Algorithm Lab Task-1

Submission Guidelines-

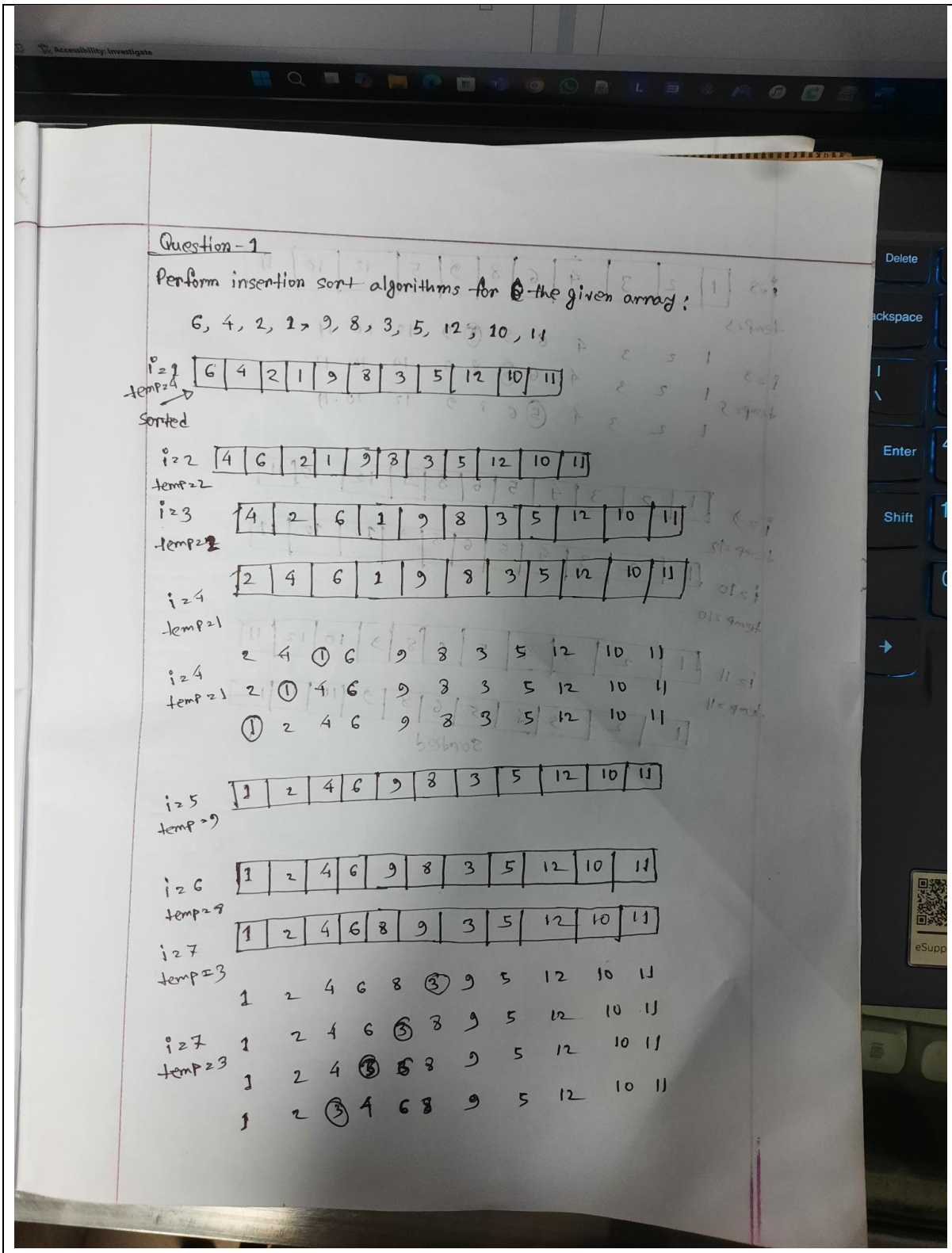
- Rename the file to your ID only. If your ID is 18-XXXXX-1, then the file name must be 18-XXXXX-1.docx.
- Must submit within the time in Teams.
- Must include resources for all the sections in the table and Uploaded file should be in PDF format.

