

# Agenda

## Arrays in Python

- what is an array?
- Is python list same as an array
- How to create array in python
- Accessing array elements
- Basic Array Operations
- len
- adding elements
- removal
- concatenation
- slicing
- looping

In [1]:

```
lst=[2,5,7,10,55]
div=lst/2
print(div)
```

```
-----
-
TypeError                                Traceback (most recent call last)
<ipython-input-1-a7dbc5bc8f86> in <module>
      1 lst=[2,5,7,10,55]
----> 2 div=lst/2
      3 print(div)
```

**TypeError:** unsupported operand type(s) for /: 'list' and 'int'

## Creating an Array

- import array
- import array as arr(using Aliases)
- from array import \*
- from numpy import array---->numpy is a numerical python module--->numeraical computations

In [2]:

```
from numpy import array
```

In [3]:

```
arr=array([1,2,3,4,5,6])
div=arr/2
print(div)
```

```
[0.5 1.  1.5 2.  2.5 3. ]
```

In [28]:

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

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

In [29]:

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

```
[1.+0.j 2.+0.j 3.+0.j]
```

In [21]:

```
from array import *
nums=array("I",[1,2,3,4,5,10,55555])
print(nums)
print(nums.typecode)
```

```
array('I', [1, 2, 3, 4, 5, 10, 55555])
I
```

In [23]:

```
from array import *
ch=array("u",['a','e','i','o','u','a','o','a'])
print(ch)
print(ch.count('a'))
```

```
array('u', 'aeiouaoa')
3
```

In [24]:

```
db=array("d",[53.6,62.1,2.3,8.9])
print(db)
```

```
array('d', [53.6, 62.1, 2.3, 8.9])
```

In [27]:

```
n=array("d",[1,2.3,5,6.9,100])
print(n)
```

```
array('d', [1.0, 2.3, 5.0, 6.9, 100.0])
```

## Accessing array elements

In [30]:

```
print(n[2])
```

5.0

In [31]:

```
print(n[0:-2])
```

array('d', [1.0, 2.3, 5.0])

In [33]:

```
print(n[::-1])
```

array('d', [100.0, 6.9, 5.0, 2.3, 1.0])

In [35]:

```
# How to read array elements from user
from array import *
int_arr=array("i",[])
size=int(input("Enter the size of an array"))
for i in range(size):
    n=int(input("enter element:"))
    int_arr.append(n)
print(int_arr)
```

Enter the size of an array5  
enter element:10  
enter element:20  
enter element:30  
enter element:40  
enter element:50  
array('i', [10, 20, 30, 40, 50])

In [36]:

```
# How to find the largest element from an array
from array import *
def largest(arr,n):
    max=arr[0]
    for i in range(1,n):
        if arr[i]>max:
            max=arr[i]
    return max

arr=array('i',[5,8,99,500,46,2589632,1,45,89])
n=len(arr)
print("Largest element from an Array is:",largest(arr,n))
```

Largest element from an Array is: 2589632

In [37]:

```
# Len method  
print(len(arr))
```

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## Adding array we use 3 methods

- append()
- extend()
- insert()

In [39]:

```
import array as ar  
A=ar.array('d',[1.1,22.1,3.2,4.1])  
A.append(55.5)  
print("Array A=",A)
```

Array A= array('d', [1.1, 22.1, 3.2, 4.1, 55.5])

In [40]:

```
B=ar.array('d',[2.1,6.3,9.9])  
B.extend([66.6,99.9,88.8])  
print("Array B=",B)
```

Array B= array('d', [2.1, 6.3, 9.9, 66.6, 99.9, 88.8])

In [43]:

```
C=ar.array('d',[1.2,2.2,3.2,4.2])  
C.insert(2,999.9)  
print("Array C=",C)
```

Array C= array('d', [1.2, 2.2, 999.9, 3.2, 4.2])

## Removing Elements

In [44]:

```
print(A)
```

array('d', [1.1, 22.1, 3.2, 4.1, 55.5])

In [45]:

```
print("After removing one element",A.pop())
```

After removing one element 55.5

In [48]:

```
print("removing element is",A.pop(3))
```

```
-----
-
IndexError                                Traceback (most recent call las
t)
```

```
<ipython-input-48-abff78c8561f> in <module>
----> 1 print("removing element is",A.pop(3))
```

**IndexError:** pop index out of range

In [49]:

```
A.extend([10.2,32.5,6.9])
```

In [50]:

```
print(A)
```

```
array('d', [1.1, 22.1, 3.2, 10.2, 32.5, 6.9])
```

In [51]:

```
print("removing element is",A.pop(3))
```

```
removing element is 10.2
```

In [52]:

```
A.remove(22.1)
```

In [53]:

```
print(A)
```

```
array('d', [1.1, 3.2, 32.5, 6.9])
```

In [55]:

```
A.remove(1.1,3.2)
```

```
-----
-
TypeError                                Traceback (most recent call las
t)
```

```
<ipython-input-55-54f3d231b612> in <module>
----> 1 A.remove(1.1,3.2)
```

**TypeError:** remove() takes exactly one argument (2 given)

In [57]:

```
print(A.pop([0:2]))
```

```
File "<ipython-input-57-d08fe0871124>", line 1
    print(A.pop([0:2]))
              ^
```

**SyntaxError:** invalid syntax

## Concatenation

In [61]:

```
a=ar.array('i',[1,2,3,4,5,-9,-8,-7])
b=ar.array('i',[10,20,30])
c=ar.array('i')
c=a+b
print("Afgter Concatenation:",c)
```

Afgter Concatenation: array('i', [1, 2, 3, 4, 5, -9, -8, -7, 10, 20, 30])

In [ ]: