Review 2

Relational Schema Diagram

A Relational Schema Diagram is a blueprint of a database structure that visually represents the relationships between different tables in a relational database. It defines:

- Tables (Entities)
- Columns (Attributes)
- Primary Keys (Unique identifiers)
- Foreign Keys (References to other tables)
- Relationships between tables
- Check constraints

Payroll Management System Schema

The Payroll Management System consists of several interconnected tables that store employee details, financial records, attendance, and other essential data. Below is an overview of the key tables and how they relate to each other:

1. Department Table ○ Stores information about different departments within the organization.
    - ○ Primary Key: Department_ID ○ Relationship: One department can have multiple employees (One-to-Many).

2. Employee Table ○ Stores personal details of employees.
    - ○ Primary Key: Employee_ID ○ Foreign Key: Department_ID (links to Department table). ○ Relationships: Connected to multiple tables like Salary, Bonus, Attendance, Payroll, etc.

3. Bank_Details Table ○ Stores bank account details of employees for salary transactions.
    - ○ Primary Key: Bank_ID ○ Foreign Key: Employee_ID (links to Employee table).

4. Bonus Table ○ Stores information about bonuses received by employees.
    - ○ Primary Key: Bonus_ID ○ Foreign Key: Employee_ID (links to Employee table).

5. Attendance Table ○ Tracks the check-in and check-out timings of employees.
    - ○ Primary Key: Attendance_ID ○ Foreign Key: Employee_ID (links to Employee table).

6. Shift Table ○ Stores details about employees' shifts (Morning, Evening, Night). ○ Primary Key: Shift_ID ○ Foreign Key: Employee_ID (links to Employee table).

7. Salary Table ○ Stores the salary details of employees.
    - ○ Primary Key: Salary_ID ○ Foreign Key: Employee_ID (links to Employee table).

8. Tax Table ○ Stores tax information applied to salaries. ○ Primary Key: Tax_ID ○ Foreign Key: Salary_ID (links to Salary table).

9. Deductions Table ○ Stores any salary deductions with reasons.
    - ○ Primary Key: Deduction_ID ○ Foreign Key: Employee_ID (links to Employee table).

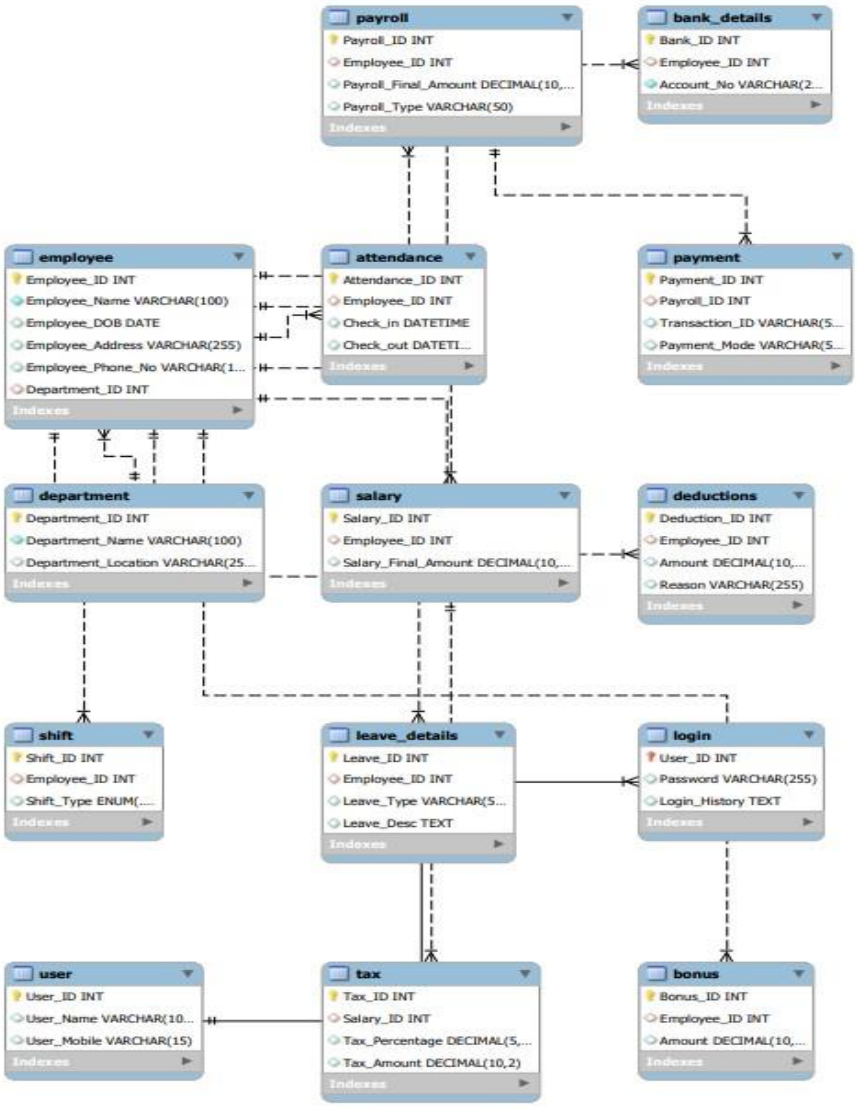
10. Payroll Table ○ Stores final payroll details after salary calculations. ○ Primary Key: Payroll_ID ○ Foreign Key: Employee_ID (links to Employee table).

