

# Competitive Programming Assignment

## 1. Sorting Algorithms Set 1

### a. Bubble sort

#### Code:

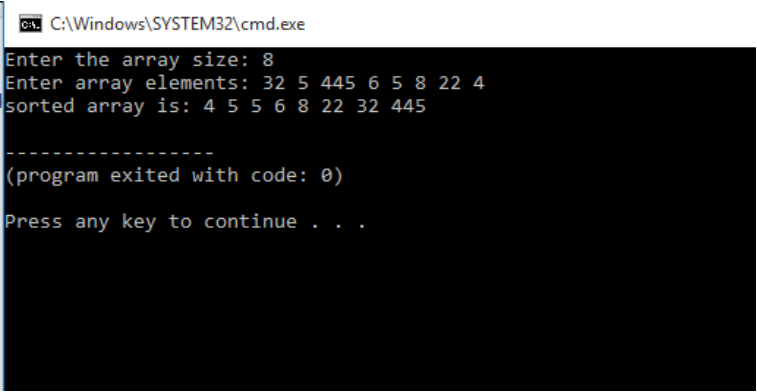
```
#include <iostream>
using namespace std;

int main()
{
    int i,j,n,tmp;
    cout<<"Enter the array size: ";
    cin>>n;
    int a[n];
    cout<<"Enter array elements: ";
    for(i=0;i<n;i++)
    {
        cin>>a[i];
    }

    for(i=0;i<n;i++)
    {
        for(j=0;j<(n-1-i);j++)
        {
            if (a[j]>a[j+1])
            {
                tmp=a[j];
                a[j]=a[j+1];
                a[j+1]=tmp;
            }
        }
    }
    cout<<"sorted array is: ";
    for(i=0;i<n;i++)
    cout<<a[i]<<" ";

    return 0;
}
```

#### Output



```
C:\Windows\SYSTEM32\cmd.exe
Enter the array size: 8
Enter array elements: 32 5 445 6 5 8 22 4
sorted array is: 4 5 5 6 8 22 32 445

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

## b. Selection Sort

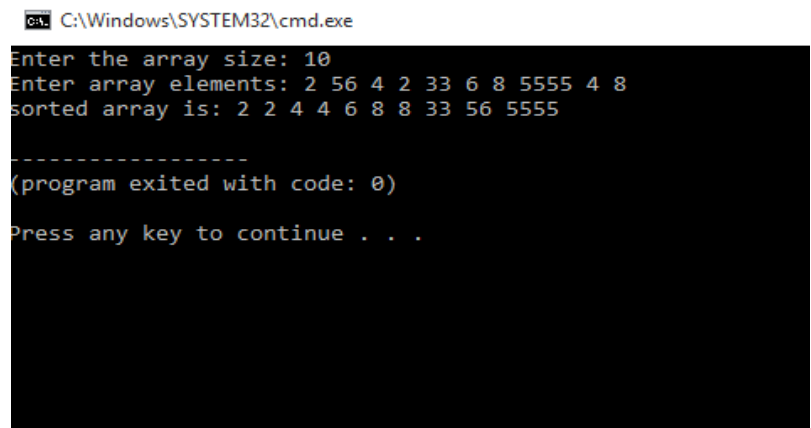
### Code:

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

int main()
{
    int i,j,n,smallest,tmp,s;
    cout<<"Enter the array size: ";
    cin>>n;
    int a[n];
    cout<<"Enter array elements: ";
    for(i=0;i<n;i++)
    {
        cin>>a[i];
    }
    for(i=0;i<n;i++)
    {
        smallest=a[i];
        s=i;
        for(j=i+1;j<n;j++)
        {
            if (smallest>a[j])
            {
                smallest=a[j];
                s=j;
            }
        }
        tmp=a[i];
        a[i]=a[s];
        a[s]=tmp;
    }
    cout<<"sorted array is: ";
    for(i=0;i<n;i++)
    cout<<a[i]<<" ";

    return 0;
}
```

### Output



```
C:\Windows\SYSTEM32\cmd.exe
Enter the array size: 10
Enter array elements: 2 56 4 2 33 6 8 5555 4 8
sorted array is: 2 2 4 4 6 8 8 33 56 5555
-----
(program exited with code: 0)
Press any key to continue . . .
```

### c. Insertion Sort

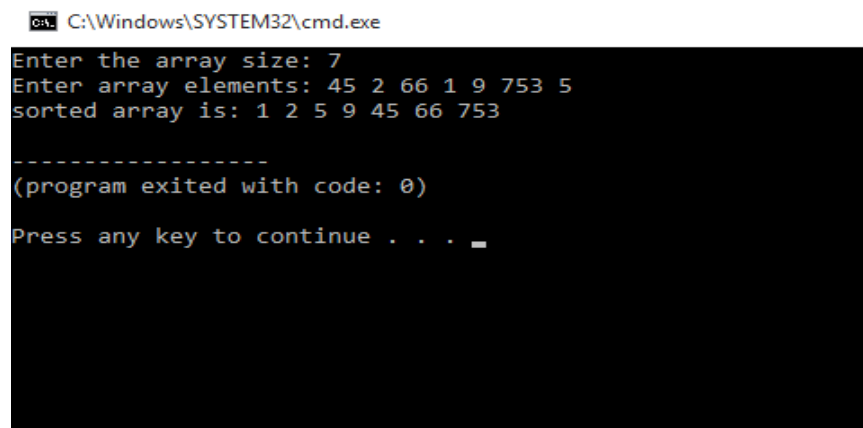
#### Code:

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

int main()
{
    int i,j,n,tmp;
    cout<<"Enter the array size: ";
    cin>>n;
    int a[n];
    cout<<"Enter array elements: ";
    for(i=0;i<n;i++)
    {
        cin>>a[i];
    }
    for(i=0;i<n;i++)
    {
        tmp=a[i];
        j=i;

        while(j>0 && tmp < a[j-1])
        {
            a[j]=a[j-1];
            j=j-1;
        }
        a[j]=tmp;
    }
    cout<<"sorted array is: ";
    for(i=0;i<n;i++)
    cout<<a[i]<<" ";
    return 0;
}
```

#### Output



```
C:\Windows\SYSTEM32\cmd.exe
Enter the array size: 7
Enter array elements: 45 2 66 1 9 753 5
sorted array is: 1 2 5 9 45 66 753
-----
(program exited with code: 0)
Press any key to continue . . . _
```