

SQL E-Commerce Data Analysis Project

1. Project Overview

This project applies SQL-based analytical techniques to an E-commerce transactional dataset. The objective is to extract business insights through filtering, sorting, aggregation, subqueries, views, and query optimization.

2. Technologies Used

- MySQL
- SQL Language
- MySQL Workbench

3. SQL Queries Executed

• View First 10 Rows

```
SELECT * FROM ecommerce_data LIMIT 10;
```

• Filter by Country

```
SELECT * FROM ecommerce_data WHERE Country = 'United Kingdom';
```

• Sorting

```
SELECT Description, Quantity FROM ecommerce_data ORDER BY Quantity DESC LIMIT 10;
```

• Aggregation

```
SELECT Description, SUM(Quantity) AS total_sold FROM ecommerce_data GROUP BY Description ORDER BY total_sold DESC LIMIT 10;
```

4. Additional SQL Queries

• Total Revenue

```
SELECT SUM(Quantity * UnitPrice) AS total_revenue FROM ecommerce_data;
```

• High-Value Customers (Subquery)

```
SELECT * FROM ecommerce_data WHERE CustomerID IN ( SELECT CustomerID FROM ecommerce_data GROUP BY CustomerID HAVING SUM(Quantity * UnitPrice) > 1000 );
```

• Creating a View

```
CREATE VIEW top_products AS SELECT Description, SUM(Quantity) AS total_sold FROM ecommerce_data GROUP BY Description ORDER BY total_sold DESC LIMIT 50;
```

• Creating Indexes

```
CREATE INDEX idx_invoice ON ecommerce_data(InvoiceNo);  
CREATE INDEX idx_customer ON ecommerce_data(CustomerID);
```

5. Key Insights

- Majority of transactions originate from the United Kingdom.
- Certain products consistently rank as top sellers based on total quantity sold.
- Revenue analysis highlights strong purchasing behavior across customers.
- Subqueries support identification of high-value customer groups.
- Views simplify repeated analytical operations.
- Indexing enhances filtering and search performance.

6. Conclusion

This project demonstrates the effectiveness of SQL for analyzing structured E-commerce data. The queries help uncover sales patterns, customer behavior, and product performance, making SQL an essential tool for business intelligence and data-driven decision-making.