SQL Programming

SQL

SQL is a set-based, declarative programming language, not an imperative programming language like C or BASIC. However, extensions to Standard SQL add

Structured Query Language (SQL) (pronounced S-Q-L; or alternatively as "sequel")

is a domain-specific language used to manage data, especially in a relational database management system (RDBMS). It is particularly useful in handling structured data, i.e., data incorporating relations among entities and variables.

Introduced in the 1970s, SQL offered two main advantages over older read–write APIs such as ISAM or VSAM. Firstly, it introduced the concept of accessing many records with one single command. Secondly, it eliminates the need to specify how to reach a record, i.e., with or without an index.

Originally based upon relational algebra and tuple relational calculus, SQL consists of many types of statements, which may be informally classed as sublanguages, commonly: data query language (DQL), data definition language (DDL), data control language (DCL), and data manipulation language (DML).

The scope of SQL includes data query, data manipulation (insert, update, and delete), data definition (schema creation and modification), and data access control. Although SQL is essentially a declarative language (4GL), it also includes procedural elements.

SQL was one of the first commercial languages to use Edgar F. Codd's relational model. The model was described in his influential 1970 paper, "A Relational Model of Data for Large Shared Data Banks". Despite not entirely adhering to the relational model as described by Codd, SQL became the most widely used database language.

SQL became a standard of the American National Standards Institute (ANSI) in 1986 and of the International Organization for Standardization (ISO) in 1987. Since then, the standard has been revised multiple times to include a larger set of features and incorporate common extensions. Despite the existence of standards, virtually no implementations in existence adhere to it fully, and most SQL code requires at least some changes before being ported to different database systems.

PL/SQL

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PL/SQL (Procedural Language for SQL) is Oracle Corporation's procedural extension for SQL and the Oracle relational database. PL/SQL is available in Oracle Database (since version 6 - stored PL/SQL procedures/functions/packages/triggers since version 7), TimesTen in-memory database (since version 11.2.1), and IBM Db2 (since version 9.7). Oracle Corporation usually extends PL/SQL functionality with each successive release of the Oracle Database.

PL/SQL includes procedural language elements such as conditions and loops, and can handle exceptions (run-time errors). It allows the declaration of constants and variables, procedures, functions, packages, types and variables of those types, and triggers. Arrays are supported involving the use of PL/SQL collections. Implementations from version 8 of Oracle Database onwards have included features associated with object-orientation. One can create PL/SQL units such as procedures, functions, packages, types, and triggers, which

are stored in the database for reuse by applications that use any of the Oracle Database programmatic interfaces.

The first public version of the PL/SQL definition was in 1995. It implements the ISO SQL/PSM standard.

SQL syntax

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The syntax of the SQL programming language is defined and maintained by ISO/IEC SC 32 as part of ISO/IEC 9075. This standard is not freely available. Despite the existence of the standard, SQL code is not completely portable among different database systems without adjustments.

Transact-SQL

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Transact-SQL (T-SQL) is Microsoft's and Sybase's proprietary extension to the SQL (Structured Query Language) used to interact with relational databases. T-SQL expands on the SQL standard to include procedural programming, local variables, various support functions for string processing, date processing, mathematics, etc. and changes to the DELETE and UPDATE statements.

Transact-SQL is central to using Microsoft SQL Server. All applications that communicate with an instance of SQL Server do so by sending Transact-SQL statements to the server, regardless of the user interface of the application.

Stored procedures in SQL Server are executable server-side routines. The advantage of stored procedures is the ability to pass parameters.

Microsoft SQL Server

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Microsoft SQL Server is a proprietary relational database management system developed by Microsoft using Structured Query Language (SQL, often pronounced "sequel"). As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network (including the Internet). Microsoft markets at least a dozen different editions of Microsoft SQL Server, aimed at different audiences and for workloads ranging from small single-machine applications to large Internet-facing applications with many concurrent users.

List of programming languages

index to notable programming languages, in current or historical use. Dialects of BASIC (which have their own page), esoteric programming languages, and

This is an index to notable programming languages, in current or historical use. Dialects of BASIC (which have their own page), esoteric programming languages, and markup languages are not included. A programming language does not need to be imperative or Turing-complete, but must be executable and so does not include markup languages such as HTML or XML, but does include domain-specific languages such as SQL and its dialects.

SQL:1999

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SQL:1999 (also called SQL 3) was the fourth revision of the SQL database query language. It introduced many new features, many of which required clarifications in the subsequent SQL:2003. In the meanwhile SQL:1999 is deprecated.

Directive (programming)

January 2014). Oracle PL/SQL Programming (6 ed.). O'Reilly Media, Inc. (published 2014). ISBN 9781449324414. Retrieved 2016-06-16. PL/SQL has a PRAGMA keyword

In computer programming, a directive or pragma (from "pragmatic") is a language construct that specifies how a compiler (or other translator) should process its input. Depending on the programming language, directives may or may not be part of the grammar of the language and may vary from compiler to compiler. They can be processed by a preprocessor to specify compiler behavior, or function as a form of in-band parameterization.

In some cases directives specify global behavior, while in other cases they only affect a local section, such as a block of programming code. In some cases, such as some C programs, directives are optional compiler hints and may be ignored, but normally they are prescriptive and must be followed. However, a directive does not perform any action in the language itself, but rather only a change in the behavior of the compiler.

This term could be used to refer to proprietary third-party tags and commands (or markup) embedded in code that result in additional executable processing that extend the existing compiler, assembler and language constructs present in the development environment. The term "directive" is also applied in a variety of ways that are similar to the term command.

SQL/JRT

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SQL/JRT, or SQL Routines and Types for the Java Programming Language, is an extension to the SQL standard first published as ISO/IEC 9075-13:2002 (part 13 of SQL:1999). SQL/JRT specifies the ability to invoke static Java methods as routines from within SQL applications, commonly referred to as "Java stored procedures". SQL/JRT also calls for the ability to use Java classes as SQL structured user-defined types. The two parts of the extension originate from the earlier ANSI SQLJ part 1 and 2 standards (not to be confused with SQLJ part 0, which defined an embedding of SQL into Java, later standardized by ISO as SQL/OLB.)

MySQL

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MySQL () is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter My, and "SQL", the acronym for Structured Query Language. A relational database organizes data into one or more data tables in which data may be related to each other; these relations help structure the data. SQL is a language that programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access

and facilitates testing database integrity and creation of backups.

MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL was owned and sponsored by the Swedish company MySQL AB, which was bought by Sun Microsystems (now Oracle Corporation). In 2010, when Oracle acquired Sun, Widenius forked the open-source MySQL project to create MariaDB.

MySQL has stand-alone clients that allow users to interact directly with a MySQL database using SQL, but more often, MySQL is used with other programs to implement applications that need relational database capability. MySQL is a component of the LAMP web application software stack (and others), which is an acronym for Linux, Apache, MySQL, Perl/PHP/Python. MySQL is used by many database-driven web applications, including Drupal, Joomla, phpBB, and WordPress. MySQL is also used by many popular websites, including Facebook, Flickr, MediaWiki, Twitter, and YouTube.

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