In [2]:

```
import numpy as np
```

1.Create an array with zeros and ones

In [4]:

```
a=np.zeros(3,dtype=np.int64)
b=np.ones(3,dtype=np.int64)
print(np.concatenate((a,b)))
```

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

2. Create an array and print the output

In [5]:

```
c=np.array([1,2,3,4,5])
print(c)
```

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

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

In [9]:

```
print(np.empty(5,dtype=np.int16))
```

```
[ 50  92  99 109 100]
```

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

In [14]:

```
print(np.arange(1,20,3))
```

```
[ 1  4  7 10 13 16 19]
```

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

In [17]:

```
print(np.linspace(1,20,num=7,dtype=np.int16))
```

```
[ 1  4  7 10 13 16 20]
```

6.Access and manipulate elements in the array

In [18]:

```
print(c[3])
```

```
4
```

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

In [21]:

```
print(np.shape(np.array([[1,2,3],[4,5,6]])))
```

```
(2, 3)
```

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

In [25]:

```
print(np.arange(1,20,3))
print(np.linspace(1,20,num=7,dtype=np.int16))
```

```
[ 1  4  7 10 13 16 19]
[ 1  4  7 10 13 16 20]
```

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

In [33]:

```
print(np.empty(5,dtype=np.int8))
```

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

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

In [34]:

```
d=np.arange(1,5)
print(np.repeat(d,2))
print(np.tile(d,2))
```

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

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

In [35]:

```
#By using the functions np.shape() and np.size()
print(np.size(d))
print(np.shape(d))
```

```
4
(4,)
```

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

In [43]:

```
e=np.size(d)
print([e])
```

```
[4]
```

13. To find the number of dimensions of the array

In [44]:

```
#use np.ndim() functions
print(np.ndim(d))
```

```
1
```

14. Create an array and reshape into a new array

In [52]:

```
f=np.array([1,2,3,4,5,6,7,8,9])
print(f.reshape(3,3))
```

```
[[1 2 3]
 [4 5 6]
 [7 8 9]]
```

15. Create a null array of size 10

In [54]:

```
h=[]
print(np.size(h))
```

```
0
```

16. Create any array with values ranging from 10 to 49 and print the numbers whose remainders are zero when divided by 7

In [55]:

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

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

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

In [56]:

```
print(i[(i>15)&(i<40)])
```

```
[16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39]
```

18. Use Arithmetic operator and print the output using array

In [57]:

```
print(i[12]+i[18])
```

```
50
```

19. Use Relational operators and print the results using array

In [59]:

```
print(i[(i%2!=0)&(i%3!=0)])
```

```
[11 13 17 19 23 25 29 31 35 37 41 43 47]
```

20. Difference between python and ipython

```
Python is a programming language where the ipython is a command-line terminal.
ipython=Interactive Python NoteBook
ipython is an interactive shell was dicovered in 2001 and later they developed the Jupyter
Notebook.
```