```
#create tuple with float tuple
b=(6.5,5.9,2.0)
print(b)
```

```
(6.5, 5.9, 2.0)
```

```
#creating tuple multiple data types
mix=("hello",70866.8,1,2)
mix
```

```
('hello', 70866.8, 1, 2)
```

```
#accessing items of tuple

a=(1,2,3,4,"hello")
print(a[4])
```

```
hello
```

```
#creating a dictionary
a={
    "name":"joy",
    "age":23,
    "education":"Engineer"
}
print(a)
```

```
{'name': 'joy', 'age': 23, 'education': 'Engineer'}
```

```
len(a)
```

```
3
```

```
type(a)
```

```
dict
```

```
x=a.keys()
x
```

```
dict_keys(['name', 'age', 'education'])
```

```
y=a.values()
y
```

```
dict_values(['joy', 23, 'Engineer'])
```

```
z=a.items()
z
```

```
dict_items([('name', 'joy'), ('age', 23), ('education', 'Engineer')])
```

```
#example
set1={1,2,3,4}
print(set1)
```

```
{1, 2, 3, 4}
```

```
#duplicates not allowed
set={1,2,3,4,5,6,7,1,1}
print(set)
```

```
{1, 2, 3, 4, 5, 6, 7}
```

```
len(set)
```

```
7
```

```
type(set)
```

```
set
```

```
def add():
    a=2
    b=3
    sum=a+b
    return sum
add()
print(add())
```

```
5
```

```
import numpy as np
print(np.__version__)
```

```
1.26.4
```

```
#1D array
import numpy as np


A1=np.array([1,2,3,4])
print(A1)
```

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

```
type(A1)
```

```
numpy.ndarray
```

```
A1.shape
```

```
(4,)
```

```
#2D array
A2=np.array([[1,2,3],[4,5,6]])
print(A2)
```

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

```
A2.ndim
```

```
2
```

```
#3D array

A3=np.array([[[1,2,3],[4,5,6],[7,8,9]]])
print(A3)
```

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

```
type(A3)
```

```
numpy.ndarray
```

```
A3.size
```

```
9
```

```
A3.shape
```

```
(1, 3, 3)
```

```
A3.ndim
```

```
3
```

```
import numpy as np
z1=np.zeros(3)
z1
```

```
array([0., 0., 0.])
```

```
z1.shape
```

```
(3,)
```

```
z1.size
```

```
3
```

```
z1.ndim
```

```
1
```

```
type(z1)
```

```
numpy.ndarray
```

```
z2=np.zeros((3,4))
z2
```

```
array([[0., 0., 0., 0.],
       [0., 0., 0., 0.],
       [0., 0., 0., 0.]])
```

```
z2=np.zeros((3,4),dtype=int)
z2
```

```
array([[0, 0, 0, 0],
       [0, 0, 0, 0],
       [0, 0, 0, 0]])
```

```
type(z2)
```

```
numpy.ndarray
```

```
z2.shape
```

```
(3, 4)
```

```
z2.size
```

```
12
```

```
z2.ndim
```

```
2
```

```
z3=np.zeros((2,3,4))
z3
```

```
array([[[0., 0., 0., 0.],
        [0., 0., 0., 0.],
        [0., 0., 0., 0.]],

       [[0., 0., 0., 0.],
        [0., 0., 0., 0.],
        [0., 0., 0., 0.]]])
```

```
z3.ndim
```

```
3
```

```
type(z3)
```

```
numpy.ndarray
```

```
z3.shape
```

```
(2, 3, 4)
```

```
z3.size
```

```
24
```

```
#ID ones array
import numpy as np
a1=np.ones(3)
a1
```

```
array([1., 1., 1.])
```

```
a1=np.ones(3,dtype=int)
a1
```

```
array([1, 1, 1])
```

```
type(a1)
```

```
numpy.ndarray
```

```
a1.shape
```

```
(3,)
```

```
a1.size
```

```
3
```

```
a1.ndim
```

```
1
```

```
#2D ones array
a2=np.ones((3,4))
a2
```

```
array([[1., 1., 1., 1.],
       [1., 1., 1., 1.],
       [1., 1., 1., 1.]])
```

```
a2=np.ones((3,4),dtype=int)
a2
```

```
array([[1, 1, 1, 1],
       [1, 1, 1, 1],
       [1, 1, 1, 1]])
```

```
a2.size
```

```
12
```

```
a2.shape
```

```
(3, 4)
```

```
a2.ndim
```

```
2
```

```
#3D array
a3=np.ones((4,2,3,))
a3
```

```
array([[[1., 1., 1.],
        [1., 1., 1.]],

       [[1., 1., 1.],
        [1., 1., 1.]],

       [[1., 1., 1.],
        [1., 1., 1.]],

       [[1., 1., 1.],
        [1., 1., 1.]]])
```

```
a3.shape
```

```
(4, 2, 3)
```

```
a3.size
```

```
24
```

```
a3.ndim
```

```
3
```

```
#1D ful array
f1=np.full(3,9)
f1
```

```
array([9, 9, 9])
```

```
f1=np.full(3,9,dtype=float)
f1
```

```
array([9., 9., 9.])
```

```
f1.size
```

```
3
```

```
f1.ndim
```

```
1
```

```
type(f1)
```

```
numpy.ndarray
```

```
#3D full array
f3=np.full([4,2,3],10)
f3
```

```
array([[[10, 10, 10],
        [10, 10, 10]],

       [[10, 10, 10],
        [10, 10, 10]],

       [[10, 10, 10],
        [10, 10, 10]],

       [[10, 10, 10],
        [10, 10, 10]]])
```

```
a=np.array([1,2,3])
b=np.array([1,2,3])
add=np.add(a,b)
add
```

```
array([2, 4, 6])
```

```
a=np.array([5,10,20])
b=np.array([4,8,10])
sub=np.subtract(a,b)
sub
```

```
array([ 1,  2, 10])
```