

Lesson 05 Demo 02

Implementing Logical Operators

Objective: To demonstrate the application of logical operators (AND, OR, NOT) in MySQL

Tools required: MySQL

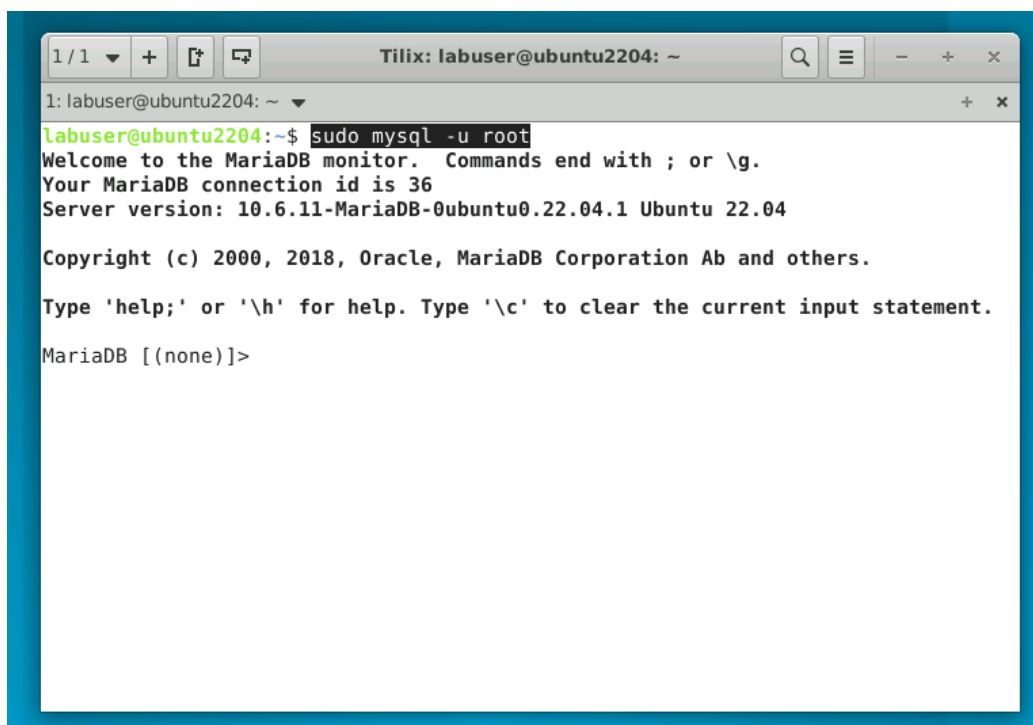
Prerequisites: None

Steps to be followed:

1. Set up a database and table
2. Apply logical operators

Step 1: Set up a database and table

- 1.1 Open a terminal window and access MySQL as a root user:
sudo mysql -u root



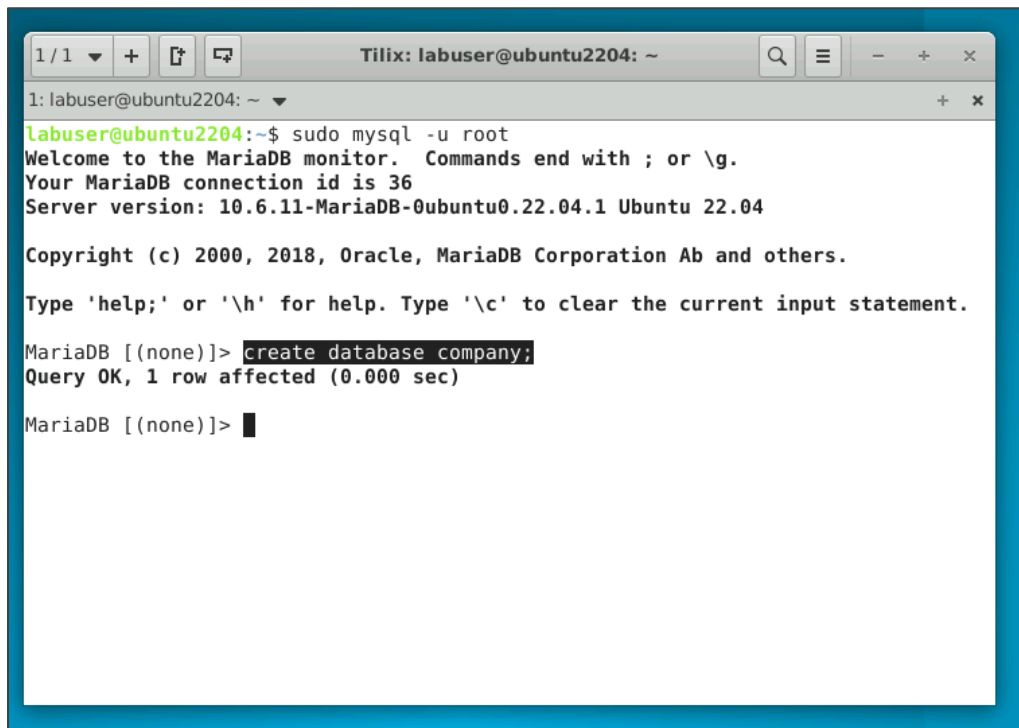
```
1 / 1 + [ ] [ ] Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~
labuser@ubuntu2204:~$ sudo mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 36
Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]>
```

- 1.2 Create a new database named **company**:
create database company;



A terminal window titled 'Tilix: labuser@ubuntu2204: ~' showing the execution of 'sudo mysql -u root'. The MariaDB monitor displays the connection details and the command 'create database company;' which is highlighted. The output shows 'Query OK, 1 row affected (0.000 sec)'.

```
1/1 + [T] [C] Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~
labuser@ubuntu2204:~$ sudo mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 36
Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

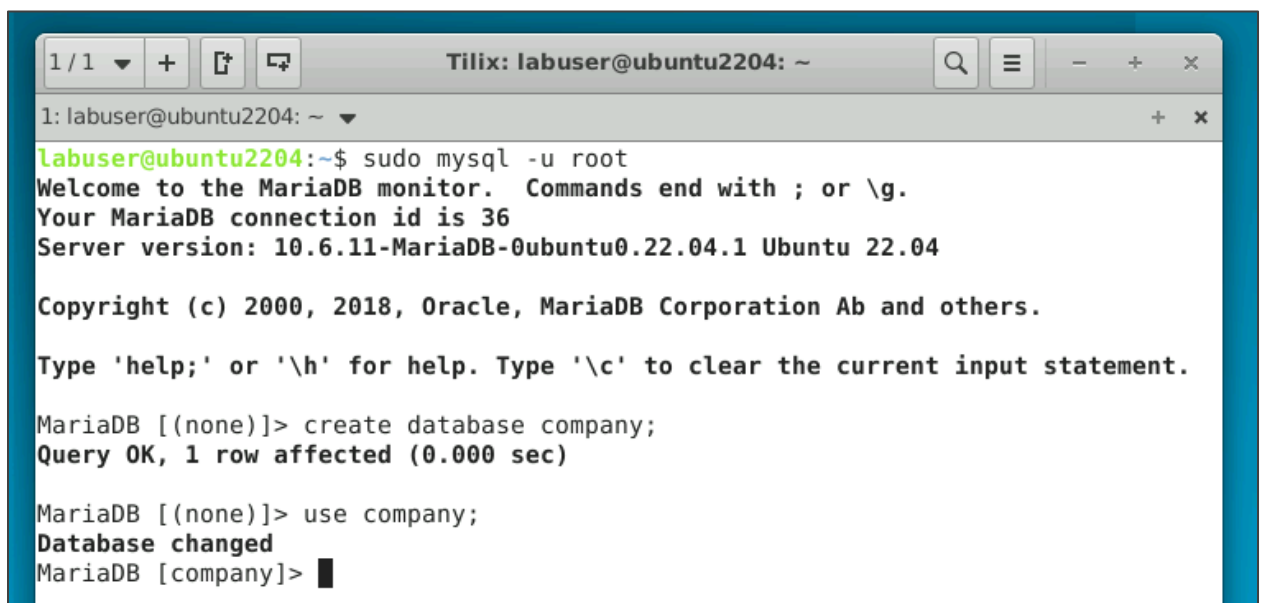
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database company;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> █
```

- 1.3 Select the **company** database:
use company;



