Multiple Table

Question 1: Joins and Aggregations

```
-- Create the employees table
CREATE TABLE employees (
  employee_id INTEGER PRIMARY KEY,
  employee_name TEXT NOT NULL,
  email VARCHAR(100),
  hire_date DATE,
  department_id INT,
  salary INT,
  FOREIGN KEY(department_id) REFERENCES departments(department_id)
);
-- Create the `departments` table
CREATE TABLE departments (
  department_id INTEGER PRIMARY KEY,
  department_name TEXT NOT NULL,
  location VARCHAR(100)
);
-- Create the `projects` table
CREATE TABLE projects (
  project_id INTEGER PRIMARY KEY,
  project_name TEXT NOT NULL,
  budget INTEGER
);
-- Create the project_assignments table
CREATE TABLE project_assignments (
  employee_id INT,
  project_id INT,
  assignment_date DATE,
```

```
  PRIMARY KEY(employee_id, project_id),
  FOREIGN KEY(employee_id) REFERENCES employees(employee_id),
  FOREIGN KEY(project_id) REFERENCES projects(project_id)
);
-- Insert data into employees
INSERT INTO employees VALUES (1, 'Alice Johnson', 'alice@company.com', '2020-01-15', 101, 70000);
INSERT INTO employees VALUES (2, 'Bob Smith', 'bob@company.com', '2019-05-22', 102, 60000);
INSERT INTO employees VALUES (3, 'Carol Davis', 'carol@company.com', '2018-11-30', 101, 80000);
INSERT INTO employees VALUES (4, 'Dave Brown', 'dave@company.com', '2021-03-12', 103, 55000);
INSERT INTO employees VALUES (5, 'Eve Wilson', 'eve@company.com', '2017-07-19', 104, 75000);
INSERT INTO employees VALUES (6, 'Frank Green', 'frank@company.com', '2020-08-03', 101, 50000);
INSERT INTO employees VALUES (7, 'Grace Hall', 'grace@company.com', '2016-04-27', 103, 45000);
INSERT INTO employees VALUES (8, 'Henry Lee', 'henry@company.com', '2021-10-15', 104, 60000);
INSERT INTO employees VALUES (9, 'Irene Adams', 'irene@company.com', '2019-01-10', 102, 90000);
INSERT INTO employees VALUES (10, 'Jack Moore', 'jack@company.com', '2018-09-05', 101, 40000);
-- Insert data into `departments`
INSERT INTO departments VALUES (101, 'IT', 'New York');
INSERT INTO departments VALUES (102, 'Sales', 'San Francisco');
INSERT INTO departments VALUES (103, 'HR', 'Chicago');
INSERT INTO departments VALUES (104, 'Finance', 'Los Angeles');
-- Insert data into `projects`
INSERT INTO projects VALUES (1, 'E-Commerce', 100000);
INSERT INTO projects VALUES (2, 'Marketing Campaign', 50000);
INSERT INTO projects VALUES (3, 'Recruitment Drive', 20000);
INSERT INTO projects VALUES (4, 'Budget Analysis', 75000);
-- Insert data into `project_assignments`
INSERT INTO project_assignments VALUES (1, 1, '2023-01-01');
INSERT INTO project_assignments VALUES (2, 2, '2023-02-15');
INSERT INTO project_assignments VALUES (3, 1, '2023-01-10');
```

```
INSERT INTO project_assignments VALUES (4, 3, '2023-03-05');
INSERT INTO project_assignments VALUES (5, 4, '2023-04-01');
INSERT INTO project_assignments VALUES (6, 1, '2023-01-20');
INSERT INTO project_assignments VALUES (7, 3, '2023-05-10');
INSERT INTO project_assignments VALUES (8, 4, '2023-06-15');
INSERT INTO project_assignments VALUES (9, 2, '2023-07-01');
INSERT INTO project_assignments VALUES (10, 1, '2023-08-01');
-- View the data
SELECT * FROM employees;
SELECT * FROM departments;
SELECT * FROM projects;
SELECT * FROM project_assignments;
--QUERY
SELECT
    p.project_name,
    d.department_name,
    SUM(e.salary) AS total_salary
FROM
    project_assignments pa
JOIN
    employees e ON pa.employee_id = e.employee_id
JOIN
    projects p ON pa.project_id = p.project_id
JOIN
    departments d ON e.department_id = d.department_id
GROUP BY
    p.project_name, d.department_name;
```

Output:

```
1|Alice Johnson|alice@company.com|2020-01-15|101|70000
2|Bob Smith|bob@company.com|2019-05-22|102|60000
3|Carol Davis|carol@company.com|2018-11-30|101|80000
4|Dave Brown|dave@company.com|2021-03-12|103|55000
5|Eve Wilson|eve@company.com|2017-07-19|104|75000
6|Frank Green|frank@company.com|2020-08-03|101|50000
7|Grace Hall|grace@company.com|2016-04-27|103|45000
8|Henry Lee|henry@company.com|2021-10-15|104|60000
9|Irene Adams|irene@company.com|2019-01-10|102|90000
10|Jack Moore|jack@company.com|2018-09-05|101|40000
101|IT|New York
102|Sales|San Francisco
103|HR|Chicago
104|Finance|Los Angeles
1|E-Commerce|100000
2|Marketing Campaign|50000
```

```
3|Recruitment Drive|20000
4|Budget Analysis|75000
1|1|2023-01-01
2|2|2023-02-15
3|1|2023-01-10
4|3|2023-03-05
5|4|2023-04-01
6|1|2023-01-20
7|3|2023-05-10
8|4|2023-06-15
9|2|2023-07-01
10|1|2023-08-01
Budget Analysis|Finance|135000
E-Commerce|IT|240000
Marketing Campaign|Sales|150000
Recruitment Drive|HR|100000
```

Question 2: Subqueries

-- create a table

CREATE TABLE customers (

  id INTEGER PRIMARY KEY,

  name TEXT NOT NULL,

  email VARCHAR(50),

  city VARCHAR(50),

  registration_date DATE

);

-- create a table

```
CREATE TABLE orders (
    id INTEGER PRIMARY KEY,
    customer_id INT,
    order_date DATE,
    total_amount INT,
    FOREIGN KEY(customer_id) REFERENCES orders(customer_id)
);
-- create a table
CREATE TABLE order_details (
    id INTEGER PRIMARY KEY,
    order_id INT,
    product_id INT,
    quantity INT,
    price INT,
    FOREIGN KEY(order_id) REFERENCES order_details(order_id),
    FOREIGN KEY(product_id) REFERENCES order_details(product_id)
);
-- create a table
CREATE TABLE products (
    id INTEGER PRIMARY KEY,
    name TEXT NOT NULL,
    category_id INT,
    stock INT,
    FOREIGN KEY(category_id) REFERENCES products(category_id)
);
-- create a table
CREATE TABLE categories (
    id INTEGER PRIMARY KEY,
    name TEXT NOT NULL
);
```

```
-- insert data into customners
INSERT INTO customers VALUES (1, 'Alice Johnson', 'alice@mail.com', 'New York', '2020-01-01');
INSERT INTO customers VALUES (2, 'Bob Smith', 'bob@mail.com', 'San Francisco', '2019-05-10');
INSERT INTO customers VALUES (3, 'Carol Davis', 'carol@mail.com', 'Chicago', '2021-03-15');
INSERT INTO customers VALUES (4, 'Dave Brown', 'dave@mail.com', 'Los Angeles', '2018-12-20');
INSERT INTO customers VALUES (5, 'Eve Wilson', 'eve@mail.com', 'Boston', '2022-06-10');
INSERT INTO customers VALUES (6, 'Frank Green', 'frank@mail.com', 'Miami', '2020-11-05');
INSERT INTO customers VALUES (7, 'Grace Hall', 'grace@mail.com', 'CDallas', '2021-09-25');
INSERT INTO customers VALUES (8, 'Henry Lee', 'henry@mail.com', 'Seattle', '2019-03-12');
INSERT INTO customers VALUES (9, 'Irene Adams', 'irene@mail.com', 'Atlanta', '2021-07-08');
INSERT INTO customers VALUES (10, 'Jack Moore', 'jack@mail.com', 'Austin', '2022-04-03');
-- insert data into orders
INSERT INTO orders VALUES (1, 1, '2023-01-05', 250);
INSERT INTO orders VALUES (2, 2, '2023-01-10', 450);
INSERT INTO orders VALUES (3, 3, '2023-02-15', 700);
INSERT INTO orders VALUES (4, 1, '2023-03-20', 150);
INSERT INTO orders VALUES (5, 4, '2023-04-25', 350);
INSERT INTO orders VALUES (6, 5, '2023-05-10', 550);
INSERT INTO orders VALUES (7, 6, '2023-06-18', 400);
INSERT INTO orders VALUES (8, 7, '2023-07-01', 300);
INSERT INTO orders VALUES (9, 8, '2023-08-05', 900);
INSERT INTO orders VALUES (10, 9, '2023-09-10', 250);
-- insert data into order_details
INSERT INTO order_details VALUES (1, 1, 1, 2, 50);
INSERT INTO order_details VALUES (2, 2, 3, 1, 450);
INSERT INTO order_details VALUES (3, 3, 2, 3, 100);
INSERT INTO order_details VALUES (4, 4, 4, 1, 150);
INSERT INTO order_details VALUES (5, 5, 5, 2, 175);
INSERT INTO order_details VALUES (6, 6, 6, 4, 100);
INSERT INTO order_details VALUES (7, 7, 1, 2, 50);
```

```
INSERT INTO order_details VALUES (8, 8, 3, 5, 60);
INSERT INTO order_details VALUES (9, 9, 2, 6, 150);
INSERT INTO order_details VALUES (10, 10, 4, 1, 250);
-- insert data into products
INSERT INTO products VALUES (1, 'Smartphone', 1, 50);
INSERT INTO products VALUES (2, 'Laptop', 1, 30);
INSERT INTO products VALUES (3, 'Sofa', 2, 10);
INSERT INTO products VALUES (4, 'Dining Table', 2, 15);
INSERT INTO products VALUES (5, 'Headphones', 1, 70);
INSERT INTO products VALUES (6, 'Television', 1, 25);
INSERT INTO products VALUES (7, 'Office Chair', 2, 20);
INSERT INTO products VALUES (8, 'Printer', 1, 40);
INSERT INTO products VALUES (9, 'Desk', 2, 12);
INSERT INTO products VALUES (10, 'Monitor', 1, 35);
-- insert data into categories
INSERT INTO categories VALUES (1, 'Electronics');
INSERT INTO categories VALUES (2, 'Furniture');
-- fetch some values
SELECT * FROM customers;
SELECT * FROM orders;
SELECT * FROM order_details;
SELECT * FROM products;
SELECT * FROM categories;
--QUERY
SELECT DISTINCT
   c.name AS customer_name,
   c.city
FROM
   customers c
WHERE
```

```
    c.id IN (
        SELECT o.customer_id
        FROM orders o
        JOIN order_details od ON o.id = od.order_id
        JOIN products p ON od.product_id = p.id
        WHERE p.category_id = 1
    )
    AND c.id NOT IN (
        SELECT o.customer_id
        FROM orders o
        JOIN order_details od ON o.id = od.order_id
        JOIN products p ON od.product_id = p.id
        WHERE p.category_id = 2
    );
```

