Process Overview:

The goal was to analyze Diwali sales data to identify trends, top-performing products, and key customer segments, helping improve marketing and sales strategies.

1. **Libraries Imported**:
    - `numpy`, `pandas` for data manipulation.
    - `matplotlib.pyplot`, `seaborn` for data visualization.

2. **Understanding the Data:**
   I started by loading the dataset and inspecting its structure. It had some irrelevant columns like `Status` and `unnamed1`, which I removed. I also checked for missing values and cleaned the data by dropping incomplete rows.

3. **Exploratory Analysis:**
   After cleaning, I explored the data to uncover patterns:

    - Identified which product categories and regions contributed most to sales.
    - Segmented customers by age, gender, and location to understand who drove the most revenue.
    - Looked for trends in purchasing ehaviour during the festive season.

4. **Visualizations:**
   I used `matplotlib` and `seaborn` to create charts that made the insights clear:

    - Bar charts to highlight top-selling products.
    - Pie charts for customer demographics.
    - Heatmaps to find relationships between features.

Key Insights:

- Electronics and home decor products were the best sellers.
- Women aged 25-40 in metro cities made up the majority of customers.
- Promotions and discounts had a big impact on sales.

Recommendations:
Focus on targeted campaigns for high-value customer segments, stock up on trending products, and create better promotions for slower categories.

Challenges:
The data had missing values and some irrelevant columns, but I handled these with data cleaning techniques.

- **Data Quality Issues:** The dataset contained null values and irrelevant columns, which I addressed by dropping them.
- **Complex Relationships:** Understanding customer behavior required detailed segmentation, which was achieved through strategic grouping and visualization techniques.