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NAAC ACCREDITED with "A" GRADE (CGPA : 3.18)

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE CODE: DJ19ITL406

COURSE NAME: Programing Laboratory 2 (Python)   **CLASS:** SYBTECH

EXPERIMENT NO. 9

CO/LO: CO1, CO2,CO4.

AIM / OBJECTIVE:

Write a Python program to implement data analysis using scipy and scikit learn

DESCRIPTION OF EXPERIMENT:

Describe the functions in scipy and scikit learn package

1. describe(), gmean(), hmean(), mode()
2. Liner regression of data

QUESTIONS:

1. Create sample data for student marks and process for the following :
   a. describe(), gmean(), hmean(), mode()

SOURCE CODE:

```python
import scipy.stats as sp

marks=[15,19,25,25,24,25]

print(sp.mode(marks))
print(sp.describe(marks))
print(sp.gmean(marks))
print(sp.hmean(marks))
```

OUTPUT:

```
...   ModeResult(mode=array([25]), count=array([3]))
      DescribeResult(nobs=6, minmax=(15, 25), mean=22.166666666666668, variance=17.766666666666666,
      skewness=-0.9521131194469888, kurtosis=-0.7622470423001237)
      21.7844209907325
      21.354979706525132
```

2. Perform Linear regression on any suitable data.
   SOURCE CODE:

```python
import matplotlib.pyplot as plt
from scipy import stats

x = [5,7,8,7,2,17,2,9,4,11,12,9,6]
y = [99,86,87,88,111,86,103,87,94,78,77,85,86]

slope, intercept, r, p, std_err = stats.linregress(x, y)

def myfunc(x):
  return slope * x + intercept

mymodel = list(map(myfunc, x))

plt.scatter(x, y)
plt.plot(x, mymodel)
plt.show()
```
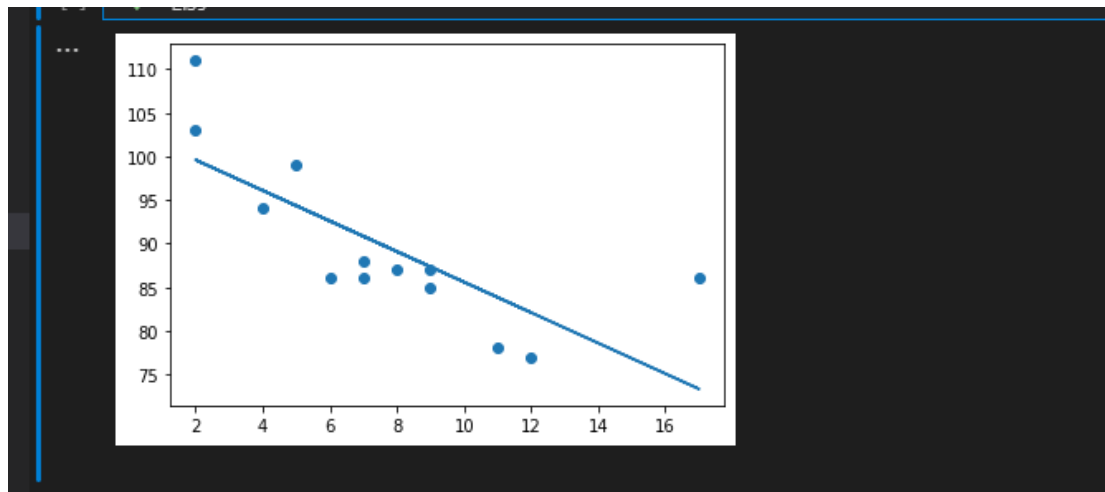
OUTPUT:

OBSERVATIONS / DISCUSSION OF RESULT:

After performing the experiments we observed that,

1)The describe() function is used to get the general information abou the data presented in the form of a table

2)The mode function tells about the value which appears in the dataframe the most

CONCLUSION:

Hence, we successfully implemented

1. describe(), gmean(), hmean(), mode()
2. Liner regression of data

REFERENCES:

Website References:

[1] https://www.w3schools.com/python