11. Payment Table ○ Stores payment transaction details for employee payroll.
    - ○ Primary Key: Payment_ID ○ Foreign Key: Payroll_ID (links to Payroll table).

12. Leave_Details Table ○ Stores details of employee leave applications.
    - ○ Primary Key: Leave_ID ○ Foreign Key: Employee_ID (links to Employee table).

13. User Table ○ Stores details of system users (HR/admin).
    - ○ Primary Key: User_ID

14. Login Table ○ Stores login credentials and history of users. ○ Primary Key: User_ID (links to User table as Foreign Key).



Database Tables

The Payroll Management System database has been created in MySQL, and it consists of multiple tables that store and manage employee payroll data efficiently. Each table is designed to hold specific information and is connected using primary and foreign keys with check constraints to ensure data integrity.

1. Department Table
    - Stores details about different departments in the organization.
    - Primary Key: Department_ID
    - Columns: Department_ID, Department_Name, Location
2. Employee Table
    - Contains employee details, including personal and professional information.
    - Primary Key: Employee_ID
    - Foreign Key: Department_ID (links to Department table)
    - Columns: Employee_ID, First_Name, Last_Name, DOB, Email, Phone, Department_ID, Position, Hire_Date, Salary
3. Bank_Details Table
    - Stores employees' bank account details for salary transactions.
    - Primary Key: Bank_ID
    - Foreign Key: Employee_ID
    - Columns: Bank_ID, Employee_ID, Bank_Name, Account_Number, IFSC_Code
4. Bonus Table
    - Contains details of employee bonuses.
    - Primary Key: Bonus_ID
    - Foreign Key: Employee_ID

- Columns: Bonus_ID, Employee_ID, Bonus_Amount, Bonus_Date, Bonus_Reason

5. Attendance Table
    - Tracks employee attendance records.
    - Primary Key: Attendance_ID
    - Foreign Key: Employee_ID
    - Columns: Attendance_ID, Employee_ID, Date, Check_In, Check_Out, Status
6. Shift Table
    - Maintains shift details of employees.
    - Primary Key: Shift_ID
    - Foreign Key: Employee_ID
    - Columns: Shift_ID, Employee_ID, Shift_Type, Start_Time, End_Time
7. Salary Table
    - Holds salary details of employees.
    - Primary Key: Salary_ID
    - Foreign Key: Employee_ID
    - Columns: Salary_ID, Employee_ID, Basic_Salary, Allowances, Deductions, Net_Salary
8. Tax Table
    - Contains tax deductions applied to salaries.
    - Primary Key: Tax_ID
    - Foreign Key: Salary_ID
    - Columns: Tax_ID, Salary_ID, Tax_Percentage, Tax_Amount
9. Deductions Table

- Stores salary deductions details.
- Primary Key: Deduction_ID
- Foreign Key: Employee_ID
- Columns: Deduction_ID, Employee_ID, Deduction_Reason, Deduction_Amount

10. Payroll Table
    - Manages final payroll processing data.
    - Primary Key: Payroll_ID
    - Foreign Key: Employee_ID
    - Columns: Payroll_ID, Employee_ID, Salary_ID, Bonus_ID, Total_Payable, Payment_Date
11. Payment Table
    - Stores payroll payment transactions.
    - Primary Key: Payment_ID
    - Foreign Key: Payroll_ID
    - Columns: Payment_ID, Payroll_ID, Payment_Method, Payment_Status
12. Leave_Details Table
    - Tracks employee leave applications.
    - Primary Key: Leave_ID
    - Foreign Key: Employee_ID
    - Columns: Leave_ID, Employee_ID, Leave_Type, Start_Date, End_Date, Approval_Status
13. User Table

-
- Stores login credentials for system users (Admin, HR).

