Initializing Different types of Arrays

In [1]:
```
import numpy as np
```

In [2]:
```
# All 0s matrix
np.zeros((2,3,5))
```

Out[2]:
```
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.]]])
```

In [3]:
```
# Any other number
np.full((2,2), [1,2], dtype='float32')
# their is no need to add data type,
# but if added it will try to convert the fill to that data type
```

Out[3]:
```
array([[1., 2.],
       [1., 2.]], dtype=float32)
```

In [4]:
```
# Random decimal numbers
np.random.rand(4,2) # 1
np.random.random_sample((4,2)) # 2
# both perform same actions
```

Out[4]:
```
array([[0.11133415, 0.01797334],
       [0.13001518, 0.31265432],
       [0.38771251, 0.52939259],
       [0.92905926, 0.33152829]])
```

In [5]:
```
# Random integer values
np.random.randint(3,7, size=(3,3))
```

Out[5]:
```
array([[4, 6, 4],
       [6, 4, 4],
       [3, 6, 6]])
```

In [6]:
```
# Identity matrix
np.identity(5, dtype='int32')
```

Out[6]:
```
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]], dtype=int32)
```

In [7]:
```
# Repeat an array
arr = np.array([[1,2,3]])
r1 = np.repeat(arr,3,axis=0)
print(r1)
```

```
[[1 2 3]
 [1 2 3]
 [1 2 3]]
```

In [8]:
```
# Question - 1
arr = np.full((5,5), 1)
arr[1:-1,1:-1] = 0
arr[2,2]=9
print(arr)
```

```
[[1 1 1 1 1]
 [1 0 0 0 1]
 [1 0 9 0 1]
 [1 0 0 0 1]
 [1 1 1 1 1]]
```

In [9]:
```
# Becarefull when copying arrays
a = np.array([1,2,3])
b = a # shallow copy
b[0] = 100
print('a->',a)
print('b->',b)
```

```
a-> [100   2   3]
b-> [100   2   3]
```

In [10]:
```
a = np.array([1,2,3])
b = a.copy() # deep copy
b[0] = 100
print('a->',a)
print('b->',b)
```

```
a-> [1 2 3]
b-> [100   2   3]
```