A terminal window titled 'Tilix: labuser@ubuntu2204: ~' showing the execution of 'sudo mysql -u root'. The MariaDB monitor displays the connection details and the command 'use company;' which is highlighted. The output shows 'Database changed'.

```
1/1 + [T] [C] Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~
labuser@ubuntu2204:~$ sudo mysql -u root
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 36
Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

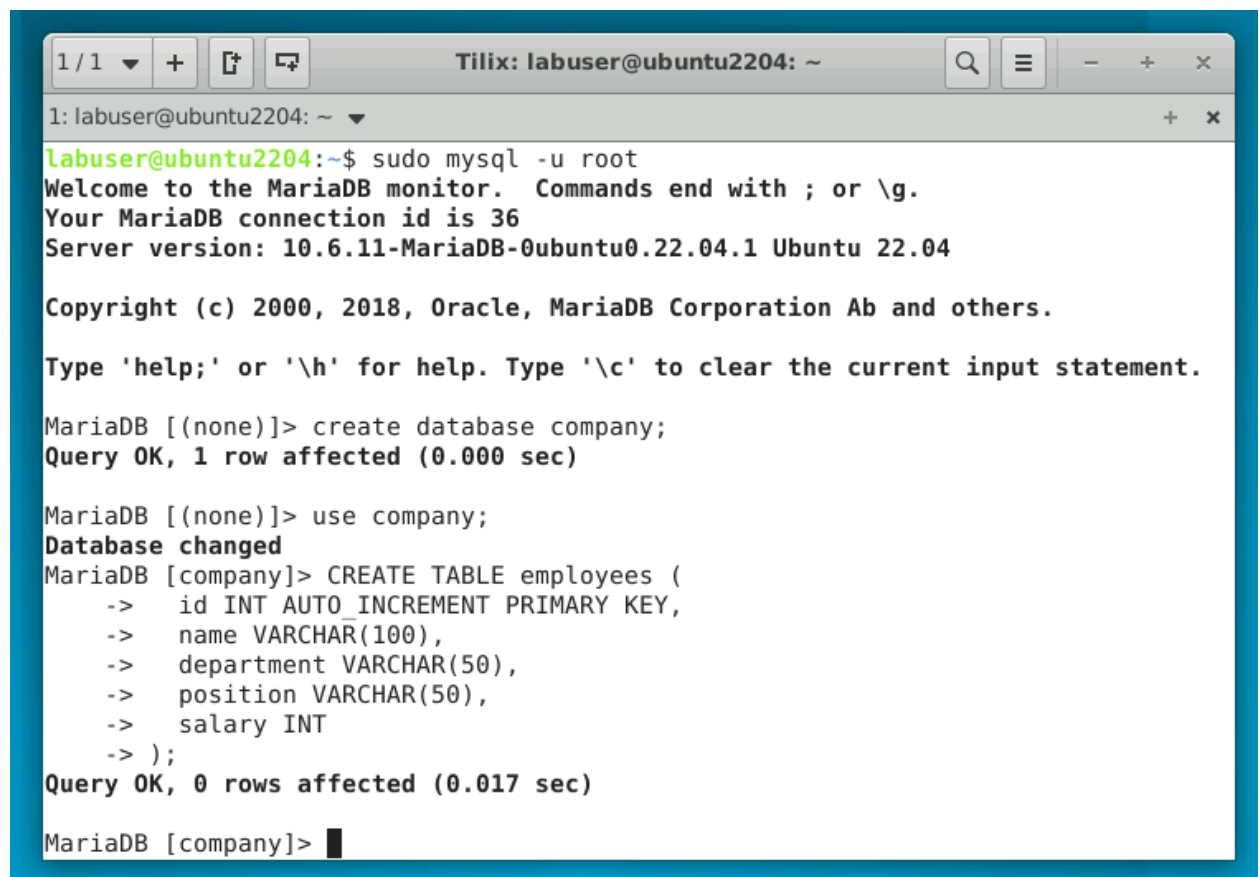
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database company;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> use company;
Database changed
MariaDB [company]> █
```

1.4 Create an **employees** table with relevant fields:

```
CREATE TABLE employees (  
  id INT AUTO_INCREMENT PRIMARY KEY,  
  name VARCHAR(100),  
  department VARCHAR(50),  
  position VARCHAR(50),  
  salary INT  
);
```



