East West University
Department of Computer Science and Engineering

Course: CSE 246(Algorithms)
Section - 02

Submitted To :	**Submitted By :**
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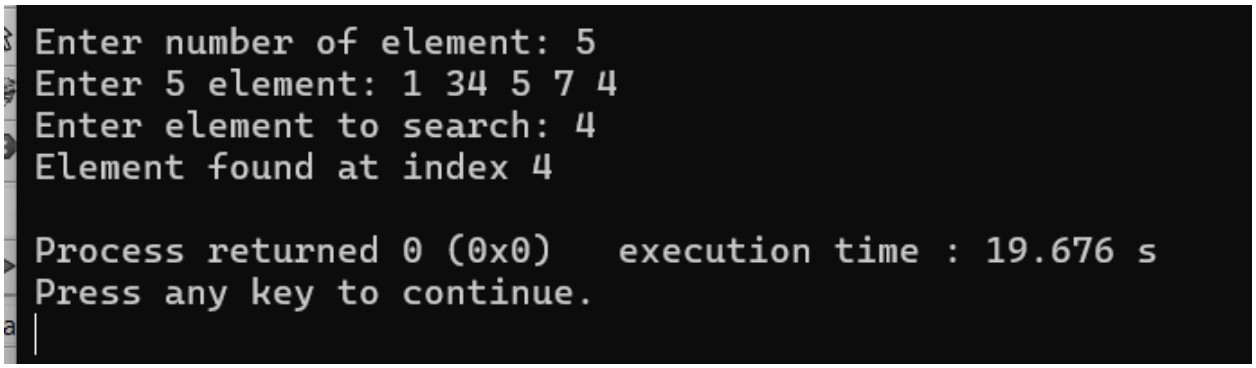
Lab Report:02

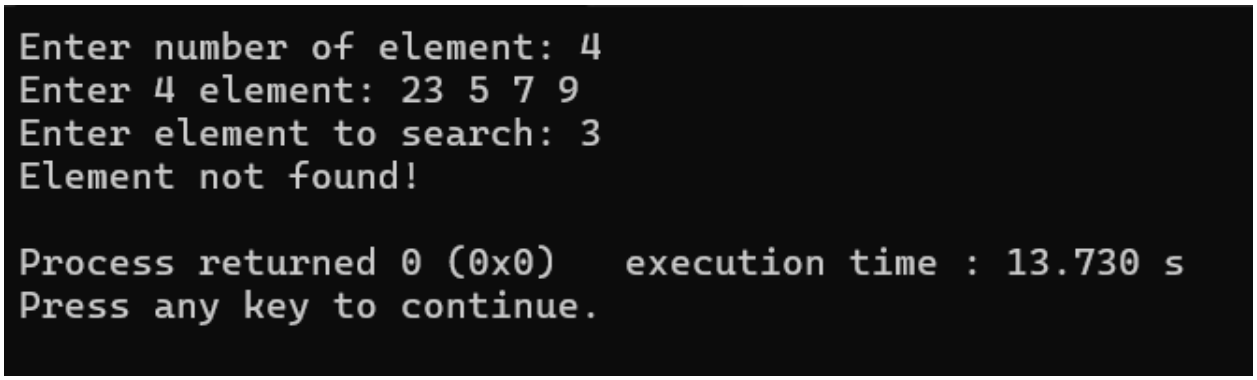
1.Linear Search:

```
#include <bits/stdc++.h>
using namespace std;
int LinearSearch(int arr[],int n,int key){
   for(int i=0;i<n;i++){
   if(arr[i]==key){
      return i;
   }
}
return -1;
}
int main(){
int n;
cout<< "Enter number of element: ";
cin>>n;

int arr[n];
cout<<"Enter " <<n <<" element: ";
for(int i=0;i<n;i++){
      cin>>arr[i];
}
int key;
cout << "Enter element to search: ";
cin >> key;

int result = LinearSearch(arr, n, key);

   if (result != -1)
      cout << "Element found at index " << result << endl;
   else
      cout << "Element not found!" << endl;
   return 0;
}
```

Output:



If not found



2.Binary Search

```
#include <bits/stdc++.h>
using namespace std;

int BinarySearch(int arr[], int n, int key) {
    int low = 0;
    int high = n - 1;

    while (low <= high) {
        int mid = (low + high) / 2;

        if (arr[mid] == key)
            return mid;
```

```
        else if (arr[mid] < key)
            low = mid + 1;
        else
            high = mid - 1;
    }

    return -1;
}

int main() {
    int n;
    cout << "Enter number of elements: ";
    cin >> n;

    int arr[n];
    cout << "Enter " << n << " sorted elements: ";
    for (int i = 0; i < n; i++) {
        cin >> arr[i];
    }

    int key;
    cout << "Enter element to search: ";
    cin >> key;

    int result = BinarySearch(arr, n, key);

    if (result != -1)
        cout << "Element found at index " << result << endl;
    else
        cout << "Element not found!" << endl;

    return 0;
}
```

Output

```
Enter number of elements: 4
Enter 4 sorted elements: 23 54 67 98
Enter element to search: 23
Element found at index 0

Process returned 0 (0x0)   execution time : 23.699 s
Press any key to continue.
```

If not found

```
Enter number of elements: 3
Enter 3 sorted elements: 34 56 78
Enter element to search: 2
Element not found!

Process returned 0 (0x0)   execution time : 14.422 s
Press any key to continue.
```