

1. Create an array with zeros and ones and print the output

```
In [3]: import numpy as np  
a=np.zeros(2)  
b=np.ones(2)  
print(np.concatenate((a,b)))
```

```
[0. 0. 1. 1.]
```

2. Create an array and print the output

```
In [4]: c=np.array([1,2,3,4])  
print(c)
```

```
[1 2 3 4]
```

3. Create an array whose initial content is random and print the output

```
In [6]: print(np.empty(5,dtype=np.int8))
```

```
[-80  34  97   3 121]
```

4. Create an array with the range of values with even intervals

```
In [11]: print(np.arange(2,10,+2))
```

```
[2 4 6 8]
```

5. create an array with values that are spaced linearly in a specified interval

```
In [12]: print(np.linspace(0,10,num=3,dtype=np.int8))
```

```
[ 0  5 10]
```

6. Access and manipulate elements in the array

```
In [15]: arr1=np.array([1,2,3,4,5])
arr1[3]
```

Out[15]: 4

7. Create a 2-dimensional array and check the shape of the array

```
In [17]: a1=np.array([[10,20],[30,40]])
print(np.shape(a1))
```

(2, 2)

8. Using the arange() and linspace() function to evenly space values in a specified interval

```
In [32]: a=np.linspace(0,100,num=11)
b=np.arange(10)
print(a)
print(b)
```

```
[ 0.  10.  20.  30.  40.  50.  60.  70.  80.  90. 100.]
[0 1 2 3 4 5 6 7 8 9]
```

9. Create an array of random values between 0 and 1 in a given shape

```
In [27]: a=np.linspace(0,1,num=3)
print(a)
```

[0. 0.5 1.]

10. Repeat each element of an array by a specified number of times using repeat() and tile() functions

```
In [29]: a=np.array([1,2,3,4,5,6])
print(np.repeat(a,3))
print(np.tile(a,3))
```

```
[1 1 1 2 2 2 3 3 3 4 4 4 5 5 5 6 6 6]
[1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6]
```

11. How do you know the shape and size of an array?

```
In [41]: b=np.array([[1,2,3,4],[1,2,3,4]])  
print(np.shape(b))  
print(np.size(b))
```

```
(2, 4)  
8
```

12. Create an array that indicates the total number of elements in an array

```
In [42]: print(np.size(a))
```

```
8
```

13. To find the number of dimensions of the array

```
In [44]: print(np.ndim(a))
```

```
2
```

14. Create an array and reshape into a new array

```
In [45]: a=np.array([11,22,33,44,55,66])  
print(a.reshape(2,3))
```

```
[[11 22 33]  
 [44 55 66]]
```

15. Create a null array of size 10

```
In [48]: print(np.empty(10,dtype=np.int8))
```

```
[0 1 1 1 1 1 1 1 1 1]
```

16. Create any array with values ranging from 10 to 49 and print the numbers whose

remainders are zero when divided by 7

```
In [56]: y=np.arange(10,49)
print(i[y%7==0])
```

```
[14 21 28 35 42]
```

17. Create an array and check any two conditions and print the output

```
In [60]: a2=np.array([12,34,14,67,24,15,77])
print(a2[(a2>15)&(a2<34)])
```

```
[24]
```

18. Use Arithmetic operator and print the output using array

```
In [61]: print(a[1]+a[2])
```

```
55
```

19. Use Relational operators and print the results using array

```
In [64]: print(a2[a2%3==0])
```

```
[12 24 15]
```

20. Difference between python and ipython

Python is an interactive shell that is built with python. It provides a more useful shell environment to execute python code in REPL (Read Eval Print Loop). It makes it more interactive by adding features like syntax highlighting, code completion etc. IPython also comes with other tools like Jupyter Notebooks etc

```
In [ ]:
```