PYTHON PROGRAMMING

LAB-17 ANSWERS

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1. Write a NumPy program to create an array of 10 zeros, 10 ones, and 10 fives

Code:

```python
import numpy as np #importing numpy as np.

# Creating arrays of 10 zeros, 10 ones, and 10 fives using
np.array() and np.full().
zeros_array = np.array([0] * 10) #intializing for 10 zeros.
ones_array = np.full(10, 1) #intializing for 10 Ones.
fives_array = np.full(10, 5) #intializing for 10 Fives..

result_array = np.concatenate([zeros_array, ones_array,
fives_array]) # Concatenating the arrays together.

print("Final Array:") #printing the Final array.
print(result_array) #printing the final result.
```

Output:

Final Array:
[0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 5 5 5 5 5 5 5 5 5 5]

2. Write a NumPy program to create a 3x3 matrix with values ranging from 2 to 10.

Code:

```python
import numpy as np #import numpy as np.

array = np.linspace(2, 10, 9) # Creating an array with 9 evenly spaced values from 2 to 10.

arr_matrix = array.reshape(3, 3) # Reshaping the array into a 3x3 matrix.

print(arr_matrix) #printing the final result as arr_matrix.
```

Output:

```
[[ 2.  3.  4.]
 [ 5.  6.  7.]
 [ 8.  9. 10.]]
```

3. Write a NumPy program to create an array with values ranging from 12 to 38.

Code:

```python
import numpy as np #importing numpy as np.

array = np.linspace(12, 38, 27, dtype=int) # Creating an array with 27 evenly spaced values from 12 to 38.

print(array) #printing final result as array.
```

Output:

[12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38]

4. Write a NumPy program to convert a list and tuple into arrays.

Input: my_list = [1, 2, 3, 4, 5, 6, 7, 8]

Input: my_tuple = ([8, 4, 6], [1, 2, 3])

Code:

```python
import numpy as np #imorting numpy as np.

my_list = [1, 2, 3, 4, 5, 6, 7, 8] # Inputing the list of elements.

my_tuple = ([8, 4, 6], [1, 2, 3]) # Inputing the tuple.

array_from_list = np.asarray(my_list) # Converting list to array.

array_from_tuple = np.asarray(my_tuple) # Converting tuple to array.

print("Array from list:") #printing the array from list.
print(array_from_list) #printing result of array from list.

print("\nArray from tuple:")  #printing the array from tuple.
print(array_from_tuple) #printing result of array from tuple.
```

Output:
Array from list:
[1 2 3 4 5 6 7 8]

Array from tuple:
[[8 4 6]
 [1 2 3]]