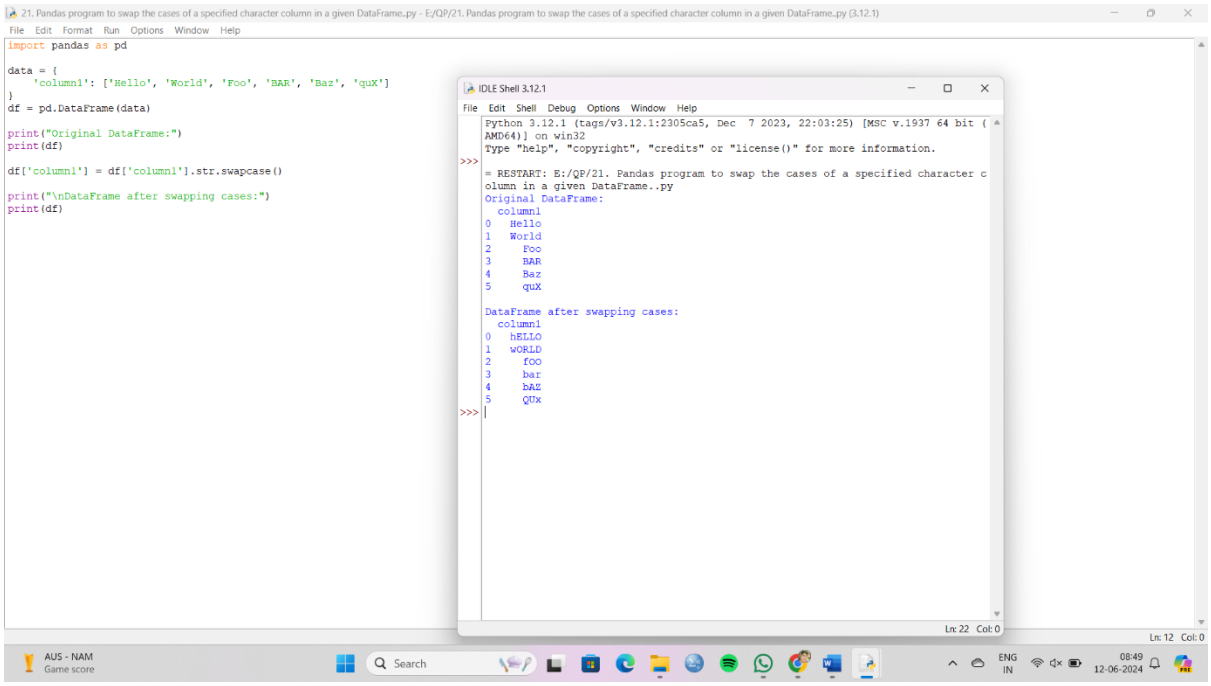
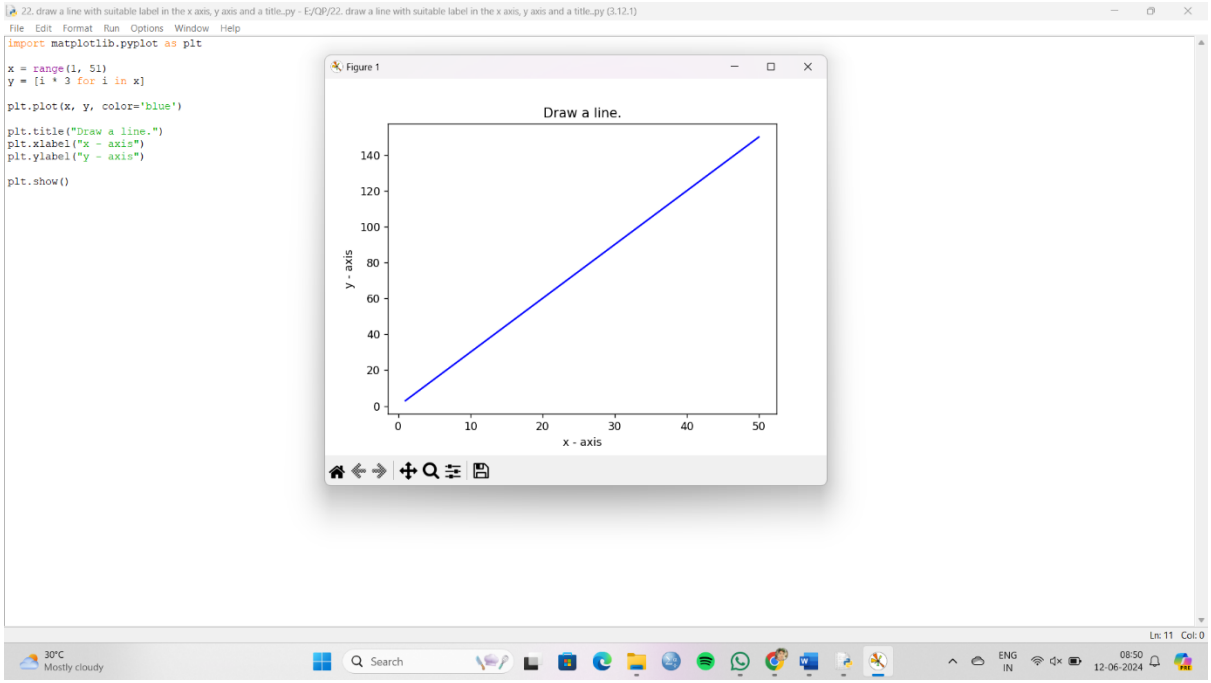
21. Write a Pandas program to swap the cases of a specified character column in a given DataFrame.

