class 151
IccFileIterator class
Constructor 151
overview 29
readNextRecord 151
readNextRecord method 32
readPreviousRecord 32, 152
reset 152
IccFileIterator constructor
Constructor 151
in IccFileIterator class 151
IccGroupId
in IccGroupId class 155
IccGroupId class
Constructor 155
operator= 155
IccGroupId constructors
Constructor 155
in IccGroupId class 155
IccJournal
in Buffer objects 25
in IccJournal class 157
in Object level 56, 57
IccJournal class
clearPrefix 158
Constructor 157
journalTypeId 158
Options 160
put 158
registerPrefix 158
setJournalTypeId 158
setPrefix 158
wait 159
writeRecord 159
IccJournal constructors
Constructor 157
in IccJournal class 157
IccJournalId
in IccJournalId class 161
IccJournalId class
Constructor 161
number 161
operator= 161, 162
IccJournalId constructors
Constructor 161
in IccJournalId class 161
IccJournalTypeId
in Foundation Classes—reference 69
in IccJournalTypeId class 163
IccJournalTypeId class
Constructor 163
operator= 163
IccJournalTypeId constructors
Constructor 163
in IccJournalTypeId class 163

IccKey
in Browsing records 32
in Deleting normal records 31
in File control 29
in IccKey class 165
in IccRecordIndex class 183
in Reading KSDS records 30
in Reading records 29
in Writing KSDS records 30
in Writing records 30
IccKey class 30
assign 165
completeLength 166
Constructor 165
kind 166
Kind 168
operator!= 166, 167
operator= 166
operator== 166
reading records 29
setKind 167
value 167
IccKey constructors
Constructor 165
in IccKey class 165
IccLockId
in IccLockId class 169
IccLockId class
Constructor 169
operator= 169
IccLockId constructors
Constructor 169
in IccLockId class 169
IccMessage
in IccMessage class 171
in Support Classes 21
IccMessage class
className 171
Constructor 171
methodName 171
number 172
summary 172
text 172
IccMessage constructor
Constructor 171
in IccMessage class 171
IccPartnerId
in IccPartnerId class 173
IccPartnerId class
Constructor 173
operator= 173
IccPartnerId constructors
Constructor 173
in IccPartnerId class 173
IccProgram
in Buffer objects 25
in IccProgram class 175
in Program control 34
in Resource classes 19
IccProgram class
address 175
clearInputMessage 176
CommitOpt 178
Constructor 175
entryPoint 176
length 176
link 176
IccProgram class *(continued)*
load 177
LoadOpt 178
program control 34
setInputMessage 177
unload 177
IccProgram constructors
Constructor 175
in IccProgram class 175
IccProgramId
in IccProgramId class 179
in Resource identification classes 18
IccProgramId class
Constructor 179
operator= 179
IccProgramId constructors
Constructor 179
in IccProgramId class 179
IccRBA
in Browsing records 32
in File control 29
in IccRBA class 181
in IccRecordIndex class 183
in Reading ESDS records 30
in Reading records 29
in Writing ESDS records 31
in Writing records 30
in Writing RRDS records 31
IccRBA class
Constructor 181
number 182
operator!= 182
operator= 181
operator== 181, 182
reading records 29
IccRBA constructor
Constructor 181
in IccRBA class 181
IccRecordIndex
in C++ Exceptions and the Foundation Classes 53
in IccRecordIndex class 183
IccRecordIndex class
Constructor 183
length 183
type 183
Type 184
IccRecordIndex constructor (protected)
Constructor 183
in IccRecordIndex class 183
IccRequestId
in Example of starting transactions 37, 38
in IccRequestId class 185
in Parameter passing conventions 65
IccRequestId class
Constructor 185
operator= 185, 186
IccRequestId constructors
Constructor 185
in IccRequestId class 185
IccResource
in Base classes 17
in Example of polymorphic behavior 60, 61
in IccResource class 187
in Polymorphic Behavior 60
IccResource *(continued)*
in Resource classes 19
in Scope of data in IccBuf reference returned from 'read' methods 67
IccResource class
actionOnCondition 187
ActionOnCondition 192
actionOnConditionAsChar 187
actionsOnConditionsText 188
clear 188
condition 188
conditionText 189
ConditionType 193
Constructor 187
get 189
handleEvent 189
HandleEventReturnOpt 192
id 189
isEDFOn 189
isRouteOptionOn 190
name 190
overview 17
put 190
routeOption 190
setActionOnAnyCondition 190
setActionOnCondition 191
setActionsOnConditions 191
setEDF 191
setRouteOption 191, 192
working with subclasses 27
IccResource constructor (protected)
Constructor 187
in IccResource class 187
IccResourceId
in Base classes 17
in C++ Exceptions and the Foundation Classes 53
in Resource identification classes 18
IccResourceId class
Constructor 195
name 195
nameLength 196
operator= 196
overview 17, 18
IccResourceId constructors (protected)
Constructor 195
in IccResourceId class 195
IccRRN
in Browsing records 32
in Deleting normal records 31
in File control 29
in IccRecordIndex class 183
in IccRRN class 197
in Reading records 29
in Reading RRDS records 30
in Writing records 30
IccRRN class
Constructor 197
number 198
operator!= 198
operator= 197
operator== 197, 198
reading records 29
IccRRN constructors
Constructor 197
in IccRRN class 197

IccSemaphore class
Constructor 199
lifeTime 200
LifeTime 201
lock 200
LockType 201
tryLock 200
type 200
unlock 200
IccSemaphore constructor
Constructor 199
in IccSemaphore class 199
IccSession
in Buffer objects 25
IccSession class
allocate 204
AllocateOpt 212
connectProcess 204, 205
Constructor 203, 204
converse 205
convId 205
errorCode 206
extractProcess 206
flush 206
free 206
get 206
isErrorSet 206
isNoDataSet 207
isSignalSet 207
issueAbend 207
issueConfirmation 207
issueError 207
issuePrepare 208
issueSignal 208
PIPList 208
process 208
put 208
receive 208
send 209
sendInvite 209
sendLast 210
SendOpt 212
state 211
StateOpt 212
stateText 211
syncLevel 211
SyncLevel 213
IccSession constructor (protected)
Constructor 204
in IccSession class 204
IccSession constructors (public)
Constructor 203
in IccSession class 203
IccStartRequestQ
in Accessing start data 36
in Buffer objects 25
in Example of starting transactions 37, 38
in IccRequestId class 185
in IccStartRequestQ class 215
in Mapping EXEC CICS calls to Foundation Class methods 295
in Parameter passing conventions 65
in Singleton classes 22
in Starting transactions asynchronously 36
IccStartRequestQ class
cancel 215
CheckOpt 220
clearData 216
Constructor 215
data 216
instance 216
overview 22
ProtectOpt 220
queueName 216
registerData 216
reset 216
retrieveData 217
RetrieveOpt 220
returnTermId 217
returnTransId 217
setData 217
setQueueName 217
setReturnTermId 218
setReturnTransId 218
setStartOpts 218
start 219
IccStartRequestQ constructor (protected)
Constructor 215
in IccStartRequestQ class 215
IccSysId
in IccSysId class 221
in Program control 34
IccSysId class
Constructor 221
operator= 221
IccSysId constructors
Constructor 221
in IccSysId class 221
IccSystem
in Singleton classes 22
IccSystem class
applName 223
beginBrowse 223, 224
Constructor 223
dateFormat 224
endBrowse 224
freeStorage 224
getFile 224, 225
getNextFile 225
getStorage 225
instance 225
operatingSystem 226
operatingSystemLevel 226
overview 22
release 226
releaseText 226
ResourceType 227
sysId 226
workArea 227
IccSystem constructor (protected)
Constructor 223
in IccSystem class 223
IccTask
in C++ Exceptions and the Foundation Classes 52
in Example of starting transactions 38
in IccAlarmRequestId class 87
in IccTask class 229
in Parameter level 57
in Singleton classes 22
IccTask *(continued)*
in Support Classes 21
IccTask class
abend 229
abendData 230
AbendDumpOpt 237
AbendHandlerOpt 237
commitUOW 230
Constructor 229
delay 230
dump 231
DumpOpts 237
enterTrace 231
facilityType 231
FacilityType 238
freeStorage 232
getStorage 232
instance 232
isCommandSecurityOn 232
isCommitSupported 233
isResourceSecurityOn 233
isRestarted 233
isStartDataAvailable 233
number 233
overview 22
principalSysId 233
priority 234
rollBackUOW 234
setDumpOpts 234
setPriority 234
setWaitText 234
startType 235
StartType 238
StorageOpts 238
suspend 235
TraceOpt 239
transId 235
triggerDataQueueId 235
userId 235
waitExternal 236
waitOnAlarm 236
WaitPostType 239
WaitPurgeability 239
workArea 236
IccTask Constructor (protected)
Constructor 229
in IccTask class 229
IccTask::commitUOW
in Scope of data in IccBuf reference returned from 'read' methods 67
IccTempstore
in Working with IccResource subclasses 27
IccTempStore
in Automatic condition handling (callHandleEvent) 54
in Buffer objects 25
in C++ Exceptions and the Foundation Classes 53
in Deleting items 42
in Example of polymorphic behavior 61
in Example of Temporary Storage 42
in IccTempStore class 241
in Reading items 41
in Resource classes 19
in Temporary storage 41

