BATCH : B150 Data Science

LESSON : NUMPY

DATE : 01.04.2023

SUBJECT : Session 3- Numpy Indexing & Selection

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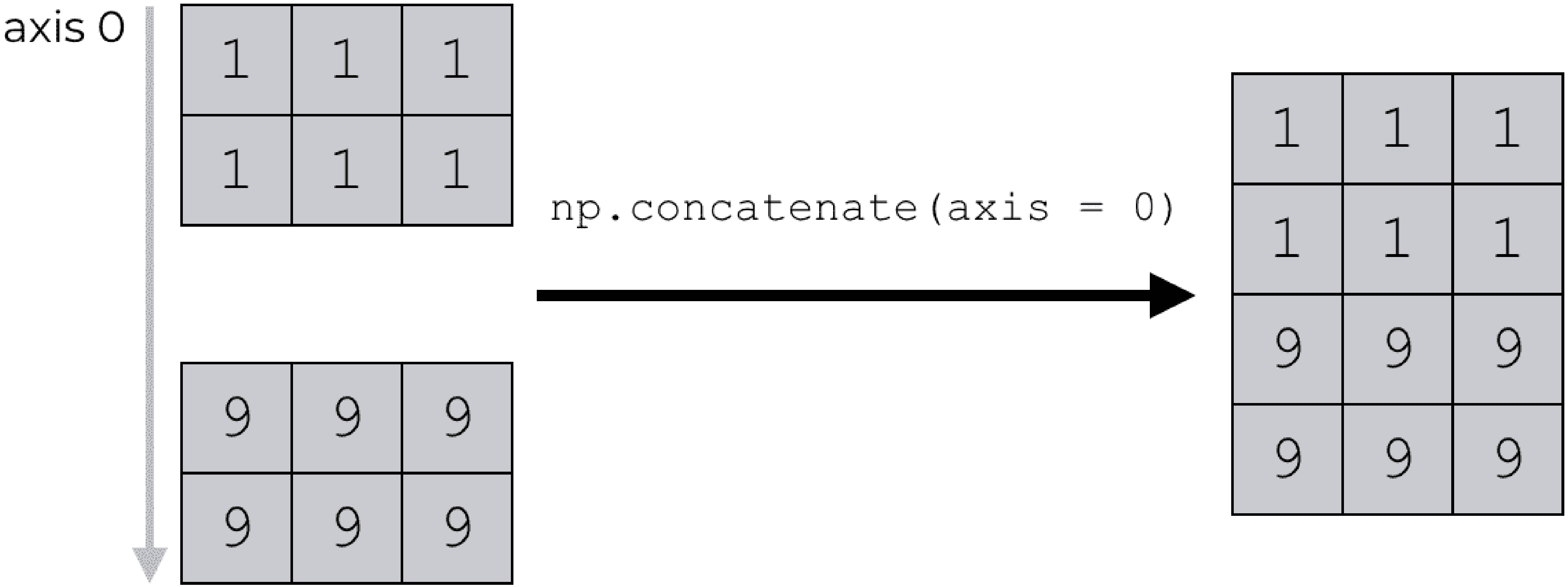
Setting `axis=0` concatenates along the row axis



