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PACKAGES

In [1]:

```
import numpy as np
a=np.array([1,2,3])
print(a)
```

[1 2 3]

In [2]:

```
import numpy as np
a=np.array([(1,2,3),(4,5,6)])
print(a)
```

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

In [3]:

```
import numpy as np
import time
import sys

s=range(1000)

print(sys.getsizeof(999)*len(s))

d=np.arange(1000)

print(d.size*d.itemsize)
```

28000
4000

In [4]:

```
size=1000000

L1=range(size)
L2=range(size)

A1=np.arange(size)
A2=np.arange(size)

start=time.time()

#list
result=[(x,y) for x,y in zip(L1,L2)]
print((time.time()-start)*1000)

#numpy

start= time.time()
result=A1+A2
print((time.time()-start)*1000)
```

```
-1623601050781.0703
78.14192771911621
```

In [6]:

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

```
2
```

In [7]:

```
import numpy as np

a=np.array([(1,2,3,4,5,6,7),(8,9,10,11,12,13,14)])
print(a.shape)
```

```
(2, 7)
```

In [8]:

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

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

In [9]:

```
a=np.array([(2,3,4),(4,5,6)])
b=np.array([(2,3,2),(3,4,5)])

print(np.vstack((a,b)))
print(np.hstack((a,b)))
```

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

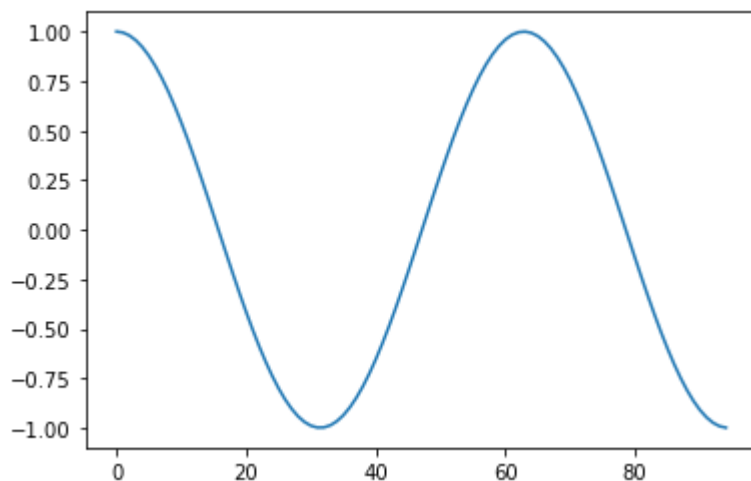
In [10]:

```
import numpy as np
import matplotlib.pyplot as plt

x=np.arange(0,3*np.pi,0.1)
y=np.cos(x)
plt.plot(y)
```

Out[10]:

[<matplotlib.lines.Line2D at 0x19e2d187310>]



In [11]:

```
ar=np.array([1,2,3])
print(np.exp(ar))
```

[2.71828183 7.3890561 20.08553692]

In []:

