**Execute the following queries to generate the dataset.**

-- Department Table

CREATE TABLE Departments (

dept\_id INT PRIMARY KEY,

dept\_name VARCHAR(50)

);

-- Employee Table

CREATE TABLE Employees (

emp\_id INT PRIMARY KEY,

emp\_name VARCHAR(50),

dept\_id INT,

manager\_id INT,

FOREIGN KEY (dept\_id) REFERENCES Departments(dept\_id)

);

-- Project Table

CREATE TABLE Projects (

proj\_id INT PRIMARY KEY,

proj\_name VARCHAR(50),

dept\_id INT,

FOREIGN KEY (dept\_id) REFERENCES Departments(dept\_id)

);

-- Departments

INSERT INTO Departments VALUES

(1, 'HR'),

(2, 'Finance'),

(3, 'IT'),

(4, 'Marketing');

-- Employees

INSERT INTO Employees VALUES

(101, 'Alice', 1, NULL), -- Alice is head of HR

(102, 'Bob', 1, 101), -- Bob reports to Alice

(103, 'Charlie', 2, NULL), -- Charlie is head of Finance

(104, 'David', 2, 103),

(105, 'Eva', 3, NULL), -- Eva is head of IT

(106, 'Frank', 3, 105),

(107, 'Grace', NULL, NULL); -- Grace not assigned

-- Projects

INSERT INTO Projects VALUES

(201, 'Recruitment Drive', 1),

(202, 'Budget Analysis', 2),

(203, 'Website Upgrade', 3),

(204, 'Ad Campaign', 4),

(205, 'System Migration', 3);

**Questions**

* Show employee names along with their department names.
* List all projects along with the department name.
* Find employees and the projects of their departments.
* Show employees who work in the IT department.
* List all employees with their department names (including those without a department).
* List all departments with employees (even if no employees exist).
* Show all employees and the projects of their department (including employees with no department/project).
* Show all departments and employees (ensure departments with no employees appear).
* Show all projects with department names (include departments even if no projects exist).
* List all employees and departments, showing unmatched ones too.
* Show all departments and their projects (include projects not assigned to a department, if any).
* Show all possible pairs of employees and projects.
* Show all possible pairs of departments and projects.
* Show each employee with their manager’s name.
* List all employees who report to the same manager.

More Questions to work with window functions, strings, and numbers;

* Count the total number of employees in each department.
* Find the average employee ID per department.
* Find the maximum and minimum employee ID in each department.
* Count how many employees don’t belong to any department.
* Find how many projects each department is handling.
* Show departments having more than 1 employee.
* Show departments having at least 2 projects.
* Rank employees by their emp\_id within each department.
* Show the rank of departments by number of projects (most projects first).
* Show employees ordered by emp\_id, and calculate a running sum of emp\_id.
* Display all employee names in **UPPERCASE**.
* Display all department names in **lowercase**.
* Find employees whose name starts with the lowercase of their first letter (use LOWER in a condition).
* Round average employee ID per department to the nearest integer.
* Show employee IDs divided by 3, and apply FLOOR, CEIL, and ROUND functions to them.