working with numpy:
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        if we want to working with numpy first we need to install numpy package.

        pip install numpy

numpy   --> numerical python

ex1:
---
wap to get the numpy version?

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

output:

1.21.5

ex2:
---
wap to create a simple array?

```
import numpy
x=numpy.array([4,3,7,2])
print(x)
print(type(x))
```

output:

```
[4 3 7 2]
<class 'numpy.ndarray'>
```

ex3:

```
import numpy
x=numpy.array([[4,3],[4,5]])
print(x)
```

output:

```
[[4 3]
 [4 5]]
```

ex4:

```
import numpy
y=numpy.arange(24)
print(y)
x=numpy.array(y)
```

```
print(x)

output:
------
[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23]

[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23]

ex5:
---
import numpy
x=numpy.array([1,2,3])
print(x)
print(x.itemsize)
a=numpy.array(x,float)
print(a)
print(a.itemsize)
b=numpy.array(x,complex)
print(b)
print(b.itemsize)

output:
------
[1 2 3]
4
[1. 2. 3.]
8
[1.+0.j 2.+0.j 3.+0.j]
16

ex6:
----
import numpy
x=numpy.array([[1,2,3],[3,4,5],[2,3,1],[3,2,7]])
print(x)
print(x.itemsize)
print(x.shape)
print(x.size)
y=x.reshape(3,4)
print(y)

output:
------
[[1 2 3]
 [3 4 5]
 [2 3 1]
 [3 2 7]]
4
(4, 3)
12
```

```
[[1 2 3 3]
 [4 5 2 3]
 [1 3 2 7]]
```

ex7:

```
---
import numpy
x=numpy.array([[1,4,2],[2,3,1]])
print(x)
print('*'*20)
print(x.ndim)
print('*'*20)
x.sort(axis=0) #vertical/column wise sorting
print(x)
print('*'*20)
x.sort(axis=1) #horizontal/row wise sorting
print(x)
```

output:

```
------
[[1 4 2]
 [2 3 1]]
********************
2
********************
[[1 3 1]
 [2 4 2]]
********************
[[1 1 3]
 [2 2 4]]
```

ex8:

```
---
import numpy
x=numpy.array([2,3.2,4])
print(x)
```

output:

```
------
[2.  3.2 4. ]
```

ex9:

```
---
import numpy
x=numpy.zeros(2)
print(x)
y=numpy.zeros(2,dtype=int)
print(y)
z=numpy.zeros((2,2),dtype=int)
print(z)
```

```
a=numpy.ones(2)
print(a)
b=numpy.ones(2,dtype=int)
print(b)
c=numpy.ones((2,2),dtype=int)
print(c)
p=numpy.identity(2)
print(p)
q=numpy.identity(2,dtype=int)
print(q)

output:
-----
[0. 0.]

[0 0]

[[0 0]
 [0 0]]

[1. 1.]

[1 1]

[[1 1]
 [1 1]]

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

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