Part 1: Subqueries (Non-Correlated) — 15 Questions

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-- DATABASE STRUCTURE FOR SUBQUERY & CORRELATED SUBQUERY PRACTICE
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-- Drop if already exists (for easy re-runs)
DROP TABLE IF EXISTS employees;
DROP TABLE IF EXISTS departments;
DROP TABLE IF EXISTS projects;
DROP TABLE IF EXISTS regions;

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--1️⃣ REGIONS TABLE
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CREATE TABLE regions (
    region_id     INTEGER PRIMARY KEY,
    region_name   TEXT NOT NULL
);

INSERT INTO regions (region_id, region_name) VALUES
(1, 'North'),
(2, 'South'),
(3, 'East'),
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(4, 'West');


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--2️⃣ DEPARTMENTS TABLE
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CREATE TABLE departments (
    dept_id       INTEGER PRIMARY KEY,
    dept_name     TEXT NOT NULL,
    region_id     INTEGER,
    FOREIGN KEY(region_id) REFERENCES regions(region_id)
);

INSERT INTO departments (dept_id, dept_name, region_id) VALUES
(101, 'Finance', 1),
(102, 'HR', 2),
(103, 'IT', 3),
(104, 'Operations', 4),
(105, 'Sales', 1);


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--3️⃣ EMPLOYEES TABLE
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CREATE TABLE employees (
    emp_id        INTEGER PRIMARY KEY,
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    emp_name      TEXT NOT NULL,
    dept_id       INTEGER,
    region_id     INTEGER,
    manager_id    INTEGER,
    salary        INTEGER,
    joining_date  DATE,
    FOREIGN KEY(dept_id) REFERENCES departments(dept_id),
    FOREIGN KEY(region_id) REFERENCES regions(region_id)
);


INSERT INTO employees (emp_id, emp_name, dept_id, region_id, manager_id, salary,
joining_date) VALUES
(1, 'Ravi Sharma',     101, 1, NULL,  90000, '2020-01-15'),
(2, 'Anita Desai',     101, 1, 1,     70000, '2021-04-12'),
(3, 'Vijay Kumar',     101, 1, 1,     55000, '2022-08-19'),
(4, 'Priya Nair',      102, 2, NULL,  80000, '2019-03-25'),
(5, 'Amit Singh',      102, 2, 4,     65000, '2020-06-10'),
(6, 'Deepa Joshi',     102, 2, 4,     45000, '2022-11-02'),
(7, 'Manoj Verma',     103, 3, NULL, 100000, '2018-07-01'),
(8, 'Neha Gupta',      103, 3, 7,     85000, '2019-09-12'),
(9, 'Karan Patel',     103, 3, 7,     60000, '2020-12-17'),
(10, 'Rohit Mehta',    104, 4, NULL,  75000, '2018-04-09'),
(11, 'Sneha Iyer',     104, 4, 10,    68000, '2020-02-14'),
(12, 'Pooja Rao',      104, 4, 10,    55000, '2021-05-19'),
(13, 'Arjun Reddy',    105, 1, NULL,  95000, '2017-10-20'),
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(14, 'Meena Kumari',   105, 1, 13,    62000, '2019-07-03'),
(15, 'Rahul Jain',     105, 1, 13,    48000, '2022-02-11');


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--4️⃣ PROJECTS TABLE
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CREATE TABLE projects (
   project_id    INTEGER PRIMARY KEY,
   project_name  TEXT NOT NULL,
   dept_id       INTEGER,
   budget        INTEGER,
   start_date    DATE,
   FOREIGN KEY(dept_id) REFERENCES departments(dept_id)
);

INSERT INTO projects (project_id, project_name, dept_id, budget, start_date) VALUES
(1001, 'ERP Upgrade',     103, 500000, '2023-01-01'),
(1002, 'Recruitment Drive', 102, 150000, '2023-03-10'),
(1003, 'Sales Expansion', 105, 300000, '2023-02-15'),
(1004, 'Cost Optimization', 101, 200000, '2022-11-01'),
(1005, 'Warehouse Setup', 104, 250000, '2022-10-20');
```

Q1. Get employees whose salary is greater than the average salary of all employees.

Q2. Find employees who work in the same department as ‘Ravi Sharma’.

Q3. List departments where the maximum salary exceeds ₹80,000.

Q4. Show employee names and their department name using subquery.

Q5. Find all employees who earn the highest salary in their department.

Q6. Retrieve employees who are not assigned to any project department.

Q7. Get departments that have more than the company’s average number of employees.

Q8. Find the second highest salary using subquery.

Q9. List employees who have the same salary as someone in the Finance department.

Q10. Retrieve projects whose budget is greater than the average project budget.

Q11. Find employees who joined before the earliest joining date in the HR department.

Q12. Show the department with the minimum average salary.

Q13. Find all regions where the total number of employees exceeds 3.

Q14. Display employees whose salary matches the maximum salary in any project department.

Q15. Show all employees working in departments located in the ‘North’ region.

🔁 Part 2: Correlated Subqueries — 10 Questions

Q16. Find employees earning more than their department’s average salary.

Q17. List employees who joined before any other employee in their department.

Q18. Display employees who have the maximum salary in their region.

Q19. Retrieve employees who earn more than their manager.

Q20. Get departments where all employees earn more than ₹50,000.

Q21. Find employees whose salary is greater than at least one other employee in the same department.

Q22. Show employees who earn less than the highest salary in their department.

Q23. Find employees who are the only ones in their department.

Q24. Display employees whose salary is above average in their region.

Q25. Find departments where the highest-paid employee earns more than ₹90,000.
