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Part 16: Property Graph Queries (SQL/PGQ)

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
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Contents

Page

Foreword. viii
Introduction. x
1 Scope. 1
2 Normative references. 2
3 Terms and definitions. 3
4 Concepts. 8
4.1 Notations and conventions. 8
4.1.1 Notations. 8
4.2 Columns, fields, and attributes. 8
4.3 SQL-statements. 8
4.3.1 SQL-statements classified by function. 8
4.3.1.1 SQL-schema statements. 8
4.4 Basic security model. 8
4.4.1 Privileges. 9
4.5 SQL-property graphs. 9
4.5.1 Introduction to SQL-property graphs. 9
4.5.2 Pure property graph. 9
4.5.3 Tabular property graph. 11
4.6 Operations involving property graphs. 12
4.7 Graph pattern matching. 13
4.7.1 Summary of graph pattern matching. 13
4.7.2 Paths. 13
4.7.3 Path patterns. 14
4.7.4 Graph pattern variables. 15
4.7.5 References to graph pattern variables. 16
4.7.6 Path pattern matching. 17
4.7.7 Path modes. 18
4.7.8 Selective path search prefixes. 19
4.7.9 Match modes. 19
5 Lexical elements. 20
5.1 <SQL terminal character>. 20
5.2 <token> and <separator>. 21
5.3 Names and identifiers. 24
6 Scalar expressions. 26
6.1 <value expression primary>. 26
6.2 <identifier chain>. 28
6.3 <set function specification>. 30
6.4 <case expression>. 32

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6.5 <property reference>. . . . 33
6.6 <element_id function>. . . . 35
6.7 <graphical match number function>. . . . 36
6.8 <graphical path name function>. . . . 37
6.9 <graphical element number function>. . . . 38
6.10 <graphical path length function>. . . . 39
7 Query expressions. . . . 40
7.1 <table reference>. . . . 40
7.2 <query specification>. . . . 50
8 Predicates. . . . 51
8.1 <predicate>. . . . 51
8.2 <directed predicate>. . . . 52
8.3 <labeled predicate>. . . . 53
8.4 <source/destination predicate>. . . . 54
8.5 <all_different predicate>. . . . 56
8.6 <same predicate>. . . . 57
8.7 <bound predicate>. . . . 58
8.8 <property_exists predicate>. . . . 60
9 Additional common rules. . . . 61
9.1 Potential sources of non-determinism. . . . 61
9.2 Contextual inference of a set of labels. . . . 62
9.3 Expansion of an <all properties reference>. . . . 65
9.4 Satisfaction of a <label expression> by a defined label set. . . . 67
9.5 Converting a tabular property graph to a pure property graph. . . . 69
9.6 Machinery for graph pattern matching. . . . 72
9.7 Evaluation of a <path pattern expression>. . . . 77
9.8 Evaluation of a selective <path pattern>. . . . 82
9.9 Applying bindings to evaluate an expression. . . . 86
9.10 Applying bindings to evaluate a subexpression of an aggregate. . . . 89
9.11 Applying bindings to generate a row. . . . 91
9.12 Creation of an element table descriptor. . . . 94
9.13 Creation of a vertex table descriptor. . . . 98
9.14 Creation of an edge table descriptor. . . . 99
9.15 Consistency check of a tabular property graph descriptor. . . . 102
9.16 Deriving a pure property graph descriptor from a tabular property graph descriptor. . . . 104
10 Additional common elements. . . . 106
10.1 <aggregate function>. . . . 106
10.2 <sort specification list>. . . . 108
10.3 <graph reference>. . . . 109
10.4 <graph pattern>. . . . 110
10.5 <path pattern prefix>. . . . 116
10.6 <path pattern expression>. . . . 120
10.7 <graph pattern quantifier>. . . . 129
10.8 <label expression>. . . . 131
10.9 <simplified path pattern expression>. . . . 133
10.10 <element reference>. . . . 138

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10.11 <path reference>. . . . 140
11 Schema definition and manipulation. . . . 141
11.1 <schema definition>. . . . 141
11.2 <drop schema statement>. . . . 142
11.3 <table definition>. . . . 143
11.4 <drop column definition>. . . . 144
11.5 <drop table statement>. . . . 145
11.6 <view definition>. . . . 146
11.7 <drop view statement>. . . . 147
11.8 <drop domain statement>. . . . 148
11.9 <drop character set statement>. . . . 149
11.10 <drop collation statement>. . . . 150
11.11 <drop transliteration statement>. . . . 151
11.12 <drop attribute definition>. . . . 152
11.13 <drop data type statement>. . . . 153
11.14 <alter routine statement>. . . . 154
11.15 <drop routine statement>. . . . 155
11.16 <drop user-defined cast statement>. . . . 156
11.17 <drop user-defined ordering statement>. . . . 157
11.18 <drop sequence generator statement>. . . . 158
11.19 <property graph definition>. . . . 159
11.20 <alter property graph statement>. . . . 164
11.21 <add element table definition>. . . . 165
11.22 <drop element table definition>. . . . 167
11.23 <alter element table definition>. . . . 170
11.24 <add element table label clause>. . . . 171
11.25 <drop element table label clause>. . . . 174
11.26 <alter element table label properties>. . . . 176
11.27 <drop property graph statement>. . . . 180
12 Access control. . . . 182
12.1 <grant statement>. . . . 182
12.2 <privileges>. . . . 183
12.3 <revoke statement>. . . . 184
13 SQL-client modules. . . . 187
13.1 <externally-invoked procedure>. . . . 187
13.2 <SQL procedure statement>. . . . 188
14 Diagnostics management. . . . 189
14.1 <get diagnostics statement>. . . . 189
15 Information Schema. . . . 191
15.1 Information Schema digital artifact. . . . 191
15.2 PG_DEFINED_LABEL_SETS view. . . . 191
15.3 PG_DEFINED_LABEL_SET_LABELS view. . . . 192
15.4 PG_EDGE_DEFINED_LABEL_SETS view. . . . 193
15.5 PG_EDGE_TABLE_COMPONENTS view. . . . 194
15.6 PG_EDGE_TRIPLETS view. . . . 195
15.7 PG_ELEMENT_TABLE_KEY_COLUMNS view. . . . 196

