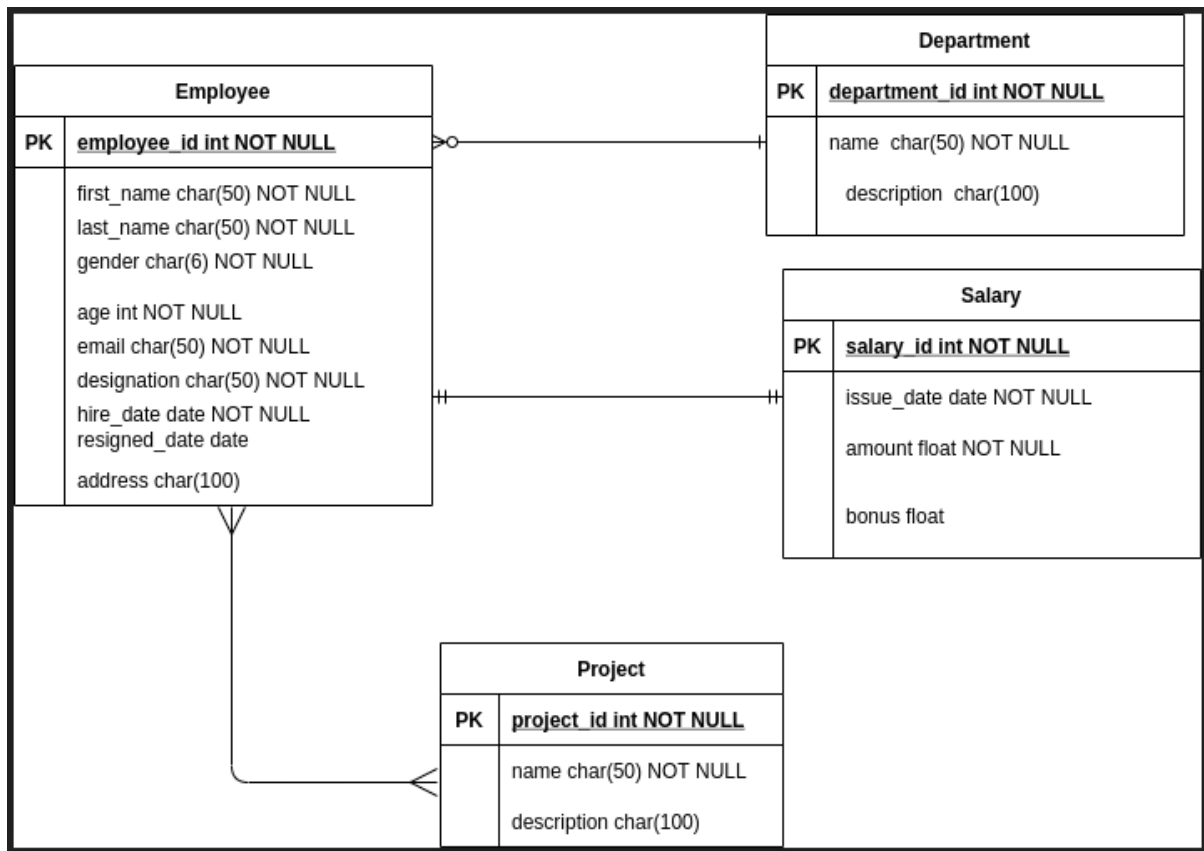


E-R Diagram



1.Create a database with EmployeeSystem.

```
CREATE DATABASE EmployeeSystem;
```

2. Create tables based on ER diagram.

//Employee Table

```
CREATE TABLE Employee(  
    employee_id int NOT NULL,  
    first_name varchar(50) NOT NULL,  
    last_name varchar(50) NOT NULL,  
    gender varchar(6) NOT NULL,  
    age int NOT NULL,  
    email varchar(50) NOT NULL,  
    designation varchar(50) NOT NULL,  
    hire_date date NOT NULL,  
    resignation_date date ,  
    address varchar(100) ,  
    department_id int,  
    PRIMARY KEY (employee_id),  
    CONSTRAINT fk_employees_dept FOREIGN KEY (department_id) REFERENCES  
    Department(department_id) );
```

