#### Ex-08-Data-Visualization-

### , AIM

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

### <sup>'</sup> 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.

#### <sup>'</sup>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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Developed by:kiruthiga M
Reg no:212219040061

#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

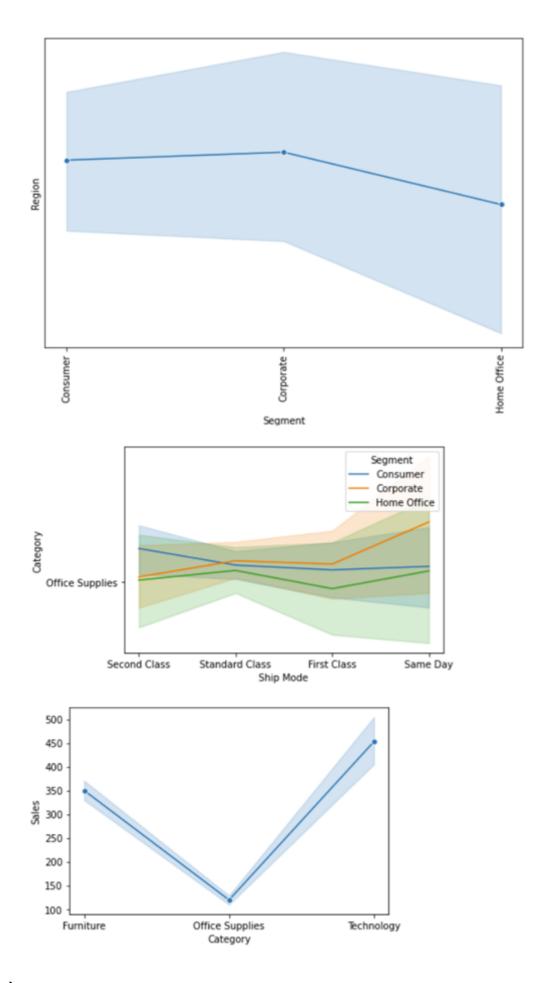
# Reading the given dataset

	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		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

