LISTS

A list is a built-in data structure representing an ordered element collection.

Lists are **MUTABLE**. It can be modified after creation, and it can contain elements of different data types, including numbers, Strings, Other lists, and more.

The list is one of the most commonly used data structures in Python due to their flexibility and versatility.

Lists are represented by Square Brackets "**[ ]**" and elements in the list are separated with commas.

Eg: [1 **,**"keerthi"**,** 27.42 **,** "india"**]**

The list can contain elements of different data types. For example, a single list can contain integers, float, strings, and even other lists.

Creating a List:

```
a=[ ]
print(type(a))
O/P: <class 'List'>
```

Characteristics of Lists:

- Lists are ordered
- The elements of the list can be accessed by indexing
- The list are mutable type
- A list can store the number of various elements.

List Indexing:

The index starts from 0 and goes to length - 1.

```
L=[1,2,3,4,5,6]
  0 1 2 3 4 5 —>Forward indexing/Positive indexing
 -6-5-4-3-2-1—> Reverse indexing/Negative indexing
```

Accessing elements from the list:

Examples:

```
L[0]=1      L[-6]=1
L[1]=2      L[-5]=2
L[2]=3      L[-4]=3
L[3]=4      L[-3]=4
```

Slicing:

We can slice the list by using its index value.

```
L=[1,2,3,4,5,6]
print(L[:])      #[start:stop:step/skip]
```

O/P: [1,2,3,4,5,6]

print(L[:3])
O/P: [1,2,3]

Methods in Lists:

There are methods built-in functions, which can be used with the lists.

Syntax to use methods**:**

variable.method()

append(): Adds the element at the end of the list.

Eg: a=[1,2,3,4,5,6]
a.append(6)
print(a)
O/P: [1,2,3,4,5,6,7]

extend(): Multiple data will be added to the existing list

Eg: a=[1,2,3,4,5,6]
a.extend([7,8])
print(a)
O/P: [1,2,3,4,5,6,7,8]

Count(): Returns the number of elements with the specified value

Eg: a=[1,2,3,4,5,6]
print(a.count(4))
O/P: 1

index(): Returns the index of the first element with the specified value

Eg: a=[1,2,3,4,5,6]
print(a.index(4))
O/P: 3

pop(): Removes the element at the specified position

Eg: a=[1,2,3,4,5,6]
a.pop()
print(a)
O/P:[1,2,3,4,5]

Clear(): Removes all the elements from the list

Eg: a=[1,2,3,4,5,6]
a.clear()
print(a)
O/P: []

remove(): Removes the first item with the specified value

Eg:
```
a=[1,2,3,4,5,6]
a.remove(3)
print(a)
```
O/P: [1,2,4,5,6]

Reverse(): Reverses the order of the list

Eg:
```
a=[1,2,3,4,5,6]
a.reverse()
print(a)
```
O/P: [6,5,4,3,2,1]

Sort(): Sorts the list

Eg:
```
a=[1,2,3,4,5,6]
a.sort()  #Ascending order
print(a)
a.sort(reverse=True)  #Descending order
print(a)
```
O/P:
```
[1,2,3,4,5,6]
[6,5,4,3,2,1]
```