ISO/IEC 9075-10:2016-12 (E)

Information te chnology - Database languages - SQL - Part 10: Object language bindings (SQL/OLB)

Contents

Page

Foreword. xix

Introduction. xx

1 Scope. 1

2 Normative references. 3

2.1 ISO and IEC standards. 3

2.2 Other international standards. 3

3 Definitions, notations, and conventions. 5

3.1 Definitions. 5

3.1.1 Definitions provided in Part 10. 5

3.2 Conventions. 7

3.2.1 Use of terms. 7

3.2.1.1 Other terms. 7

3.2.2 Specification of translator-generated classes. 8

4 Concepts. 9

4.1 Embedded syntax. 9

4.2 Character strings. 9

4.2.1 Unicode support. 9

4.2.2 Character sets. 10

4.3 Introduction to SQLJ. 10

4.3.1 Overview. 10

4.3.2 SQL constructs. 10

4.3.3 SQLJ clauses. 11

4.3.4 Binary portability. 11

4.3.4.1 Binary portability requirements. 11

4.3.4.2 Components of binary portable applications. 13

4.3.5 Profile overview. 13

4.3.5.1 EntryInfo overview. 14

4.3.5.2 TypeInfo overview. 17

4.3.5.3 SQLJ datatype properties. 18

4.3.6 Host variables. 20

4.3.7 Host expressions. 20

4.3.8 Connection contexts. 21

4.3.9 Default connection context. 21

4.3.10 Schema checking using exemplar schemas. 22

4.3.11 Using multiple SQLJ contexts and connections. 22

4.3.12 Dynamic SQL and JDBC/SQLJ Connection interoperability. . . . 22
4.3.12.1 Creating an SQLJ ConnectionContext from a `java.sql.Connection` object. . . . 23
4.3.12.2 Obtaining a `java.sql.Connection` object from an SQLJ ConnectionContext. . . . 23
4.3.12.3 Connection sharing. . . . 23
4.3.12.4 Connection resource management. . . . 23
4.3.13 SQL execution control and status. . . . 24
4.3.14 Iterators. . . . 24
4.3.15 Input and output assignability. . . . 26
4.3.16 Multiple `java.sql.ResultSet` objects from SQL-invoked procedure calls. . . . 39
4.3.16.1 Resource management with multiple results. . . . 39
4.3.17 JDBC/SQLJ ResultSet interoperability. . . . 39
4.3.17.1 Creating an SQLJ iterator from a `java.sql.ResultSet` object. . . . 39
4.3.17.2 Obtaining a `java.sql.ResultSet` object from an SQLJ iterator object. . . . 40
4.3.17.3 Obtaining a `java.sql.ResultSet` object from an untyped iterator object. . . . 40
4.3.17.4 Iterator and `java.sql.ResultSet` object resource management. . . . 40
4.3.18 Multi-threading considerations. . . . 41
4.3.19 User-defined data types. . . . 41
4.3.20 Batch updates. . . . 42
4.3.20.1 Batchable statements and batch compatibility. . . . 42
4.3.20.2 Statement batching API. . . . 43
4.3.20.3 Execution status and update counts. . . . 43
4.3.20.4 Program semantics and exceptions. . . . 44
4.3.20.5 Batch cancellation and disabling. . . . 45
4.3.20.6 Specification of a batching limit. . . . 45
4.3.21 SQLJ language elements. . . . 46
4.3.21.1 <cursor name>. . . . 46
4.3.21.2 SQL-schema, SQL-data, and SQL-transaction statements. . . . 46
4.3.21.3 <SQL dynamic statement>. . . . 46
4.3.21.4 <SQL connection statement>. . . . 47
4.3.21.5 <host variable definition>. . . . 47
4.3.21.6 <embedded exception declaration>. . . . 47
4.3.21.7 <SQL diagnostics statement>. . . . 48
4.3.21.8 Cursor declaration. . . . 48
4.3.21.9 Input parameters to SQL-statements. . . . 48
4.3.21.10 Extracting column values from SQLJ iterators. . . . 48
4.3.21.11 <open statement> and cursors. . . . 49
4.3.22 SQLJ, JDBC, and SQLExceptions and SQLWarnings. . . . 49
4.3.23 Profile generation and naming. . . . 49
4.3.24 SQLJ application packaging. . . . 50
4.3.25 Profile customizer interface. . . . 51
4.3.26 Customization interface. . . . 52
4.3.26.1 Customization usage. . . . 52
4.3.26.2 Customization registration. . . . 53