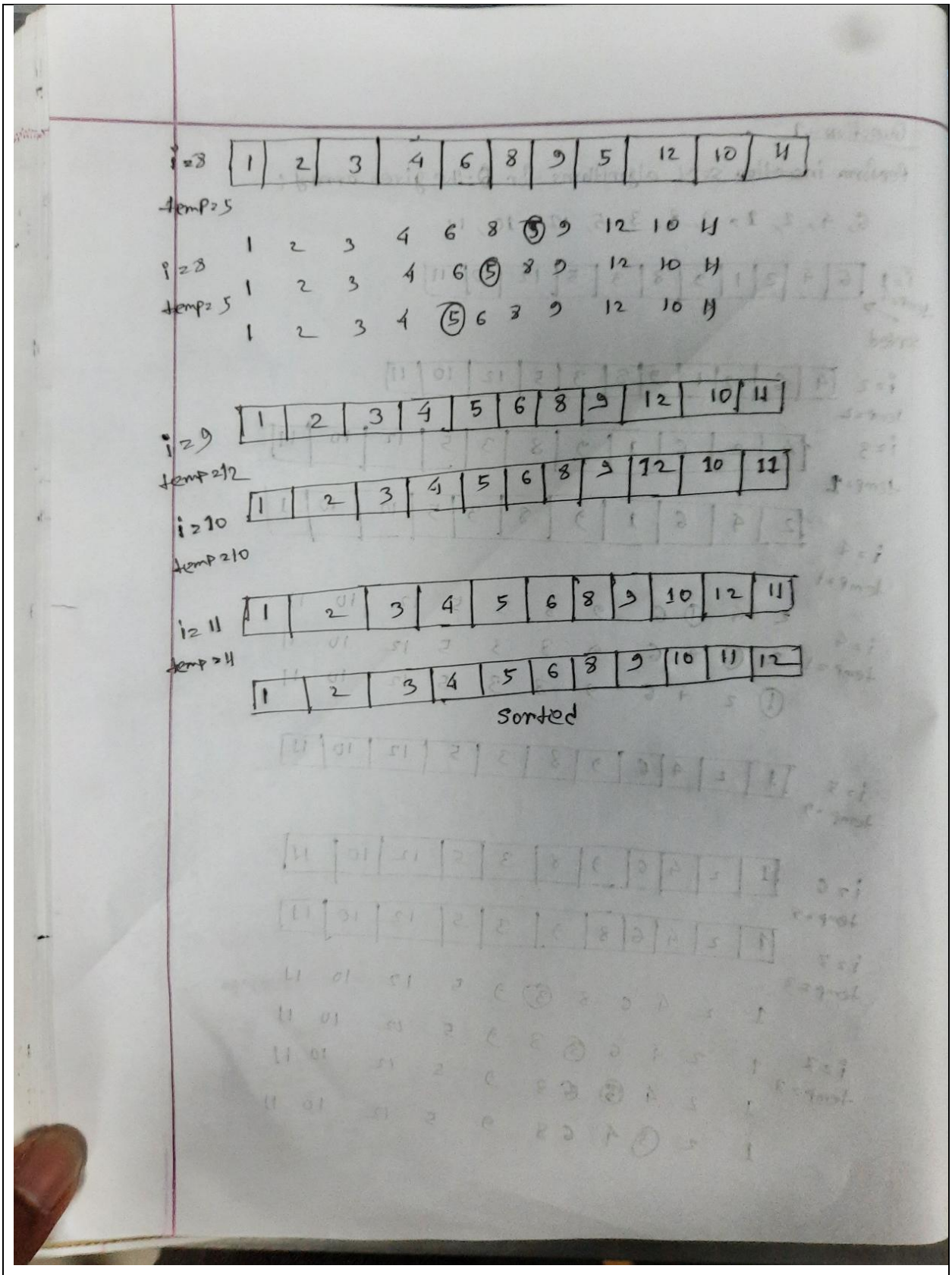
Question- 1 Perform Insertion sort algorithms for the given array: [6,4,2,1,9,8,3,5,12,10,11]
Solution (Do it on paper, and the solution should be attached here):

Question - 1

Perform insertion sort algorithms for the given array:

6, 4, 2, 1, 9, 8, 3, 5, 12, 10, 11




i=3
1 2 3 4 6 8 9 5 12 10 11
temp=5
1 2 3 4 6 8 5 9 12 10 11
p=3
1 2 3 4 6 5 8 9 12 10 11
temp=5
1 2 3 4 5 6 8 9 12 10 11
i=9
1 2 3 4 5 6 8 9 12 10 11
temp=12
i=10
1 2 3 4 5 6 8 9 12 10 11
temp=10
i=11
1 2 3 4 5 6 8 9 10 12 11
temp=11
1 2 3 4 5 6 8 9 10 11 12
sorted

