Ex-08-Data-Visualization-

AIM

To Perform Data Visualization on a complex dataset and save the data to a file.

Explanation

Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.

ALGORITHM

STEP 1

Read the given Data

STEP 2

Clean the Data Set using Data Cleaning Process

STEP 3

Apply Feature generation and selection techniques to all the features of the data set

STEP 4

Apply data visualization techniques to identify the patterns of the data.

CODE

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```
#Reading the given dataset

import pandas as pd
df=pd.read_csv("Superstore.csv",encoding='unicode_escape')

df.head()

#Data Visualization using Seaborn

import seaborn as sns
from matplotlib import pyplot as plt
```

```
#1.Line Plot

plt.figure(figsize=(9,6))
sns.lineplot(x="Segment",y="Region",data=df,marker='o')
plt.xticks(rotation = 90)

sns.lineplot(x='Ship Mode',y='Category', hue ="Segment",data=df)

sns.lineplot(x="Category",y="Sales",data=df,marker='o')

#2.Scatterplot

sns.scatterplot(x='Category',y='Sub-Category',data=df)

sns.scatterplot(x='Category', y='Sub-Category', hue ="Segment",data=df)

plt.figure(figsize=(10,7))
sns.scatterplot(x="Region",y="Sales",data=df)
plt.xticks(rotation = 90)

#3.Boxplot

sns.boxplot(x="Sub-Category",y="Discount",data=df)

sns.boxplot( x="Profit", y="Category",data=df)

#4.Violin Plot

sns.violinplot(x="Profit",data=df)

#5.Barplot

sns.barplot(x="Sub-Category",y="Sales",data=df)
plt.xticks(rotation = 90)

sns.barplot(x="Category",y="Sales",data=df)
plt.xticks(rotation = 90)

#6.Pointplot

sns.pointplot(x=df["Quantity"],y=df["Discount"])

#7.Count plot

sns.countplot(x="Category",data=df)

sns.countplot(x="Sub-Category",data=df)

#8.Histogram

sns.histplot(data=df,x ='Ship Mode',hue='Sub-Category')
```

```
#9.KDE Plot

sns.kdeplot(x="Profit", data = df,hue='Category')

#Data Visualization Using MatPlotlib

#1.Plot

plt.plot(df['Category'], df['Sales'])
plt.show()

#2.Heatmap

df.corr()
plt.subplots(figsize=(12,7))
sns.heatmap(df.corr(),annot=True)

#3.Piechart

df1=df.groupby(by=["Ship Mode"]).sum()
labels=[]
for i in df1.index:
    labels.append(i)
colors=sns.color_palette("bright")
plt.pie(df1["Sales"],labels=labels,autopct="%0.0f%%")
plt.show()

df3=df.groupby(by=["Category"]).sum()
labels=[]
for i in df3.index:
    labels.append(i)
plt.figure(figsize=(8,8))
colors = sns.color_palette('pastel')
plt.pie(df3["Profit"],colors = colors,labels=labels, autopct = '%0.0f%%')
plt.show()

#4.Histogram

plt.hist(df["Sub-Category"],facecolor="peru",edgecolor="blue",bins=10)
plt.show()

#5.Bargraph

plt.bar(df.index,df['Category'])
plt.show()

#6.Scatterplot

plt.scatter(df["Region"],df["Profit"], c ="blue")
plt.show()