IccTempStore *(continued)*
in Transient Data 39
in Updating items 41
in Working with IccResource subclasses 27
in Writing items 41
IccTempStore class
clear 242
Constructor 241
empty 242
get 242
Location 245
NoSpaceOpt 245
numberOfItems 242
put 242
readItem 242
readNextItem 243
rewriteItem 243
writeItem 243, 244
IccTempStore constructors
Constructor 241
in IccTempStore class 241
IccTempStore::readItem
in Scope of data in IccBuf reference returned from 'read' methods 67
IccTempStore::readNextItem
in Scope of data in IccBuf reference returned from 'read' methods 67
IccTempStoreId
in Base classes 17
in Example of Temporary Storage 42
in IccTempStoreId class 247
in Temporary storage 41
IccTempStoreId class
Constructor 247
operator= 247
IccTempStoreId constructors
Constructor 247
in IccTempStoreId class 247
IccTermId
in Base classes 17
in C++ Exceptions and the Foundation Classes 53
in Example of starting transactions 37
in Example of terminal control 44
in IccTermId class 249
in Terminal control 43
IccTermId class
Constructor 249
operator= 249
overview 17
IccTermId constructors
Constructor 249
in IccTermId class 249
IccTerminal
in Buffer objects 25
in Example of terminal control 44
in Finding out information about a terminal 44
in IccTerminalData class 265
in Receiving data from a terminal 44
in Resource classes 19
in Singleton classes 22
in Terminal control 43
IccTerminal class
AID 251
IccTerminal class *(continued)*
AIDVal 263
Case 263
clear 251
Color 263
Constructor 251
cursor 251
data 252
erase 252
freeKeyboard 252
get 252
height 252
Highlight 263
inputCursor 252
instance 253
line 253
netName 253
NextTransIdOpt 264
operator« 253, 254, 255
put 255
receive 255
receive3270Data 256
registerInputMessage 177
send 256, 257
send3270Data 257, 258
sendLine 258, 259
setColor 259
setCursor 259
setHighlight 259
setLine 260
setNewLine 260
setNextCommArea 260
setNextInputMessage 260
setNextTransId 260
signoff 261
signon 261
waitForAID 262
width 262
workArea 262
IccTerminal constructor (protected)
Constructor 251
in IccTerminal class 251
IccTerminal::receive
in Scope of data in IccBuf reference returned from 'read' methods 67
IccTerminalData
in Example of terminal control 44
in Finding out information about a terminal 44
in IccTerminalData class 265
in Terminal control 43
IccTerminalData class
alternateHeight 265
alternateWidth 265
Constructor 265
defaultHeight 266
defaultWidth 266
graphicCharCodeSet 266
graphicCharSetId 266
isAPLKeyboard 266
isAPLText 267
isBTrans 267
isColor 267
isEWA 267
isExtended3270 267
isFieldOutline 268
isGoodMorning 268
IccTerminalData class *(continued)*
isHighlight 268
isKatakana 268
isMSRControl 268
isPS 269
isSOSI 269
isTextKeyboard 269
isTextPrint 269
isValidation 269
IccTerminalData constructor (protected)
Constructor 265
in IccTerminalData class 265
IccTime
in Base classes 18
in IccTime class 271
in Parameter passing conventions 65
in Support Classes 21
IccTime class
Constructor 271
hours 271
minutes 271
overview 18
seconds 271
timeInHours 272
timeInMinutes 272
timeInSeconds 272
type 272
Type 273
IccTime constructor (protected)
Constructor 271
in IccTime class 271
IccTimeInterval
in Base classes 18
in delay 230
in Example of starting transactions 37, 38
in IccTime class 271
in Support Classes 21
IccTimeInterval class
Constructor 275
operator= 275
set 275
IccTimeInterval constructors
Constructor 275
in IccTimeInterval class 275
IccTimeOfDay
in Base classes 18
in delay 230
in IccTime class 271
in Support Classes 21
IccTimeOfDay class
Constructor 277
operator= 277
set 277
IccTimeOfDay constructors
Constructor 277
in IccTimeOfDay class 277
IccTPNameId
in IccTPNameId class 279
IccTPNameId class
Constructor 279
operator= 279
IccTPNameId constructors
Constructor 279
in IccTPNameId class 279
IccTransId
in Base classes 17

IccTransId *(continued)*
in Example of starting transactions 37
in IccResourceId class 195
in IccTransId class 281
in Parameter passing conventions 65
IccTransId class
Constructor 281
operator= 281
overview 17
IccTransId constructors
Constructor 281
in IccTransId class 281
IccUser class
changePassword 283
Constructor 283
daysUntilPasswordExpires 284
ESMReason 284
ESMResponse 284
groupId 284
invalidPasswordAttempts 284
language 284
lastPasswordChange 285
lastUseTime 285
passwordExpiration 285
setLanguage 285
verifyPassword 285
IccUser constructors
Constructor 283
in IccUser class 283
IccUserControl
in C++ Exceptions and the Foundation Classes 52
in Example of file control 32
in Example of managing transient data 40
in Example of polymorphic behavior 60
in Example of starting transactions 37
in Example of Temporary Storage 42
in Example of terminal control 44
in Example of time and date services 45
in Hello World 10
in main function 291
in Program control 34
in Singleton classes 22
IccUserControl class 10
IccUserId
in IccUserId class 287
IccUserId class
Constructor 287
operator= 287
IccUserId constructors
Constructor 287
in IccUserId class 287
IccValue
in Foundation Classes—reference 69
IccValue structure
CVDA 291
id
in IccResource class 189
Id
in Resource identification classes 18
id (parameter)
in Constructor 87, 125, 129, 137, 149, 155, 157, 161, 163, 169, 173, 175, 179, 185, 195, 199, 203, 221, 241, 247, 249, 279, 281, 283, 287
in getFile 224
in operator= 88, 124, 129, 149, 155, 162, 163, 169, 173, 179, 185, 196, 221, 247, 249, 279, 281, 287
in setJournalTypeId 158
in signon 261
in waitOnAlarm 236
ifSOSReturnCondition
in StorageOpts 238
ignoreAbendHandler
in AbendHandlerOpt 237
immediate
in NextTransIdOpt 264
index (parameter)
in Constructor 137, 151
in registerRecordIndex 143
in reset 152
Inherited protected methods
in IccAbendData class 81
in IccAbsTime class 86
in IccAlarmRequestId class 89
in IccBuf class 103
in IccClock class 108
in IccConsole class 116
in IccControl class 121
in IccConvId class 124
in IccDataQueue class 127
in IccDataQueueId class 130
in IccEvent class 132
in IccException class 135
in IccFile class 146
in IccFileId class 150
in IccFileIterator class 153
in IccGroupId class 156
in IccJournal class 160
in IccJournalId class 162
in IccJournalTypeId class 164
in IccKey class 167
in IccLockId class 170
in IccMessage class 172
in IccPartnerId class 174
in IccProgram class 178
in IccProgramId class 180
in IccRBA class 182
in IccRecordIndex class 184
in IccRequestId class 186
in IccResource class 192
in IccResourceId class 196
in IccRRN class 198
in IccSemaphore class 201
in IccSession class 212
in IccStartRequestQ class 220
in IccSysId class 222
in IccSystem class 227
in IccTask class 237
in IccTempStore class 244
in IccTempStoreId class 248
in IccTermId class 250
in IccTerminal class 263
in IccTerminalData class 270
in IccTime class 273
in IccTimeInterval class 276
Inherited protected methods *(continued)*
in IccTimeOfDay class 278
in IccTPNameId class 280
in IccTransId class 282
in IccUser class 286
in IccUserId class 288
Inherited public methods
in IccAbendData class 81
in IccAbsTime class 86
in IccAlarmRequestId class 88
in IccBuf class 103
in IccClock class 108
in IccConsole class 115
in IccControl class 120
in IccConvId class 124
in IccDataQueue class 127
in IccDataQueueId class 130
in IccEvent class 132
in IccException class 135
in IccFile class 146
in IccFileId class 150
in IccFileIterator class 152
in IccGroupId class 156
in IccJournal class 159
in IccJournalId class 162
in IccJournalTypeId class 164
in IccKey class 167
in IccLockId class 170
in IccMessage class 172
in IccPartnerId class 174
in IccProgram class 177
in IccProgramId class 180
in IccRBA class 182
in IccRecordIndex class 184
in IccRequestId class 186
in IccResource class 192
in IccResourceId class 196
in IccRRN class 198
in IccSemaphore class 200
in IccSession class 211
in IccStartRequestQ class 219
in IccSysId class 222
in IccSystem class 227
in IccTask class 236
in IccTempStore class 244
in IccTempStoreId class 248
in IccTermId class 250
in IccTerminal class 262
in IccTerminalData class 270
in IccTime class 272
in IccTimeInterval class 276
in IccTimeOfDay class 278
in IccTPNameId class 280
in IccTransId class 282
in IccUser class 285
in IccUserId class 288
initByte (parameter)
in getStorage 225, 232
initData
in IccControl class 118
in Public methods 118
initializeEnvironment
in Functions 72
in Icc structure 72
in Method level 57
in Storage management 63

