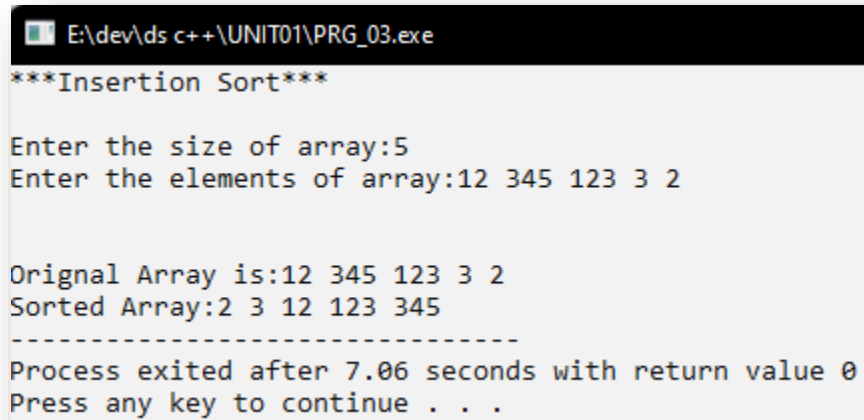


```
/*
Name: Harsh Singh
Roll NO:1262
Unit:1
Program: Insertion Sort
*/
#include<iostream>
using namespace std;
int main()
{
    int n,i;
    int A[10];
    int tmp,loc;
    cout<<"***Insertion Sort***"<<endl<<endl;
    cout<<"Enter the size of array:";
    cin>>n;
    cout<<"Enter the elements of array:";
    for(i=0;i<n;i++)
    {
        cin>>A[i];
    }
    cout<<endl<<endl;
    cout<<"Original Array is:";
    for(i=0;i<n;i++)
    {
        cout<<A[i]<<" ";
    }
    //Insertion Sort
    for (i=1;i<n;i++)//iteration loop
    {
        tmp=A[i];
        loc=i-1;
        while(tmp<A[loc] && loc>=0){
            A[loc+1]=A[loc];
            loc=loc-1;
        }//end of while
        //At this stage a space is available for tmp
        A[loc+1]=tmp;

    }//end of for i loop
    cout<<endl<<"Sorted Array:";
    for (i=0;i<n;i++){
        cout<<A[i]<<" ";
    }
}
```

Output:


```

E:\dev\ds c++\UNIT01\PRG_03.exe
***Insertion Sort***

Enter the size of array:5
Enter the elements of array:12 345 123 3 2

Original Array is:12 345 123 3 2
Sorted Array:2 3 12 123 345
-----
Process exited after 7.06 seconds with return value 0
Press any key to continue . . .

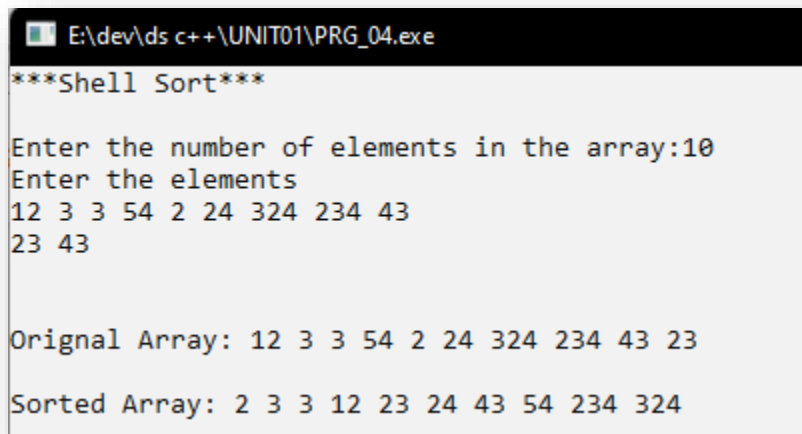
```

```

/*
Name: Harsh Singh
Roll NO:1262
Unit:1
Program: Shell Sort
*/
#include<iostream>
using namespace std;
int main()
{
    int n,i;
    int A[10];
    int tmp,j,gap;
    cout<<"***Shell Sort***\n\n";
    cout<<"Enter the number of elements in the array:";
    cin>>n;
    cout<<"Enter the elements"<<endl;
    for(i=0;i<n;i++){
        cin>>A[i];
    }
    cout<<endl<<endl;
    cout<<"Original Array: ";
    for(i=0;i<n;i++){
        cout<<A[i]<<" ";
    }
    //Shell sort
    for(gap=n/2;gap>0;gap=gap/2)//Iterations for increment sequence
    {
        for(i=gap;i<n;i++){
            tmp=A[i];

```

```
        for (j=i;j>=gap && tmp<A[j-gap];j-=gap)
        {
            A[j]=A[j-gap];
        } //end of j loop
        A[j]=tmp;
    } //end of for i loop
} //end of loop
cout<<endl<<endl;
cout<<"Sorted Array: ";
for(i=0;i<n;i++){
    cout<<A[i]<<" ";
}
} //end of main
```

Output:

```
E:\dev\ds c++\UNIT01\PRG_04.exe
***Shell Sort***

Enter the number of elements in the array:10
Enter the elements
12 3 3 54 2 24 324 234 43
23 43

Original Array: 12 3 3 54 2 24 324 234 43 23
Sorted Array: 2 3 3 12 23 24 43 54 234 324
```