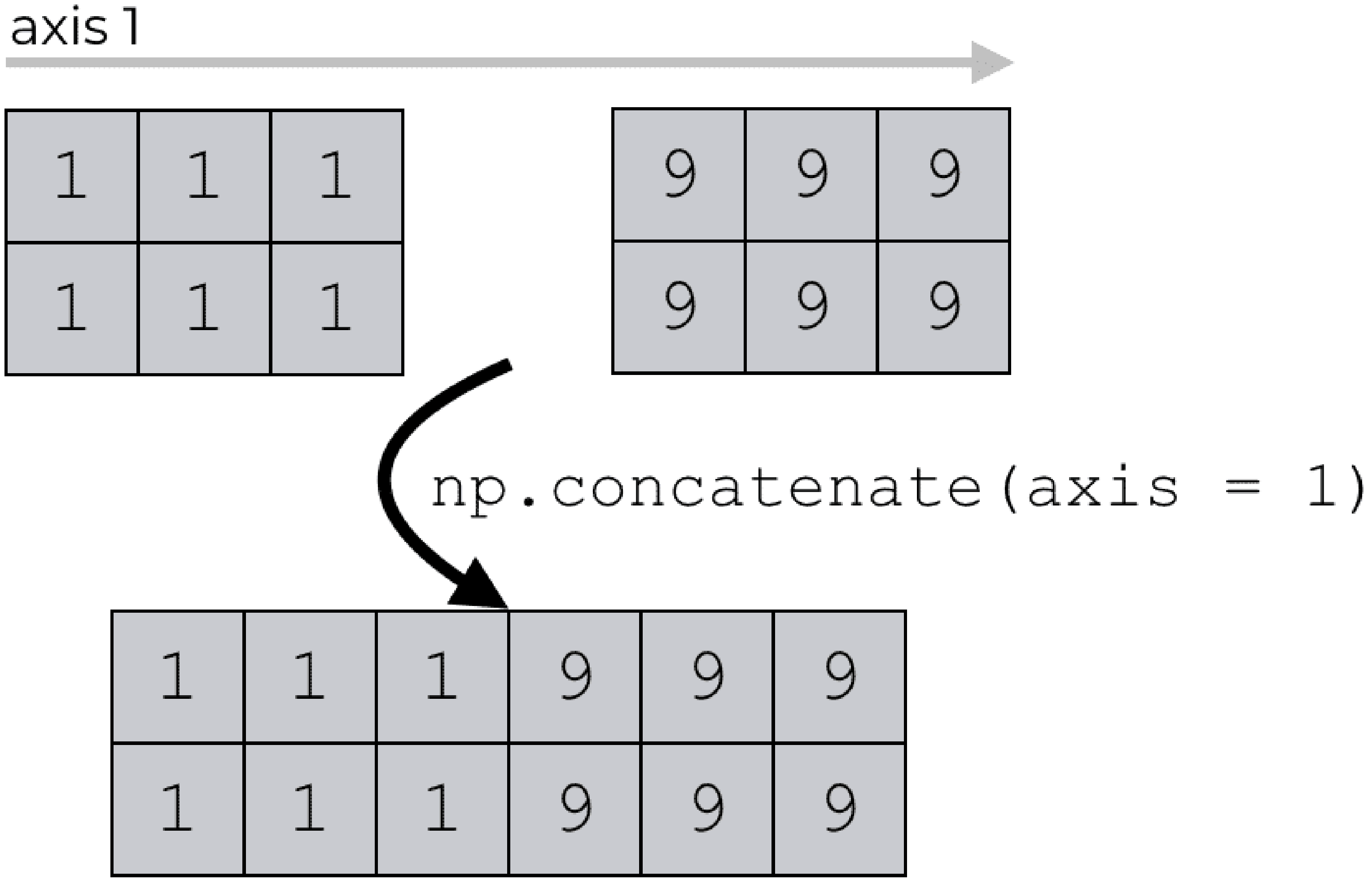
1	1	1
1	1	1

9	9	9
9	9	9

```
np.concatenate(axis = 0)
```

1	1	1
1	1	1
9	9	9
9	9	9

Setting `axis=1` concatenates along the column axis



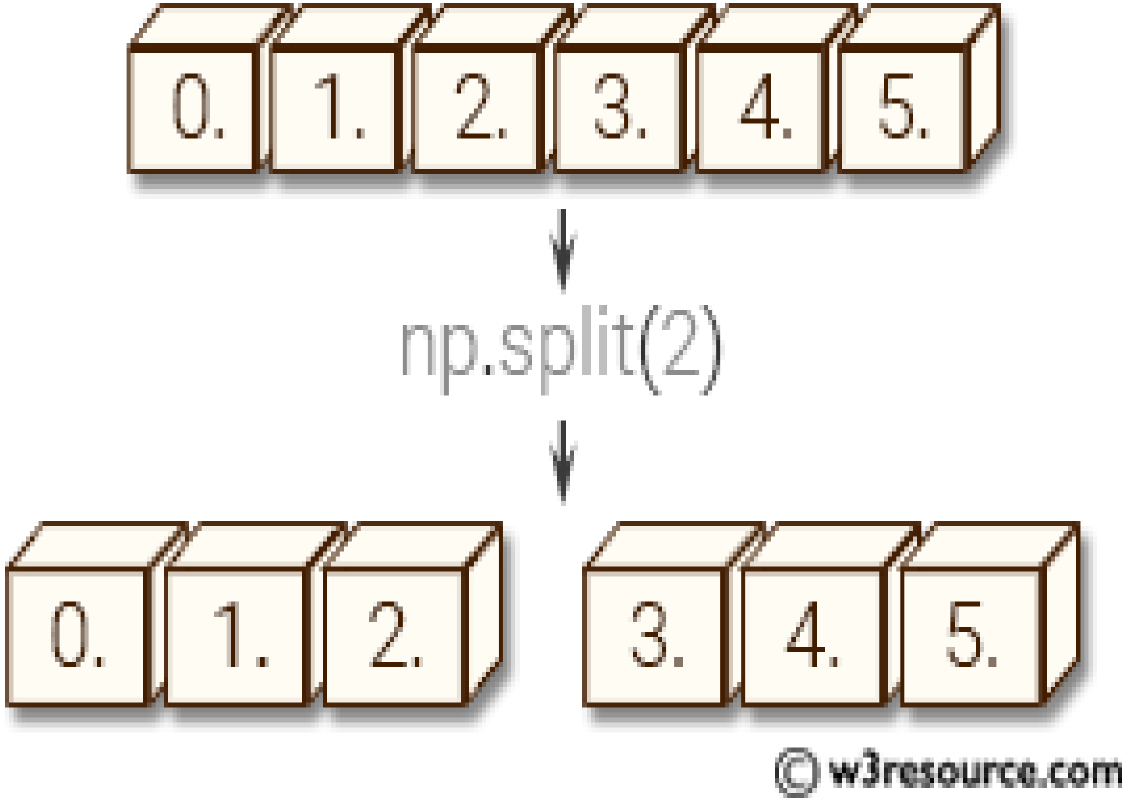
1	1	1
1	1	1

9	9	9
9	9	9

```
np.concatenate(axis = 1)
