**Weekly Progress Report**

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Domain: Python

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# Week Ending: 03

**I. Introduction:**

In this week, I learnt about the python libraries such as numpy and pandas and their operations and example programs

# 2.What is Numpy?

* NumPy, is an open source library to enable numerical computing with python.
* NumPy, which stands for Numerical Python. It provides support for multi- dimensional arrays and matrices, along with a collection of mathematical functions to operate on these arrays efficiently.

# 3.Key Concepts:

Arrays: NumPy's primary data structure is the ndarray, which is a multi-dimensional array. It allows efficient manipulation of large datasets.

# 4.NumPy Operations:

NumPy offers a several operations for array manipulation and mathematical computations.

# 4.1Array Creation

Arrays can created using various functions like np.array(), np.zeros(), np.ones(), etc.

# #Program:

import numpy as np list=[[1,2,3],[4,5,6],[7,8,9]]

b=np.array(list) print(b)

# Output:

[

[1,2,3],[4,5,6][7,8,9]]

# 4.2Mathematical Operations:

Element-wise arithmetic operations: addition, subtraction, multiplication, division.

Mathematical functions: np.sum(), np.mean(), np.max(), np.min(), etc.

# Example:

import numpy as np list=[[1,2,3],[4,5,6],[7,8,9]]

b=np.array(list) print(b.mean())

print(b.min())

print(b.max())

# Output:

5.0

1

9

# 4.3Array Manipulation

Reshaping, slicing, and indexing arrays to extract and modify elements can performed on ndarray using numpy.

# 4.3.1Reshaping:

**#program**

import numpy as np nar=np.random.randint(10,20,10) nrp=nar.**reshape(2,5)**

# 4.3.2Indexing:

**#program**

import numpy as np deviation=1)

nar=np.random.randint(10,20,10) n=nar.reshape(2,5)

print(n[0])

# 4.3.3Slicing:

import numpy as np nar=np.random.randint(10,20,10) n=nar.reshape(2,5) print(n[0:1,0:1])

# 5.Random Function

Random function are classified into 3 categories

**5.1random.rand**-> Return number between 0 &1 of a given shape

**5.2andom.randn**-> Return output as “standard normal”(mean=0,standard

**5.3random.randint->** Return random integers from lower value included and high value is excluded.

**6. Introduction to Pandas:**

Pandas is an open-source library for data analysis and manipulation tool, built in python programming language.

**6.1. Key Features**

Data Frame: Pandas introduces the Data Frame, a two-dimensional labeled data structure.

Data Manipulation: Pandas offers powerful tools for data manipulation, including merging, reshaping, slicing, and indexing.

**6.3 Creating pandas series**

**#program**

import numpy as np

import pandas as p

nar=np.random.randint(10,20,10)

s=p.Series(nar)

**6.4 Creating data frames from dictionary series**:

**#program**

import pandas as p

import numpy as np

data={'a':p.Series(np.random.randint(10,20,5)),

'b':p.Series(np.random.randint(10,20,5)),

'c':p.Series(np. random.randint(10,20,5))

}

data=p.DataFrame(data)

print(data)

#Basic functions

print(data[‘a’])

**#slicing**

print(data.loc[1:2,’a’:’b’])

**6 .Next Week Goals:**

1. Excited to learn more concepts about the python libraries

2. Improving the practical knowledge about the python

**7. Conclusion:**

Python consists of various libraries such as numpy ,pandas which can performs several operations on data