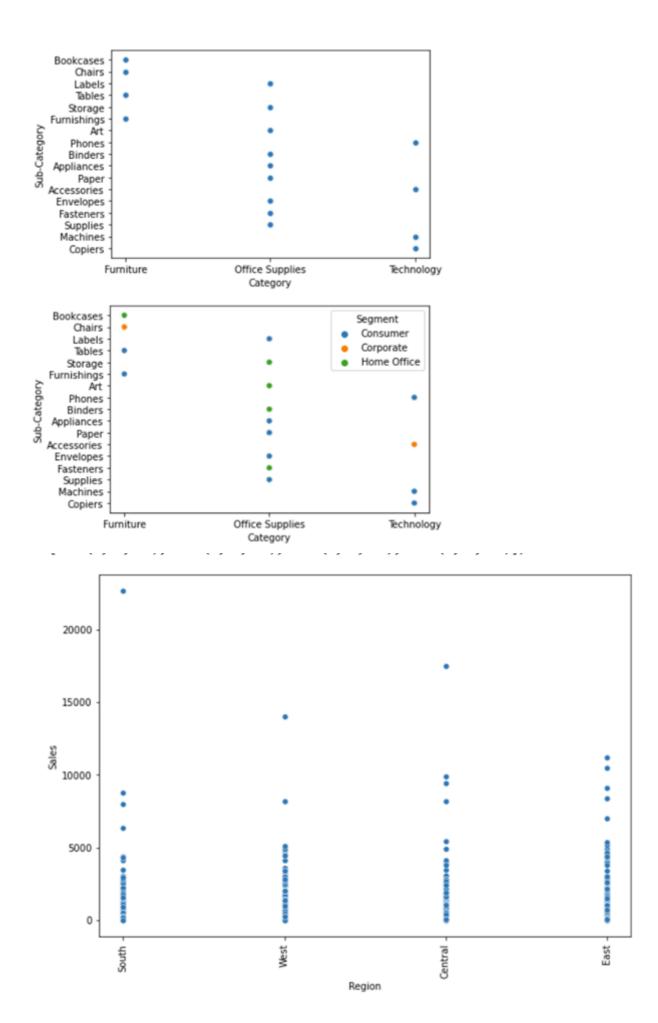
5 rows × 21 columns

### **Data Visualization Using Seaborn**

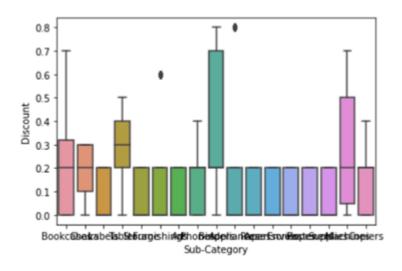
<sup>¹</sup>1.Line Plot

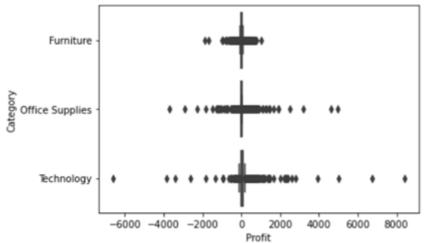


<sup>2</sup>.Scatterplot

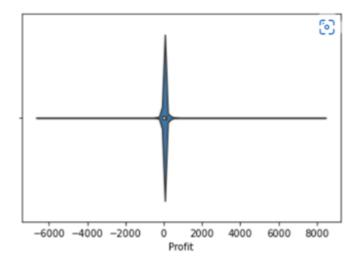


3.Boxplot





## <sup>'</sup>4.Violin Plot

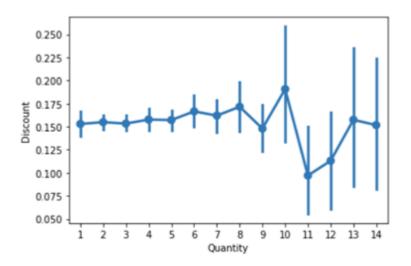


## 5.Barplot

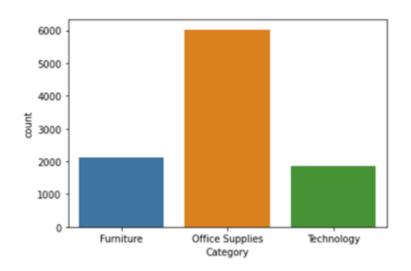
```
(array([ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16]),
 [Text(0, 0, 'Bookcases'),
  Text(1, 0, 'Chairs'),
  Text(2, 0, 'Labels'),
  Text(3, 0, 'Tables'),
  Text(4, 0, 'Storage'),
  Text(5, 0, 'Furnishings'),
  Text(6, 0, 'Art'),
Text(7, 0, 'Phones'),
  Text(8, 0, 'Binders'),
  Text(9, 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')])
   3000
   2500
   2000
등
1500
   1000
    500
                                 Phones
                                    Binders
                                                     Fasteners
                Labels
                   Tables
                             ΑĦ
                                           Paper
                                                         Supplies
                                                            Machines
                          Furnishings
                                              Accessories
                                                  Envelopes
                                Sub-Category
(array([0, 1, 2]),
[Text(0, 0, 'Furniture'),
  Text(1, 0, 'Office Supplies'),
  Text(2, 0, 'Technology')])
                                                              (e)
   500
   400
   300
   200
   100
      0
                                    Office Supplies
                                                       Fechnology
                Furmiture
```

