Database Design

Logical Comparisons and Precedence Rules

ORACLE ACADEMY

Objectives

This lesson covers the following objectives:

- Evaluate logical comparisons to restrict the rows returned based on two or more conditions
- Apply the rules of precedence to determine the order in which expressions are evaluated and calculated

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Purpose

Not too many things in life depend on just one condition. For instance, if you want to go to college, you probably need good grades and the tuition money to pay for it.

If you have extra money, you could either save it or spend it. If you want to go to a movie, you may not want to go this weekend and you may not want to sit in the first 10 rows of the theater.

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Purpose (cont.)

In SQL, it is often desirable to be able to restrict the rows returned by a query based on two or more conditions.

As the business manager of Global Fast Foods, you may need to know the names of your staff who are either cooks or order takers. You don't need or want the entire staff list, you just want a subset of it.

Conditional operators such as AND, NOT, and OR make these types of requests easy to do.

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Logical Conditions

Logical conditions combine the result of two component conditions to produce a single result based on them. For example, to attend a rock concert, you need to buy a ticket AND have transportation to get there. If both conditions are met, you can go to the concert.

What if you can't get transportation, can you go?

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Logical Conditions (cont.)

Another logical condition combines two component conditions with OR. All employees will receive a raise either by having a perfect attendance record OR by meeting their monthly sales quota. If an employee meets either of these two conditions, he gets a raise. Using syntax you already know, rewrite the code to produce the same results.

```
…WHERE cd_id NOT IN (105, 206, 332);
```

Will a query using this WHERE clause select cd_id = 206? The NOT operator excludes the condition from the query result.

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Logical Operators

A logical operator combines the results of two or more conditions to produce a single result. A row is returned ONLY IF the overall result of the condition is true.

AND -- Returns TRUE if both conditions are true.

OR -- Returns TRUE if either condition is true.

NOT -- Returns TRUE if the condition is false.

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AND Operator

In the query below, the results returned will be rows that satisfy BOTH conditions specified in the WHERE clause.

```
SELECT id, title, duration, type_code
FROM   d_songs
WHERE  id > 40
AND    type_code = 77;
```


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AND Operator (cont.)

In the query below, the results returned will be rows that satisfy BOTH conditions specified in the WHERE clause.

```
SELECT id, title, duration, type_code
FROM   d_songs
WHERE  id > 40
AND    type_code = 77;
```

ID	TITLE	DURATION	TYPE_CODE
47	Hurrah for Today	3 min	77
49	Let's Celebrate	8 min	77

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OR Operator

If the WHERE clause uses the OR condition, the results returned from a query will be rows that satisfy either one of the OR conditions. In other words, all rows returned have an ID greater than 48 OR they have a type_code equal to 77. Look at the row with “Let’s Celebrate” -- it has both!

```
SELECT id, title, duration, type_code
FROM   d_songs
WHERE  id > 48 OR type_code = 77;
```

ID	TITLE	DURATION	TYPE_CODE
47	Hurray for Today	3 min	77
49	Let’s Celebrate	8 min	77
50	All These Years	10 min	88

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NOT Operator

The NOT operator will return rows that do NOT satisfy the condition in the WHERE clause.

```
SELECT title, type_code
FROM   d_songs
WHERE  type_code NOT IN 77;
```

TITLE	TYPE_CODE
It's Finally Over	12
I'm Going to Miss My Teacher	12
Meet Me At the Altar	1
All These Years	88

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Rules of Precedence or What Happens First?

Consider the following SELECT statement. In what order are the expressions evaluated and calculated?

```
SELECT last_name||' '||salary*1.05
As "Employee Raise"
FROM employees
WHERE department_id IN(50,80)
AND first_name LIKE 'C%'
OR last_name LIKE '%s%';
```

Luckily, when things get this complicated, SQL has a few basic rules that are easy to follow.

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Rules of Precedence or What Happens First? (cont.)

Notice that the AND operator is evaluated before the OR operator. This means that if either of the conditions in the AND statement are not met, then the OR operator is used to select the rows. This is an important concept to remember.

ORDER	OPERATORS
1	Arithmetic + - * /
2	Concatenation ||
3	Comparison <, <=, >, >=, <>
4	IS (NOT) NULL, LIKE, (NOT) IN
5	(NOT) BETWEEN
6	NOT
7	AND
8	OR

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Rules of Precedence or What Happens First? (cont.)

Review the next two examples. What will be the output of each query shown? Is the output what you predicted?

```
SELECT last_name, specialty, auth_expense_amt
FROM   d_partners
WHERE  specialty ='All Types'
OR     specialty IS NULL
AND   auth_expense_amt = 300000;
```

The order of operations is:

1. Specialty IS NULL AND auth_expense_amt = 300000. Both these conditions must be met to be returned.

2.Any instance of specialty = 'All Types' will be returned.

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Rules of Precedence or What Happens First? (cont.)

```
SELECT last_name, specialty, auth_expense_amt
FROM   d_partners
WHERE  (specialty ='All Types'
OR     specialty IS NULL)
AND   auth_expense_amt = 300000;
```

The order of operations is:

1. The values in the parentheses are selected.
2. All instances of the values in the parentheses that also match auth_expense_amt = 300000 will be returned.

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Summary

In this lesson, you should have learned how to:

- Evaluate logical comparisons to restrict the rows returned based on two or more conditions
- Apply the rules of precedence to determine the order in which expressions are evaluated and calculated

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