```
# Install required libraries (if running in Colab)
!pip install matplotlib seaborn pandas numpy

# Import necessary libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

# Generate a sample dataset
np.random.seed(42)
data = {
    "Category": np.random.choice(["A", "B", "C"], size=100),
    "Values1": np.random.randint(1, 100, size=100),
    "Values2": np.random.randn(100) * 50 + 100,
    "Group": np.random.choice(["X", "Y"], size=100),
}

df = pd.DataFrame(data)

# Display the first few rows of the dataset
print("Sample Data:")
print(df.head())

# Set the style for Seaborn
sns.set_theme(style="whitegrid")

# --------------------------------
# Matplotlib Visualizations
# --------------------------------

# Line Plot
plt.figure(figsize=(10, 6))
plt.plot(df['Values1'], label='Values1', color='blue')
plt.title("Line Plot")
plt.xlabel("Index")
plt.ylabel("Values")
plt.legend()
plt.grid()
plt.show()

# Bar Chart
plt.figure(figsize=(10, 6))
category_counts = df['Category'].value_counts()
plt.bar(category_counts.index, category_counts.values, color=['red', 'green', 'blue'])
plt.title("Bar Chart")
plt.xlabel("Categories")
plt.ylabel("Count")
plt.show()

# Scatter Plot
plt.figure(figsize=(10, 6))
plt.scatter(df['Values1'], df['Values2'], alpha=0.7, c='purple')
plt.title("Scatter Plot")
plt.xlabel("Values1")
plt.ylabel("Values2")
plt.show()

# Histogram
plt.figure(figsize=(10, 6))
plt.hist(df['Values2'], bins=20, color='orange', alpha=0.7)
plt.title("Histogram")
plt.xlabel("Values2")
plt.ylabel("Frequency")
plt.show()

# --------------------------------
# Seaborn Visualizations
# --------------------------------

# Box Plot
plt.figure(figsize=(10, 6))
sns.boxplot(x='Category', y='Values2', data=df, palette='Set2')
plt.title("Box Plot")
plt.show()
```

```
# Violin Plot
plt.figure(figsize=(10, 6))
sns.violinplot(x='Category', y='Values2', data=df, hue='Group', split=True, palette='muted')
plt.title("Violin Plot")
plt.show()

# Heatmap
corr_matrix = df[['Values1', 'Values2']].corr()
plt.figure(figsize=(8, 6))
sns.heatmap(corr_matrix, annot=True, cmap='coolwarm', fmt=".2f", linewidths=0.5)
plt.title("Heatmap")
plt.show()

# Pair Plot
sns.pairplot(df, hue="Category", palette="Dark2")
plt.suptitle("Pair Plot", y=1.02)
plt.show()

# --------------------------------
# Extra Visualization
# --------------------------------

# Count Plot
plt.figure(figsize=(10, 6))
sns.countplot(x='Category', data=df, hue='Group', palette='pastel')
plt.title("Count Plot")
plt.show()
```

```
Requirement already satisfied: matplotlib in /usr/local/lib/python3.10/dist-packages (3.8.0)
Requirement already satisfied: seaborn in /usr/local/lib/python3.10/dist-packages (0.13.2)
Requirement already satisfied: pandas in /usr/local/lib/python3.10/dist-packages (2.2.2)
Requirement already satisfied: numpy in /usr/local/lib/python3.10/dist-packages (1.26.4)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (1.3.1)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (4.55.0)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (1.4.7)
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (24.2)
Requirement already satisfied: pillow>=6.2.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (11.0.0)
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Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.10/dist-packages (from pandas) (2024.2)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dist-packages (from python-dateutil>=2.7->matplotlib) (1.16.0)
Sample Data:
  Category  Values1     Values2 Group
0        C        8  112.877520     X
1        A       88   96.277704     Y
2        C       63    4.061439     X
3        C       11   98.674306     Y
4        A       81  103.011510     Y
```