5 Lexical elements. 55
5.1 <SQL terminal character>. 55
5.2 <token> and <separator>. 56
6 Scalar expressions. 57
6.1 <value specification> and <target specification>. 57
7 Additional common elements. 59
7.1 <routine invocation>. 59
8 Embedded SQL. 61
8.1 <embedded SQL host program>. 61
8.2 <embedded SQL Java program>. 64
9 SQLJ reserved names. 65
9.1 Naming runtime library components. 65
9.2 Temporary variable names. 65
9.3 Class and resource file names. 66
9.3.1 Introduction. 66
9.3.2 Generated classes. 66
9.3.3 Resource files and profiles. 66
10 Common subelements. 67
10.1 <modifiers>. 67
10.2 <java class name>. 68
10.3 <java id>. 69
10.4 <java datatype>. 70
10.5 <java constant expression>. 71
10.6 <embedded Java expression>. 72
10.7 <implements clause>. 75
10.8 <declaration with clause>. 76
11 <SQLJ specific clause> and contents. 81
11.1 <SQLJ specific clause>. 81
11.2 <connection declaration clause>. 82
11.3 Generated connection class. 83
11.4 <iterator declaration clause>. 88
11.5 <positioned iterator>. 90
11.6 Generated positioned iterator class. 91
11.7 <named iterator>. 94
11.8 Generated named iterator class. 96
11.9 <executable clause>. 98
11.10 <context clause>. 105
11.11 <statement clause>. 107
11.12 <delete statement: positioned>. 109
11.13 <update statement: positioned>. 111
11.14 <select statement: single row>. 113
11.15 <fetch statement>. 117

11.16 <assignment statement>. . . . 120
11.17 <savepoint statement>. . . . 122
11.18 <release savepoint statement>. . . . 123
11.19 <commit statement>. . . . 124
11.20 <rollback statement>. . . . 125
11.21 <set transaction statement>. . . . 126
11.22 <call statement>. . . . 127
11.23 <assignment clause>. . . . 129
11.24 <query clause>. . . . 131
11.25 <function clause>. . . . 135
11.26 <iterator conversion clause>. . . . 138
11.27 <compound statement>. . . . 141
12 Package sqlj.runtime. . . . 143
12.1 Overview. . . . 143
12.2 SQLJ runtime interfaces. . . . 143
12.2.1 sqlj.runtime.ConnectionContext. . . . 143
12.2.1.1 Interface Overview. . . . 143
12.2.1.2 Variables. . . . 144
12.2.1.2.1 CLOSE_CONNECTION. . . . 144
12.2.1.2.2 KEEP_CONNECTION. . . . 145
12.2.1.3 Methods. . . . 145
12.2.1.3.1 close (). . . . 145
12.2.1.3.2 close (boolean). . . . 145
12.2.1.3.3 getConnectedProfile (Object). . . . 146
12.2.1.3.4 getConnection (). . . . 147
12.2.1.3.5 getExecutionContext (). . . . 147
12.2.1.3.6 getTypeMap (). . . . 147
12.2.1.3.7 isClosed (). . . . 148
12.2.2 sqlj.runtime.ForUpdate. . . . 148
12.2.2.1 Interface Overview. . . . 148
12.2.2.2 Methods. . . . 148
12.2.2.2.1 getCursorName (). . . . 148
12.2.3 sqlj.runtime.NamedIterator. . . . 149
12.2.4 sqlj.runtime.PositionedIterator. . . . 149
12.2.4.1 Interface Overview. . . . 149
12.2.4.2 Methods. . . . 150
12.2.4.2.1 endFetch (). . . . 150
12.2.5 sqlj.runtime.ResultSetIterator. . . . 150
12.2.5.1 Interface Overview. . . . 150
12.2.5.2 Variables. . . . 150
12.2.5.2.1 ASENSITIVE. . . . 150
12.2.5.2.2 FETCH_FORWARD. . . . 151
12.2.5.2.3 FETCH_REVERSE. . . . 151

