Assignment 5

Demonstrate the creation of an index on a table and discuss how it improves query performance. Use a DROP INDEX statement to remove the index and analyze the impact on query execution.

1. Creating an Index:

sql

```
CREATE INDEX idx_department ON employees(department);
```

This SQL statement creates an index named idx_department on the department column of the employees table.

2. How Index Improves Query Performance:
    - Faster Data Retrieval: When querying based on the department column, the database engine can use the index to quickly locate the rows belonging to a specific department without scanning the entire table.
    - Efficient Sorting and Join Operations: If queries involve sorting or joining based on the department column, the index allows the database engine to perform these operations more efficiently.
3. Removing the Index:

sql

DROP INDEX idx_department ON employee

When you drop the index, the database engine no longer has access to the indexed structure. This can impact query performance in the following ways:

- Slower Data Retrieval: Queries that previously benefited from the index may become slower because the database now needs to perform full table scans to locate rows based on the department column.
- Decreased Sorting and Join Performance: Sorting and joining operations that relied on the index may experience a decrease in performance since the database engine no longer has the indexed structure to facilitate these operations efficiently.

create database company;

show databases;

```
use company;

-- Create the employee table

CREATE TABLE employee (

    employee_id INT PRIMARY KEY AUTO_INCREMENT,

    employee_name VARCHAR(100) NOT NULL,

    employee_department VARCHAR(100),

    employee_salary DECIMAL(10, 2),

    hire_date DATE

);



INSERT INTO employee (employee_name, employee_department, employee_salary,
hire_date)

VALUES

    ('John Doe', 'IT', 60000.00, '2023-01-15'),

    ('Jane Smith', 'HR', 55000.00, '2022-08-20'),

    ('Alice Johnson', 'Finance', 65000.00, '2023-03-10');

    select *from employee;



CREATE INDEX idx_employee_department ON employee (employee_department);
```

```
-- Drop the index on the employee_department column

DROP INDEX idx_employee_department ON employee;
```