PYTHON LAB – 23

MATPLOTLIB BAR PLOT AND HISTOGRAM

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QUESTIONS

1. Visualize the daily temperature changes over time in a city and give your conclusion
2. Create a line plot to visualize the daily closing prices of a stock over a year and give your conclusion.
3. Create a bar chart to represent monthly expenses in different spending categories and give your conclusion.
4. Create a histogram to represent the distribution of product prices in a retail store and give your conclusion.

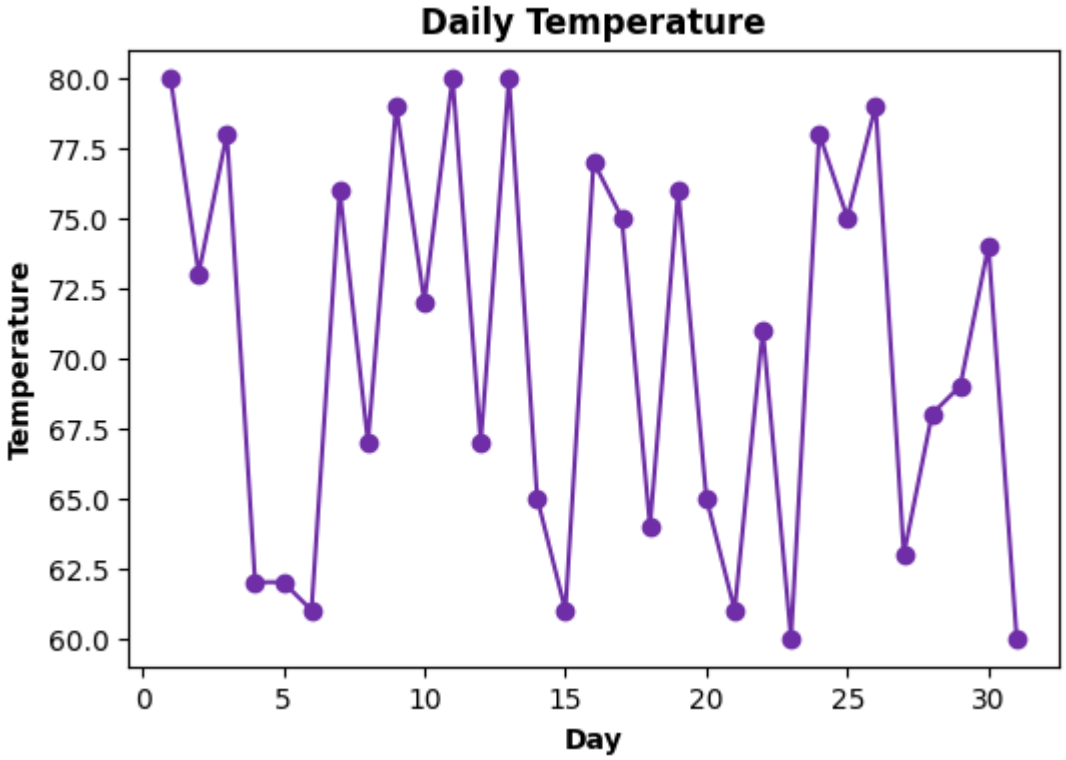
1. Visualize the daily temperature changes over time in a city and give your conclusion

   Input: days = list(range(1, 32)) # Daily temperature data (replace with your own data) temperature = [65, 68, 70, 72, 75, 76, 78, 80, 81, 79, 75, 72, 70, 68, 67, 69, 70, 73, 75, 76, 78, 80, 81, 82, 83, 82, 80, 78, 76, 74, 71]

   Code :

```
#import necessary packages
import matplotlib.pyplot as plt # for data visualization
import random # to generate random numbers

#Generate random number between 60 to 80 for 31 days
days = list(range(1,32))
temperature = [random.randint(60,80) for i in range(31)]

# Providing the figure size
plt.figure(figsize=(6,4))

# Plotting the data
plt.plot(days,temperature,marker='o',color='#6f2da8')

# Adding title, x-axis and y-axis labels
plt.title('Daily Temperature',weight='bold')
plt.xlabel('Day',weight='bold')
plt.ylabel('Temperature',weight='bold')

# Displaying the plot
plt.show()
```

Output:

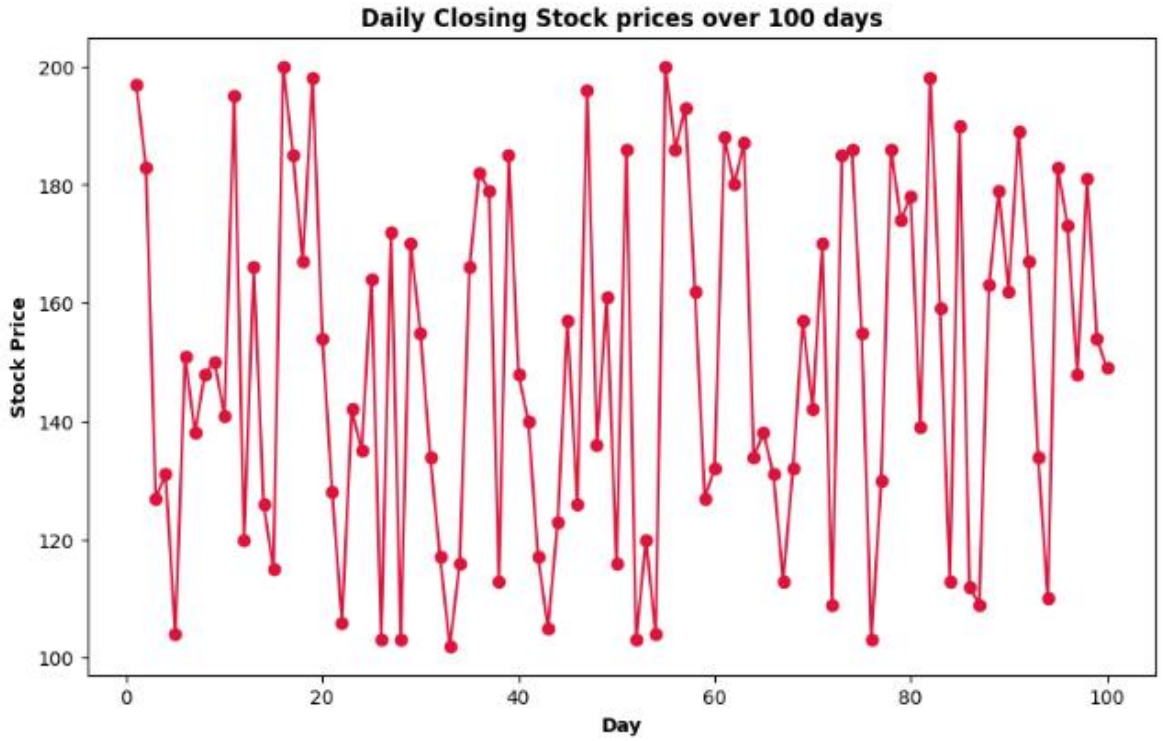

Daily Temperature
Temperature
Day
80.0
77.5
75.0
72.5
70.0
67.5
65.0
62.5
60.0
0
5
10
15
20
25
30

2. Create a line plot to visualize the daily closing prices of a stock over a year and give your conclusion.
   Input: days = list(range(1, 78))
   # Daily closing prices of a stock (replace with your own data) stock_prices = [100, 105, 110, 115, 112, 120, 118, 125, 128, 130, 132, 135, 138, 140, 142, 144, 145, 148, 150, 155, 160, 158, 162, 165, 170, 172, 175, 178, 180, 182, 185, 188, 190, 192, 195, 198, 200, 198, 195, 193, 190, 188, 185, 182, 180, 178, 175, 172, 170, 168, 165, 162, 160, 158, 155, 152, 150, 148, 145, 143, 140, 138, 135, 132, 130, 128, 125, 123, 120, 118, 115, 112, 110, 108, 105, 103, 100]

   Code:

```
#import necessary packages
import matplotlib.pyplot as plt # for data visualization
import random # to generate random numbers

#Generate random number between 100 and 200 for 100 days
days = list(range(1,101))
stock_prices = [random.randint(100,200) for _ in
range(100)]

# Providing the figure size
plt.figure(figsize=(10,6))

# Plotting the data
plt.plot(days,stock_prices,marker='o',color='Crimson')

# Adding title, x-axis and y-axis labels
plt.title('Daily Closing Stock prices over 100
days',weight='bold')
plt.xlabel('Day',weight='bold')
plt.ylabel('Stock Price',weight='bold')

# Displaying the plot
plt.show()
```

Output:


Daily Closing Stock prices over 100 days
Stock Price
Day
200
180
160
140
120
100
0
20
40
60
80
100

