Instructor:

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Learning Objectives:

- Retrieving and Restricting data using the SQL SELECT statement

Helping Material:

Capabilities of SQL SELECT Statements

A SELECT statement retrieves information from the database. With SELECT statement you can use the following capabilities:

- **Projection**: Select the columns in a table that are returned by a query. Select as few or as many of the columns as required.
- **Selection**: Select the rows in a table that are returned by a query. Various criteria can be used to restrict the rows that are retrieved.
- **Joining**: Bring together data that is stored in different tables by specifying the link between them. SQL joins are covered in more detail in the next labs.

Structure of basic select statement

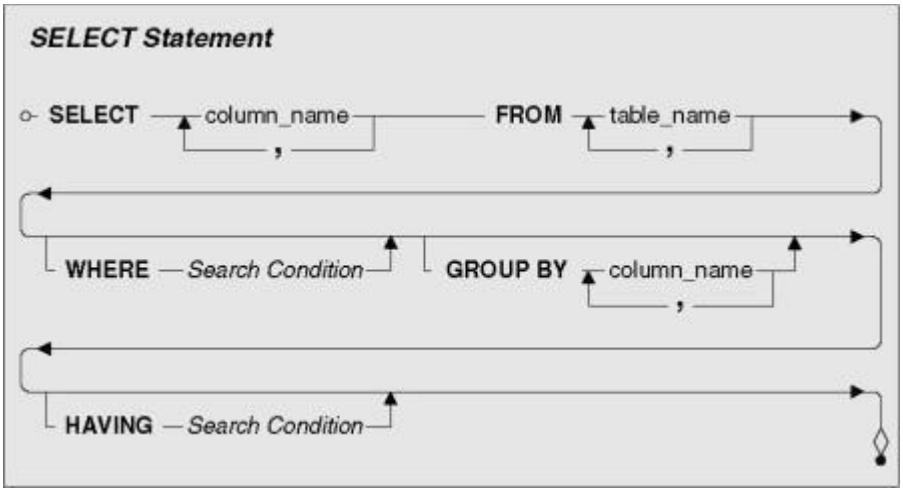

Figure 1: Select statement graphical flow

In its simplest form, a SELECT statement must include the follow in:

- A SELECT clause, which specifies the columns to be displayed
- A FROM clause, which identifies the table containing the columns that are listed in the SELECT statement

Note: Throughout this course, the words **keyword, *clause*: and *statement*** are used as follows:

- A keyword refers to an individual SQL element. For example, SELECT and FROM are keywords.
- A clause is a part of a SQL statement. For example, SELECT name, cnic and so on is a clause.

- A statement is a combination of two or more clauses. For example, SELECT * FROM Student is a SQL statement.

Note:

- SQL statements are not case-sensitive.
- SQL statements can be entered on one or more lines.
- Keywords cannot be abbreviated or split across lines.
- Clauses are usually placed on separate lines.
- Indents are used to enhance readability.
- SQL statements can optionally be terminated by a semicolon (;). Semicolons are required when you execute multiple SQL statements.

Operator Precedence:

Operator	**Precedence**
Unary operators, bitwise NOT	1
Multiplication and division	2
Addition, subtraction, and concatenation	3
SQL conditions	4

DISTINCT clause:

- The distinct operator is used to eliminate the duplicates in your SQL statement

Comparison and Logical Operators:

- Following comparison operators are commonly used in SQL server o = o < > o > o >= o <= o < o IS NULL o IS NOT NULLo BETWEEN AND o IN(set) o LIKE
- Following Logical operators are used o NOT o OR o AND

ORDER BY Clause

- ORDER BY clause is used for ascending order.

TOP N clause:

- TOP N clause is used to limit the result.
- Limit is also used for this purpose.

Lab Task:

- Create a new table Student which have the following schema Student(RegNo: String, FirstName: String, LastName: String, GPA: Float, Contact: Integer)
- Add at least 5 records of your own class in which one or two students have GPA undefined.
- Display all the data from the table Student
- Display specific columns form the table Student
- Display all the data of students where GPA > 3.5
- Display all the data of students where GPA <= 3.5
- Does the above 2 queries covers all the data?
- Display first and last name of all students as single column using concatenation operator "||".
- Your task is to write SQL statements corresponding to each operator using Northwind schema
- Identify at least one SQL statement in which precedence can affect the result of query.
- Identify how the result of a mathematical expression on null value affect the result of a query.
- Use the distinct operator to eliminate the duplicates in your SQL statement.
- Write at least 3 SQL statements using Northwind schema which use ORDER BY clause
- Limit the result of 3 ORDER BY queries to 10 rows.

Home Task:

1. Write a query to report orders which were delayed shipped.
2. Our employees belong to how many countries. List the names.
3. Is there any employee who is not accountable?
4. List the names of products which have been discontinued.
5. List the IDs the orders on which discount was not provided.
6. Enlist the names of customers who have not specified their region.
7. Enlist the names of customers along with contact number who either belongs to UK or USA.
8. Report the names of companies who have provided their web page.
9. In which countries, products were sold in year 1997.
10. List the ids of customers whose orders were never shipped.
11. Write a query to report suppliers with their id, company name and city.
12. Our employees belong to how many countries. List them who are used to live in London.
13. List the names of products which have not been discontinued.
14. List the IDs the orders on which discount was 0.1 or less.
15. Enlist the IDS, names of employees and their contact number with extensions who have not specified their region.

HackerRank Tasks:

1. https://www.hackerrank.com/challenges/select-all-sql/problem?isFullScreen=true
2. https://www.hackerrank.com/challenges/japanese-cities-attributes/problem?isFullScreen=true
3. https://www.hackerrank.com/challenges/japanese-cities-name/problem?isFullScreen=true
4. https://www.hackerrank.com/challenges/salary-of-employees/problem?isFullScreen=true
5. https://www.hackerrank.com/challenges/name-of-employees/problem?isFullScreen=true
6. https://www.hackerrank.com/challenges/select-by-id/problem?isFullScreen=true
7. https://www.hackerrank.com/challenges/weather-observation-station-1/problem?isFullScreen=true

8. https://www.hackerrank.com/challenges/weather-observation-station-3/problem?isFullScreen=true
9. https://www.hackerrank.com/challenges/weather-observation-station-5/problem?isFullScreen=true
10. https://www.hackerrank.com/challenges/weather-observation-station-4/problem?isFullScreen=true
11. https://www.hackerrank.com/challenges/more-than-75-marks/submissions
12. https://www.hackerrank.com/challenges/revising-the-select-query/problem?isFullScreen=true
13. https://www.hackerrank.com/challenges/revising-the-select-query-2/problem?isFullScreen=true

What to Submit:

You are required to submit the following files.

- Dbscript.sql
- Pdf report.