INTERNATIONAL STANDARD ISO/IEC 9075-3:1999

TECHNICAL CORRIGENDUM 2

Published 2003-06-01

Information technology — Database languages — SQL —

Part 3:
Call-Level Interface (SQL/CLI)

TECHNICAL CORRIGENDUM 2

Technologies de l'information — Langages de base de données — SQL —

Partie 3: Interface de niveau d'appel (SQL/CLI)

RECTIFICATIF TECHNIQUE 2

Technical Corrigendum 2 to ISO/IEC 9075-3:1999 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*. ISO/IEC 9075-3:1999/Cor. 2:2003 cancels and replaces ISO/IEC 9075-3:1999/Cor. 1:2000.

Statement of purpose for rationale:

A statement indicating the rationale for each change to ISO/IEC 9075 is included. This is to inform the users of that standard as to the reason why it was judged necessary to change the original wording. In many cases the reason is editorial or to clarify the wording; in some cases it is to correct an error or an omission in the original wording.

Notes on numbering:

Where this Corrigendum introduces new Syntax, Access, General and Conformance Rules, the new rules have been numbered as follows:
Rules inserted between, for example, Rules 7) and 8) are numbered 7.1), 7.2), etc. [or 7) a.1), 7) a.2), etc.]. Those inserted before Rule 1) are numbered 0.1), 0.2), etc.
Where this Corrigendum introduces new Subclauses, the new subclauses have been numbered as follows:
Subclauses inserted between, for example, Subclause 4.3.2 and 4.3.3 are numbered 4.3.2a, 4.3.2b, etc.
Those inserted before, for example, 4.3.1 are numbered 4.3.0, 4.3.0a, etc.

ICS 35.060

Ref. No. ISO/IEC 9075-3:1999/Cor.2:2003(E)

Published in Switzerland

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Part 3:
Call-Level Interface (SQL/CLI)

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3.1.1. Definitions provided in Part 3

1. *Rationale: Provide missing definition*

Insert the following item:

a.0)   **data source**: A synonym for the SQL-server that is part of the current connection.

3.3.2.1 Clause, subclause and table relationships

1. *Rationale: Separating data type correspondence tables in Foundation and CLI.*

Replace the following rows from Table 1 "Clause, Subclause, and Table relationships":

Clause, Subclause, or Table in this part of /ISO/IEC 9075	Corresponding Clause, Subclause, or Table from another part	Part containing correspondence
Subclause 5.15, "Data type correspondences"	Subclause 13.6, "Data type correspondences"	ISO/IEC 9075-2
Table 44, "Data type correspondences for Ada"	Table 18, "Data type correspondences for Ada"	ISO/IEC 9075-2
Table 45, "Data type correspondences for C"	Table 18, "Data type correspondences for C"	ISO/IEC 9075-2
Table 46, "Data type correspondences for COBOL"	Table 18, "Data type correspondences for COBOL"	ISO/IEC 9075-2
Table 47, "Data type correspondences for Fortran"	Table 18, "Data type correspondences for Fortran"	ISO/IEC 9075-2
Table 48, "Data type correspondences for MUMPS"	Table 18, "Data type correspondences for MUMPS"	ISO/IEC 9075-2
Table 49, "Data type correspondences for Pascal"	Table 18, "Data type correspondences for Pascal"	ISO/IEC 9075-2
Table 50, "Data type correspondences for PL/I"	Table 18, "Data type correspondences for PL/I"	ISO/IEC 9075-2

with the following rows:

Clause, Subclause, or Table in this part of /ISO/IEC 9075	Corresponding Clause, Subclause, or Table from another part	Part containing correspondence
Subclause 5.15, "SQL/CLI data type correspondences"	*none*	*none*
Table 44, "SQL/CLI data type correspondences for Ada"	*none*	*none*

Table 45, "SQL/CLI data type correspondences for C"	*none*	*none*
Table 46, "SQL/CLI data type correspondences for COBOL"	*none*	*none*
Table 47, "SQL/CLI data type correspondences for Fortran"	*none*	*none*
Table 48, "SQL/CLI data type correspondences for MUMPS"	*none*	*none*
Table 49, "SQL/CLI data type correspondences for Pascal"	*none*	*none*
Table 50, "SQL/CLI data type correspondences for PL/I"	*none*	*none*

