LAB#31

Example#1: Write a program to search an element from an unsorted array.

Solution:

linear_search.py > linear_search

```
1   from array import array
2   def linear_search(arr,element):
3       for i in range(len(arr)):
4           if arr[i]==element:
5               print('Your element', element,'is at index#',i,'in the array')
6               return 1
7       else:
8           return -1
9
10  a=array('i',[1,9,5,7,8,2,12])
11  element=int(input('Enter the value which you want to search:'))
12  result=linear_search(a,element)
13
14  if result==-1:
15      print('The entered element',element,' is not found in the array')
16
```

Output:

```
Enter the value which you want to search:7
Your element 7 is at index# 3 in the array
```

Example#2: Write a program to search an element from a sorted array.

Solution:

```python
def binary_search(arr, element):
    left = 0
    right = len(arr) - 1

    while left <= right:
        mid = (left + right) // 2

        if arr[mid] == element:
            return mid

        elif arr[mid] < element:
            left = mid + 1

        else:
            right = mid - 1

    return -1
```

```python

arr = [2, 3, 5, 7, 11, 13, 17, 19, 23]

element=int(input('Enter the value which you want to search:'))
result = binary_search(arr, element)

if result != -1:
    print('The element',element,' is present at index', result)
else:
    print("Element is not present in array")

```

Output:

```
Enter the value which you want to search:19
The element 19  is present at index 7
```

Class Assignment

Q.1: Write a program to merge different unsorted arrays then apply linear search algorithm to search a particular element from that array.

Q.2: Write a program to merge different unsorted arrays then apply any sorting algorithm to sort the resultant array and then apply the binary search algorithm to search a particular element from that array.