The screenshot shows a terminal window titled 'Tilix: labuser@ubuntu2204: ~'. The user has executed the command 'sudo mysql -u root' to access the MariaDB monitor. The monitor displays the welcome message, connection ID (36), and server version (10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04). The user then enters the command 'create database company;', which is successful. Next, the user enters 'use company;', and the database is changed. Finally, the user enters the 'CREATE TABLE employees' command, which is also successful. The terminal shows the following sequence of commands and output:

```
labuser@ubuntu2204:~$ sudo mysql -u root  
Welcome to the MariaDB monitor.  Commands end with ; or \g.  
Your MariaDB connection id is 36  
Server version: 10.6.11-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04  
  
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
MariaDB [(none)]> create database company;  
Query OK, 1 row affected (0.000 sec)  
  
MariaDB [(none)]> use company;  
Database changed  
MariaDB [company]> CREATE TABLE employees (  
->   id INT AUTO_INCREMENT PRIMARY KEY,  
->   name VARCHAR(100),  
->   department VARCHAR(50),  
->   position VARCHAR(50),  
->   salary INT  
-> );  
Query OK, 0 rows affected (0.017 sec)  
  
MariaDB [company]>
```

1.5 Insert data into the **employees** table:

```
INSERT INTO employees (name, department, position, salary) VALUES
('John Doe', 'Sales', 'Manager', 60000),
('Jane Smith', 'HR', 'Recruiter', 45000),
('Mike Johnson', 'IT', 'Developer', 50000),
('Sarah Brown', 'Marketing', 'Analyst', 40000),
('Alex Green', 'Sales', 'Salesperson', 38000);
```

```
1/1 ▼ + [?] [x] Tilix: labuser@ubuntu2204: ~ 🔍 ≡ - + ×
1: labuser@ubuntu2204: ~ ▼ + ×
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> use company;
Database changed
MariaDB [company]> CREATE TABLE employees (
  -> id INT AUTO_INCREMENT PRIMARY KEY,
  -> name VARCHAR(100),
  -> department VARCHAR(50),
  -> position VARCHAR(50),
  -> salary INT
  -> );
Query OK, 0 rows affected (0.017 sec)

MariaDB [company]> INSERT INTO employees (name, department, position, salary) VA
LUES
  -> ('John Doe', 'Sales', 'Manager', 60000),
  -> ('Jane Smith', 'HR', 'Recruiter', 45000),
  -> ('Mike Johnson', 'IT', 'Developer', 50000),
  -> ('Sarah Brown', 'Marketing', 'Analyst', 40000),
  -> ('Alex Green', 'Sales', 'Salesperson', 38000);
Query OK, 5 rows affected (0.002 sec)
Records: 5 Duplicates: 0 Warnings: 0

MariaDB [company]> █
```

Step 2: Apply logical operators

- 2.1 Execute the following query to find employees in the **Sales** department with a salary over **50000**:

SELECT * FROM employees WHERE department = 'Sales' AND salary > 50000;

```
Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~
-> department VARCHAR(50),
-> position VARCHAR(50),
-> salary INT
-> );
Query OK, 0 rows affected (0.017 sec)

MariaDB [company]> INSERT INTO employees (name, department, position, salary) VALUES
-> ('John Doe', 'Sales', 'Manager', 60000),
-> ('Jane Smith', 'HR', 'Recruiter', 45000),
-> ('Mike Johnson', 'IT', 'Developer', 50000),
-> ('Sarah Brown', 'Marketing', 'Analyst', 40000),
-> ('Alex Green', 'Sales', 'Salesperson', 38000);
Query OK, 5 rows affected (0.002 sec)
Records: 5 Duplicates: 0 Warnings: 0

MariaDB [company]> SELECT * FROM employees WHERE department = 'Sales' AND salary > 50000;
+-----+-----+-----+-----+-----+
| id | name   | department | position | salary |
+-----+-----+-----+-----+-----+
| 1 | John Doe | Sales      | Manager  | 60000 |
+-----+-----+-----+-----+-----+
1 row in set (0.001 sec)

MariaDB [company]>
```

- 2.2 Find employees either in **HR** or **IT** departments:

SELECT * FROM employees WHERE department = 'HR' OR department = 'IT';

```
Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~
-> ('Mike Johnson', 'IT', 'Developer', 50000),
-> ('Sarah Brown', 'Marketing', 'Analyst', 40000),
-> ('Alex Green', 'Sales', 'Salesperson', 38000);
Query OK, 5 rows affected (0.002 sec)
Records: 5 Duplicates: 0 Warnings: 0

MariaDB [company]> SELECT * FROM employees WHERE department = 'Sales' AND salary > 50000;
+-----+-----+-----+-----+-----+
| id | name   | department | position | salary |
+-----+-----+-----+-----+-----+
| 1 | John Doe | Sales      | Manager  | 60000 |
+-----+-----+-----+-----+-----+
1 row in set (0.001 sec)

MariaDB [company]> SELECT * FROM employees WHERE department = 'HR' OR department = 'IT';
+-----+-----+-----+-----+-----+
| id | name       | department | position | salary |
+-----+-----+-----+-----+-----+
| 2 | Jane Smith | HR         | Recruiter | 45000 |
| 3 | Mike Johnson | IT        | Developer | 50000 |
+-----+-----+-----+-----+-----+
2 rows in set (0.000 sec)

MariaDB [company]>
```

2.3 Find employees with salaries not less than 40000:

SELECT * FROM employees WHERE NOT salary < 40000;

```

1/1 + [icons] Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~
+-----+-----+-----+-----+-----+
1 row in set (0.001 sec)

MariaDB [company]> SELECT * FROM employees WHERE department = 'HR' OR department = 'IT';
+-----+-----+-----+-----+-----+
| id | name       | department | position | salary |
+-----+-----+-----+-----+-----+
| 2 | Jane Smith | HR         | Recruiter | 45000 |
| 3 | Mike Johnson | IT        | Developer | 50000 |
+-----+-----+-----+-----+-----+
2 rows in set (0.000 sec)

MariaDB [company]> SELECT * FROM employees WHERE NOT salary < 40000;
+-----+-----+-----+-----+-----+
| id | name       | department | position | salary |
+-----+-----+-----+-----+-----+
| 1 | John Doe   | Sales      | Manager  | 60000 |
| 2 | Jane Smith | HR         | Recruiter | 45000 |
| 3 | Mike Johnson | IT        | Developer | 50000 |
| 4 | Sarah Brown | Marketing  | Analyst  | 40000 |
+-----+-----+-----+-----+-----+
4 rows in set (0.000 sec)

MariaDB [company]>

