EDS MINI PROJECT

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INTRODUCTION:

In this analysis, we delve into an e-commerce company's sales data to gain valuable insights. Using Python libraries like NumPy, pandas, and matplotlib.pyplot, we perform data manipulation and visualization tasks.

MOTIVATION:

- This project aims to utilize Python and its libraries to uncover hidden insights and patterns in the e-commerce company's sales data.
- By analyzing the dataset, the project aims to understand product performance, identify trends, and make data-driven predictions, enabling informed business decisions and improved competitiveness.

DATASET:

	A	B	C	D	E
1	Product ID	Category	Sales Quar	Price	
2	1	Electronics	10	500	
3	2	Clothing	20	1000	
4	3	Electronics	15	800	
5	4	Clothing	30	1200	
6	5	Electronics	12	700	
7	6	Furniture	8	1500	
8	7	Clothing	25	900	
9	8	Electronics	18	600	
10	9	Furniture	10	2000	
11	10	Clothing	35	1100	
12					

DETAILS OF DATASET:

The dataset consists of 10 records representing individual products, with information on product ID, category, sales quantity, and price. By analyzing sales trends, category-wise sales, and price distribution, we extract valuable insights to inform data-driven decision-making for the company.

DATA MANIPULATION:

We utilize Python libraries like NumPy and pandas to perform various data manipulation tasks.

These include:

- calculating the total sales quantity

total_sales_quantity = df['Sales Quantity'].sum()

- finding the average price

average_price = df['Price'].mean()

- identifying the maximum sales quantity

max_sales_quantity = df['Sales Quantity'].max()

- determining the number of products in specific categories

electronics_products = df[df['Category'] == 'Electronics']

- num_electronics_products = len(electronics_products

```
plt.bar(df['Product ID'], df['Sales Quantity'])
plt.xlabel('Product ID')
plt.ylabel('Sales Quantity')
plt.title('Sales Quantity per Product')
```

```
plt.plot(df['Time'], df['Sales Quantity'])
plt.xlabel('Time')
plt.xticks(rotation=45)
plt.ylabel('Sales Quantity')
plt.title('Sales Quantity Trend over Time')
```

```
# to add time column
df['Time'] = pd.date_range(start='2023-01-01',
        periods=len(df), freq='D')
```

```
category_counts = df['Category'].value_counts()
plt.pie(category_counts,
labels=category_counts.index, autopct='%1.1f%%')
plt.title('Product Distribution by Category')
```

```
category_counts = df['Category'].value_counts()
plt.pie(category_counts, labels=category_counts.index,
        autopct='%1.1f%%')
plt.title('Product Distribution by Category')
```

Library Used to Plot Graph - MATPLOTLIB

• The library commonly used to plot graphs in Python is called Matplotlib. Matplotlib is a popular data visualization library that provides a wide range of functionalities for creating various types of plots, charts, and graphs.

• Matplotlib provides many customization options and supports various types of plots such as scatter plots, bar plots, histograms, etc.

• You can customize every aspect of your plot, including colors, line styles, markers , labels, titles, axes and legends

DATA VISUALISATION:

- To enhance the understanding of the sales data, we utilize the matplotlib.pyplot library to create visually appealing graphs and charts.
- These include bar charts depicting sales quantity per product, line graphs showcasing sales quantity trends over time
- pie charts illustrating the percentage distribution of products in each category
- Histograms displaying the price distribution of the products.

```
total_sales_quantity = df['Sales Quantity'].sum()
print("Total sales quantity:", total_sales_quantity)
```


```
total_sales_quantity = df['Sales Quantity'].sum()
print("Total sales quantity:", total_sales_quantity)
```


```
max_sales_quantity = df['Sales Quantity'].max()
print("Maximum sales quantity:",
max_sales_quantity)
```

```
electronics_products = df[df['Category'] == 'Electronics']
num_electronics_products = len(electronics_products)
print("Number of products under Electronics category:",
num_electronics_products)
```

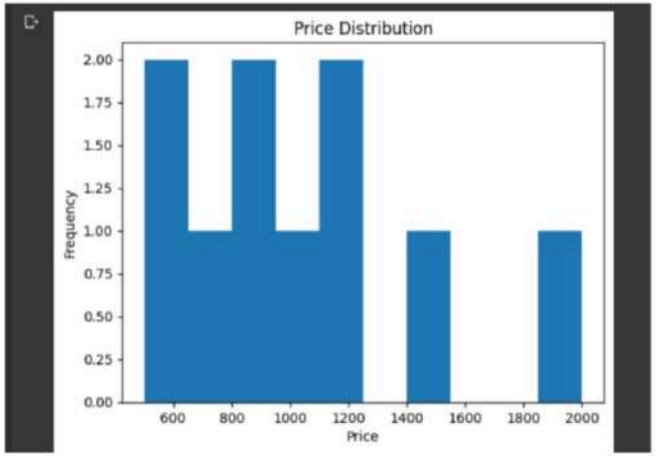
```python
# Question 5: Calculate the total sales quantity for each category
total_sales_by_category = df.groupby('Category')['Sales
Quantity'].sum()
print("Total sales quantity by category:")
print(total_sales_by_category)
```

```
Total sales quantity by category:
Category
Clothing       110
Electronics     55
Furniture       18
Name: Sales Quantity, dtype: int64
```

```python
# Question 6: Find the product(s) with the highest price
max_price = df['Price'].max()
products_with_max_price = df[df['Price'] == max_price]
print("Product(s) with the highest price:")
print(products_with_max_price)
```

```
Product(s) with the highest price:
   Product ID   Category  Sales Quantity  Price
8           9  Furniture              10   2000
```

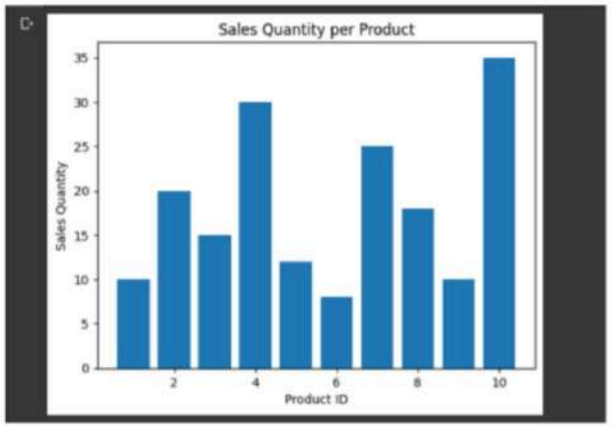
```python
# Question 10: Generate a histogram to display the price distribution
of the products
plt.hist(df['Price'], bins=10)
plt.xlabel('Price')
plt.ylabel('Frequency')
plt.title('Price Distribution')
plt.show()
```



```
# Question 7: Create a bar chart to visualize the sales quantity for
each product
plt.bar(df['Product ID'], df['Sales Quantity'])
plt.xlabel('Product ID')
```

```
plt.ylabel('Sales Quantity')
plt.title('Sales Quantity per Product')
plt.show()
```

OUTPUT:




```
df['Time'] = pd.date_range(start='2023-01-01', periods=len(df),
freq='D')


# Question 8: Plot a line graph to show the trend of sales quantity
over time
plt.plot(df['Time'], df['Sales Quantity'])
plt.xlabel('Time')
plt.xticks(rotation=45)
plt.ylabel('Sales Quantity')
plt.title('Sales Quantity Trend over Time')
plt.show()
```

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OUTPUT:

The output of this analysis will include valuable insights into sales trends, category-wise sales, and price distribution. Through data visualization and predictive techniques, we aim to provide actionable information that will aid in making informed business decisions.


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Thank You
SLIDE PRESENTATIONS DESIGN