#7.Boxplot
```

```
plt.boxplot(x="Sales",data=df)
plt.show()
```

OUPUT

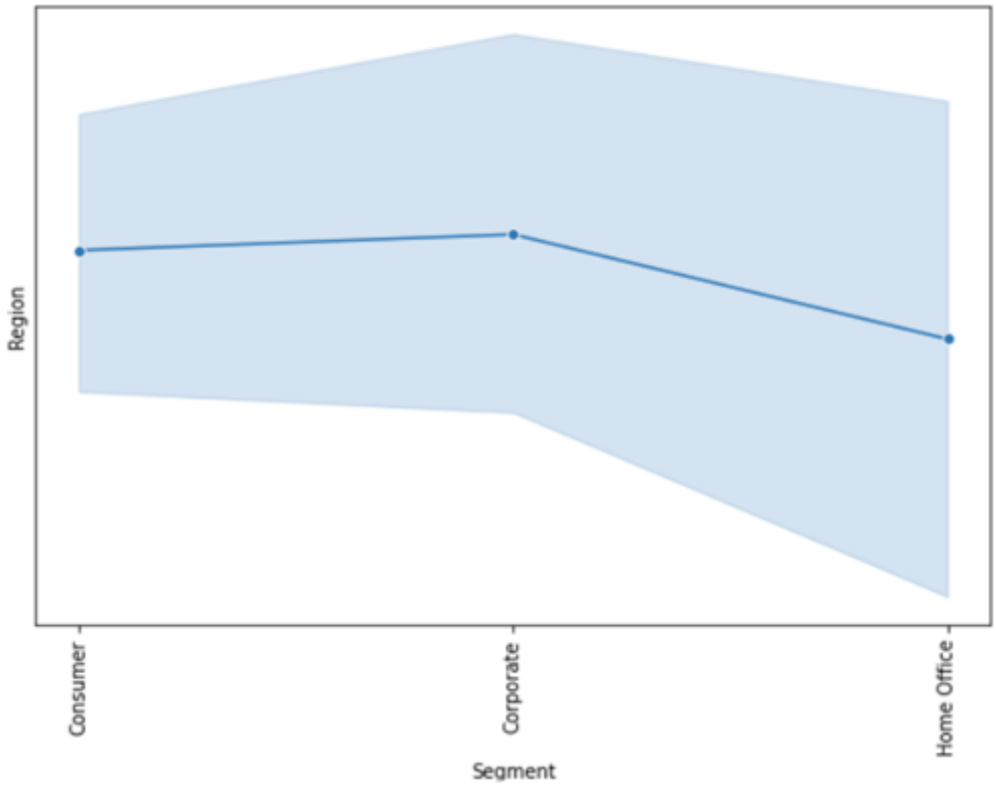
Reading the given dataset

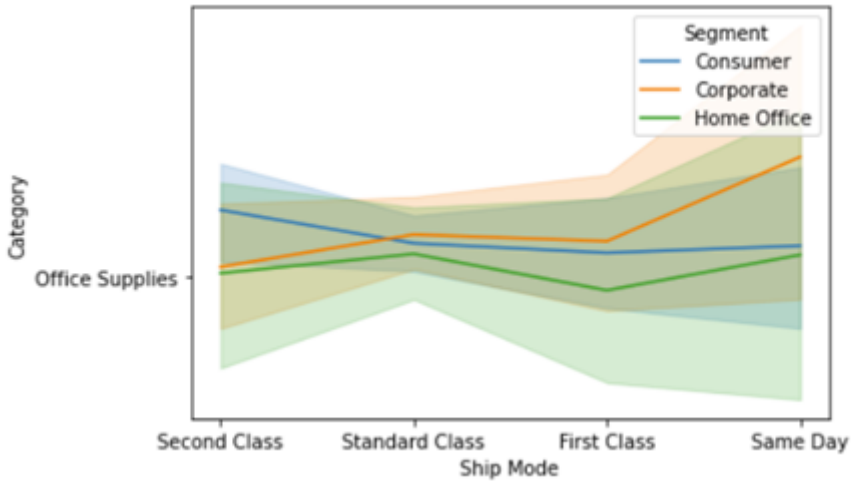
	Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Country	City	...	Postal Code	Region	Product ID	Category	Sub-Category
0	1	CA-2016-152156	11/8/2016	11/11/2016	Second Class	CG-12520	Claire Gute	Consumer	United States	Henderson	...	42420	South	FUR-BO-10001798	Furniture	Bookcases
1	2	CA-2016-152156	11/8/2016	11/11/2016	Second Class	CG-12520	Claire Gute	Consumer	United States	Henderson	...	42420	South	FUR-CH-10000454	Furniture	Chairs
2	3	CA-2016-138688	6/12/2016	6/16/2016	Second Class	DV-13045	Darrin Van Huff	Corporate	United States	Los Angeles	...	90036	West	OFF-LA-10000240	Office Supplies	Labels
3	4	US-2015-108966	10/11/2015	10/18/2015	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States	Fort Lauderdale	...	33311	South	FUR-TA-10000577	Furniture	Tables
4	5	US-2015-108966	10/11/2015	10/18/2015	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States	Fort Lauderdale	...	33311	South	OFF-ST-10000760	Office Supplies	Storage

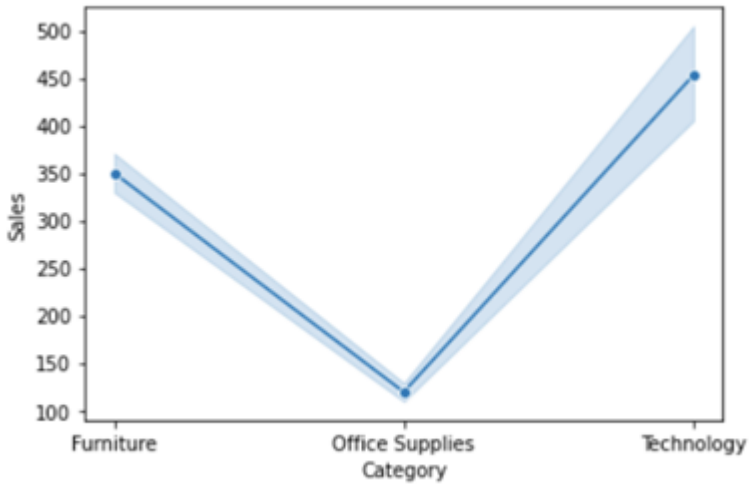
5 rows × 21 columns

Data Visualization Using Seaborn

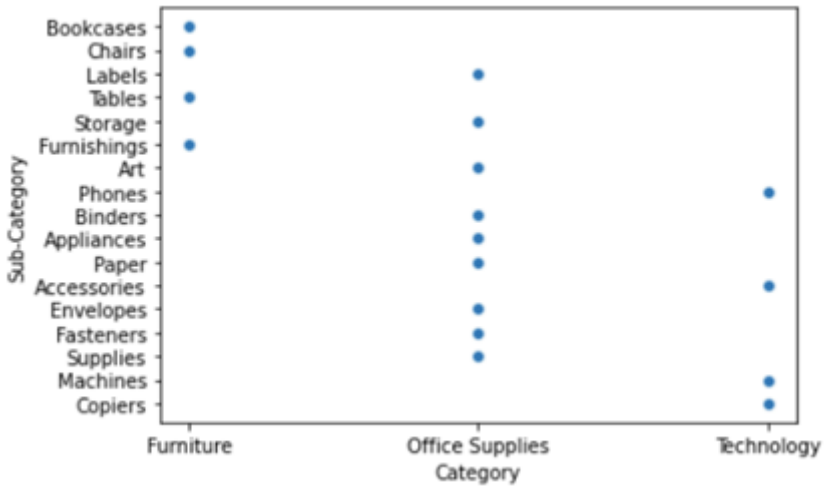
1.Line Plot

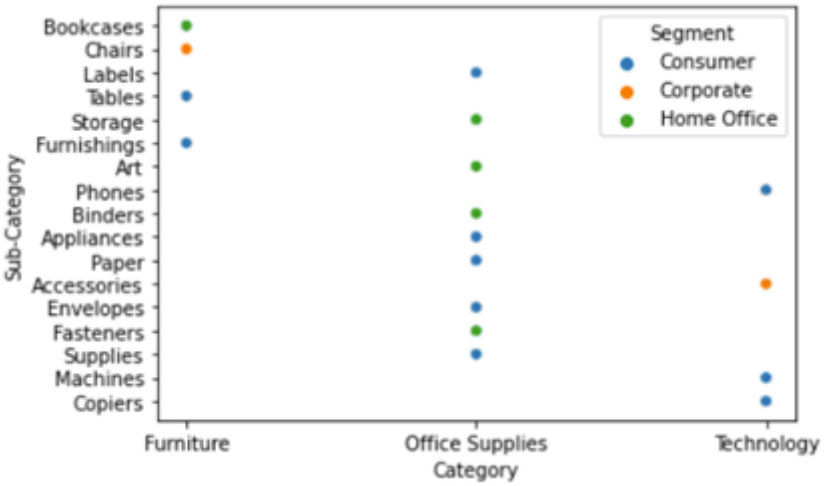


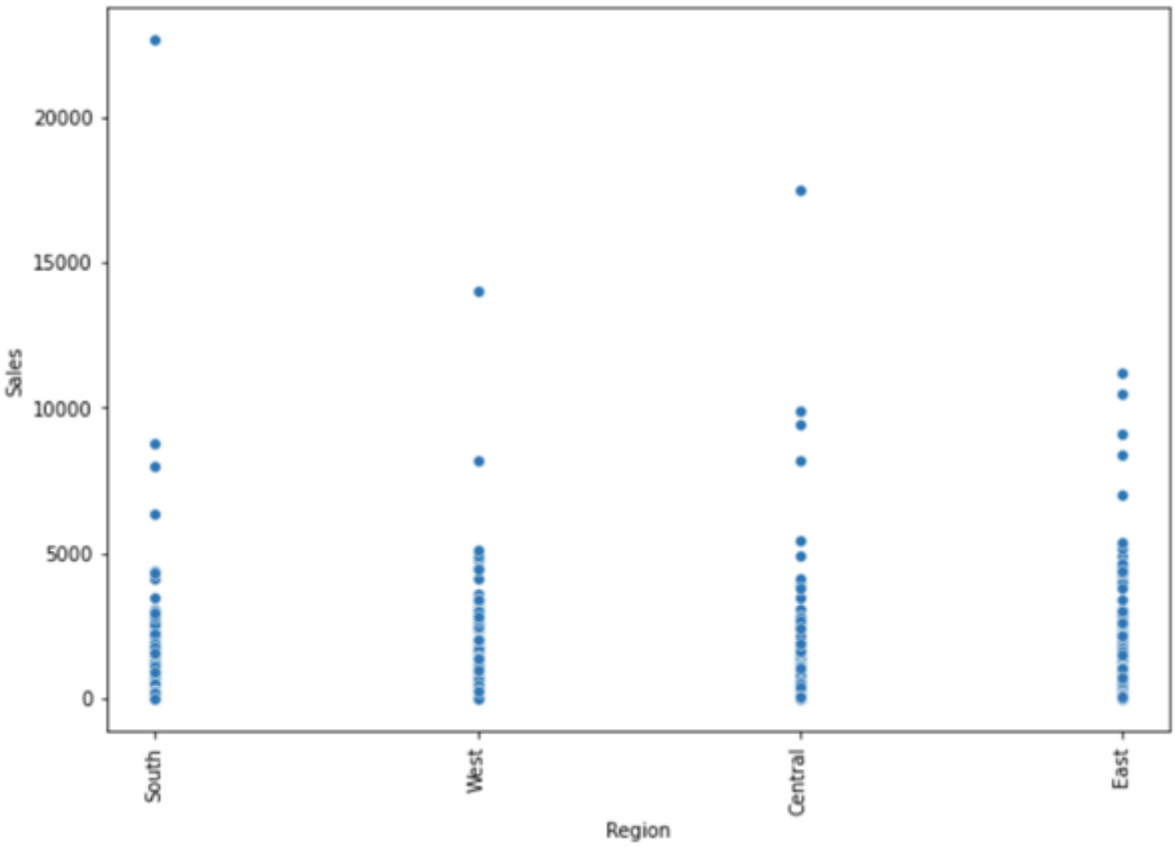




