

Linear Search

```
In [26]: def linear_Search(list1, n, key):  
          # Searching list1 sequentially  
          for i in range(0, n):  
              if (list1[i]==key):  
                  return i  
          return -1  
list1 = [1,3,5,4,7,9]  
key = 7  
n = len(list1)  
res = linear_Search(list1, n, key)  
if(res == -1):  
    print("Element not found")  
else:  
    print("Element found at index: ", res)
```

Element found at index: 4

binary search using Iterative Method

```
In [27]: def binary_Search(list1,n):
    low = 0
    high = len(list1) - 1
    mid = 0

    while low <= high:
        mid = (high + low)//2

        if list1[mid] < n:
            low = mid+1
        elif list1[mid] > n:
            high = mid - 1

        else:
            return mid
    return -1
list1 = [12,24,32,39,45,50,54]
n = 45

res = binary_Search(list1,n)

if res != -1:
    print("Element is present at index: ",str(res))
else:
    print("Element not present in the list")
```

Element is present at index: 4

binary search using Recursive Method

```
In [28]: def binary_search(list1, low, high, x):
    if high >= low:
        mid = (high + low) // 2
        if list1[mid] == x:
            return mid
        elif list1[mid] > x:
            return binary_search(list1, low, mid - 1, x)
        else:
            return binary_search(list1, mid + 1, high, x)
    else:
        return -1

list1 = [2, 3, 4, 10, 40]
x = 4
result = binary_search(list1, 0, len(list1)-1, x)

if result != -1:
    print("Element is present at index", str(result))
else:
    print("Element is not present in list")
```

Element is present at index 2

In []: