1.Creation of List - [Elements in Square brackets]

In [1]:
```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789]
#The above List has different data types i.e., int, float, complex and strings.
#List assigned to variable L1
print(L1)
print()
print(type(L1)) #prints what Data type is L1 ?
```

```
['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789]

<class 'list'>
```

2.len() - Length of List

In [2]:
```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789] #List with 6 elements
print(len(L1)) #prints the no.of elements present in the list.
print()
L2 = [20,50,67.89,'int', 'float', 'complex', 'string']#List with 7 elements
print(len(L2)) #prints the no.of elements present in the list.
```

```
6

7
```

3. '*' - Repetition of Lists

In [3]:
```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789]
print(L1*2) #Just Prints the list into 2 times.
print()
L2 = L1*2 #Repeats the list L1 into 2 times and saves in List 2.
print(L2)
```

```
['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789, 'Python', 'Bala Narasimha',
2023, 'AI&ML', (-3+2j), 15.6789]

['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789, 'Python', 'Bala Narasimha',
2023, 'AI&ML', (-3+2j), 15.6789]
```

4. '+' - Concatenation / Combination of Two Lists

In [20]:
```
L1 = [10,30,50,70, 'Bala']
print('The List L1 is',L1)
print()
L2 = [20,40,60,80, 'Narasimha']
print('The List L2 is',L2)
print()
L3 = L1 + L2 #Combines List 1 and List 2
print(L3)
```

```
The List L1 is [10, 30, 50, 70, 'Bala']

The List L2 is [20, 40, 60, 80, 'Narasimha']

[10, 30, 50, 70, 'Bala', 20, 40, 60, 80, 'Narasimha']
```

5. '[ ]' Accessing elements from list using Slicing Operator

In [5]:

```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789] #List with 6 elements
print(L1[0]) #Accessing the Zeroth element from the list L1.
print()
print(L1[4]) #Accessing the fourth element from the list L1.
print()
print(L1[2] + L1[5]) #Accessing Second and fifth elements from the list L1, and sums t
print()
print(L1[0] + L1[3]) #Accessing Zeroth and Third elemnts (strings) from the list L1, a
```

```
Python

(-3+2j)

2038.6789

PythonAI&ML
```

6. [ ] Slicing - Accessing Parts from the list (just like strings)

In [6]:

```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789,'Students','University','23
print(L1[0:3]) #Gets the first three elements from the List.
print()
print(L1[:3]) #Gets the first three elements from the List.
print()
print(L1[3:]) #Gets all except the first three elements from the List.
print()
print(L1[-3:]) #Gets the last three elements from the List.
print()
print(L1[:-3]) #Gets all except the last three elements from the List.
print()
print(L1[0:3:1]) #starts from 0th - 3rd position with a stepsize of 1
print()
print(L1[0:5:1]) #starts from 0th - 5th position with a stepsize of 1
print()
print(L1[5:10:1])#starts from 5th - 10th position with a stepsize of 1
print()
print(L1[0:13:3])#starts from 0th - 13th position with a stepsize of 3
print()
print(L1[0:13:5])#starts from 0th - 13th position with a stepsize of 5
```

```
['Python', 'Bala Narasimha', 2023]

['Python', 'Bala Narasimha', 2023]

['AI&ML', (-3+2j), 15.6789, 'Students', 'University', '2311CS020000']

['Students', 'University', '2311CS020000']

['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789]

['Python', 'Bala Narasimha', 2023]

['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j)]

[15.6789, 'Students', 'University', '2311CS020000']

['Python', 'AI&ML', 'Students']

['Python', 15.6789]
```

7. List Processing Functions

7. 1append() - Adds an element to the last of the list.

In [7]:
```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789] #List with 6 elements
print(L1) # Before Append/Adding
print()
L1.append('Programming') #Adds the string 'Programming' to the list L1.
print(L1) #After Appending the element  will be added to the last of the list.
print()
L1.append('Hexadecimal')#Adds the string 'University' to the updated list L1.
print(L1) #After Appending the element  will be added to the last of the list.
```

```
['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789]

['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789, 'Programming']

['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789, 'Programming', 'Hexadecima
l']
```

7.2 copy() - Copies the list elements into a new list and returns it.

