

ISO/IEC 19075-2:2021-08 (E)

Information technology - Guidance for the use of database language SQL - Part 2: Time-related information

| Contents | Page |
|--|-----------|
| Foreword..... | vi |
| Introduction..... | viii |
| 1 Scope..... | 1 |
| 2 Normative references..... | 2 |
| 3 Terms and definitions..... | 3 |
| 4 Time-related data types, constructs, operators, and predicates..... | 4 |
| 4.1 Context of time-related specifications..... | 4 |
| 4.2 Datetime types..... | 4 |
| 4.3 DateTime literals..... | 6 |
| 4.4 Interval types..... | 7 |
| 4.5 Interval literals..... | 8 |
| 4.6 Periods..... | 9 |
| 4.7 Operations involving datetimes and intervals..... | 10 |
| 4.8 Time-related predicates..... | 10 |
| 4.8.1 Overlaps predicate..... | 10 |
| 4.8.2 Period predicates..... | 11 |
| 5 Time-related tables..... | 14 |
| 5.1 Introduction to time-related tables..... | 14 |
| 5.2 Application-time period tables..... | 14 |
| 5.2.1 Introduction to application-time period tables..... | 14 |
| 5.2.2 Extensions to primary key / unique constraints..... | 14 |
| 5.2.3 Extensions to referential constraints..... | 15 |
| 5.2.4 Inserting rows into tables containing an application-time period definition..... | 18 |
| 5.2.5 Updating rows of tables containing an application-time period definition..... | 18 |
| 5.2.6 Updating the table between specific points in time..... | 19 |
| 5.2.7 Deleting rows from tables containing an application-time period definition..... | 22 |
| 5.2.8 Deleting rows between specific points in time..... | 22 |
| 5.2.9 Querying tables containing a period definition..... | 24 |
| 5.2.10 Adding a period definition to a table..... | 25 |
| 5.3 System-versioned tables..... | 26 |
| 5.3.1 Introduction to system-versioned tables..... | 26 |
| 5.3.2 Primary key and referential constraints..... | 27 |
| 5.3.3 Updating rows in system-versioned tables..... | 28 |
| 5.3.4 Deleting rows in system-versioned tables..... | 29 |
| 5.3.5 Querying system-versioned tables..... | 29 |
| 5.4 Bi-temporal tables..... | 30 |
| Bibliography..... | 32 |
| Index..... | 33 |

Table

Page

| | | |
|----|---|----|
| 1 | Fields in datetime values. | 4 |
| 2 | Mapping of datetime fields to datetime data types. | 5 |
| 3 | Examples of the datetime data types. | 6 |
| 4 | Examples of datetime literals. | 6 |
| 5 | Fields in year-month INTERVAL values. | 7 |
| 6 | Fields in day-time INTERVAL values. | 7 |
| 7 | Examples of day-time INTERVAL values. | 8 |
| 8 | Examples of interval literals. | 8 |
| 9 | Valid operators involving datetimes and intervals. | 10 |
| 10 | Example data table emp for primary key with application-time period. | 15 |
| 11 | Example data table dept for foreign key with application-time period. | 16 |
| 12 | Example data table emp for foreign key with application-time period. | 16 |
| 13 | Content of table emp after insert with application-time period. | 18 |
| 14 | Content of table emp before updating a row. | 18 |
| 15 | Content of table emp after updating a row. | 19 |
| 16 | Content of table emp before updating the application-time period of a row. | 19 |
| 17 | Content of table emp after updating the application-time period of a row. | 19 |
| 18 | Content of table emp before updating a row for an inner part of a period. | 20 |
| 19 | Content of table emp after updating a row for an inner part of a period. | 20 |
| 20 | Content of table emp before updating a row for all of a period. | 20 |
| 21 | Content of table emp after updating a row for all of a period. | 21 |
| 22 | Content of table emp before updating the edge of a period of a row. | 21 |
| 23 | Content of table emp after updating the edge of a period of a row. | 21 |
| 24 | Content of table emp before deleting an inner part of a period. | 22 |
| 25 | Content of table emp with application-time period after deleting an inner part of a period. | 23 |
| 26 | Content of table emp with application-time period before deleting a row. | 23 |
| 27 | Content of table emp before deleting an edge of a period. | 23 |
| 28 | Content of table emp after deleting an edge of a period. | 24 |
| 29 | Content of system-versioned table emp before updating a row. | 28 |
| 30 | Content of system-versioned table emp after updating a row. | 28 |
| 31 | Content of system-versioned table emp before deleting a row. | 29 |
| 32 | Content of system-versioned table emp after deleting a row. | 29 |