

LAB-01

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Q1. Linear search algorithm. (in cpp)

```
//K V Jaya Harsha
//CS23B1034
#include<iostream>
using namespace std;
int linear(int arr[], int target, int size){
    int codi=-1;
    for (int i = 0; i < size-1; i++)
    {
        if (arr[i]==target)
        {
            codi = i;
        }
    }
    if (codi!=-1)
    {
        cout << "Element if found at " << codi+1 << " position!";
    }
    else{
        cout << "Element not found!";
    }
}
int main(){
    int k;
    cout << "Enter the size of the array: ";
    cin >> k;
    int arr[k];
    cout << endl;
    cout << "Enter the elements in the array: ";
    for (int i = 0; i < k; i++)
    {
        cin >> arr[i];
    }
    cout << "Enter the target element!: ";
    int key;
    cin >> key;
    linear(arr,key,k);
    return 0;
}
```

Enter the size of the array: 5

Enter the elements in the array: 1 2 3 4 5

Enter the target element!: 4

Element if found at 4 position!

Q2. Binary Search algorithm. (in cpp)

```
//K V Jaya Harsha
//CS23B1034
#include<iostream>
using namespace std;
int binary(int begin, int end, int target, int arr[]){
    while (begin<=end){
        int mid;
        mid = (begin+end)/2;
        if (target==arr[mid]){
            return mid;
        }
        if (mid>target){
            end=mid-1;
        }
        else{
            begin=mid+1;
        }
    }
}
int main(){
    int k;
    cout << "Enter the size of the array: ";
    cin >> k;
    int arr[k];
    cout << endl;
    cout << "Enter the elements in the array: ";
    for (int i = 0; i < k; i++){
        cin >> arr[i];
    }
    cout << "Enter the target element!: ";
    int key;
    cin >> key;
    cout << "Element found at index = " << binary(0,k-1,key,arr);
    return 0;
}
```

Enter the size of the array: 5

Enter the elements in the array: 1 2 3 4 5

Enter the target element!: 4

Element found at index = 3

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Q3. Bubble sort. (in cpp)

```
//K V Jaya Harsha
//CS23B1034
#include<iostream>
using namespace std;
int bubble(int arr[],int size){
    for (int i = 0; i < size-1; i++){
        for (int j = 0; j < size-i-1; j++){
            if (arr[j]>arr[j+1]){
                int temp;
                temp = arr[j];
                arr[j] = arr[j+1];
                arr[j+1] = temp;
            }
        }
    }
    return 0;
}
int main(){
    int k;
    cout << "Enter the size of the array: ";
    cin >> k;
    int arr[k];
    cout << endl;
    cout << "Enter the elements in the array: ";
    for (int i = 0; i < k; i++){
        cin >> arr[i];
    }
    cout << "Array before sorting!: ";
    for (int i = 0; i < k; i++){
        cout << arr[i] << " ";
    }
    bubble(arr,k);
    cout << endl;
    cout << "Array after sorting!: ";
    for (int i = 0; i < k; i++){
        cout << arr[i] << " ";
    }
    return 0;
}
```

Enter the size of the array: 5

Enter the elements in the array: 21 -12 89 0 9

Array before sorting!: 21 -12 89 0 9

Array after sorting!: -12 0 9 21 89