26 Feb ASS

April 3, 2023

[2]:
```
import numpy as np
list_ = [ '1' , '2' , '3' , '4' , '5' ]
array_list = np.array(object = list_)
```

[ ]:
```
Q1. Is there any difference in the data type of variables list_ and array_list?
 ↪If there is then write a code
to print the data types of both the variables.
```

[ ]:
```
ANS -
```

[ ]:
```
The main difference between list and arraylist is that list is an interface
 ↪while arraylist is a class . most
importantly ,it implements the list interface , which also means that arraylist
 ↪is a subtype of the list interface.
```

[10]:
```
list = ['1' , '2' , '3' , '4' , '5']
```

[15]:
```
 np.array(object = list)
```

[15]:
```
array(['1', '2', '3', '4', '5'], dtype='<U1')
```

[ ]:
```

```

[ ]:
```

```

[ ]:
```
Q2. Write a code to print the data type of each and every element of both the
 ↪variables list_ and
arra_list.
```

[ ]:
```
ANS -
```

[32]:
```
arr = ['1' , '2' , '3' , '4' , '5']
```

[33]:
```
type(1)
```

[33]:
```
int
```

[34]:
```
type(2)
```

[34]:
```
int
```

[35]:
```
type(3)
```

[35]:
```
int
```

[36]:
```
type(4)
```

[36]:
```
int
```

[37]:
```
type(5)
```

[37]:
```
int
```

[ ]:

[ ]:

[ ]:
```
Q3. Considering the following changes in the variable, array_list:
array_list = np.array(object = list_, dtype = int)
Will there be any difference in the data type of the elements present in both␣
 ↪the variables, list_ and
arra_list? If so then print the data types of each and every element present in␣
 ↪both the variables, list_
and arra_list.
```

[ ]:
```
ANS -
```

[38]:
```
list = ['1' , '2' , '3' , '4' , '5']
```

[39]:
```
 np.array(object = list_, dtype = int)
```

[39]:
```
array([1, 2, 3, 4, 5])
```

[ ]:

[ ]:
```
Q4. Write a code to find the following characteristics of variable, num_array:
(i) shape
(ii) size
```

[ ]:
```
ANS -
```

[3]:
```
import numpy as np
```

[4]:
```
arr1 =np.random.randint(3,5 , (7,9))
```

[5]:
```
arr1
```

[5]:
```
array([[4, 3, 4, 4, 4, 4, 4, 4, 4],
       [3, 3, 4, 4, 4, 3, 4, 4, 4],
       [3, 4, 4, 4, 3, 3, 4, 3, 3],
       [3, 3, 3, 3, 4, 3, 4, 4, 3],
       [3, 3, 4, 4, 4, 4, 3, 4, 4],
       [3, 4, 3, 4, 4, 4, 3, 4, 4],
       [4, 3, 4, 3, 3, 4, 3, 3, 3]])
```

[6]:
```
arr1.shape
```

[6]:
```
(7, 9)
```

[7]:
```
arr1.size
```

[7]:
```
63
```

[ ]:

[ ]:

[ ]:
```
Q5. Write a code to create numpy array of 3*3 matrix containing zeros only,␣
 ↪using a numpy array
creation function.
[Hint: The size of the array will be 9 and the shape will be (3,3).]
```

[ ]:
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ANS -
```

[8]:
```
np.zeros((9,3,3))
```

[8]:
```
array([[[0., 0., 0.],
        [0., 0., 0.],
        [0., 0., 0.]],

       [[0., 0., 0.],
        [0., 0., 0.],
        [0., 0., 0.]],

       [[0., 0., 0.],
        [0., 0., 0.],
        [0., 0., 0.]],

       [[0., 0., 0.],
        [0., 0., 0.],
        [0., 0., 0.]],
```

```
[[0., 0., 0.],
 [0., 0., 0.],
 [0., 0., 0.]],

[[0., 0., 0.],
 [0., 0., 0.],
 [0., 0., 0.]],

[[0., 0., 0.],
 [0., 0., 0.],
 [0., 0., 0.]],

[[0., 0., 0.],
 [0., 0., 0.],
 [0., 0., 0.]],

[[0., 0., 0.],
 [0., 0., 0.],
 [0., 0., 0.]]])
```

[ ]:

[ ]:

[ ]:
```
Q6. Create an identity matrix of shape (5,5) using numpy functions?
[Hint: An identity matrix is a matrix containing 1 diagonally and other␣
 ↪elements will be 0.]
```

[ ]:
```
ANS -
```

[9]:
```
np.eye(5,5)
```

[9]:
```
array([[1., 0., 0., 0., 0.],
       [0., 1., 0., 0., 0.],
       [0., 0., 1., 0., 0.],
       [0., 0., 0., 1., 0.],
       [0., 0., 0., 0., 1.]])
```

[ ]:

[ ]: