Python Array

Arrays are used to store multiple values at a time in one single variable. Python does not have built-in support for Arrays, but Python Lists can be used instead.

Differences between List and an Array.

A list is a different kind of data structure from an array. The biggest difference is in the idea of **direct access vs. sequential** access. **Arrays allow both; direct and sequential access, while lists allow only sequential access.** And this is because the way that these data structures are stored in memory. **Sequential access** must begin at the beginning and access each element in order, one after the other. **Direct access** allows the access of any element directly by locating it by its index number or address. Arrays and lists are both used in Python to store data, but they don't serve exactly the same purposes. They both can be used to store any data type (real numbers, strings, etc.), and they both can be indexed and iterated through, but the similarities between the two don't go much further. The main difference between a list and an array is the functions that we can perform to them. For example, we can divide an array by 3, and each number in the array will be divided by 3 and the result will be printed. If we try to divide a list by 3, Python will be thrown an error.

Create an array containing subject's name.

```
My_subject = [“Phy”, “Chem”, “Maths”]
print(type(My_subject))    # result <class ‘list’>
print (My_subject)          # result [‘Phy’, ‘Chem’, ‘Maths’]
```

Access the elements of an Array by referring to the index number.

```
My_subject = [“Phy”, “Chem”, “Maths”]
x = My_subject[0] # Get the value of the first array item:
print(x)
```

Modify the value of the array item.

```
My_subject = [“Phy”, “Chem”, “Maths”]
My_subject[0] = “Biology”
print(My_subject)
```

Use the **len()** method to return the length of an array or number of elements in an array.

```
My_subject = [“Phy”, “Chem”, “Maths”,”Biology”]
print(len(My_subject))      # result 4, index-(0,1,2,3)
```

The **for in loop** to access all the elements of an array.

```
My_subject = [“Phy”, “Chem”, “Maths”,”Biology”]
for x in My_subject:
print(x)
```

The **append()** method to add an element to an array.

```
My_subject = [“Phy”, “Chem”, “Maths”,”Biology”]
My_subject.append(“Geography”)
for x in My_subject:
print(x)
```

The **pop()** and **remove()** method to remove an element from the array..

```
My_subject = [“Phy”, “Chem”, “Maths”,”Biology”]
My_subject.pop(0)       # removed by index value.
for x in My_subject:
print(x)
```

The **remove()** method to remove an ”specified element” from the array.

```
My_subject = [“Phy”, “Chem”, “Maths”,”Biology”]
My_subject.remove(“Maths”)      # remove by item value.
for x in My_subject:
print(x)
```

The **Reverse()** method reverse the order of the an array or list.

```
fruits = [‘apple’, ‘banana’, ‘cherry’]
fruits.reverse()
print(fruits)
```

The **sort()** method sort the array or list alphabetically:

```
fruits = [‘apple’, ‘mango’, ‘banana’, ‘cherry’]
fruits.sort()
print(fruits)
```

 # Small i is called signed integer while capital I unsigned integer

```
from array import *
vals= array(‘i’,[1,2,3,4,5,6])
print(vals)      # success, i
```

```
from array import *
vals= array(‘i’,[1,2,3,-4,5,6])
print(vals)     # success, i
```

```
from array import *
vals= array(‘I’,[1,2,3,-4,5,6])
print(vals)      # error, I
```

```
from array import *
vals= array('i',[1,2,3,-4,5,6])
print(vals)
print(vals.buffer_info())
```

```
from array import *
vals= array('i',[1,2,3,-4,5,6])
print(vals)
print(vals.typecode)
```

```
from array import *
vals= array('i',[1,2,3,-4,5,6])
print(vals)
vals.reverse()
print(vals)
```

 # indexed accessing.

```
from array import *
vals= array('i',[1,2,3,-4,5,6])
print(vals)
print(vals[5])
```

Loop in array fetch value one by one by indexed value

```
from array import *
vals= array('i',[1,2,3,-4,5,6])
for x in range(5):
print(vals[x])
```

Loop in array fetch value one by one by indexed value

```
from array import *
vals= array('i',[1,2,3,-4,5,6])
for x in range(len(vals)):
print(vals[x])
```

Loop in array fetch value one by one by indexed value

```
from array import *
vals= array('i',[1,2,3,-4,5,6])
for x in range(7-3):
print(vals[x])
```

Loop in array e fetch value one by one at the end

```
from array import *
vals= array('i',[1,2,3,-4,5,6])
for e in vals:
print(e)
```

Copy the array with newArray

```
from array import *
vals= array('i',[1,2,3,-4,5,6])
newArr=array(vals.typecode,(a for a in vals))
for e in newArr:
print(e)
```