```

1	1	1	9	9	9
1	1	1	9	9	9

Numpy



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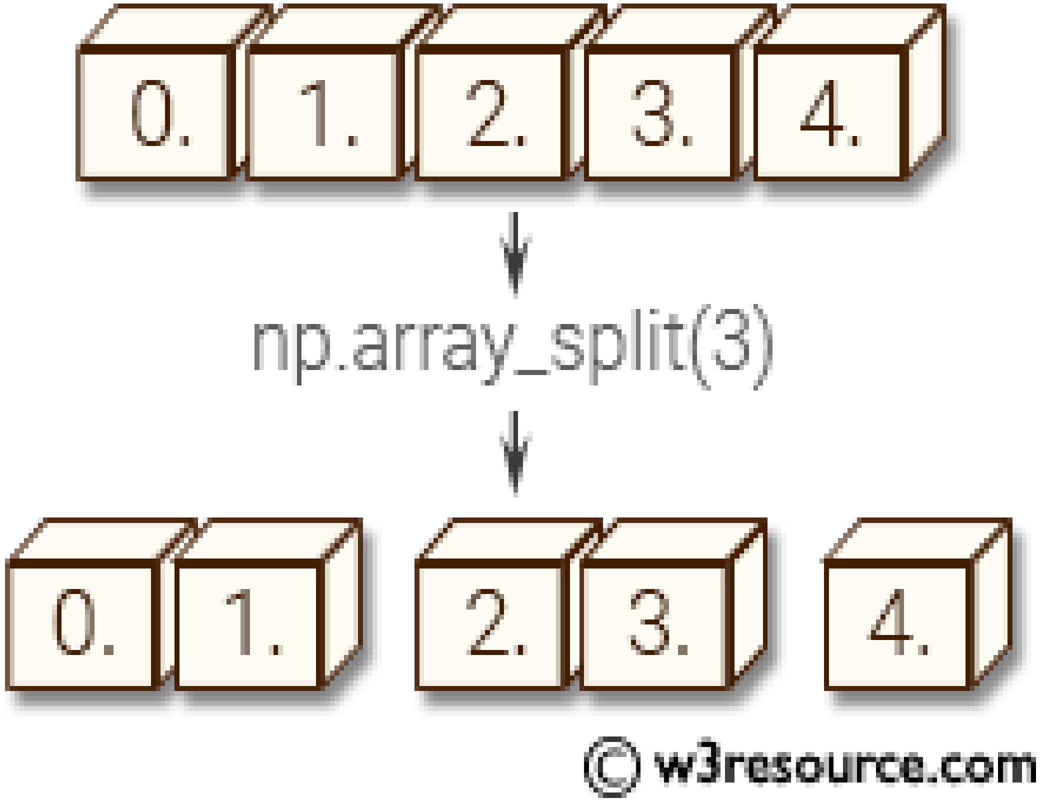

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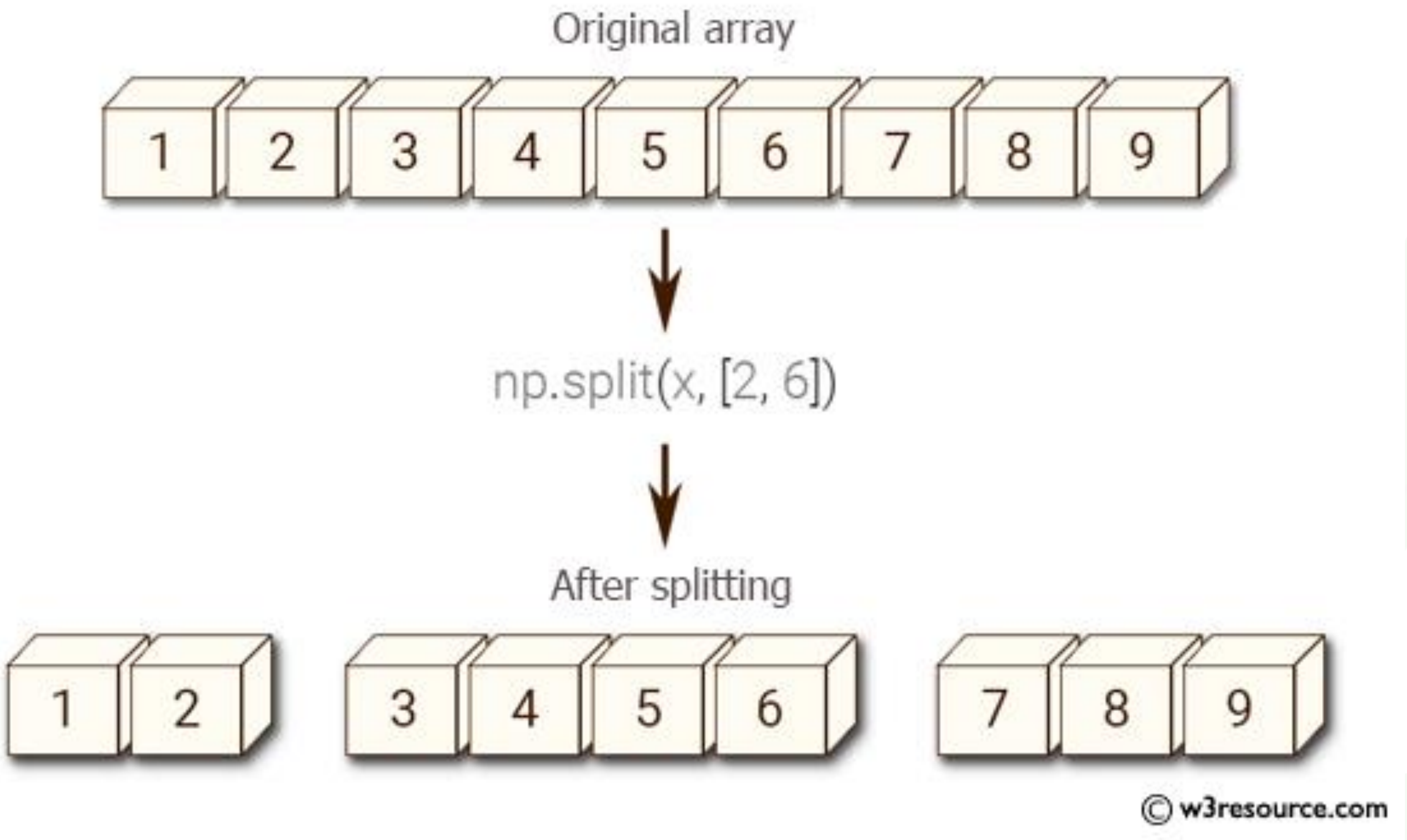
Numpy



```
np.split(x, [2, 6])
```

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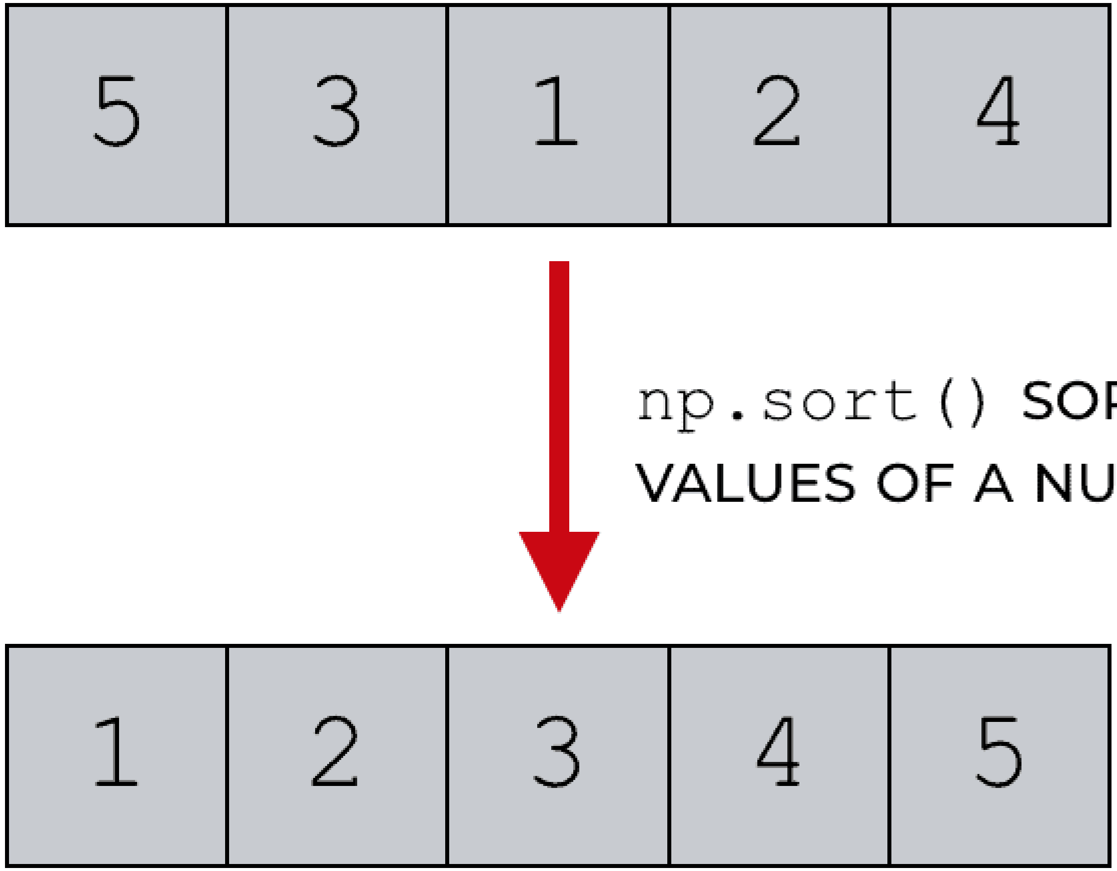
Numpy