12.2.5.2.4 FETCH_UNKNOWN. . . . 151
12.2.5.2.5 INSENSITIVE. . . . 151
12.2.5.2.6 SENSITIVE. . . . 151
12.2.5.3 Methods. . . . 151
12.2.5.3.1 clearWarnings (). . . . 152
12.2.5.3.2 close (). . . . 152
12.2.5.3.3 getFetchSize (). . . . 152
12.2.5.3.4 getResultSet (). . . . 153
12.2.5.3.5 getRow (). . . . 153
12.2.5.3.6 getSensitivity (). . . . 153
12.2.5.3.7 getWarnings (). . . . 154
12.2.5.3.8 isClosed (). . . . 155
12.2.5.3.9 next (). . . . 155
12.2.5.3.10 setFetchSize (int). . . . 155
12.2.6 sqlj.runtime.Scrollable. . . . 157
12.2.6.1 Interface Overview. . . . 157
12.2.6.2 Variables. . . . 157
12.2.6.3 Methods. . . . 157
12.2.6.3.1 absolute (int). . . . 157
12.2.6.3.2 afterLast (). . . . 158
12.2.6.3.3 beforeFirst (). . . . 158
12.2.6.3.4 first (). . . . 158
12.2.6.3.5 getFetchDirection (). . . . 159
12.2.6.3.6 isAfterLast (). . . . 159
12.2.6.3.7 isBeforeFirst (). . . . 159
12.2.6.3.8 isFirst (). . . . 160
12.2.6.3.9 isLast (). . . . 160
12.2.6.3.10 last (). . . . 160
12.2.6.3.11 previous (). . . . 161
12.2.6.3.12 relative (int). . . . 161
12.2.6.3.13 setFetchDirection (int). . . . 162
12.3 SQLJ Runtime Classes. . . . 163
12.3.1 sqlj.runtime.AsciiStream. . . . 163
12.3.1.1 Class Overview. . . . 163
12.3.1.2 Constructors. . . . 163
12.3.1.2.1 AsciiStream (InputStream). . . . 163
12.3.1.2.2 AsciiStream (InputStream, int). . . . 164
12.3.2 sqlj.runtime.BinaryStream. . . . 164
12.3.2.1 Class Overview. . . . 164
12.3.2.2 Constructors. . . . 165
12.3.2.2.1 BinaryStream (InputStream). . . . 165
12.3.2.2.2 BinaryStream (InputStream, int). . . . 165
12.3.3 sqlj.runtime.DefaultRuntime. . . . 165
12.3.3.1 Class Overview. . . . 165

12.3.3.2 Constructors. . . . 166
12.3.3.2.1 DefaultRuntime (). . . . 166
12.3.3.3 Methods. . . . 166
12.3.3.3.1 getDefaultConnection (). . . . 166
12.3.3.3.2 getLoaderForClass (Class). . . . 166
12.3.4 sqlj.runtime.ExecutionContext. . . . 167
12.3.4.1 Class Overview. . . . 167
12.3.4.2 Variables. . . . 168
12.3.4.2.1 ADD_BATCH_COUNT. . . . 168
12.3.4.2.2 AUTO_BATCH. . . . 168
12.3.4.2.3 EXEC_BATCH_COUNT. . . . 168
12.3.4.2.4 EXCEPTION_COUNT. . . . 169
12.3.4.2.5 NEW_BATCH_COUNT. . . . 169
12.3.4.2.6 QUERY_COUNT. . . . 169
12.3.4.2.7 UNLIMITED_BATCH. . . . 170
12.3.4.3 Constructors. . . . 170
12.3.4.3.1 ExecutionContext (). . . . 170
12.3.4.4 Methods. . . . 170
12.3.4.4.1 cancel (). . . . 170
12.3.4.4.2 execute (). . . . 171
12.3.4.4.3 executeBatch (). . . . 172
12.3.4.4.4 executeQuery (). . . . 173
12.3.4.4.5 executeUpdate (). . . . 173
12.3.4.4.6 getBatchLimit (). . . . 174
12.3.4.4.7 getBatchUpdateCounts (). . . . 175
12.3.4.4.8 getFetchDirection (). . . . 175
12.3.4.4.9 getFetchSize (). . . . 175
12.3.4.4.10 getMaxFieldSize (). . . . 176
12.3.4.4.11 getMaxRows (). . . . 176
12.3.4.4.12 getNextResultSet (). . . . 177
12.3.4.4.13 getNextResultSet (int). . . . 177
12.3.4.4.14 getQueryTimeout (). . . . 178
12.3.4.4.15 getUpdateCount (). . . . 179
12.3.4.4.16 getWarnings (). . . . 179
12.3.4.4.17 isBatching (). . . . 180
12.3.4.4.18 registerStatement (ConnectionContext, Object, int). . . . 180
12.3.4.4.19 releaseStatement (). . . . 181
12.3.4.4.20 setBatching (boolean). . . . 182
12.3.4.4.21 setBatchLimit (int). . . . 182
12.3.4.4.22 setFetchDirection (int). . . . 183
12.3.4.4.23 setFetchSize (int). . . . 183
12.3.4.4.24 setMaxFieldSize (int). . . . 184
12.3.4.4.25 setMaxRows (int). . . . 184
12.3.4.4.26 setQueryTimeout (int). . . . 184

