In [1]:
```
#khai bao thu vien numpy de su dung
import numpy as np

#tao list
my_list1 = [1,2,3,4]

#tao mang numpy tu list tren
my_array1 = np.array(my_list1)
```

In [2]:
```
#Print out array
my_array1
```

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

In [3]:
```
# Make another list
my_list2 = [11,22,33,44]

#Make a list of lists
my_lists = [my_list1,my_list2]

#Make multi-dimensional array
my_array2 = np.array(my_lists)

#Show array
my_array2
```

Out[3]:
```
array([[ 1,  2,  3,  4],
       [11, 22, 33, 44]])
```

In [4]:
```
#Lets get the size of the array
my_array2.shape
```

Out[4]:
```
(2, 4)
```

In [5]:
```
#Find out the data type of the array
my_array2.dtype
```

Out[5]:
```
dtype('int32')
```

In [6]:
```
#Making special case arrays

#Zeros
np.zeros((2,5))
```

Out[6]:
```
array([[0., 0., 0., 0., 0.],
       [0., 0., 0., 0., 0.]])
```

In [7]:
```
#Ones
np.ones((5,5))
```

Out[7]:
```
array([[1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1.]])
```

In [8]:
```
# An empty array
np.empty(100)
```

Out[8]:
```
array([ 5.28595595e-085,  1.61674054e+184,  5.70766076e-110,
        1.23392427e-095,  3.03428028e-086,  1.72219190e+097,
        6.01334435e-154,  3.23933836e-205,  4.37339537e+257,
        1.07030996e-013, -1.42160424e+308,  8.96337736e-309,
        1.12044094e+219,  2.07535667e+026,  7.00265746e-061,
        1.02800749e-312,  9.70427720e-308,  1.72723390e-077,
        1.79292066e-313,  1.09385327e-303,  1.75393304e-321,
        2.17292369e-311,  7.91270162e-308,  2.21672182e-301,
        5.83450858e-302,  3.82447961e-297,  2.50544747e-292,
        1.07671935e-282,  5.50929512e-279,  5.98123966e-154,
        7.22247388e+159,  1.81450402e-152,  3.88794576e+174,
        4.77497310e+180,  2.66064034e-260,  3.15756657e+233,
        6.96384174e+252,  1.81450400e-152,  2.11329289e+214,
        2.35287091e+251,  3.82544660e+228,  6.47518981e+170,
        5.98150386e-154,  7.22771642e+159,  5.03032220e+180,
        2.72157656e+257,  9.27987405e+242,  4.81432065e+199,
        2.43812985e-152,  1.46923330e+195,  1.67500440e+243,
        6.01346953e-154,  5.28964691e+180,  2.47379808e-091,
        4.47593816e-091,  1.73782264e-152,  8.30807897e+151,
        6.01334637e-154,  3.76152112e+233,  4.83245960e+276,
        4.00979049e+087,  2.46599819e-154,  4.47593816e-091,
        1.91002772e+227,  1.96086546e+243,  1.39310750e-258,
        6.01347002e-154,  1.95040666e+227,  1.10638559e+200,
        5.46647994e+241,  5.80835514e+180,  2.62789177e+092,
        1.00735898e+261,  2.46599062e-154,  5.37625007e+241,
        7.63907878e-095,  3.86598877e+233,  1.81596891e-152,
        1.48776246e+195,  7.38326283e+170,  1.68884892e+155,
        2.62785629e+092,  2.04553260e-258,  4.47593804e-091,
        6.01334512e-154,  2.19855062e-152,  7.22247388e+159,
        1.81450402e-152,  5.13121664e+252,  2.03487601e+174,
        9.08367206e+223,  6.87015417e+228,  1.71757613e+228,
        1.96086573e+243,  6.97843734e+252,  1.76625390e+267,
        5.98129759e-154,  2.52303223e-258,  4.47593804e-091,
        4.29886089e+237])
```

In [9]:
```
np.empty((3,4))
```

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

In [10]:
```
#Identity array
np.eye(5)
```

Out[10]:
```
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.]])
```

In [11]:
```
# Using a range
np.arange(5)
```

Out[11]:
```
array([0, 1, 2, 3, 4])
```

In [21]:
```
np.arange(50,100, 3)
```

Out[21]:
```
array([50, 53, 56, 59, 62, 65, 68, 71, 74, 77, 80, 83, 86, 89, 92, 95, 98])
```

In [28]:
```
np.full((3,4), [1,2,2,1])
```

Out[28]:
```
array([[1, 2, 2, 1],
       [1, 2, 2, 1],
       [1, 2, 2, 1]])
```