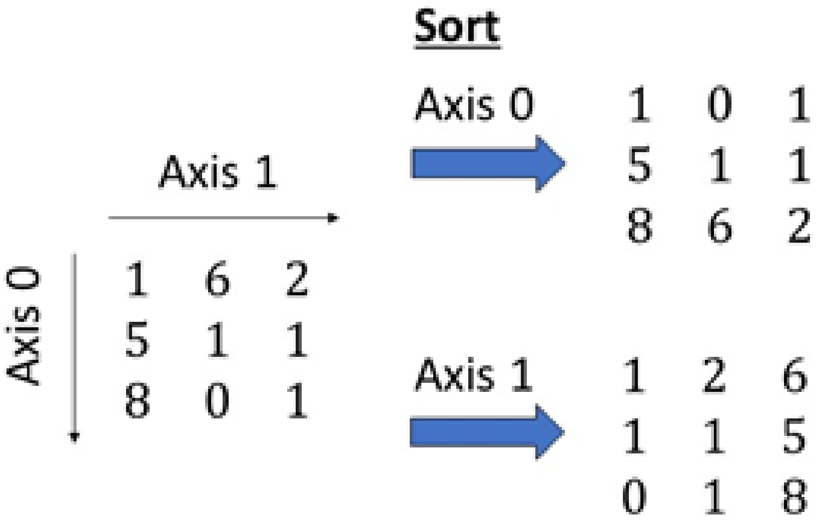


5	3	1	2	4

1	2	3	4	5

`np.sort()` SORTS THE VALUES OF A NUMPY ARRAY

Numpy



Sort

Axis 1

Axis 0

1 6 2
5 1 1
8 0 1

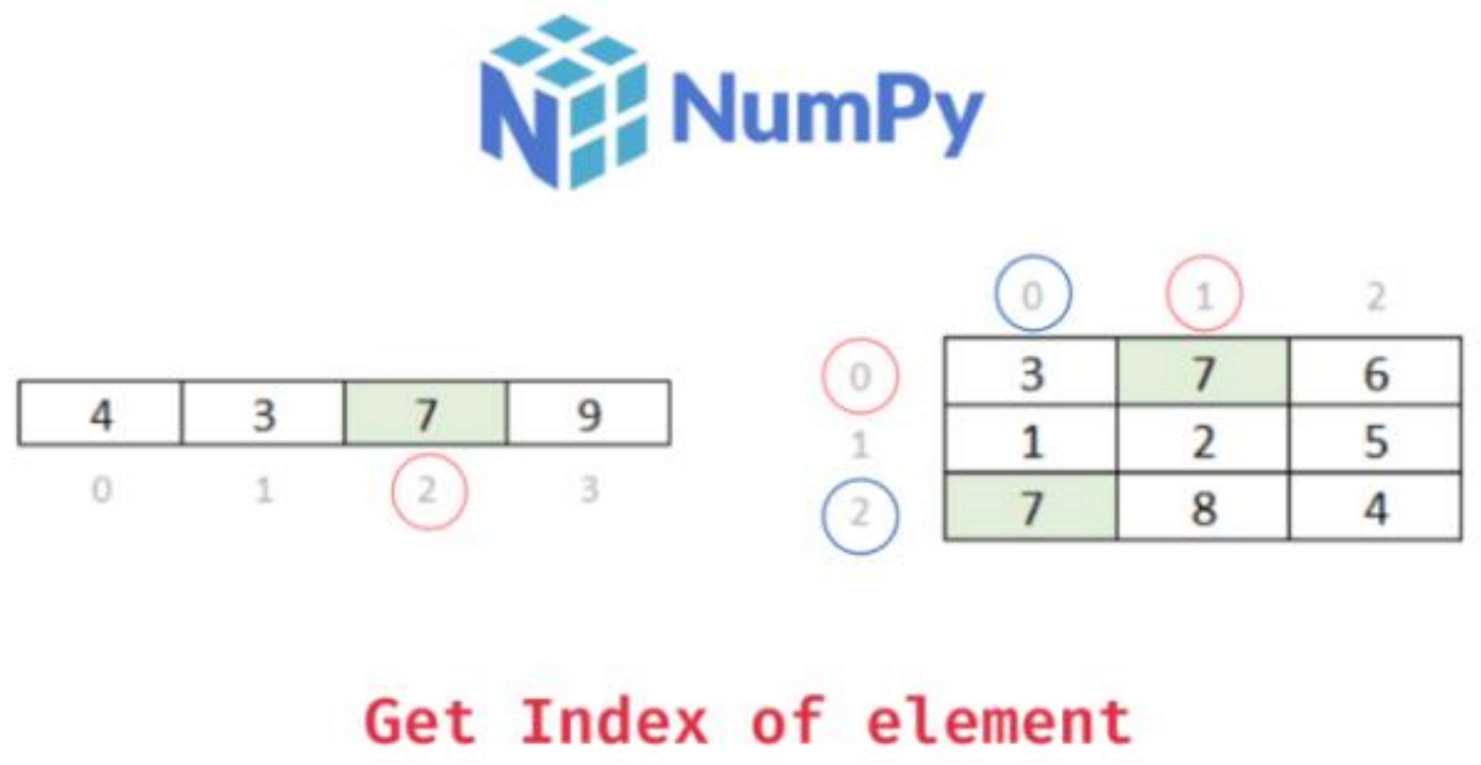
Axis 0

1 0 1
5 1 1
8 6 2

Axis 1

1 2 6
1 1 5
0 1 8

Numpy

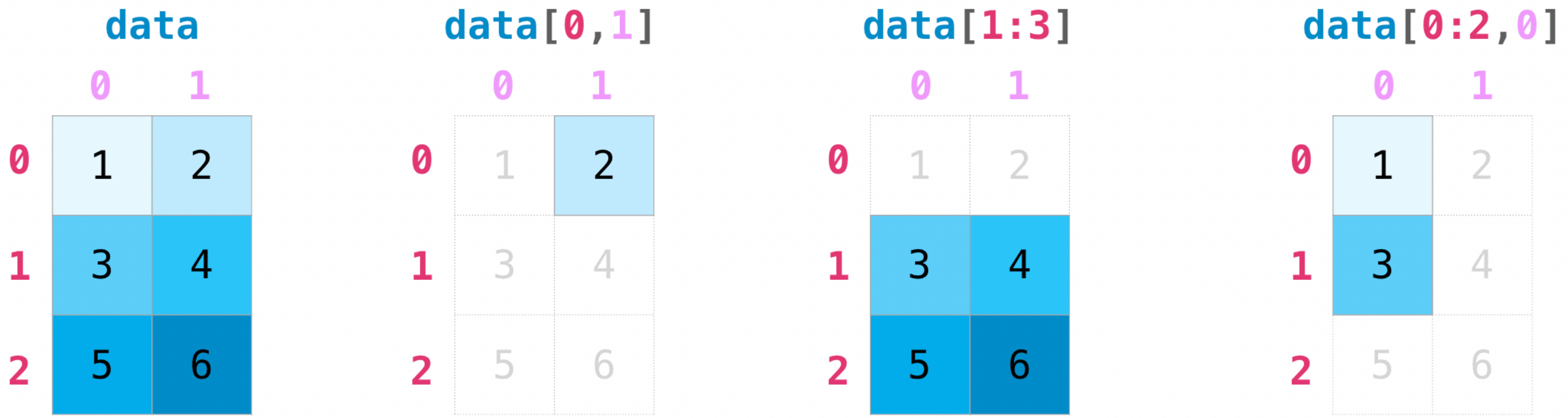


4	3	7	9
0	1	2	3

	0	1	2
0	3	7	6
1	1	2	5
2	7	8	4

