S.No: 8	Exp. Name: ***Write a C program to Sort the given elements in Ascending order using Bubble Sort***	Date:2023-04-01

Aim:

Write a program to `sort` (`Ascending order`) the given elements using `bubble 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
```

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

Source Code:

Program504.c

```
#include <stdio.h>
void bubblesort(int a[],int n)
{
   for(int step=0;step<n-1;step++)
   {
      for(int i=0;i<n-step-1;i++)
      {
         if(a[i]>a[i+1])
         {
            int temp =a[i];
            a[i]=a[i+1];
            a[i+1]=temp;
   }
```

```
  }
 }
}
int main()
{
   int a[20],i,n;
   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]);
 }
   printf("Before sorting the elements in the array are\n");
   for(i=0;i<n;i++)
   {
      printf("Value of a[%d] = %d\n",i,a[i]);
 }
   bubblesort(a,n);
   printf("After sorting the elements in the array are\n");
   for(i=0;i<n;i++)
   {
      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] : 2
Enter element for a[1] : 7
Enter element for a[2] : 6
Enter element for a[3] : 4
Enter element for a[4] : 1
Before sorting the elements in the array are
Value of a[0] = 2
Value of a[1] = 7
Value of a[2] = 6
Value of a[3] = 4
Value of a[4] = 1
After sorting the elements in the array are
Value of a[0] = 1
Value of a[1] = 2
Value of a[2] = 4
Value of a[3] = 6
Value of a[4] = 7

Test Case - 2
User Output

```
Enter value of n :  4
Enter element for a[0] :  28
Enter element for a[1] :  34
Enter element for a[2] :  26
Enter element for a[3] :  29
Before sorting the elements in the array are
Value of a[0] = 28
Value of a[1] = 34
Value of a[2] = 26
Value of a[3] = 29
After sorting the elements in the array are
Value of a[0] = 26
Value of a[1] = 28
Value of a[2] = 29
Value of a[3] = 34
```

Test Case - 3

User Output

```
Enter value of n :  8
Enter element for a[0] :  7
Enter element for a[1] :  3
Enter element for a[2] :  9
Enter element for a[3] :  2
Enter element for a[4] :  5
Enter element for a[5] :  4
Enter element for a[6] :  6
Enter element for a[7] :  1
Before sorting the elements in the array are
Value of a[0] = 7
Value of a[1] = 3
Value of a[2] = 9
Value of a[3] = 2
Value of a[4] = 5
Value of a[5] = 4
Value of a[6] = 6
Value of a[7] = 1
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] = 4
Value of a[4] = 5
Value of a[5] = 6
Value of a[6] = 7
Value of a[7] = 9
```

Test Case - 4

User Output

```
Enter value of n :  4
Enter element for a[0] :  -23
```

```
Enter element for a[1] :  -14
Enter element for a[2] :  -56
Enter element for a[3] :  -35
Before sorting the elements in the array are
Value of a[0] = -23
Value of a[1] = -14
Value of a[2] = -56
Value of a[3] = -35
After sorting the elements in the array are
Value of a[0] = -56
Value of a[1] = -35
Value of a[2] = -23
Value of a[3] = -14
```

Test Case - 5

User Output

```
Enter value of n :  5
Enter element for a[0] :  28
Enter element for a[1] :  45
Enter element for a[2] :  -1
Enter element for a[3] :  -5
Enter element for a[4] :  2
Before sorting the elements in the array are
Value of a[0] = 28
Value of a[1] = 45
Value of a[2] = -1
Value of a[3] = -5
Value of a[4] = 2
After sorting the elements in the array are
Value of a[0] = -5
Value of a[1] = -1
Value of a[2] = 2
Value of a[3] = 28
Value of a[4] = 45
```