  Primary Key: User_ID

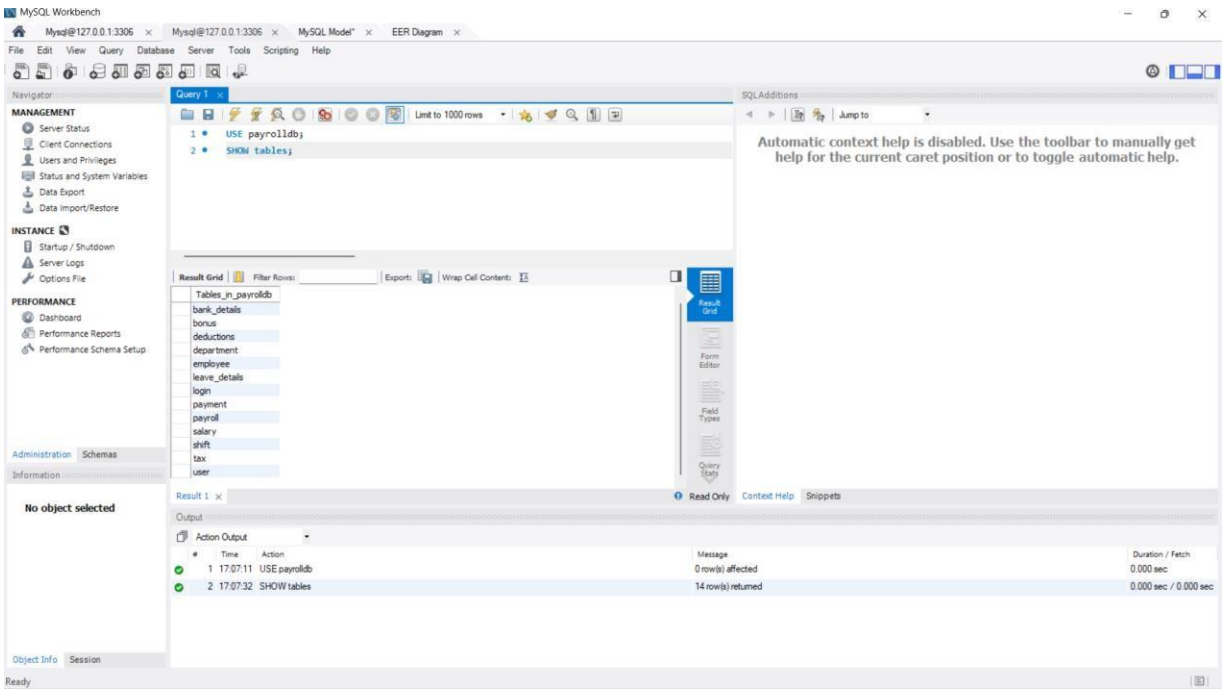
- Columns: User_ID, Username, Role

14. Login Table

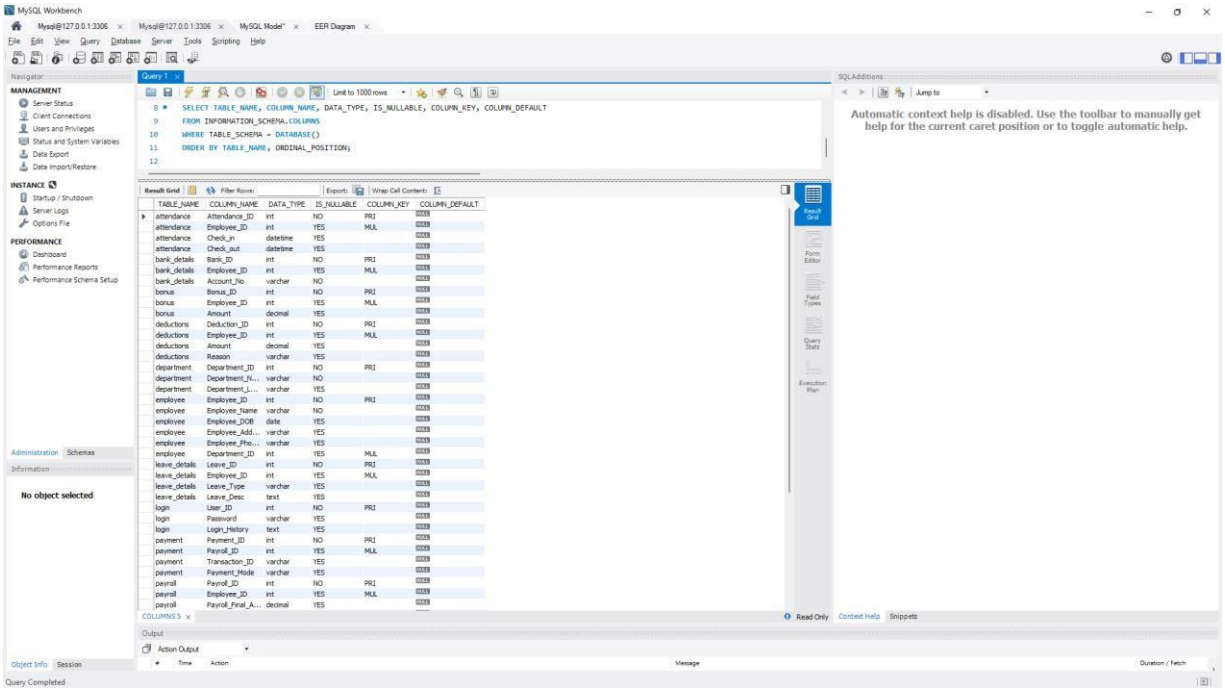
- Maintains login activity and authentication records.
- Primary Key: User_ID (Foreign Key from User Table)
- Columns: User_ID, Password, Last_Login, Login_Attempts