Get Index of element

Numpy



`data`

	0	1
0	1	2
1	3	4
2	5	6

`data[0,1]`

	0	1
0	1	2
1	3	4
2	5	6

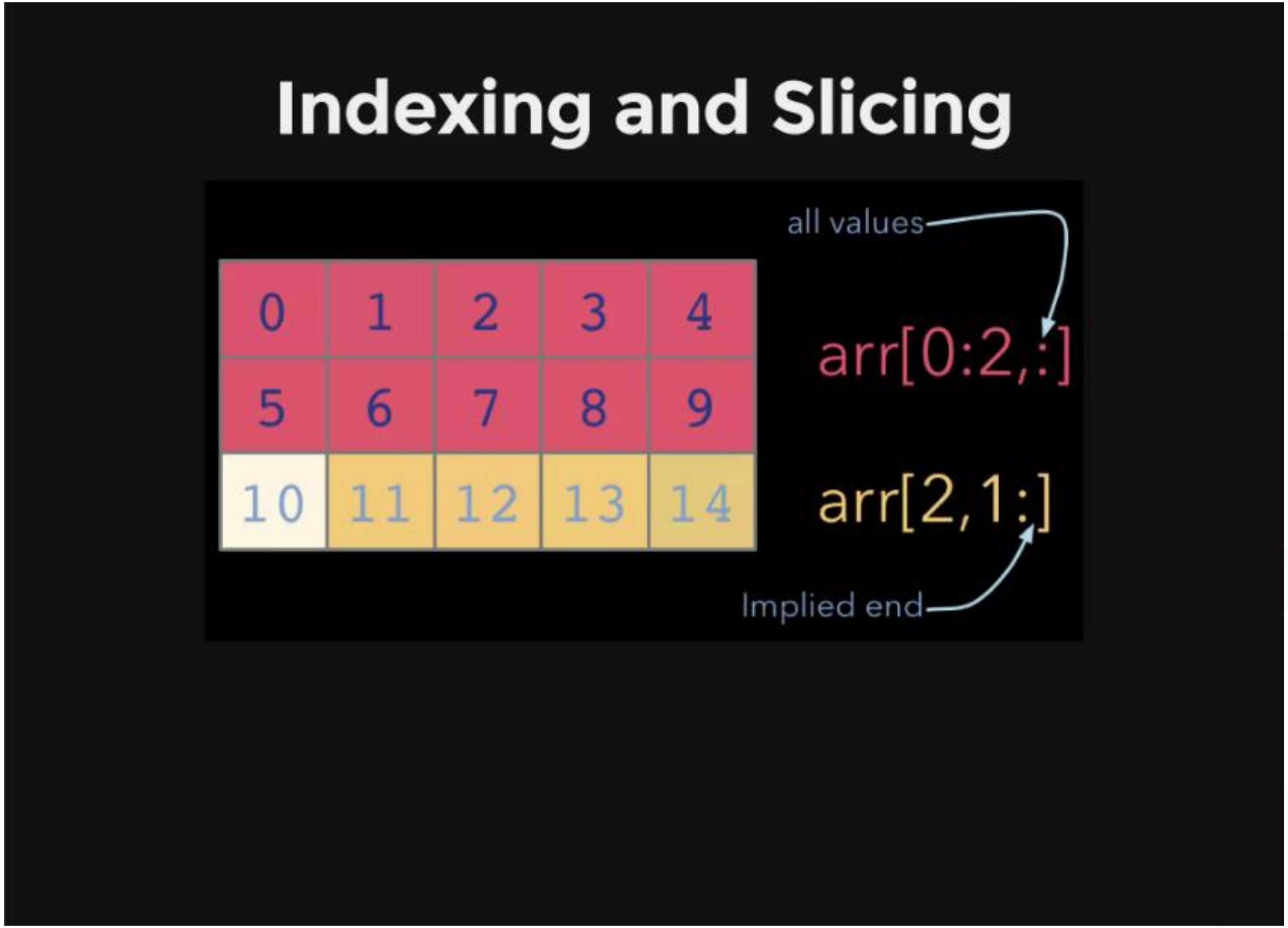
`data[1:3]`

	0	1
0	1	2
1	3	4
2	5	6

`data[0:2,0]`

	0	1
0	1	2
1	3	4
2	5	6

Numpy



Indexing and Slicing

0	1	2	3	4
5	6	7	8	9
10	11	12	13	14

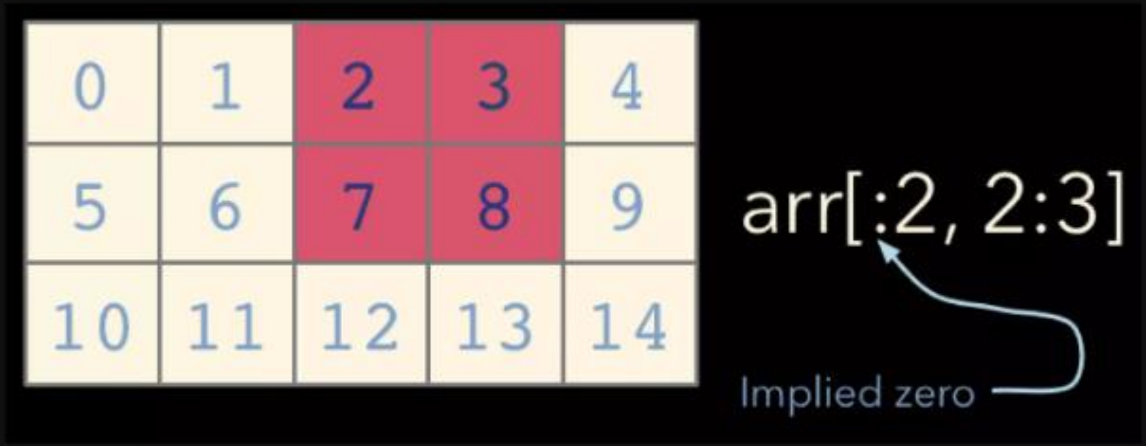
all values

arr[0:2,:]

arr[2,1:]