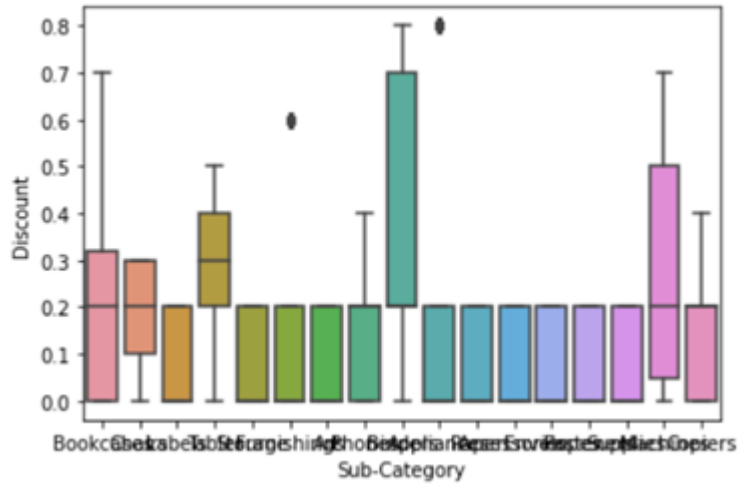
2.Scatterplot

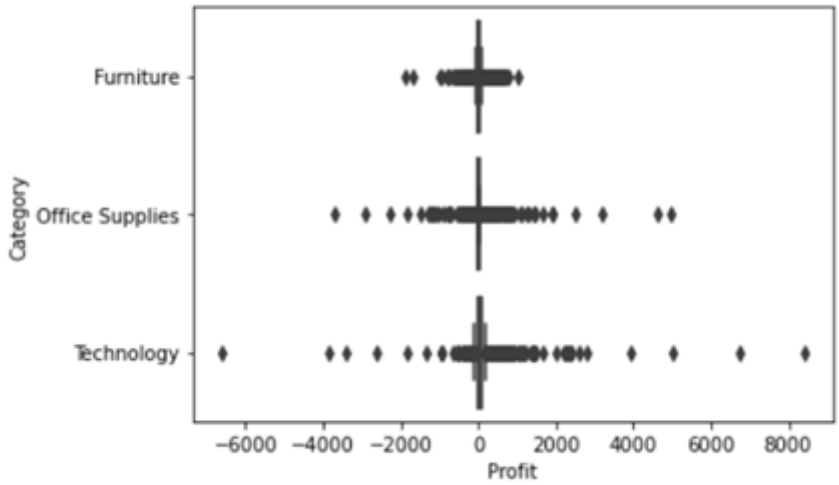

Bookcases
Chairs
Labels
Tables
Storage
Furnishings
Art
Phones
Binders
Appliances
Paper
Accessories
Envelopes
Fasteners
Supplies
Machines
Copiers
Sub-Category
Furniture
Office Supplies
Technology
Category


Segment
Consumer
Corporate
Home Office
Bookcases
Chairs
Labels
Tables
Storage
Furnishings
Art
Phones
Binders
Appliances
Paper
Accessories
Envelopes
Fasteners
Supplies
Machines
Copiers
Sub-Category
Furniture
Office Supplies
Technology
Category

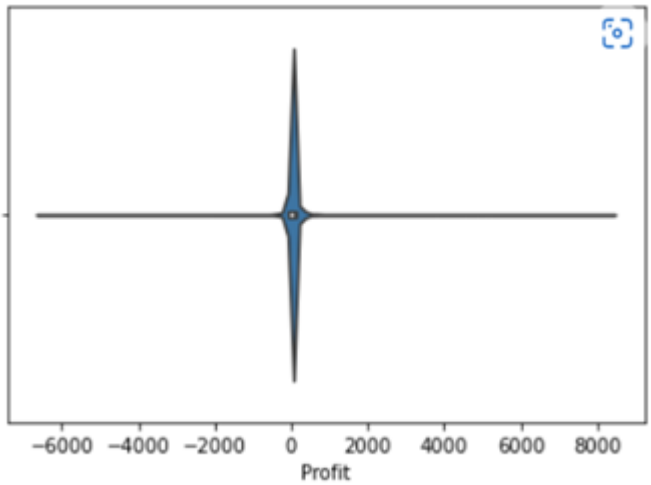

20000
15000
10000
5000
0
Sales
South
West
Central
East
Region

3.Boxplot



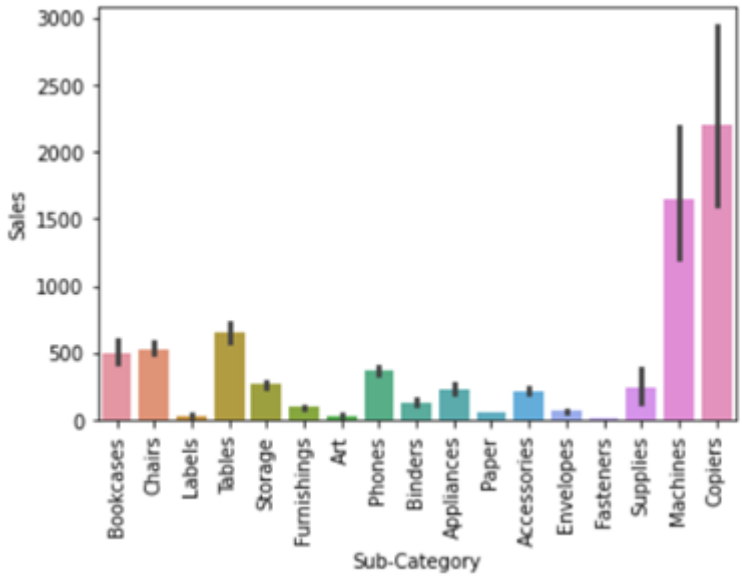


