Employee Management and Attendance Tracker

1. Introduction

The Employee Management and Attendance Tracker is a database-driven system aimed at streamlining the daily operational tasks of human resource departments. The system enables accurate and efficient tracking of employee attendance, including arrival times, departure times, and attendance status. With a structured SQL backend, this system minimizes human error and helps management make better staffing decisions using data analytics.

2. Abstract

The project involves creating a comprehensive employee database system using MySQL that facilitates the recording, monitoring, and analysis of employee attendance. The database schema includes departments, roles, employees, and attendance records, with foreign key relationships for referential integrity. The system goes beyond basic storage by implementing features like stored procedures, triggers for automation, scheduled events for absentee tracking, and functions to calculate total working hours. These tools collectively enable rich insights into employee punctuality, working patterns, and performance trends.

3.Tools Used

-MySQL Workbench - for database design and query execution

- SQL - to implement DDL, DML, and complex queries

4. Project Steps

- Database Design:

Created normalized tables for the following:

- employees: stores ID, name, gender, department, joining date, etc.

- departments: stores department ID and name.

- attendance: records daily attendance (present/absent).

- leaves: tracks leave requests with start/end dates.

- shifts: stores shift timings and assignments.

- Data Insertion:

Sample records were inserted to simulate a real company structure with multiple employees, departments, and attendance logs.

- Key SQL Queries Implemented:

- Display all employee details

- Show present employees on a particular date

- List employees in a particular department

- Count number of employees on leave today

- Show latecomers (based on shift time)

- Department-wise employee count

- Monthly attendance summary

- Average working hours per employee

- Identify frequent absentees

- Views & Joins:

- Used inner joins to link employees, departments, and attendance

- Created views for frequently accessed summaries

- Used aggregate functions for reports

- Other Features :

- Trigger to auto-update attendance on login

5. Conclusion

This project highlights the power of SQL in solving real-world HR problems through automation, data tracking, and reporting. By implementing core database concepts along with advanced triggers, procedures, and analytical queries, the system not only serves as a basic attendance tracker but evolves into a complete HR analytics tool. It demonstrates the practical importance of relational databases in enterprise environments and showcases the student's ability to combine technical knowledge with real-world applications