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

**Part 11:
Information and definition schemas
(SQL/Schemata)**

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

*Partie 11: Schémas des informations et des définitions (SQL/
Schemata)*

get full document from standards.iteh.ai

Sample Document

get full document from standards.iteh.ai



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword.....	ix
Introduction.....	x
1 Scope.....	1
2 Normative references.....	3
2.1 ISO and IEC standards.....	3
3 Definitions, notations, and conventions.....	5
3.1 Conventions.....	5
4 Concepts.....	7
4.1 Introduction to the Definition Schema.....	7
4.2 Introduction to the Information Schema.....	8
5 Information Schema.....	9
5.1 INFORMATION_SCHEMA Schema.....	9
5.2 INFORMATION_SCHEMA_CATALOG_NAME view.....	10
5.3 CARDINAL_NUMBER domain.....	11
5.4 CHARACTER_DATA domain.....	12
5.5 SQL_IDENTIFIER domain.....	13
5.6 TIME_STAMP domain.....	14
5.7 YES_OR_NO domain.....	15
5.8 ADMINISTRABLE_ROLE_AUTHORIZATIONS view.....	16
5.9 APPLICABLE_ROLES view.....	17
5.10 ASSERTIONS view.....	18
5.11 ATTRIBUTES view.....	19
5.12 CHARACTER_SETS view.....	21
5.13 CHECK_CONSTRAINT_ROUTINE_USAGE view.....	22
5.14 CHECK_CONSTRAINTS view.....	23
5.15 COLLATIONS view.....	24
5.16 COLLATION_CHARACTER_SET_APPLICABILITY view.....	25
5.17 COLUMN_COLUMN_USAGE view.....	26
5.18 COLUMN_DOMAIN_USAGE view.....	27
5.19 COLUMN_PRIVILEGES view.....	28
5.20 COLUMN_UDT_USAGE view.....	29
5.21 COLUMNS view.....	30
5.22 CONSTRAINT_COLUMN_USAGE view.....	33
5.23 CONSTRAINT_PERIOD_USAGE view.....	35
5.24 CONSTRAINT_TABLE_USAGE view.....	37

5.25	DATA_TYPE_PRIVILEGES view.....	39
5.26	DIRECT_SUPERTABLES view.....	41
5.27	DIRECT_SUPERTYPES view.....	42
5.28	DOMAIN_CONSTRAINTS view.....	43
5.29	DOMAINS view.....	44
5.30	ELEMENT_TYPES view.....	46
5.31	ENABLED_ROLES view.....	48
5.32	FIELDS view.....	49
5.33	KEY_COLUMN_USAGE view.....	51
5.34	KEY_PERIOD_USAGE view.....	53
5.35	METHOD_SPECIFICATION_PARAMETERS view.....	54
5.36	METHOD_SPECIFICATIONS view.....	56
5.37	PARAMETERS view.....	59
5.38	PERIODS view.....	61
5.39	PRIVATE_PARAMETERS view.....	63
5.40	REFERENCED_TYPES view.....	65
5.41	REFERENTIAL_CONSTRAINTS view.....	66
5.42	ROLE_COLUMN_GRANTS view.....	67
5.43	ROLE_ROUTINE_GRANTS view.....	68
5.44	ROLE_TABLE_GRANTS view.....	69
5.45	ROLE_TABLE_METHOD_GRANTS view.....	70
5.46	ROLE_USAGE_GRANTS view.....	71
5.47	ROLE_UDT_GRANTS view.....	72
5.48	ROUTINE_COLUMN_USAGE view.....	73
5.49	ROUTINE_PERIOD_USAGE view.....	74
5.50	ROUTINE_PRIVILEGES view.....	75
5.51	ROUTINE_ROUTINE_USAGE view.....	76
5.52	ROUTINE_SEQUENCE_USAGE view.....	77
5.53	ROUTINE_TABLE_USAGE view.....	78
5.54	ROUTINES view.....	79
5.55	SCHEMATA view.....	82
5.56	SEQUENCES view.....	83
5.57	SQL_FEATURES view.....	84
5.58	SQL_IMPLEMENTATION_INFO view.....	85
5.59	SQL_PARTS view.....	86
5.60	SQL_SIZING view.....	87
5.61	TABLE_CONSTRAINTS view.....	88
5.62	TABLE_METHOD_PRIVILEGES view.....	89
5.63	TABLE_PRIVILEGES view.....	90
5.64	TABLES view.....	91
5.65	TRANSFORMS view.....	92
5.66	TRANSLATIONS view.....	93
5.67	TRIGGERED_UPDATE_COLUMNS view.....	94
5.68	TRIGGER_COLUMN_USAGE view.....	95

5.69	TRIGGER_PERIOD_USAGE view.....	96
5.70	TRIGGER_ROUTINE_USAGE view.....	97
5.71	TRIGGER_SEQUENCE_USAGE view.....	98
5.72	TRIGGER_TABLE_USAGE view.....	99
5.73	TRIGGERS view.....	100
5.74	UDT_PRIVILEGES view.....	102
5.75	USAGE_PRIVILEGES view.....	103
5.76	USER_DEFINED_TYPES view.....	104
5.77	VIEW_COLUMN_USAGE view.....	106
5.78	VIEW_PERIOD_USAGE view.....	107
5.79	VIEW_ROUTINE_USAGE view.....	108
5.80	VIEW_TABLE_USAGE view.....	109
5.81	VIEWS view.....	110
5.82	Short name views.....	111
6	Definition Schema.....	133
6.1	DEFINITION_SCHEMA Schema.....	133
6.2	EQUAL_KEY_DEGREES assertion.....	134
6.3	KEY_DEGREE_GREATER_THAN_OR_EQUAL_TO_1 assertion.....	135
6.4	UNIQUE_CONSTRAINT_NAME assertion.....	136
6.5	ASSERTIONS base table.....	137
6.6	ATTRIBUTES base table.....	139
6.7	AUTHORIZATIONS base table.....	141
6.8	CATALOG_NAME base table.....	142
6.9	CHARACTER_ENCODING_FORMS base table.....	143
6.10	CHARACTER_REPERTOIRES base table.....	145
6.11	CHARACTER_SETS base table.....	147
6.12	CHECK_COLUMN_USAGE base table.....	150
6.13	CHECK_CONSTRAINT_ROUTINE_USAGE base table.....	151
6.14	CHECK_CONSTRAINTS base table.....	152
6.15	CHECK_PERIOD_USAGE base table.....	153
6.16	CHECK_TABLE_USAGE base table.....	154
6.17	COLLATIONS base table.....	155
6.18	COLLATION_CHARACTER_SET_APPLICABILITY base table.....	158
6.19	COLUMN_COLUMN_USAGE base table.....	160
6.20	COLUMN_PRIVILEGES base table.....	161
6.21	COLUMNS base table.....	163
6.22	DATA_TYPE_DESCRIPTOR base table.....	168
6.23	DIRECT_SUPERTABLES base table.....	180
6.24	DIRECT_SUPERTYPES base table.....	182
6.25	DOMAIN_CONSTRAINTS base table.....	184
6.26	DOMAINS base table.....	186
6.27	ELEMENT_TYPES base table.....	187
6.28	FIELDS base table.....	189

6.29	KEY_COLUMN_USAGE base table.	191
6.30	KEY_PERIOD_USAGE base table.	193
6.31	METHOD_SPECIFICATION_PARAMETERS base table.	195
6.32	METHOD_SPECIFICATIONS base table.	197
6.33	PARAMETERS base table.	202
6.34	PERIODS base table.	205
6.35	PRIVATE_PARAMETERS base table.	206
6.36	REFERENCED_TYPES base table.	208
6.37	REFERENTIAL_CONSTRAINTS base table.	210
6.38	ROLE_AUTHORIZATION_DESCRIPTORs base table.	213
6.39	ROUTINE_COLUMN_USAGE base table.	215
6.40	ROUTINE_PERIOD_USAGE base table.	216
6.41	ROUTINE_PRIVILEGES base table.	217
6.42	ROUTINE_ROUTINE_USAGE base table.	219
6.43	ROUTINE_SEQUENCE_USAGE base table.	220
6.44	ROUTINE_TABLE_USAGE base table.	221
6.45	ROUTINES base table.	222
6.46	SCHEMATA base table.	232
6.47	SEQUENCES base table.	234
6.48	SQL_CONFORMANCE base table.	236
6.49	SQL_IMPLEMENTATION_INFO base table.	239
6.50	SQL_SIZING base table.	240
6.51	TABLE_CONSTRAINTS base table.	242
6.52	TABLE_METHOD_PRIVILEGES base table.	245
6.53	TABLE_PRIVILEGES base table.	247
6.54	TABLES base table.	250
6.55	TRANSFORMS base table.	254
6.56	TRANSLATIONS base table.	256
6.57	TRIGGERED_UPDATE_COLUMNS base table.	258
6.58	TRIGGER_COLUMN_USAGE base table.	259
6.59	TRIGGER_PERIOD_USAGE base table.	260
6.60	TRIGGER_ROUTINE_USAGE base table.	261
6.61	TRIGGER_SEQUENCE_USAGE base table.	262
6.62	TRIGGER_TABLE_USAGE base table.	263
6.63	TRIGGERS base table.	264
6.64	USAGE_PRIVILEGES base table.	267
6.65	USER_DEFINED_TYPE_PRIVILEGES base table.	269
6.66	USER_DEFINED_TYPES base table.	271
6.67	VIEW_COLUMN_USAGE base table.	275
6.68	VIEW_PERIOD_USAGE base table.	276
6.69	VIEW_ROUTINE_USAGE base table.	277
6.70	VIEW_TABLE_USAGE base table.	278
6.71	VIEWS base table.	279

7	Conformance	283
7.1	Claims of conformance to SQL/Schemata	283
7.2	Additional conformance requirements for SQL/Schemata	283
7.3	Implied feature relationships of SQL/Schemata	283
Annex A (informative)	SQL Conformance Summary	285
Annex B (informative)	Implementation-defined elements	309
Annex C (informative)	Implementation-dependent elements	311
Annex D (informative)	Deprecated features	313
Annex E (informative)	Incompatibilities with ISO/IEC 9075:2011	315
Annex F (informative)	SQL feature taxonomy	317
Annex G (informative)	Defect reports not addressed in this edition of this part of ISO/IEC 9075	321
Index		323

Sample Document

get full document from standards.iteh.ai

Tables

Table	Page
1 Implied feature relationships of SQL/Schemata.	283
2 Feature taxonomy and definition for mandatory features.	318
3 Feature taxonomy for optional features.	319

Sample Document

get full document from standards.iteh.ai

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.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 32 *Data management and interchange*.

This fourth edition of ISO/IEC 9075-11 cancels and replaces the third edition (ISO/IEC 9075-11:2011), which has been technically revised.

A list of all parts in the ISO/IEC 9075 series, published under the general title *Information technology — Database languages — SQL*, can be found on the ISO website.

NOTE The individual parts of multi-part standards are not necessarily published together. New editions of one or more parts can be published without publication of new editions of other parts.

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 SQL modules.
- 5) **Clause 5, “Information Schema”**, defines viewed tables that contain schema information.
- 6) **Clause 6, “Definition Schema”**, defines base tables on which the viewed tables containing schema information depend.
- 7) **Clause 7, “Conformance”**, defines the criteria for conformance to this part of ISO/IEC 9075.
- 8) **Annex A, “SQL Conformance Summary”**, is an informative Annex. It summarizes the conformance requirements of the SQL language.
- 9) **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.
- 10) **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.
- 11) **Annex D, “Deprecated features”**, is an informative Annex. It lists features that the responsible Technical Committee intend will not appear in a future revised version of this part of ISO/IEC 9075.
- 12) **Annex E, “Incompatibilities with ISO/IEC 9075:2011”**, is an informative Annex. It lists incompatibilities with the previous version of this part of ISO/IEC 9075.
- 13) **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 an identifier and a short descriptive name. This taxonomy is used to specify conformance.
- 14) **Annex G, “Defect reports not addressed in this edition of this part of ISO/IEC 9075”**, is an informative Annex. It describes the Defect Reports that were known at the time of publication of this part of this International Standard. Each of these problems is a problem carried forward from the previous edition of ISO/IEC 9075. No new problems have been created in the drafting of this edition of this International Standard.

In the text of this part of ISO/IEC 9075, Clauses and Annexes begin new odd-numbered pages, and in **Clause 5, “Information Schema”**, through **Clause 7, “Conformance”**, Subclauses begin new pages. Any resulting blank space is not significant.

Information technology — Database languages — SQL —**Part 11:****Information and Definition Schemas (SQL/Schemata)****1 Scope**

This part of ISO/IEC 9075 specifies an Information Schema and a Definition Schema that describes:

- The structure and integrity constraints of SQL-data.
- The security and authorization specifications relating to SQL-data.
- The features and subfeatures of ISO/IEC 9075, and the support that each of these has in an SQL-implementation.
- The SQL-implementation information and sizing items of ISO/IEC 9075 and the values supported by an SQL-implementation.

(Blank page)

Sample Document

get full document from standards.iteh.ai

2 Normative references

The following referenced documents are indispensable for the application 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.

2.1 ISO and IEC standards

[ISO9075-1] ISO/IEC 9075-1:2016, *Information technology — Database languages — SQL — Part 1: Framework (SQL/Framework)*.

[ISO9075-2] ISO/IEC 9075-2:2016, *Information technology — Database languages — SQL — Part 2: Foundation (SQL/Foundation)*.

Sample Document

get full document from standards.iteh.ai

(Blank page)

Sample Document

get full document from standards.iteh.ai

3 Definitions, notations, and conventions

This Clause modifies Clause 3, “Definitions, notations, and conventions”, in ISO/IEC 9075-2.

3.1 Conventions

This Subclause modifies Subclause 3.3, “Conventions”, in ISO/IEC 9075-2.

Insert this paragraph The Descriptions in Clause 6, “Definition Schema”, sometimes specify values that are to appear in rows of base tables. When such a value is given as a sequence of capital letters enclosed in <double quote>s, it denotes the same value as would be denoted by the <character string literal> obtained by replacing the enclosing <double quote>s by <quote>s. The need for such notation arises when the column in question sometimes, in other rows, contains character strings denoting SQL expressions, possibly even <character string literal>s.

Sample Document

get full document from standards.iteh.ai