PYTHON ADVANCE ASSIGNMENT 1

**1) What makes NumPy.shape( ) different from NumPy.size( ) ?**

I noticed that some numpy operations take an argument called shape, such as np.zeros, SSSwhereas some others take an argument called size, such as np.random.randint. To me, those arguments have the same function and the fact that they have different names is a bit confusing. Actually, size seems a bit off since it really specifies the .shape of the output.

2) **In NumPy ,describe the idea of broadcasting.**

The term broadcasting refers to the ability of NumPy to treat arrays of different shapes during arithmetic operations. Arithmetic operations on arrays are usually done on corresponding elements. If two arrays are of exactly the same shape, then these operations are smoothly performed.

**3) What makes python better than other libraries for** numerical **computation ?**

**Python is a high-level scripting language**. It is easy to learn and powerful than other languages because of its dynamic nature and simple syntax which allow small lines of code. Included indentation and object-oriented functional programming make it simple. Such advantages of Python make it different from other languages and that’s **why Python is preferred for development** in companies mostly. In industries, machine learning using python has become popular. This is because it has standard libraries that are used for scientific and numerical calculations. Also, it can be operated on Linux, Windows, Mac OS, and UNIX. **Students who want to make a future in Python are joining online video training courses and python programming tutorials.**

4) **How does NumPy deals with files ?**

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### Using NumPy To Read In Files

It’s possible to use NumPy to directly read csv or other files into arrays. We can do this using the [numpy.genfromtxt](https://docs.scipy.org/doc/numpy/reference/generated/numpy.genfromtxt.html) function. We can use it to read in our initial data on red wines.

In the below code, we:

* Use the genfromtxt function to read in the winequality-red.csv file.
* Specify the keyword argument delimiter=";" so that the fields are parsed properly.
* Specify the keyword argument skip\_header=1 so that the header row is skipped.

wines = np.genfromtxt("winequality-red.csv", delimiter=";", skip\_header=1)

wines will end up looking the same as if we read it into a list then converted it to an array of floats. NumPy will automatically pick a data type for the elements in an array based on their format

**5)mention the importance of NumPy.empty ().**

The numpy module of Python provides a function called numpy.empty(). This function is used to create an array without initializing the entries of given shape and type.

Just like **numpy.zeros()**, the **numpy.empty()** function doesn't set the array values to zero, and it is quite faster than the **numpy.zeros()**. This function requires the user to set all the values in the array manually and should be used with caution.

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