Experiment: 2.1

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1. **AIM:** *To implement Python basic libraries such as Math,NumPy, and SciPy.*

2. **Objective:** *The objective of this experiment is to implement Python basic libraries such as Math,NumPy, and SciPy.*

3. Tools/Resource Used:

1. *Python programming language.*
2. *Jupyter Notebook.*

4. Algorithm:

Math Library:

1. *Initialize a variable x with the value 4.5.*
2. *Use the math.sqrt() function from the math library to calculate the square root of x.*
3. *Store the result in the variable y.*
4. *Print the square root of x using the print() function.*

Numpy Library:

1. *Create a NumPy array arr containing the values [1, 2, 3, 4, 5].*
2. *Use the np.mean() function from the NumPy library to calculate the mean (average) of the*
3. *elements in the array arr.*
4. *Store the result in the variable mean.*
5. *Print the mean value using the print() function.*

SciPy Library:

1. *Create a NumPy array data containing the values [1, 2, 3, 4, 5].*
2. *Use the stats.describe() function from the SciPy library to compute various descriptive*
3. *statistics for the data array. The stats.describe() function returns a structure containing*
4. *statistics such as the number of observations, minimum and maximum values, mean,*
5. *variance, skewness, and kurtosis.*

6. *Store the result in the variable result.*
7. *Print the descriptive statistics using the print() function.*

5. Program Code:

```
# Importing the required libraries
import math
import numpy as np
from scipy import stats

# Math library example
x = 4.5
y = math.sqrt(x)
print("Square root of", x, "is", y)

# NumPy library example
arr = np.array([1, 2, 3, 4, 5])
mean = np.mean(arr)
print("Mean of the array is", mean)

# SciPy library example
data = np.array([1, 2, 3, 4, 5])
result = stats.describe(data)
print("Descriptive statistics:", result)
```

6. Output/Result:

```
Square root of 4.5 is 2.1213203435596424
```

```
Mean of the array is 3.0
```

```
Descriptive statistics: DescribeResult(nobs=5, minmax=(1, 5), mean=3.0, variance=2.5, skewness=0.0, kurtosis=-1.
```

7. Learning Outcomes:

1. *Implement to implement different python library.*
2. *Understand the concept of numpy, pandas, SciPy library.*
3. *Use recursion effectively to navigate through graph nodes and explore their connections.*