Aim:

Write a program to sort (ascending order) the given elements using shell sort technique.

At the time of execution, the program should print the message on the console as:

```
Enter array size :
```

For example, if the user gives the **input** as:

```
Enter array size : 5
```

Next, the program should print the following message on the console as:

```
Enter 5 elements :
```

if the user gives the **input** as:

```
Enter 5 elements : 34 67 12 45 22
```

then the program should **print** the result as:

```
Before sorting the elements are : 34 67 12 45 22
After sorting the elements are : 12 22 34 45 67
```

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

Source Code:

ShellSort2.c

```c
#include<stdio.h>
#include<conio.h>
void sort(int [],int );
void main()
{
    int a[20],i,n;
    printf("Enter array size : ");
    scanf("%d",&n);
    printf("Enter %d elements : ",n);
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("Before sorting the elements are : ");
    for(i=0;i<n;i++)
    printf("%d ",a[i]);
    sort(a,n);
    printf("\nAfter sorting the elements are : ");
    for(i=0;i<n;i++)
    printf("%d ",a[i]);
    printf("\n");
}
void sort(int arr[],int n)
{
    int gap,i,j,temp;
```

```
    for(gap=n/2;gap>0;gap=gap/2)
    {
        for(i=gap;i<n;i++)
        {
            temp=arr[i];
            for(j=i;j>=gap&&arr[j-gap]>temp;j=j-gap)
            {
                arr[j]=arr[j-gap];
            }
            arr[j]=temp;
        }
    }
}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Enter array size : 5
Enter 5 elements : 12 32 43 56 78
Before sorting the elements are : 12 32 43 56 78
After sorting the elements are : 12 32 43 56 78