Employee Management System for IT company

***Abstract*—This proposal outlines the development of an Employee Management System (EMS) for an IT company, utilizing a modern web technology stack that includes React for the frontend, Node.js for the backend, and SQL for the database. The system aims to streamline the management of employee data, project assignments, attendance, and performance evaluations, thereby improving operational efficiency and providing insights into workforce management.**

I. Introduction

This system is to be designed keeping the wider and larger view in mind, which can also be used in real life scenarios.

II. Requirement Analysis

The requirement of an Employee Management System (EMS) in an IT company, as outlined above, stems from the need to efficiently manage and streamline various HR and project-related processes within the organization. The aim is to make a full fledged system which would be easy to use and works properly to reduce the manual errors and administrative overhead.

III. Technology used

- **React.js** for building a dynamic and responsive user interface.
- **Node.js** for server-side logic and API developement.
- **SQL** for storing and querying employee data, project details, attendance records and other relevant information.

IV. Features of the system

- **User-Authentication:** Secure login system for different role based access for people with different controls in the company. Eg. employees, managers, admin etc.
- **Profiles:** Login pages open the profiles of people and show them the info related to them and their specific roles in the company, which includes their name, age, start date in the company, ongoing and upcoming projects and also details of the clients.
- **Project management:** Assigns project to new employees when they join and also to those who complete their earlier ongoing projects automatically.
- **Attendance management:** Will try and include this feature according to the feasibility, but if included then it will check digital logging of attendance, automated tracking of working hours, and management of leave requests and approvals.
- **Performance Evaluation:** A module for conducting and recording employee performance evaluations, including feedback mechanisms.
- **Reporting Dashboard:** Analytics and reporting tools for generating insights on productivity, attendance patterns, and project statuses.

A. Reporting metrics

- **Punctuality:** The key metric for an employee evaluation can be how often does he/she turn in their work late , i.e. do not follow the deadline given.
- **Code bugs:** Quality of work is also a major criteria of judgement, in which their code are checked for correctness and complilations.

V. ER(Entity-Relationship) diagram

The fig.1 represents the base ER diagram for the system to be made, according to the relational database given below which is based on the requirements and the features of the system described above.

VI. Relational Databases

- **Employee** (PK: employeeID, FK: departmentID,roleID) employeeID(INT), Name(VARCHAR(255)), Email(VARCHAR(255)), departmentID(INT), RoleID(INT), HireDate(DATE), Salary(DECIMAL(10,2)), Address(VARCHAR(255)).
- **Department** (PK: departmentID, FK: managerID) departmentID(INT), DepartmentName(VARCHAR(255)), managerID(INT).
- **Role** (PK: roleID) roleID(INT), RoleName(VARCHAR(255)), RoleDescription(TEXT).
- **Project** (PK: projectID, FK: departmentID, employeeID) projectID(INT), ProjectName(VARCHAR(255)), StartDate(DATE), EndDate(DATE), Budget(DECIMAL(15,2)), status(VARCHAR(255)),departmentID(INT),employeeID(INT).
- **Attendance** (FK: employeeID) employeeID(INT), Date(DATE), Status(VARCHAR(255))
- **Performance review** (PK: reviewID, FK: employeeID) reviewID(INT), employeeID(INT), ReviewDate(DATE), Score(DECIMAL(5,2)), Feedback(TEXT)

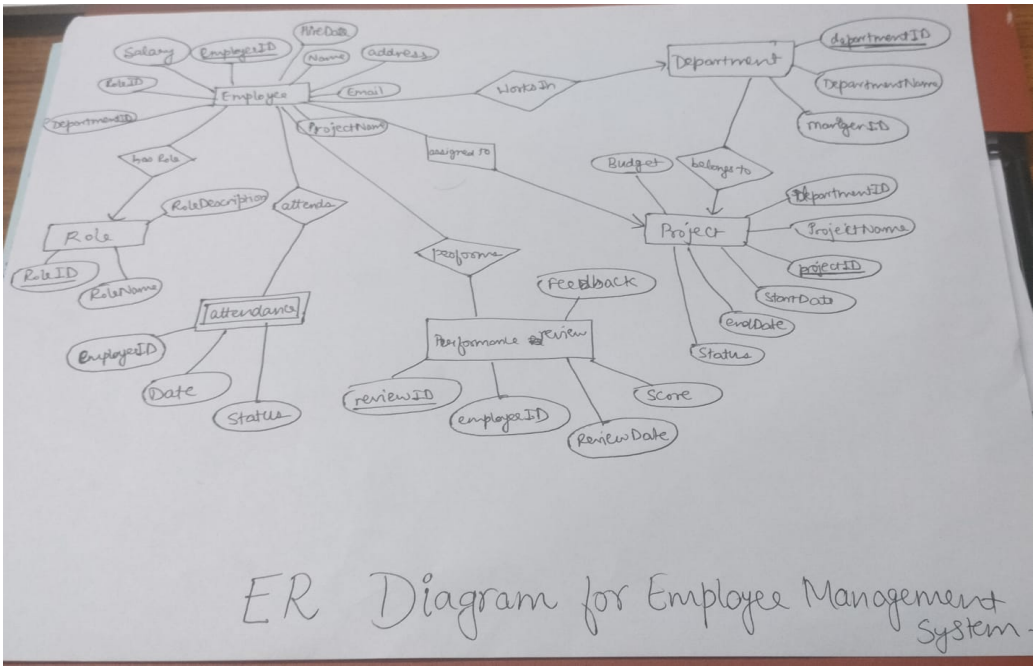

Fig. 1. ER Diagram

VII. Setup Parameters and Collected Parameters

A. *Organisational setup*

Departments - HR,Developement,QA Roles - Admin, Manager, Employee

B. *User Access Control*

Access levels per role- Personal information like Name, Age, Phone number, Address,Salary etc.
For employees extra info like Start date at the company, clients and their information, Projects handled and currently handling with deadline dates.

For manager of a department extra info like Start date at the company, the employees in their department and some of their info, the departments stats necessary and more according to the future extra things I might add on.

For an administrative staff who has access to the information of all the staff, employees and people working in the company.

C. *Project Management*

Information on ongoing and completed projects names(upcoming projects can also be included) with their start and end dates,budget,current status,department and with the information on the lead employee handling it.

D. *Attendance and leave management*

Types of leaves like sick leave, maternity/paternity leave or a prolonged leave would be recorded for different employees taking the particular leave. Regular attendance managed by the badge scans in the system, would be included by an option in my system. (::Present, Absent, Leave)-STATUS

E. *Performance Evaluation Criteria*

The metrics used for performance reviews, including code quality, project delivery timelines, teamwork, and communication.

F. *Payroll*

Salary ranges for different roles or levels within the company, along with rules for raises(based on performance), bonuses, and other compensation components. Available benefits(paid leaves etc.), eligibility criteria, and enrollment periods for health insurance, retirement plans, and other employee perks.

VIII. Data Analytics Dashboard and Quantifiable Metrics

- **Average Project Delivery Time** Measures the average time taken to complete projects.
- **Cost per Project** Measures the average time taken to complete projects.