Assignment Tasks

Task 1: Exploratory Data Analysis (EDA) and Business Insights

➢ Business Insights 1: Customer Distribution by Region

Customer Distribution by Region

- **Customer Region Distribution**: The customer data shows the distribution across various regions, with counts indicating where most customers are located. This helps identify region-specific trends and areas of concentration.

- **Data Visualization**: A count plot effectively visualizes customer distribution by region, using distinct colors for better clarity. This aids in understanding regional customer density at a glance.

- **Strategic Analysis**: Insights from the region distribution can guide business decisions, such as tailoring marketing strategies, allocating resources, and identifying underrepresented regions for potential growth opportunities.

# ➢ **Business Insights 2: New Registrations Over The Years**

- **Signup Trends by Year**: The analysis reveals the number of customer sign-ups each year, showcasing variations in growth patterns and highlighting years of peak activity.

- **Visualization**: A line plot with markers provides a clear view of yearly trends, showing the rise and fall of new registrations over time for easy interpretation.

- **Business Implications**: These trends are valuable for evaluating the effectiveness of past initiatives, identifying high-performing years, and crafting targeted strategies to increase sign-ups in the future.

# ➢ **Business Insights 3: Sales by Product Category**
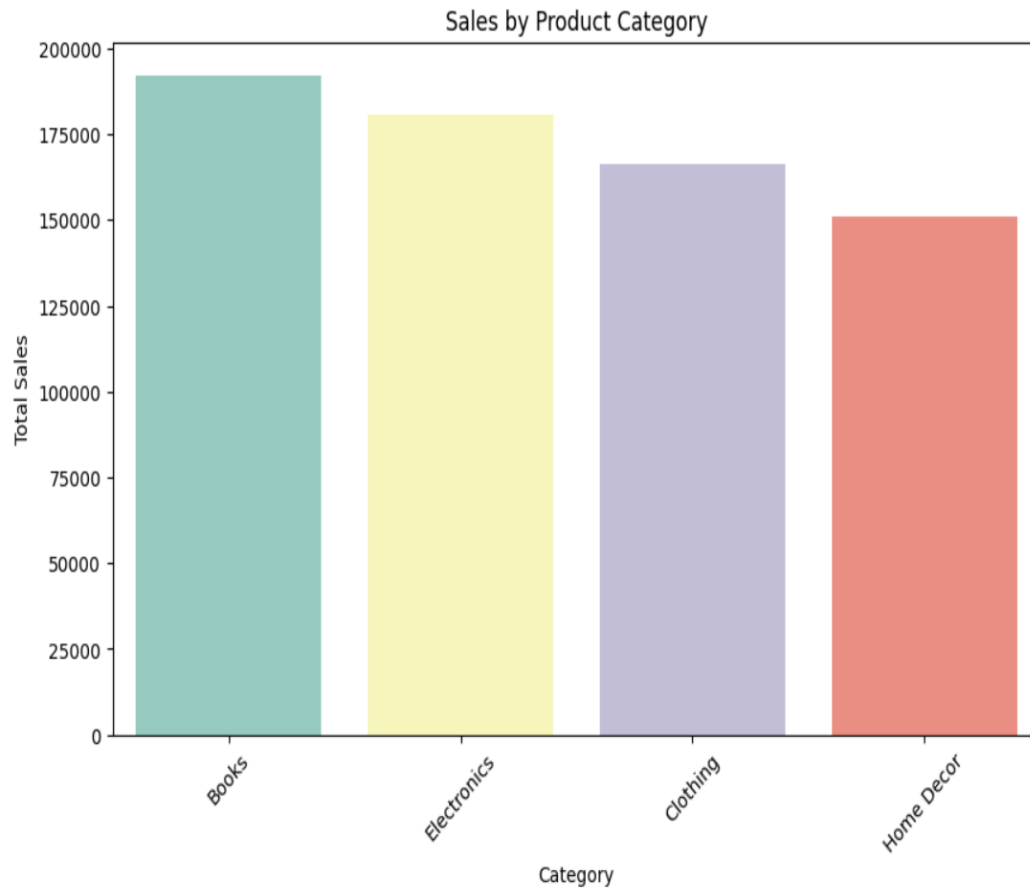
- **Sales by Product Category**: The analysis identifies total sales contributions from each product category, revealing which categories drive the most revenue and which underperform.

- **Visualization**: A bar plot presents sales data by product category, using a vibrant color palette for clarity. The rotated x-axis labels ensure easy readability of category names.

- **Actionable Insights**: High-performing categories can be prioritized for inventory stocking and promotional activities, while low-performing ones may need re-evaluation of pricing, marketing, or product relevance to boost sales.

