Problem F. AA Country and King Dreamoon

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

There is a prosperous country, AA, which is consisting of n cities(numbering from 1 to n) and $n-1$ roads. Because of good road design, you can start from any city and go through several roads to reach the destination you want to reach.

The king of the AA country, Dreamoon, wanted to inspect the law and order of all the cities tomorrow, so he made a route plan, which consists of a path with $2 \times n - 2$ edges, starting and ending at city 1(the capital city of AA country). For the convenience of recording, Dreamoon writes the numbers of the cities on this path on paper in order.

However, Dreamoon spilled the milk tea on the paper unfortunately, there are consecutive numbers that are not clear now. Thus, he asks you to help restore these unclear numbers in order to have a good journey.

If there are multiple solutions, please output the solution in the smallest lexicographical order. In addition, it is guaranteed to have at least one solution for the given input.

Input

The first line contains one integer T — the number of test cases. The following is a description of the input data sets.

Each test case contains two lines. The first line of each test case contains one integer n — the number of cities in AA country. The second line of each test case contains $2 \times n - 1$ integers between 0 and n - the i-th number representing the i-th city in this path. If the i-th number is 0, the number cannot be seen clearly because of the overturned milk tea. The input guarantees that all 0s are consecutive and there is at least one 0.

Constraints

- $1 \leq T \leq 30,000$.
- $1 \leq n \leq 300,000$.
- The cities are numbered from 1 to n.
- At least one number of city Dreamoon writes on paper is not clear and all unclear numbers are consecutive.
- The sum of n across all test cases does not exceed $300,000$.

Output

For each test case, please output a line containing $2 \times n - 1$ numbers between 1 and n, representing the path you restore. Remember, output the solution in the smallest lexicographical order if there are multiple ones. It is guaranteed to have at least one solution for the given input.

Examples

standard input	standard output
9 5 1 2 3 2 0 2 1 5 1 5 1 2 3 0 0 2 1 5 1 5 1 2 0 0 0 2 1 5 1 5 1 2 0 0 0 0 1 5 1 5 1 0 0 0 0 0 1 5 1 5 1 0 0 0 0 0 0 5 1 5 1 0 0 0 0 0 0 0 1 5 1 0 0 0 0 0 0 0 0 5 0 0 0 0 0 0 0 0 0	1 2 3 2 4 2 1 5 1 1 2 3 2 4 2 1 5 1 1 2 3 2 4 2 1 5 1 1 2 1 3 1 4 1 5 1 1 2 1 3 1 4 1 5 1 1 2 1 3 1 4 1 5 1 1 2 1 3 1 4 1 5 1 1 2 1 3 1 4 1 5 1 1 2 1 3 1 4 1 5 1