

EXPT NO: 7	EXPERIMENT: DATA VISUALIZATION USING TABLEAU

AIM

To perform data visualization using **Tableau** by connecting to data sources, creating visualizations (bar charts, line charts, pie charts), calculated fields, and building dashboards and stories.

ALGORITHM

1. **Open Tableau Desktop** and familiarize yourself with the **Tableau Interface**.
2. **Connect to data sources** (Excel, CSV, SQL, etc.) using *Connect Pane*.
3. **Load dataset** into Tableau workspace.
4. **Data Preparation:**
 - Rename fields, filter unwanted rows.
 - Create **Calculated Fields**.
 - Example:
 - $\text{Profit} = [\text{Revenue}] - [\text{Cost}]$
5. **Create Visualizations:**
 - Bar Chart (Sales by Category)
 - Line Chart (Sales Trend by Month)
 - Pie Chart (Market Share by Region)
6. **Build Dashboards:**
 - Go to *Dashboard* → *New Dashboard*
 - Drag required sheets into dashboard canvas.
 - Add filters, legends, and interactive controls.
7. **Build Stories** (Optional): Combine dashboards into *Stories* for presentations.

CODE / IMPLEMENTATION

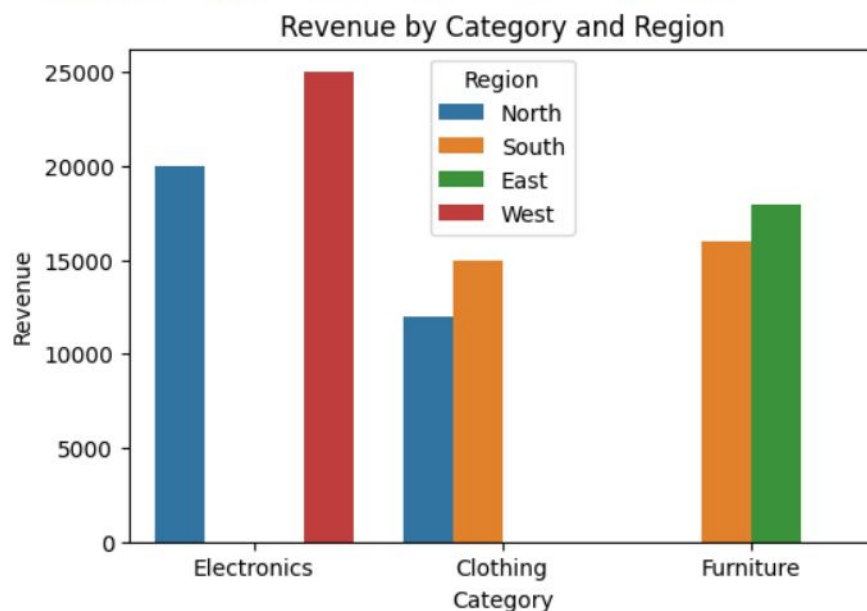
```
# -----  
# EXPERIMENT 7: DATA VISUALIZATION USING TABLEAU (Simulation in Python)  
# -----  
  
import pandas as pd  
import matplotlib.pyplot as plt  
import seaborn as sns  
import plotly.express as px  
  
# Step 1: Load Data (Simulating Excel/CSV/SQL connection)  
data = pd.DataFrame({  
    "Category": ["Electronics", "Clothing", "Furniture", "Electronics",  
"Clothing", "Furniture"],  
    "Region": ["North", "South", "East", "West", "North", "South"],  
    "Revenue": [20000, 15000, 18000, 25000, 12000, 16000],  
    "Cost": [12000, 7000, 9000, 14000, 6000, 8000],  
    "Discount": [5, 10, 7, 6, 8, 9]  
})  
  
# Step 2: Create Calculated Fields (like Tableau Calculated Fields)  
data["Profit"] = data["Revenue"] - data["Cost"]  
data["Profit Ratio"] = data["Profit"] / data["Revenue"]  
  
print("=== Tableau Simulation Results ===")  
print(data[["Category", "Region", "Revenue", "Cost", "Profit", "Profit  
Ratio"]])  
  
# Step 3: Create Visualizations  
# Bar Chart - Sales by Category  
plt.figure(figsize=(6,4))  
sns.barplot(x="Category", y="Revenue", data=data, estimator=sum, hue="Region")  
plt.title("Revenue by Category and Region")  
plt.show()  
  
# Line Chart - Sales Trend  
plt.figure(figsize=(6,4))  
sns.lineplot(x=data.index, y="Revenue", data=data, marker="o")  
plt.title("Sales Trend Over Transactions")  
plt.show()  
  
# Pie Chart - Regional Distribution  
region_share = data.groupby("Region")["Revenue"].sum()  
plt.figure(figsize=(6,6))  
plt.pie(region_share, labels=region_share.index, autopct="%1.1f%%")  
plt.title("Regional Revenue Distribution")  
plt.show()
```