➢ Business Insights 4: Top 10 Customers by Number of Transactions

Top 10 Customers by Number of Transactions
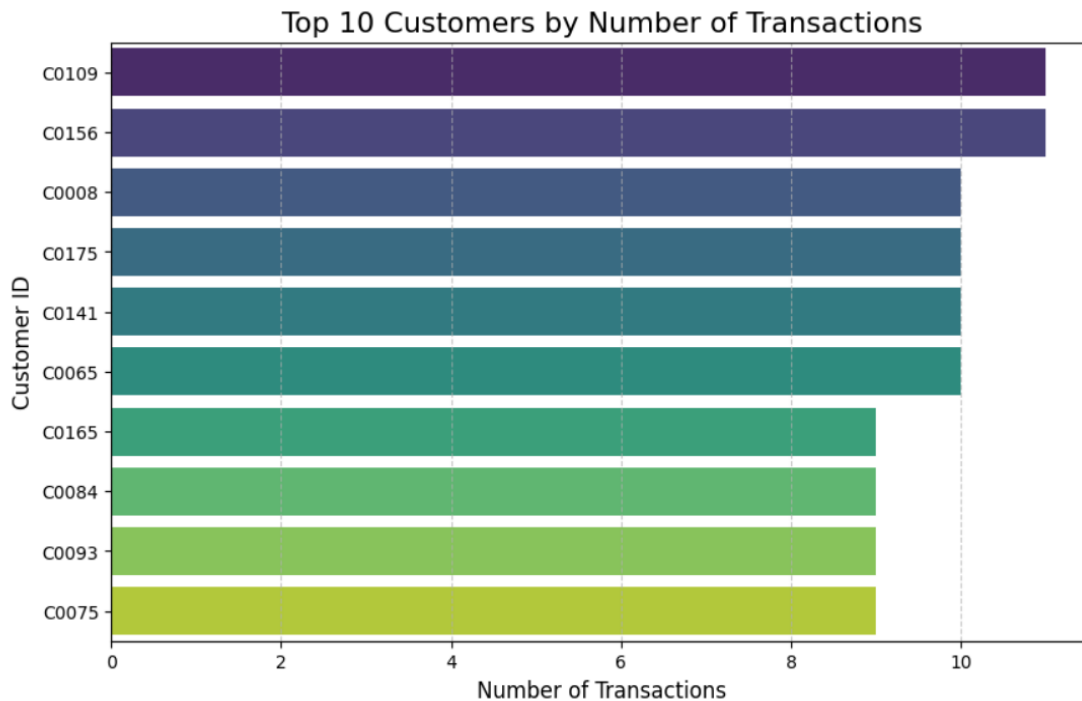
- **Top 10 Customers Analysis**: The analysis identifies the top 10 customers based on the number of transactions, showcasing the most engaged and frequent buyers.

- **Visualization**: A horizontal bar plot highlights the transaction counts for these customers, providing a clear comparison. Gridlines improve readability, and the color scheme adds visual appeal.

- **Business Implications**: Recognizing top customers enables businesses to strengthen relationships with loyal buyers through personalized offers, exclusive discounts, or rewards programs to encourage continued engagement.

➢ **Business Insights 5: Monthly Sales Trends**

Monthly Revenue Trends
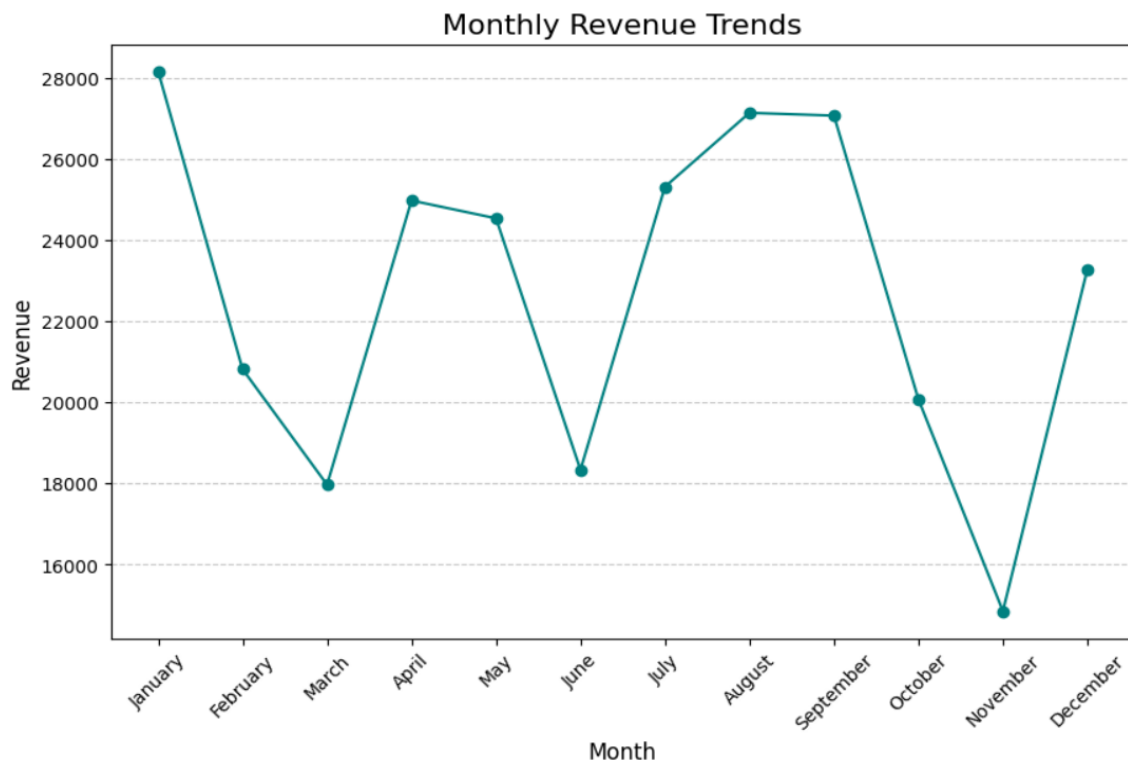
- **Monthly Revenue Analysis**: The analysis examines total revenue generated each month, highlighting periods of high and low sales activity throughout the year.

- **Visualization**: A line plot with markers shows monthly revenue trends, making it easy to track fluctuations. Rotated month labels and gridlines enhance readability and provide better clarity.

- **Strategic Insights**: Identifying peak sales months helps businesses optimize inventory, marketing campaigns, and promotions. Low-revenue months may require targeted efforts to improve sales performance.