

# ***COMPETITIVE PROGRAMMING***

## ASSIGNMENT 1

### SORTING ALGORITHMS SET 1

#### ➤ **BUBBLE SORT**

##### code

```
#include<iostream>

using namespace std;

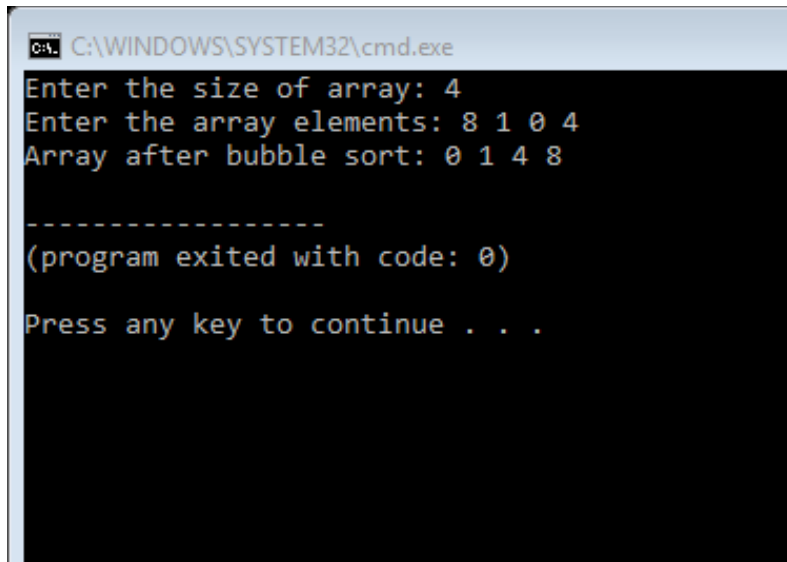
int main()
{
    int a[50],n,i,j,temp;
    cout<<"Enter the size of array: ";
    cin>>n;
    cout<<"Enter the array elements: ";

    for(i=0;i<n;++i)
        cin>>a[i];
    for(i=1;i<n;++i)
    {
        for(j=0;j<(n-i);++j)
            if(a[j]>a[j+1])
            {
                temp=a[j];
                a[j]=a[j+1];
                a[j+1]=temp;
            }
    }

    cout<<"Array after bubble sort:";
    for(i=0;i<n;++i)
```

```
cout<<" "<<a[i];  
return 0;  
}
```

## OUTPUT



```
C:\WINDOWS\SYSTEM32\cmd.exe  
Enter the size of array: 4  
Enter the array elements: 8 1 0 4  
Array after bubble sort: 0 1 4 8  
  
-----  
(program exited with code: 0)  
Press any key to continue . . .
```

## ➤ SELECTION SORT code

```
#include<iostream>  
using namespace std;  
int main()  
{  
    int i,j,n,loc,temp,min,a[15];  
    cout<<"Enter the number of elements:";  
    cin>>n;  
    cout<<"\nEnter the elements\n";  
  
    for(i=0;i<n;i++)
```

```

{
    cin>>a[i];
}

for(i=0;i<n-1;i++)
{
    min=a[i];
    loc=i;
    for(j=i+1;j<n;j++)
    {
        if(min>a[j])
        {
            min=a[j];
            loc=j;
        }
    }
    temp=a[i];
    a[i]=a[loc];
    a[loc]=temp;
}

cout<<"sorted list is as follows:";

for(i=0;i<n;i++)
{
    cout<<a[i]<<" ";
}

cout<<"\nSELECTION SORT\n";

return 0;
}

```

## OUTPUT

```
C:\WINDOWS\SYSTEM32\cmd.exe
Enter the number of elements:5
Enter the elements
12
10
9
7
4
sorted list is as follows:0 4 7 10 12
SELECTION SORT

-----
(program exited with code: 0)
Press any key to continue . . .
```

## ➤ INSERTION SORT

### code

```
#include <iostream>
using namespace std;

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

void insertion_sort(int array[], int n)
{
    int i,j,k;
    for (i = 1; i < n; i++)
    {
        k = array[i];
        int j = i - 1;
```

```

while (j>= 0 && array[j]> k)
{
    array[j + 1] = array[j];
    j=j-1;
}
array[j + 1] = k;
}
}
int main()
{
    int a;

    cout<<"enter the number of elements:";
    cin >> a;
    int arr[a];
    cout << "Enter elements:" << endl;
    for(int i=0; i<a; i++)
    {
        cin>>arr[i];
    }
    cout<<"array elemennts before sorting";
    displayArray(arr,a);
    insertion_sort(arr,a);
    cout<<"array elements after sorting:";
    displayArray(arr,a);

    cout<<"INSERTION SORT";

}

```

## OUTPUT

```
C:\WINDOWS\SYSTEM32\cmd.exe
enter the number of elements:4
Enter elements:
91
52
0
2
array elemennts before sorting91 52 0 2
array elements after sorting:0 2 52 91
INSERTION SORT

-----
(program exited with code: 0)

Press any key to continue . . .
```