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AMENDMENT 1
2001-03-15

Information technology — Database languages — SQL —

Part 1: **Framework (SQL/Framework)**
Part 2: **Foundation (SQL/Foundation)**
Part 5: **Host Language Bindings (SQL/Bindings)**

AMENDMENT 1: On-Line Analytical Processing (SQL/OLAP)

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

Partie 1: Charpente (SQL/Charpente)

Partie 2: Fondations (SQL/Fondations)

Partie 5: Liants de langage d'hôte (SQL/Liants)

AMENDEMENT 1: Traitement analytique en ligne (SQL/OLAP)

Reference number
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Contents

FIGURES

Figure **Page**

TABLES

Tables **Page**

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75% of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this Amendment may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 1 to parts 1, 2 and 5 of ISO/IEC 9075:1999 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

Introduction

The organization of this Amendment is as follows:

1) Clause 1, "Scope", specifies the scope of this Amendment.

2) Clause 2, "Normative references", identifies additional standards that, through reference in this Amendment, constitute provisions of this Amendment.

3) Clause 3, "Definitions, notations, and conventions", defines the notations and conventions used in this Amendment.

4) Clause 4, "Concepts", presents concepts used in the definition of On-Line Analytical Processing facilities.

5) Clause 5, "Lexical elements", defines a number of lexical elements used in the definition of On-Line Analytical Processing facilities.

6) Clause 6, "Scalar expressions", defines a number of scalar expressions used in the definition of On-Line Analytical Processing facilities.

7) Clause 7, "Query expressions", defines the elements of the language that produce rows and tables of data as used in On-Line Analytical Processing facilities.

8) Clause 8, "Additional common elements", defines additional common elements used in the definition of On-Line Analytical Processing facilities.

9) Clause 9, "Schema definition and manipulation", defines the schema definition and manipulation statements associated with the definition of On-Line Analytical Processing facilities.

10) Clause 10, "SQL-client modules", defines SQL-client modules and externally-invoked procedures.

11) Clause 11, "Data manipulation", defines data manipulation operations associated with On-Line Analytical Processing facilities.

12) Clause 12, "Dynamic SQL", defines the SQL dynamic statements.

13) Clause 13, "Information Schema", defines viewed tables that contain schema information related to On-Line Analytical Processing facilities.

14) Clause 14, "Status codes", defines SQLSTATE values related to On-Line Analytical Processing facilities.

15) Clause 15, "Conformance", defines the criteria for conformance to this Amendment.

16) Annex A, "SQL conformance summary", is an informative Annex. It summarizes the conformance requirements of the SQL language.

17) Annex B, "Implementation-defined elements", is an informative Annex. It lists those features for which the body of this Amendment states that the syntax, the meaning, the returned results, the effect on SQL-data and/or schemas, or any other behavior is partly or wholly implementation-defined.

18) Annex C, "Implementation-dependent elements", is an informative Annex. It lists those features for which the body of this Amendment states that the syntax, the meaning, the returned results, the effect on SQL-data and/or schemas, or any other behavior is partly or wholly implementation-dependent.

19) Annex D, "SQL feature and package taxonomy", is an informative Annex. It identifies features of the SQL language specified in this Amendment by a numeric identifier and a short descriptive name. This taxonomy is used to specify conformance to Core SQL and may be used to develop other profiles involving the SQL language.

20) Annex E, "SQL Packages", is an informative Annex. It specifies a package of SQL language features.

In the text of this Amendment, Clauses begin a new odd-numbered page, and in Clause 5, "Lexical elements", through Clause 15, "Conformance", Subclauses begin a new page. Any resulting blank space is not significant.

Information technology — Database languages — SQL —

Part 1: Framework (SQL/Framework)
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AMENDMENT 1:
On-Line Analytical Processing (SQL/OLAP)

1 Scope

This Amendment specifies the syntax and semantics of database language facilities that support on-line analytical processing.

The database language facilities that support on-line analytical processing include:

— Rank functions.

— Distribution functions.

— Inverse distribution functions (percentiles).

— Hypothetical set functions.

— Cumulative and other forms of moving aggregates.

— Variance, standard deviation, covariance, correlation, and linear regression functions.

This amendment also incidentally defines several new numeric functions.

NOTE 1 – The context for this Amendment is described by the Reference Model of Data Management (ISO/IEC 10032:1993).

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2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Amendment. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this Amendment are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 9075-1:1999, *Information technology — Database languages — SQL — Part 1: Framework (SQL/Framework).*

ISO/IEC 9075-2:1999, *Information technology — Database languages — SQL — Part 2: Foundation (SQL/Foundation).*

ISO/IEC 9075-5:1999, *Information technology — Database languages — SQL — Part 5: Host Language Bindings (SQL/Bindings).*

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3 Definitions, notations, and conventions

3.1 Definitions

Insert this paragraph For the purposes of this Amendment, the definitions given in ISO/IEC 9075-1 and ISO/IEC 9075-2 apply.

3.2 Notation

Insert this paragraph The syntax notation used in this Amendment is an extended version of BNF ("Backus Normal Form" or "Backus Naur Form"). This version of BNF is fully described in Subclause 3.2, "Notation", of ISO/IEC 9075-1.

3.3 Conventions

Insert this paragraph Except as otherwise specified in this Amendment the conventions used in this Amendment are identical to those described in ISO/IEC 9075-1 and ISO/IEC 9075-2.

3.3.1 Use of terms

3.3.1.1 Syntactic containment

Replace 2nd paragraph *A1 directly contains B1* if *A1* contains *B1* without an intervening <subquery>, <within group specification>, or <set function specification> that is not an <ordered set function>.

3.3.2 Relationships to other parts of ISO/IEC 9075

3.3.2.1 Clause, Subclause, and Table relationships

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
Clause 1, "Scope"	Clause 1, "Scope"	ISO/IEC 9075-2
Clause 2, "Normative references"	Clause 2, "Normative references"	ISO/IEC 9075-2
Clause 3, "Definitions, notations, and conventions"	Clause 3, "Definitions, notations, and conventions"	ISO/IEC 9075-2
Subclause 3.1, "Definitions"	Subclause 3.1, "Definitions"	ISO/IEC 9075-2
Subclause 3.2, "Notation"	Subclause 3.2, "Notation"	ISO/IEC 9075-2