Certura Internship Program (Database Handling)

Task No: 02

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Submitted to:

Certura.

✅ TOOLS USED

1. **MySQL Server**
   - Database engine.
2. **MySQL Workbench**
   - GUI tool for writing queries and managing the database.

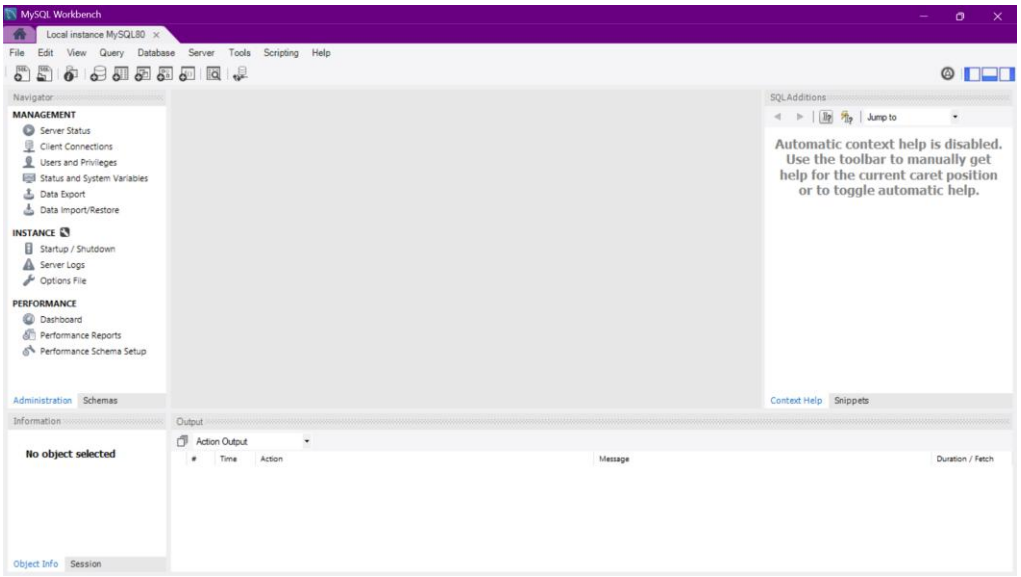
□ TASK: 2

Goal: Practice JOIN operations on multiple tables.
We'll go step-by-step, practically solving it like you are doing it live.

🔑 How to Solve the Task (Detailed Steps)

Step 1: Open MySQL Workbench and Connect

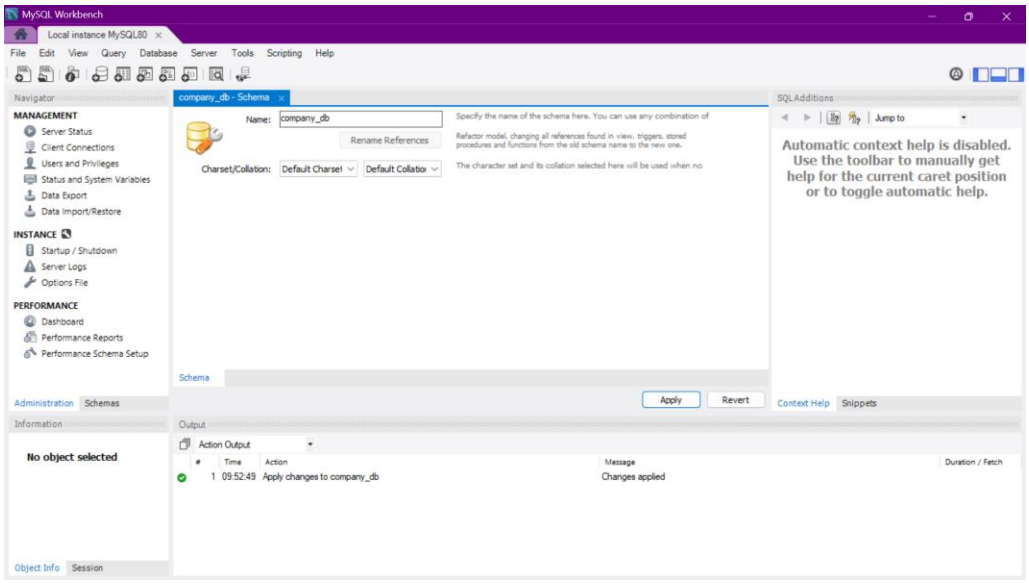
• Open MySQL Workbench.
• Connect to your local MySQL server (using the saved connection).
• You'll reach the SQL Editor screen.