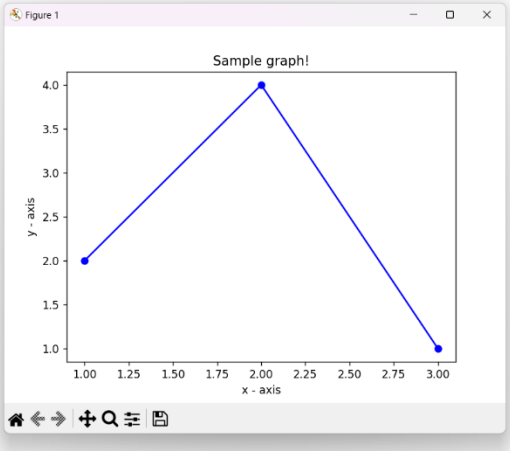


22. Write a Python program to draw a line with suitable label in the x axis, y axis and a title.



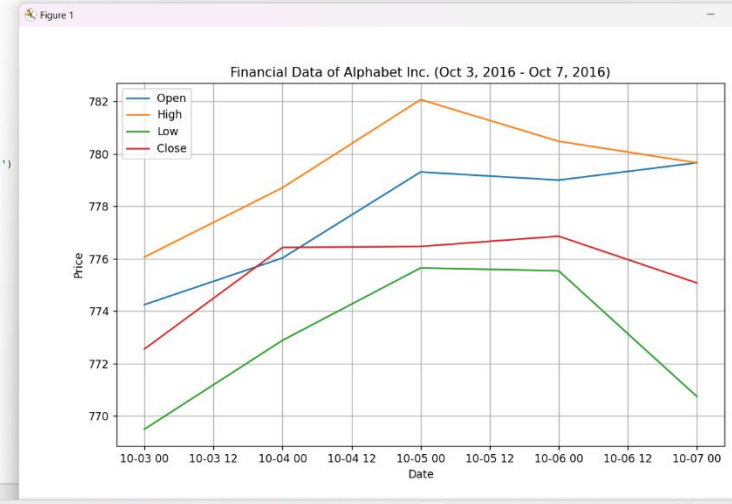
23. Write a Python program to draw a line using given axis values taken from a text file, with suitable label in the x axis, y axis and a title.

```
import matplotlib.pyplot as plt
file_path = """D:\data.txt"""
x_values = []
y_values = []

with open(file_path, 'r') as file:
    for line in file:
        x, y = map(float, line.split())
        x_values.append(x)
        y_values.append(y)
plt.plot(x_values, y_values, marker='o', color='b')
plt.xlabel('x - axis')
plt.ylabel('y - axis')
plt.title('Sample graph!')
plt.show()
```



