



Experiment - 1.4

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1. Aim:

Implementation of Python Libraries for ML application such as Pandas and Matplotlib

2. Objective:

The objective of this experiment is to of Python Libraries for ML application such as Pandas and Matplotlib and analyze its performance and characteristics.

3. Algorithm

`import matplotlib.pyplot as plt`: This line imports the matplotlib.pyplot module and assigns it the alias plt. This module contains functions that allow you to create various types of plots.

`x = [1, 2, 3, 4, 5]` and `y = [10, 15, 7, 12, 9]`: These two lists define the x and y coordinates of the points that you want to plot.

`plt.plot(x, y)`: This line creates a line plot using the data from the x and y lists. It connects the points with straight lines.

`plt.xlabel('X-axis')` and `plt.ylabel('Y-axis')`: These lines set labels for the x-axis and y-axis of the plot.

`plt.title('Basic Line Plot')`: This line sets the title of the plot.

`plt.scatter(x, y, color='red', marker='o', label='Data Points')`: This line creates a scatter plot using the x and y data. The color argument specifies the color of the data points (red), the marker argument specifies the marker style (circle), and the label argument sets the label for the legend.

`plt.legend()`: This line displays the legend on the plot, which shows the label you specified earlier.

`plt.show()`: This line displays the scatter plot.

4. Code -:

CODE 1 -:

```
import matplotlib.pyplot as plt

x = [1, 2, 3, 4, 5]
y = [14, 20, 9, 10, 8]

# Line plot
plt.figure() # Create a new figure for the line plot
plt.plot(x, y)
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title('Basic Line Plot')

# Show the line plot
plt.show()

# Scatter plot
plt.figure() # Create a new figure for the scatter plot
plt.scatter(x, y, color='red', marker='o', label='Data Points')
plt.xlabel('X-axis')
plt.ylabel('Y-axis')
plt.title('Scatter Plot with Data Points')
plt.legend()

# Show the scatter plot
plt.show()
```

CODE 2-:

```
import matplotlib.pyplot as plt
import numpy as np

# Prepare the data
K = np.linspace(2, 4, 8)
R = np.linspace(5, 7, 9)
Q = np.linspace(0, 1, 3)

# Plot the data

plt.plot(K, K, label='K')
plt.plot(R, R, label='R')

plt.plot(Q, Q, label='Q')

# Add a legend
plt.legend()

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

CODE 3 -:

```
import matplotlib.pyplot as plt
import numpy as np

# Prepare the data
K = np.linspace(2, 4, 8)
R = np.linspace(5, 7, 9)
Q = np.linspace(0, 1, 3)

# Plot the data
plt.plot(K, K, label='K')
plt.plot(R, R, label='R')
plt.plot(Q, Q, label='Q')

# Add a legend
```

```
plt.legend()
```

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

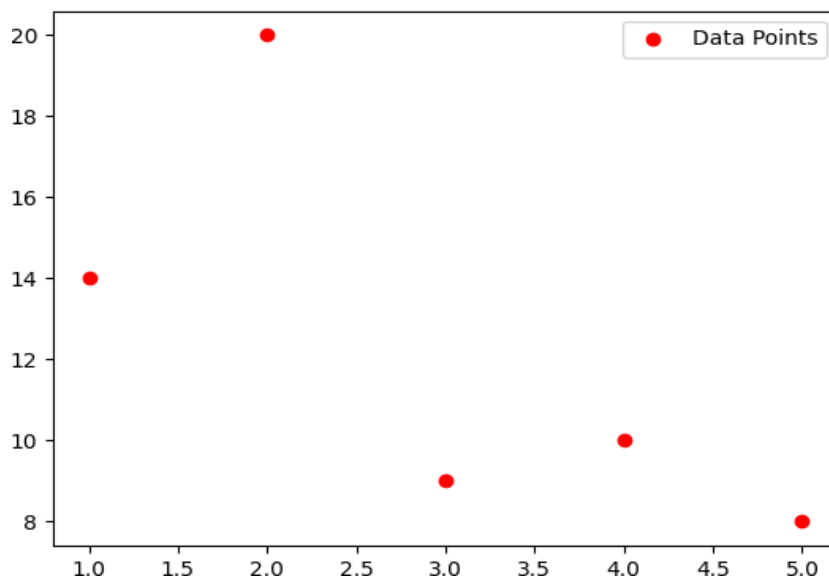
PANDAS - :

CODE 1 - :

```
import pandas as pd  
data = pd.DataFrame({"x1":["y", "x", "y", "x", "x", "y"],  
Construct a pandas DataFrame  
                        "x2":range(16, 22),  
                        "x3":range(1, 7),  
                        "x4":["a", "b", "c", "d", "e", "f"],  
  
