

## UNIT IV

### LISTS, TUPLES, DICTIONARIES

Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing - list comprehension; Illustrative programs: selection sort, insertion sort, merge sort, histogram.


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## 4.1 LISTS

### Define List

A list is an ordered set of values, where each value is identified by an index. The values in a list are called its elements or items. The items can be of different types (int, float, string). To create a new list, the simplest way is to enclose the elements in square bracket [ ]. Lists are mutable which means the items in the list can be add or removed later.

### Example:



```
>>>[ ] #empty list
>>>[1,2,3] #list of integers
>>>['physics','chemistry','python'] #list of strings
>>>[1,'hello',3.4] #list with mixed datatypes
>>>list1=['a','b','c','d']
>>>print(list1)
```

List can have another list as an item. This is called nested list.

```
Mylist=['mouse',[8,6,5], 3.2]
```

### List are mutable.

Lists are mutable which means the items in the list can be added or removed later. >>>mark=[98,87,94]

```
>>>mark[2]=100
```

```
>>>print(mark)    #Prints [98,87,100]
```

### **To access the elements in a list**

The syntax for accessing an element is same as string. The square brackets are used to access the elements. The index value within the square brackets should be given.

```
>>>list1=[] #Empty list
```

```
>>>list2=[1,2,3,4,5,6,7,8]
```

```
>>>list3=['Hello',3.5,'abc',4]
```

```
print(list3[1]) → 3.5
```

### **List Length:**

The function **len** returns the length of a list, which is equal to the number of elements.

```
len(list2) → 8
```

```
len(list3) → 4
```

### **List Membership:**

The membership operator **“in”** and **“not in”** can also be used in a list to check whether the element is present in the list or not.

*Ex:*

```
list3=['Hello',3.5,'abc',4]
```

```
'Hello' in list3 → returns True
```

