**Chapter 1 - Introduction**
Oracle Database 11g SQL
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## Introducing the Structured Query Language (SQL)

Structured Query Language (SQL) is the standard language designed to access relational databases. SQL should be pronounced as the letters “S-Q-L.”

> **Note** “S-Q-L” is the correct way to pronounce SQL according to the American National Standards Institute. However, the single word “sequel” is frequently used instead.

SQL is based on the groundbreaking work of Dr. E.F. Codd, with the first implementation of SQL being developed by IBM in the mid-1970s. IBM was conducting a research project known as System R, and SQL was born from that project. Later, in 1979, a company then known as Relational Software Inc. (known today as Oracle Corporation) released the first commercial version of SQL. SQL is now fully standardized and recognized by the American National Standards Institute.

SQL uses a simple syntax that is easy to learn and use. You’ll see some simple examples of its use in this chapter. There are five types of SQL statements, outlined in the following list:

- **Query statements** retrieve rows stored in database tables. You write a query using the SQL `SELECT` statement.
- **Data Manipulation Language (DML) statements** modify the contents of tables. There are three DML statements:
  - **`INSERT`** adds rows to a table.
  - **`UPDATE`** changes rows.
  - **`DELETE`** removes rows.
- **Data Definition Language (DDL) statements** define the data structures, such as tables, that make up a database. There are five basic types of DDL statements:
  - **`CREATE`** creates a database structure. For example, `CREATE TABLE` is used to create a table; another example is `CREATE USER`, which is used to create a database user.
  - **`ALTER`** modifies a database structure. For example, `ALTER TABLE` is used to modify a table.
  - **`DROP`** removes a database structure. For example, `DROP TABLE` is used to remove a table.
  - **`RENAME`** changes the name of a table.
  - **`TRUNCATE`** deletes all the rows from a table.
- **Transaction Control (TC) statements** either permanently record any changes made to rows, or undo those changes. There are three TC statements:
  - **`COMMIT`** permanently records changes made to rows.
  - **`ROLLBACK`** undoes changes made to rows.
  - **`SAVEPOINT`** sets a “save point” to which you can roll back changes.

- **Data Control Language (DCL) statements** change the permissions on database structures. There are two DCL statements:
    - **`GRANT`** gives another user access to your database structures.
    - **`REVOKE`** prevents another user from accessing your database structures.

There are many ways to run SQL statements and get results back from the database, some of which include programs written using Oracle Forms and Reports. SQL statements may also be embedded within programs written in other languages, such as Oracle's Pro*C++, which allows you to add SQL statements to a C++ program. You can also add SQL statements to a Java program using JDBC; for more details, see my book *Oracle9i JDBC Programming* (Oracle Press, 2002).

Oracle also has a tool called SQL*Plus that allows you to enter SQL statements using the keyboard or to run a script containing SQL statements. SQL*Plus enables you to conduct a "conversation" with the database; you enter SQL statements and view the results returned by the database. You'll be introduced to SQL*Plus next.

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