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Information technology — Database languages SQL —

Part 15: Multidimensional arrays (SQL/MDA)

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

Partie 15: Tableaux multi-dimensionnels (SQL/MDA)

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

This second edition cancels and replaces the first edition (ISO/IEC 9075-15:2019), which has been technically revised. It also incorporates the Technical Corrigendum ISO/IEC 9075-15:2019/Cor.1:2022.

The main changes are as follows:

— improve the presentation and accuracy of the summaries of implementation-defined and implementation-dependent aspects of this document;

— introduction of several digital artifacts;

— alignment with updated ISO house style and other guidelines for creating standards.

This second edition of ISO/IEC 9075-15 is designed to be used in conjunction with the following editions of other parts of the ISO/IEC 9075 series, all published in 2023:

— ISO/IEC 9075-1, sixth edition;

— ISO/IEC 9075-2, sixth edition;

— ISO/IEC 9075-3, sixth edition;

— ISO/IEC 9075-4, seventh edition;

— ISO/IEC 9075-9, fifth edition;

— ISO/IEC 9075-10, fifth edition;

— ISO/IEC 9075-11, fifth edition;

— ISO/IEC 9075-13, fifth edition;

— ISO/IEC 9075-14, sixth edition;

— ISO/IEC 9075-16, first edition.

A list of all parts in the ISO/IEC 9075 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

This document was developed in response to industry demand for the ability to store and manipulate data in the form of multidimensional arrays within databases managed using database language SQL.

The organization of this document is as follows:

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

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

3) Clause 3, "Terms and definitions", defines the notations and conventions used in this document.

4) Clause 4, "Concepts", presents concepts used in the definition of multidimensional arrays.

5) Clause 5, "Lexical elements", defines a number of lexical elements used in the definition of multidimensional arrays.

6) Clause 6, "Scalar expressions", defines a number of scalar expressions used in the definition of multidimensional arrays.

7) Clause 7, "Query expressions", defines the elements of the language that produce rows and tables of data as used in multidimensional arrays.

8) Clause 8, "Predicates", defines the predicates used in the definition of multidimensional arrays.

9) Clause 9, "Additional common rules", specifies the rules for assignments that retrieve multidimensional array data from or store multidimensional array data into SQL-data, and formation rules for set operations.

10) Clause 10, "Additional common elements", defines additional common elements used in the definition of multidimensional arrays.

11) Clause 11, "Schema definition and manipulation", defines facilities for creating and managing a schema.

12) Clause 12, "SQL-client modules", defines SQL-client modules and externally-invoked procedures in the context of multidimensional arrays.

13) Clause 13, "Data manipulation", defines the data manipulation statements.

14) Clause 14, "Additional data manipulation rules", defines additional rules for data manipulation.

15) Clause 15, "Dynamic SQL", defines the facilities for executing SQL-statements dynamically in the context of multidimensional arrays.

16) Clause 16, "Embedded SQL", defines the host language embeddings in the context of multidimensional arrays.

17) Clause 17, "Call-Level Interface specifications", defines facilities for using SQL through a Call-Level Interface.

18) Clause 18, "Information Schema", defines the Information and Definition Schema objects associated with multidimensional arrays.

19) Clause 19, "Definition Schema", defines base tables on which the viewed tables containing schema information depend.

20) Clause 20, "Status codes", defines SQLSTATE values related to multidimensional arrays.

21) Clause 21, "Conformance", defines the criteria for conformance to this document.

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

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

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

25) Annex D, "SQL optional feature taxonomy", is an informative Annex. It identifies the optional features of the SQL language specified in this document by an identifier and a short descriptive name. This taxonomy is used to specify conformance.

26) Annex E, "Deprecated features", is an informative Annex. It lists features that the responsible Technical Committee intends not to include in a future edition of this document.

27) Annex F, "Incompatibilities with ISO/IEC 9075:2016", is an informative Annex. It lists incompatibilities with the previous version of this document.

28) Annex G, "Defect Reports not addressed in this edition of this document", is an informative Annex. It describes the Defect Reports that were known at the time of publication of this document. Each of these problems is a problem carried forward from the previous edition of the ISO/IEC 9075 series. No new problems have been created in the drafting of this edition of this document.

In the text of this document, in Clause 5, "Lexical elements", through Clause 21, "Conformance", Subclauses begin new pages. Any resulting blank space is not significant.

Information technology — Database language SQL —

Part 15:
Multidimensional arrays (SQL/MDA)

1 Scope

This document defines ways in which Database Language SQL can be used in conjunction with multidimensional arrays.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

ISO/IEC 9075-3, *Information technology — Database languages — SQL — Part 3: Call-Level Interface (SQL/CLI)*

ISO/IEC 9075-11, *Information technology — Database languages — SQL — Part 11: Information and Definition Schemas (SQL/Schemata)*

Internet Engineering Task Force (IETF) RFC 2046 *Multipurpose Internet Mail Extensions (MIME), Part Two: Media Types*. Edited by: Freed, N. November 1996
Available at: `https://tools.ietf.org/html/rfc2046`

Internet Engineering Task Force (IETF) RFC 8259 *The JavaScript Object Notation (JSON) Data Interchange Format*. Edited by: Miller, Matthew December 2018
Available at: `https://datatracker.ietf.org/doc/rfc8259/`