initRBA (parameter)
in Constructor 181
initRRN (parameter)
in Constructor 197
initValue (parameter)
in Constructor 165
inputCursor
in IccTerminal class 252
insert
in Example of Temporary Storage 43
in IccBuf class 98
in IccBuf constructors 26
Installed contents
Location 6
instance
in IccAbendData class 80
in IccConsole class 113
in IccControl class 118
in IccStartRequestQ class 216
in IccSystem class 225
in IccTask class 232
in IccTerminal class 253
in Singleton classes 22
internal
in DataAreaOwner 103
internalError
in C++ Exceptions and the Foundation Classes 53
in Type 136
interval (parameter)
in setReplyTimeout 114
invalidArgument
in C++ Exceptions and the Foundation Classes 52
in Type 135
invalidMethodCall
in C++ Exceptions and the Foundation Classes 53
in Type 136
invalidPasswordAttempts
in IccUser class 284
isAddable
in IccFile class 139
in Writing ESDS records 31
in Writing KSDS records 31
in Writing RRDS records 31
isAPLKeyboard
in IccTerminalData class 266
in Public methods 266
isAPLText
in IccTerminalData class 267
in Public methods 267
isBrowsable
in IccFile class 140
isBTrans
in IccTerminalData class 267
isClassMemoryMgmtOn
in Functions 72
in Icc structure 72
isColor
in IccTerminalData class 267
isCommandSecurityOn
in IccTask class 232
isCommitSupported
in IccTask class 233
isCreated
in IccControl class 118
isDeletable
in IccFile class 140
isDumpAvailable
in IccAbendData class 80
isEDFOn
in Functions 72
in Icc structure 72
in IccResource class 189
isEmptyOnOpen
in IccFile class 140
isErrorSet
in IccSession class 206
isEWA
in IccTerminalData class 267
isExpired
in IccAlarmRequestId class 88
isExtended3270
in IccTerminalData class 267
in Public methods 267
isFamilySubsetEnforcementOn
in Functions 72
in Icc structure 72
isFieldOutline
in IccTerminalData class 268
in Public methods 268
isFMHContained
in IccBuf class 98
in Public methods 98
isGoodMorning
in IccTerminalData class 268
in Public methods 268
isHighlight
in IccTerminalData class 268
isKatakana
in IccTerminalData class 268
isMSRControl
in IccTerminalData class 268
isNoDataSet
in IccSession class 207
isPS
in IccTerminalData class 269
ISR2
in Example of starting transactions 37
isReadable
in IccFile class 140
in Reading ESDS records 30
in Reading KSDS records 30
in Reading RRDS records 30
isReadable method 30
isRecoverable
in IccFile class 141
isResourceSecurityOn
in IccTask class 233
isRestarted
in IccTask class 233
isRouteOptionOn
in IccResource class 190
in Public methods 190
isSignalSet
in IccSession class 207
isSOSI
in IccTerminalData class 269
isStartDataAvailable
in IccTask class 233
issueAbend
in IccSession class 207
issueConfirmation
in IccSession class 207
issueError
in IccSession class 207
issuePrepare
in IccSession class 208
issueSignal
in IccSession class 208
isTextKeyboard
in IccTerminalData class 269
in Public methods 269
isTextPrint
in IccTerminalData class 269
in Public methods 269
isUpdatable
in IccFile class 141
isValidation
in IccTerminalData class 269
item (parameter)
in rewriteItem 243
in writeItem 126, 243
itemNum (parameter)
in readItem 242
in rewriteItem 243
ITMP
in Example of starting transactions 37

J

journalNum (parameter)
in Constructor 157, 161
in operator= 161
journalTypeId
in IccJournal class 158
journalTypeName (parameter)
in Constructor 163
in operator= 163
jtypeid (parameter)
in setJournalTypeId 158

K

key
complete 30
generic 30
key (parameter)
in Constructor 165
in Example of file control 33
in operator!= 167
in operator= 166
in operator== 166
keyLength
in IccFile class 141
in Reading KSDS records 30
in Writing KSDS records 31
keyLength method 30
keyPosition
in IccFile class 141
in Reading KSDS records 30
in writing KSDS records 31
keyPosition method 30
kind
in IccKey class 166
Kind
in Enumerations 168

Kind *(continued)*
in IccKey class 168
kind (parameter)
in Constructor 165
in setKind 167
Knowledge Center xiv
Knowledge Center content types xiv
KSDS
in File control 29
KSDS file 29

L

language
in IccUser class 284
language (parameter)
in setLanguage 285
lastCommand
in StateOpt 212
lastPasswordChange
in IccUser class 285
lastUseTime
in IccUser class 285
length
in IccProgram class 176
in IccRecordIndex class 183
length (parameter)
in append 96
in assign 97, 165
in Constructor 95
in cut 97
in insert 98
in overlay 102
in replace 102
in setDataLength 102
level (parameter)
in connectProcess 204, 205
level0
in SyncLevel 213
level1
in SyncLevel 213
level2
in SyncLevel 213
life (parameter)
in Constructor 199
lifeTime
in IccSemaphore class 200
LifeTime
in Enumerations 201
in IccSemaphore class 201
line
in Finding out information about a terminal 44
in IccTerminal class 253
lineNum (parameter)
in setLine 260
link
in IccProgram class 176
load
in IccProgram class 177
LoadOpt
in Enumerations 178
in IccProgram class 178
loc (parameter)
in Constructor 241
Location
in Dynamic link library 6
Location *(continued)*
in Enumerations 245
in Header files 6
in IccTempStore class 245
in Installed contents 6
in Sample source code 6
lock
in IccSemaphore class 200
LockType
in Enumerations 201
in IccSemaphore class 201

