
**Information technology — Database
languages — SQL —**

**Part 4:
Persistent Stored Modules (SQL/PSM)**

*Technologies de l'information — Langages de base de données — SQL —
Partie 4: Modules stockés persistants (SQL/PSM)*
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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 734 10 79
E-mail copyright@iso.ch
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Printed in Switzerland

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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.

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.

International Standard ISO/IEC 9075-4, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

This second edition of this part of ISO/IEC 9075 cancels and replaces the first edition, ISO/IEC 9075-4:1996.

[ISO/IEC 9075-4:1999](http://www.iso.org/iso/standards/iso-iec-9075-4-1999)

ISO/IEC 9075 consists of the following parts, under the general title *Information technology — Database languages — SQL*:

- *Part 1: Framework (SQL/Framework)*
- *Part 2: Foundation (SQL/Foundation)*
- *Part 3: Call-Level Interface (SQL/CLI)*
- *Part 4: Persistent Stored Modules (SQL/PSM)*
- *Part 5: Host Language Bindings (SQL/Bindings)*

Annexes A, B, C, D, E, and F of this part of ISO/IEC 9075 are for information only.

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Introduction

The organization of this part of ISO/IEC 9075 is as follows:

- 1) Clause 1, “Scope”, specifies the scope of this part of ISO/IEC 9075.
- 2) Clause 2, “Normative references”, identifies additional standards that, through reference in this part of ISO/IEC 9075, constitute provisions of this part of ISO/IEC 9075.
- 3) Clause 3, “Definitions, notations, and conventions”, defines the notations and conventions used in this part of ISO/IEC 9075.
- 4) Clause 4, “Concepts”, presents concepts used in the definition of persistent stored modules.
- 5) Clause 5, “Lexical elements”, defines a number of lexical elements used in the definition of persistent stored modules.
- 6) Clause 6, “Scalar expressions”, defines a number of scalar expressions used in the definition of persistent stored modules.
- 7) Clause 7, “Query expressions”, defines the elements of the language that produce rows and tables of data as used in persistent stored modules.
- 8) Clause 8, “Additional common elements”, defines additional common elements used in the definition of persistent stored modules.
- 9) Clause 9, “Schema definition and manipulation”, defines the schema definition and manipulation statements associated with the definition of persistent stored modules.
- 10) Clause 10, “Access control”, defines facilities for controlling access to SQL-data.
- 11) Clause 11, “SQL-client modules”, defines the facilities for using persistent stored modules.
- 12) Clause 12, “Data manipulation”, defines data manipulation operations associated with persistent stored modules.
- 13) Clause 13, “Control statements”, defines the control statements used with persistent stored modules.
- 14) Clause 14, “Dynamic SQL”, defines the facilities for executing SQL-statements dynamically in the context of persistent stored modules.
- 15) Clause 15, “Embedded SQL”, defines the host language embeddings.
- 16) Clause 16, “Diagnostics management”, defines enhancements to the facilities used with persistent stored modules.
- 17) Clause 17, “Information Schema”, defines the Information and Definition Schema objects associated with persistent stored modules.
- 18) Clause 18, “Definition Schema”, defines base tables on which the viewed tables containing schema information depend.

- 19) Clause 19, “Status codes”, defines SQLSTATE values related to persistent stored modules.
- 20) Clause 20, “Conformance”, defines the criteria for conformance to this part of ISO/IEC 9075.
- 21) Annex A, “SQL Conformance Summary”, is an informative Annex. It summarizes the conformance requirements of the SQL language.
- 22) Annex B, “Implementation-defined elements”, is an informative Annex. It lists those features for which the body of this part of ISO/IEC 9075 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.
- 23) Annex C, “Implementation-dependent elements”, is an informative Annex. It lists those features for which the body of this part of ISO/IEC 9075 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.
- 24) Annex D, “Deprecated features”, is an informative Annex. It lists features that the responsible Technical Committee intends will not appear in a future revised version of ISO/IEC 9075.
- 25) Annex E, “Incompatibilities with ISO/IEC 9075:1992”, is an informative Annex. It lists the incompatibilities between this edition of this part of ISO/IEC 9075 and ISO/IEC 9075-4:1996.
- 26) Annex F, “SQL Feature Taxonomy”, is an informative Annex. It identifies features of the SQL language specified in this part of ISO/IEC 9075 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.

In the text of this part of ISO/IEC 9075, Clauses begin a new odd-numbered page, and in Clause 5, “Lexical elements”, through Clause 20, “Conformance”, Subclauses begin a new page. Any resulting blank space is not significant.

Information technology — Database languages — SQL —

Part 4:

Persistent Stored Modules (SQL/PSM)

1 Scope

This part of International Standard ISO/IEC 9075 specifies the syntax and semantics of a database language for declaring and maintaining persistent database language routines in SQL-server modules.

The database language for <externally-invoked procedure>s and <SQL-invoked routine>s includes:

- The specification of statements to direct the flow of control.
- The assignment of the result of expressions to variables and parameters.
- The specification of condition handlers that allow SQL-invoked routines to deal with various conditions that arise during their execution.
- The specification of statements to signal and resignal conditions.
- The declaration of local cursors.
- The declaration of local variables.

It also includes the definition of the Information Schema tables that contain schema information pertaining to SQL-server modules and SQL-invoked routines.

NOTE 1 – The context for this part of ISO/IEC 9075 is described by the Reference Model of Data Management (ISO/IEC 10032:1993).

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2 Normative references

The following standards contain provisions that, through reference in this text, constitute provisions of this part of ISO/IEC 9075. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 9075 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 8652:1995, *Information technology — Programming languages — Ada*.

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 9075-3:1996, *Information technology — Database languages — SQL — Part 3: Call-Level Interface (SQL/CLI)*.

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

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