Step 2: Create a New Schema (Database)

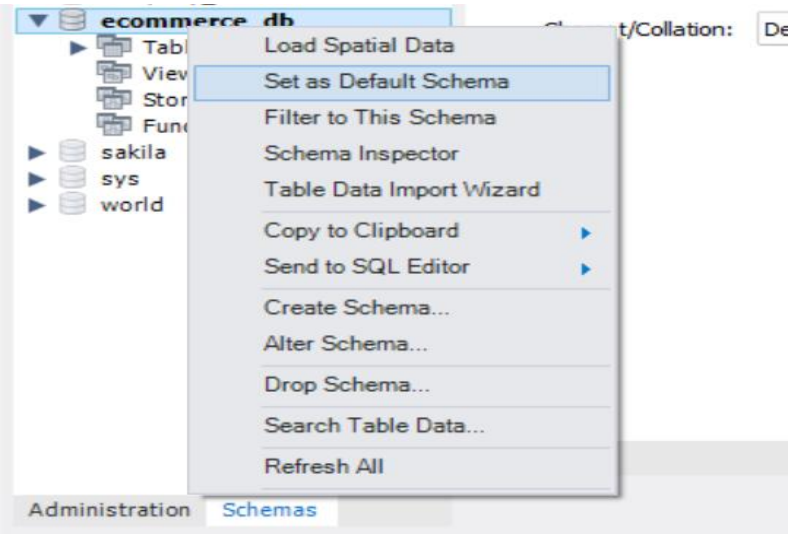
• Click on the "Schemas" tab (left-side).
• Right-click → "Create Schema".
• Name it something like: **company_db**.
• Click **Apply → Apply → Finish**.

✅ Your database (**company_db**) is now created.



Step 3: Create Tables

☞ Set your schema as default: • Right-click on **company_db** → "Set as Default Schema".



Now create two tables: `employees` and `departments`.

