

**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 bubble_sort(int [],int);
int main()
{
    int a[10],n,i;
    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] = ",i);
        printf("%d\n",a[i]);
    }
    bubble_sort(a,n);
    {
        printf("After sorting the elements in the array are\n");
        for(i=0;i<n;i++)
        {
            printf("Value of a[%d] = ",i);
            printf("%d\n",a[i]);
        }
    }
}
void bubble_sort(int a[],int n)
{
    for(int i=0;i<n;i++)
    {
        for(int j=0;j<n-1;j++)
        {
            if(a[j]>a[j+1])
            {
                int temp = a[j];
                a[j] = a[j+1];
                a[j+1] = temp;
            }
        }
    }
}
}
}

```

### 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