Problem B. B

Time limit	1000 ms
Mem limit	131072 kB
OS	Linux

Write a program of a Merge Sort algorithm implemented by the following pseudocode. You should also report the number of comparisons in the Merge function.

```
Merge(A, left, mid, right)
  n1 = mid - left;
  n2 = right - mid;
  create array L[0...n1], R[0...n2]
  for i = 0 to n1-1
    do L[i] = A[left + i]
  for i = 0 to n2-1
    do R[i] = A[mid + i]
  L[n1] = SENTINEL
  R[n2] = SENTINEL
  i = 0;
  j = 0;
  for k = left to right-1
    if L[i] <= R[j]
      then A[k] = L[i]
           i = i + 1
      else A[k] = R[j]
           j = j + 1

Merge-Sort(A, left, right){
  if left+1 < right
    then mid = (left + right)/2;
         call Merge-Sort(A, left, mid)
         call Merge-Sort(A, mid, right)
         call Merge(A, left, mid, right)
```

Input

In the first line *n* is given. In the second line, *n* integers are given.

Output

In the first line, print the sequence S. Two consequtive elements should be separated by a space character.

In the second line, print the number of comparisons.

Constraints

- n ≤ 500000
- 0 ≤ an element in S ≤ 10^9

Sample Input 1

```
10
8 5 9 2 6 3 7 1 10 4
```

Sample Output 1

```
1 2 3 4 5 6 7 8 9 10
34
```

Notes