                        "x5":range(30, 24, - 1)})  
print(data)  
data_row = data[data.x2 < 20]  
particular rows  
print(data_row)  
data_col = data.drop("x1", axis = 1)  
variable from DataFrame  
print(data_col)
```

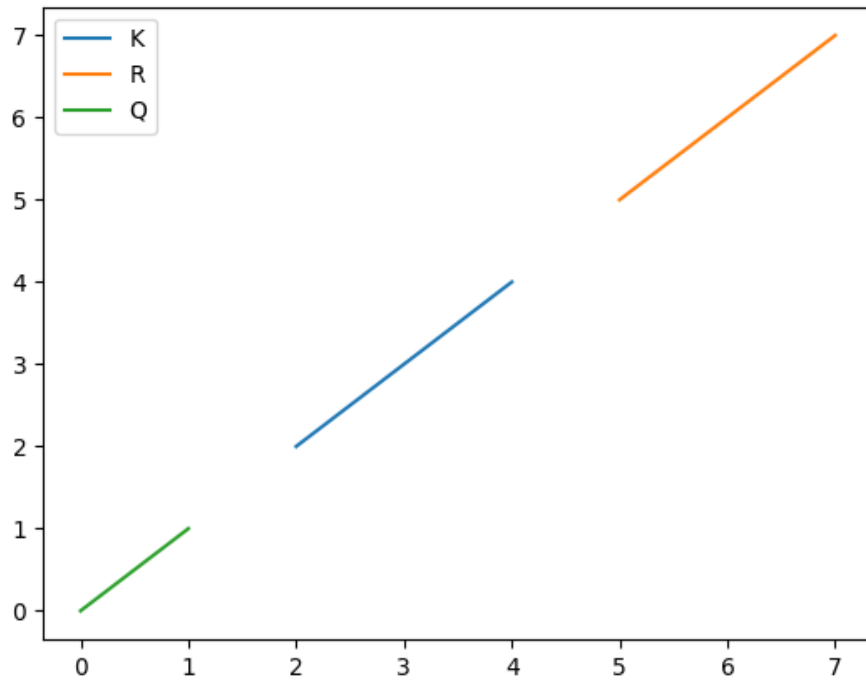
certain

5. OUTPUT -:

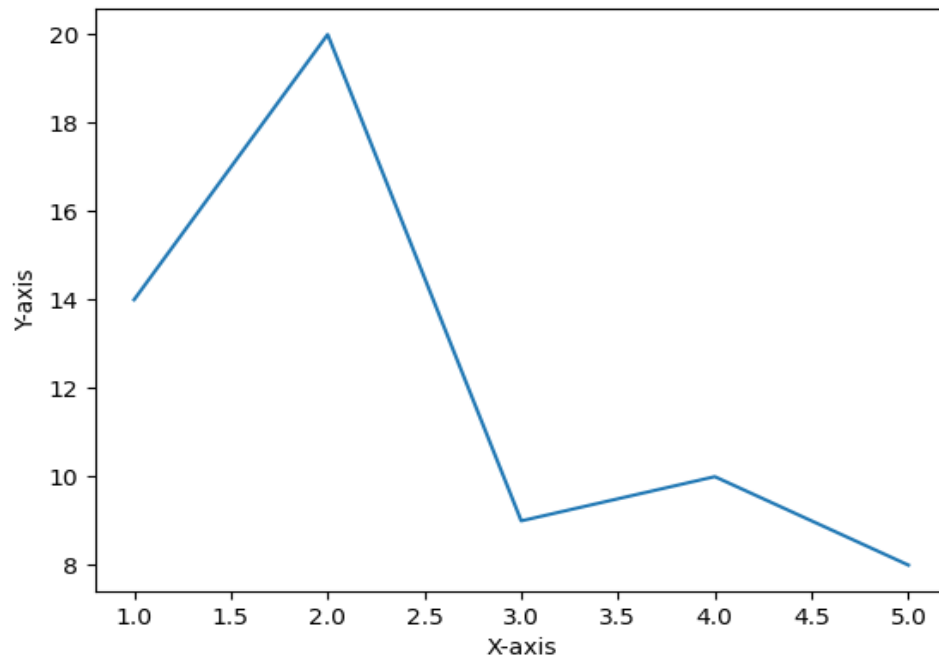




DEPARTMENT OF



Basic Line Plot



```
[Running] python -u "C:\Users\TAHARAT\AppData\Local\Temp\tempCodeRunnerFile.python"
| x1 x2 x3 x4 x5
0 y 16 1 a 30
1 x 17 2 b 29
2 y 18 3 c 28
3 x 19 4 d 27
4 x 20 5 e 26
5 y 21 6 f 25
| x1 x2 x3 x4 x5
0 y 16 1 a 30
1 x 17 2 b 29
2 y 18 3 c 28
3 x 19 4 d 27
| x2 x3 x4 x5
0 16 1 a 30
1 17 2 b 29
2 18 3 c 28
3 19 4 d 27
4 20 5 e 26
5 21 6 f 25
```

6.Learning Outcome -:

Pandas is used for data manipulation and analysis, facilitating tasks like data cleaning and exploration, while Matplotlib is employed for data visualization, enabling the creation of various plots and charts to understand data patterns