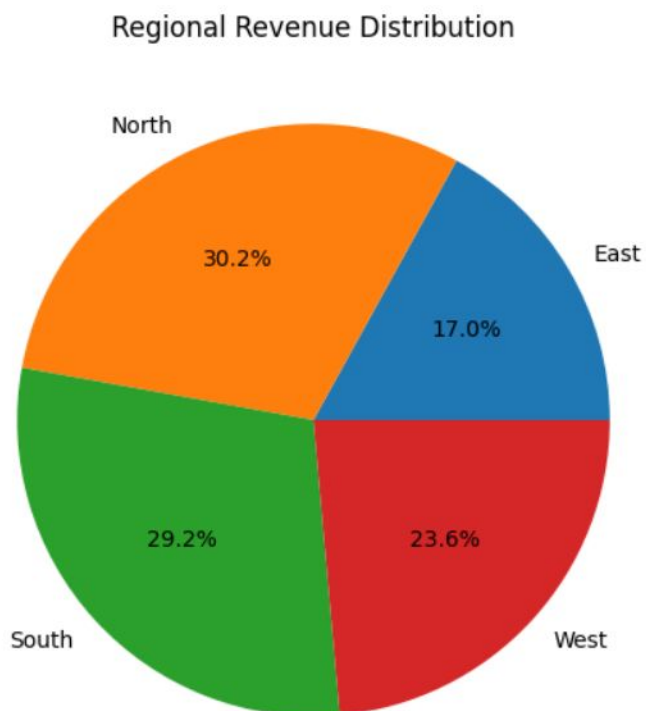
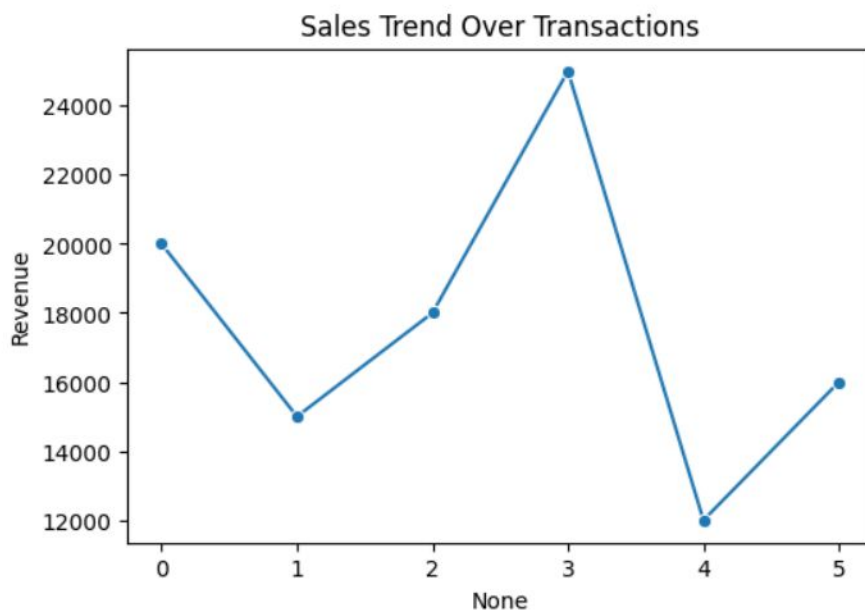
```
# Step 4: Interactive Dashboard (Plotly like Tableau Dashboards/Stories)
fig1 = px.bar(data, x="Category", y="Revenue", color="Region", title="Revenue
by Category and Region")
fig2 = px.line(data, x=data.index, y="Revenue", markers=True, title="Sales
Trend")
fig3 = px.pie(data, values="Revenue", names="Region", title="Revenue by
Region")

fig1.show()
fig2.show()
fig3.show()
```

