

**Aim:**

Write a program to **sort** the given elements using `insertion sort technique`.

At the time of execution, the program should print the message on the console as:

Enter value of n :

For example, if the user gives the **input** as:

Enter value of n : 3

Next, the program should print the messages one by one on the console as:

Enter element for a[0] :  
Enter element for a[1] :  
Enter element for a[2] :

if the user gives the **input** as:

Enter element for a[0] : 22  
Enter element for a[1] : 33  
Enter element for a[2] : 12

then the program should **print** the result as:

Before sorting the elements in the array are  
Value of a[0] = 22  
Value of a[1] = 33  
Value of a[2] = 12  
After sorting the elements in the array are  
Value of a[0] = 12  
Value of a[1] = 22  
Value of a[2] = 33

Fill in the missing code so that it produces the desired result.

**Source Code:****InsertionSortDemo3.c**

```
#include<stdio.h>
void main()
{
    int a[20], i, n, j, temp;
    printf("Enter value of n : ");
    scanf("%d", &n);
    for(i=0;i<n;i++)
    {
        printf("Enter element for a[%d] : ",i);
        scanf("%d",&a[i]);
    }
    //Write the for loop to read array elements
    printf("Before sorting the elements in the array are\n");
    for(i=0;i<n;i++)
```

```

{
    printf("Value of a[%d] = %d",i,a[i]);
    printf("\n");
}
//Write the for loop to display array elements before sorting
for(i=0;i<n;i++)
{
    for(j=i+1;j<n;j++)
    {
        if(a[i]>a[j])
        {
            temp=a[i];
            a[i]=a[j];
            a[j]=temp;
        }
    }
}
//Write the code to sort elements

printf("After sorting the elements in the array are\n");
for(i=0;i<n;i++)
{
    printf("Value of a[%d] = %d",i,a[i]);
    printf("\n");
}
//Write the for loop to display array elements after sorting
}

```

### Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Enter value of n : 6
Enter element for a[0] : 5
Enter element for a[1] : 9
Enter element for a[2] : 2
Enter element for a[3] : 5
Enter element for a[4] : 1
Enter element for a[5] : 3
Before sorting the elements in the array are
Value of a[0] = 5
Value of a[1] = 9
Value of a[2] = 2
Value of a[3] = 5
Value of a[4] = 1
Value of a[5] = 3
After sorting the elements in the array are
Value of a[0] = 1
Value of a[1] = 2
Value of a[2] = 3
Value of a[3] = 5
Value of a[4] = 5
Value of a[5] = 9

Test Case - 2
User Output
Enter value of n : 3
Enter element for a[0] : 5
Enter element for a[1] : 9
Enter element for a[2] : 4
Before sorting the elements in the array are
Value of a[0] = 5
Value of a[1] = 9
Value of a[2] = 4
After sorting the elements in the array are
Value of a[0] = 4
Value of a[1] = 5
Value of a[2] = 9