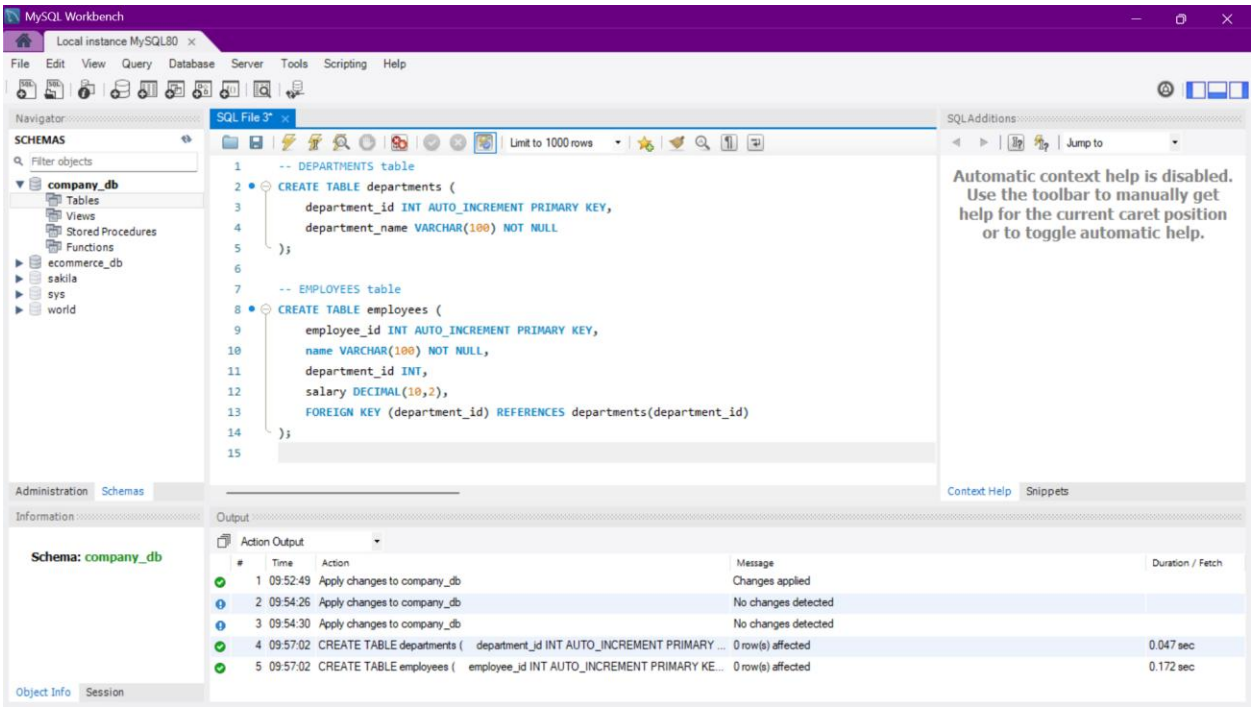
Paste this SQL code:

```
-- Drop existing tables if they exist to avoid errors
DROP TABLE IF EXISTS employees;
DROP TABLE IF EXISTS departments;

-- DEPARTMENTS table creation
CREATE TABLE departments (
    department_id INT AUTO_INCREMENT PRIMARY KEY,
    department_name VARCHAR(100) NOT NULL
);

-- EMPLOYEES table creation
CREATE TABLE employees (
    employee_id INT AUTO_INCREMENT PRIMARY KEY,
    name VARCHAR(100) NOT NULL,
    department_id INT NULL,  -- Allow NULL values for department_id
    salary DECIMAL(10,2),
    FOREIGN KEY (department_id) REFERENCES departments(department_id)
);
```

✅ This will create two tables with a **foreign key** relationship between them.



