Ex. No. 04	VISUALIZING 1D, 2D AND 3D PLOTS
02.08.2024	

AIM:

To visualize 1D, 2D and 3D plot using dataset

ALGORITHM:

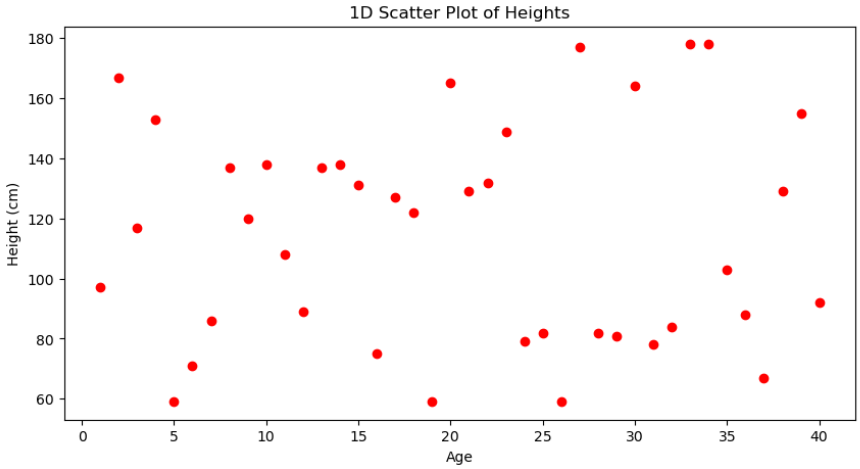
Step 1: Start the program
Step 2: Load the dataset
Step 3: Initialize variables
Step 4: Plot the plots
Step 5: Stop the program

PROGRAM:

1. **1D - Scatter plot:**

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
np.random.seed(0)
df = pd.DataFrame({
   'Index': range(1, 41),
   'Height': np.random.randint(50, 180, 40) })
plt.figure(figsize=(10, 5))
plt.scatter(df['Index'], df['Height'], color='red', marker='o')
plt.title('1D Scatter Plot of Heights')
plt.xlabel('Age')
plt.ylabel('Height (cm)')
plt.show()
```

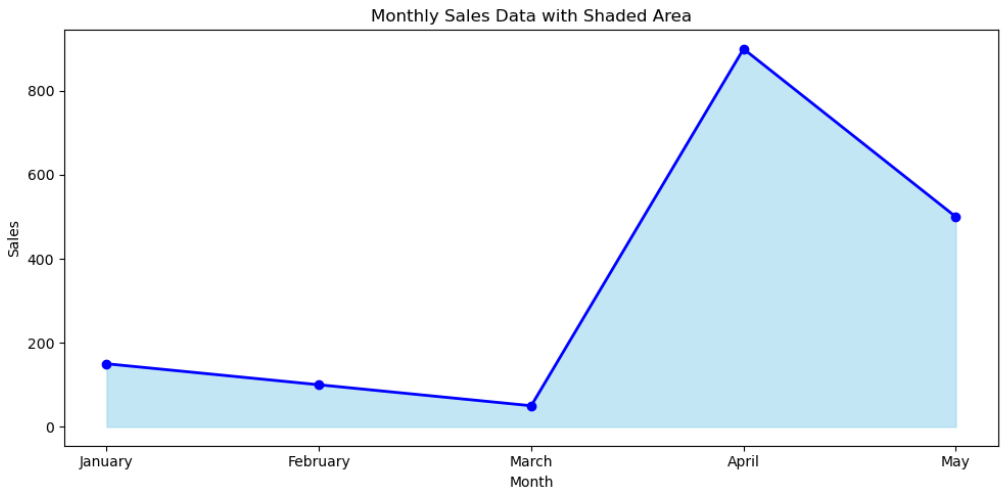
Output:



2. **2D – Line plot with shaded area**

```
data = {
'Month': ['January', 'February', 'March', 'April', 'May'],
'Sales': [150,100,50,900,500]}
df = pd.DataFrame(data)
plt.figure(figsize=(10, 5))  # Set the figure size
plt.plot(df['Month'], df['Sales'], marker='o', color='blue', linestyle='-', linewidth=2)
plt.fill_between(df['Month'], df['Sales'], color='skyblue', alpha=0.5)
plt.title('Monthly Sales Data with Shaded Area')
plt.xlabel('Month')
plt.ylabel('Sales')
plt.tight_layout()# Adjust layout to make room for rotated labels
plt.show()
```

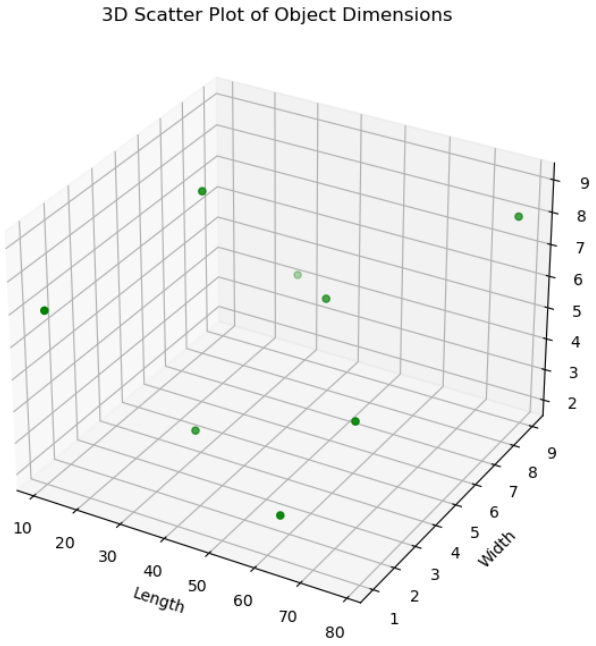
Output:



3. **3D – Scatter plot:**

```
from mpl_toolkits.mplot3d import Axes3D
data = {  'Length': [11,26,34,49,58,33,65,78],
   'Width': [1,5,3,6,2,8,4,9],
   'Height': [7,9,3,6,2,5,4,8] }
df = pd.DataFrame(data)
fig = plt.figure(figsize=(10, 7))
ax = fig.add_subplot(111, projection='3d')
ax.scatter(df['Length'], df['Width'], df['Height'], color='green', marker='o')
ax.set_title('3D Scatter Plot of Object Dimensions')
ax.set_xlabel('Length')
ax.set_ylabel('Width')
ax.set_zlabel('Height')
plt.show()
```

Output:



RESULT:

The above data visualization of 1D,2D and 3D plots are successfully executed using the dataset.