

Practical No-04

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1)Linear Search

```
#include<iostream>

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

int linearSearch(int arr[],int size,int target)
{
    for(int i=0;i<size;++i)
    {
        if(arr[i]==target)
        {
            return i;
        }
    }
    return -1;
}

int main()
{ int size,target;
```

```

        cout << "enter the size of the array" <<
endl; cin >> size; int arr[size];
        cout << "enter the elements of the array" << endl;
        for(int i=0;i<size;++i)
        {
                cin >> arr[i];
        }

        cout <<"enter the target element" <<endl; cin >>
target;
        int temp=linearSearch(arr,size,target);
        if(temp== -1)
        {
                cout << "target element is not present" <<endl;
        }
        else
        {
                cout << "target element is present at "<<temp <<
"index" <<endl;
        }
        return 0;
}

```

```
C:\Users\Admin\Documents\practical3.1.exe
enter the size of the array
8
enter the elements of the array
9
5
7
3
6
2
4
1
enter the target element
3
target element is present at 3index
-----
Process exited after 25.77 seconds with return value 0
Press any key to continue . . .
```

2) Binary Search

```
#include<iostream>

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

int BinarySearch(int arr[],int size,int target)
{
    int start=0;    int
end=size-1;
while(start<=end)
{
    int mid=start+(end-start)/2;
if(arr[mid]==target)
{
    return mid;
}
```

```

        else if(arr[mid]>target)
        {
            end=mid-1;
        }
    else
    {
        start=mid+1;
    }
}
return -1;
}

int main()
{
    int arr[10]={8,3,9,16,7,11,19,22,15,14};
    int target;
    cout <<"enter the target element"<<endl;
    cin >>target;

    int ans=BinarySearch(arr,10,target);
    if(ans==-1)
    {
        cout << "target element is not present" <<endl;
    }
}

```

```

    }

    else

    {

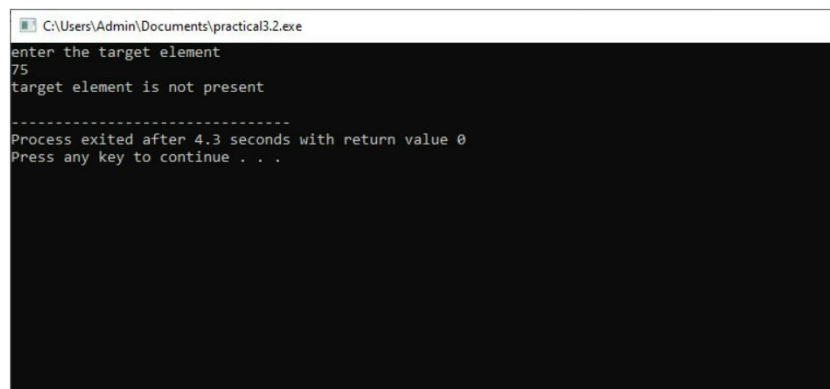
        cout << "target element is present at "<<ans <<
"index" <<endl;

    }

    return 0;

}

```



```

C:\Users\Admin\Documents\practical3.2.exe
enter the target element
75
target element is not present

-----
Process exited after 4.3 seconds with return value 0
Press any key to continue . . .

```

3)Selection sort

```

#include<iostream>

#include<bits/stdc++.h>

using namespace std; int

main()

{

    int size;

```

```
cout << "enter the size of the array" << endl; cin
>> size;

int arr[size];

cout << "enter the elements of the array" << endl;
for(int i=0;i<size;++i)
{
    cin >> arr[i];
}
for(int i=0;i<size-1;++i)
{
    int MinIndex=i;
    for(int j=i+1;j<size;++j)
    {
        if(arr[j]<arr[MinIndex])
        {
            MinIndex=j;
        }
    }
    swap(arr[i],arr[MinIndex]);
}
cout <<"sorted array:"<<endl;
for(int i=0;i<size;++i)
```

```

    {
        cout << arr[i] << " ";
    }
    return 0;
}

```

```

C:\Users\Admin\Documents\practical3.3.exe
enter the size of the array
6
enter the elements of the array
8
4
0
3
5
76
sorted array:
0 3 4 5 8 76
-----

```

4)Bubble sort

```

#include<iostream>

#include<bits/stdc++.h>

using namespace std; int
main()
{
    int size;

    cout << "enter the size of the array" << endl;

    cin >> size;    int arr[size];    cout << "enter the
elements of the array" << endl;    for(int
i=0;i<size;++i)

```

```

        {
            cin >> arr[i];
        }
        int n=size;
while(n>0)
    {
        for(int j=0;j<n-1;++j)
        {
            if(arr[j]>arr[j+1])
            {
                swap(arr[j],arr[j+1]);
            }
        }
        --n;
    }
    cout <<"sorted array:"<<endl;
for(int i=0;i<size;++i)
    {
        cout << arr[i] <<" ";
    }
    return 0;
}

```



```
C:\Users\Admin\Documents\practical3.4.exe
enter the size of the array
8
enter the elements of the array
45
34
78
99
5
56
23
67
sorted array:
5 23 34 45 56 67 78 99
-----
Process exited after 17.39 seconds with return value 0
Press any key to continue . . .
```

5) Insertion sort #include

<bits/stdc++.h> using

namespace std;

void insertionSort(int arr[], int n)

{

int i, key, j; for

(i = 1; i < n; i++)

{

key = arr[i];

j = i - 1;

while (j >= 0 && arr[j] > key)

{

arr[j + 1] = arr[j];

```

        j = j - 1;
    }
    arr[j + 1] = key;
}
}

void printArray(int arr[], int n)
{
    int i;
    for (i = 0; i < n; i++)
        cout << arr[i] << " ";
    cout << endl;
}

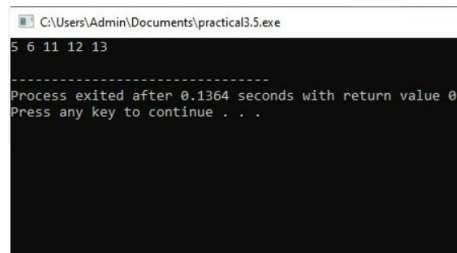
int main()
{
    int arr[] = { 12, 11, 13, 5, 6 }; int
    N = sizeof(arr) / sizeof(arr[0]);

    insertionSort(arr, N);
    printArray(arr, N);

    return 0;
}

```

}



A screenshot of a Windows command prompt window. The title bar shows the file path "C:\Users\Admin\Documents\practical3.5.exe". The command prompt displays the output of a program: "5 6 11 12 13" followed by a line of dashes, then "Process exited after 0.1364 seconds with return value 0", and finally "Press any key to continue . . .".

```
C:\Users\Admin\Documents\practical3.5.exe
5 6 11 12 13
-----
Process exited after 0.1364 seconds with return value 0
Press any key to continue . . .
```