In [24]:
```
#Create matrix A with size (3,5) containing random numbers.
import numpy as np
A=np.random.randint(0,100,(3, 5))
print(A)
```

```
[[83 35 35 44 17]
 [61 19 91 31  4]
 [57 47 50 41 47]]
```

In [25]:
```
#Find the size of matrix A.
A.size
```

Out[25]: 15

In [26]:
```
#Find the length of matrix A.
len(A)
```

Out[26]: 3

In [27]:
```
#Resize (crop/slice) matrix A to size (3,4).
A.resize((3, 4))
print(A)
```

```
[[83 35 35 44]
 [17 61 19 91]
 [31  4 57 47]]
```

In [33]:
```
#Find the transpose of matrix A and assign it to B.
B=A.transpose()
print(B)
```

```
[[83 17 31]
 [35 61  4]
 [35 19 57]
 [44 91 47]]
```

In [37]:
```
#Find the minimum value in column 1 of matrix B.
B[::,0:1:].min()
```

Out[37]: 35

In [38]:
```
#Find the minimum values for the entire matrix A.
A.min()
```

Out[38]: 4

In [39]:
```
#Find the maximum values for the entire matrix A.
A.max()
```

Out[39]: 91

In [57]:
```
#Create vector X (an array) with 4 random numbers.
X=np.random.randint(0,100,4)
print(X)
```

```
[26 56 42 72]
```

In [56]:
```
#Create a function and pass vector X and matrix A in it.
#In the new function multiply vector X with matrix A and assign the result to D.
def f(X,A):
    return np.dot(A,X.T)
D=f(X,A)
print(D)
```

```
[12082 13226  6435]
```

In [72]:
```
#Create a complex number Z with absolute and real parts != 0.
Z=5+12j
Z
```

Out[72]: (5+12j)

In [73]:
```
#Show its real part.
Z.real
```

Out[73]: 5.0

In [74]:
```
#Show its imaginary part.
Z.imag
```

Out[74]: 12.0

In [75]:
```
#Show its absolute value.
abs(Z)
```

Out[75]: 13.0

In [77]:
```
#Multiply result D with the absolute value of Z and record it to C.
C=D*abs(Z)
print(C)
```

```
[157066. 171938.  83655.]
```

In [81]:
```
#Convert matrix B from a matrix to a string and overwrite B.
str(B)
```

Out[81]: '[[83 17 31]\n [35 61 4]\n [35 19 57]\n [44 91 47]]'

In [104]:
```
#Display a text on the screen: ‘Name is done with HW2‘, but pass your ‘Name’ as a string variable.
s='Qingran Zhou'
print("%s is done with HW2."%(s))
```

```
Qingran Zhou is done with HW2.
```