Ex. No. 8	IMPLEMENTATION OF INSERTION AND SELECTION SORT
06-09-2017	

Question:

To implement the working of implementation of insertion and selection sort.

Algorithm:

1. Start.
2. For insertion sort, follow the steps:
3. If it is the first element, it is already sorted. return 1;
4. Pick next element.
5. Compare with all elements in the sorted sub-list
6. Shift all the elements in the sorted sub-list that is greater than the value to be sorted
7. Insert the value
8. Repeat until list is sorted
9. For selection sort, follow the steps:
10. Set MIN to location 0
11. Search the minimum element in the list
12. Swap with value at location MIN
13. Increment MIN to point to next element
14. Repeat until list is sorted
15. End.

Program:

```
/*To implement the working of implementation of Selection and insertion sort.*/
#include <iostream>
using namespace std;

int i, j, MIN, temp, V;
void inssort()
{
   cout<<"\n**********INSERTION SORT*******************";
   cout<<"\n Enter the elements of the array: ";
   int A[5];
   for(i=0;i<=4;i++)
   {
      cin>>A[i];
   }
   for( i=1;i<=4;i++)
   {
      V=A[i];
      j=i-1;
      while(j>=0 && A[j]>V)
      {
         A[j+1]=A[j];
```

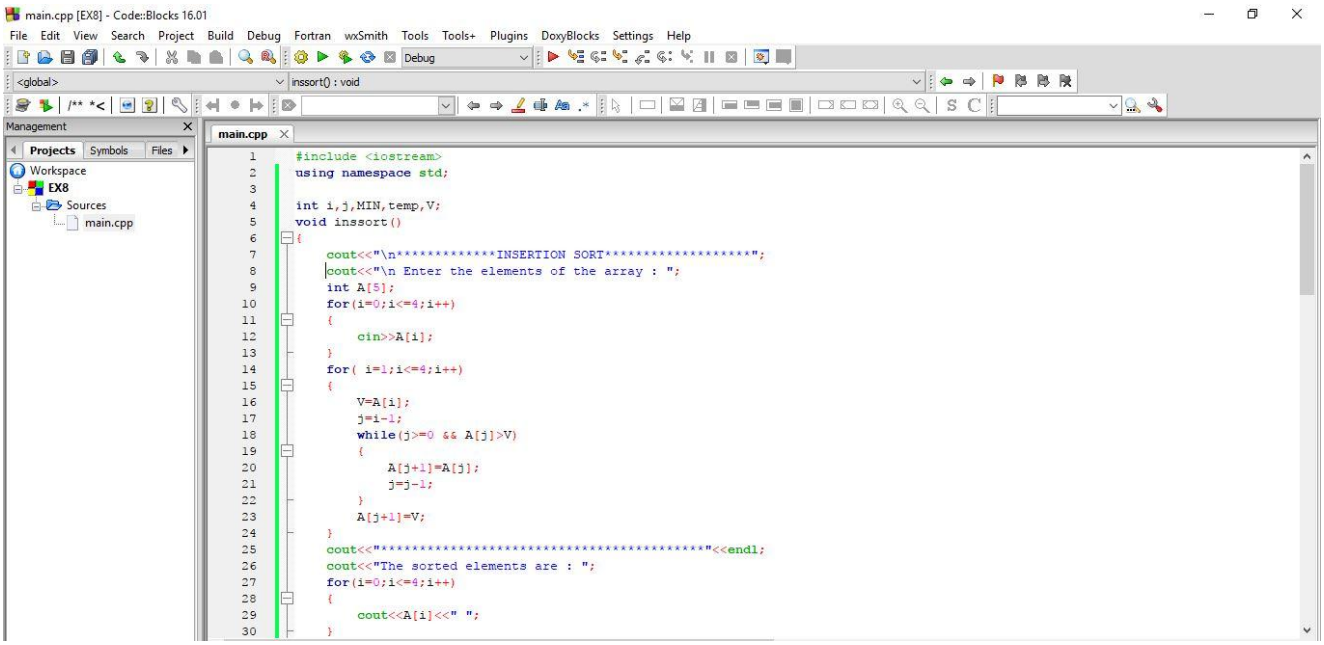
```
            j=j-1;
        }
        A[j+1]=V;
    }
    cout<<"*****************************************"<<endl;
    cout<<"The sorted elements are : ";
    for(i=0;i<=4;i++)
    {
        cout<<A[i]<<" ";
    }
    cout<<endl;
}
void selsort()
{
    cout<<"\n**********SELECTION SORT***************";
    cout<<"\n Enter the elements of the array : ";
    int A[5];
    for(i=0;i<5;i++)
    {
        cin>>A[i];
    }
```

```
    for(i=0;i<5;i++)
    {  MIN=i;
       for(j=i+1;j<5;j++)
       {
          if (A[j]<A[MIN])
{         MIN=j;
       }
       temp=A[i];
       A[i]=A[MIN];
       A[MIN]=temp;
   }
    cout<<"*****************************************"<<endl;
    cout<<"The sorted elements are : ";
    for(i=0;i<5;i++)
    { cout<<A[i]<<" ";}
    cout<<endl;
}

int main()
{
    int opt;
    while(1)
```

```
{
cout<<"\n CHOICES TO DO.....";
cout<<"\n--------------------";
cout<<"\n 1.Insertion sort";
cout<<"\n 2.Selection sort";
cout<<"\n 3.Exit";
cout<<"\n\n Enter your choice: ";
cin>>opt;
switch(opt)
{
case 1:
   inssort();
   break;
case 2:
   sensor();
   break;
case 3:
   return 0;
default:
   cout<<"\n Invalid choice";
}
}}
```

