ASSIGNMENT

Q1. How to create an empty and a full NumPy array?

Code:

```
import numpy as np
empty_array = np.empty((0,4))
print("Empty array: ")
print(empty_array)

full_array = np.full( shape: (3, 3),  fill_value: 7)
print("Full array: ")
print(full_array)
```

Output:

```
Empty array:
[]
Full array:
[[7 7 7]
 [7 7 7]
 [7 7 7]]
```

Q2. Create a Numpy array filled with all zeroes.

Code:

```
import numpy as np
zeroes_array = np.zeros((3,2))
print(zeroes_array)
```

Output:

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

Q3. Create a Numpy array filled with all ones.

Code:

```
import numpy as np
ones_array = np.ones((2,3))
print(ones_array)
```

Output:

```
[[1. 1. 1.]
 [1. 1. 1.]]
```

Q4. Combining a one and a two-dimensional NumPy Array.

Code:

```
import numpy as np
array_1D = np.array([10, 20, 30])
array_2D = np.array([[1,2], [2,3], [4,5]])

combined_array = np.column_stack((array_1D, array_2D))
print(combined_array)
```

Output:

```
[[10  1  2]
 [20  2  3]
 [30  4  5]]
```

Q5. Create a Numpy array with random values.

Code:

```
import numpy as np
arr = np.random.rand(2,3)
print(arr)
```

Output:

```
[[0.1547149  0.05429897 0.60166255]
 [0.50326231 0.46740954 0.14604895]]
```

Q6. Return a Matrix of random values from a Gaussian distribution.

Code:

```
import numpy as np
arr = np.random.randn(2,3)
print(arr)
```

Output:

```
[[ 0.34316931 -1.26858079  0.9601329 ]
 [-1.19801186  0.15836302  1.30176325]]
```

Q7. How to convert a list and tuple into NumPy arrays?

Code:

```
import numpy as np
# List to NumPy array
list_data = [1, 2, 3, 4, 5]
array_from_list = np.array(list_data)

# Tuple to NumPy array
tuple_data = (10, 20, 30, 40, 50)
array_from_tuple = np.array(tuple_data)

print("Array from List:", array_from_list)
print("Array from Tuple:", array_from_tuple)
```

Output:

```
[[ 1.21359753 -0.13081151 -0.14370478]
 [-1.76340201 -1.63503437 -1.64337493]]
Array from List: [1 2 3 4 5]
Array from Tuple: [10 20 30 40 50]
```

Q8. Ways to convert array of strings to array of floats'.

Code:

```
import numpy as np
arr = np.array(['1.2','4.5','8.1'])

float_arr = arr.astype(float)
print("Array: ", arr)
print("Float array: ", float_arr)
```

Output:

```
Array:  ['1.2' '4.5' '8.1']
Float array:  [1.2 4.5 8.1]
```

Q9. Get Random elements from Laplace distribution.

Code:

```
import numpy as np
arr = np.random.laplace( loc: 2,  scale: 1,  size: (3,4))
print(arr)
```

Output:

```
[[ 1.30890018  2.39206865  1.56702161  1.72300445]
 [ 0.65243818 -0.5736858   2.60735914  2.62799145]
 [ 0.64890147  7.19086623  2.85867421  2.19166018]]
```

Q10. Generate Random Numbers from The Uniform Distribution using NumPy.

Code:

```
import numpy as np
arr = np.random.uniform( low: 2, high: 10, size: (2,3))
print(arr)
```

Output:

```
[[9.05677485 5.33536224 9.98593481]
 [4.96319948 3.05419526 6.45880909]]
```