//Salary Table

```
CREATE TABLE Salary (  
    salary_id int NOT NULL,  
    issue_date date NOT NULL,  
    amount float NOT NULL,  
    bonus float NOT NULL,  
    employee_id int,  
    PRIMARY KEY (salary_id),  
    CONSTRAINT fk_employee_salary FOREIGN KEY (employee_id) REFERENCES  
    Employee(employee_id) );
```

//Department Table

```
CREATE TABLE Department (  
    department_id int NOT NULL,  
    name varchar(50) NOT NULL,  
    description varchar(100),  
    PRIMARY KEY (department_id));
```

//Project Table

```
CREATE TABLE Project (  
    project_id int NOT NULL,  
    name varchar(50) NOT NULL,  
    description varchar(100) ,  
    PRIMARY KEY (project_id)  
);
```

//Employee_Project

//This table is used to maintain many to many relationships between project and employee

```
CREATE TABLE Employee_Project (  
    id int not null,  
    employee_id int,  
    project_id int,  
    PRIMARY KEY (id),  
  
    CONSTRAINT fk_employee FOREIGN KEY (employee_id) REFERENCES  
    Employee(employee_id),  
    CONSTRAINT fk_projet FOREIGN KEY (project_id) REFERENCES Project(project_id) );
```

3. Add 20 employees.

Insert into Employee values (1, 'John', 'Doe','Male', 12, 'john@doe.com', 'Software engineer', '2020-03-08', '2021-03-08', 'Bhaktapur',1);

Insert into Employee values (2, 'Johan', 'Doe','Male', 21, 'johan@doe.com', 'Software engineer 1', '2020-06-08', '2021-03-08', 'Lalitpur',1);

Insert into Employee values (3, 'Mary', 'Jane','Female', 35, 'Mary@Jane.com', 'Software engineer 2', '2020-09-08', '2021-03-08', 'Kathmandu',2);

Insert into Employee values (4, 'Desmond', 'Hills','Male', 45, 'Desmond@Hills.com', 'Senior Software engineer', '2021-03-08', '2021-03-08', 'Jhapa',2);

Insert into Employee values (5, 'Sangita', 'Maharjan','Female', 22, 'Sangita@Maharjan.com', 'Software engineer 2', '2000-03-08', '2021-03-08', 'Biratnagar',3);

Insert into Employee values (6, 'Naresh', 'Shrestha','Male', 24, 'Naresh@Shrestha.com', 'Junior Software engineer', '2021-07-31', '2021-03-24', 'Bhaktapur',3);

Insert into Employee values (7, 'Mohan', 'Shrestha','Male', 24, 'Mohan@Shrestha.com', 'HR', '2021-07-31', '2021-03-24', 'Bhaktapur',4);

Insert into Employee values (8, 'rabi', 'Shrestha','Male', 21, 'rabi@Shrestha.com', 'HR', '2021-07-31', '2021-03-24', 'Lalitpur',4);

Insert into Employee values (9, 'Nischal', 'Shrestha','Male', 25, 'Nischal@Shrestha.com', 'Software engineer 2', '2021-07-31', '2021-03-24', 'Kathmandu',5);

Insert into Employee values (10, 'Summit', 'Shrestha','Male', 27, 'Summit@Shrestha.com', 'Software engineer 2', '2021-07-31', '2021-03-24', 'Bhaktapur',5);

Insert into Employee values (11, 'Ajay', 'Shrestha','Male', 26, 'Ajay@Shrestha.com', 'Junior Software engineer', '2021-07-31', '2021-03-24', 'Pokhara',6);

Insert into Employee values (12, 'Dharma', 'Shrestha','Male', 23, 'Dharma@Shrestha.com', 'Junior Software engineer', '2021-07-31', '2021-03-24', 'Bhaktapur',6);