12.3.5 sqlj.runtime.RuntimeContext. 185
12.3.5.1 Class Overview. 185
12.3.5.2 Variables. 185
12.3.5.2.1 DEFAULT_DATA_SOURCE. 185
12.3.5.2.2 DEFAULT_RUNTIME. 186
12.3.5.2.3 PROPERTY_KEY. 186
12.3.5.3 Constructors. 186
12.3.5.3.1 RuntimeContext (). 186
12.3.5.4 Methods. 186
12.3.5.4.1 getDefaultConnection (). 186
12.3.5.4.2 getLoaderForClass (Class). 187
12.3.5.4.3 getRuntime (). 187
12.3.6 sqlj.runtime.StreamWrapper. 188
12.3.6.1 Class Overview. 188
12.3.6.2 Constructors. 188
12.3.6.2.1 StreamWrapper (InputStream). 188
12.3.6.2.2 StreamWrapper (InputStream, int). 189
12.3.6.3 Methods. 189
12.3.6.3.1 getInputStream (). 189
12.3.6.3.2 getLength (). 189
12.3.6.3.3 setLength (int). 190
12.3.7 sqlj.runtime.UnicodeStream. 190
12.3.7.1 Class Overview. 190
12.3.7.2 Constructors. 191
12.3.7.2.1 UnicodeStream (InputStream). 191
12.3.7.2.2 UnicodeStream (InputStream, int). 191
12.3.8 sqlj.runtime.CharacterStream. 191
12.3.8.1 Class Overview. 191
12.3.8.2 Constructors. 192
12.3.8.2.1 CharacterStream (Reader). 192
12.3.8.2.2 CharacterStream (Reader, int). 192
12.3.8.3 Methods. 193
12.3.8.3.1 getReader (). 193
12.3.8.3.2 getLength (). 193
12.3.8.3.3 setLength (int). 193
12.3.9 sqlj.runtime.SQLNullException. 194
12.3.9.1 Class Overview. 194
12.3.9.2 Constructors. 194
12.3.9.2.1 SQLNullException (). 194
13 Package sqlj.runtime.profile. 195
13.1 Overview. 195
13.2 SQLJ sqlj.runtime.profile Interfaces. 195
13.2.1 sqlj.runtime.profile.BatchContext. 195

13.2.1.1 Interface Overview. . . . 195
13.2.1.2 Methods. . . . 195
13.2.1.2.1 clearBatch (). . . . 195
13.2.1.2.2 executeBatch (). . . . 196
13.2.1.2.3 setBatchLimit (int). . . . 196
13.2.2 sqlj.runtime.profile.ConnectedProfile. . . . 197
13.2.2.1 Interface Overview. . . . 197
13.2.2.2 Methods. . . . 198
13.2.2.2.1 close (). . . . 198
13.2.2.2.2 getConnection (). . . . 198
13.2.2.2.3 getProfileData (). . . . 198
13.2.2.2.4 getStatement (int, Map). . . . 199
13.2.2.2.5 getStatement (int, BatchContext, Map). . . . 199
13.2.3 sqlj.runtime.profile.Customization. . . . 200
13.2.3.1 Interface Overview. . . . 200
13.2.3.2 Methods. . . . 201
13.2.3.2.1 acceptsConnection (Connection). . . . 201
13.2.3.2.2 getProfile (Connection, Profile). . . . 201
13.2.4 sqlj.runtime.profile.Loader. . . . 202
13.2.4.1 Interface Overview. . . . 202
13.2.4.2 Methods. . . . 202
13.2.4.2.1 getResourceAsStream (String). . . . 202
13.2.4.2.2 loadClass (String). . . . 203
13.2.5 sqlj.runtime.profile.RTResultSet. . . . 204
13.2.5.1 Interface Overview. . . . 204
13.2.5.2 Methods. . . . 207
13.2.5.2.1 clearWarnings (). . . . 207
13.2.5.2.2 close (). . . . 207
13.2.5.2.3 findColumn (String). . . . 207
13.2.5.2.4 getArray (int). . . . 208
13.2.5.2.5 getAsciiStreamWrapper (int). . . . 209
13.2.5.2.6 getBigDecimal (int). . . . 210
13.2.5.2.7 getBinaryStreamWrapper (int). . . . 210
13.2.5.2.8 getBlob (int). . . . 211
13.2.5.2.9 getBooleanNoNull (int). . . . 212
13.2.5.2.10 getBooleanWrapper (int). . . . 213
13.2.5.2.11 getByteNoNull (int). . . . 214
13.2.5.2.12 getBytes (int). . . . 215
13.2.5.2.13 getByteWrapper (int). . . . 215
13.2.5.2.14 getCharacterStreamWrapper (int). . . . 216
13.2.5.2.15 getClob (int). . . . 217
13.2.5.2.16 getColumnCount (). . . . 218
13.2.5.2.17 getCursorName (). . . . 218
13.2.5.2.18 getDate (int). . . . 219