4.4.5 Connection attributes

1. *Rationale: Remove the anomaly in <savepoint specifier> and correct the specification of which locators are marked invalid when an SQL-transaction ends.*

Replace the 5th paragraph with:

The SAVEPOINT NAME connection attribute specifies the savepoint to be referenced in an invocation of the EndTran routine that uses the SAVEPOINT NAME ROLLBACK or SAVEPOINT NAME RELEASE CompletionType. The SAVEPOINT NAME attribute is set to a zero-length string when the SQL-connection is allocated.

5.1 <CLI routine>

1. *Rationale: Add missing rule.*

Insert the following Syntax Rule:

    8.1)   There shall be no <separator> between the <CLI name prefix> and the <CLI generic name>

2. *Rationale: Separating data type correspondence tables in Foundation and CLI.*

Replace Syntax Rule 12) with:

    12)   Let *operative data type correspondence table* be the data type correspondence table for *HL* as specified in Subclause 5.15, "SQL/CLI data type correspondences". Refer to the two columns of the operative data type correspondence table as the "SQL data type column" and the "host data type column".

5.3 Description of CLI item descriptor areas

1.   Rationale: Separating data type correspondence tables in Foundation and CLI.

Replace General Rule 6) with:

6)   Let *HL* be the standard programming language of the invoking host program. Let *operative data type correspondence table* be the data type correspondence table for *HL* as specified in Subclause 5.15, "SQL/CLI data type correspondences". Refer to the two columns of the operative data type correspondence table as the *SQL data type column* and the *host data type column*.

5.5 Implicit DESCRIBE USING clause

1.   Rationale: Editorial - typographic error.

Replace General Rule 5) c) iv) 1) with:

5)   c)   iv)   1)   If TYPE indicates a <character string type>, then LENGTH is set to the length or maximum length in characters of the character string. OCTET_LENGTH is set to the maximum possible length in octets of the character string. If *HL* is C, then the lengths specified in LENGTH and OCTET_LENGTH do not include the implementation-defined null character that terminates a C character string. CHARACTER_SET_CATALOG, CHARACTER_SET_SCHEMA, and CHARACTER_SET_NAME are set to the <character set name> of the character string's character set. COLLATION_CATALOG, COLLATION_SCHEMA, and COLLATION_NAME are set to the <collation name> of the character string's collation.

5.11 Deferred parameter check

1.   Rationale: Editorial - style error.

Replace General Rule 4) with:

4)   Let *L2* be the set of all allocated SQL-statements in *L1* that have an associated deferred parameter number.

5.13 Description of CLI item descriptor areas

1.   Rationale: Remove mangled text

Replace Syntax Rule 5) c) xiv) with:

5)   c)   xiv)   TYPE indicates ARRAY or ARRAY LOCATOR, the value of CARDINALITY is a valid value for the cardinality of an array, there is exactly one immediately subordinate descriptor area of IDA, and that item descriptor area is valid.

2.   Rationale: Editorial - misplaced row.

Delete the following row from Table 6 — Fields in SQL/CLI row and parameter descriptor areas

Field	Data Type
Fields in item descriptor areas	
COUNT	SMALLINT

Insert the following row into Table 6 — Fields in SQL/CLI row and parameter descriptor areas

Field	Data Type
Header fields	
COUNT	SMALLINT

5.14 Other tables associated with CLI

1. *Rationale: Correct the specification of which locators are marked invalid when an SQL-transaction ends.*

In Table 14 — Codes used for transaction termination, replace the row:

Termination type	Code
SAVEPOINT NAME COMMIT	2

with:

Termination type	Code
SAVEPOINT NAME ROLLBACK	2

2. *Rationale: Remove the anomaly in <savepoint specifier>.*

In Table 14 — Codes used for transaction termination, delete the following rows:

Termination type	Code
SAVEPOINT NUMBER COMMIT	3
SAVEPOINT NUMBER RELEASE	5

In Table 16 — Codes used for connection attributes, delete the following row:

Attribute	Code	May be set
SAVEPOINT NUMBER	10028	Yes

In Table 19 — Data types of attributes, delete the following row:

Attribute	Data type	Values
Statement attributes		
SAVEPOINT NUMBER	INTEGER	Not specified

3.   *Rationale: Correct the contents of the Type column of Table 20 "Codes used for descriptor fields".*

In Table 20 — Codes used for descriptor fields, delete the following rows:

Field	Code	SQL Item Descriptor Name	Type
CARDINALITY	1040	CARDINALITY	Status
CURRENT_TRANSFORM_GROUP	1039	(Not applicable)	Status
DEGREE	1041	DEGREE	Status
RETURNED_CARDINALITY_ POINTER	1043	RETURNED_CARDINALITY	Status
SCOPE_CATALOG	1033	SCOPE_CATALOG	Status
SCOPE_NAME	1035	SCOPE_NAME	Status
SCOPE_SCHEMA	1034	SCOPE_SCHEMA	Status
SPECIFIC_TYPE_CATALOG	1036	(Not applicable)	Status
SPECIFIC_TYPE_NAME	1038	(Not applicable)	Status
SPECIFIC_TYPE_SCHEMA	1037	(Not applicable)	Status

In Table 20 — Codes used for descriptor fields, add the following rows:

Field	Code	SQL Item Descriptor Name	Type
CARDINALITY	1040	CARDINALITY	Item
CURRENT_TRANSFORM_GROUP	1039	(Not applicable)	Item
DEGREE	1041	DEGREE	Item
RETURNED_CARDINALITY_ POINTER	1043	RETURNED_CARDINALITY	Item
SCOPE_CATALOG	1033	SCOPE_CATALOG	Item
SCOPE_NAME	1035	SCOPE_NAME	Item
SCOPE_SCHEMA	1034	SCOPE_SCHEMA	Item
SPECIFIC_TYPE_CATALOG	1036	(Not applicable)	Item

SPECIFIC_TYPE_NAME	1038	(Not applicable)	Item
SPECIFIC_TYPE_SCHEMA	1037	(Not applicable)	Item

4.   Rationale: Add the missing codes.

In Table 37 — Codes used for concise data types, add the following rows:

Date Type	Code
USER-DEFINED TYPE	17
ROW	19
ARRAY	50

5.15 Data type correspondences

1.   Rationale: Separating data type correspondence tables in Foundation and CLI.

Change the name of this subclause to "SQL/CLI data type correspondences".

2.   Rationale: Separating data type correspondence tables in Foundation and CLI.

In the Function replace the 1ˢᵗ paragraph with:

Replace first paragraph   Specify the SQL/CLI data type correspondences for SQL data types and host language types associated with the required parameter mechanisms, as shown in Table 3, "Supported calling conventions of SQL/CLI routines by language".

3.   Rationale: Separating data type correspondence tables in Foundation and CLI.

In the Tables section:

Replace the title of Table 44 — "Data type correspondences for Ada" with:
    Table 44 — "SQL/CLI data type correspondences for Ada".

Replace the title of Table 45 — "Data type correspondences for C" with:
    Table 45 — "SQL/CLI data type correspondences for C".

Replace the title of Table 46 — "Data type correspondences for COBOL" with:
    Table 46 — "SQL/CLI data type correspondences for COBOL".

Replace the title of Table 47 — "Data type correspondences for Fortran" with:
    Table 47 — "SQL/CLI data type correspondences for Fortran".

Replace the title of Table 48 — "Data type correspondences for MUMPS" with:
    Table 48 — "SQL/CLI data type correspondences for MUMPS".

Replace the title of Table 49 — "Data type correspondences for Pascal" with:
    Table 49 — "SQL/CLI data type correspondences for Pascal".

Replace the title of Table 50 — "Data type correspondences for PL/I" with:
Table 50 — "SQL/CLI data type correspondences for PL/I".