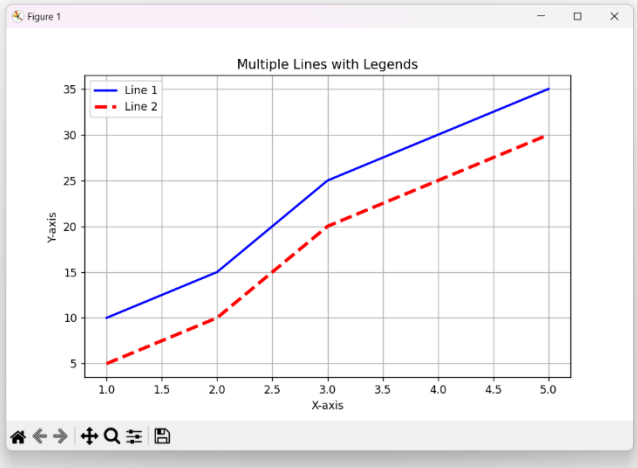
24. Write a Python program to draw line charts of the financial data of Alphabet Inc.

```
import pandas as pd
import matplotlib.pyplot as plt
data = {
    'Date': ['10-03-16', '10-04-16', '10-05-16', '10-06-16', '10-07-16'],
    'Open': [774.25, 776.030029, 779.309998, 779, 779.659973],
    'High': [776.065002, 778.710022, 782.070007, 780.47998, 779.659973],
    'Low': [769.5, 772.890015, 775.650024, 775.539978, 770.75],
    'Close': [772.559998, 776.429993, 776.469971, 776.859985, 775.080017]
}
df = pd.DataFrame(data)
df['Date'] = pd.to_datetime(df['Date'], format='%m-%d-%y')
df.set_index('Date', inplace=True)
plt.figure(figsize=(10, 6))

plt.plot(df.index, df['Open'], label='Open')
plt.plot(df.index, df['High'], label='High')
plt.plot(df.index, df['Low'], label='Low')
plt.plot(df.index, df['Close'], label='Close')

plt.xlabel('Date')
plt.ylabel('Price')
plt.title('Financial Data of Alphabet Inc. (Oct 3, 2016 - Oct 7, 2016)')
plt.legend()
plt.grid(True)

plt.show()
```



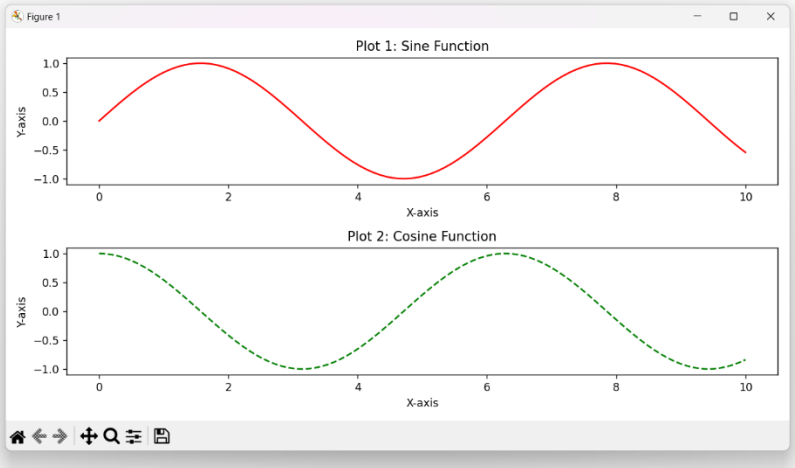
25. Write a Python program to plot two or more lines with legends, different widths and colors.

```
import matplotlib.pyplot as plt
x_values = [1, 2, 3, 4, 5]
y1_values = [10, 15, 25, 30, 35]
y2_values = [5, 10, 20, 25, 30]
plt.figure(figsize=(8, 5))
plt.plot(x_values, y1_values, label='Line 1', color='blue', linewidth=2)
plt.plot(x_values, y2_values, label='Line 2', color='red', linewidth=3, linestyle='--')
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title('Multiple Lines with Legends')
plt.legend()

plt.grid(True)
plt.show()
```



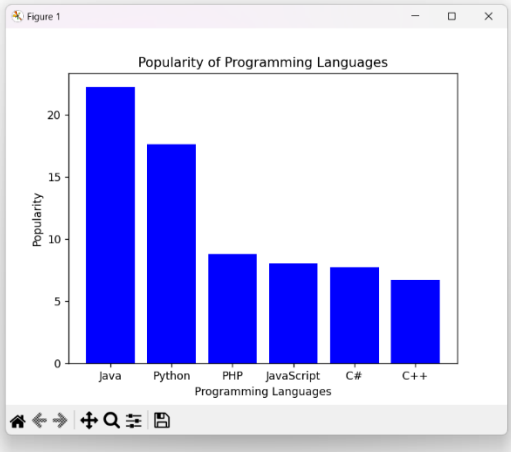
26. Write a Python program to create multiple plots.

```
import matplotlib.pyplot as plt
import numpy as np
x = np.linspace(0, 10, 100)
y1 = np.sin(x)
y2 = np.cos(x)
plt.figure(figsize=(10, 5))
plt.subplot(2, 1, 1)
plt.plot(x, y1, 'r-')
plt.title('Plot 1: Sine Function')
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.subplot(2, 1, 2)
plt.plot(x, y2, 'g--')
plt.title('Plot 2: Cosine Function')
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.tight_layout()
plt.show()
```



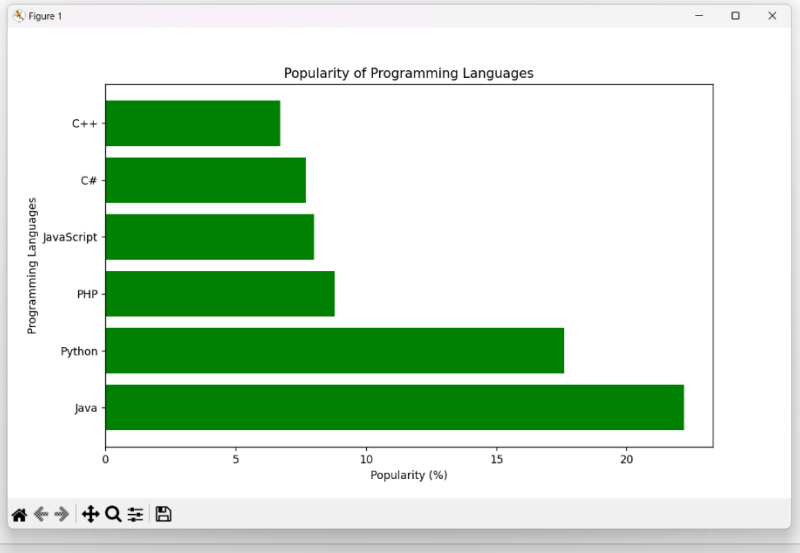
27. Write a Python programming to display a bar chart of the popularity of programming Languages.

```
import matplotlib.pyplot as plt
languages = ['Java', 'Python', 'PHP', 'JavaScript', 'C#', 'C++']
popularity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]
plt.bar(languages, popularity, color='blue')
plt.xlabel('Programming Languages')
plt.ylabel('Popularity')
plt.title('Popularity of Programming Languages')
plt.show()
```



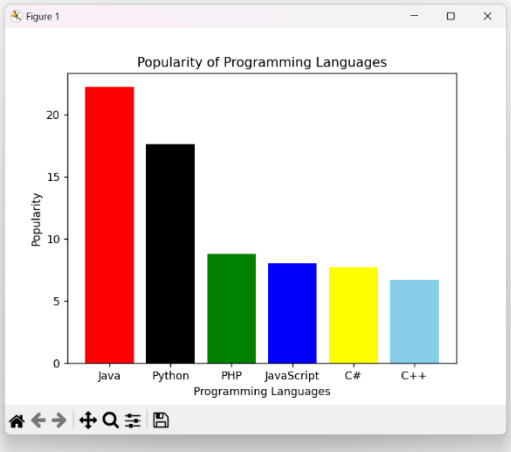
28. Write a Python programming to display a horizontal bar chart of the popularity of programming Languages.

```
import matplotlib.pyplot as plt
languages = ['Java', 'Python', 'PHP', 'JavaScript', 'C#', 'C++']
popularity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]
plt.figure(figsize=(10, 6))
plt.barh(languages, popularity, color='green')
plt.title('Popularity of Programming Languages')
plt.xlabel('Popularity (%)')
plt.ylabel('Programming Languages')
plt.show()
```



29. Write a Python programming to display a bar chart of the popularity of programming Languages. Use different color for each bar.

```
import matplotlib.pyplot as plt
languages = ['Java', 'Python', 'PHP', 'JavaScript', 'C#', 'C++']
popularity = [22.2, 17.6, 8.8, 8, 7.7, 6.7]
colors = ['red', 'black', 'green', 'blue', 'yellow', 'skyblue']
plt.bar(languages, popularity, color=colors)
plt.xlabel('Programming Languages')
plt.ylabel('Popularity')
plt.title('Popularity of Programming Languages')
plt.show()
```



30. Write a Python program to create bar plot of scores by group and gender. Use multiple X values on the same chart for men and women.

```
import matplotlib.pyplot as plt
import numpy as np
men_means = (22, 30, 35, 35, 26)
women_means = (25, 32, 30, 35, 29)
labels = ['Group 1', 'Group 2', 'Group 3', 'Group 4', 'Group 5']
x = np.arange(len(labels))
width = 0.35
fig, ax = plt.subplots()
bars1 = ax.bar(x - width/2, men_means, width, label='Men')
bars2 = ax.bar(x + width/2, women_means, width, label='Women')
ax.set_xlabel('Groups')
ax.set_ylabel('Scores')
ax.set_title('Scores by Group and Gender')
ax.set_xticks(x)
ax.set_xticklabels(labels)
ax.legend()
plt.show()
```