**1. PROJECT TITTLE: PAYROLL MANAGEMENT SYSTEM**

**2. Project Description:**

A **Payroll Management System (PMS)** is a software application designed to manage and automate employee payroll processing for an organization. The system allows HR departments to efficiently manage employee information, track work hours, calculate salaries, manage deductions, and produce pay slips. It also generates reports that summarize payroll details, and deductions for compliance purposes.

This system will include features such as:

* Employee registration
* Salary structure management
* Attendance tracking
* Leave management
* Payroll calculation

It will automate the process of salary calculation based on various inputs such as hours worked, salary grade, tax deductions, and allowances.

|  |
| --- |
| Salary |
| Salary ID  Gross Salary  Net Salary  Payment Date |

**3. Entity Relationship Diagram (ERD)**

|  |
| --- |
| Employee |
| Employee ID  Name  Position  Department |

|  |
| --- |
| Deduction |
| Deduction**(PK),** Employee ID**(FK),**  Deduction Type,  Salary ID(FK),  Basic Salary |

**4. Logical Data Model (LDM)**

A **Logical Data Model (LDM)** is a conceptual representation of the data and its relationships in a system, focusing on what data is stored and how it is related, without considering how it will be physically implemented in a database.

In Payroll Management System, the LDM defines key entities like Employee, Salary, and Deductions, and shows how they are connected. For example:

Employee has a relationship with Salary (one employee can have multiple salary records).

The LDM helps to organize and structure the data based on business requirements, ensuring that all necessary information (like employee details, salary, and deductions) is captured and linked correctly.

**Employee** (Employee ID(**PK),** Name, Email, Phone, Address, DepartementID(FK), Hire Date, Position)

**Salary** (Salary ID(**PK**), Employee ID(**FK**), Basic Salary, Net Salary, Gross Salary, Payment Date)

**Deduction(**Deduction**(PK),** Employee ID**(FK),** Deduction Type, Salary ID(FK), Basic Salary)

1. **Physical Data Model (PDM)**

The **Physical Data Model** of my project **PAYROLL MANAGEMENT SYSTEM** will outline how the entities such as **Employee**, **Salary**, and **Deductions** are structured in the database, the data types used for each attribute, and how they are linked (e.g., with **Primary Keys** and **Foreign Keys**). It will also include optimization considerations such as indexing and constraints to ensure data integrity and performance.

**EMPLOYEE ENTITY**

|  |  |  |
| --- | --- | --- |
| **ENTITY** | **DATATYPE** | **CONSTRAINTS** |
| Employee ID | INT | PRIMARY KEY,AUTO\_INCREMENT |
| Name | Varchar(50) | NOT NULL |
| Email | Varchar(50) | NOT NULL |
| phone | Varchar(50) | UNIQUE |
| Hire Date | Date | NOT NULL |
| Position | Varchar(50) | NOT NULL |
| Department | Varchar(50) | NOT NULL |

**SALARY ENTITY**

|  |  |  |
| --- | --- | --- |
| **ATTRIBUTE NAME** | **DATA TYPE** | **CONSTRAINTS** |
| Salary ID | INT | PRIMARY KEY,AUTO\_INCREMENT |
| Employee ID | INT | FOREIGN KEY REFERENCES Employee(Employee ID) |
| Gross Salary | DECIMAL | Not null |
| Basic salary | DECIMAL | Not null |
| Payment Date | DATE | Not null |

**DEDUCTION ENTITY**

|  |  |  |
| --- | --- | --- |
| **ATTRIBUTE NAME** | **DATA TYPE** | **CONSTRAINTS** |
| Deduction ID | INT | PRIMARY KEY,AUTO\_INCREMENT |
| Salary ID | INT | FOREIGHN KEY REFERENCES Salary(Salary ID) |
| Employee ID | INT | FOREIGHN KEY REFERENCES Employee(Employee ID) |
| Basic Salary | Decimal | Not null |
| Deduction | Decimal | No null |

1. **Data Dictionary**
2. **EMPLOYEE ENTITY**

|  |  |  |  |
| --- | --- | --- | --- |
| **ATTRIBUTE NAME** | **DATA TYPE** | **DESCRIPTION** | **CONSTRAINTS** |
| Employee ID | INT | Unique identifier for each employee | PRIMARY KEY,AUTO\_INCREMENT |
| Name | VARCHAR(100) | Employee’s name | NOT NULL |
| Email | VARCHAR(30) | Employee’s email | UNIQUE,NOT NULL |
| Phone | VARCHAR(15) | Employee’s contact number | UNIQUE |
| Join Date | DATE | Date employee’s join date | NOT NULL |
| Address | VARCHAR(50) | Employee’s address | NOT NULL |
| Department | VARCHAR(50) | Department the employee belongs to | NOT NULL |

**SALARY RNTITY**

|  |  |  |  |
| --- | --- | --- | --- |
| **ATTRIBUTE NAME** | **DATA TYPE** | **DESCRIPTION** | **CONSTRAINTS** |
| **Salary ID** | INT | Unique identifier for each salary record | PRIMARY KEY,AUTO\_INCREMENT |
| Employee ID | INT | References to Employee entity | NOT NULL |
| Basic Salary | INT | Employee’s base salary | NOT NULL |
| Payment Date | Decimal | Date of salary payment | UNIQUE |
| Gross Salary | Decimal | Total salary before deductions | NOT NULL |

**DEDUCTION ENTITY**

|  |  |  |  |
| --- | --- | --- | --- |
| **ATTRIBUTE NAME** | **DATA TYPE** | **DESCRIPTION** | **CONSTRAINTS** |
| Salary ID | INT | Unique identifier for each deduction record | PRIMARY KEY,AUTO\_INCREMENT |
| Deduction ID | INT | References to salary entity | FOREIGHN KEY REFERENCES Salary(Salary ID) |
| Employee ID | INT | References to Employee entity | FOREIGHN KEY REFERENCES Employee(Employee ID) |
| Basic Salary | Decimal | Employee’s base salary before deduction | Not null |
|  |  |  |  |
| Deduction | Decimal |  | No null |

Bottom of Form