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Batch code: ANP-C9180

Day 16: Numpy

```
import numpy as np

# Solve below questions:

# 1. Create a 1D array with elements from 1 to 10.

#input from the user
arr = np.arange(1,11) #arange function used to create an array with
elements from 1 to 10
print("1D array with elements from 1 to 10:") #Sentence to display on
console
print(arr) #display of array from 1 to 10
print("-----") #line to separate
questions

# 2. Create a 2D array of size 3x3 filled with zeros.

# Create an array of zeros with shape (3, 3)
zero_arr = np.zeros((3, 3)) #use zeros (a built-in function) to print zeros
in the array.
print("An array of size 3x3 filled with zeros:") #Sentence to display
on console
print(zero_arr) #display of 3x3 array with zeros
print("-----") #line to separate
questions

# 3. Find the maximum and minimum values in an array.
my_arr = np.random.rand(3,3) #random.rand(built-in function) prints random
elements in a 3x3 array.
print("Given array is:") #Sentence to display on console
print(my_arr) #display of 3x3 array with random elements
maximum_val = np.max(my_arr) #max function is used to find an element with
a maximum value
minimum_val = np.min(my_arr) #min function is used to find an element with
a minimum value
print(f"An element with maximum value is: {maximum_val}") #showing an
element with maximum value to console
print(f"An element with minimum value is: {minimum_val}") #showing an
element with minimum value to console
```

```

print("-----")      #line to separate
questions

# 4. Reshape a 1D array into a 2D array of shape 2x5.
re_arr = np.arange(10)    #1D array with 10 elements
print("1D Array is:")
print(re_arr)
reshaped_arr = re_arr.reshape(2,5)    #Reshaped array with 2x5 matrix.
print("Reshaped 2D Array of shape 2x5 is:")
print(reshaped_arr)
print("-----")      #line to separate
questions

# 5. Generate a 1D array of 5 random integers between 10 and 50.
any_random_num_arr = np.random.randint(10,50,size=5)
print("Random array is",any_random_num_arr)
print("-----")

# 6. Convert the below list into a numpy array then display the array

# Input:
my_list = [1, 2, 3, 4, 5]
print(f"The List is {my_list}")
list_into_arr = np.array(my_list)
print(f"List Converted to array is: {list_into_arr}")

# 7. Convert the below list into a numpy array then display the array
# Then display the first and last index, multiply each element by 2, and
display the result.
print(f"First Index is {list_into_arr[0]} and Last index is
{list_into_arr[-1]}")
print(f"Result Array after multiplication by 2 is: {list_into_arr*2}")
print("-----")

```

Output:

```
1D array with elements from 1 to 10:
[ 1  2  3  4  5  6  7  8  9 10]
-----
An array of size 3x3 filled with zeros:
[[0. 0. 0.]
 [0. 0. 0.]
 [0. 0. 0.]]
-----
Given array is:
[[0.51616329 0.30831549 0.3466193 ]
 [0.08019192 0.71448023 0.22710239]
 [0.14727545 0.35650139 0.77494715]]
An element with a maximum value is: 0.7749471488404609
An element with a minimum value is: 0.08019191951528837
-----
1D Array is:
[0 1 2 3 4 5 6 7 8 9]
Reshaped 2D Array of shape 2x5 is:
[[0 1 2 3 4]
 [5 6 7 8 9]]
-----
Random array is [33 32 17 16 38]
-----
The List is [1, 2, 3, 4, 5]
List Converted to an array is: [1 2 3 4 5]
First Index is 1 and the Last index is 5
Result Array after multiplication by 2 is: [ 2  4  6  8
10]
-----
```

Process finished with exit code 0