Lab #06 Tasks

DBMS-CS232 (DATA SCIENCE)

TASK1

Scenario:

You are working as a database administrator for a retail company. The company has three main tables in their PostgreSQL database: **customers, orders, and products**.
The customers table contains information about the customers, the orders table contains details about the orders placed by customers, and the products table contains information about the products available in the store.

Tables:

- **Customers:**
  - customer_id (Primary Key)
  - customer_name
  - email
  - phone_number
- **Orders:**
  - order_id (Primary Key)
  - customer_id (Foreign Key referencing customers)
  - product_id (Foreign Key referencing products)
  - order_date
  - quantity
  - total_price
- **Products:**
  - product_id (Primary Key)
  - product_name
  - price

- stock_quantity

Tasks:

1. **Inner Join:** Write a query to retrieve the details of all orders along with the customer names and product names. The output should include order_id, customer_name, product_name, order_date, quantity, and total_price.
2. **Left Join:** Write a query to find all customers who have not placed any orders. The output should include customer_id, customer_name, and email.
3. **Full Outer Join:** Write a query to retrieve all customers and all orders, including those customers who have not placed any orders and those orders that do not have a corresponding customer. The output should include customer_id, customer_name, order_id, and order_date.
4. **Cross Join:** Write a query to generate a report that shows all possible combinations of customers and products. The output should include customer_name and product_name.

TASK2:

Scenario:
You are working as a data analyst for a large corporation. The company has two main tables in their PostgreSQL database: **employees and projects.** The employees table contains information about the employees, and the projects table contains details about the projects assigned to employees.

Tables:

- **Employees:**
  - employee_id (Primary Key)
  - employee_name
  - department_id
  - hire_date

- **Projects:**
    - project_id (Primary Key)
    - project_name
    - employee_id (Foreign Key referencing employees)
    - start_date
    - end_date

Tasks:

1. **Anti-Join:** Write a query to find all employees who have not been assigned to any project. The output should include employee_id, employee_name, and department_id.
2. **Semi-Join:** Write a query to retrieve the details of all employees who have been assigned to at least one project. The output should include employee_id, employee_name, and department_id.
3. **Self-Join:** Write a query to find pairs of employees who work in the same department. The output should include employee1_name, employee2_name, and department_id.
4. **Natural Join:** Write a query to retrieve the details of all projects along with the employee names using a natural join. The output should include project_id, project_name, employee_name, start_date, and end_date.