ISO/IEC 9075-3:2023-06 (E)

Information technology - Database language s SQL - Part 3: Call-Level Interface (SQL/CLI)

Contents

Page

Foreword. ix

Introduction. xi

1 Scope. 1

2 Normative references. 2

3 Terms and definitions. 3

4 Concepts. 4

4.1 Notations and conventions. 4

4.1.1 Notations. 4

4.1.2 Specification of routine definitions. 4

4.2 Introduction to SQL/CLI. 4

4.3 Return codes. 8

4.4 Diagnostics areas in SQL/CLI. 9

4.4.1 Introduction to diagnostics areas in SQL/CLI. 9

4.4.2 Setting of ROW_NUMBER and COLUMN_NUMBER fields. 12

4.5 Miscellaneous characteristics. 12

4.5.1 Handles. 12

4.5.2 Null-terminated strings. 12

4.5.3 Null pointers. 13

4.5.4 Environment attributes. 13

4.5.5 Connection attributes. 13

4.5.6 Statement attributes. 14

4.5.7 CLI descriptor areas. 14

4.5.8 Obtaining diagnostics during multi-row fetch. 15

4.6 SQL-invoked routines. 16

4.6.1 Result sets returned by SQL-invoked procedures. 16

4.7 Cursors. 16

4.7.1 General description of cursors. 16

4.8 Client-server operation. 16

5 Lexical elements. 17

5.1 <token> and <separator>. 17

6 Call-Level Interface specifications. 18

6.1 <CLI routine>. 18

6.2 <CLI routine> invocation. 26

6.3 Implicit set connection. 29

6.4 Preparing a statement. 30

6.5 Executing a statement. 33

6.6 Implicit CLI prepared cursor. 35

6.7 Implicit CLI procedural result cursor. 37

6.8 Initial CLI cursor . . . 38
6.9 Implicit DESCRIBE USING clause . . . 39
6.10 Implicit EXECUTE USING and OPEN USING clauses . . . 45
6.11 Implicit CALL USING clause . . . 51
6.12 Fetching a rowset . . . 56
6.13 Implicit FETCH USING clause . . . 60
6.14 Character string retrieval . . . 66
6.15 Binary string retrieval . . . 68
6.16 Deferred parameter check . . . 70
6.17 Description of CLI item descriptor areas . . . 71
6.18 Other tables associated with CLI . . . 82
6.19 SQL/CLI data type correspondences . . . 106
7 SQL/CLI routines . . . 116
7.1 Introduction to SQL/CLI routines . . . 116
7.2 AllocConnect() . . . 116
7.3 AllocEnv() . . . 117
7.4 AllocHandle() . . . 118
7.5 AllocStmt() . . . 122
7.6 BindCol() . . . 123
7.7 BindParameter() . . . 125
7.8 Cancel() . . . 129
7.9 CloseCursor() . . . 131
7.10 ColAttribute() . . . 132
7.11 ColumnPrivileges() . . . 134
7.12 Columns() . . . 140
7.13 Connect() . . . 149
7.14 CopyDesc() . . . 153
7.15 DataSources() . . . 154
7.16 DescribeCol() . . . 156
7.17 Disconnect() . . . 158
7.18 EndTran() . . . 160
7.19 Error() . . . 164
7.20 ExecDirect() . . . 166
7.21 Execute() . . . 167
7.22 Fetch() . . . 168
7.23 FetchScroll() . . . 169
7.24 ForeignKeys() . . . 170
7.25 FreeConnect() . . . 182
7.26 FreeEnv() . . . 183
7.27 FreeHandle() . . . 184
7.28 FreeStmt() . . . 187
7.29 GetConnectAttr() . . . 189
7.30 GetCursorName() . . . 191
7.31 GetData() . . . 192
7.32 GetDescField() . . . 198
7.33 GetDescRec() . . . 200
7.34 GetDiagField() . . . 202

7.35 GetDiagRec() . . . 211
7.36 GetEnvAttr() . . . 213
7.37 GetFeatureInfo() . . . 215
7.38 GetFunctions() . . . 218
7.39 GetInfo() . . . 219
7.40 GetLength() . . . 223
7.41 GetParamData() . . . 225
7.42 GetPosition() . . . 231
7.43 GetSessionInfo() . . . 233
7.44 GetStmtAttr() . . . 235
7.45 GetSubString() . . . 238
7.46 GetTypeInfo() . . . 240
7.47 MoreResults() . . . 244
7.48 NextResult() . . . 245
7.49 NumResultCols() . . . 246
7.50 ParamData() . . . 247
7.51 Prepare() . . . 252
7.52 PrimaryKeys() . . . 253
7.53 PutData() . . . 258
7.54 RowCount() . . . 261
7.55 SetConnectAttr() . . . 262
7.56 SetCursorName() . . . 264
7.57 SetDescField() . . . 266
7.58 SetDescRec() . . . 271
7.59 SetEnvAttr() . . . 273
7.60 SetStmtAttr() . . . 275
7.61 SpecialColumns() . . . 279
7.62 StartTran() . . . 286
7.63 TablePrivileges() . . . 288
7.64 Tables() . . . 293

8 Additional data manipulation rules . . . 300
8.1 Effect of opening a cursor . . . 300

9 Dynamic SQL . . . 301
9.1 <preparable dynamic cursor name> . . . 301

10 Status codes . . . 302
10.1 SQLSTATE . . . 302

11 Conformance . . . 305
11.1 Claims of conformance to SQL/CLI . . . 305
11.2 Additional conformance requirements for SQL/CLI . . . 305
11.3 Implied feature relationships of SQL/CLI . . . 305

Annex A (informative) **SQL conformance summary . . . 306**

Annex B (informative) **Implementation-defined elements . . . 308**

Annex C (informative) **Implementation-dependent elements . . . 329**

Annex D (informative) **SQL optional feature taxonomy . . . 334**

Annex E (informative) **Deprecated features . . . 335**

Annex F (informative) **Incompatibilities with ISO/IEC 9075:2016** **336**
Annex G (informative) **Defect Reports not addressed in this edition of this document** **337**
Annex H (informative) **Example header files** **338**
H.1 C header file sqlcli.h 338
H.2 COBOL library item SQLCLI 349
Annex I (informative) **Example C programs** **357**
I.1 Introduction to Example C programs 357
I.2 Create table, insert, select 357
I.3 Interactive Query 360
I.4 Providing long dynamic arguments at Execute time 363
Index **366**