Lists

A built in data type that stores set of values. It can store elements of different types (integer, float, string, etc)

Strings are immutable in python
Immutable which cannot be change.

Lists are mutable in python
Mutable means which can be change.

List Methods

```
list = [2, 1, 3]
```

(i) list.append(4) # adds one element at the end [2, 1, 3, 4]
(ii) list.sort() # sorts in ascending order [1, 2, 3]
(iii) list.sort(reverse = True) # sorts in descending order [3, 2, 1]
(iv) list.reverse() # reverse list [3, 1, 2]
(v) list.insert(idx, el) # insert element at index

(i) List.append # adds one element at the end [2, 1, 3]

```
List = [2, 1, 3]
list.append(4)
print(list)
```

When we add an element it is called mutating value

Output :) 2, 1, 3, 4

(ii) List.sort() # sorts in ascending order

```
List = [1, 42, 15]
print(List.sort())
print(list)
```

(iii) List.sort(reverse = True) # sorts in descending order

```
List = [10, 5, 45, 12, 16, 47]
print(list.sort(reverse = True))
print(list)
```

[47, 45, 16, 12, 10, 5]

(vi) List.reverse() # reverse list (8)

```
list = [10, 5, 8, 7, 6, 4]
list.reverse()
print(list)
output = [4, 6, 7, 8, 5, 10]
```

List.insert(idx, el) # insert element at index

```
list = [1, 2, 3]
list.insert(1, 5)
print(list)
```

output [1, 5, 2, 3]

(vii) List.remove # removes first occurrence of element

list.pop() is used to remove.

```
list = 1, 5, 8, 6
list.pop(3)
print(list)
```

Output [1, 5, 8]

(viii)

write a program to ask the user to enter names of their 3 favorite movies and store them in a list.

```
movies = [ ]
a = str(input("Enter the film : "))
b = str(input("Enter the film : "))
c = str(input("Enter the film : "))
movies.append(a)
movies.append(b)
movies.append(c)
print(movies)
```

- or 2nd way to solve.

```
movies [ ]
movies.append(input("Enter the film : "))
movies.append(input("Enter the film : "))
movies.append(input("Enter the film : "))
print(movies)
```

Output

['abc', 'def', 'ghi']

len()

Returns the length of the list passed as the argument.

Example list = [10, 20, 30, 40, 50]

```
>>> len(list1)
5
```

list()

Creates an empty list if no argument is passed. It creates a list if a sequence is passed as an argument.

```
>>> list1 = list()
>>> list1
[]
>>> str1 = 'aeiou'
>>> list1 = list(str1)
>>> list1
['a', 'e', 'i', 'o', 'u']
```

Append()

Appends a single element passed as an argument at the end of the list. The single element can also be a list.

```
>>> list1 = [10, 20, 30, 40]
>>> list1.append(50)
>>> list1
[10, 20, 30, 40, 50]
>>> list1 = [10, 20, 30, 40]
>>> list1.append([50, 60])
>>> list1
[10, 20, 30, 40, [50, 60]]
```

Extend()

Appends each element of the list passed as argument to the end of the given list.

```
>>> list1 = [10, 20, 30]
>>> list2 = [40, 50]
>>> list1.extend(list2)
>>> list1
[10, 20, 30, 40, 50]
```

Count()

Returns the number of times a given element appears in the list.

```
>>> list1 = [10, 20, 30, 10, 40, 10]
>>> list1.count(10)
3
>>> list1.count(90)
0
```

Index()

Returns index of the first occurence of the element in the list. If the element is not present, value error is generated

```
list1 = [10, 20, 30, 20, 40, 10]
list1.index(20)
1
>>> list1.index(90)
value Error: 90 is not in list.
```

min()

Returns the minimum or smallest element of the list.

```
>>> list1 = [34, 12, 63, 39, 92, 44]
>>> min(list1)
12
```

max()

Returns the maximum or largest element of the list.

```
>>> list1 = [34, 12, 63, 39, 92, 44]
max(list1)
```

sum()

Returns the sum of the elements of the list.

```
>>> list1 = [34, 12, 63, 39, 92, 44]
>>> sum(list1)
284
```