Implied end

Numpy

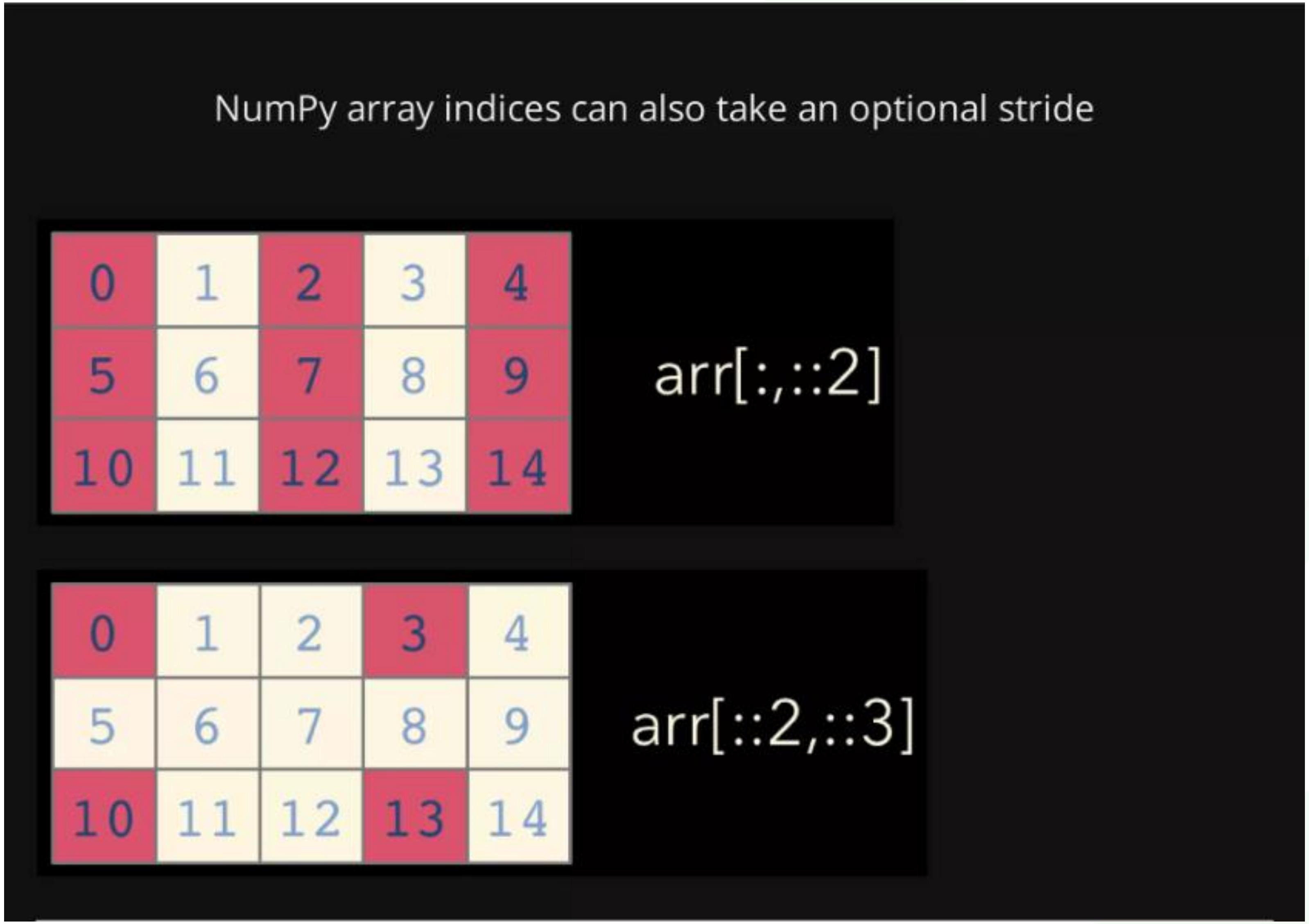


0	1	2	3	4
5	6	7	8	9
10	11	12	13	14

arr[:2, 2:3]

Implied zero

Numpy



NumPy array indices can also take an optional stride

0	1	2	3	4
5	6	7	8	9
10	11	12	13	14

arr[:,::2]

0	1	2	3	4
5	6	7	8	9
10	11	12	13	14

arr[::2,::3]