In [8]:
```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789] #List with 6 elements
L2 = L1.copy()
print(L2) #New List 'L2' as same as L1.
print()
print(id(L1)) #Memory Address of list L1.
print()
print(id(L2)) #Memory Address of list L2.
```

```
['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789]

2502229986304

2502229991744
```

7.3 count() - Returns number of occurences of an element in the list.

In [9]:
```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789] #List with 6 elements
print(L1.count(2023)) #Counts the element 2023 no.of occurences in the list L1.
print()
L2 = [10,587,62.96,'Bala',10,'Python','Engineering']
print(L2.count(10)) #Counts the element 10 no.of occurences in the list L2.
```

```
1

2
```

7.4 extend() - Appends a list to another list

In [10]:
```
L1 = [10,20,30] #List 1 with 3 elements.
L2 = [40,50,60] #List 2 with 3 elements.
L2.extend(L1) #Appends List 1 to the List 2
print(L2)
print(len(L1)) #Prints length of List 1.
print(len(L2)) #Prints length of List 2.
```

```
[40, 50, 60, 10, 20, 30]
3
6
```

7.4 index() - Returns the first occurence of a specified element in the list.

In [11]:
```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789,2023,'Bala Narasimha']
print(L1.index(2023)) #Prints the position of the element '2023' in the list L1.
print(L1.index('Bala Narasimha')) #Prints the position of the element 'Bala Narasimha'
```

```
2
1
```

7.5 Insert() - Inserts an element into the specified position in the list.

In [12]:
```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789] #List with 6 elements
print(L1)
print()
L1.insert(3,'Professor')#Inserts element 'Professor' at 3rd position of list.
print(L1)
print()
L1.insert(5,'Engineering')#Inserts element 'Engineering' at 5th position of list.
print(L1)
```

```
['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789]

['Python', 'Bala Narasimha', 2023, 'Professor', 'AI&ML', (-3+2j), 15.6789]

['Python', 'Bala Narasimha', 2023, 'Professor', 'AI&ML', 'Engineering', (-3+2j), 15.6789]
```

7.6 pop() - removes the last element from the list (unless specified the position).

In [13]:
```
L1 = ['Python','Bala Narasimha',2023,'AI&ML',-3+2j,15.6789] #List with 6 elements
print(L1)
print()
L2 = L1.pop() # Removes the last element from the List 1.
print('Updated List L1 is',L1)
print()
print("Removed element from the List 1 is",L2)
print()
L3 = L1.pop(1) # Removes the first element from the List 1.
print(L3)
```

```
['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j), 15.6789]

Updated List L1 is ['Python', 'Bala Narasimha', 2023, 'AI&ML', (-3+2j)]

Removed element from the List 1 is 15.6789

Bala Narasimha
```

7.7 remove() - Removes an element from the list.

In [14]:
```
L4 = ['Python','Bala Narasimha','AI&ML','University'] #List with 4 elements
L4.remove('Bala Narasimha') #remove the string 'Bala Narasimha'
print(L4)
```

```
['Python', 'AI&ML', 'University']
```

7.8 reverse() - Reverse the sequence of elements in the list.

In [21]:
```
L4 = ['Python','Bala Narasimha','AI&ML','University']
L4.reverse()
print(L4)
```

```
['University', 'AI&ML', 'Bala Narasimha', 'Python']
```

7.9 sort() - Sorts the elements of the list in Alphabetical / Ascending Order.

In [15]:
```
L4 = ['Python','Bala Narasimha','AI&ML','University','1','2'] #List with 6 elements
L4.sort()
print(L4)
```

```
['1', '2', 'AI&ML', 'Bala Narasimha', 'Python', 'University']
```

7.10 sum(Iterable, Start) - Sums the elements of the list

In [16]:
```
L5 = [10,20,13.456]
print(sum(L5)) #(iterable is L5, start is 0)
print(sum(L5,10)) #(iterable is L5, start is 10)
print(sum(L5,23)) #(iterable is L5, start is 23)
```

```
43.456
53.456
66.456
```

7.11 clear() - Deletes/clears all elements from the list.

In [17]:
```
L4 = ['Python','Bala Narasimha','AI&ML','University']
L4.clear()
print(L4)
```

```
[]
```

8. list() - List Constructor

In [18]:
```
a = 'Bala123'#String
b = list(a) # Converts string into list using list constructor and assigned to variabl
print(b)
```

```
['B', 'a', 'l', 'a', '1', '2', '3']
```