

**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

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int size;
    int *arr, i;
    printf("Enter array size : ");
    scanf("%d",&size);
    arr = (int*) malloc(size * sizeof(int));
    printf("Enter %d elements : ",size);
    for(i=0;i<size;i++)
    {
        scanf("%d",&arr[i]);
    }
    printf("Before sorting the elements are : ");
    printArray(arr,size);

    shellSort(arr,size);

    printf("After sorting the elements are : ");
    printArray(arr,size);
    return 0;
}
int shellSort(int arr[],int n)
{
```

```

int gap,i,j,temp;
for(gap=n/2;gap>0;gap/=2)
{
    for(i=gap;i<n;i++)
    {
        temp = arr[i];
        for(j=i;j>=gap && arr[j-gap]>temp;j-=gap)
        {
            arr[j]=arr[j-gap];
        }
        arr[j] = temp;
    }
}
}
void printArray(int arr[],int n)
{
    for(int i=0;i<n;i++)
    {
        printf("%d ",arr[i]);
    }
    printf("\n");
}

```

### 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