e-2

March 11, 2025

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

[2]:
```
a = np.array(
    [
        [1, 2, 3],
        [4, 5, 6],
        [7, 8, 9]
    ]
)
```

[3]:
```
a.reshape(1, 9)
```

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

[4]:
```
a.reshape(9, 1)
```

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

[6]:
```
a.size #count of items in a
```

[6]:
```
9
```

[7]:
```
a[2, 0]
```

[7]:
```
np.int64(7)
```

[9]:
```
a[:2]
```

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

[10]:
```
b = np.array([
    [10, 11, 12],
])
```

[15]:
```
np.vstack((a, b)) # and hstact exists too and according to the dimns
```

[15]:
```
array([[ 1,  2,  3],
       [ 4,  5,  6],
       [ 7,  8,  9],
       [10, 11, 12]])
```

[17]:
```
np.concatenate((a, b),axis=0)        # Adds arr2 as columns to end of arr1
```

[17]:
```
array([[ 1,  2,  3],
       [ 4,  5,  6],
       [ 7,  8,  9],
       [10, 11, 12]])
```

[21]:
```
np.hsplit(a, 3)  #Splits arr horizontally on the 5th index, vsplit exists too
```

[21]:
```
[array([[1],
        [4],
        [7]]),
 array([[2],
        [5],
        [8]]),
 array([[3],
        [6],
        [9]])]
```

[26]:
```
c = np.array([1, 5, 3])
c.sort()
c
```

[26]:
```
array([1, 3, 5])
```

[31]:
```
copy_arr = a.copy() #Copies arr to new memory
copy_arr
```

[31]:
```
array([[1, 2, 3],
       [4, 5, 6],
       [7, 8, 9]])
```

[38]:
```
view_copy_arr = a.view() #Creates view of arr elements with type dtype
view_copy_arr
```

[38]:
```
array([[ 1,  2, 30],
       [ 4,  5,  6],
       [ 7,  8,  9]])
```

[39]:
```
view_copy_arr[0, 2] = 30

print(view_copy_arr)
print('-------')
print(a)
```

```
[[ 1  2 30]
 [ 4  5  6]
 [ 7  8  9]]
-------
[[ 1  2 30]
 [ 4  5  6]
 [ 7  8  9]]
```

[41]:
```
view_copy_arr.base #show us the base and source of this obj
```

[41]:
```
array([[ 1,  2, 30],
       [ 4,  5,  6],
       [ 7,  8,  9]])
```

[ ]:
```

```