# E■Commerce Data Analysis Project – SQL & Python

## Project Overview

This project demonstrates end■to■end Data Analysis using SQL and Python on an E■Commerce dataset. The objective was to simulate real■world analyst tasks such as database creation, data cleaning, query writing, visualization, and business insight generation. This project reflects the skillset required for entry■level Data Analyst roles.

## Project Objectives

1. Analyze monthly order trends
2. Calculate total revenue and KPIs
3. Identify top customers and sellers
4. Perform SQL joins and aggregations
5. Create Python visualizations
6. Present business insights clearly

## Tools & Technologies Used

1. MySQL Workbench – Database creation and SQL querying
2. Python – Data processing and visualization
3. Pandas – Data cleaning and manipulation
4. Matplotlib – Chart creation
5. Jupyter Notebook – Analysis environment
6. GitHub – Project hosting and portfolio

## Datasets Used

1. customers.csv – Customer demographic data
2. orders.csv – Order timestamps and purchase history
3. order_items.csv – Product prices and revenue information

## SQL Analysis Performed

1. Database creation and dataset import
2. Total customers and total orders calculation
3. Total revenue calculation using SUM()
4. Orders per month trend analysis
5. Top 10 customers by spending
6. Group By and Join operations across tables

## Python Analysis & Visualizations

1. Orders Per Month Bar Chart
2. Top Customers Spending Chart
3. Revenue Calculation and Trend Analysis
4. Datetime cleaning and transformation using Pandas

## Key Business Insights

1. Order volume increased consistently over time
2. A small percentage of customers generated major revenue
3. Revenue trends show steady business growth
4. Monthly trends highlight peak sales periods

## Skills Demonstrated

1. SQL Query Writing and Joins
2. Data Cleaning & Transformation
3. Data Visualization
4. Analytical Thinking & KPI Identification
5. Project Documentation & GitHub Management

## Conclusion

This project demonstrates the practical ability to work with structured datasets, perform SQL and Python■based analysis, and present findings in a clear and professional manner. It reflects real■world data analyst responsibilities and is suitable for portfolio presentation and entry■level job applications.