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

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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 main()
{
   int n,a[20],i,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]);
   }
   printf("Before sorting the elements in the array are\n");
```

```
      printf("Value of a[%d] = %d", i ,a[i]);
      printf("\n");
   }
   for(i=0;i<n;i++)
   {
      for(j=0;j<n-1-i;j++)
      {
         if(a[j]>a[j+1])
         {
            temp=a[j];
            a[j]=a[j+1];
            a[j+1]=temp;
         }
      }
   }
   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");
   }
}
```

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

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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