Code-

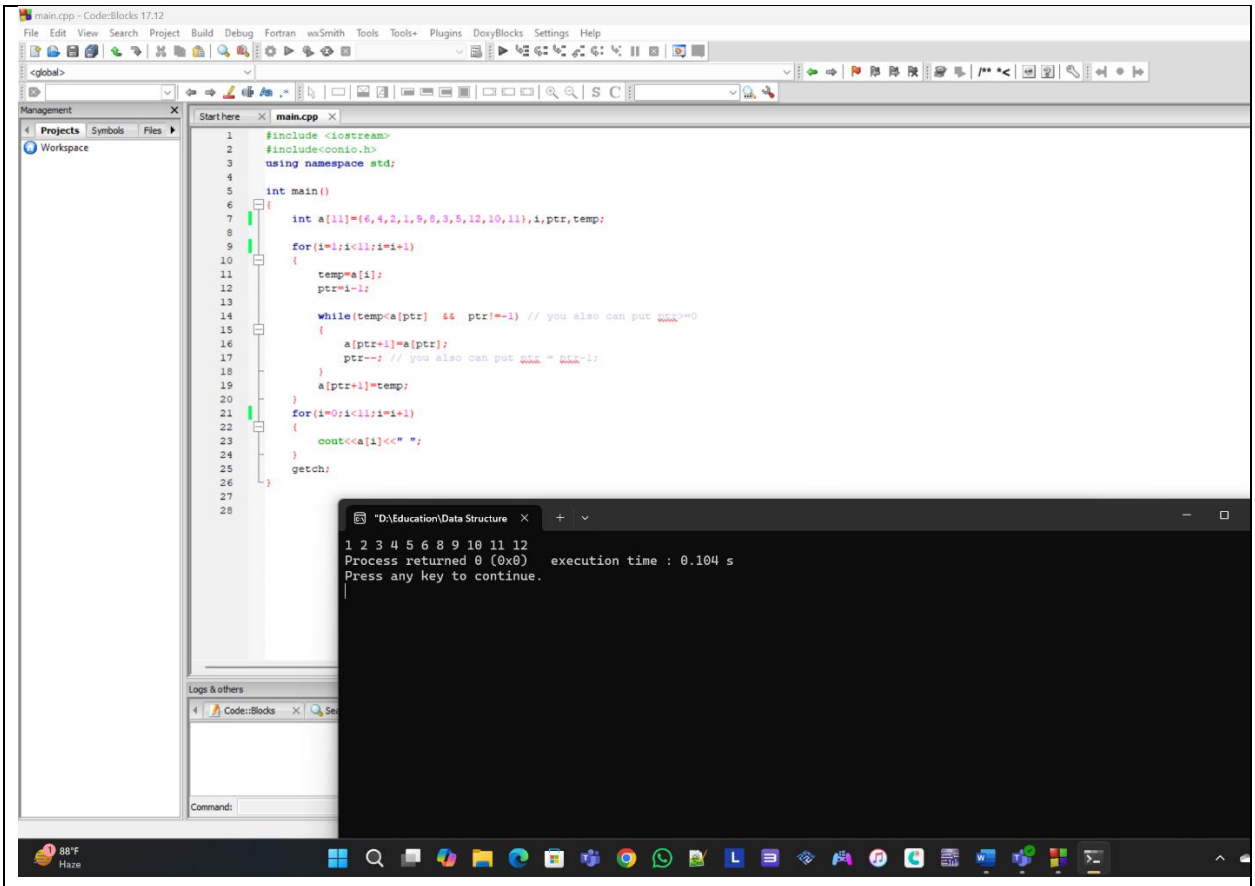
```
#include <iostream>
#include<conio.h>
using namespace std;

int main()
{
   int a[11]={6,4,2,1,9,8,3,5,12,10,11},i,ptr,temp;

   for(i=1;i<11;i=i+1)
   {
      temp=a[i];
      ptr=i-1;

      while(temp<a[ptr]  &&  ptr!=-1) // you also can put ptr>=0
      {
         a[ptr+1]=a[ptr];
         ptr--; // you also can put ptr = ptr-1;
      }
      a[ptr+1]=temp;
   }
   for(i=0;i<11;i=i+1)
   {
      cout<<a[i]<<" ";
   }
   getch;
}
```

Output Screenshot-



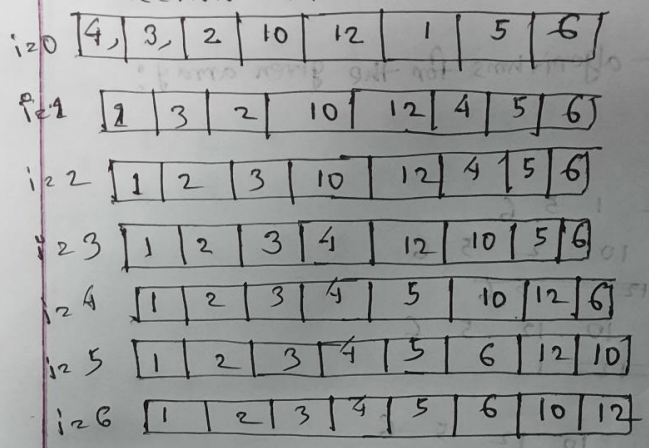
Question- 2

Perform Selection sort algorithms for the given array:
[4,3,2,10,12,1,5,6]

Solution (Do it on paper, and the solution should be attached here):

Question - 2

Selection Sort



$n = 8$

$\therefore (n-1) = 8-1 = 7$

Code-

```
#include <iostream>
#include<conio.h>
using namespace std;

int main()
{
   //input
   int n;
   cin>>n;

   int arr[n];
   for(int i=0;i<n;i++)
   {
      cin>>arr[i];
   }

   //selection operation
   for(int i=0;i<n-1;i++)
   {
      for(int j=i+1;j<n;j++)
      {
         if(arr[j]<arr[i])
         {
            int temp=arr[j];
            arr[j]=arr[i];
            arr[i]=temp;
         }
      }
   }
   //output
   for(int i=0;i<n;i++)
   {
      cout<<arr[i]<<" ";
   }
   cout<<endl;
   getch;
}
```

Output Screenshot-