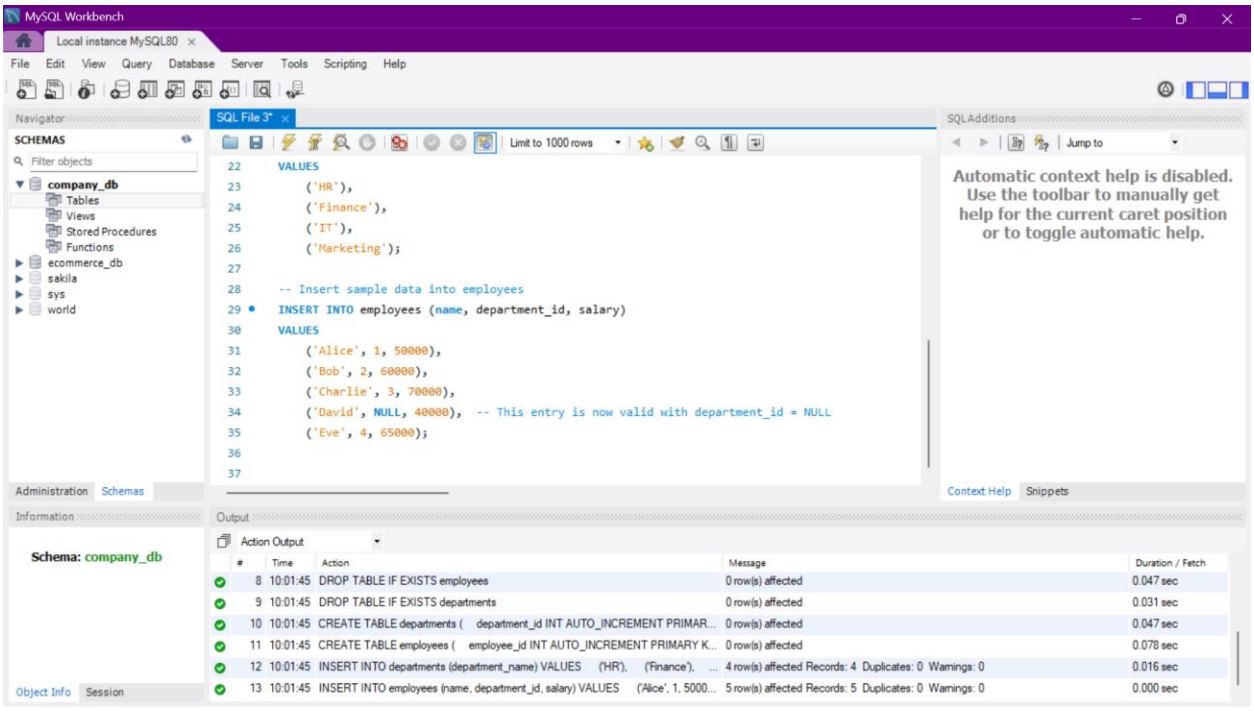
Step 4: Insert Sample Data

Insert some basic data to work with:

```
-- Insert sample data into departments
INSERT INTO departments (department_name)
VALUES
    ('HR'),
    ('Finance'),
    ('IT'),
    ('Marketing');

-- Insert sample data into employees
INSERT INTO employees (name, department_id, salary)
VALUES
    ('Alice', 1, 50000),
    ('Bob', 2, 60000),
    ('Charlie', 3, 70000),
    ('David', NULL, 40000),  -- This entry is now valid with department_id =
NULL
    ('Eve', 4, 65000);
```

✅ This will populate your tables with sample data.



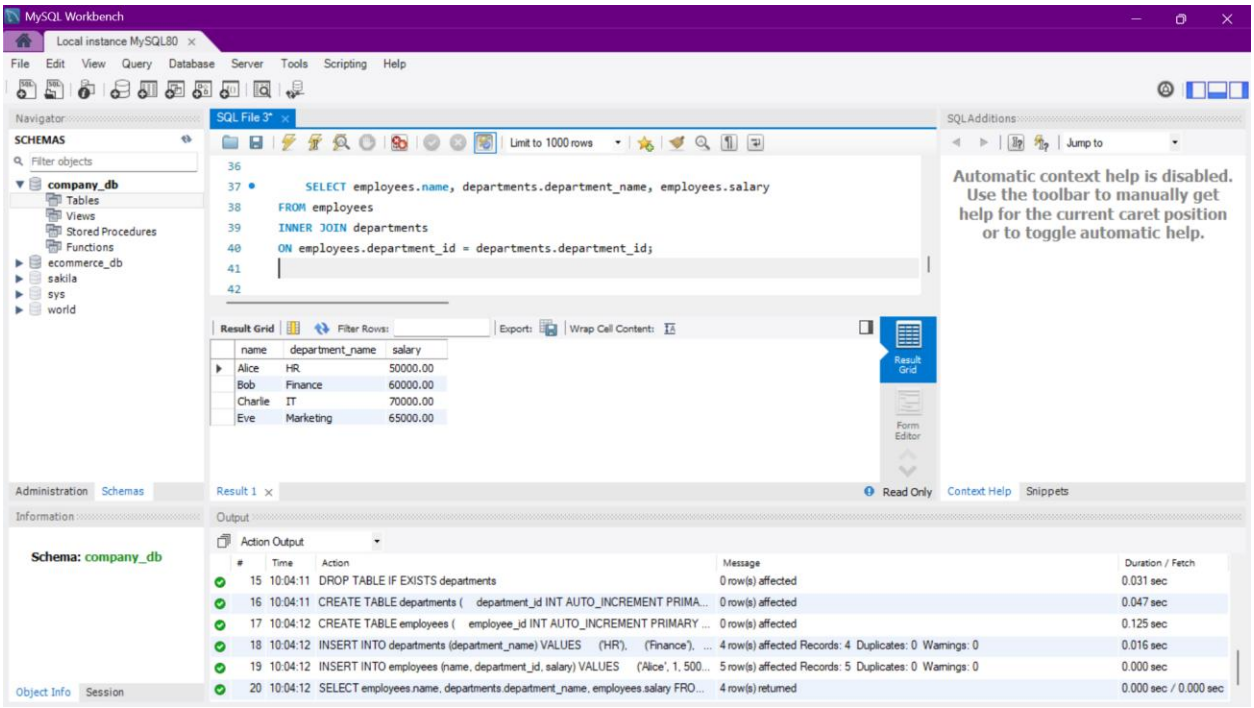
Step 5: Write Queries for INNER JOIN, LEFT JOIN, RIGHT JOIN

Now we'll perform **advanced JOINs**:

📌 INNER JOIN (Fetch employees with matching departments)

```
SELECT employees.name, departments.department_name, employees.salary
FROM employees
INNER JOIN departments
ON employees.department_id = departments.department_id;
```

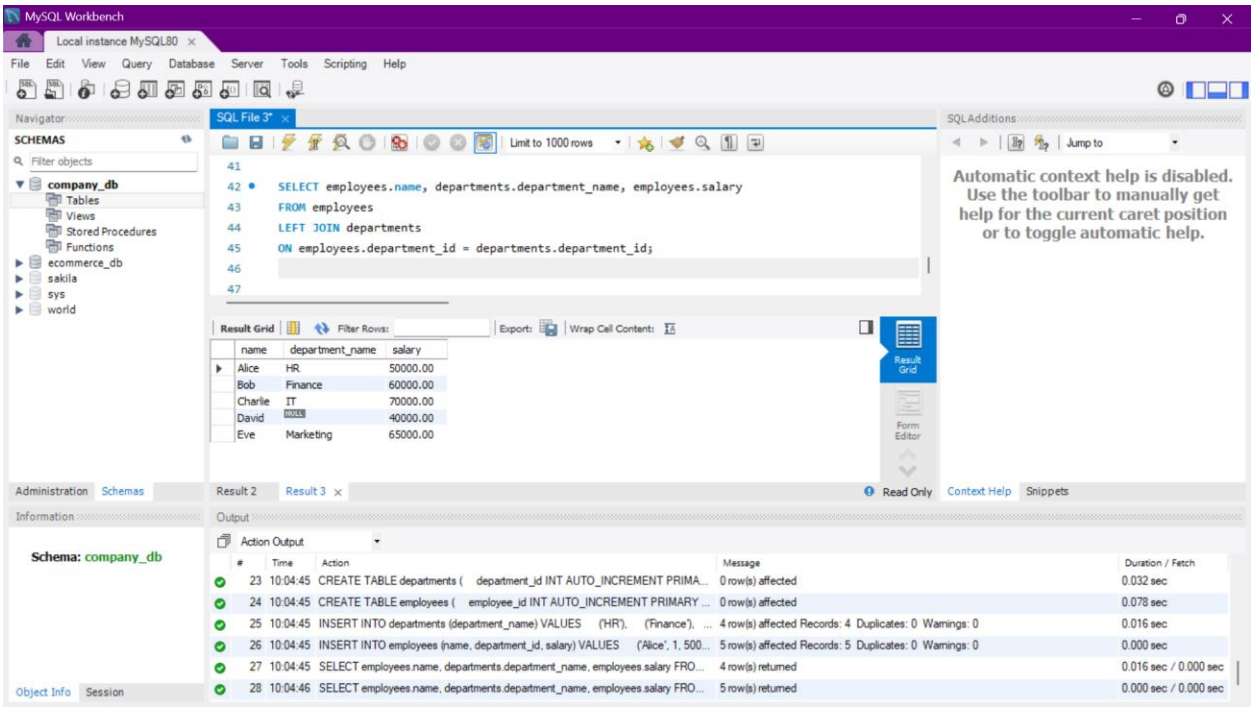
✅ This will show only employees who are linked to a department.