```

2.4 Find employees in either Marketing or Sales with salaries not less than 60000:

SELECT * FROM employees WHERE (department = 'Marketing' OR department = 'Sales') AND NOT salary < 60000;

```

1/1 + [icons] Tilix: labuser@ubuntu2204: ~
1: labuser@ubuntu2204: ~
+-----+-----+-----+-----+-----+
2 rows in set (0.000 sec)

MariaDB [company]> SELECT * FROM employees WHERE NOT salary < 40000;
+-----+-----+-----+-----+-----+
| id | name       | department | position | salary |
+-----+-----+-----+-----+-----+
| 1 | John Doe   | Sales      | Manager  | 60000 |
| 2 | Jane Smith | HR         | Recruiter | 45000 |
| 3 | Mike Johnson | IT        | Developer | 50000 |
| 4 | Sarah Brown | Marketing  | Analyst  | 40000 |
+-----+-----+-----+-----+-----+
4 rows in set (0.000 sec)

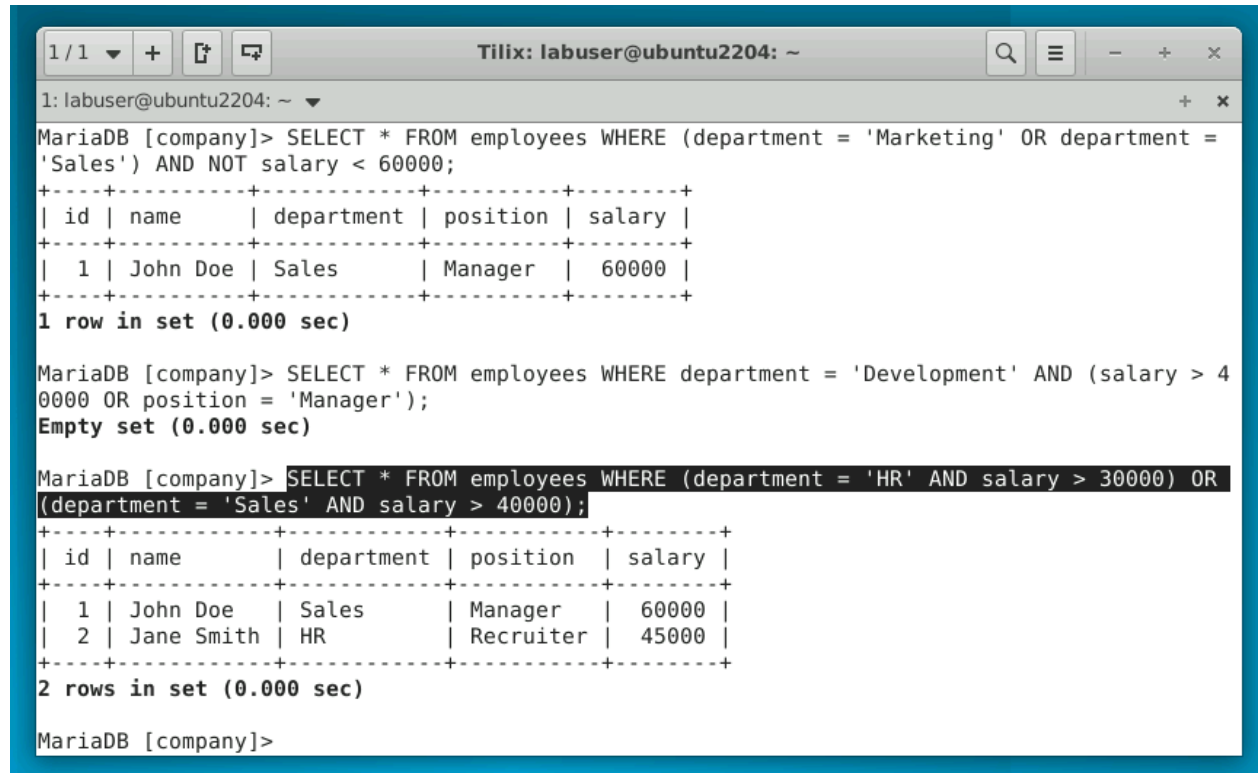
MariaDB [company]> SELECT * FROM employees WHERE (department = 'Marketing' OR department = 'Sales') AND NOT salary < 60000;
+-----+-----+-----+-----+-----+
| id | name       | department | position | salary |
+-----+-----+-----+-----+-----+
| 1 | John Doe   | Sales      | Manager  | 60000 |
+-----+-----+-----+-----+-----+
1 row in set (0.000 sec)

MariaDB [company]>

```

2.5 Find employees in **HR** with salaries above **30000** or in **Sales** with salaries above **40000**:

SELECT * FROM employees WHERE (department = 'HR' AND salary > 30000) OR (department = 'Sales' AND salary > 40000);



The screenshot shows a terminal window titled 'Tilix: labuser@ubuntu2204: ~'. The user is logged in as 'labuser@ubuntu2204'. The terminal displays three MySQL queries and their results:

```
MariaDB [company]> SELECT * FROM employees WHERE (department = 'Marketing' OR department = 'Sales') AND NOT salary < 60000;
```

id	name	department	position	salary
1	John Doe	Sales	Manager	60000

1 row in set (0.000 sec)

```
MariaDB [company]> SELECT * FROM employees WHERE department = 'Development' AND (salary > 40000 OR position = 'Manager');
```

Empty set (0.000 sec)

```
MariaDB [company]> SELECT * FROM employees WHERE (department = 'HR' AND salary > 30000) OR (department = 'Sales' AND salary > 40000);
```

id	name	department	position	salary
1	John Doe	Sales	Manager	60000
2	Jane Smith	HR	Recruiter	45000

2 rows in set (0.000 sec)

```
MariaDB [company]>
```

By following these steps, you have successfully set up a database and a table in MySQL, populated it with sample data, and applied various logical operators to extract specific information based on complex criteria.