Database Designs

Section 2: Database Tables

1.1 Introducing the SELECT Statement

Using the below Students Table we will look at how we can query the table to retrieve information from the database using SQL SELECT Statement.

STUDENTS				
studentID	firstName	lastName	gender	email
1	John	Doe	M	j.d@email.com
2	Jenny	Smith	F	j.s@email.com
3	Navdeep	Singh	F	n.s@email.com
4	Alberto	Diaz	M	a.d@email.com
5	Martha	Blyth	F	m.b@email.com

The SQL SELECT Statement is used to fetch data out of a database table(s). The SELECT statement is used to fetch specific rows and columns out of a database. Below is a very basic example of fetching data from a database using the SELECT Statement SQL Syntax.

We need to always answer three simple questions:
1. Which rows do we want to fetch?
2. Which columns in those rows are we interested in?
3. From which tables should we fetch this information from?

These are the three questions you need to think about in order to structure your thoughts and structure the SELECT statement.

If we want to get all emails of female students we can use the three questions to structure our thoughts and our SELECT statement to retrieve the data. First we are interested only in the rows which are female students. We are interested only in the column that holds the emails. Finally, we are interested in the Students Table which holds the information we want to extract. Having answered these questions we can now write the SQL query:

SELECT email
FROM STUDENTS
WHERE gender **=** 'F'**;**

The keywords are highlighted in blue. These keywords are uniformly used to form the syntax of a basic SELECT statement. We would use these three keywords in a variety of ways to extract the most complicated of information from a database.

The WHERE keyword is used to answer the first question noted above i.e. which rows do we want to fetch. The WHERE clause is followed by a list of conditions which is used to figure out which of the rows we are interested in. Whichever rows satisfies the condition is selected as part of the select statement.
If we wanted all student emails from the database we can simply omit the WHERE clause from the SELECT statement.

The SELECT keyword is used to answer the second question noted above i.e. which columns are we interested in fetching. We select all the columns by the column names existing in the table separated by a comma. These are the values whose values will be retrieved for the records that satisfies the WHERE condition above.
The asterisk (*) is a special character to select all columns from a table rather than listing each column individually.

Finally, the FROM keyword is used to answer the last question noted above i.e. which table should we fetch the rows and columns data from. This should be a table stored in the database being queried.

The semicolon (;) at the end of the statement is extremely important because it terminates/ends the statement. This indicates to the DBMS system that we have completed our Query Statement.

Below is an example of a SELECT statement where we want to fetch all columns of all female students with the first name of Jenny.

SELECT *
FROM STUDENTS
WHERE gender **=** 'F' **AND** firstName **=** 'Jenny'**;**

Below is an example of a SELECT statement where we want to fetch the student id and email of all female students or students with the first name of Alberto.

SELECT studentID, email
FROM STUDENTS
WHERE gender **=** 'F' **OR** firstName **=** 'Alberto'**;**

The logical AND/OR operator is used to add multiple WHERE queries. We can chain the logical operators to produce more complex and interesting queries.