## Aim:

Write a program to sort (Ascending order) the given elements using insertion sort technique.

Exp. Name: Write a C program to Sort given elements using Insertion sort

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
```

**Note:** Do use the **printf()** function with a **newline** character (\\n\).

## Source Code:

## Program505.c

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

```
printf("Value of a[%d] = %d\n",i,a[i]);
   }
   for(i=0;i<n;i++)</pre>
   {
      k=a[i];
      j=i-1;
      while(j>=0\&&a[j]>k)
         a[j+1]=a[j];
         j--;
      }
      a[j+1]=k;
   printf("After sorting the elements in the array are\n");
   for(i=0;i<n;i++)</pre>
      printf("Value of a[%d] = %d\n",i,a[i]);
   }
}
```

## Execution Results - All test cases have succeeded!

```
Test Case - 1
User Output
Enter value of n : 5
Enter element for a[0]: 7
Enter element for a[1]: 33
Enter element for a[2] : 12
Enter element for a[3] : 56
Enter element for a[4] : 9
Before sorting the elements in the array are
Value of a[0] = 7
Value of a[1] = 33
Value of a[2] = 12
Value of a[3] = 56
Value of a[4] = 9
After sorting the elements in the array are
Value of a[0] = 7
Value of a[1] = 9
Value\ of\ a[2]\ =\ 12
Value of a[3] = 33
Value of a[4] = 56
```