FREQUENTLY ASKED QUESTIONS:

PYTHON: NUMPY

PART 1

FAQ

1) Explain what is Numpy and why it is used in Python.

NumPy is a general-purpose array-processing package. It provides a high-performance multidimensional array object, and tools for working with these arrays.

NumPy is a package in Python used for Scientific Computing. NumPy package is used to perform different operations. The ndarray (NumPy Array) is a multidimensional array used to store values of same datatype. These arrays are indexed just like Sequences, starts with zero.

2) Where is NumPy used?

NumPy contains a multi-dimentional array and matrix data structures. It can be utilised to perform a number of mathematical operations on arrays such as trigonometric, statistical and algebraic routines. NumPy is an extension of Numeric and Numarray.

3) how to create 3D Array or ND Array ?

```
import numpy as np

num3=[[[1,2,3],[4,5,6],[7,8,9]]]
num3 = np.array(num3)
print("n3d array : ",num3)


```

4) how to use shape for 3d or Nd Array ?

```
import numpy as np

num3=[[1,2,3],[4,5,6],[7,8,9]] if not added
print("\nshpae of 3d ",num3.shape)
```

FAQ

5) How to identified datatyp for numpy array?

```
import numpy as np

print("\n data type num 1 ",num.dtype)
print("\n data type num 2 ",num2.dtype)
print("\n data type num 3 ",num3.dtype)
```

6) Print zeros with 2 rows and 3 columns ?

```
import numpy as np

arr2 = np.zeros((2,3))
print("\nprint 2 rows and 3 cols : ",arr2)
```

7)use of eye() diagonal values ?

```
import numpy as np

arr3 = np.eye(4)
print("\ndiaglonal values : ",arr3)
```

8)use of diag() square matrix ?

```
import numpy as np

arr3 = np.diag([1,2,3,4])
print("\n square matrix",arr3)
```

FAQ

9)Print Range Between 1 To 100 and show 4 integers random numbers

```
import numpy as np

rand_arr3 = np.random.randint(1,100,20)
print("\n random number from 1 to 100 ",rand_arr3)
```

10)describe the example of seed() function? and how to use it ? why seed()?

```
import numpy as np

np.random.seed(123)
rand_arr4 = np.random.randint(1,100,20)
print("\nseed() showing same number only : ",rand_arr4)
```

Output:

```
seed() showing same number only :  [67 93 99 18 84 58 87 98 97 48 74 33 47 97
26 84 79 37 97 81]
```

11)Print first position, last position and 2nd and 3rd position.

```
import numpy as np

num = np.array([5,15,25,35]) if not added
print("\n first position : ",num[0]) #5
print("\n third position : ",num[2]) #25
```

FAQ

12)How to identify the last number of the NumPy array?

```
import numpy as np

num = np.array([5,15,25,35]) if not added
print("\n forth position : ",num[3])
```

13) Create a matrix 3 * 3 with value ranging from 0 to 8

```
import numpy as np

arr = np.arange(0,9).reshape(3,3)
print(arr)
```

14) Use numpy to generate array of 25 random numbers sampled from a standard normal distribution

```
import numpy as np

print("\n random number 25\n ",np.random.rand(25))
```

15) Use of reshape ex.1 starting value is 1 and ending value is 50, print 10 integer random numbers

```
import numpy as np
num = np.random.randint(1,50,10)
print("\nprin random numbers 1 to 50 with 10 rand numbers : ",num)
```

FAQ

16) Using ravel() we can combine arrays into single

```
import numpy as np

a = np.array([(1,2,3),(4,5,6)])
print(a.ravel())
```

Output:

```
[1 2 3 4 5 6]
```

17) how to use of concatenate() with axis=0

```
import numpy as np

x=np.array([[1,2],[3,4]])
y=np.array([[5,6]])
z=np.concatenate((x,y),axis=None) #
print("\narray of z value is with o axis : ",z) # [ 1 2 3 4 5 6]
```

18) Print the probabilty arr = [0.23, 0.09, 1.2, 1.24, 9.99] using fix() this example of fuzzy logic or probability

```
import numpy as np

arr_num = [0.23, 0.09, 1.2, 1.24, 9.99]
print("Input probability : ",arr_num)
out_arr = np.fix(arr_num)
print("Output probability : ",out_arr)
```

Output:

```
Input probability :  [0.23, 0.09, 1.2, 1.24, 9.99]
Output probability :  [0. 0. 1. 1. 9.]
```

FAQ

18) What is the use of append() function with axis=0 ?

```
import numpy as np

a=np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
b=np.array([[15, 61, 31], [50, 92, 62], [73, 83, 95]])
c=np.append(a,b,axis=0)
print("\n append function with axis = 0\n ",c)
```

Output:

```
append function with axis = 0
 [[ 1  2  3]
[ 4  5  6]
[ 7  8  9]
[15 61 31]
[50 92 62]
[73 83 95]]
```

19) What is the use of rint() function explain with example ?

```
import numpy as np

arr = [0.23, 0.09, 1.2, 1.24, 9.99]
print("Input array:",arr)
r_arr = np.rint(arr)
print("Output array:",r_arr)
```

Output:

```
Input array: [0.23, 0.09, 1.2, 1.24, 9.99]
Output array: [ 0.  0.  1.  1. 10.]
```

FAQ

19) What is the use of transpose() function explain with example ?

```
import numpy as np

aa= np.array([[1,2],[4,5],[7,8]])
print(aa)
bb= np.transpose(aa,(1,0))
print(bb)
```

Output:

```
[[1 2]
 [4 5]
 [7 8]]
[[1 4 7]
 [2 5 8]]
```

20)How to extract items that satisfy a given condition from 1D array?

```
import numpy as np

# Input
arr = np.array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
print("Input array",arr)
# Solution
arr[arr % 2 == 1]
print("Output array",arr)
```

Output:

```
Input array [0 1 2 3 4 5 6 7 8 9]
Output array [0 1 2 3 4 5 6 7 8 9]
```