Tables and Sample Entries

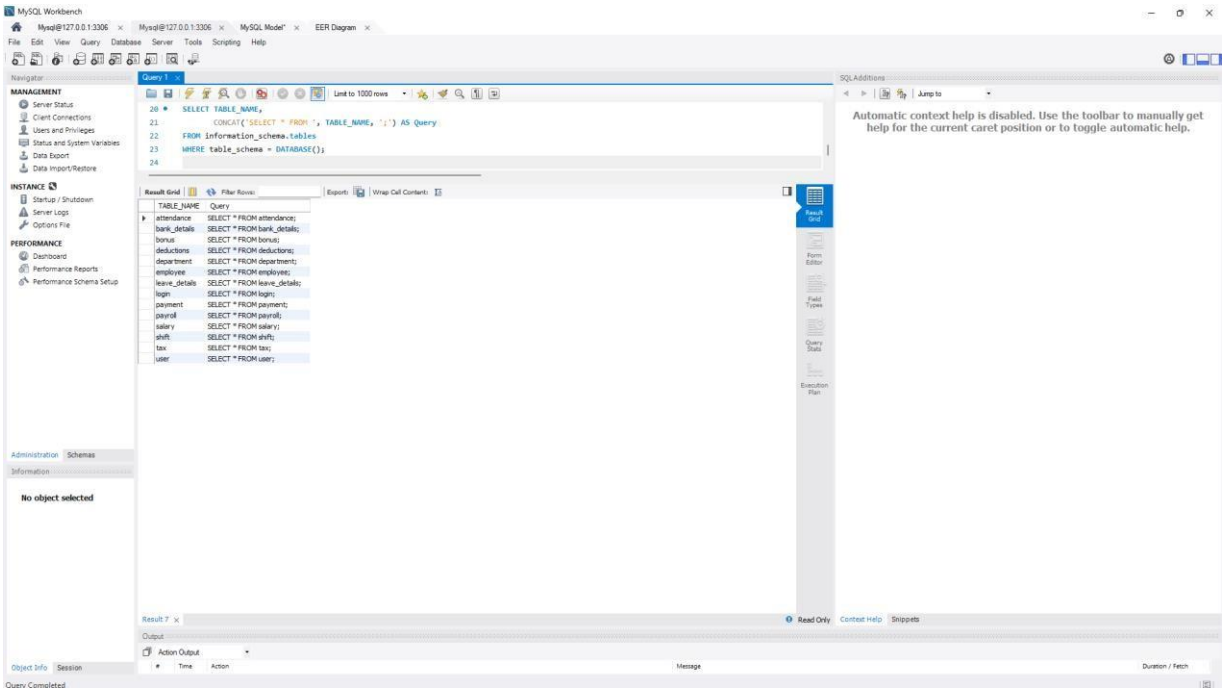
1) SHOW tables; (To display all the tables)