13.2.5.2.19 getDoubleNoNull (int). 220
13.2.5.2.20 getDoubleWrapper (int). 221
13.2.5.2.21 getFloatNoNull (int). 221
13.2.5.2.22 getFloatWrapper (int). 222
13.2.5.2.23 getIntNoNull (int). 223
13.2.5.2.24 getIntWrapper (int). 224
13.2.5.2.25 getJDBCResultSet (). 224
13.2.5.2.26 getLongNoNull (int). 225
13.2.5.2.27 getLongWrapper (int). 226
13.2.5.2.28 getObject (int, Class). 227
13.2.5.2.29 getRef (int). 228
13.2.5.2.30 getShortNoNull (int). 229
13.2.5.2.31 getShortWrapper (int). 229
13.2.5.2.32 getString (int). 230
13.2.5.2.33 getSQLXML(int). 231
13.2.5.2.34 getTime (int). 232
13.2.5.2.35 getTimestamp (int). 232
13.2.5.2.36 getUnicodeStreamWrapper (int). 233
13.2.5.2.37 getURL (int). 234
13.2.5.2.38 getWarnings (). 235
13.2.5.2.39 isClosed (). 235
13.2.5.2.40 isValidRow (). 236
13.2.5.2.41 next (). 236
13.2.6 sqlj.runtime.profile.RTStatement. 236
13.2.6.1 Interface Overview. 236
13.2.6.2 Methods. 242
13.2.6.2.1 cancel (). 242
13.2.6.2.2 clearWarnings (). 242
13.2.6.2.3 execute (). 242
13.2.6.2.4 executeComplete (). 243
13.2.6.2.5 executeRTQuery (). 243
13.2.6.2.6 executeUpdate (). 244
13.2.6.2.7 getArray (int). 244
13.2.6.2.8 getBatchContext (). 245
13.2.6.2.9 getBigDecimal (int). 246
13.2.6.2.10 getBlob (int). 247
13.2.6.2.11 getBooleanNoNull (int). 248
13.2.6.2.12 getBooleanWrapper (int). 248
13.2.6.2.13 getByteNoNull (int). 249
13.2.6.2.14 getBytes (int). 250
13.2.6.2.15 getByteWrapper (int). 251
13.2.6.2.16 getClob (int). 251
13.2.6.2.17 getDate (int). 252
13.2.6.2.18 getDoubleNoNull (int). 253