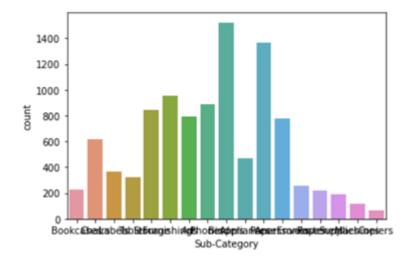
Category

### 6.Pointplot

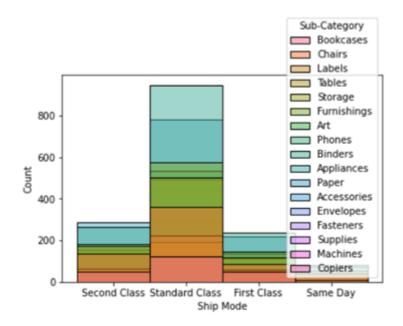


# <sup>'</sup>7.Count plot

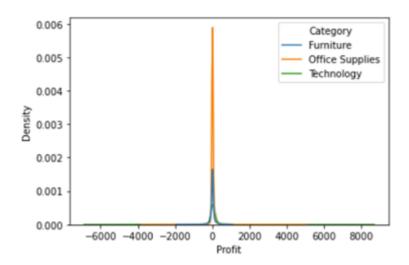




## 8.Histogram

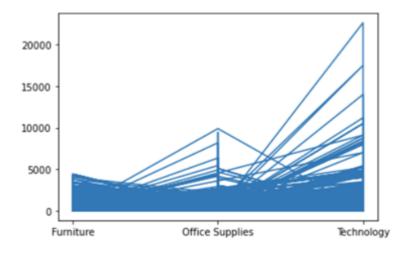


## 9.KDE Plot



## Data Visualization Using Matplotlib:

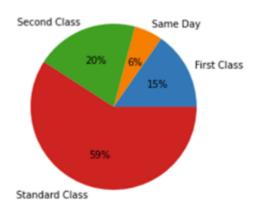
## <sup>¹</sup>1.Plot

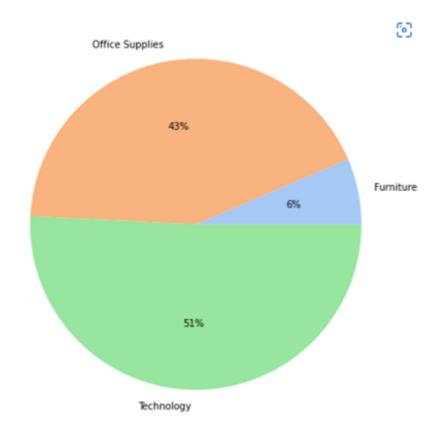


# <sup>2</sup>.Heatmap

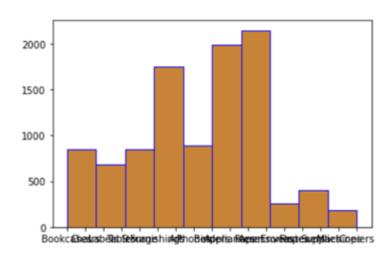


<sup>3</sup>.Piechart

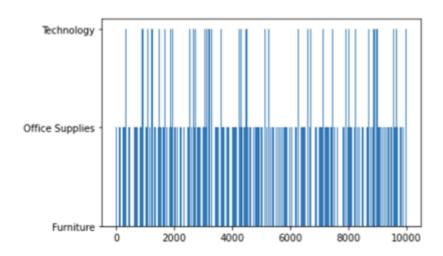




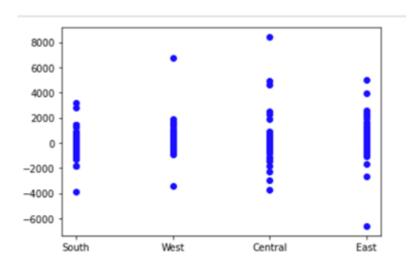
# <sup>2</sup>4.Histogram



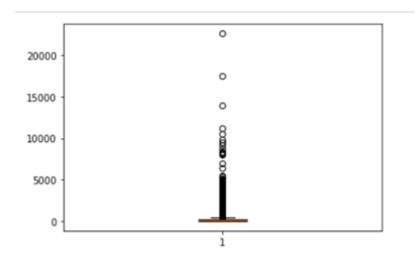
<sup>°</sup>5.Bargraph



# 6.Scatterplot



# <sup>'</sup>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.