📌 LEFT JOIN (Fetch all employees even if they don't belong to any department)

```
SELECT employees.name, departments.department_name, employees.salary
FROM employees
LEFT JOIN departments
ON employees.department_id = departments.department_id;
```

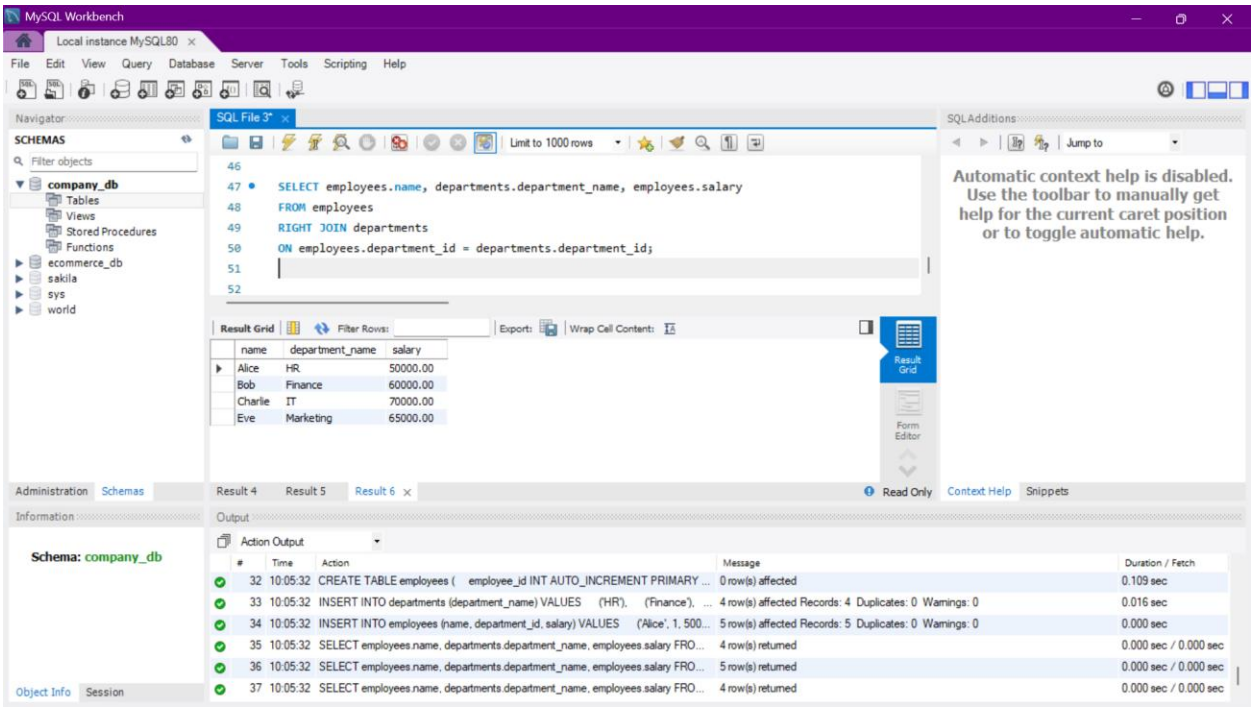
✅ This will show all employees, and for those without a department, `NULL` will appear.



📌 RIGHT JOIN (Fetch all departments even if no employee is assigned)

```
SELECT employees.name, departments.department_name, employees.salary
FROM employees
RIGHT JOIN departments
ON employees.department_id = departments.department_id;
```

✅ This will show all departments, and if a department has no employees, `NULL` will appear under employee name.



Step 6: Execute and Test the Queries

• Highlight each query one by one.
• Click the ⚡ Execute button.
• Check the results for accuracy.

✅ Make sure:

- INNER JOIN → Only matched records.
- LEFT JOIN → All employees shown.
- RIGHT JOIN → All departments shown.

📋 Final Summary (In Short)

Step	Task
1	Open Workbench and connect
2	Create schema (company_db)
3	Create `employees` and `departments` tables
4	Insert sample data
5	Write and execute JOIN queries
6	Verify results
