

Experiment 1.2

Insertion sort :

```
#include<iostream>
using namespace std;
#define MAX 100
class sort
{
    int n,a[MAX];
    public:
        void getdata();
        void insertion_sort();
        void display();
};
void sort::getdata()
{
    cout<<"\nEnter the Size of the Array : ";
    cin>>n;
    cout<<"\nNow Enter Array Elements : ";
    for(int i=0;i<n;i++)
    {
        cout<<"\nEnter Element "<<i<<" => ";
        cin>>a[i];
    }
    cout<<"\nArray Successfully added!";
}
void sort :: insertion_sort()
{
    int i, j , p ,temp;
    cout<<"\n";
    for (i = 1; i < n; i++)
    {
        p = a[i];
        cout<<"\nPass "<<i;
        for(j=i-1;j>=0;j--)
        {
            if(a[j]>p)
            {
                temp = a[j];
                a[j] = a[j+1];
                a[j+1] = temp;
            }
            cout<<"\t"<<a[j];
        }
    }
}
```

```

    }
}
void sort::display()
{
    cout<<"\n\nSorted Array using Insertion sort is : \n";
    for(int i=0;i<n;i++)
    {
        cout<<"\t"<<a[i];
    }
    cout<<"\n\n";
}
int main()
{
    sort s;
    cout<<"\n\n-----Intertion Sort-----";
    s.getdata();
    s.insertion_sort();
    s.display();
return 0;
}

```

OUTPUT:

```

mca18@mca17-optiplex-390: ~/Documents/Devender_Singh
mca18@mca17-optiplex-390:~/Documents/Devender_Singh$ g++ insertion.cpp -o first
mca18@mca17-optiplex-390:~/Documents/Devender_Singh$ ./first

-----Intertion Sort-----
Enter the Size of the Array : 6

Now Enter Array Elements :
Enter Element 0 => 7
Enter Element 1 => 8
Enter Element 2 => 45
Enter Element 3 => -22
Enter Element 4 => 45
Enter Element 5 => 67

Array Successfully added!
Pass 0 7
Pass 1 7 8
Pass 2 7 8 45
Pass 3 -22 7 8 45
Pass 4 -22 7 8 45 45
Pass 5 -22 7 8 45 45 67

Sorted Array using Insertion sort is :
-22 7 8 45 45 67

mca18@mca17-optiplex-390:~/Documents/Devender_Singh$

```