CLASS 5 26 -05-2021

**QUESTIONS**

👉 What is Numpy?  
👉 Why NumPy is used in Python?  
👉 Where is NumPy used?  
👉 Difference between numpy and Python List  
👉 How to convert 1D Numpy array to 2D Numpy array  
👉 How to find the memory size of any array?  
👉 What is use of Pandas?  
👉 What is Series in Pandas?

**ANSWERS**

1. **NumPy** is a library for the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.

2. **NumPy** aims to provide an array object that is up to 50x **faster** than traditional Python lists. The array object in NumPy is called **ndarray** , it provides a lot of supporting functions that make working with ndarray very easy. Arrays are very frequently used in data science, where **speed** and **resources** are very important.

3.Python **NumPy** arrays provide tools for integrating C, C++, etc. It is also **useful** in **linear** **algebra**, **random number** capability etc. NumPy array can also be used as an **efficient multi-dimensional container for generic data**.

4. **NumPy's** arrays are more **compact** than Python **lists**. A list of lists in Python, would take at least 20 MB or so, while a NumPy 3D array with single-precision floats in the cells would fit in 4 MB. Access in reading and writing items is also **faster** with NumPy

5. Use **numpy. reshape()** to reshape a **1D** NumPy array to a **2D** NumPy array. Call numpy. reshape(a, newshape) with a as a 1D array and newshape as the tuple (-1, x) to reshape the array to a 2D array containing nested arrays of x values each.

6. Using **size** and **itemsize** attributes of NumPy array. **size**: This attribute gives the number of elements present in the NumPy array. **itemsize**: This attribute gives the memory size of one element of NumPy array in bytes.

7. **Pandas** is mainly used for data analysis. Pandas allows importing data from various file formats such as comma-separated values, JSON, SQL, Microsoft Excel. Pandas allows various data manipulation operations such as merging, reshaping, selecting, as well as data cleaning, and data wrangling features.

8. **Series** is a one-dimensional labeled array capable of holding data of any type (integer, string, float, python objects, etc.). The axis labels are collectively called index.