

Problem K. Keep On Movin

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 64 mebibytes

Professor Zhang has n kinds of characters, and the quantity of the i -th character is a_i . Professor Zhang wants to use all the characters to build several palindromic strings. He also wants to maximize the length of the shortest palindromic string.

For example, let there be 4 kinds of characters denoted as ‘a’, ‘b’, ‘c’, ‘d’, and let their quantities be $\{2, 3, 2, 2\}$, respectively. Professor Zhang can build (“acdbbbdca”), or (“abbba” and “cddc”), or (“aca”, “bbb” and “dcd”), or (“acdbdca” and “bb”). The first is the optimal solution where the length of the shortest palindromic string is 9.

Note that a string is called palindromic if it can be read the same way in either direction.

Input

There are multiple test cases. The first line of input contains an integer T indicating the number of test cases. For each test case:

The first line contains an integer n ($1 \leq n \leq 10^5$): the number of kinds of characters. The second line contains n integers a_1, a_2, \dots, a_n ($0 \leq a_i \leq 10^4$).

There are at most 110 test cases, and the total size of the input is at most 6 mebibytes.

Output

For each test case, output an integer denoting the answer.

Example

standard input	standard output
4	3
4	6
1 1 2 4	1
3	3
2 2 2	
5	
1 1 1 1 1	
5	
1 1 2 2 3	