4.Violin Plot

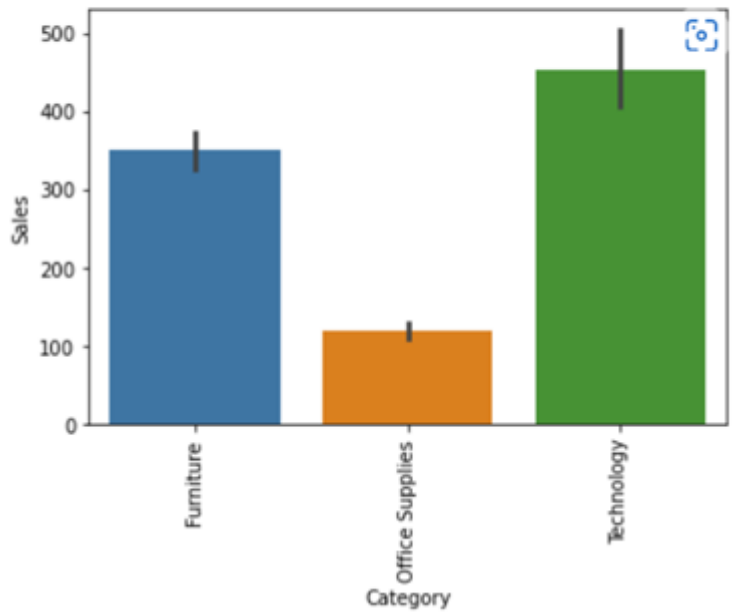


5.Barplot

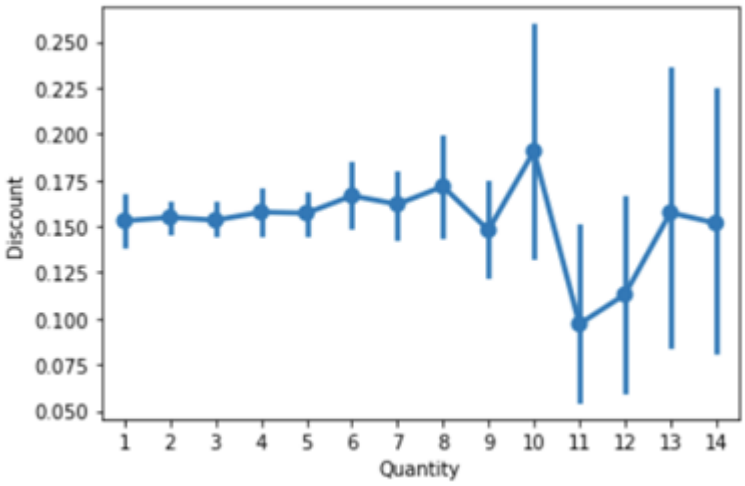
```
(array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16]),
 [Text(0, 0, 'Bookcases'),
  Text(1, 0, 'Chairs'),
  Text(2, 0, 'Labels'),
  Text(3, 0, 'Tables'),
  Text(4, 0, 'Storage'),
  Text(5, 0, 'Furnishings'),
  Text(6, 0, 'Art'),
  Text(7, 0, 'Phones'),
  Text(8, 0, 'Binders'),
  Text(9, 0, 'Appliances'),
  Text(10, 0, 'Paper'),
  Text(11, 0, 'Accessories'),
  Text(12, 0, 'Envelopes'),
  Text(13, 0, 'Fasteners'),
  Text(14, 0, 'Supplies'),
  Text(15, 0, 'Machines'),
  Text(16, 0, 'Copiers')])
```



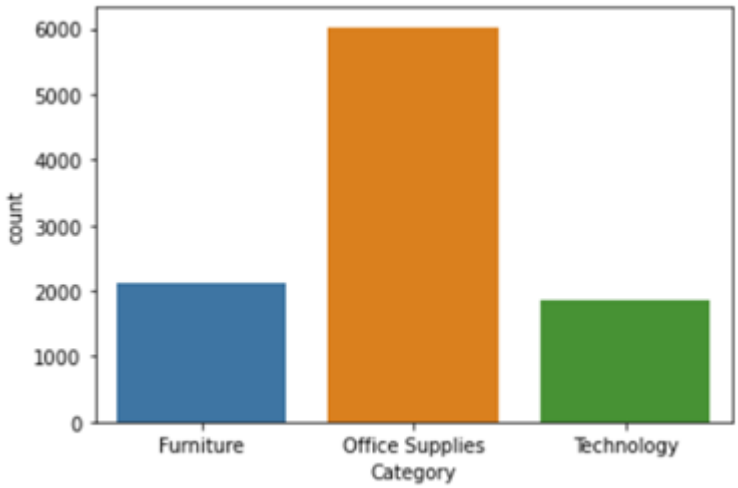

