CodeAlpha Data Analytics Project

# Project Overview

This project is part of the CodeAlpha internship tasks, specifically **Task 1 (Exploratory Data Analysis) and Task 2 (Data Visualization).** The dataset contains sales data from an e-commerce company and the objective is to extract insights and represent them visually to support better decision-making.

# Task 1: Exploratory Data Analysis (EDA)

In Task 1, we performed an initial exploration of the dataset using pandas. The key objectives included:

* Understanding the data structure and data types
* Asking analytical questions such as:

- Which product category generates the most revenue?

- What is the most used payment method?

- Does delivery speed affect customer satisfaction (rating)?

* Identifying missing data or anomalies
* Generating basic statistical summaries

# Task 2: Data Visualization

In Task 2, we visualized the insights discovered in Task 1 using Matplotlib and Seaborn. We created well-labeled and meaningful visualizations to support data-driven storytelling. These visualizations highlight trends and assist stakeholders in making better decisions.

# Connecting Task 1 and Task 2

Task 1 helped us explore and understand the dataset. The questions and hypotheses generated during EDA inspired the visualizations in Task 2. Each graph was created to validate assumptions or highlight trends revealed during the initial exploration. Together, both tasks provided a clear and insightful overview of the business data.

# Visualizations Explained

1. **Total Sales by Product Category**

A bar chart was created to show which product categories generated the highest revenue. This helps businesses focus on high-performing product lines.

1. **Payment Method Distribution**

This bar chart shows how frequently each payment method is used. It provides insights into customer preferences in payment options.

1. **Delivery Days vs Customer Rating**

A scatter plot was used to visualize the relationship between delivery speed and customer satisfaction. It tests the hypothesis that faster delivery improves ratings.

1. **Sales by Customer Type**

A pie chart shows the contribution of new vs returning customers to total sales. This helps evaluate customer retention and acquisition performance.