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Database Programming with SQL

2-2
Limit Rows Selected

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Objectives

This lesson covers the following objectives:

- Apply SQL syntax to restrict the rows returned from a query
- Demonstrate application of the WHERE clause syntax
- Explain why it is important, from a business perspective, to be able to easily limit data retrieved from a table
- Construct and produce output using a SQL query containing character strings and date values

Purpose

- Have you ever had "information overload"?
- The television is on, your Mom is asking you how school went today, the phone rings, and the dog is barking.
- Wouldn't it be nice to be able to restrict the amount of information you have to process at one time?
- In SQL, this is the job of the WHERE clause.
- It is important to be able to choose the information you need to see from a table.
- Tables can have millions of rows of data, and it is a waste of resources to search and return data you don't need or want.

SELECT Statement

- You use SELECT to retrieve information from the database.
- A SELECT statement must include at a minimum a SELECT clause and a FROM clause.
- The WHERE clause is optional.

```
SELECT*|{[DISTINCT] column | expression alias]..}
FROM table
[WHERE condition(s)];
```

WHERE Clause

- When retrieving data from the database, you may need to limit the rows of data that are displayed.
- You can accomplish this using the WHERE clause.
- A WHERE clause contains a condition that must be met, and it directly follows the FROM clause in a SQL statement.
- The syntax for the WHERE clause is:

```
WHERE column_name comparison_condition comparison_value
```

- Note: An alias cannot be used in the WHERE clause!

WHERE Clause

- Examine the following SQL statement from the Employees database:

```
SELECT employee_id, first_name, last_name
FROM employees;
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME
100	Steven	King
101	Neena	Kochhar
102	Lex	De Haan

- By adding a WHERE clause, the rows are limited to those rows where the value of employee_id is 101.

```
SELECT employee_id, first_name, last_name
FROM employees
WHERE employee_id = 101;
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME
101	Neena	Kochhar

Comparison Operators in the WHERE Clause

- As you saw on the previous slide, the = sign can be used in the WHERE clause.
- In addition to the "equal to" operator (=), other comparison operators can be used to compare one expression to another:
  - = equal to
  - > greater than
  - >= greater than or equal to
  - < less than
  - <= less than or equal to
  - <> not equal to (or != or ^=)

Comparison Operators in the WHERE Clause

- In the example below, the department_id column is used in the WHERE clause, with the comparison operator = .
- All employees with a department_id of 90 are returned.

```
SELECT employee_id, last_name, department_id
FROM   employees
WHERE department_id = 90;
```

EMPLOYEE_ID	LAST_NAME	DEPARTMENT_ID
100	King	90
101	Kochhar	90
102	De Haan	90

Character and Date Strings in the WHERE Clause

- Character strings and dates in the WHERE clause must be enclosed in single quotation marks ' '.
- Numbers, however, should not be enclosed in single quotation marks.

Character and Date Strings in the WHERE Clause

- Look at the following example from the Employees database.
- The WHERE clause contains a string and is enclosed in single quotation marks.

```
SELECT first_name, last_name
FROM employees
WHERE last_name = 'Taylor';
```

Character and Date Strings in the WHERE Clause

- What do you think will happen if the WHERE clause is written as:

```
WHERE last_name = 'jones';
```

- All character searches are case-sensitive.
- Because the employees table stores all the last names in the proper case, no rows are returned in this example.

Character and Date Strings in the WHERE Clause

- This is an important point to remember.
- In another lesson, you will learn to use other SQL keywords UPPER, LOWER, and INITCAP that will make it easier to avoid a case-sensitive mistake.

Comparison Operators in the WHERE Clause

- Comparison operators can be used in all of the following ways in the WHERE clause:

```
WHERE hire_date < '01-Jan-2000'
```

```
WHERE salary >= 6000
```

```
WHERE job_id = 'IT_PROG'
```

Comparison Operators in the WHERE Clause

- In the following example from the Employees database, which rows will be selected?
- Will salaries of 3000 be included in the result set?

```
SELECT last_name, salary
FROM employees
WHERE salary <= 3000;
```

Terminology

Key terms used in this lesson included:

- WHERE Clause
- Comparison Operators

Summary

In this lesson, you should have learned how to:

- Apply SQL syntax to restrict the rows returned from a query
- Demonstrate application of the WHERE clause syntax
- Explain why it is important, from a business perspective, to be able to easily limit data retrieved from a table
- Construct and produce output using a SQL query containing character strings and date values

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