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15.8 PG_ELEMENT_TABLE_LABELS view. . . . 197
15.9 PG_ELEMENT_TABLE_PROPERTIES view. . . . 198
15.10 PG_ELEMENT_TABLES view. . . . 199
15.11 PG_LABEL_PROPERTIES view. . . . 200
15.12 PG_LABELS view. . . . 201
15.13 PG_PROPERTY_DATA_TYPES view. . . . 202
15.14 PG_PROPERTY_GRAPH_PRIVILEGES view. . . . 203
15.15 PG_VERTEX_DEFINED_LABEL_SETS view. . . . 204
15.16 PROPERTY_GRAPHS view. . . . 205
16 Definition Schema. . . . 206
16.1 Definition Schema digital artifact. . . . 206
16.2 DATA_TYPE_DESCRIPTOR base table. . . . 206
16.3 TABLES base table. . . . 207
16.4 PG_DEFINED_LABEL_SETS base table. . . . 208
16.5 PG_DEFINED_LABEL_SET_LABELS base table. . . . 209
16.6 PG_EDGE_DEFINED_LABEL_SETS base table. . . . 210
16.7 PG_EDGE_TABLE_COMPONENTS base table. . . . 212
16.8 PG_EDGE_TRIPLETS base table. . . . 214
16.9 PG_ELEMENT_TABLE_KEY_COLUMNS base table. . . . 216
16.10 PG_ELEMENT_TABLE_LABELS base table. . . . 217
16.11 PG_ELEMENT_TABLE_PROPERTIES base table. . . . 218
16.12 PG_ELEMENT_TABLES base table. . . . 219
16.13 PG_LABEL_PROPERTIES base table. . . . 221
16.14 PG_LABELS base table. . . . 222
16.15 PG_PROPERTY_DATA_TYPES base table. . . . 223
16.16 PG_PROPERTY_GRAPH_PRIVILEGES base table. . . . 225
16.17 PG_VERTEX_DEFINED_LABEL_SETS base table. . . . 227
16.18 PROPERTY_GRAPHS base table. . . . 228
17 Status codes. . . . 229
17.1 SQLSTATE. . . . 229
18 Conformance. . . . 230
18.1 Claims of conformance to SQL/PGQ. . . . 230
18.2 Additional conformance requirements for SQL/PGQ. . . . 230
18.3 Implied feature relationships of SQL/PGQ. . . . 230
Annex A (informative) **SQL conformance summary. . . . 234**
Annex B (informative) **Implementation-defined elements. . . . 249**
Annex C (informative) **Implementation-dependent elements. . . . 251**
Annex D (informative) **SQL optional feature taxonomy. . . . 254**
Annex E (informative) **Deprecated features. . . . 259**
Annex F (informative) **Incompatibilities with ISO/IEC 9075:2016. . . . 260**
Annex G (informative) **Defect Reports not addressed in this edition of this document. . . . 261**
Index. . . . 262

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Tables

Table

Page

1 Conversion of simplified syntax delimiters to default edge delimiters. 135
2 Data types of <condition information item name>s. 189
3 SQL-statement codes. 190
4 SQLSTATE class and subclass codes. 229
5 Implied feature relationships of SQL/PGQ. 230
A.1 Feature definitions outside of Conformance Rules. 234
D.1 Feature taxonomy for optional features. 254

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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.

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 first edition of ISO/IEC 9075-16 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;

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— ISO/IEC 9075-13, fifth edition;

— ISO/IEC 9075-14, sixth edition;

— ISO/IEC 9075-15, second 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.

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Introduction

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 terms and definitions used in this document.

4) Clause 4, "Concepts", presents concepts used in the definition of property graph queries.

5) Clause 5, "Lexical elements", defines a number of lexical elements used in the definition of property graph queries.

6) Clause 6, "Scalar expressions", defines a number of scalar expressions used in the definition of property graph queries.

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

8) Clause 8, "Predicates", defines the predicates of the language.

9) Clause 9, "Additional common rules", specifies additional rules for implicit or explicit invocation from other places in this document.

10) Clause 10, "Additional common elements", defines additional common elements used in the definition of property graph queries.

11) Clause 11, "Schema definition and manipulation", defines the schema definition and manipulation statements associated with the definition of property graph queries.

12) Clause 12, "Access control", defines facilities for controlling access to SQL-data.

13) Clause 13, "SQL-client modules", defines the facilities for using property graph queries.

14) Clause 14, "Diagnostics management", defines the diagnostics management facilities.

15) Clause 15, "Information Schema", defines viewed tables that contain schema information.

16) Clause 16, "Definition Schema", defines base tables on which the viewed tables containing schema information depend.

17) Clause 17, "Status codes", defines SQLSTATE values related to property graph queries.

18) Clause 18, "Conformance", defines the criteria for conformance to this document.

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

20) 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.

21) 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.

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

23) 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.

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

25) 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 18, "Conformance", Subclauses begin new pages. Any resulting blank space is not significant.

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Information technology — Database language SQL —

Part 16:
Property Graph Queries (SQL/PGQ)

1 Scope

This document defines ways for the SQL language to represent property graphs and to interact with them.

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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 9075-4, *Information technology — Database languages — SQL — Part 4: Persistent Stored Modules (SQL/PSM)*

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

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