13.2.6.2.19 getDoubleWrapper (int). 254
13.2.6.2.20 getFloatNoNull (int). 255
13.2.6.2.21 getFloatWrapper (int). 255
13.2.6.2.22 getIntNoNull (int). 256
13.2.6.2.23 getIntWrapper (int). 257
13.2.6.2.24 getJDBCCallableStatement (). 258
13.2.6.2.25 getJDBCPreparedStatement (). 258
13.2.6.2.26 getLongNoNull (int). 258
13.2.6.2.27 getLongWrapper (int). 259
13.2.6.2.28 getMaxFieldSize (). 260
13.2.6.2.29 getMaxRows (). 260
13.2.6.2.30 getMoreResults (int). 261
13.2.6.2.31 getObject (int, Class). 262
13.2.6.2.32 getQueryTimeout (). 263
13.2.6.2.33 getRef (int). 263
13.2.6.2.34 getResultSet (). 264
13.2.6.2.35 getShortNoNull (int). 265
13.2.6.2.36 getShortWrapper (int). 265
13.2.6.2.37 getString (int). 266
13.2.6.2.38 getSQLXML (int). 267
13.2.6.2.39 getTime (int). 268
13.2.6.2.40 getTimestamp (int). 268
13.2.6.2.41 getUpdateCount (). 269
13.2.6.2.42 getURL (). 270
13.2.6.2.43 getWarnings (). 270
13.2.6.2.44 isBatchable (). 271
13.2.6.2.45 isBatchCompatible (). 272
13.2.6.2.46 aetArray (int, Array). 272
13.2.6.2.47 setAsciiStreamWrapper (int, AsciiStream). 273
13.2.6.2.48 setBigDecimal (int, BigDecimal). 274
13.2.6.2.49 setBinaryStreamWrapper (int, BinaryStream). 275
13.2.6.2.50 setBlob (int, Blob). 275
13.2.6.2.51 setBoolean (int, boolean). 276
13.2.6.2.52 setBooleanWrapper (int, Boolean). 277
13.2.6.2.53 setByte (int, byte). 277
13.2.6.2.54 setBytes (int, byte). 278
13.2.6.2.55 setByteWrapper (int, Byte). 279
13.2.6.2.56 setCharacterStreamWrapper (int, CharacterStream). 279
13.2.6.2.57 setClob (int, Clob). 280
13.2.6.2.58 setDate (int, Date). 281
13.2.6.2.59 setDouble (int, double). 281
13.2.6.2.60 setDoubleWrapper (int, Double). 282
13.2.6.2.61 setFloat (int, float). 283
13.2.6.2.62 setFloatWrapper (int, Float). 284

13.2.6.2.63 setInt (int, int). . . . 284
13.2.6.2.64 setIntWrapper (int, Integer). . . . 285
13.2.6.2.65 setLong (int, long). . . . 286
13.2.6.2.66 setLongWrapper (int, Long). . . . 286
13.2.6.2.67 setMaxFieldSize (int). . . . 287
13.2.6.2.68 setMaxRows (int). . . . 287
13.2.6.2.69 setObject (). . . . 288
13.2.6.2.70 setQueryTimeout (int). . . . 289
13.2.6.2.71 setRef (int, Ref). . . . 289
13.2.6.2.72 setShort (int, short). . . . 290
13.2.6.2.73 setShortWrapper (int, Short). . . . 290
13.2.6.2.74 setString (int, String). . . . 291
13.2.6.2.75 setSQLXML (int, SQLXML). . . . 292
13.2.6.2.76 setTime (int, Time). . . . 293
13.2.6.2.77 setTimestamp (int, Timestamp). . . . 293
13.2.6.2.78 setUnicodeStreamWrapper (int, UnicodeStream). . . . 294
13.2.6.2.79 setURL (int, URL). . . . 295
13.2.7 sqlj.runtime.profile.SerializedProfile. . . . 295
13.2.7.1 Interface Overview. . . . 295
13.2.7.2 Methods. . . . 296
13.2.7.2.1 getProfileAsStream (). . . . 296
13.3 SQLJ sqlj.runtime.profile Classes. . . . 297
13.3.1 sqlj.runtime.profile.DefaultLoader. . . . 297
13.3.1.1 Class Overview. . . . 297
13.3.1.2 Constructors. . . . 297
13.3.1.2.1 DefaultLoader (ClassLoader). . . . 297
13.3.1.3 Methods. . . . 298
13.3.1.3.1 getResourceAsStream (String). . . . 298
13.3.1.3.2 loadClass (String). . . . 298
13.3.2 sqlj.runtime.profile.EntryInfo. . . . 299
13.3.2.1 Class Overview. . . . 299
13.3.2.2 Variables. . . . 299
13.3.2.2.1 BLOCK. . . . 299
13.3.2.2.2 CALL. . . . 299
13.3.2.2.3 CALLABLE_STATEMENT. . . . 300
13.3.2.2.4 COMMIT. . . . 300
13.3.2.2.5 EXECUTE. . . . 300
13.3.2.2.6 EXECUTE_QUERY. . . . 301
13.3.2.2.7 EXECUTE_UPDATE. . . . 301
13.3.2.2.8 ITERATOR_CONVERSION. . . . 301
13.3.2.2.9 NAMED_RESULT. . . . 302
13.3.2.2.10 NO_RESULT. . . . 302
13.3.2.2.11 OTHER. . . . 302
13.3.2.2.12 POSITIONED. . . . 303