Output:


main.cpp [EX8] - Code::Blocks 16.01
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Debug
<global>
inssort() : void
Management
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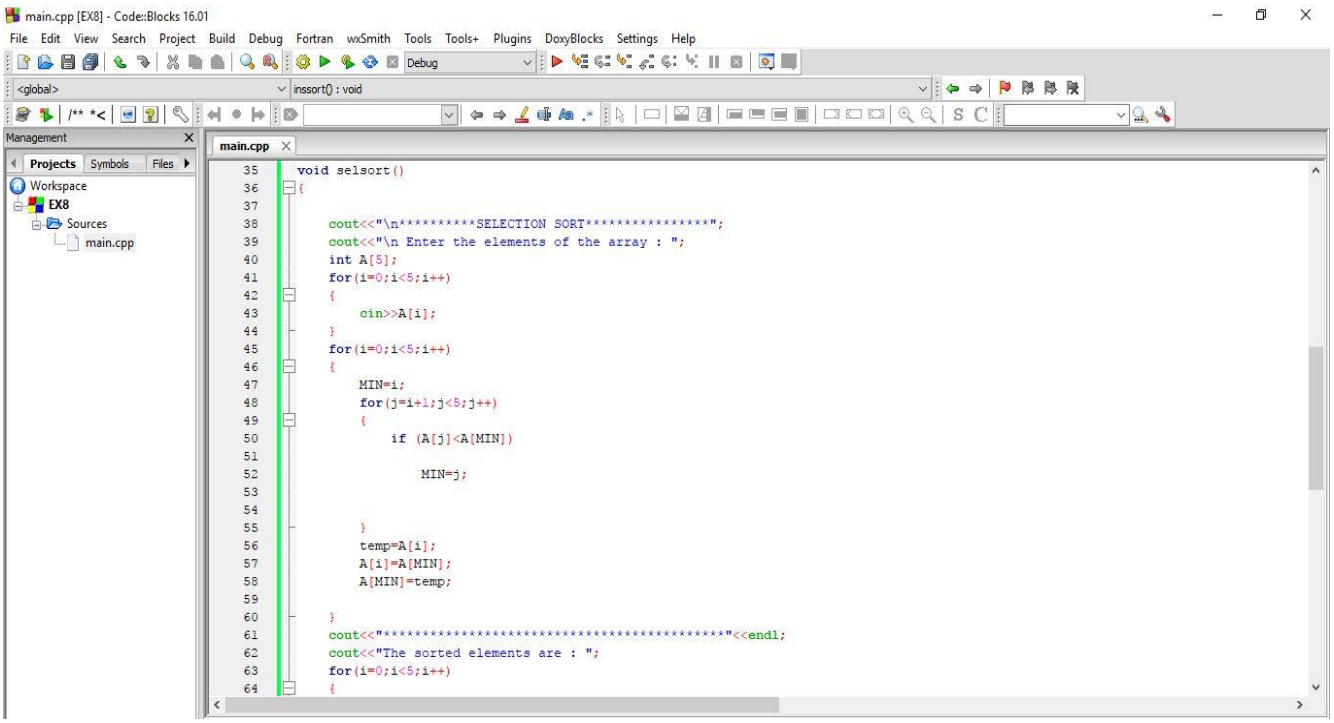
Workspace
EX8
Sources
main.cpp
main.cpp
#include <iostream>
using namespace std;
int i,j,MIN,temp,V;
void inssort()
{
cout<<"\n*************INSERTION SORT********************";
cout<<"\n Enter the elements of the array : ";