3. Create a bar chart to represent msonthly expenses in different spending categories and give your conclusion.
   Input: categories = ['Rent', 'Groceries', 'Utilities', 'Entertainment', 'Transportation'] # Monthly expenses in dollars (replace with your own data) expenses = [1200, 400, 200, 150, 250]

Code:

```
import necessary packages
import matplotlib.pyplot as plt # for data visualization
import random #to generate random members

#Generate random number between 100 and 200 for 100 days
categories = ['Rent', 'Groceries', 'Utilities',
'Entertainment', 'Transportation']
expenses = [random.randint(100,2000) for _ in
range(len(categories))]

# Plotting the data
plt.bar(categories,expenses,color='#17D66B',edgecolor='black')

# Adding title, x-axis and y-axis labels
plt.title('Monthly expenses',weight='bold')
plt.xlabel('Categories',weight='bold')
plt.ylabel('Expenses ($)',weight='bold')

# Displaying the plot
plt.show()
```

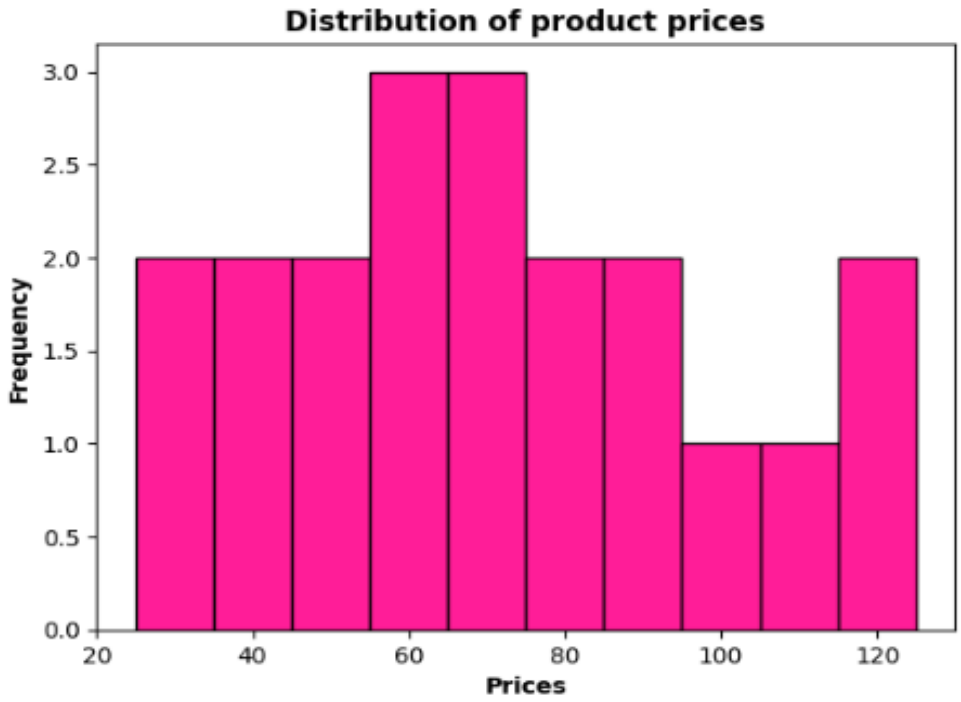
Output:

4. Create a histogram to represent the distribution of product prices in a retail store and give your conclusion.
   Input: product_prices = [24.99, 34.99, 49.99, 64.99, 39.99, 54.99, 79.99, 99.99, 29.99, 44.99, 59.99, 69.99, 84.99, 109.99, 119.99, 89.99, 74.99, 124.99, 69.99, 54.99]

Code:

```
#import necessary packages
import matplotlib.pyplot as plt # for data visualization

# Product prices
product_prices = [24.99, 34.99, 49.99, 64.99, 39.99,
54.99, 79.99, 99.99, 29.99,
                  44.99, 59.99, 69.99, 84.99, 109.99,
119.99, 89.99, 74.99, 124.99,
                  69.99, 54.99]

# Plotting the data
plt.hist(product_prices,color='#FF1D98',edgecolor='black'
)

# Adding title, x-axis and y-axis labels
plt.title('Distribution of product prices',weight='bold')
plt.xlabel('Prices',weight='bold')
plt.ylabel('Frequency',weight='bold')

# Displaying the plot
plt.show()
```

Output:


Distribution of product prices
Frequency
Prices
0.0
0.5
1.0
1.5
2.0
2.5
3.0
20
40
60
80
100
120