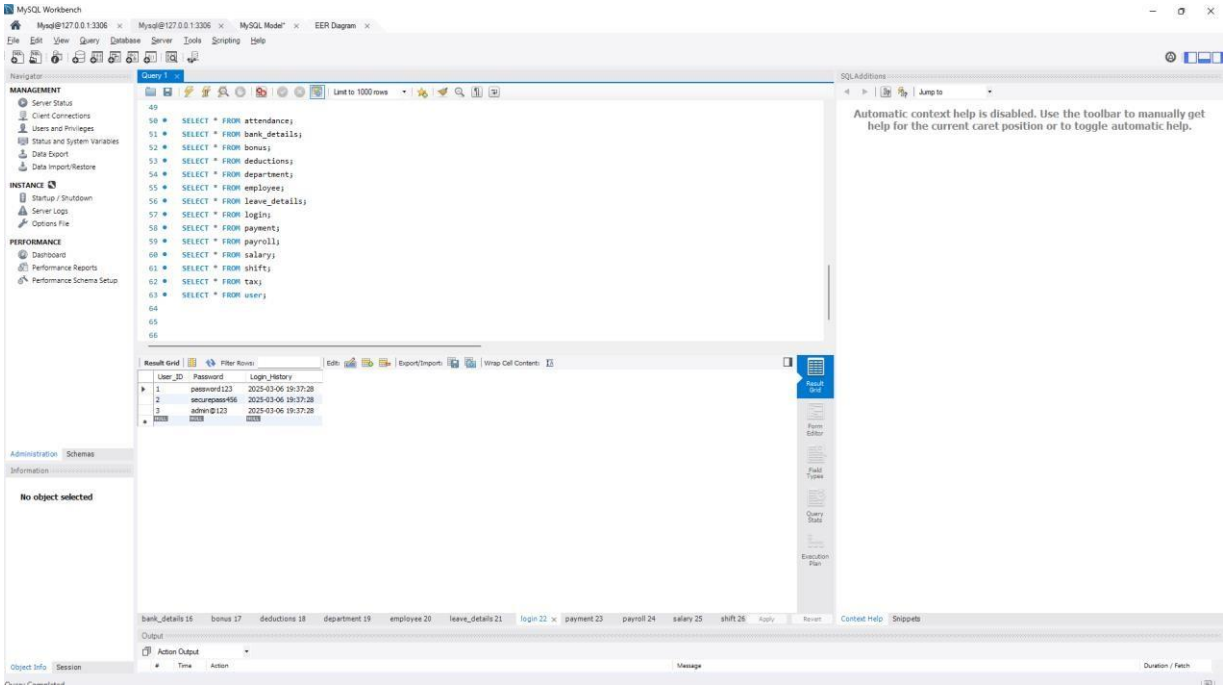
2)DESC tables; (To describe all tables)