6.5 BindCol

1. *Rationale: Separating data type correspondence tables in Foundation and CLI.*

Replace General Rule 8) with:

8) Let *HL* be the standard programming language of the invoking host program. Let *operative data type correspondence table* be the data type correspondence table for *HL* as specified in Subclause 5.15, "SQL/CLI data type correspondences". Refer to the two columns of the *operative data type correspondence table* as the *SQL data type column* and the *host data type column*.

6.6 BindParameter

1. *Rationale: Separating data type correspondence tables in Foundation and CLI.*

Replace General Rule 9) with:

9) Let *HL* be the standard programming language of the invoking host program. Let *operative data type correspondence table* be the data type correspondence table for *HL* as specified in Subclause 5.15, "SQL/CLI data type correspondences". Refer to the two columns of the *operative data type correspondence table* as the *SQL data type column* and the *host data type column*.

6.9 ColAttribute

1. *Rationale: Correct definition of parameter length.*

Replace the Definition with:

```
ColAttribute (
     StatementHandle     IN   INTEGER,
     ColumnNumber        IN   SMALLINT,
     FieldIdentifier     IN   SMALLINT,
     CharacterAttribute  OUT  CHARACTER(L),
     BufferLength        IN   SMALLINT,
     StringLength        OUT  SMALLINT,
     NumericAttribute    OUT  INTEGER )
     RETURNS SMALLINT
```

where *L* has a maximum value equal to the implementation-defined maximum length of a variable-length character string.

6.10 ColumnPrivileges

1.   Rationale: Correct definition of parameter length.

Replace the Definition with:

```
ColumnPrivileges (
     StatementHandle    IN   INTEGER,
     CatalogName        IN   CHARACTER(L1),
     NameLength1        IN   SMALLINT,
     SchemaName         IN   CHARACTER(L2),
     NameLength2        IN   SMALLINT,
     TableName          IN   CHARACTER(L3),
     NameLength3        IN   SMALLINT,
     ColumnName         IN   CHARACTER(L4),
     NameLength4        IN   SMALLINT )
     RETURNS SMALLINT
```

where each of $L1$, $L2$, $L3$, and $L4$ has a maximum value equal to the implementation-defined maximum length of a variable-length character string.

6.11 Columns

1.   Rationale: Correct definition of parameter length.

Replace the Definition with:

```
Columns (
     StatementHandle    IN   INTEGER,
     CatalogName        IN   CHARACTER(L1),
     NameLength1        IN   SMALLINT,
     SchemaName         IN   CHARACTER(L2),
     NameLength2        IN   SMALLINT,
     TableName          IN   CHARACTER(L3),
     NameLength3        IN   SMALLINT,
     ColumnName         IN   CHARACTER(L4),
     NameLength4        IN   SMALLINT )
     RETURNS SMALLINT
```

where each of $L1$, $L2$, $L3$, and $L4$ has a maximum value equal to the implementation-defined maximum length of a variable-length character string.

6.12 Connect

1.   Rationale: Correct definition of parameter length.

Replace the Definition with:

```
Connect (
    ConnectionHandle    IN   INTEGER,
    ServerName          IN   CHARACTER(L1),
    NameLength1         IN   SMALLINT,
    UserName            IN   CHARACTER(L2),
    NameLength2         IN   SMALLINT,
    Authentication      IN   CHARACTER(L3),
    NameLength3         IN   SMALLINT )
    RETURNS SMALLINT
```

where
:

— $L1$ has a maximum value of 128.

— $L2$ has a maximum value equal to the implementation-defined maximum length of a variable-length character string.

— $L3$ has an implementation-defined maximum value.

6.14 DataSources

1.   Rationale: Correct definition of parameter length.

Replace the Definition with:

```
DataSources (
    EnvironmentHandle   IN   INTEGER,
    Direction           IN   SMALLINT,
    ServerName          OUT CHARACTER(L1),
    BufferLength1       IN   SMALLINT,
    NameLength1         OUT SMALLINT,
    Description         OUT CHARACTER(L2),
    BufferLength2       IN   SMALLINT,
    NameLength2         OUT SMALLINT )
    RETURNS SMALLINT
```

where $L1$ and $L2$ have maximum values equal to the implementation-defined maximum length of a variable-length character string.