int A[5];
for(i=0;i<=4;i++)
{
cin>>A[i];
}
for(i=1;i<=4;i++)
{
V=A[i];
j=i-1;
while(j>=0 && A[j]>V)
{
A[j+1]=A[j];
j=j-1;
}
A[j+1]=V;
}
cout<<"***"<<endl;
cout<<"The sorted elements are : ";
for(i=0;i<=4;i++)
{
cout<<A[i]<<" ";
}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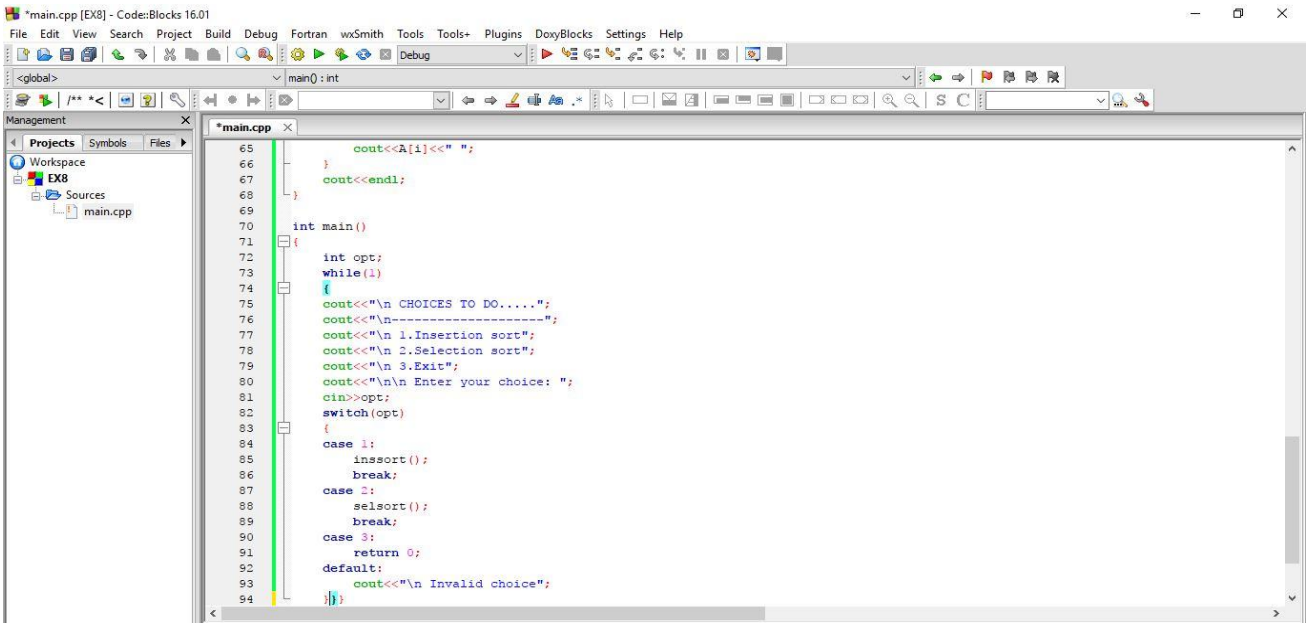
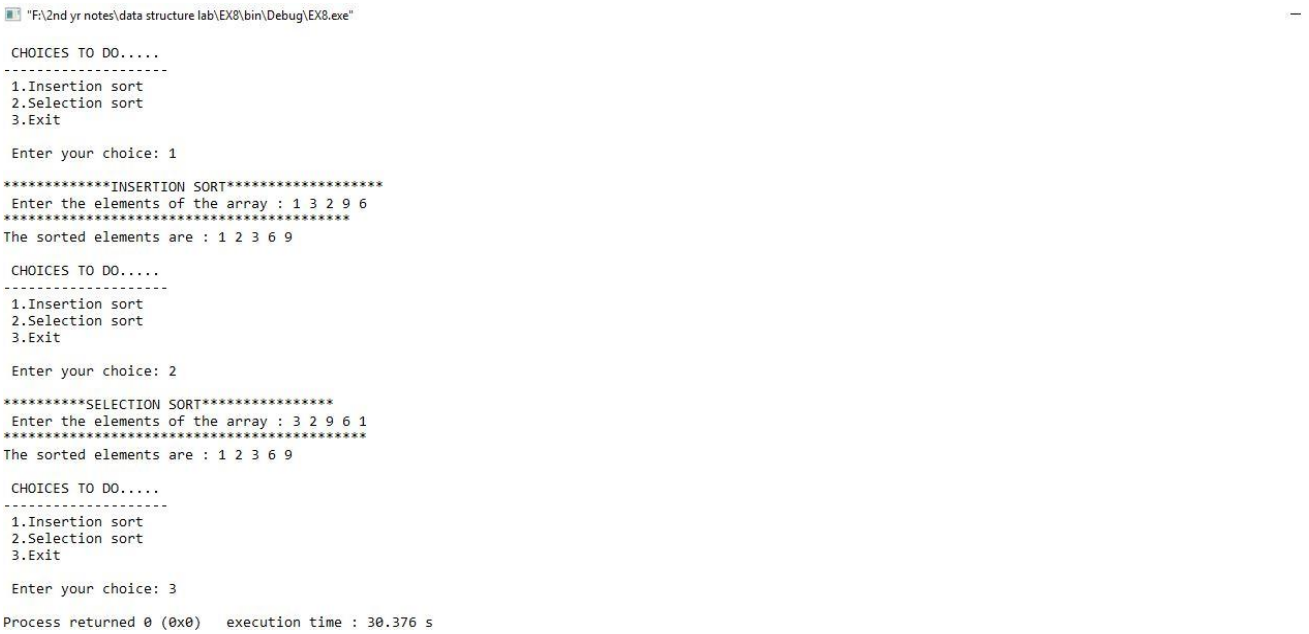
Sources
main.cpp
main.cpp
void selsort()
{
cout<<"\n**********SELECTION SORT*****************";
cout<<"\n Enter the elements of the array : ";
int A[5];
for(i=0;i<5;i++)
{
cin>>A[i];
}
for(i=0;i<5;i++)
{
MIN=i;
for(j=i+1;j<5;j++)
{
if (A[j]<A[MIN])
MIN=j;
}
temp=A[i];
A[i]=A[MIN];
A[MIN]=temp;
}
cout<<"***"<<endl;
cout<<"The sorted elements are : ";
for(i=0;i<5;i++)
{





VIDEO URL:

https://youtu.be/do_6Gz4grGY

RESULT:

The program of implementation of insertion and selection sort is implemented successfully and the output is verified.