

**K. J. Somaiya College of Engineering, Mumbai-77**

A Constituent College of Somaiya Vidyavihar University

**Batch:G3**

**Roll No.: 16010421063**

**Experiment / assignment / tutorial No. 5**

**Grade: AA / AB / BB / BC / CC / CD /DD**

**Signature of the Staff In-charge with date**

**TITLE:** Program to sort array

**AIM:** Program to sort the 1D array in the ascending or descending order and then accept the element from user and insert in the same array at its correct place by keeping array sorted

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**Expected OUTCOME of Experiment:**

CO3: Illustrate the use of derived and structured data types such as arrays, strings, structures and unions.

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**Books/ Journals/ Websites referred:**

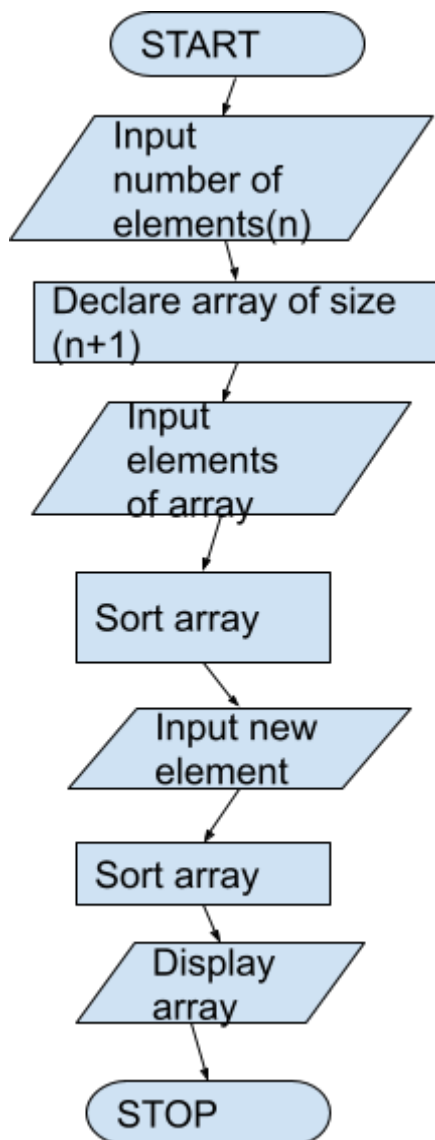
1. Programming in C, second edition, Pradeep Dey and Manas Ghosh, Oxford University Press.
2. Programming in ANSI C, fifth edition, E Balagurusamy, Tata McGraw Hill.
3. Introduction to programming and problem solving, G. Michael Schneider ,Wiley India edition.
4. <http://cse.iitkgp.ac.in/~rkumar/pds-vlab/>

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**Problem Definition:**

The program takes a 1D array and sorts it in the specified manner. The user enters an element and the same has to be inserted at the correct place in the sorted array.

**Flowchart:**



**Implementation details:**

```
#include<stdio.h>
//Code By Arya Nair
float sort(float arr[], int n)// Parameters- float data type
array and int n
{
    float temp;
    for (int i = 0; i < n; ++i)
    {
        for (int j = i + 1; j < n; ++j)
        {
            if (arr[i] > arr[j])
            {
                temp= arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }
}

int main()
{
    int n,i,j,temp;
    //Asking user to enter number of elements
    printf("How many elements are there: ");
    scanf("%d",&n);
    //Asking user to enter the elements
    printf("Enter %d elements: ",n);
    //Declaring an array with size+1 to accommodate the new
    element later
```

```
float arr[n+1];
for ( i=0;i<n;++i)
{
    scanf("%f",&arr[i]);
}
//sorting the array
sort(arr,n);
//Showing user the sorted array
printf("Sorted Array: ");
for (int i=0;i<n;++i)
{
    printf("%f ",arr[i]);
}

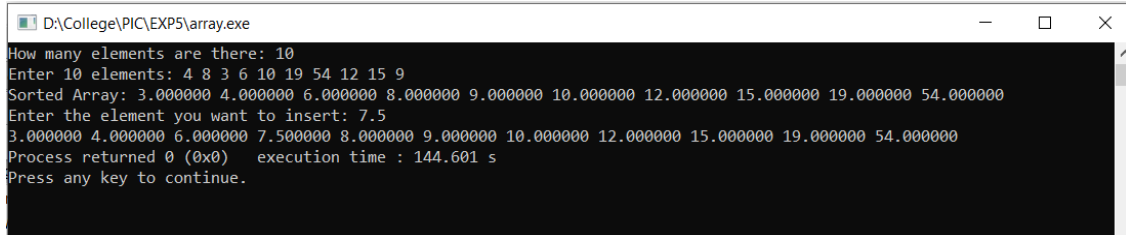
// Asking user for another element which he/she/they want
to add
printf("\nEnter the element you want to insert: ");
scanf("%f",&arr[n]);

//Sorting the new array
sort(arr,n+1);

//Displaying the Array to the user
for (int i=0;i<=n;++i)
{
    printf("%f ",arr[i]);
}
}
```

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**Output(s):**



```
D:\College\PIC\EXP5\array.exe
How many elements are there: 10
Enter 10 elements: 4 8 3 6 10 19 54 12 15 9
Sorted Array: 3.000000 4.000000 6.000000 8.000000 9.000000 10.000000 12.000000 15.000000 19.000000 54.000000
Enter the element you want to insert: 7.5
3.000000 4.000000 6.000000 7.500000 8.000000 9.000000 10.000000 12.000000 15.000000 19.000000 54.000000
Process returned 0 (0x0)   execution time : 144.601 s
Press any key to continue.
```

**Conclusion:**

We successfully learnt and applied the concept of 1D array

**Post Lab Descriptive Questions**

Write a program to enter n numbers, store them in an array and rearrange array in the reverse order.

```
#include<stdio.h>
//Code by Arya Nair
float sort(float arr[], int n)// Parameters- float data type
array and int n
{
    float temp;
    for (int i = 0; i < n; ++i)
    {
        for (int j = i + 1; j < n; ++j)
        {
            if (arr[i] < arr[j])
            {
                temp= arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }
}
```

```
        }
    }

}

int main()
{
    int n;
    //Asking user to enter number of elements
    printf("How many elements are there: ");
    scanf("%d",&n);
    //Asking user to enter the elements
    printf("Enter %d elements: ",n);
    float arr[n];
    for ( int i=0;i<n;++i)
    {
        scanf("%f",&arr[i]);
    }
    //sorting the array in reverse order
    sort(arr,n);
    //Displaying the reverse sorted array
    for (int i=0;i<n;++i)
    {
        printf("%f ",arr[i]);
    }
}
```

**Date:** \_\_\_\_\_

**Signature of faculty in-charge**

**Department of Science and Humanities**