M

main
in C++ Exceptions and the Foundation Classes 51
in Example of file control 32
in Example of managing transient data 40
in Example of polymorphic behavior 60
in Example of starting transactions 37
in Example of Temporary Storage 42
in Example of terminal control 44
in Example of time and date services 45
in Header files 6, 48
in main function 291
in Program control 34
in Storage management 63
main function
in Hello World 9
majorCode
in ConditionType 193
manual
in UpdateMode 109
Manual condition handling (noAction)
in CICS conditions 54
in Conditions, errors, and exceptions 54
maxValue
in Range 112
mem (parameter)
in initializeEnvironment 72
memory
in Location 245
message
in IccException class 134
message (parameter)
in Constructor 133
in setNextInputMessage 260
method
in Foundation Classes—reference 69
Method level
in Conditions, errors, and exceptions 57
in Platform differences 57
methodName
in IccEvent class 132
in IccException class 134
in IccMessage class 171
methodName (parameter)
in Constructor 131, 133, 171
milliSeconds
in IccAbsTime class 84
milliSeconds *(continued)*
in IccClock class 107
minorCode
in ConditionType 193
minutes
in IccAbsTime class 84
in IccTime class 271
minutes (parameter)
in Constructor 271, 275, 277
in set 276, 278
Miscellaneous
Example of polymorphic behavior 60
mixed
in Case 263
mode (parameter)
in readNextRecord 151
in readPreviousRecord 152
in readRecord 142
monthOfYear
in Example of time and date services 46
in IccAbsTime class 84
in IccClock class 107
MonthOfYear
in Enumerations 109
in IccClock class 109
msg (parameter)
in clearInputMessage 176
in registerInputMessage 177
in setInputMessage 177
MVS/ESA
in ClassMemoryMgmt 74
in Storage management 63
MVSPost
in WaitPostType 239
MyTempStore
in Automatic condition handling (callHandleEvent) 55

N

N
in operatingSystem 226
name
in IccResource class 190
in IccResourceId class 195
name (parameter)
in Constructor 87, 169, 221, 247, 249, 279, 281, 287
in operator= 169, 221, 247, 249, 279, 281, 287
in setWaitText 234
nameLength
in IccResourceId class 196
NameOpt
in Enumerations 94
in IccBase class 94
netName
in IccTerminal class 253
neutral
in Color 263
new
in Storage management 63
new operator 15
newPassword (parameter)
in changePassword 283, 284
in signon 261

NextTransIdOpt
in Enumerations 264
in IccTerminal class 264
noAccess
in Access 147
noAction
in ActionOnCondition 192
in CICS conditions 54
noCommitOnReturn
in CommitOpt 178
NONCICS
in ASRAKeyType 78
none
in FacilityType 238
noQueue
in AllocateOpt 212
normal
in ReadMode 147
in SendOpt 212
in TraceOpt 239
NoSpaceOpt
in Enumerations 245
in IccTempStore class 245
noSuspend
in Options 160
notAddable
in Access 146
NOTAPPLIC
in ASRAKeyType 78
in ASRASpaceType 79
in ASRAStorageType 79
notBrowsable
in Access 146
notDeletable
in Access 147
notPurgeable
in WaitPurgeability 239
notReadable
in Access 146
notUpdatable
in Access 147
num (parameter)
in operator!= 182
in operator« 101, 254, 255
in operator= 181, 197
in operator== 182
number
in IccException class 134
in IccJournalId class 161
in IccMessage class 172
in IccRBA class 182
in IccRRN class 198
in IccTask class 233
in Writing RRDS records 31
number (parameter)
in Constructor 171
in setCustomClassNum 93
numberOfItems
in IccTempStore class 242
numEvents (parameter)
in waitExternal 236
numLines (parameter)
in setNewLine 260
numRoutes (parameter)
in setRouteCodes 114

O

obj (parameter)
in Using an object 16
object
creating 15
deleting 16
in GetOpt 74
using 16
object (parameter)
in Constructor 131, 133
in operator delete 92
Object level
in Conditions, errors, and exceptions 56
in Platform differences 56
objectCreationError
in C++ Exceptions and the Foundation Classes 52
in Type 135
offset (parameter)
in cut 97
in dataArea 97
in insert 98
in replace 102
in setCursor 259
onOff (parameter)
in setEDF 73, 191
open
in Status 147
openStatus
in IccFile class 142
operatingSystem
in IccSystem class 226
in Public methods 226
operatingSystemLevel
in IccSystem class 226
operator const char*
in IccBuf class 98
operator delete
in IccBase class 92
in Public methods 92
operator new
in IccBase class 92
operator!=
in IccBuf class 100
in IccKey class 166, 167
in IccRBA class 182
in IccRRN class 198
in Public methods 100
operator«
in IccBuf class 100, 101
in IccTerminal class 253, 254, 255
in Working with IccResource subclasses 28
operator+=
in IccBuf class 99
operator=
in Example of file control 33
in IccAbsTime class 85
in IccAlarmRequestId class 88
in IccBuf class 99
in IccConvId class 123
in IccDataQueueId class 129
in IccFileId class 149
in IccGroupId class 155
in IccJournalId class 161, 162
in IccJournalTypeId class 163
operator= *(continued)*
in IccKey class 166
in IccLockId class 169
in IccPartnerId class 173
in IccProgramId class 179
in IccRBA class 181
in IccRequestId class 185, 186
in IccResourceId class 196
in IccRRN class 197
in IccSysId class 221
in IccTempStoreId class 247
in IccTermId class 249
in IccTimeInterval class 275
in IccTimeOfDay class 277
in IccTPNameId class 279
in IccTransId class 281
in IccUserId class 287
in Protected methods 196
in Public methods 85, 275
in Working with IccResource subclasses 27, 28
operator==
in IccBuf class 99
in IccKey class 166
in IccRBA class 181, 182
in IccRRN class 197, 198
opt (parameter)
in abendCode 77
in access 138
in accessMethod 138
in alternateHeight 265
in alternateWidth 266
in ASRAInterrupt 78
in ASRAKeyType 78
in ASRAPSW 78
in ASRARegisters 79
in ASRASpaceType 79
in ASRAStorageType 80
in className 91, 92
in defaultHeight 266
in defaultWidth 266
in enableStatus 139
in enterTrace 231
in graphicCharCodeSet 266
in graphicCharSetId 266
in height 252
in isAddable 139
in isAPLKeyboard 267
in isAPLText 267
in isBrowsable 140
in isBTrans 267
in isColor 267
in isDeletable 140
in isDumpAvailable 80
in isEmptyOnOpen 140
in isEWA 267
in isExtended3270 268
in isFieldOutline 268
in isGoodMorning 268
in isHighlight 268
in isKatakana 268
in isMSRControl 269
in isPS 269
in isReadable 140
in isRecoverable 141
in isSOSI 269
in isTextKeyboard 269

opt (parameter) *(continued)*
in isTextPrint 269
in isUpdatable 141
in isValidation 270
in keyLength 141
in keyPosition 141
in link 176
in load 177
in openStatus 142
in originalAbendCode 80
in principalSysId 233
in priority 234
in programName 80
in recordFormat 143
in recordLength 143
in rewriteItem 243
in setNextTransId 260, 261
in type 145
in userId 235
in waitExternal 236
in width 262
in write 115
in writeAndGetReply 115
in writeItem 243, 244
opt1 (parameter)
in abend 229
opt2 (parameter)
in abend 229
option (parameter)
in allocate 204
in retrieveData 217
in send 209
in sendInvite 209, 210
in sendLast 210
in state 211
in stateText 211
in wait 159
in writeRecord 159
Options
in Enumerations 160
in IccJournal class 160
options (parameter)
in Constructor 157
opts (parameter)
in setDumpOpts 234
originalAbendCode
in IccAbendData class 80
Other data sets for CICS
in Installed contents 7
Output from sample programs
First Screen 311
Second Screen 312
overlay
in IccBuf class 102
overview of Foundation Classes 17
Overview of the foundation classes
Calling methods on a resource object 22
Creating a resource object 21