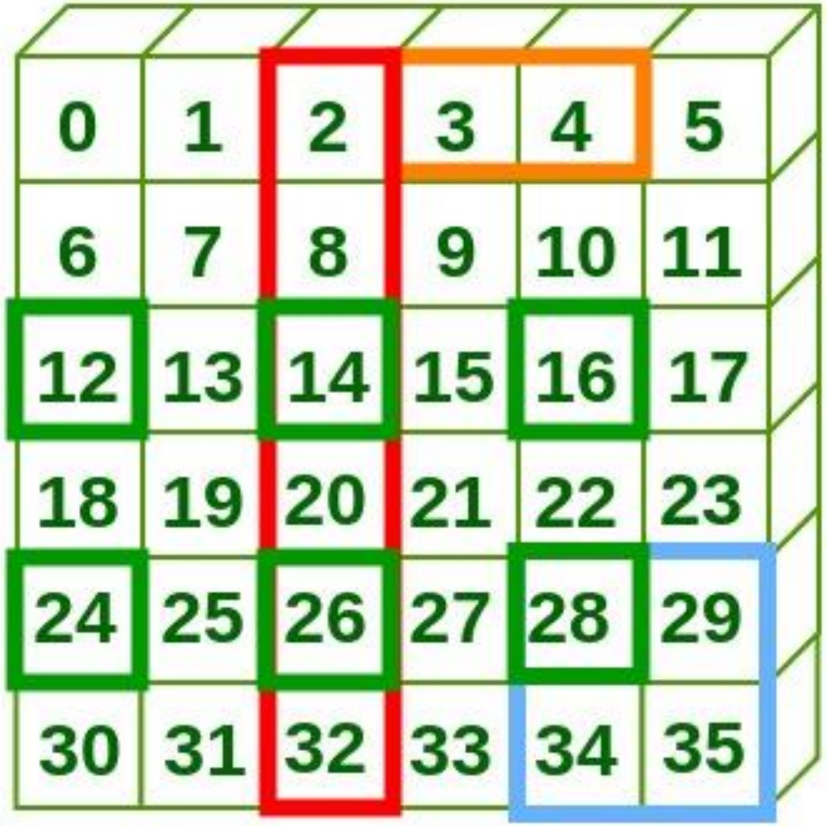
Numpy

```
>>> a[0,3:5]
array( [3,4] )

>>> a[4:, 4:]
array( [ 28, 29],
         [ 34, 35] ] )

>>> a[ :, 2]
array( [2, 8, 14, 20, 26, 32] )

>>> a[2 : : 2, : : 2]
array( [ 12, 14, 16],
         [ 24, 26, 28] ] )
```



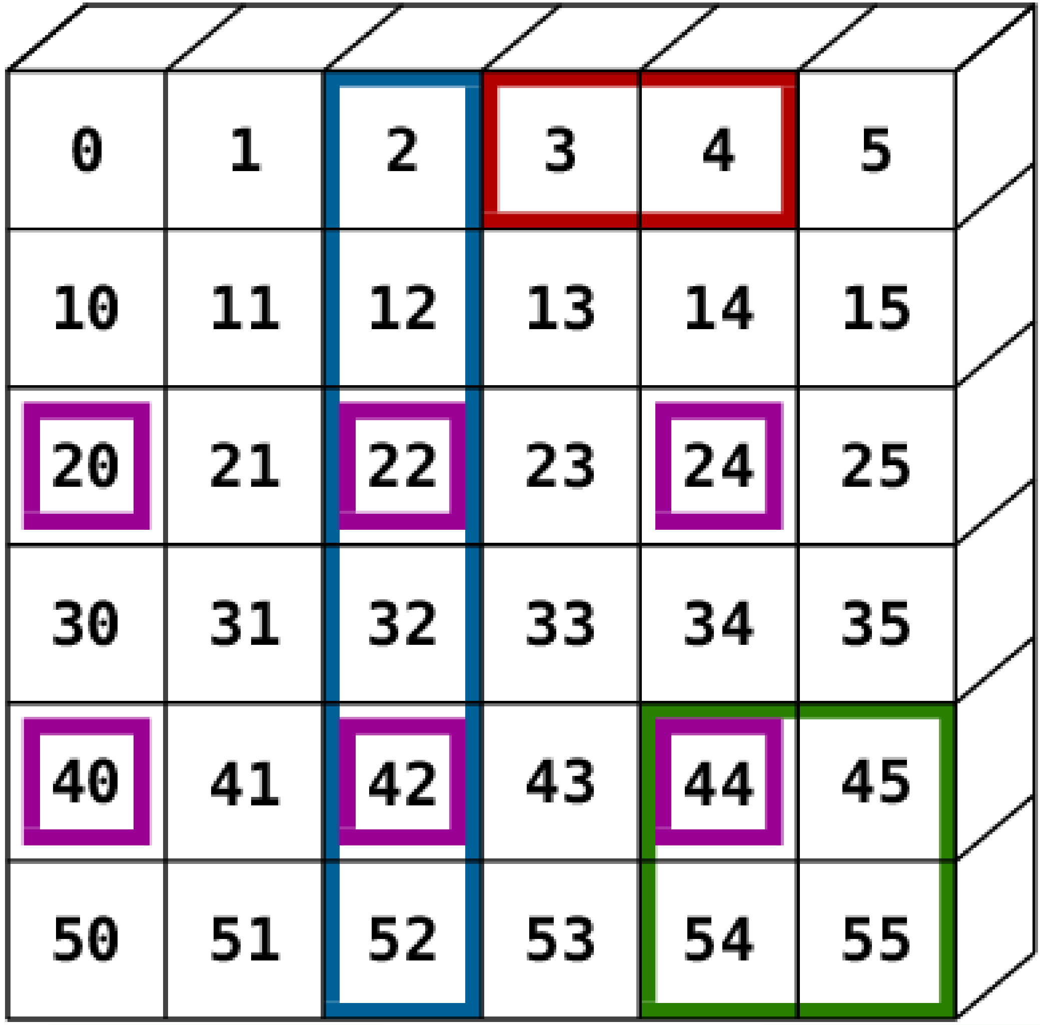
0	1	2	3	4	5
6	7	8	9	10	11
12	13	14	15	16	17
18	19	20	21	22	23
24	25	26	27	28	29
30	31	32	33	34	35

```
>>> a[0, 3:5]
array([3, 4])

>>> a[4:, 4:]
array([[44, 55],
       [54, 55]])

>>> a[:, 2]
a([2, 12, 22, 32, 42, 52])

>>> a[2::2, ::2]
array([[20, 22, 24],
       [40, 42, 44]])
```



0	1	2	3	4	5
10	11	12	13	14	15
20	21	22	23	24	25
30	31	32	33	34	35
40	41	42	43	44	45
50	51	52	53	54	55

Numpy

TIME TO PRACTICE