

Linear Search

Algorithm:

1. Accept array as input as arr[], set flag = 0
2. Accept element to be search as x
3. Start from the leftmost element of arr[] and one by one compare x with each element of arr[]
4. If x matches with an element, set flag to 1.
5. Continue steps 3 and 4 till end of the arr[].
6. Check value of flag if flag = 1 print element is present, otherwise print element is not present

Time complexity:

Best case: $O(1)$

Worst case: $O(n)$

Space complexity:

$O(1)$

Program:

```
#include<iostream.h>

#include<conio.h>

void main()

{

int n,ele,flag=0,i;

// accept no of elements in array

cout<<"Enter number of element to be placed in array"<<endl;

cin>>n;
```

```
int a[20];

// acceting values for array
for(i=0;i<n;i++)
{
    cout<<"Enter "<<i<<"th element";
    cin>>a[i];
}

// accept element to be search
cout<<"Enter element to be search"<<endl;
cin>>ele;

// Search logic
for(i=0;i<n;i++)
{
    if(a[i]==ele){
        flag=1;
    }
}

// display if element is found or not
if(flag==0)
    cout<<"Element not found"<<endl;
else
    cout<<"Element found";

getch();
}
```

Output:

```
Enter number of element to be placed in array
8
Enter 0th element 33
Enter 1th element 66
Enter 2th element 22
Enter 3th element 12
Enter 4th element 45
Enter 5th element 87
Enter 6th element 99
Enter 7th element 34
Enter element to be search
3
Element not found
-
```

Enter number of element to be placed in array

5

Enter 0th element 5

Enter 1th element 4

Enter 2th element 3

Enter 3th element 2

Enter 4th element 1

Enter element to be search

5

Element found_