

EXPERIMENT NO. 1

AIM: Write a program to implement Bubble Sort.

SCOPE: Sorting helps in arranging the elements in particular order ascending or descending order in case of numeric data alphabetical order in case of alphanumeric data.

FACILITIES: Software Needed: Turbo C

THEORY:

Bubble Sort is the simplest sorting algorithm that works by repeatedly swapping the adjacent elements if they are in wrong order. Bubble sort, sometimes referred to as sinking sort, is a simple sorting algorithm that repeatedly steps through the list to be sorted, compares each pair of adjacent items and swaps them if they are in the wrong order. The pass through the list is repeated until no swaps are needed, which indicates that the list is sorted.

Example

We take an unsorted array for our example.



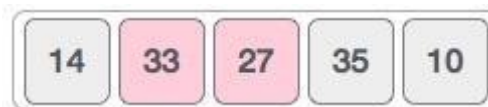
Bubble sort starts with very first two elements, comparing them to check which one is greater.



In this case, value 33 is greater than 14, so it is already in sorted locations. Next, we compare 33 with 27.



We find that 27 is smaller than 33 and these two values must be swapped.



The new array should look like this –



Next we compare 33 and 35. We find that both are in already sorted positions.



Then we move to the next two values, 35 and 10.



We know then that 10 is smaller 35. Hence they are not sorted.



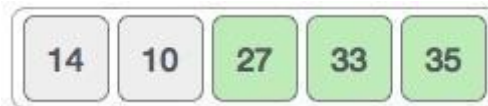
We swap these values. We find that we have reached the end of the array. After one iteration, the array should look like this –



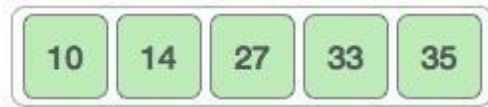
To be precise, we are now showing how an array should look like after each iteration. After the second iteration, it should look like this –



Notice that after each iteration, at least one value moves at the end.



And when there's no swap required, bubble sorts learns that an array is completely sorted.



```
#include<stdio.h>
#include<conio.h>

void main()
{
    int a[10],i,j,temp,n;
    clrscr();
    printf("\n Enter the max no. of Elements to Sort:\t");
    scanf("%d",&n);
    printf("\n Enter the Elements : \t");
    for(i=0; i<n; i++)
    {
        scanf("%d",&a[i]);
    }
    for(i=0; i<n; i++)
        for(j=i+1; j<n; j++)
        {
            if(a[i]>a[j])
            {
                temp=a[i];
                a[i]=a[j];
                a[j]=temp;
            }
        }
    printf("\nTHE SORTED ARRAY OF ELEMENT IS:");
    for(i=0; i<n; i++)
    {

        printf("%d\t",a[i]);

    }

    getch();
}
```

OUTPUT:

```
Enter the max no.of Elements to Sort: 6
Enter the Elements : 56 34 12 39 45 10
THE SORTED ARRAY OF ELEMENT IS:10      12      34      39      45      56
```

RESULT: In this way we have Implemented Bubble Sort with Turbo C and tested with examples.

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