Indexing in NumPy

This lesson will help you learn indexing in NumPy.

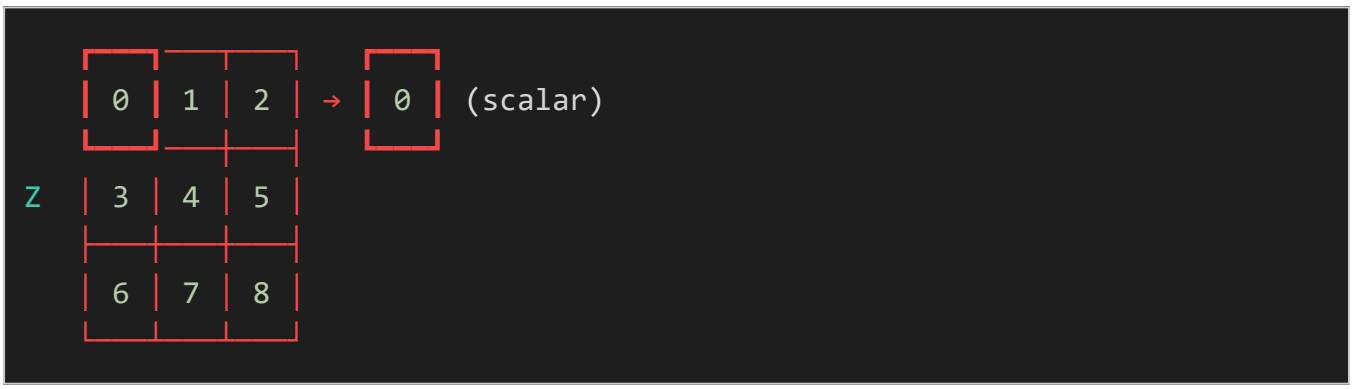
We'll cover the following

Indexing means to refer to any value in an array. Each item in a numpy array is stored at a specific index. To access value at a specific index write:

```
Z=np.arrange(9)
Z[0] #get the value at index 0
```

Get the First Value

To get the first value of a matrix, write: `Z(0,0)`.




```
import numpy as np
Z = np.arange(9).reshape(3,3)
```

```
print(Z[0,0])
```

Get the Last Value

To get the last value of a matrix, write: `Z[-1,-1]`.


```
import numpy as np
Z = np.arange(9).reshape(3,3)
print(Z[-1,-1])
```

Get a row from a Grid

To get a row from a grid, write: `Z[row_index]`.

To get the first row from a grid, write: `Z[1]`.


```
import numpy as np
Z = np.arange(9).reshape(3,3)
print(Z[1])
```

Get a Column from a Grid

To get the column from a grid, use `Z[:,column_index]`

To get the second column from a grid, use `Z[:,2]`


```
import numpy as np
Z = np.arange(9).reshape(3,3)
print(Z[:,2])
```

Get a Mini-grid from a Grid

To get a subset of a grid, write: `Z[row_index:,column_index:]`.

To get a subset of a grid containing the first row onwards up to the size and first column onwards up to the size, write: `Z[1:,1:]`.


```
import numpy as np
Z = np.arange(9).reshape(3,3)
print(Z[1:,1:])
```

Arrange Values from a Grid in a Mini-grid

To get the values from corners of a grid and arrange them in a grid format write: `Z[::row_size-1,::column_size-1]`

To get the values at index (0,0),(0,2),(2,0),(2,2) and arrange them in a grid format write: `(Z[::2,::2])`


```
import numpy as np
Z = np.arange(9).reshape(3,3)
print(Z[::2,::2])
```

Get Specific Indices from a Grid

To get specific indices values such as (0,0) and (0,2) write: `(Z[[0,1],[0,2]])`.


```
import numpy as np
Z = np.arange(9).reshape(3,3)
print(Z[[0,1],[0,2]])
```

Solve this Quiz!

Q

Given an np array `Z` .How would you get the following values from Z?

A)

```
print(Z[[0,1],[0,2]])
```

B)

```
print(Z[[0,1],[0,1]])
```

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1 of 1

Now that you have learned about indexing in NumPy, let's move on to the next lesson "Broadcasting in NumPy".