Day 12

```
a=np.arange(9)
a
array([0, 1, 2, 3, 4, 5, 6, 7, 8])
a=a.reshape(3,3)
a
array([[0, 1, 2],
       [3, 4, 5],
       [6, 7, 8]])
b=np.arange(1,10)
b=b.reshape(3,3)
b
array([[1, 2, 3],
       [4, 5, 6],
       [7, 8, 9]])
a*b
array([[ 0,  2,  6],
       [12, 20, 30],
       [42, 56, 72]])
a.dot(b)
array([[ 18,  21,  24],
       [ 54,  66,  78],
       [ 90, 111, 132]])
np.hstack((a,b))
array([[0, 1, 2, 1, 2, 3],
       [3, 4, 5, 4, 5, 6],
       [6, 7, 8, 7, 8, 9]])
np.vstack((a,b))
array([[0, 1, 2],
```

[3, 4, 5],

[6, 7, 8],

[1, 2, 3],

[4, 5, 6],

[7, 8, 9]])

np.vstack((b,a))

array([[1, 2, 3],

[4, 5, 6],

[7, 8, 9],

[0, 1, 2],

[3, 4, 5],

[6, 7, 8]])

a

array([[0, 1, 2],

[3, 4, 5],

[6, 7, 8]])

b

array([[1, 2, 3],

[4, 5, 6],

[7, 8, 9]])

c=a

a[2,2]=5

a

array([[0, 1, 2],

[3, 4, 5],

[6, 7, 5]])

c

array([[0, 1, 2],

[3, 4, 5],

[6, 7, 5]])

id(a)

2581752568528

id(c)

2581752568528

d=a.view()

d

array([[0, 1, 2],

[3, 4, 5],

[6, 7, 5]])

a[1,2]=10

a

array([[0, 1, 2],

[3, 4, 10],

[6, 7, 5]])

d

array([[0, 1, 2],

[3, 4, 10],

[6, 7, 5]])

id(d)

2581997509328

id(a)

2581752568528

e=a.copy()

a

array([[0, 1, 2],

[3, 4, 10],

[6, 7, 5]])

e

```
array([[ 0,  1,  2],
       [ 3,  4, 10],
       [ 6,  7,  5]])
```

a[0,2]=20

a

```
array([[ 0,  1, 20],
       [ 3,  4, 10],
       [ 6,  7,  5]])
```

e

```
array([[ 0,  1,  2],
       [ 3,  4, 10],
       [ 6,  7,  5]])
```

a

```
array([[ 0,  1, 20],
       [ 3,  4, 10],
       [ 6,  7,  5]])
```

np.append(a,10)

```
array([ 0,  1, 20,  3,  4, 10,  6,  7,  5, 10])
```

c=np.arange(20)

np.append(a,11)

```
array([ 0,  1, 20,  3,  4, 10,  6,  7,  5, 11])
```

np.append(c,11)

```
array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16,
       17, 18, 19, 11])
```

np.append(a,12)

```
array([ 0,  1, 20,  3,  4, 10,  6,  7,  5, 12])
```

a

```
array([[ 0,  1, 20],
       [ 3,  4, 10],
```

```
       [ 6,  7,  5]])
```

np.append(a,[[11,12,13]],axis=0)

```
array([[ 0,  1, 20],
       [ 3,  4, 10],
       [ 6,  7,  5],
       [11, 12, 13]])
```

a

```
array([[ 0,  1, 20],
       [ 3,  4, 10],
       [ 6,  7,  5]])
```

np.append(a,[[11],[12],[13]],axis=1)

```
array([[ 0,  1, 20, 11],
       [ 3,  4, 10, 12],
       [ 6,  7,  5, 13]])
```

np.append(a,[[11,13]],axis=0)

```
Traceback (most recent call last):
  File "<pyshell#49>", line 1, in <module>
    np.append(a,[[11,13]],axis=0)
  File "<__array_function__ internals>", line 5, in append
  File "C:\Users\nielit\AppData\Local\Programs\Python\Python310\lib\site-
packages\numpy\lib\function_base.py", line 4817, in append
    return concatenate((arr, values), axis=axis)
  File "<__array_function__ internals>", line 5, in concatenate
ValueError: all the input array dimensions for the concatenation axis must match exactly, but along
dimension 1, the array at index 0 has size 3 and the array at index 1 has size 2
```

