S.No: 19	Exp. Name: ***Write a C program to sort elements using insertion sort***	Date:2023-04-04

Aim:

Write a program to sort the elements in ascending order with insertion sort technique using functions.

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

```
Enter n value :
```

For example, if the user gives the input as:

```
Enter n value : 3
```

Next, the program should print the message on the console as:

```
Enter 3 elements :
```

if the user gives the input as:

```
Enter 3 elements : 45 67 34
```

then the program should print the result as:

```
Elements before sorting : 45 67 34
Elements after sorting : 34 45 67
```

Note: Do use printf() with '\n' at the end of output.

Source Code:

sort.c

```
#include<stdio.h>
void insertion_sort(int [], int);
void read(int [], int);
void display(int [], int);
void main()
{
   int a[20], n, i;
   printf("Enter n value : ");
   scanf("%d", &n);
   read(a, n);
   printf("Elements before sorting : ");
   display(a, n);
   insertion_sort(a,n);
   printf("Elements after sorting : ");
   display(a, n);
}
void insertion_sort(int a[],int n)
{
int i,j,k;
for(i=1;i<n;i++)
{
   k=a[i];
   j=i-1;
   while(j>=0&&a[j]>k)
   {
```

```
      a[j+1]=a[j];
      j=j-1;
   }
   a[j+1]=k;
}
}
void read(int a[],int n)
{
   int i;
   printf("Enter %d elements : ",n);
   for(i=0;i<n;i++)
   scanf("%d",&a[i]);
}
void display(int a[],int n)
{
   int i;
   for(i=0;i<n;i++)
   printf("%d ",a[i]);
   printf("\n");
}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Enter n value : 3
Enter 3 elements : 45 67 34
Elements before sorting : 45 67 34
Elements after sorting : 34 45 67

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