Chapter 1 :
SQL Basics

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What is SQL?

Structured Query Language is the standard language for querying, storing, manipulating and retrieving data from relational databases. A query is an inquiry or request for data from a database.

What is a Database?

A database is an organized collection of data that is stored digitally, such that information can be maintained, accessed and analyzed efficiently. In order to manage our databases, we use a software called **DBMS**, short for Database Management System.

What is a Relational Database ?

A relational database is a type of database that organizes data into rows and columns, which collectively form a table where the data points are related to each other. If you've used Excel, you should already be familiar with tables. Relational Database tables have rows and columns just like Excel, but are a little more rigid. For instance, they are always organized by columns and each column must have a unique name. To get a sense of this organization, the image below shows a sample table.

year	category	nominee	movie	winner
2010	actress in a leading role	Nicole Kidman	Rabbit Hole	false
2010	actress in a leading role	Jennifer Lawrence	Winter's Bone	false
2010	actress in a leading role	Michelle Williams	Blue Valentine	false
2010	actress in a leading role	Natalie Portman	Black Swan	true
2010	actress in a leading role	Annette Bening	The Kids Are All Right	false
2010	actor in a leading role	Jesse Eisenberg	The Social Network	false
2010	actor in a leading role	Colin Firth	The King's Speech	true
2010	actor in a leading role	James Franco	127 Hours	false
2010	actor in a leading role	Javier Bardem	Biutiful	false
2010	actor in a leading role	Jeff Bridges	True Grit	false

Figure 1: Example Table

The SQL queries learned here can be practiced on real world data at **mode.com**.

1 SELECT

Let us start by looking at some basic SQL syntax and queries. There are two required ingredients in any SQL query : **SELECT** and **FROM** and they have to be in that order. SELECT indicates the columns that you would like to view and FROM identifies the table that they are in.

```
SELECT year,
       month,
       west
    FROM tutorial.us_housing_units
```

The query above is telling the database to return the year, month, and west columns from the "tutorial.us_housing_units" table.

1.1 Formatting Conventions

You might have noticed that the SELECT and FROM commands are capitalized. This isn't actually necessary. SQL will understand these commands if you type them in lowercase. Capitalizing commands is simply a convention that makes queries easier to read. Similarly, SQL treats one space, multiple spaces, or a line break as being the same thing.

1.2 Column Names

While we're on the topic of formatting, it's worth noting the format of column names. All of the columns in the tutorial.us_housing_units table are named in lower case, and use underscores instead of spaces. The table name itself also uses underscores instead of spaces.

If you want to have spaces in column names, you need to always refer to those columns in double quotes. For example, if you want the "west" column to appear as "West Region" in the results, you would have to type:

```
SELECT west AS "West Region"
    FROM tutorial.us_housing_units
```

2 LIMIT