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Assignment 8.2 – SQL

Relational databases are fundamental to storing data for modern computer applications and the structured query language, or SQL, is the key to using them. SQL was standardized by the American National Standards Institute (ANSI) and the International Standards Organization (ISO) in 1986. Its capabilities have expanded over the years since it’s standardization and has become the go to solution to managing and using relational databases. SQL has a series of staple commands that are necessary for a database administrator to know, different architectures to describe database deployment, and database management tools for serving up stored data.

SQL has a very straightforward syntax that is more similar to a standard English sentence than it is to a typical programming language. The command “SELECT” is used to specify specific queries of a database and how that information is requested. The “SELECT” command has three parameters. They are “SELECT,” “FROM,” and “WHERE.” The typical syntax of a select command looks like this:

SELECT column\_a, column\_b, column\_n FROM table\_a WHERE [conditional statement];

A SELECT statement doesn’t always require a conditional WHERE, such as in a case where a query requests a whole table be returned. A SELECT statement can also be used to return values from multiple tables and display it in a unified fashion by entering both table names separated by a comma after the “FROM” command. Several other important commands to know for managing a database are “INSERT INTO,” “UPDATE,” “DELETE,” “DROP,” and “CREATE TABLE.” “INSERT INTO” allows for the adding of an additional row of information to a table. “UPDATE” allows an administrator to change the values of a specific row within a database table. “DELETE” allows for the deletion or removal of one or more rows from a table. “DROP” is used to delete entire tables or databases. “CREATE TABLE” is used to create a new table within a database.

Database access through the web is achieved through a client-server architecture. This architecture can be created through the use of several different technologies with SQL as the intermediary with the actual database. This type of architecture usually has the client submit a request for information from their web browser as the client. That request is then sent to the computer that is operating as the web server and is hosting the database application. This application then takes the users’ request and translates it into a SQL query and submits it to the database. The database returns the raw data from that request to the web application, the application then formats the raw data to be viewed by the user, and the formatted data is sent to the browser for the user to see. This is called a three-tiered architecture. This is the type of architecture a user would see when surfing on an e-commerce site such as amazon.com.

Connecting that web application to the database is frequently done through the use of the database system called MySQL. MySQL is open source software that allows for the management and control of databases through a command line. It allows a database administrator to connect to specific database through the use of the mysqli\_connect command and it requires four parameters. Those parameters are the host running MySQL, the username for the MySQL database, the associated password, and finally, the name of the database to be accessed. MySQL is used frequently in conjunction with languages such as PHP, Java, and ASP.Net to provide web access to database information.

Databases have been critical to the development of web applications. Understanding how to make use of SQL and MySQL in a three-tiered architecture is necessary to the process of developing web applications. Thankfully, the structured query language follows a syntax more akin to written English than other languages do, so learning this language is less strenuous.

Sources

Sebesta, R. (2013). *Programming the World Wide Web* (7th ed.). Boston: Pearson.