Output:

```
1|Alice Johnson|alice@mail.com|New York|2020-01-01
2|Bob Smith|bob@mail.com|San Francisco|2019-05-10
3|Carol Davis|carol@mail.com|Chicago|2021-03-15
4|Dave Brown|dave@mail.com|Los Angeles|2018-12-20
5|Eve Wilson|eve@mail.com|Boston|2022-06-10
6|Frank Green|frank@mail.com|Miami|2020-11-05
7|Grace Hall|grace@mail.com|CDallas|2021-09-25
8|Henry Lee|henry@mail.com|Seattle|2019-03-12
9|Irene Adams|irene@mail.com|Atlanta|2021-07-08
10|Jack Moore|jack@mail.com|Austin|2022-04-03
1|1|2023-01-05|250
2|2|2023-01-10|450
3|3|2023-02-15|700
4|1|2023-03-20|150
5|4|2023-04-25|350
6|5|2023-05-10|550
```

```
7|6|2023-06-18|400
8|7|2023-07-01|300
9|8|2023-08-05|900
10|9|2023-09-10|250
1|1|1|2|50
2|2|3|1|450
3|3|2|3|100
4|4|4|1|150
5|5|5|2|175
6|6|6|4|100
7|7|1|2|50
8|8|3|5|60
9|9|2|6|150
10|10|4|1|250
1|Smartphone|1|50
2|Laptop|1|30
3|Sofa|2|10
```

```
4|Dining Table|2|15
5|Headphones|1|70
6|Television|1|25
7|Office Chair|2|20
8|Printer|1|40
9|Desk|2|12
10|Monitor|1|35
1|Electronics
2|Furniture
Carol Davis|Chicago
Dave Brown|Los Angeles
Eve Wilson|Boston
Frank Green|Miami
Henry Lee|Seattle
```