

# **Lists in Python**

# Lists in Python

- Lists are the most versatile compound data types.
- A list contains items separated by commas and enclosed within **square brackets** ([ ]).
- Lists are similar to arrays in C, but all the items belonging to a list can be of different data type.
- The plus (+) sign is the list concatenation operator, and the asterisk (\*) is the repetition operator.

```
list1 = ['RCC', 2020, 'COLLEGE', 12.5]
```

```
list2 = ['KOLKATA', 700015]
```

```
print(list1)           # ['RCC', 2020, 'COLLEGE', 12.5]
```

```
print(list1+list2)    # ['RCC', 2020, 'COLLEGE', 12.5, 'KOLKATA', 700015]
```

```
print(list2 * 2)      # ['KOLKATA', 700015, 'KOLKATA', 700015]
```

# Lists in Python

## Accessing Values in Lists

- Similar to string, lists can be sliced, concatenated and so on.
- The values stored in a list can be accessed using the slice operator ([ ] and [:]) with indexes starting at **0** in the beginning of the list and working their way to **end -1**.

```
list1 = ['Kolkata', 'Delhi', 'Mumbai']
```

```
list2 = [10, 20, 30, 40, 50 ]
```

```
list3 = ['RCCIIT', 'Kolkata', 700015 ]
```

```
print(list1)           # ['Kolkata', 'Delhi', 'Mumbai']
```

```
print(list1[1])       # Delhi
```

```
print(list2[1:4])     # [20, 30, 40]
```

# Lists in Python

## Updating Lists

- Updating single or multiple elements of lists is done by giving the slice on the left-hand side of the assignment operator.
- Elements can be added in a list with the ***append()*** method.

```
list1 = ['Kolkata', 'Delhi', 'Mumbai']
```

```
list1[1]='Chennai'
```

```
print(list1)           # output ['Kolkata', 'Chennai', 'Mumbai']
```

## Delete List Elements

- To remove a list element, the ***del*** statement is used if you know exactly which element(s) you are deleting.
- Elements can be removed using ***remove()*** method if you do not know the index of the element.

```
list1 = ['Kolkata', 'Delhi', 'Mumbai']
```

```
del list1[1]
```

```
print(list1)           # output ['Kolkata', 'Mumbai']
```

# Lists in Python

## Basic List Operations

```
list1=[10,20,30,40]
```

```
list2=[50,60]
```

```
len(list1)      # return the length of the list1
```

```
print(len(list1))  # output 4
```

```
list3=list1+list2  #concatenation of list1 and list2
```

```
print(list3)      # output [10,20,30,40,50,60]
```

```
list3=list1*2      # repetition of list1
```

```
print(list3)      # output [10, 20, 30, 40, 10, 20, 30, 40]
```

```
member= x in list1  # check membership
```

```
for x in list1:     # iteration
```

```
    print(x)        # output 10 20 30 40 in separate line
```

# Lists in Python

## Built-in List Functions

```
list1=[10,20,30,40]
```

```
len(list1)          # return the length of the list1
```

```
print(len(list1))  # output 4
```

---

```
tuple1 = ('RCCIIT', 'Kolkata', 700015)
```

```
list1=list(tuple1)  # a tuple to be converted into list
```

```
print(list1)       # output ['RCCIIT', 'Kolkata', 700015]
```

---

```
list1=[10,30,25,20]
```

```
maxvalue=max(list1) # return max value
```

```
print(maxvalue)    # output 30
```

---

```
list1=[10,30,25,20]
```

```
minvalue=min(list1) # return min value
```

```
print(minvalue)    # output 10
```

# Lists in Python

## Built-in List Methods

```
list1 = ['RCCIIT', 'Kolkata', 700015]
```

```
list1.append( 2020 )
```

```
print(list1)          # output ['RCCIIT', 'Kolkata', 700015, 2020]
```

---

```
list1 = ['Chennai', 'Kolkata', 'Delhi', 'Mumbai']
```

```
print(list1.index( 'Delhi'))    # output 2
```

---

```
list1 = ['Chennai', 'Kolkata', 'Delhi', 'Mumbai']
```

```
list1.insert(2,'Bangalore')
```

```
print(list1)  # output ['Chennai', 'Kolkata', 'Bangalore', 'Delhi', 'Mumbai']
```

---

```
list1 = ['Chennai', 'Kolkata', 'Delhi', 'Mumbai']
```

```
list1.remove('Delhi')
```

```
print(list1)    # output ['Chennai', 'Kolkata', 'Mumbai']
```

---

```
list1 = [10, 20, 30, 20, 40, 50, 20]
```

```
print(list1.count(20))  # output 3
```

# Lists in Python

## Built-in List Methods

```
list1 = [10, 20, 30, 40]
```

```
list1.reverse()
```

```
print(list1)    # output [40, 30, 20, 10]
```

---

```
list1 = [20, 40, 30, 10]
```

```
list1.sort()    # list1.sort(reverse=True) for reverse the list
```

```
print(list1)    # output [10, 20, 30, 40]
```

---

```
list1 = [10, 20, 30, 40]
```

```
list2=[50,60]
```

```
list1.extend(list2)
```

```
print(list1)    # output [10, 20, 30, 40, 50, 60]
```

---

```
list1 = [10, 20, 30, 40]
```

```
print(list1.pop()) # output 40
```

```
print(list1)    # output [10, 20, 30]
```



THANK YOU