### SQL Lab Exercise

#### Instructions

* Use the provided Shop database for all exercises.
* Write the SQL queries for each task.
* Execute the queries and verify the results.
* Document your results and any issues encountered.

1. Write a query to select all columns from the Products table and order the results by ProductName in ascending order.
2. Write a query to select all columns from the Orders table and order the results by OrderDate in descending order.
3. Write a query to select the top 5 most expensive products from the Products table.
4. Write a query to select the top 3 most recent orders from the Orders table.
5. Write a query to select ProductName as Product and UnitPrice as Price from the Products table.
6. Write a query to select all orders with OrderDate between '2023-01-01' and '2023-12-31'.
7. Write a query to count the number of products in the Products table.
8. Write a query to calculate the total quantity ordered from the OrderDetails table.
9. Write a query to find the average unit price of products.
10. Write a query to find the minimum and maximum order dates from the Orders table.
11. Write a query to count the number of orders for each customer from the Orders table, grouped by CustomerID.
12. Write a query to find the customers who have placed more than 10 orders, grouped by CustomerID.
13. Write a query to select all customers whose names start with 'A'.
14. Write a query to select all products with names containing the word 'Tea'.
15. Write a query to select all customers with phone numbers ending in '5'.
16. Write a query to join Orders and Customers tables on CustomerID and select OrderID, OrderDate, and CustomerName.
17. Write a query to list all customers and their orders, including those who haven't placed any orders.
18. Write a query to list all orders and their customers, including those orders that don't have a matching customer.
19. Write a query to perform a full outer join on Orders and Customers tables and select OrderID, OrderDate, and CustomerName.
20. Create a view named CustomerOrders that includes CustomerID, CustomerName, OrderID, and OrderDate.
21. Write a query to select customers who have placed at least one order.
22. Write a query to select all products from the Products table and combine it with a selection of all discontinued products.
23. Write a query to display ProductName, UnitPrice, and a new column PriceCategory that categorizes products as 'Expensive' if UnitPrice > 20, 'Moderate' if UnitPrice between 10 and 20, and 'Cheap' if UnitPrice < 10.

#### Constraints

1. Write a query to add a primary key constraint to the CustomerID column in the Customers table.
2. Write a query to add a foreign key constraint to the OrderDetails table that references the Orders table.
3. Write a query to add a not null constraint to the ProductName column in the Products table.
4. Write a query to add a default constraint to the OrderDate column in the Orders table to default to the current date.
5. Write a query to add a check constraint to the UnitPrice column in the Products table to ensure prices are greater than 0.
6. Write a query to add a unique constraint to the Email column in the Customers table.