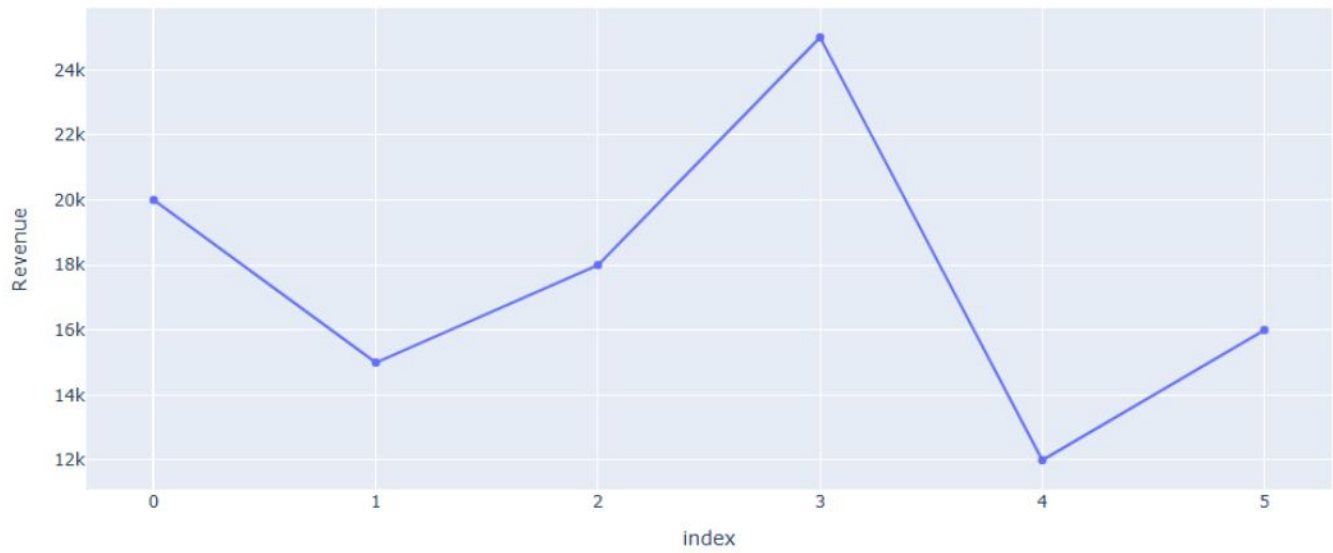
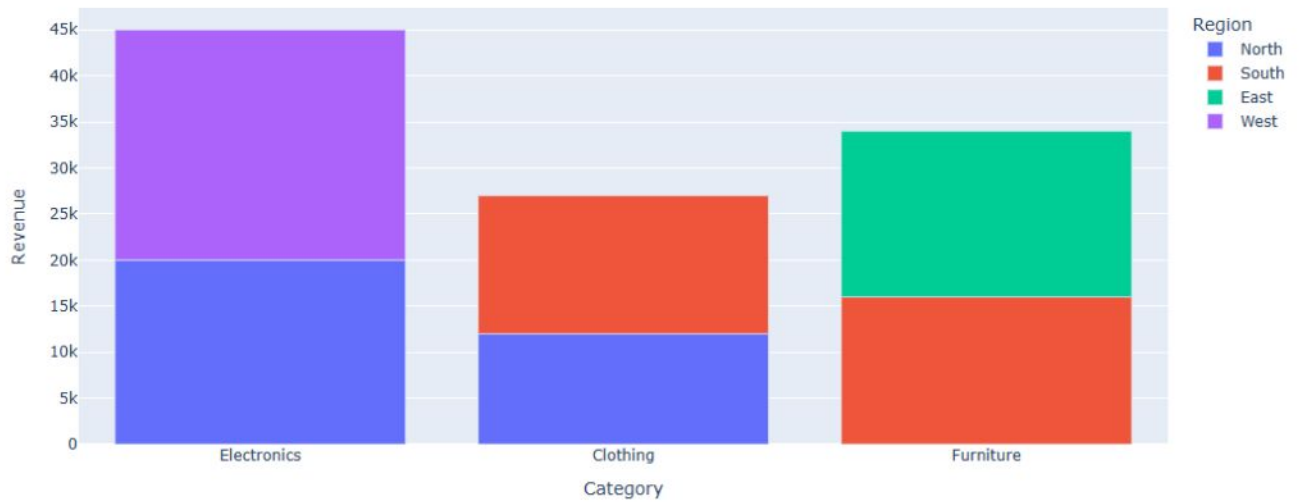
OUTPUT

```
=== Tableau Simulation Results ===
   Category Region  Revenue  Cost  Profit  Profit Ratio
0  Electronics  North   20000  12000   8000    0.400000
1   Clothing  South   15000   7000   8000    0.533333
2   Furniture   East   18000   9000   9000    0.500000
3  Electronics  West   25000  14000  11000    0.440000
4   Clothing  North   12000   6000   6000    0.500000
5   Furniture  South   16000   8000   8000    0.500000
```

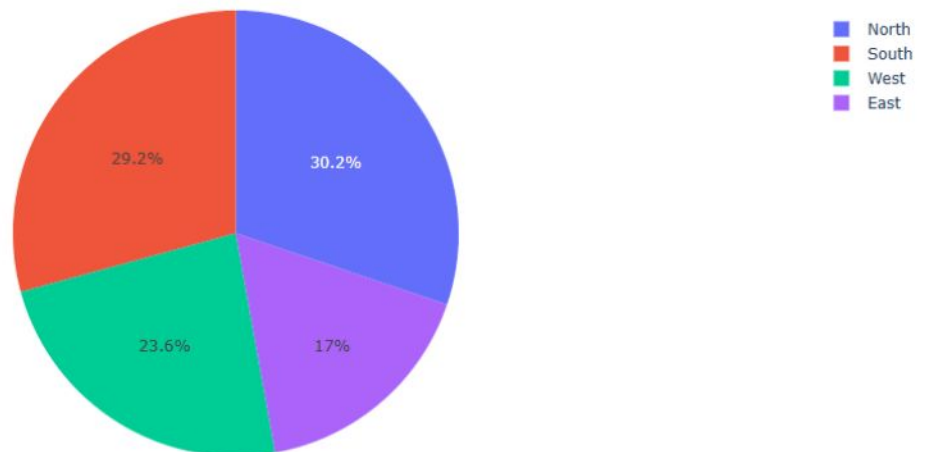




Revenue by Category and Region



Revenue by Region



RESULT:

An interactive **Tableau dashboard** was successfully created with multiple visualizations showing **sales trends, distribution by category, and regional performance**. A story was built by combining dashboards to demonstrate insights step by step.