#include <stdio.h>

void merge(int arr[], int left, int mid, int right) {

int i, j, k;

int n1 = mid - left + 1;

int n2 = right - mid;

int L[n1], R[n2];

for (i = 0; i < n1; i++)

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

for (j = 0; j < n2; j++)

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

i = 0; j = 0; k = left;

while (i < n1 && j < n2) {

if (L[i] <= R[j])

arr[k++] = L[i++];

else

arr[k++] = R[j++];

}

while (i < n1)

arr[k++] = L[i++];

while (j < n2)

arr[k++] = R[j++];

}

void mergeSort(int arr[], int left, int right) {

if (left < right) {

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

mergeSort(arr, left, mid);

mergeSort(arr, mid + 1, right);

merge(arr, left, mid, right);

}

}

void display(int arr[], int size) {

printf("Sorted array: ");

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

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

printf("\n");

}

int main() {

int arr[100], n;

printf("Enter number of elements: ");

scanf("%d", &n);

printf("Enter %d elements:\n", n);

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

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

mergeSort(arr, 0, n - 1);

display(arr, n);

return 0;

}