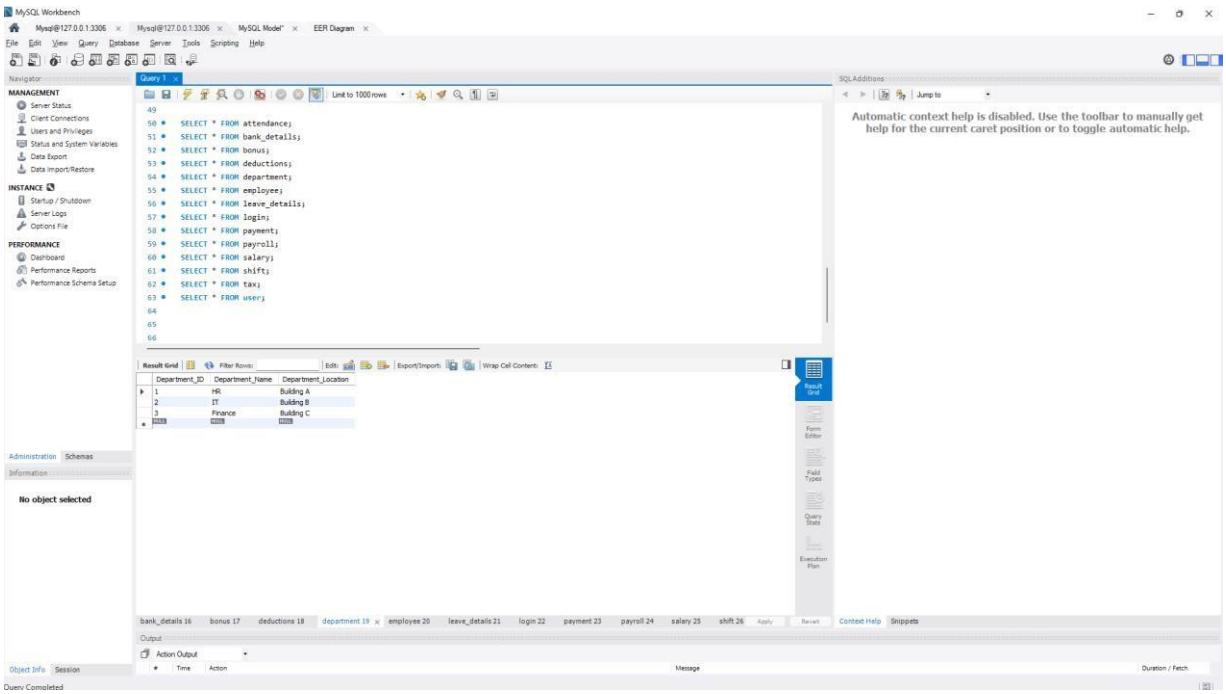


3) SELECT * FROM (To view all the data from all the tables)



Sample Entries showcased:


MySQL Workbench
Query 1
SELECT * FROM attendance;
SELECT * FROM bank_details;
SELECT * FROM bonus;
SELECT * FROM deductions;
SELECT * FROM department;
SELECT * FROM employee;
SELECT * FROM leave_details;
SELECT * FROM login;
SELECT * FROM payment;
SELECT * FROM payroll;
SELECT * FROM salary;
SELECT * FROM shift;
SELECT * FROM tax;
SELECT * FROM user;
Result Grid
User_ID Password Login_History
1 password123 2025-03-06 19:37:28
2 securepass456 2025-03-06 19:37:28
3 admin@123 2025-03-06 19:37:28
No object selected
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.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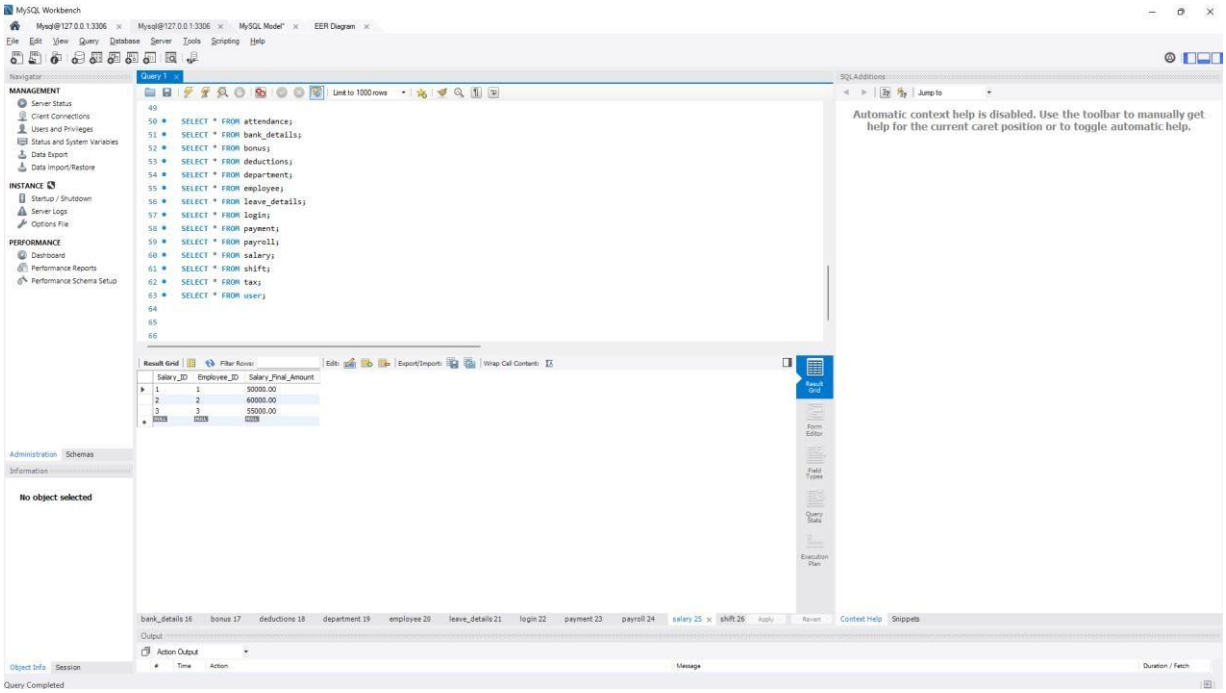
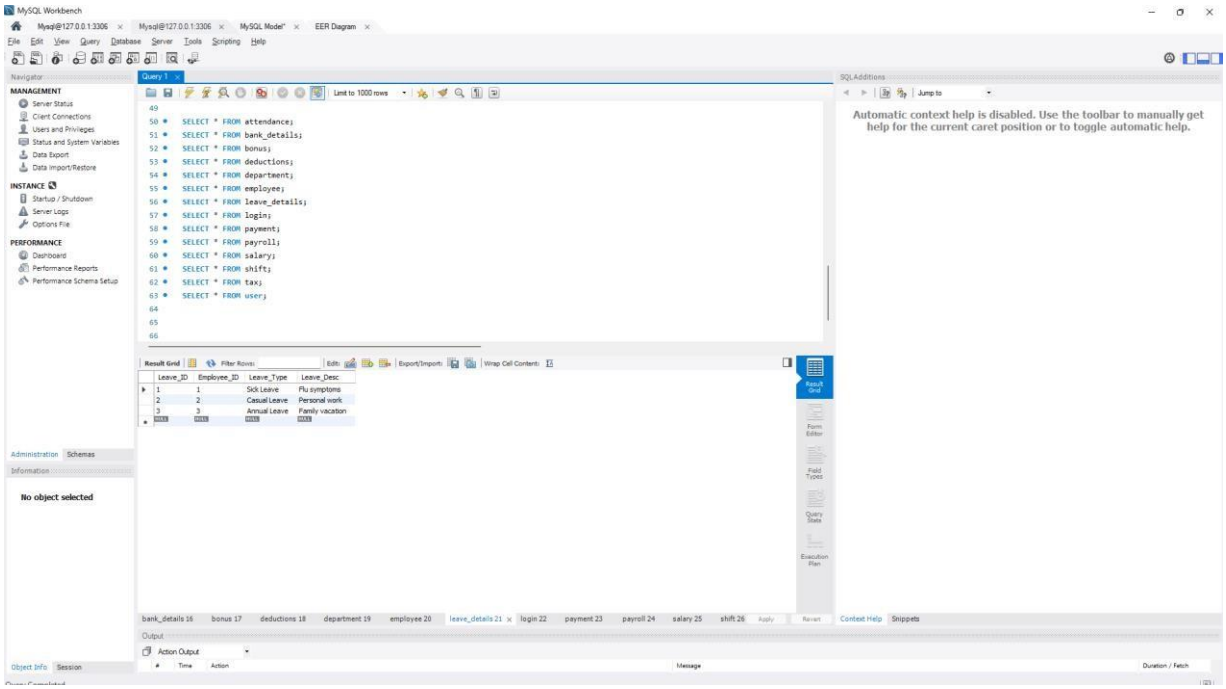
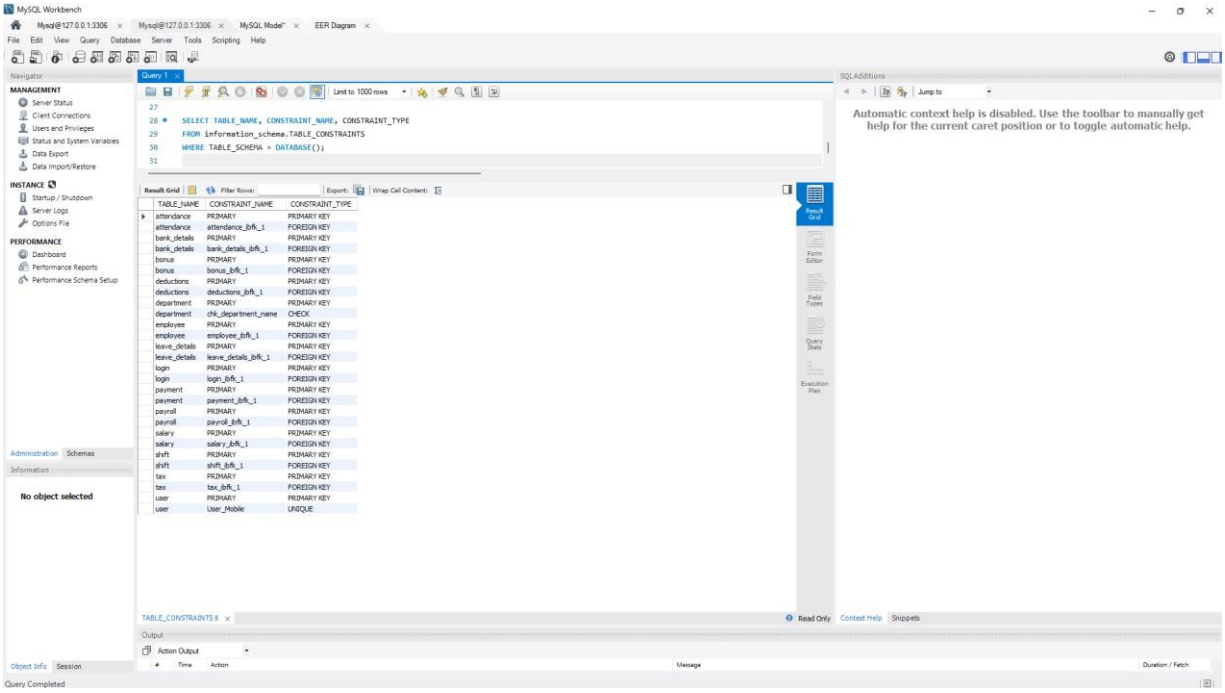
SELECT * FROM login;
SELECT * FROM payment;
SELECT * FROM payroll;
SELECT * FROM salary;
SELECT * FROM shift;
SELECT * FROM tax;
SELECT * FROM user;
Result Grid
Department_ID Department_Name Department_Location
1 HR Building A
2 IT Building B
3 Finance Building C
No object selected
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

