# Python Project: Advanced Sales Analysis using Pandas

## Project Overview

This project analyzes an e-commerce sales dataset to derive insights using the pandas library in Python. It demonstrates how to extract useful business intelligence from structured data through a series of practical questions and analysis tasks.

## Dataset Columns

OrderID: Unique ID of the order

CustomerName: Name of the customer

Category: Product category

Amount: Value of the order

Rating: Customer rating (1 to 5)

OrderDate: Date the order was placed

## Steps in the Analysis

Step 1: Load the CSV File

Step 2: Explore the Dataset

## Exploratory Questions

- Q1: What is the total revenue?
- Q2: Which category generated the highest revenue?
- Q3: What is the average rating per category?
- Q4: Monthly revenue trends
- Q5: Top 5 customers by total spend
- Q6: How many orders received a perfect 5-star rating?
- Q7: Average order amount per category
- Q8: Number of orders per category
- Q9: Which day had the highest total sales?
- Q10: How many unique customers placed orders?

- Q11: What is the most frequent rating given by customers?

- Q12: What is the total revenue per rating score?

- Q13: Which customer gave the most 5-star ratings?

- Q14: What is the average revenue per order by month?

- Q15: What is the revenue contributed by the top 10% of customers?

- Q16: Which customers placed more than 3 orders?

- Q17: What is the average rating across all orders?

- Q18: Category with highest avg order value

- Q19: Revenue % by category

- Q20: Category with most 5-star ratings

- Q21: Month with highest avg rating

- Q22: Customer with highest avg order value

- Q23: Month-over-month revenue growth

- Q24: Customers who gave 1-star and 5-star

- Q25: Avg order value for 5-star ratings

- Q26: Customers who always rated >= 4

- Q27: Std. deviation of amount by category

- Q28: Month with highest revenue growth

- Q29: Category with lowest avg rating

- Q30: High-value but poorly rated orders

## Conclusion

This project shows how Python can be used to analyze sales data effectively using pandas. By answering business-relevant questions, one can gain insights into customer behavior, product performance, revenue trends, and more. These techniques are fundamental for business intelligence, data reporting, and decision support systems.