

# When indexing and slicing this numpy array:

```
h=np.array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

## Simple Index:

1 2 3 4 5  
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

↑  
**h[5] = 5**

"only give me the value  
at index 5"

2 1  
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

↑  
**h[-2] = 8**

"only give me the value  
at the 2nd to last index"

## Slice:

1 2 3 4 5 6 7 8  
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

↑ ↑ ↑  
**h[5:8] = array([5, 6, 7])**

"give me a slice (array) starting at index 5  
and stopping, but not including index 8"

1 2 3 4 5  
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

↑ ↑ ↑ ↑ ↑  
**h[5:] = array([5, 6, 7, 8, 9])**

"give me a slice (array) starting at index 5  
and stopping at the end of the array"

1 2 3  
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

↑ ↑ ↑  
**h[:3] = array([0, 1, 2])**

"give me a slice (array) starting at index 0  
and stopping, but not including index 3"

-6 -5 -4 -3 -2 -1  
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

↑ ↑ ↑ ↑  
**h[-6:-2] = array([4, 5, 6, 7])**

"give me a slice (array) starting at 6th index from the end  
and stopping, but not including, the 2nd index from the end"

## Slice, with step:

1 2 3 4 5 6 7  
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

↑ ↑ ↑  
**h[1:7:2] = array([1, 3, 5])**

"give me a slice (array) starting at index 1  
and stopping, but not including index 7,  
with a step value of 2"

1 2 3 4 5 6 7 8  
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

↑ ↑ ↑  
**h[8:5:-1] = array([8, 7, 6])**

"give me a slice (array) starting at index 9  
and stopping, but not including index 5,  
with a step value of -1 (i.e. in reverse)"

-3 -2 -1  
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

↑ ↑  
**h[:-3:-1] = array([9, 8])**

"give me a slice (array) starting at the end  
of the array, and stopping at the 3rd index  
from the end with a step value of -1 (i.e. in reverse)"