P

PA1 to PA3
in AIDVal 263
packedDecimal
in IccAbsTime class 85
Parameter level
in Conditions, errors, and exceptions 57
in Platform differences 57
parameter passing 65
Parameter passing conventions
in Miscellaneous 65
partnerName (parameter)
in Constructor 173
in operator= 173
password (parameter)
in changePassword 283
in signon 261
in verifyPassword 285
passwordExpiration
in IccUser class 285
PF1 to PF24
in AIDVal 263
pink
in Color 263
PIP (parameter)
in connectProcess 204, 205
PIPList
in IccSession class 208
platform differences
method level 57
object level 56
parameter level 57
Platform differences
in Conditions, errors, and exceptions 56
Method level 57
Object level 56
Parameter level 57
platformError
in Type 136
Platforms
in Enumerations 74
in Icc structure 74
polymorphic behavior 59
Polymorphic Behavior
Example of polymorphic behavior 60
in Miscellaneous 59
popt (parameter)
in setStartOpts 218
prefix (parameter)
in registerPrefix 158
in setPrefix 158
pri (parameter)
in setPriority 234
principalSysId
in IccTask class 233
in Public methods 233
print
in Polymorphic Behavior 59
priority
in IccTask class 234
in Public methods 234
process
in IccSession class 208
profile (parameter)
in Constructor 203
progName (parameter)
in Constructor 175, 179
in operator= 179
program control
example 34
program control *(continued)*
introduction 34
Program control
in Using CICS Services 34
programId
in IccControl class 118
in Method level 57
in Public methods 118
programId (parameter)
in setAbendHandler 119
programName
in IccAbendData class 80
in Public methods 80
programName (parameter)
in setAbendHandler 120
Protected methods
in IccBase class 92
in IccResourceId class 196
operator= 196
setClassName 92
setCustomClassNum 93
ProtectOpt
in Enumerations 220
in IccStartRequestQ class 220
pStorage (parameter)
in freeStorage 224
Public methods
abend 229
abendCode 77
abendData 230
absTime 105
access 138
accessMethod 138
actionOnCondition 187
actionOnConditionAsChar 187
actionsOnConditionsText 188
address 175
AID 251
allocate 204
alternateHeight 265
alternateWidth 265
append 96
applName 223
ASRAInterrupt 78
ASRAKeyType 78
ASRAPSW 78
ASRARegisters 79
ASRASpaceType 79
ASRAStorageType 80
assign 97, 165
beginBrowse 223, 224
beginInsert (VSAM only) 138
callingProgramId 117
cancel 215
cancelAbendHandler 117
cancelAlarm 105
changePassword 283
className 91, 131, 134, 171
classType 91, 131, 134
clear 125, 188, 242, 251
clearData 216
clearInputMessage 176
clearPrefix 158
commArea 118
commitUOW 230
completeLength 166
condition 131, 188

Public methods *(continued)*
conditionText 132, 189
connectProcess 204, 205
console 118
converse 205
convId 205
cursor 251
customClassNum 92
cut 97
data 216, 252
dataArea 97
dataAreaLength 97
dataAreaOwner 98
dataAreaType 98
dataLength 98
date 83, 106
dateFormat 224
dayOfMonth 84, 106
dayOfWeek 84, 106
daysSince1900 84, 106
daysUntilPasswordExpires 284
defaultHeight 266
defaultWidth 266
delay 230
deleteLockedRecord 138
deleteRecord 139
dump 231
empty 125, 242
enableStatus 139
endBrowse 224
endInsert (VSAM only) 139
enterTrace 231
entryPoint 176
erase 252
errorCode 206
ESMReason 284
ESMResponse 284
extractProcess 206
facilityType 231
flush 206
free 206
freeKeyboard 252
freeStorage 224, 232
get 126, 189, 206, 242, 252
getFile 224, 225
getNextFile 225
getStorage 225, 232
graphicCharCodeSet 266
graphicCharSetId 266
groupId 284
handleEvent 189
height 252
hours 84, 271
id 189
in IccAbendData class 77
in IccAbsTime class 83
in IccAlarmRequestId class 88
in IccBase class 91
in IccBuf class 96
in IccClock class 105
in IccConsole class 113
in IccControl class 117
in IccConvId class 123
in IccDataQueue class 125
in IccDataQueueId class 129
in IccEvent class 131
in IccException class 134

Public methods *(continued)*
in IccFile class 137
in IccFileId class 149
in IccFileIterator class 151
in IccGroupId class 155
in IccJournal class 157
in IccJournalId class 161
in IccJournalTypeId class 163
in IccKey class 165
in IccLockId class 169
in IccMessage class 171
in IccPartnerId class 173
in IccProgram class 175
in IccProgramId class 179
in IccRBA class 181
in IccRecordIndex class 183
in IccRequestId class 185
in IccResource class 187
in IccResourceId class 195
in IccRRN class 197
in IccSemaphore class 199
in IccSession class 204
in IccStartRequestQ class 215
in IccSysId class 221
in IccSystem class 223
in IccTask class 229
in IccTempStore class 241
in IccTempStoreId class 247
in IccTermId class 249
in IccTerminal class 251
in IccTerminalData class 265
in IccTime class 271
in IccTimeInterval class 275
in IccTimeOfDay class 277
in IccTPNameId class 279
in IccTransId class 281
in IccUser class 283
in IccUserId class 287
initData 118
inputCursor 252
insert 98
instance 80, 113, 118, 216, 225, 232, 253
invalidPasswordAttempts 284
isAddable 139
isAPLKeyboard 266
isAPLText 267
isBrowsable 140
isBTrans 267
isColor 267
isCommandSecurityOn 232
isCommitSupported 233
isCreated 118
isDeletable 140
isDumpAvailable 80
isEDFOn 189
isEmptyOnOpen 140
isErrorSet 206
isEWA 267
isExpired 88
isExtended3270 267
isFieldOutline 268
isFMHContained 98
isGoodMorning 268
isHighlight 268
isKatakana 268
isMSRControl 268

Public methods *(continued)*
isNoDataSet 207
isPS 269
isReadable 140
isRecoverable 141
isResourceSecurityOn 233
isRestarted 233
isRouteOptionOn 190
isSignalSet 207
isSOSI 269
isStartDataAvailable 233
issueAbend 207
issueConfirmation 207
issueError 207
issuePrepare 208
issueSignal 208
isTextKeyboard 269
isTextPrint 269
isUpdatable 141
isValidation 269
journalTypeId 158
keyLength 141
keyPosition 141
kind 166
language 284
lastPasswordChange 285
lastUseTime 285
length 176, 183
lifeTime 200
line 253
link 176
load 177
lock 200
message 134
methodName 132, 134, 171
milliSeconds 84, 107
minutes 84, 271
monthOfYear 84, 107
name 190, 195
nameLength 196
netName 253
number 134, 161, 172, 182, 198, 233
numberOfItems 242
openStatus 142
operatingSystem 226
operatingSystemLevel 226
operator const char* 98
operator delete 92
operator new 92
operator!= 100, 166, 167, 182, 198
operator« 100, 101, 253, 254, 255
operator+= 99
operator= 85, 88, 99, 123, 129, 149, 155, 161, 162, 163, 166, 169, 173, 179, 181, 185, 186, 197, 221, 247, 249, 275, 277, 279, 281, 287
operator== 99, 166, 181, 182, 197, 198
originalAbendCode 80
overlay 102
packedDecimal 85
passwordExpiration 285
PIPList 208
principalSysId 233
priority 234
process 208
programId 118
programName 80

Public methods *(continued)*
put 113, 126, 158, 190, 208, 242, 255
queueName 216
readItem 126, 242
readNextItem 243
readNextRecord 151
readPreviousRecord 152
readRecord 142
receive 208, 255
receive3270Data 256
recordFormat 142
recordIndex 143
recordLength 143
registerData 216
registerInputMessage 177
registerPrefix 158
registerRecordIndex 143
release 226
releaseText 226
replace 102
replyTimeout 113
reset 152, 216
resetAbendHandler 119
resetRouteCodes 114
retrieveData 217
returnProgramId 119
returnTermId 217
returnTransId 217
rewriteItem 243
rewriteRecord 143
rollBackUOW 234
routeOption 190
run 119
seconds 85, 271
send 209, 256, 257
send3270Data 257, 258
sendInvite 209
sendLast 210
sendLine 258, 259
session 119
set 275, 277
setAbendHandler 119
setAccess 144
setActionOnAnyCondition 190
setActionOnCondition 191
setActionsOnConditions 191
setAlarm 107
setAllRouteCodes 114
setColor 259
setCursor 259
setData 217
setDataLength 102
setDumpOpts 234
setEDF 191
setEmptyOnOpen 144
setFMHContained 102
setHighlight 259
setInputMessage 177
setJournalTypeId 158
setKind 167
setLanguage 285
setLine 260
setNewLine 260
setNextCommArea 260
setNextInputMessage 260
setNextTransId 260
setPrefix 158

Public methods *(continued)*
setPriority 234
setQueueName 217
setReplyTimeout 114
setReturnTermId 218
setReturnTransId 218
setRouteCodes 114
setRouteOption 191, 192
setStartOpts 218
setStatus 144
setTimerECA 88
setWaitText 234
signoff 261
signon 261
start 219
startRequestQ 120
startType 235
state 211
stateText 211
summary 132, 134, 172
suspend 235
syncLevel 211
sysId 226
system 120
task 120
terminal 120
text 172
time 85, 107
timeInHours 85, 272
timeInMinutes 85, 272
timeInSeconds 86, 272
timerECA 88
transId 235
triggerDataQueueId 235
tryLock 200
type 135, 145, 183, 200, 272
typeText 135
unload 177
unlock 200
unlockRecord 145
update 108
userId 235
value 167
verifyPassword 285
wait 159
waitExternal 236
waitForAID 262
waitOnAlarm 236
width 262
workArea 227, 236, 262
write 115
writeAndGetReply 115
writeItem 126, 243, 244
writeRecord 145, 159
year 86, 108
purgeable
in WaitPurgeability 239
put
in Example of polymorphic behavior 61
in IccConsole class 113
in IccDataQueue class 126
in IccJournal class 158
in IccResource class 190
in IccSession class 208
in IccTempStore class 242
in IccTerminal class 255

put *(continued)*
in Polymorphic Behavior 60

Q

queue
in AllocateOpt 212
in NextTransIdOpt 264
queueName
in Accessing start data 36
in IccStartRequestQ class 216
queueName (parameter)
in Constructor 125, 129
in operator= 129
in setQueueName 217

R

rAbendTask
in HandleEventReturnOpt 193
Range
in Enumerations 112
in IccCondition structure 112
RBA 29
rba (parameter)
in operator!= 182
in operator= 181
in operator== 182
rContinue
in HandleEventReturnOpt 193
readable
in Access 146
reading data 39
Reading data
in Transient Data 39
in Using CICS Services 39
Reading ESDS records
in File control 30
in Reading records 30
reading items 41
Reading items
in Temporary storage 41
in Using CICS Services 41
Reading KSDS records
in File control 30
in Reading records 30
Reading records
in File control 29
in Using CICS Services 29
Reading ESDS records 30
Reading KSDS records 30
Reading RRDS records 30
Reading RRDS records
in File control 30
in Reading records 30
readItem
in Example of Temporary Storage 43
in IccDataQueue class 126
in IccTempStore class 242
in Reading data 39
in Reading items 41
in Scope of data in IccBuf reference returned from 'read' methods 67
in Temporary storage 41
in Transient Data 39

readItem *(continued)*
in Working with IccResource subclasses 27, 28
ReadMode
in Enumerations 147
in IccFile class 147
readNextItem
in IccTempStore class 243
in Scope of data in IccBuf reference returned from 'read' methods 67
in Temporary storage 41
readNextRecord
in Browsing records 32
in IccFileIterator class 151
in Public methods 151
readNextRecord method 32
READONLY
in ASRAStorageType 79
readPreviousRecord 32
in Browsing records 32
in IccFileIterator class 152
readRecord
in C++ Exceptions and the Foundation Classes 53
in Deleting locked records 32
in IccFile class 142
in Reading records 29
in Updating records 31
readRecord method 29
receive
in IccSession class 208
in IccTerminal class 255
in Receiving data from a terminal 44
receive3270data
in Receiving data from a terminal 44
receive3270Data
in IccTerminal class 256
in Public methods 256
receiving data from a terminal 44
Receiving data from a terminal
in Terminal control 44
in Using CICS Services 44
record (parameter)
in writeRecord 159
recordFormat
in IccFile class 142
in Reading ESDS records 30
in Reading RRDS records 30
in Writing ESDS records 31
in Writing RRDS records 31
recordFormat method 30
recordIndex
in IccFile class 143
in Reading ESDS records 30
in Reading KSDS records 30
in Reading RRDS records 30
in Writing ESDS records 31
in Writing KSDS records 31
in Writing RRDS records 31
recordIndex method 30
recordLength
in IccFile class 143
in Reading ESDS records 30
in Reading KSDS records 30
in Reading RRDS records 30
in Writing ESDS records 31
in Writing KSDS records 31
recordLength *(continued)*
in Writing RRDS records 31
recordLength method 30
red
in Color 263
registerData 216
in Example of starting transactions 37
in IccStartRequestQ class 216
in Starting transactions 36
registerInputMessage 175
in IccTerminal class 177
registerPrefix
in IccJournal class 158
in Public methods 158
registerRecordIndex 30
in IccFile class 143
in Reading ESDS records 30
in Reading KSDS records 30
in Reading RRDS records 30
in Writing ESDS records 31
in Writing KSDS records 31
in Writing records 30
in Writing RRDS records 31
registerRecordIndex method 30
relative byte address 29
relative record number 29
release
in IccSystem class 226
releaseAtTaskEnd
in LoadOpt 178
releaseText
in IccSystem class 226
remoteTermId
in Example of starting transactions 37
replace
in IccBuf class 102
in IccBuf constructors 26
replyTimeout
in IccConsole class 113
req
in Example of starting transactions 38
req1
in Example of starting transactions 37
req2
in Example of starting transactions 37
reqestName (parameter)
in operator= 186
reqId (parameter)
in cancel 215
in cancelAlarm 105
in delay 230
in setAlarm 107
in start 219
requestName (parameter)
in Constructor 185
in operator= 88, 186
requestNum (parameter)
in wait 159
reset
in Browsing records 32
in IccFileIterator class 152
in IccStartRequestQ class 216
resetAbendHandler
in IccControl class 119
resetRouteCodes
in IccConsole class 114
in Public methods 114
resId (parameter)
in beginBrowse 223
resName (parameter)
in beginBrowse 224
in Constructor 195
resource (parameter)
in beginBrowse 223, 224
in Constructor 199
in endBrowse 224
in enterTrace 231
resource class 19
Resource classes
in Overview of the foundation classes 19
resource identification class 18
Resource identification classes
in Overview of the foundation classes 18
resource object
creating 21
ResourceType
in Enumerations 227
in IccSystem class 227
respectAbendHandler
in AbendHandlerOpt 237
retrieveData
in Accessing start data 36
in IccStartRequestQ class 215, 217
in Mapping EXEC CICS calls to Foundation Class methods 295
RetrieveOpt
in Enumerations 220
in IccStartRequestQ class 220
return
in Mapping EXEC CICS calls to Foundation Class methods 295
returnCondition
in NoSpaceOpt 245
returnProgramId
in IccControl class 119
in Public methods 119
returnTermId
in Accessing start data 36
in IccStartRequestQ class 217
returnToCICS
in Functions 72
in Icc structure 72
returnTransId
in Accessing start data 36
in IccStartRequestQ class 217
reverse
in Highlight 263
rewriteItem
in Example of Temporary Storage 43
in IccTempStore class 243
in Temporary storage 41
in Updating items 41
in Writing items 41
rewriteRecord
in IccFile class 143
in Updating records 31
rewriteRecord method 31

rewriting records 31
rollBackUOW
in IccTask class 234
routeOption
in IccResource class 190
row (parameter)
in send 256, 257
in setCursor 259
RRDS file
in File control 29
RRN 29
rrn (parameter)
in operator!= 198
in operator= 197
in operator== 198
rThrowException
in HandleEventReturnOpt 193
run
in Base classes 17
in C++ Exceptions and the Foundation Classes 52
in Example of file control 32, 34
in Example of managing transient data 40, 41
in Example of polymorphic behavior 60
in Example of starting transactions 37
in Example of Temporary Storage 42, 43
in Example of terminal control 44, 45
in Example of time and date services 45, 46
in Hello World 10
in IccControl class 117, 119
in main function 291, 292
in Mapping EXEC CICS calls to Foundation Class methods 295
in Program control 34
run method
in Hello World 9
Running "Hello World" on your CICS server
Expected Output from "Hello World" 11
in Hello World 10
Running the sample applications 6

