REPORT

SOURAV KUMAR

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EMPLOYEE MANAGEMENT AND
ATTENDANCE TRACKER

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SQL

INTRODUCTION

Attendance tracking is an essential part of every organization. Manual attendance systems are often time-consuming, error-prone, and inefficient. This project aims to design and implement a SQL-based Employee Management and Attendance Tracking system that automates the process of recording employee check-in and check-out times, marking their attendance status, and generating useful summaries.

The system uses SQL functions to calculate daily work hours and triggers to automatically tag employees as "Late" if they log in after a specified time. Additionally, the database supports monthly reports, department-wise summaries, and employee-wise attendance insights. This project simulates how real-world companies manage attendance data efficiently using databases.

STEPS TAKEN

1. Designed the Database Schema

Created three core tables: Departments, Employees, and Attendance. Used proper primary and foreign keys to maintain relationships between departments and employees.

2. INSERTED SAMPLE DATA

Added sample departments, employees, and attendance records to simulate a real company environment.

3. Created SQL Function to Calculate Work Hours

Built a user-defined function calculate_hours that takes IN and OUT time and returns the total working hours for the day.

4. Implemented Trigger for Auto-Late Status

Created a trigger that checks if an employee logs in after 10:00 AM and automatically marks their attendance status as "Late". Otherwise, it marks "Present".

5. Wrote SQL Queries to Generate Reports

- Monthly attendance summary per employee
  - Count of late arrivals per employee
  - Department-wise total attendances
  All queries use GROUP BY and JOIN to generate meaningful reports.

6. Tested and Validated the System

Executed all queries and tested the function and trigger to verify their correctness and usefulness in a real-world scenario.

CONCLUSION –

This project demonstrates how a SQL-based Employee Management and Attendance Tracking system can simplify and automate everyday HR operations. By using database triggers and functions, the system intelligently manages attendance records and ensures accurate reporting without manual intervention.

The use of structured schema, relational integrity, and analytical queries makes the system scalable and suitable for real-world use in small to mid-sized organizations. Overall, this project highlights the power of SQL in building backend solutions that are reliable, efficient, and easy to maintain.