

Multiple Filters

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WHAT'S COVERED

This tutorial explores using AND and OR in the WHERE clause of SELECT statements to combine filtering of conditions in three parts:

1. Using AND
2. Using OR
3. Combining Both

1. Using AND

The AND operator displays a record if all of the conditions are separated by AND are true. You can think of this approach of using the AND operator as if you were searching for a car to rent. You may be looking for a four-door, with the color blue, having leather seats, and so forth. This would be a great example of using the AND to ensure that we are considering all of the criteria.

If we wanted to search for customers from Manhattan in New York City, which is in the USA and has the area code 212, we would first need to identify the columns to search. The country column would contain 'USA' while the phone column would have the area code. However, it is important to note what comparison would be needed. Since the country is a specific value, we can use the equal sign to compare. For the area code, we would need to use LIKE with wildcards:

```
SELECT *  
FROM customer  
WHERE country = 'USA'  
AND phone LIKE '%(212)%';
```

Query Results												
Row count: 1												
customer_id	first_name	last_name	company	address	city	state	country	postal_code	phone	fax	email	support_rep_id
18	Michelle	Brooks		627 Broadway	New York	NY	USA	10012-2612	+1 (212) 221-3546	+1 (212) 221-4679	michelleb@aol.com	3

If we changed the criteria to finding American customers who spoke with a particular support representative, we might query records that have the support_rep_id equal to 3 and the country USA. We can change the query as follows:

```
SELECT *
```

FROM customer
 WHERE country = 'USA'
 AND support_rep_id = 3;
 This would return a result set as follows:

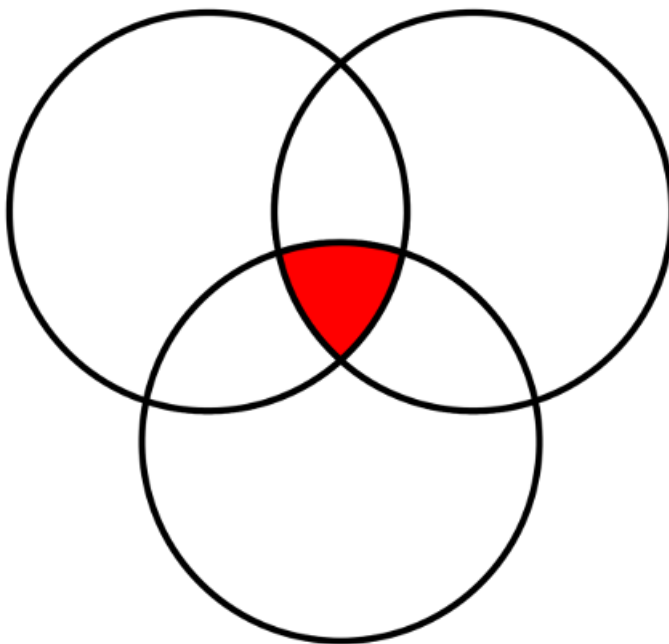
Query Results												
Row count: 3												
customer_id	first_name	last_name	company	address	city	state	country	postal_code	phone	fax	email	support_rep_id
18	Michelle	Brooks		627 Broadway	New York	NY	USA	10012-2612	+1 (212) 221-3546	+1 (212) 221-4679	michelleb@aol.com	3
19	Tim	Goyer	Apple Inc.	1 Infinite Loop	Cupertino	CA	USA	95014	+1 (408) 996-1010	+1 (408) 996-1011	tgoyer@apple.com	3
24	Frank	Ralston		162 E Superior Street	Chicago	IL	USA	60611	+1 (312) 332-3232		fralston@gmail.com	3

We can have as many criteria as we want. If we extended the prior criteria to include those with the city starting with the letter C, we would adjust the query like this:

SELECT *
 FROM customer
 WHERE country = 'USA'
 AND support_rep_id = 3
 AND city LIKE 'C%';
 This would return the following result set:

Query Results												
Row count: 2												
customer_id	first_name	last_name	company	address	city	state	country	postal_code	phone	fax	email	support_rep_id
19	Tim	Goyer	Apple Inc.	1 Infinite Loop	Cupertino	CA	USA	95014	+1 (408) 996-1010	+1 (408) 996-1011	tgoyer@apple.com	3
24	Frank	Ralston		162 E Superior Street	Chicago	IL	USA	60611	+1 (312) 332-3232		fralston@gmail.com	3

In essence, the query would first take the customers and retrieve those in the USA. In that subset, it would find those that had the support_rep_id equal to 3. Next, it would retrieve those that had the city that started with the letter C. You can think of this as the intersection of all of the criteria being returned.



2. Using OR

The OR operator displays a record if any of the conditions separated by OR is true. As long as one of the conditions is met, the result would be returned. If we wanted to get employees that had the title of IT Staff or those that had the title of IT Manager, we could run it as two separate statements like this:

```
SELECT *  
FROM employee  
WHERE title = 'IT Staff';
```

Query Results				
Row count: 2				
employee_id	last_name	first_name	title	reports_to
7	King	Robert	IT Staff	6
8	Callahan	Laura	IT Staff	6

```
SELECT *  
FROM employee  
WHERE title = 'IT Manager';
```

Query Results				
Row count: 1				
employee_id	last_name	first_name	title	reports_to
6	Mitchell	Michael	IT Manager	1

Using the OR operator, we have the ability to combine the sets together like this:

```
SELECT *  
FROM employee  
WHERE title = 'IT Manager'  
OR title = 'IT Staff';
```

Query Results

Row count: 3

employee_id	last_name	first_name	title	reports_to
6	Mitchell	Michael	IT Manager	1
7	King	Robert	IT Staff	6
8	Callahan	Laura	IT Staff	6

This behaves differently from the AND operator. With the AND operator, the more times we use it, the smaller (or the same) the result set becomes. Using the OR operator, the more times we use it, the larger (or the same) the result set becomes. If we look at employees that either have the title IT Staff or reports to 6, the query would look like this:

```
SELECT *  
FROM employee  
WHERE title = 'IT Staff'  
OR reports_to = 6;
```

Query Results

Row count: 2

employee_id	last_name	first_name	title	reports_to
7	King	Robert	IT Staff	6
8	Callahan	Laura	IT Staff	6

However, running each independently would return the same rows:

```
SELECT *  
FROM employee  
WHERE title = 'IT Staff';
```

Query Results

Row count: 2

employee_id	last_name	first_name	title	reports_to
7	King	Robert	IT Staff	6
8	Callahan	Laura	IT Staff	6

```
SELECT *  
FROM employee  
WHERE reports_to = 6;
```

Query Results

Row count: 2

employee_id	last_name	first_name	title	reports_to
7	King	Robert	IT Staff	6
8	Callahan	Laura	IT Staff	6

3. Combining Both

We can also combine both types in a single query. It is important to note that the AND operators are performed first, and then the OR statements are executed. In the following query:

```
SELECT *  
FROM employee  
WHERE title = 'IT Staff'  
OR reports_to = 6  
AND phone like '%1';
```

Query Results												
Row count: 2												
employee_id	last_name	first_name	title	reports_to	birth_date	hire_date	address	city	state	country	postal_code	phone
7	King	Robert	IT Staff	6	1970-05-29T00:00:00.000Z	2004-01-02T00:00:00.000Z	590 Columbia Boulevard West	Lethbridge	AB	Canada	T1K 5N8	+1 (403) 456-9986
8	Callahan	Laura	IT Staff	6	1968-01-09T00:00:00.000Z	2004-03-04T00:00:00.000Z	923 7 ST NW	Lethbridge	AB	Canada	T1H 1Y8	+1 (403) 467-3351

We would first get the result set of the AND statement as if it were:

```
SELECT *
FROM employee
WHERE reports_to = 6
AND phone like '%1';
```

Query Results												
Row count: 1												
employee_id	last_name	first_name	title	reports_to	birth_date	hire_date	address	city	state	country	postal_code	phone
8	Callahan	Laura	IT Staff	6	1968-01-09T00:00:00.000Z	2004-03-04T00:00:00.000Z	923 7 ST NW	Lethbridge	AB	Canada	T1H 1Y8	+1 (403) 467-3351

Then we would combine it with:

```
SELECT *
FROM employee
WHERE title = 'IT Staff';
```

Query Results												
Row count: 2												
employee_id	last_name	first_name	title	reports_to	birth_date	hire_date	address	city	state	country	postal_code	phone
7	King	Robert	IT Staff	6	1970-05-29T00:00:00.000Z	2004-01-02T00:00:00.000Z	590 Columbia Boulevard West	Lethbridge	AB	Canada	T1K 5N8	+1 (403) 456-9986
8	Callahan	Laura	IT Staff	6	1968-01-09T00:00:00.000Z	2004-03-04T00:00:00.000Z	923 7 ST NW	Lethbridge	AB	Canada	T1H 1Y8	+1 (403) 467-3351

This would return different results than if the OR operator were performed first. If we did want to have the OR operator first, we would use parentheses to form complex expressions. The query would look like this:

```
SELECT *
FROM employee
WHERE (title = 'IT Staff'
OR reports_to = 6)
AND phone like '%1';
```

This would force the query to do the OR statement first and then find the intersection between that result and the phone like '%1'. This statement would return:

Query Results												
Row count: 1												
employee_id	last_name	first_name	title	reports_to	birth_date	hire_date	address	city	state	country	postal_code	phone
8	Callahan	Laura	IT Staff	6	1968-01-09T00:00:00.000Z	2004-03-04T00:00:00.000Z	923 7 ST NW	Lethbridge	AB	Canada	T1H 1Y8	+1 (403) 467-3351

As you see, you can customize the result set through the use of filters with the AND and OR operators while using parentheses to control the ordering.

Video Transcription

[MUSIC PLAYING] As a data sets get larger in the database, you'll find that you need to utilize multiple filters to find the information that you're looking for. There we'll utilize the AND, and the OR operator to put together different conditions, so that we're able to limit the data.

For example, we want to look for the first 20 customers. So looking at the customer being less than 20, but we also want to ensure that all those individuals that we're looking at are from country, USA. So we'll type the two items together. And we should return the customer ID, all these are less than 20 and then the country, all of them are in USA.

In essence, this is the intersection of all those customers that have the customer ID of less than 20, being that would return 19 different records, and those that live in the USA. There might be many other customers that live in the USA that have the customer ID that's greater or equal to 20. The other option is utilizing the OR.

If we select the OR, we're finding the union between these two sets of data. So if we run this query now, it know that it's showing 28 records. If we only looked at the customer ID of less than 20, we only have 19 records. If we're looking only at the ones in USA we have other records that go beyond that. So you'll notice as part of the customer ID, it should show at least 1 to 19 first of all.

And then all these other individuals that have customer ID that's greater than 20 have the country being USA. And so being that it finds that union between the two, it provides us the information of having multiple different options in this case, to be able to combine those data sets together.

[MUSIC PLAYING]



Your turn! Open the SQL tool by clicking on the LAUNCH DATABASE button below. Then enter in one of the examples above and see how it works. Next, try your own choices for which columns you want the query to provide.



SUMMARY

We can use AND and OR to combine the filtering of various conditions.

Source: Authored by Vincent Tran