S

sample source 6
Sample source code
in Installed contents 6
Location 6
scope of data 67
Scope of data in IccBuf reference returned from 'read' methods
in Miscellaneous 67
scope of references 67
SDFHLOAD 7
SDFHPROC 7
SDFHSDCK 7
search (parameter)
in Constructor 151
in reset 152
SearchCriterion
in Enumerations 147
SearchCriterion *(continued)*
in IccFile class 147
Second Screen
in ICC$PRG1 (IPR1) 312
in Output from sample programs 312
seconds
in IccAbsTime class 85
in IccTime class 271
seconds (parameter)
in Constructor 271, 275, 277
in set 276, 278
in setReplyTimeout 114
send
in Example of terminal control 44
in Hello World 10
in IccSession class 209
in IccTerminal class 256, 257
send (parameter)
in converse 205
in put 113
in send 209
in sendInvite 209
in sendLast 210
in write 115
in writeAndGetReply 115
send3270Data
in IccTerminal class 257, 258
sending data to a terminal 43
Sending data to a terminal
in Terminal control 43
in Using CICS Services 43
sendInvite
in IccSession class 209
sendLast
in IccSession class 210
sendLine
in Example of file control 33
in Example of terminal control 44
in IccTerminal class 258, 259
SendOpt
in Enumerations 212
in IccSession class 212
sequential reading of files 32
session
in FacilityType 238
in IccControl class 119
set
in IccTimeInterval class 275
in IccTimeOfDay class 277
set (parameter)
in boolText 71
set...
in Sending data to a terminal 43
setAbendHandler
in IccControl class 119
setAccess
in IccFile class 144
setActionOnAnyCondition
in IccResource class 190
setActionOnCondition
in IccResource class 191
setActionsOnConditions
in IccResource class 191
setAlarm
in IccAlarmRequestId class 87
in IccClock class 107
setAllRouteCodes
in IccConsole class 114
setClassName
in IccBase class 92
in Protected methods 92
setColor
in Example of terminal control 45
in IccTerminal class 259
setCursor
in IccTerminal class 259
setCustomClassNum
in IccBase class 93
in Protected methods 93
setData 216
in IccStartRequestQ class 217
in Starting transactions 36
setDataLength
in IccBuf class 102
setDumpOpts
in IccTask class 234
setEDF
in Functions 73
in Icc structure 73
in IccResource class 191
setEmptyOnOpen
in IccFile class 144
in Public methods 144
setFMHContained
in IccBuf class 102
in Public methods 102
setHighlight
in Example of terminal control 45
in IccTerminal class 259
setInputMessage 175
in IccProgram class 177
in Public methods 177
setJournalTypeId
in IccJournal class 158
setKind
in Example of file control 33
in IccKey class 167
setLanguage
in IccUser class 285
setLine
in IccTerminal class 260
setNewLine
in IccTerminal class 260
setNextCommArea
in IccTerminal class 260
in Public methods 260
setNextInputMessage
in IccTerminal class 260
setNextTransId
in IccTerminal class 260
setPrefix
in IccJournal class 158
setPriority
in IccTask class 234
in Public methods 234
setQueueName
in Example of starting transactions 38
in IccStartRequestQ class 217
in Starting transactions 36
setReplyTimeout
in IccConsole class 114

setReturnTermId
in Example of starting transactions 37
in IccStartRequestQ class 218
in Starting transactions 36
setReturnTransId
in Example of starting transactions 37
in IccStartRequestQ class 218
in Starting transactions 36
setRouteCodes
in IccConsole class 114
setRouteOption
in Example of starting transactions 37, 39
in IccResource class 191, 192
in Program control 35
in Public methods 191, 192
setStartOpts
in IccStartRequestQ class 218
setStatus
in IccFile class 144
setTimerECA
in IccAlarmRequestId class 88
setWaitText
in IccTask class 234
Severe error handling (abendTask)
in CICS conditions 56
in Conditions, errors, and exceptions 56
SeverityOpt
in Enumerations 116
in IccConsole class 116
signoff
in IccTerminal class 261
signon
in IccTerminal class 261
in Public methods 261
singleton class 22
Singleton classes
in Creating a resource object 22
in Using CICS resources 22
size (parameter)
in getStorage 225, 232
in operator new 92
start
in Example of starting transactions 38
in IccRequestId class 185
in IccStartRequestQ class 215, 219
in Mapping EXEC CICS calls to Foundation Class methods 295
in Parameter passing conventions 65
in Starting transactions 36
Starting transactions
in Starting transactions asynchronously 36
in Using CICS Services 36
starting transactions asynchronously 36
Starting transactions asynchronously
Accessing start data 36
Cancelling unexpired start requests 36
Example of starting transactions 36
in Using CICS Services 36
Starting transactions 36
startIO
in Options 160
startRequest
in StartType 238
startRequestQ
in Example of starting transactions 37, 38
in IccControl class 120
startType
in Example of starting transactions 38
in IccTask class 235
StartType
in Enumerations 238
in IccTask class 238
state
in IccSession class 211
StateOpt
in Enumerations 212
in IccSession class 212
stateText
in IccSession class 211
Status
in Enumerations 147
in IccFile class 147
status (parameter)
in setStatus 144
Storage management
in Miscellaneous 63
StorageOpts
in Enumerations 238
in IccTask class 238
storageOpts (parameter)
in getStorage 225, 232
storeName (parameter)
in Constructor 241
SUBSPACE
in ASRASpaceType 79
summary
in IccEvent class 132
in IccException class 134
in IccMessage class 172
support classes 20
Support Classes
in Overview of the foundation classes 20
suppressDump
in AbendDumpOpt 237
suspend
in IccTask class 235
in NoSpaceOpt 245
synchronous
in Options 160
syncLevel
in IccSession class 211
SyncLevel
in Enumerations 213
in IccSession class 213
sysId
in IccSystem class 226
sysId (parameter)
in Constructor 203
in setRouteOption 191
sysName (parameter)
in Constructor 203
in setRouteOption 192
system
in IccControl class 120