Insert into Employee values (13, 'Aishwarya', 'Shrestha','Female', 22, 'Aishwarya@Shrestha.com', 'Junior Software engineer', '2021-07-31', '2021-03-24', 'Kathmandu',1);

Insert into Employee values (14, 'Dharma', 'Shrestha','Male', 24, 'Dharma@Shrestha.com', 'Junior Software engineer', '2021-07-31', '2021-03-24', 'Bhaktapur',6);

Insert into Employee values (15, 'Rohan', 'Shrestha','Male', 24, 'Rohan@Shrestha.com', 'Software engineer 2', '2021-07-31', '2021-03-24', 'Kathmandu',1);

Insert into Employee values (16, 'Biraj', 'Shrestha','Male', 21, 'Biraj@Shrestha.com', 'Junior Software engineer', '2021-07-31', '2021-03-24', 'Bhaktapur',1);

Insert into Employee values (17, 'Anish', 'Shrestha','Male', 29, 'Anish@Shrestha.com', 'Junior Software engineer', '2021-07-31', '2021-03-24', 'Lalitpur',1);

Insert into Employee values (18, 'Avhi', 'Shrestha','Male', 30, 'Avhi@Shrestha.com', 'Software engineer 2', '2021-07-31', '2021-03-24', 'Bhaktapur',1);

Insert into Employee values (19, 'Sandhya', 'Shrestha','Female', 31, 'Sandhya@Shrestha.com', 'Junior Software engineer', '2021-07-31', null, null,1);

Insert into Employee values (20, 'Smriti', 'Shrestha','Female', 24, 'Smriti@Shrestha.com', 'Software engineer 2', '2021-07-31', null, null,1);

4. Add the salary of each employee.

Insert into Salary values (1, '2020-03-08', 123456.7, 678.00,9);

Insert into Salary values (2, '2020-03-08', 111111.0, 678.00,10);

Insert into Salary values (3, '2020-03-08', 300000.0, 678.00,11);

Insert into Salary values (4, '2020-03-08', 200000.0, 678.00,12);

Insert into Salary values (5, '2020-03-08', 100000.0, 678.00,13);

Insert into Salary values (6, '2020-03-08', 123456.7, 678.00,14);

Insert into Salary values (7, '2020-03-08', 11111.0, 678.00,15);

Insert into Salary values (8, '2020-03-08', 30000.0, 678.00,16);

Insert into Salary values (9, '2020-03-08', 20000.0, 678.00,17);

Insert into Salary values (10, '2020-03-08', 100000.0, 678.00,18);

Insert into Salary values (11, '2020-03-08', 12356.7, 678.00,19);
Insert into Salary values (12, '2020-03-08', 11111.0, 678.00,20);
Insert into Salary values (13, '2020-03-08', 30000.0, 678.00,8);
Insert into Salary values (14, '2020-03-08', 20000.0, 678.00,7);
Insert into Salary values (15, '2020-03-08', 10000.0, 678.00,6);
Insert into Salary values (16, '2020-03-08', 12456.7, 678.00,5);
Insert into Salary values (17, '2020-03-08', 11111.0, 678.00,4);
Insert into Salary values (18, '2020-03-08', 30000.0, 678.00,3);
Insert into Salary values (19, '2020-03-08', 20000.0, 678.00,2);
Insert into Salary values (20, '2020-03-08', 10000.0, 678.00,1);

5. Add departments with employees working in it.

Insert into Department values (1, 'Computer', null);
Insert into Department values (2, 'Mechanical', null);
Insert into Department values (3, 'Electrical', null);
Insert into Department values (4, 'Civil', 'Civil Department');
Insert into Department values (5, 'Electronics', 'Electronics Department');
Insert into Department values (6, 'Architecture', null);

6. Add 7 projects.

Insert into Project values (1, 'Project 1', null);
Insert into Project values (2, 'Project 2', null);
Insert into Project values (3, 'Project 3', null);
Insert into Project values (4, 'Project 4', 'Project 4 Description');
Insert into Project values (5, 'Project 5', 'Project 5 Description');
Insert into Project values (6, 'Project 6', null);
Insert into Project values (7, 'Project 7', null);

//Inserting Data into Employee_Project table for a many to many relationship between Employee and Project (This is a extra step to be carried out).

Insert into Employee_Project values (1, 1, 1);

Insert into Employee_Project values (2, 1, 2);

Insert into Employee_Project values (3, 2, 2);

Insert into Employee_Project values (4, 2, 1);

Insert into Employee_Project values (5, 3, 1);

Insert into Employee_Project values (6, 3, 4);

Insert into Employee_Project values (7, 6, 6);

7. Move 3 employees to another department(any).

Update Employee

Set department_id = 2

Where employee_id in (1,2,3);

8. Add resigned date for 2 employee.

Update Employee

Set resignation_date = ('2021-09-24')

Where employee_id in (19,20);

9. Show details of employees whose first name starts with 'R' or 'r'.

SELECT * FROM Employee

WHERE first_name LIKE 'R%' OR first_name LIKE 'r%'

ORDER BY first_name ;

10. Show details of employees who work in more than one project.

SELECT Employee.first_name, count(Employee_Project.project_id) AS TotalNumOfProjects,
Employee_Project.employee_id

FROM Employee

LEFT JOIN Employee_Project ON Employee.employee_id = Employee_Project.employee_id

GROUP BY Employee_Project.employee_id

having count(Employee_Project.project_id) > 1;

11.Count number of employee who have less than 20000 salary.

```
SELECT *  
FROM Employee  
Inner JOIN Salary ON Employee.employee_id = Salary.employee_id  
where Salary.amount < 20000;
```

12. Increment salary of all employee by 10%.

```
Update Salary  
set amount = amount + (amount * 0.10);
```

13. Give bonus of 10% to all employee hired before 2000-09-30.

```
UPDATE Salary  
inner JOIN Employee ON Salary.employee_id = Employee.employee_id  
SET Salary.bonus = Salary.amount * 0.10  
where Employee.hire_date < '2000-09-30';
```

14. Find the average salary of each department, number of employee working on that department.

```
select avg(Salary.amount), Count(Employee.employee_id), Department.department_id  
from Department  
Inner Join Employee on Department.Department_id = Employee.Department_id  
Inner Join Salary on Employee.Employee_id = Salary.Employee_id  
Group by Department.department_id;
```

15. Select the employee from each department which has a maximum salary.

```
select Employee.employee_id, max(Salary.amount), Department.Department_id  
from Department  
Inner Join Employee on Department.Department_id = Employee.Department_id  
Inner Join Salary on Employee.Employee_id = Salary.Employee_id  
Group by Department.department_id;
```


16. Select the employee from each department which has a maximum salary without using group by clause.

```
CREATE VIEW EmployeeSalary AS
```

```
    SELECT employee.*, salary.amount AS salary
```

```
    FROM employee JOIN salary
```

```
    ON employee.employee_id = salary.employee_id;
```

```
SELECT department.name AS 'department',
```

```
    EmployeeSalary.first_name AS Employee,
```

```
    EmployeeSalary.salary
```

```
    FROM department, EmployeeSalary
```

```
    WHERE department.department_id = EmployeeSalary.department_id
```

```
    AND EmployeeSalary.salary =
```

```
    (SELECT MAX(EmployeeSalary.salary)
```

```
    FROM EmployeeSalary WHERE EmployeeSalary.Department_id =  
    Department.Department_id);
```

17. Check what happens when you want to delete an employee who have resigned;

What needs to be done to delete?

Ans:-

When an employee is deleted, the data related to that employee in salary table is not deleted.

In order to delete the record from salary, we need to implement it while creating the salary table as follows:

```
CREATE TABLE Salary (  
    salary_id int NOT NULL,  
    issue_date date NOT NULL,  
    amount float NOT NULL,  
    bonus float NOT NULL,  
    employee_id int,  
    PRIMARY KEY (salary_id),  
    CONSTRAINT fk_employee_salary FOREIGN KEY (employee_id) REFERENCES  
    Employee(employee_id) ON DELETE CASCADE );
```