Employee Attendance Management System

Devapriya L

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1 Introduction

The purpose of the Employee Attendance Management System is to automate and simplify the process of tracking employee attendance in an organization. The goal of this thorough examination of the project specifications is to create a strong foundation for the domain and open the door for efficient database architecture.

A visual depiction of the relationships between entities in a system is called an entity-relationship (ER) diagram. Making an ER diagram for an Employee Attendance Management System (EAMS) is an essential first step in figuring out the links and structure of the database. This diagram acts as a guide for building a reliable and effective database that precisely records all of the many facets of tracking employee attendance.

2 Overview

An essential part of human resource management is the employee attendance management system, which is made to automate and simplify the tracking of workers' attendance inside a company. This system helps decision-making processes pertaining to employee attendance, improves effective workforce management, and assures accurate record-keeping.

3 Relevance

In the modern workplace, where organizations are increasingly adopting flexible work arrangements, remote work, and diverse attendance policies, an efficient attendance management system becomes essential. The system provides benefits such as:

- By automating attendance tracking, inaccuracies in capturing attendance data are minimized and manual labor is reduced.

- Enables adherence to labor rules and regulations by precisely recording attendance.

- Gives managers the information they need to decide how best to distribute their workers and maximize output.

- An open attendance policy encourages responsibility and confidence among staff members.

- Sturdy reporting tools help with strategic workforce planning by offering insightful information about attendance trends.

4 Requirement Analysis

4.1 Stakeholders

1. **Employees**: Require easy and convenient attendance marking methods and access to personal attendance records.

2. **Managers**: Need tools to monitor team attendance, analyze patterns, and make informed decisions.

3. **Administrators**: Responsible for system configuration, ensuring security, and generating organizational insights through reporting.

4.2 Requirements

1. **User Authentication and Authorization**: Secure login for different user roles.
   Role-based access control for administrators, managers, and employees.

2. **Attendance Tracking**: Multiple methods for attendance marking (biometric, mobile app, etc.).
   Automated recording of attendance based on defined rules.

3. **Leave Management**: Request and approval of leaves with integration into attendance calculations.

4. **Reporting and Analytics**: Generate individual and team attendance reports.
   Customizable reports for date ranges, departments, etc.

5. **Employee Information Management**: Central repository for employee details.
   Consistent data across the system.

5 Entities

5.1 Employee

Information on the organization's personnel is kept in the "Employee" database. Each row in this table represents a distinct employee and contains information

on that employee, including name, date of birth, employee ID, address, and contact data.

5.1.1 Attributes

Employee_Id:

- Type: varchar
- Description: A unique identifier is assigned to each employee. This serves as the primary key of the table.
- The constraint is that the primary key is not null.

Employee_Firstname:

- Type: varchar
- Description: This field stores the first name of the employee.

Employee_Lastname:

- Type: varchar
- Description: This field stores the last name of the employee.

DOB:

- Type: timestamp
- Description: This field stores the date of birth of each employee.

Email:

- Type: varchar
- Description: This field stores the email address of employees for communication purposes.

Phone_Number:

- Type: integer
- Description: This field stores the phone number of each employee for communication purposes.

Address:

- Type: varchar
- Description: This field stores the address of each employee.

Job_Id:

- Type: varchar

- Description: A unique identifier assigned to each job title. This serves as the primary key for the table.

Job_Name:

- Type: varchar

- Description: The name or designation of the job title. This field stores the official title or position name associated with the job.

Dept_Id:

- Type: varchar

- Description: The identifier of the department to which the job title belongs. This field serves as a foreign key referencing the Department table.

5.2 Department

Information pertaining to the many departments inside the company is kept in the "Department" table. With the help of a department ID and other information, each record in this table represents a distinct department and contains information such the department name.

5.2.1 Attributes

Dept_Id:

- Type: varchar

- Description: A unique identifier assigned to each department. This serves as the primary key for the table, ensuring the uniqueness of each department record.

Dept_Name:

- Type: varchar

- Description: This field stores the official name or designation of the department within the organization.

5.3 Attendance

Data on employee attendance is entered into and maintained by the "Attendance" table. With the use of a punch ID, each record in this table signifies a distinct attendance entry. Information such as the employee ID, check-in and check-out timestamps, and the length of the attendance are all included.

5.3.1 Attributes

Punch_Id:

- Type: varchar

- Description: A unique identifier assigned to each attendance entry. This serves as the primary key for the table.

Employee_Id:

- Type: varchar

- Description: The identifier of the employee associated with the attendance entry. This field serves as a foreign key referencing the Employee table.

Check_In:

- Type: timestamp

- Description: The timestamp when the employee checked in for attendance. This field captures the exact time the employee began the workday.

Check_Out:

- Type: timestamp

- Description: The timestamp when the employee checked out at the end of the workday. This field captures the exact time the employee finished work.

5.4 Leave Request

The "Leave" table is intended to hold data pertaining to workers' requests for leaves of absence, keeping note of the employee ID, leave ID, and leave date. The employee ID requesting the leave and the precise date for which the leave is sought are among the details included in each record in this table, which represents a unique leave entry denoted by a leave ID.

5.4.1 Attributes

LeaveRequest_Id:

- Type: varchar

- Description: An Id associated with the leave request. This serves as the primary key for the table, ensuring the uniqueness of each record.

LeaveRequest_Name:

- Type: varchar

- Description: The field describes the name of the leave type.

Employee_Id:

- Type: varchar

- Description: The identifier of the employee requesting the leave. This field serves as a foreign key referencing the Employee table.

Leave_Date:

- Type: timestamp

- Description: The date for which the leave is requested. This field captures the specific date on which the employee plans to be on leave.

Available_Leaves:

- Type: integer

- Description: This field represent the number of available leaves in the particular leave type.

Leave_Status:

- Type: varchar

- Description: This field represent the status of the leave request (e.g., approved, pending, rejected).

5.5   Calendar

The Calendar table serves as a reference for dates, providing information about the type of day (holiday or working day).

5.5.1   Attributes

Date:

- Type: timestamp

- Description: The Date field uniquely identifies each date in the calendar and serves as the primary key.

Date_Type:

- Type: varchar

- Description: This field provides additional information about the nature of the day, distinguishing between holidays and working days.

6　ER Diagram

These tables below provide the complete database table details such as Field Name, data types, and character lengths. Each of these tables represents the characteristics and the attributes of data storage.
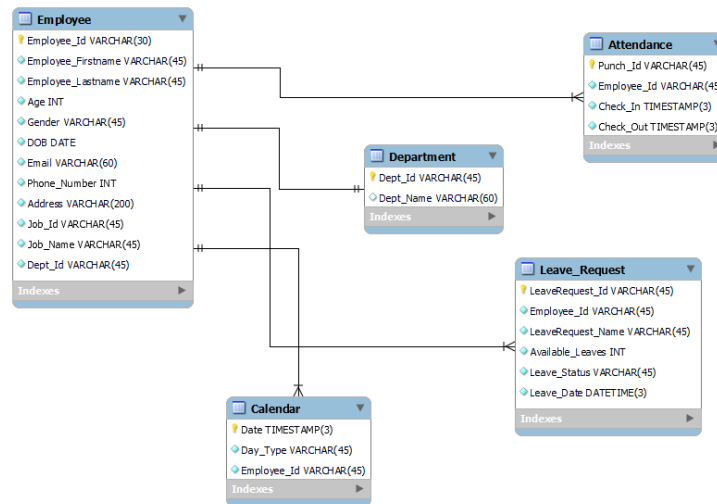

Figure 1: ER Diagram of Employee Attendance Management System