Cognizance Task 8

PYTHON - MEDICORE LVL

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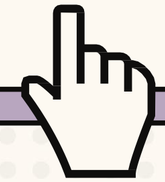

Question 1

Consider the vector [10, 11, 12, 13, 14], how to build a new vector with 5 consecutive zeros interleaved between each value?

Program

```
# Question 1

import numpy as np
# Getting first and last number from user
n1=int(input("Enter first number:"))
n2=int(input("Enter last number:"))
arr=np.array([]) # Initializing empty numpy array
r=n2-n1
for i in range(r):
    arr=np.append(arr,n1) # Appending element to array
    arr=np.append(arr,(np.zeros(5))) # Adding 5 zeros after element to array
    n1+=1 # Incrementing element
arr=np.append(arr,n2) # Appending last element
print()
print(arr) # Printing the array
```

Output

```
In [1]: runfile('C:/Users/abi/Desktop/cognizance/Task 8/Q1.py', wdir='C:/Users/abi/Desktop/cognizance/
Task 8')

Enter first number:10

Enter last number:14

[10.  0.  0.  0.  0.  0. 11.  0.  0.  0.  0.  0. 12.  0.  0.  0.  0.  0.
 13.  0.  0.  0.  0.  0. 14.]
```

Question 2

Consider two random array A and B, check if they are equal

Program

```
# Question 2
import numpy as np
n=int(input("Enter array length:")) # Getting length of array from user

# Iniatilizing empty arrays
A=[]
B=[]

print("Enter elements for First Array:")

# Getting elements from user
for i in range(n):
    e=int(input("Element :"))
    A.append(e)
print()
print("Enter elements for Second Array:")
for j in range(n):
    e1=int(input("Element :"))
    B.append(e1)

# Changing it into numpy array
A=np.array(A)
B=np.array(B)
print()
print("First array: ",A)
print("Second arrary: ",B)
print()
# np.array_equal compares both the array and return boolean value
print(np.array_equal(A, B))
```

Output

```
In [2]: runfile('C:/Users/abi/Desktop/cognizance/Task 8/Q2.py', wdir='C:/Users/abi/Desktop/cognizance/Task 8')

Enter array length:6
Enter elements for First Array:

Element :1

Element :0

Element :0

Element :0

Element :1

Element :0

Enter elements for Second Array:

Element :0

Element :0

Element :1

Element :1

Element :0

Element :1

First array:  [1 0 0 0 1 0]
Second arrary:  [0 0 1 1 0 1]

False
```

Question 3

What is the result of the following expression ?

```
print(0 * np.nan)
print(np.nan != np.nan)
print(np.inf > np.nan)
print(np.nan - np.nan)
print(0.3 == 3 * 0.1)
```

Program

```
# Question 3

import numpy as np
print(0 * np.nan)
print(np.nan != np.nan) # np.nan is not comparable to np.nan directly
print(np.inf > np.nan)
print(np.nan - np.nan)
print(0.3 == 3 * 0.1)
```

Output

```
In [3]: runfile('C:/Users/abi/Desktop/cognizance/Task 8/Q3.py', wdir='C:/Users/abi/
Desktop/cognizance/Task 8')
nan
True
False
nan
False
```

Question 4

Convert the first character of each element in a series to uppercase?

Program

```
# Question 4


import pandas as pd
ser = pd.Series(['amrita', 'school', 'of', 'engineering' , 'chennai' , 'campus'])
ser=ser.str.title() # Capitalizing first letter of each element using title()
for i in ser:
    print(i,end=" ") # Printing the series
```

Output

```
In [5]: runfile('C:/Users/abi/Desktop/cognizance/Task 8/Q4.py', wdir='C:/Users/abi/
Desktop/cognizance/Task 8')
Amrita School Of Engineering Chennai Campus
```

Question 5

Do any two Exercises using NumPy

1. addition of 2 numpy arrays
2. Getting the positions (indexes) where elements of 2 numpy arrays match

1. Adding of 2 numpy arrays

Program

```
# Question 5

# 1
# Adding two arrays

import numpy as np
n=int(input("Enter array length:")) # Getting length of the array from user
# Initializing empty arrays
a1=[]
a2=[]
#Gettimg elements from user
print("Enter elements for First Array:")
for i in range(n):
    e=int(input("Element :"))
    a1.append(e)
print()
print("Enter elements for Second Array:")
for j in range(n):
    e1=int(input("Element :"))
    a2.append(e1)

# Changing it into numpy arrays
a1=np.array(a1)
a2=np.array(a2)
print()
print("First array: ",a1)
print("Second array: ",a2)
print()
ad=np.add(a1,a2) # Adding both the arrays using add()
print("Sum of 2 arrays: ",ad) # Printing the result
```

Output

```
In [8]: runfile('C:/Users/abi/Desktop/cognizance/Task 8/Q5.py', wdir='C:/Users/abi/
Desktop/cognizance/Task 8')

Enter array length:3
Enter elements for First Array:

Element :1

Element :2

Element :3

Enter elements for Second Array:

Element :4

Element :5

Element :6

First array:  [1 2 3]
Second array:  [4 5 6]

Sum of 2 arrays:  [5 7 9]
```

2.

Getting the positions (indexes) where elements of 2 numpy arrays match.

Program

```
# Question 5

# 2
# Getting the positions (indexes) where elements of 2 numpy arrays match

import numpy as np
n=int(input("Enter array length:")) # Getting length of the array from user
# Initializing empty arrays
arr1=[]
arr2=[]
#Gettimg elements from user
print("Enter elements for First Array:")
for i in range(n):
    e=int(input("Element :"))
    arr1.append(e)
print()
print("Enter elements for Second Array:")
for j in range(n):
    e1=int(input("Element :"))
    arr2.append(e1)

# Changing it into numpy arrays
arr1=np.array(arr1)
arr2=np.array(arr2)
print()
print("First array: ",arr1)
print("Second array: ",arr2)
print()
l=[]
for i in range(n):
    if arr1[i]==arr2[i]: # Comparing both the arrays
        l.append(i) # Appending the index to the list

print("Indexex at which elements of arrays match are: ")
for i in l:
    print(i,end=" ") # Printing the indexes(position)
```

Output

```
In [9]: runfile('C:/Users/abi/Desktop/cognizance/Task 8/Q5(b).py', wdir='C:/Users/abi/
Desktop/cognizance/Task 8')

Enter array length:5
Enter elements for First Array:

Element :1

Element :0

Element :0

Element :0

Element :1

Enter elements for Second Array:

Element :2

Element :1

Element :0

Element :0

Element :1

First array:  [1 0 0 0 1]
Second array:  [2 1 0 0 1]

Indexex at which elements of arrays match are:
2 3 4
```

THANK YOU