# Program:

#include <iostream> //Merge Sort

using namespace std;

void merge(int\*,int\*,int,int,int);

void mergesort(int \*a, int\*b, int low, int high)

{ //main Mersort Function

int mid;

if(low<high) //Checking The Condition

{

mid=(low+high)/2; //splitting

mergesort(a,b,low,mid); //The Left Half

mergesort(a,b,mid+1,high); //The Right Half

merge(a,b,low,mid,high); //Merging

}

}

void merge(int \*a, int \*b, int low, int mid, int high)

{ //Function to merge

int h,i,j,k;

h=low;

i=low;

j=mid+1;

while((h<=mid)&&(j<=high))

{ //checking the condition

if(a[h]<=a[j])

{

b[i]=a[h];

h++;

}

else

{

b[i]=a[j];

j++;

}

i++;

}

if(h>mid) //if mid is less

{

for(k=j; k<=high; k++)

{

b[i]=a[k];

i++;

}

}

else //if mid is greater

{

for(k=h; k<=mid; k++)

{

b[i]=a[k];

i++;

}

}

for(k=low; k<=high; k++) //copying

a[k]=b[k];

}

int main() //main function

{

cout<<"\tUR12CS135- Merge Sort\n\n";

int a[100];

int b[100], num, i;

cout<<"Enter Total Number Of Elements: ";

cin>>num;

for(i=0; i<num; i++)

cin>>a[i];

mergesort(a,b,0,num-1); //sending to the main merge function

for(i=0; i<num; i++)

cout<<a[i]<<" ";

cout<<endl;

}

# Output:

