#include <stdio.h>

#include <stdlib.h>

void Merge(int arr[], int left, int mid, int right)

{

int i, j, k;

int size1 = mid - left + 1;

int size2 = right - mid;

int Left[size1], Right[size2];

for (i = 0; i < size1; i++)

Left[i] = arr[left + i];

for (j = 0; j < size2; j++)

Right[j] = arr[mid + 1 + j];

i = 0;

j = 0;

k = left;

while (i < size1 && j < size2)

{

if (Left[i] <= Right[j])

{

arr[k] = Left[i];

i++;

}

else

{

arr[k] = Right[j];

j++;

}

k++;

}

while (i < size1)

{

arr[k] = Left[i];

i++;

k++;

}

while (j < size2)

{

arr[k] = Right[j];

j++;

k++;

}

}

void Merge\_Sort(int arr[], int left, int right)

{

if (left < right)

{

int mid = left + (right - left) / 2;

Merge\_Sort(arr, left, mid);

Merge\_Sort(arr, mid + 1, right);

Merge(arr, left, mid, right);

}}

int main()

{

int size;

printf("Enter the size: ");

scanf("%d", &size);

int arr[size];

printf("Enter the elements of array: ");

for (int i = 0; i < size; i++)

{

scanf("%d", &arr[i]);

}

Merge\_Sort(arr, 0, size - 1);

printf("The sorted array is: ");

for (int i = 0; i < size; i++)

{

printf("%d ", arr[i]);

}

printf("\n");

return 0;

}