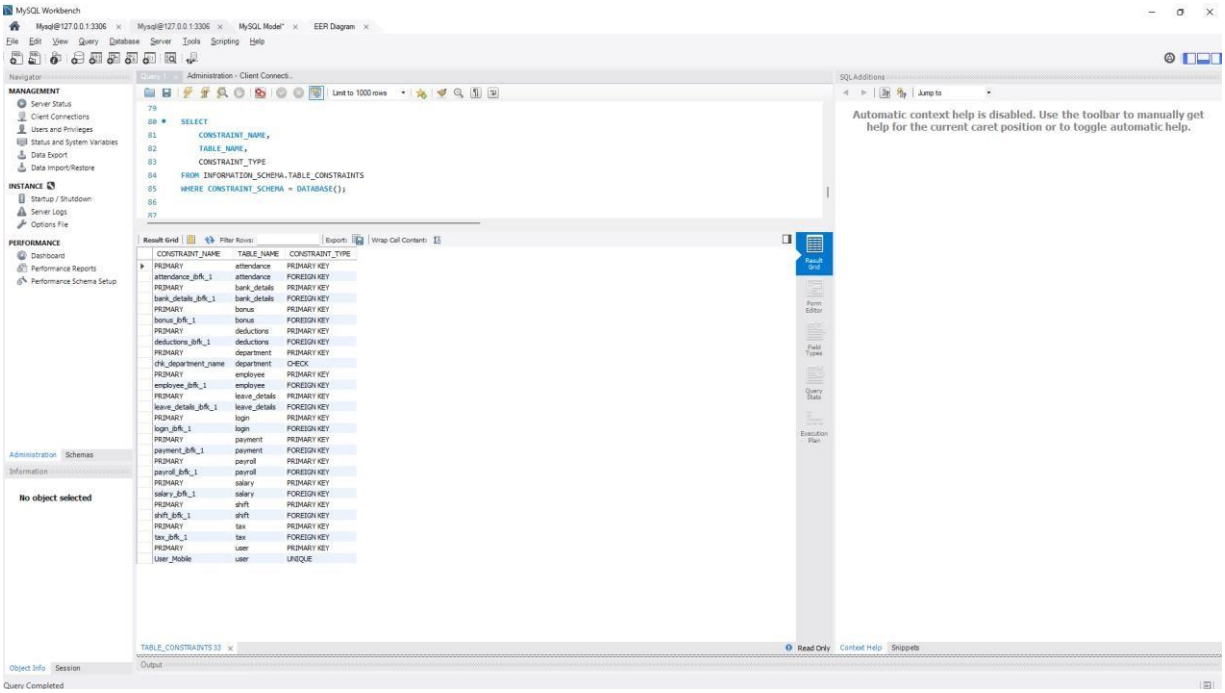




4) To view all the constraints in the database



5) Check Constraints in the tables of the database



Conclusion:

The Payroll Management System ERD provides a well-structured representation of how payroll operations are managed within an organization. By automating attendance, salary

distribution, leave management, and tax calculations, this system ensures efficiency, accuracy, and transparency in payroll processing. The ERD highlights relationships between key entities, ensuring seamless data flow and process integration. Implementing this system will significantly enhance the organization’s payroll efficiency and compliance with tax regulations.