Problem P. Mergesort

Time limit	1000 ms
Mem limit	1572864 kB
Code length Limit	50000 B
OS	Linux

Simple. Sort the numbers on the standard input using the merge sort algorithm. Don't try to cheat by just calling your build in functions... I can see your source.

Input

On the standard input you will receive N ($1 <= N <= 100000$). Each number will fit in 32-bit integer

Output

Output the same integers in a sorted manner. Smallest to largest.

Example

Input	Output
7 3 2 5 4 3	2 3 3 4 5 7