```
(array([0, 1, 2]),
 [Text(0, 0, 'Furniture'),
  Text(1, 0, 'Office Supplies'),
  Text(2, 0, 'Technology')])
```

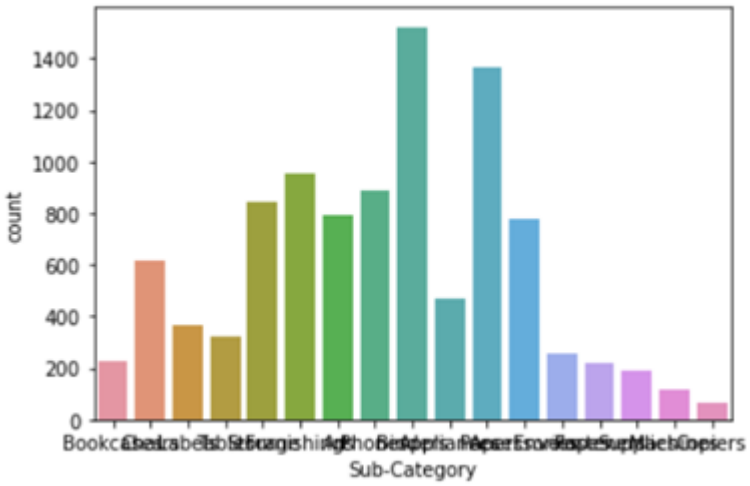


6.Pointplot

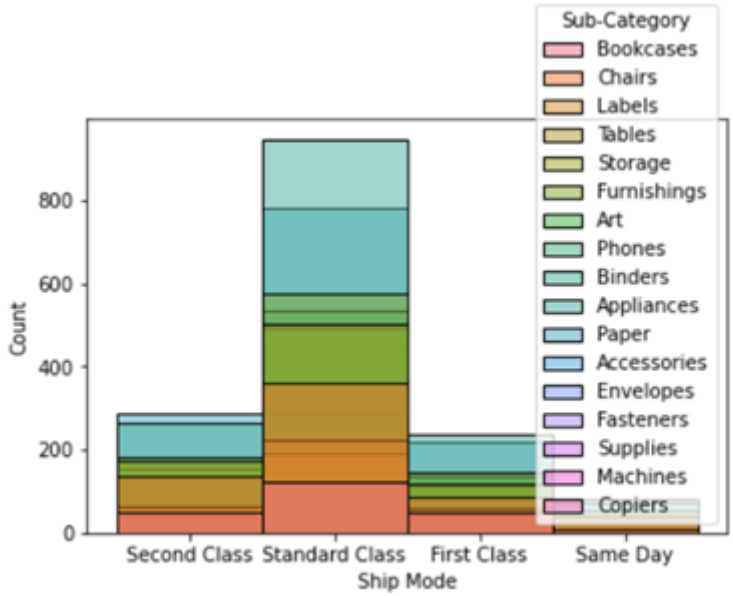


7.Count plot

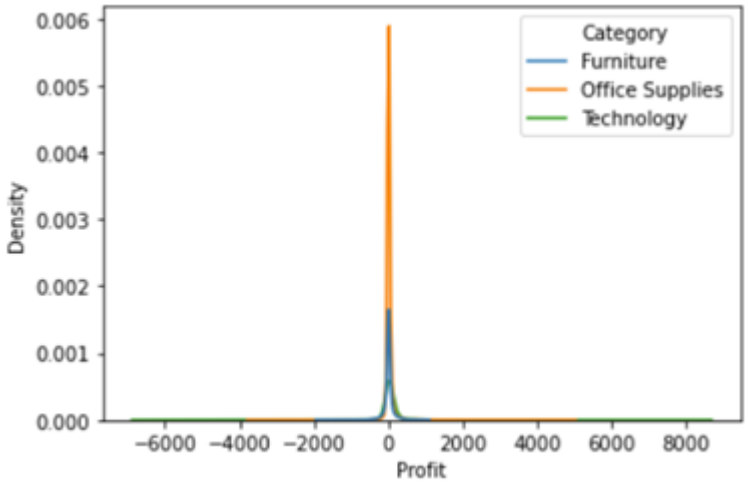




8.Histogram

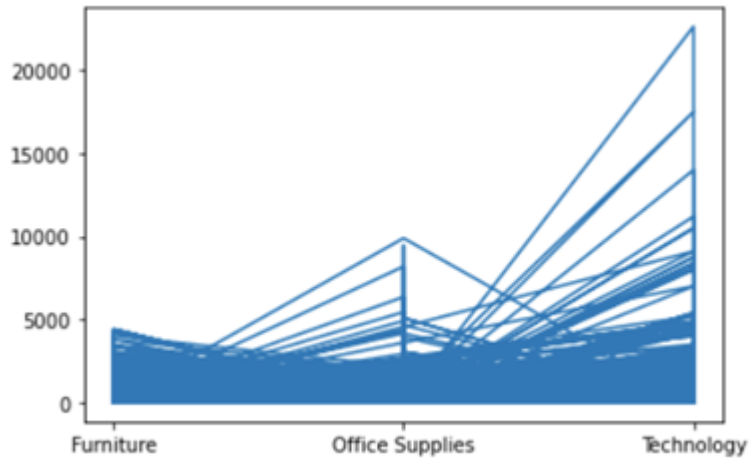


9.KDE Plot

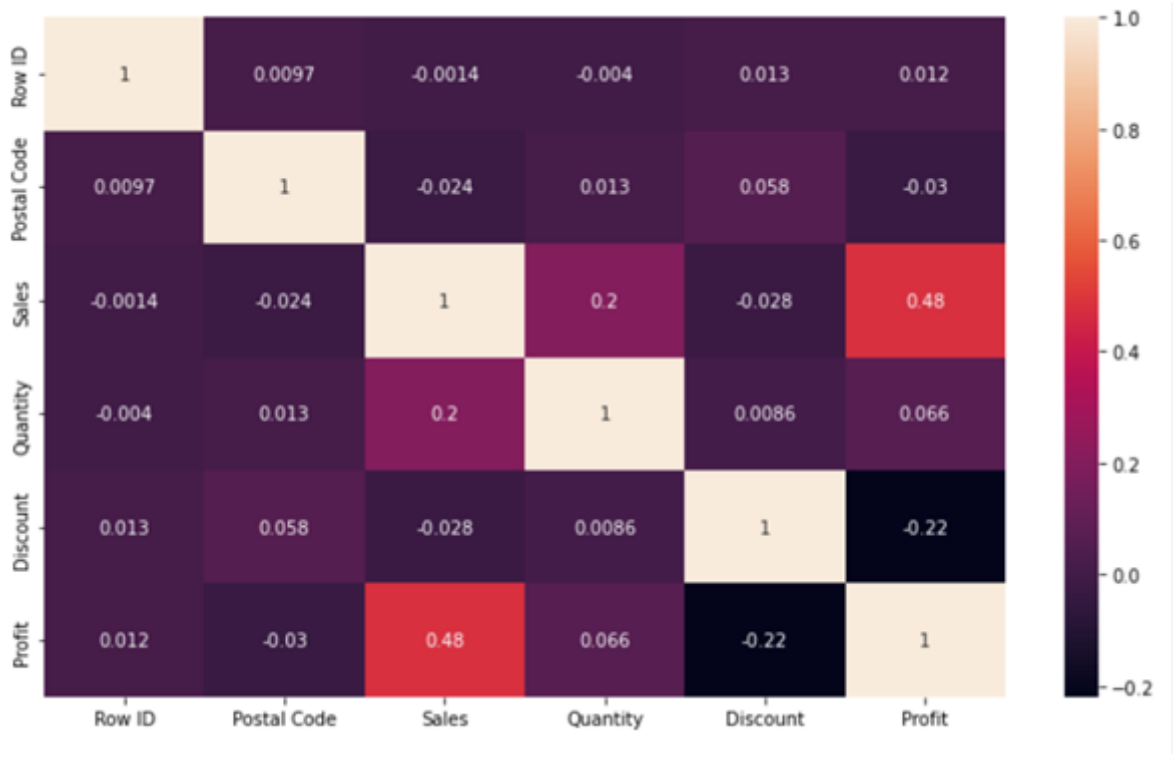


Data Visualization Using Matplotlib:

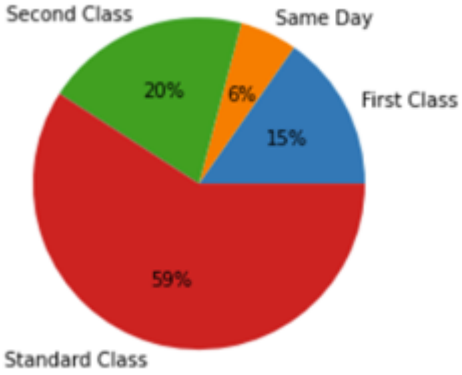
1.Plot

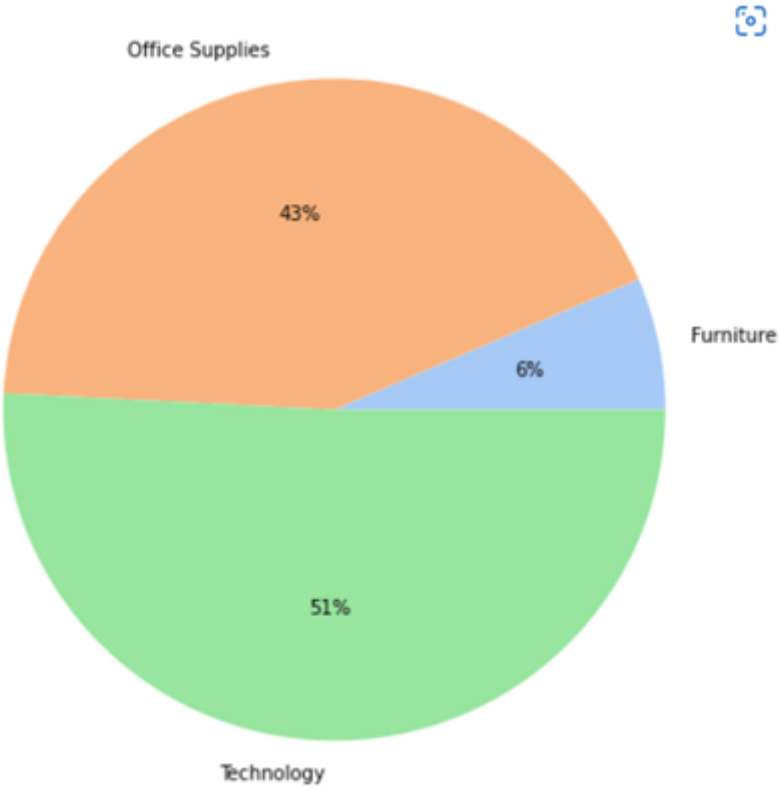


2.Heatmap

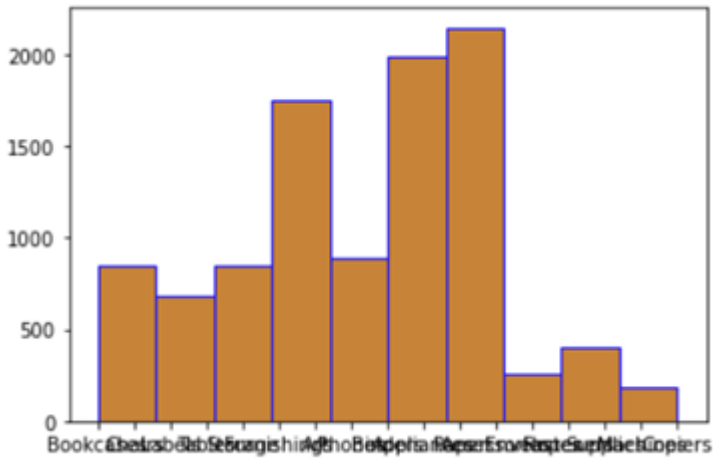


3.Piechart

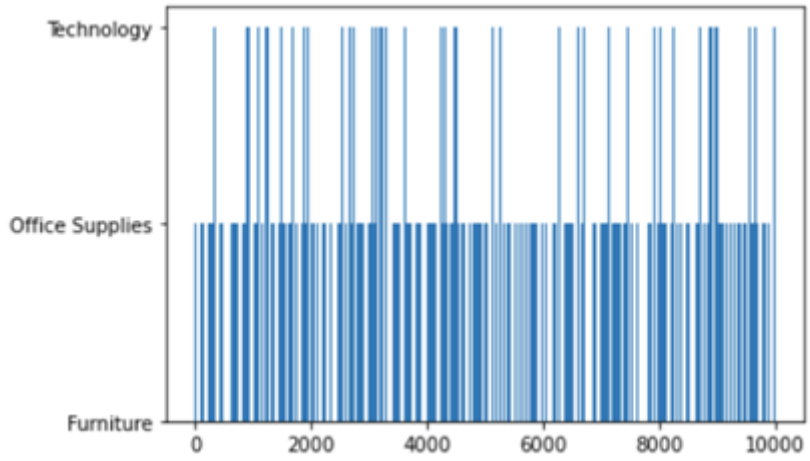