T

task
in IccControl class 120
in LifeTime 201
temporary storage
deleting items 42
example 42
introduction 41
reading items 41
updating items 41
Writing items 41
Temporary storage
Deleting items 42
Example of Temporary Storage 42
in Using CICS Services 41
Reading items 41
Updating items 41
Writing items 41
termId (parameter)
in setReturnTermId 218
in start 219
terminal
finding out about 44
in FacilityType 238
in Hello World 10
in IccControl class 120
receiving data from 44
sending data to 43
terminal control
example 44
finding out information 44
introduction 43
receiving data 44
sending data 43
Terminal control
Example of terminal control 44
Finding out information about a terminal 44
in Using CICS Services 43
Receiving data from a terminal 44
Sending data to a terminal 43
terminalInput
in StartType 238
termName (parameter)
in setReturnTermId 218
Test
in C++ Exceptions and the Foundation Classes 51, 52
test (parameter)
in boolText 71
text
in IccMessage class 172
text (parameter)
in Constructor 95, 96, 171
in operator!= 167
in operator« 100, 101, 254
in operator+= 99
in operator= 99
in operator== 166
in writeItem 126, 244
throw
in C++ Exceptions and the Foundation Classes 51

throw *(continued)*
in Exception handling (throwException) 55
throwException
in ActionOnCondition 192
in CICS conditions 54
ti
in Example of starting transactions 37, 38
time
in IccAbsTime class 85
in IccClock class 107
time (parameter)
in Constructor 83, 275, 277
in delay 230
in setAlarm 107
in start 219
Time and date services
Example of time and date services 45
in Using CICS Services 45
time services 45
timeInHours
in IccAbsTime class 85
in IccTime class 272
timeInMinutes
in IccAbsTime class 85
in IccTime class 272
timeInSeconds
in IccAbsTime class 86
in IccTime class 272
timeInterval
in Type 273
timeInterval (parameter)
in operator= 275
timeOfDay
in Type 273
timeOfDay (parameter)
in operator= 277
timerECA
in IccAlarmRequestId class 88
timerECA (parameter)
in Constructor 87
in setTimerECA 88
timeSeparator (parameter)
in time 85, 107
TPName (parameter)
in connectProcess 205
traceNum (parameter)
in enterTrace 231
TraceOpt
in Enumerations 239
in IccTask class 239
tracing
activating trace output 49
trademarks 319
transId
in IccTask class 235
transid (parameter)
in setNextTransId 260
transId (parameter)
in cancel 215
in connectProcess 204, 205
in link 176
in setNextTransId 261
in setReturnTransId 218
in start 219
transient data
deleting queues 40
example 40
introduction 39
reading data 39
Writing data 40
Transient Data
Deleting queues 40
Example of managing transient data 40
in Using CICS Services 39
Reading data 39
Writing data 40
transName (parameter)
in setReturnTransId 218
triggerDataQueueId
in IccTask class 235
trueFalse (parameter)
in setEmptyOnOpen 144
try
in C++ Exceptions and the Foundation Classes 51, 52
in Exception handling (throwException) 55
in main function 292
tryLock
in IccSemaphore class 200
tryNumber
in C++ Exceptions and the Foundation Classes 51, 52
type
in C++ Exceptions and the Foundation Classes 52
in IccException class 135
in IccFile class 145
in IccRecordIndex class 183
in IccSemaphore class 200
in IccTime class 272
Type
in Enumerations 135, 184, 273
in IccException class 135
in IccRecordIndex class 184
in IccTime class 273
type (parameter)
in condition 132, 189
in Constructor 91, 95, 96, 183, 195, 199
in waitExternal 236
typeText
in IccException class 135

U

underscore
in Highlight 264
UNIX
in ClassMemoryMgmt 74
in Storage management 63
unknownException
in Functions 73
in Icc structure 73
unload
in IccProgram class 177
unlock
in IccSemaphore class 200
unlockRecord
in IccFile class 145
UOW
in LifeTime 201
updatable
in Access 147
update
in IccClock class 108
in ReadMode 147
update (parameter)
in Constructor 105
UpdateMode
in Enumerations 109
in IccClock class 109
updateToken (parameter)
in deleteLockedRecord 138
in readNextRecord 151, 152
in readPreviousRecord 152
in readRecord 142
in rewriteRecord 143, 144
in unlockRecord 145
updating items 41
Updating items
in Temporary storage 41
in Using CICS Services 41
updating records 31
Updating records
in File control 31
in Using CICS Services 31
upper
in Case 263
USER
in ASRAStorageType 79
user (parameter)
in signon 261
userDataKey
in StorageOpts 239
USEREXECKEY
in ASRAKeyType 78
userId
in IccTask class 235
userId (parameter)
in start 219
userName (parameter)
in Constructor 283
Using an object
in C++ Objects 16
using CICS resources 21
Using CICS resources
Calling methods on a resource object 22
Creating a resource object 21
in Overview of the foundation classes 21
Singleton classes 22
Using CICS Services
Accessing start data 36
Browsing records 32
Cancelling unexpired start requests 36
Deleting items 42
Deleting queues 40
Deleting records 31
Example of file control 32
Example of managing transient data 40
Example of starting transactions 36
Example of Temporary Storage 42
Example of terminal control 44

Using CICS Services *(continued)*
Example of time and date services 45
Finding out information about a terminal 44
Reading data 39
Reading items 41
Reading records 29
Receiving data from a terminal 44
Sending data to a terminal 43
Starting transactions 36
Updating items 41
Updating records 31
Writing data 40
Writing items 41
Writing records 30

V

value
in IccKey class 167
value (parameter)
in operator= 166
variable (parameter)
in Foundation Classes—reference 69
verifyPassword
in IccUser class 285
in Public methods 285
VSAM 29

W

wait
in IccJournal class 159
in SendOpt 212
waitExternal
ECBList (parameter)
in waitExternal 236
in IccTask class 236
numEvents (parameter)
in waitExternal 236
opt (parameter)
in waitExternal 236
type (parameter)
in waitExternal 236
waitForAID
in Example of terminal control 45
in IccTerminal class 262
waitOnAlarm
in IccAlarmRequestId class 87
in IccTask class 236
WaitPostType
in Enumerations 239
in IccTask class 239
WaitPurgeability
in Enumerations 239
in IccTask class 239
width
in IccTerminal class 262
workArea
in IccSystem class 227
in IccTask class 236
in IccTerminal class 262
Working with IccResource subclasses
in Buffer objects 27
in IccBuf class 27
write
in IccConsole class 115
writeAndGetReply
in IccConsole class 115
writeItem
in C++ Exceptions and the Foundation Classes 53
in Calling methods on a resource object 23
in IccDataQueue class 126
in IccTempStore class 243, 244
in Temporary storage 41
in Transient Data 39
in Working with IccResource subclasses 27, 28
in Writing data 40
in Writing items 41
writeRecord
in Example of file control 33
in IccFile class 145
in IccJournal class 159
in Writing KSDS records 31
in Writing records 30
in Writing RRDS records 31
writeRecord method
IccFile class 30
Writing data 40
in Transient Data 40
in Using CICS Services 40
Writing ESDS records
in File control 31
in Writing records 31
Writing items 41
in Temporary storage 41
in Using CICS Services 41
Writing KSDS records
in File control 30
in Writing records 30
Writing records
in File control 30
in Using CICS Services 30
Writing ESDS records 31
Writing KSDS records 30
Writing RRDS records 31
Writing RRDS records
in File control 31
in Writing records 31

X

X
in actionOnConditionAsChar 188
in operatingSystem 226
XPLINK 7

Y

year
in IccAbsTime class 86
in IccClock class 108
yellow
in Color 263
yesNo (parameter)
in setFMHContained 102

Readers' Comments — We'd Like to Hear from You

CICS Transaction Server for z/OS
Version 5 Release 3
C++ OO Class Libraries

Publication No. SC34-7405-00

We appreciate your comments about this publication. Please comment on specific errors or omissions, accuracy, organization, subject matter, or completeness of this book. The comments you send should pertain to only the information in this manual or product and the way in which the information is presented.

For technical questions and information about products and prices, please contact your IBM branch office, your IBM business partner, or your authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you. IBM or any other organizations will only use the personal information that you supply to contact you about the issues that you state on this form.

Comments:

Thank you for your support.

Submit your comments using one of these channels:
- Send your comments to the address on the reverse side of this form.
- Send a fax to the following number: +44 1962 816151
- Send your comments via email to: idrcf@uk.ibm.com

If you would like a response from IBM, please fill in the following information:

Name	Address
Company or Organization	
Phone No.	Email address

Readers' Comments — We'd Like to Hear from You
SC34-7405-00

Cut or Fold
Along Line

Fold and Tape | **Please do not staple** | Fold and Tape

PLACE
POSTAGE
STAMP
HERE

IBM United Kingdom Limited
User Technologies Department (MP189)
Hursley Park
Winchester
Hampshire
United Kingdom
SO21 2JN

Fold and Tape | **Please do not staple** | Fold and Tape

Cut or Fold
Along Line

SC34-7405-00