1. **Employee**

CREATE TABLE Employees (EmployeeID NUMBER PRIMARY KEY, FirstName VARCHAR2(50), LastName VARCHAR2(50), DepartmentID NUMBER, Salary NUMBER);

2. **Departments**

CREATE TABLE Departments (DepartmentID NUMBER PRIMARY KEY, DepartmentName VARCHAR2(50));

3. **Projects**

CREATE TABLE Projects (ProjectID NUMBER PRIMARY KEY, ProjectName VARCHAR2(50), DepartmentID NUMBER);

4. **Employee Projects**

CREATE TABLE EmployeeProjects (EmployeeID NUMBER, ProjectID NUMBER, PRIMARY KEY (EmployeeID, ProjectID));

Sample Data

-- ----Departments -------

INSERT INTO Departments (DepartmentID, DepartmentName) VALUES (1, 'HR');

INSERT INTO Departments (DepartmentID, DepartmentName) VALUES (2, 'IT');

INSERT INTO Departments (DepartmentID, DepartmentName) VALUES (3, 'Finance');

--------- Employees--------

INSERT INTO Employees (EmployeeID, FirstName, LastName, DepartmentID, Salary) VALUES (1, 'John', 'Doe', 1, 50000);

INSERT INTO Employees (EmployeeID, FirstName, LastName, DepartmentID, Salary) VALUES (2, 'Jane', 'Smith', 2, 60000);

INSERT INTO Employees (EmployeeID, FirstName, LastName, DepartmentID, Salary) VALUES (3, 'Sam', 'Brown', 3, 55000);

INSERT INTO Employees (EmployeeID, FirstName, LastName, DepartmentID, Salary) VALUES (4, 'Lucy', 'Green', 2, 62000);

INSERT INTO Employees (EmployeeID, FirstName, LastName, DepartmentID, Salary) VALUES (5, 'Mike', 'Johnson', 1, 52000);

-- -----Projects---------

INSERT INTO Projects (ProjectID, ProjectName, DepartmentID) VALUES (1, 'Project A', 1);
INSERT INTO Projects (ProjectID, ProjectName, DepartmentID) VALUES (2, 'Project B', 2);

INSERT INTO Projects (ProjectID, ProjectName, DepartmentID) VALUES (3, 'Project C', 3);

-- -----EmployeeProjects --------

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INSERT INTO EmployeeProjects (EmployeeID, ProjectID) VALUES (1, 1);

INSERT INTO EmployeeProjects (EmployeeID, ProjectID) VALUES (2, 2);

INSERT INTO EmployeeProjects (EmployeeID, ProjectID) VALUES (3, 3);

INSERT INTO EmployeeProjects (EmployeeID, ProjectID) VALUES (4, 2);

INSERT INTO EmployeeProjects (EmployeeID, ProjectID) VALUES (5, 1);
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Practice Queries

1. Find all employees who work in the 'IT' department.
2. List the names of employees who are working on 'Project A'.
3. Find the departments that have no employees.
4. Find employees whose salary is above the average salary of their department.
5. **List all projects along with the department name they belong to.**
6. Find employees who are not assigned to any project.
7. List the names of employees who are working on more than one project.
8. Find the department with the highest average salary.

Solution

1. SELECT * FROM Employees WHERE DepartmentID = (SELECT DepartmentID FROM Departments WHERE DepartmentName = 'IT');
2. SELECT FirstName, LastName FROM Employees WHERE EmployeeID IN (SELECT EmployeeID FROM EmployeeProjects WHERE ProjectID = (SELECT ProjectID FROM Projects WHERE ProjectName = 'Project A'));
3. SELECT DepartmentName FROM Departments WHERE DepartmentID NOT IN (SELECT DISTINCT DepartmentID FROM Employees);
4. SELECT FirstName, LastName, Salary FROM Employees e WHERE Salary > (SELECT AVG(Salary) FROM Employees WHERE DepartmentID = e.DepartmentID);
5. SELECT ProjectName, (SELECT DepartmentName FROM Departments WHERE DepartmentID = p.DepartmentID) AS DepartmentName FROM Projects p;
6. SELECT FirstName, LastName FROM Employees WHERE EmployeeID NOT IN (SELECT DISTINCT EmployeeID FROM EmployeeProjects);
7. SELECT FirstName, LastName FROM Employees WHERE EmployeeID IN (SELECT EmployeeID FROM EmployeeProjects GROUP BY EmployeeID HAVING COUNT(ProjectID) > 1);
8. SELECT DepartmentName FROM Departments WHERE DepartmentID = (SELECT DepartmentID FROM (SELECT DepartmentID, AVG(Salary) AS AvgSalary FROM Employees GROUP BY DepartmentID ORDER BY AvgSalary DESC) WHERE ROWNUM = 1);