

Python-Numpy Assignment 1

Q1. Write a program which Subtract the mean of each row from a matrix. (Create a matrix of random elements)

Q2. Write a python program to count the number of elements in 2D array.

Test case:

Input: `np.array([1, 2])`

Expected Output: 2

Q3. You are given a space separated list of numbers. Your task is to print a reversed NumPy array with the element type float.

Test Case:

Input: 1 2 3 4 5 6 7 8

Expected Output: [8.0 7.0 6.0 5.0 4.0 3.0 2.0 1.0]

Q4. Create the following pattern without hardcoding. Use only numpy functions and the below input array a.

Input: `a = np.array([1,2,3])`

Output: `array([1, 1, 1, 2, 2, 2, 3, 3, 3, 1, 2, 3, 1, 2, 3, 1, 2, 3])`

Q5. Write a function to create a 2d array with 1 on the border and 0 inside. Take 2-D array shape as (a, b) as parameter to function.

Input: a = 4

b = 4

Expected Output:

```
[[1,1,1,1],  
 [1,0,0,1],  
 [1,0,0,1],  
 [1,1,1,1]]
```

Q6. Write a function which will accept 2 arguments.

First: A 1D numpy array arr

Second: An integer n {Please make sure $n \leq \text{len}(\text{arr})$ }

Output: The output should be the nth largest item out of the array.

Test Case:

Input: arr = (12,34,40,7,1,0) and n=3,

Output; 12

Test case:

Input: arr=(12,34,40,7,1,0) and n=1

Output: 40

Q7. Write a program which makes an array having corresponding max value out of two given arrays.

Input:

```
a=np.array([6,3,1,5,8])
```

```
b=np.array([3,2,1,7,2])
```

Output: [6 3 1 7 8]

Q8. Write a python function that accepts infinite number of numpy arrays and do the vertical stack to them. Then return that new array as result. The function only accepts the numpy array, otherwise raise error.

Test Case:

```
Input: a= [[0 1 2 3 4]
            [5 6 7 8 9]]
```

```
        b= [[1 1 1 1 1]
            [1 1 1 1 1]]
```

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