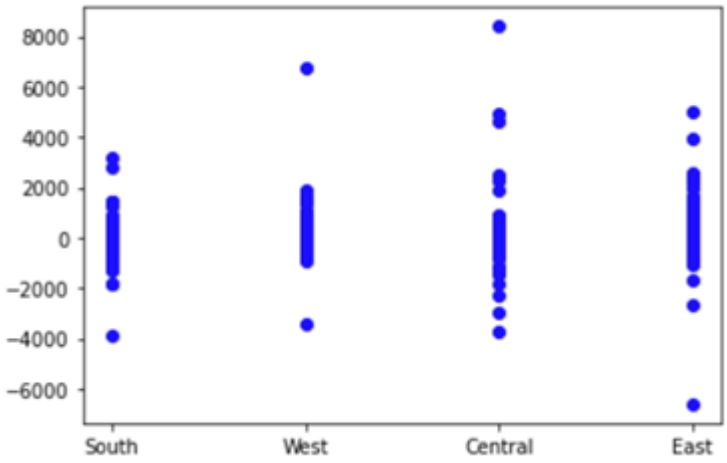
4.Histogram



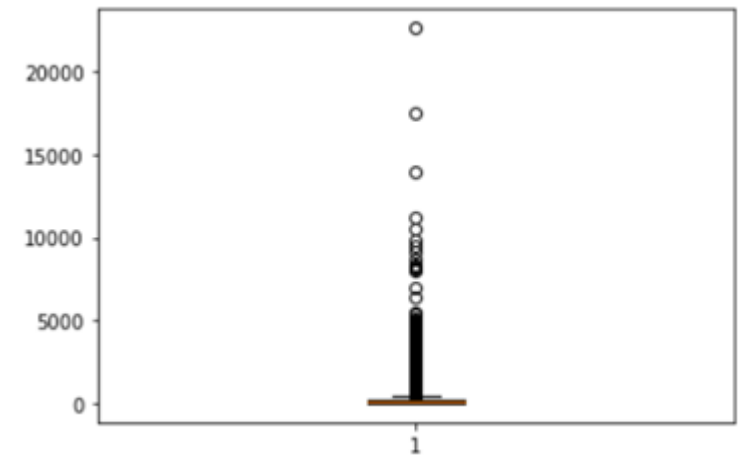
5.Bargraph



6.Scatterplot



7.Boxplot



RESULT:

Hence, Data Visualization is applied on the complex dataset using libraries like Seaborn and Matplotlib successfully and the data is saved to file.