**Experiment: 2.1**

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**Subject Name**: AIML Lab **Subject Code:** 21CSH-316

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.*

1. **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.*
8. **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)*

1. **Output/Result:**

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