a

```
array([[ 0,  1, 20],
       [ 3,  4, 10],
       [ 6,  7,  5]])
```

b

```
array([[1, 2, 3],
       [4, 5, 6],
       [7, 8, 9]])
```

c

```
array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16,
       17, 18, 19])
```

np.delete(c,4)

```
array([ 0,  1,  2,  3,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16, 17,
       18, 19])
```

np.delete(a,1)

```
array([ 0, 20,  3,  4, 10,  6,  7,  5])
```

np.delete(a,1,axis=0)

```
array([[ 0,  1, 20],
       [ 6,  7,  5]])
```

np.delete(a,1,axis=1)

```
array([[ 0, 20],
       [ 3, 10],
       [ 6,  5]])
```

a=np.random.randn(4,6)

a

```
array([[ 0.83180614,  0.09165184, -0.13822705, -1.16938202, -0.94328948,
         0.25769292],
       [-0.97348367,  0.24513401, -0.06081013, -0.48100787, -0.04560986,
        -0.85218578],
       [-0.45993779, -3.12827249, -0.08716143,  0.77318257, -0.61807934,
         1.6492033 ],
       [-0.12311303,  0.45777186,  0.55043831, -0.52868425, -0.84833229,
        -1.20941751]])
```

np.split(a,2)

```
[array([[ 0.83180614,  0.09165184, -0.13822705, -1.16938202, -0.94328948,
         0.25769292],
       [-0.97348367,  0.24513401, -0.06081013, -0.48100787, -0.04560986,
        -0.85218578]]), array([[-0.45993779, -3.12827249, -0.08716143,  0.77318257, -0.61807934,
         1.6492033 ],
       [-0.12311303,  0.45777186,  0.55043831, -0.52868425, -0.84833229,
        -1.20941751]])]
```

b=np.split(a,2)

b[0]

```
array([[ 0.83180614,  0.09165184, -0.13822705, -1.16938202, -0.94328948,
         0.25769292],
       [-0.97348367,  0.24513401, -0.06081013, -0.48100787, -0.04560986,
        -0.85218578]])
```

b[1]

```
array([[-0.45993779, -3.12827249, -0.08716143,  0.77318257, -0.61807934,
         1.6492033 ],
       [-0.12311303,  0.45777186,  0.55043831, -0.52868425, -0.84833229,
        -1.20941751]])
```

a

```
array([[ 0.83180614,  0.09165184, -0.13822705, -1.16938202, -0.94328948,
         0.25769292],
       [-0.97348367,  0.24513401, -0.06081013, -0.48100787, -0.04560986,
        -0.85218578],
       [-0.45993779, -3.12827249, -0.08716143,  0.77318257, -0.61807934,
         1.6492033 ],
       [-0.12311303,  0.45777186,  0.55043831, -0.52868425, -0.84833229,
        -1.20941751]])
```

b

```
[array([[ 0.83180614,  0.09165184, -0.13822705, -1.16938202, -0.94328948,
         0.25769292],
       [-0.97348367,  0.24513401, -0.06081013, -0.48100787, -0.04560986,
        -0.85218578]]), array([[-0.45993779, -3.12827249, -0.08716143,  0.77318257, -0.61807934,
         1.6492033 ],
       [-0.12311303,  0.45777186,  0.55043831, -0.52868425, -0.84833229,
        -1.20941751]])]
```

a=np.arange(9)

a=a.reshape(3,3)

a

```
array([[0, 1, 2],
       [3, 4, 5],
       [6, 7, 8]])
```

np.tile(a,(2,1))

```
array([[0, 1, 2],
       [3, 4, 5],
       [6, 7, 8],
       [0, 1, 2],
       [3, 4, 5],
       [6, 7, 8]])
```

np.tile(a,(2,3))

```
array([[0, 1, 2, 0, 1, 2, 0, 1, 2],
       [3, 4, 5, 3, 4, 5, 3, 4, 5],
       [6, 7, 8, 6, 7, 8, 6, 7, 8],
       [0, 1, 2, 0, 1, 2, 0, 1, 2],
       [3, 4, 5, 3, 4, 5, 3, 4, 5],
       [6, 7, 8, 6, 7, 8, 6, 7, 8]])
```

a

```
array([[0, 1, 2],
```

[3, 4, 5],

[6, 7, 8]])

np.insert(a,1,10,axis=0)

array([[0, 1, 2],

[10, 10, 10],

[3, 4, 5],

[6, 7, 8]])

np.add(a,b)