13.3.2.2.13 POSITIONED_RESULT. . . . 303
13.3.2.2.14 PREPARED_STATEMENT. . . . 303
13.3.2.2.15 QUERY. . . . 304
13.3.2.2.16 QUERY_FOR_UPDATE. . . . 304
13.3.2.2.17 RELEASE_SAVEPOINT. . . . 304
13.3.2.2.18 ROLLBACK. . . . 305
13.3.2.2.19 SAVEPOINT. . . . 305
13.3.2.2.20 SET_TRANSACTION. . . . 305
13.3.2.2.21 SINGLE_ROW_QUERY. . . . 306
13.3.2.2.22 STATEMENT. . . . 306
13.3.2.2.23 UNTYPED_SELECT. . . . 306
13.3.2.2.24 VALUES. . . . 306
13.3.2.3 Constructors. . . . 307
13.3.2.3.1 EntryInfo (). . . . 307
13.3.2.4 Methods. . . . 307
13.3.2.4.1 executeTypeToString (int). . . . 307
13.3.2.4.2 getDescriptor (). . . . 307
13.3.2.4.3 getExecuteType (). . . . 308
13.3.2.4.4 getLineNumber (). . . . 309
13.3.2.4.5 getParamCount (). . . . 309
13.3.2.4.6 getParamInfo (int). . . . 309
13.3.2.4.7 getResultSetCount (). . . . 310
13.3.2.4.8 getResultSetInfo (int). . . . 310
13.3.2.4.9 getResultSetName (). . . . 311
13.3.2.4.10 getResultSetType (). . . . 311
13.3.2.4.11 getRole (). . . . 312
13.3.2.4.12 getSQLString (). . . . 313
13.3.2.4.13 getStatementType (). . . . 313
13.3.2.4.14 getTransactionDescriptor (). . . . 313
13.3.2.4.15 isDefinedRole (int). . . . 314
13.3.2.4.16 isValidDescriptor (Object, int). . . . 314
13.3.2.4.17 isValidExecuteType (int). . . . 315
13.3.2.4.18 isValidResultSetType (int). . . . 315
13.3.2.4.19 isValidRole (int). . . . 315
13.3.2.4.20 isValidStatementType (int). . . . 316
13.3.2.4.21 resultSetTypeToString (int). . . . 316
13.3.2.4.22 roleToString (int). . . . 317
13.3.2.4.23 statementTypeToString (int). . . . 317
13.3.2.4.24 validateObject (). . . . 318
13.3.3 sqlj.runtime.profile.Profile. . . . 318
13.3.3.1 Class Overview. . . . 318
13.3.3.2 Constructors. . . . 319
13.3.3.2.1 Profile (Loader). . . . 319
13.3.3.3 Methods. . . . 320

13.3.3.3.1 deregisterCustomization (Customization). . . . 320
13.3.3.3.2 getConnectedProfile (Connection). . . . 320
13.3.3.3.3 getContextName (). . . . 321
13.3.3.3.4 getCustomizations (). . . . 321
13.3.3.3.5 getJavaType (String). . . . 321
13.3.3.3.6 getJavaType (TypeInfo). . . . 322
13.3.3.3.7 getLoader (). . . . 323
13.3.3.3.8 getProfileData (). . . . 323
13.3.3.3.9 getProfileName (). . . . 323
13.3.3.3.10 getTimestamp (). . . . 323
13.3.3.3.11 instantiate (Loader, InputStream). . . . 324
13.3.3.3.12 instantiate (Loader, String). . . . 324
13.3.3.3.13 registerCustomization (Customization). . . . 326
13.3.3.3.14 registerCustomization (Customization, Customization). . . . 326
13.3.3.3.15 replaceCustomization (Customization, Customization). . . . 327
13.3.4 sqlj.runtime.profile.ProfileData. . . . 327
13.3.4.1 Class Overview. . . . 327
13.3.4.2 Constructors. . . . 328
13.3.4.2.1 ProfileData (). . . . 328
13.3.4.3 Methods. . . . 328
13.3.4.3.1 getEntryInfo (int). . . . 328
13.3.4.3.2 getProfile (). . . . 328
13.3.4.3.3 getSourceFile (). . . . 329
13.3.4.3.4 size (). . . . 329
13.3.5 sqlj.runtime.profile.SetTransactionDescriptor. . . . 329
13.3.5.1 Class Overview. . . . 329
13.3.5.2 Variables. . . . 330
13.3.5.2.1 READ_NONE. . . . 330
13.3.5.2.2 READ_ONLY. . . . 330
13.3.5.2.3 READ_WRITE. . . . 330
13.3.5.3 Constructors. . . . 331
13.3.5.3.1 SetTransactionDescriptor (int, int). . . . 331
13.3.5.4 Methods. . . . 331
13.3.5.4.1 getAccessMode (). . . . 331
13.3.5.4.2 getIsolationLevel (). . . . 332
13.3.6 sqlj.runtime.profile.TypeInfo. . . . 332
13.3.6.1 Class Overview. . . . 332
13.3.6.2 Variables. . . . 333
13.3.6.2.1 IN. . . . 333
13.3.6.2.2 INOUT. . . . 333
13.3.6.2.3 OUT. . . . 333
13.3.6.3 Constructors. . . . 334
13.3.6.3.1 TypeInfo (). . . . 334
13.3.6.4 Methods. . . . 334

13.3.6.4.1 getJavaTypeName (). . . . 334
13.3.6.4.2 getMarkerIndex (). . . . 335
13.3.6.4.3 getMode (). . . . 335
13.3.6.4.4 getName (). . . . 335
13.3.6.4.5 getSQLType (). . . . 336
13.3.6.4.6 getSQLTypeName (). . . . 337
13.3.6.4.7 isValidMode (int). . . . 337
13.3.6.4.8 isValidSQLType (int). . . . 337
13.3.6.4.9 modeToString (int). . . . 338
13.3.6.4.10 SQLTypeToString (int). . . . 338
13.3.6.4.11 validateObject (). . . . 339
14 sqlj.runtime.profile.util.ProfileCustomizer. . . . 341
14.1 Interface Overview. . . . 341
14.2 Methods. . . . 343
14.2.1 acceptsConnection (Connection). . . . 343
14.2.2 customize (Profile, Connection, ErrorLog). . . . 343
15 Definition Schema. . . . 345
15.1 SQL_CONFORMANCE base table. . . . 345
16 Status codes. . . . 347
16.1 SQLSTATE. . . . 347
17 Conformance. . . . 349
17.1 Claims of conformance to SQL/OLB. . . . 349
17.2 Additional conformance requirements for SQL/OLB. . . . 349
17.3 Implied feature relationships of SQL/OLB. . . . 349
Annex A (informative) **SQL Conformance Summary. . . . 351**
Annex B (informative) **Implementation-defined elements. . . . 355**
Annex C (informative) **Implementation-dependent elements. . . . 359**
Annex D (infomative) **Deprecated features. . . . 363**
Annex E (informative) **Incompatibilities with ISO/IEC 9075:2008. . . . 365**
Annex F (informative) **SQL feature taxonomy. . . . 367**
Annex G (informative) **Defect reports not addressed in this edition of this part of ISO/IEC 9075. . . 369**
Bibliography. . . . 371
Index. . . . 373

Tables

Table

Page

1 Association of roles with SQLJ <executable clause>s. . . . 15
2 SQLJ type properties. . . . 18
3 SQLJ output assignability (part 1). . . . 26
4 SQLJ output assignability (part 2). . . . 28
5 SQLJ output assignability (part 3). . . . 29
6 SQLJ output assignability (part 4). . . . 31
7 SQLJ input assignability (part 1). . . . 33
8 SQLJ input assignability (part 2). . . . 34
9 SQLJ input assignability (part 3). . . . 36
10 SQLJ input assignability (part 4). . . . 37
11 Methods retained from java.sql.ResultSet. . . . 204
12 Methods not retained from java.sql.ResultSet. . . . 205
13 Additional methods unique to RTResultSet. . . . 206
14 Methods retained from java.sql.Statement. . . . 237
15 Methods not retained from java.sql.Statement. . . . 238
16 Methods retained from java.sql.PreparedStatement. . . . 238
17 Methods not retained from java.sql.PreparedStatement. . . . 240
18 Methods retained from java.sql.CallableStatement. . . . 240
19 Methods not retained from java.sql.CallableStatement. . . . 241
20 Additional methods unique to RTStatement. . . . 241
21 Customize Result Interpretation. . . . 342
22 SQLSTATE class and subclass codes. . . . 347
23 Implied feature relationships of SQL/OLB. . . . 349
24 Feature taxonomy for optional features. . . . 367