Problem C. Yet Another Balanced Coloring Problem

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You are given two rooted trees with n and m vertices, respectively. The vertices are indexed $1 \dots n$ (resp. $1 \dots m$) and the root is the vertex n (resp. m). Both trees have k leaves and in both trees, the leaves are precisely the vertices with indices $1 \dots k$. Here, the root of a tree isn't considered a leaf, even if it has only one neighbor.

For each i in $1 \dots k$, you have to choose red or blue. Then you have to paint the i-th vertex in both trees with the selected color.

After coloring the leaves, the following must hold in both trees:

- For each vertex u, the number of red leaves in the subtree of u must not differ from the number of blue leaves in the subtree of u by more than one.

Input

The first line contains one integer t ($1 \le t \le 10^5$) — the number of test cases. t test cases follow. Each test case is described as follows.

The first line of the test case contains two integers n and m ($3 \le n, m \le 10^5$).

The second line contains $n-1$ integers $p_1, \dots, p_{n-1}$ ($i < p_i \le n$); the i-th of them denotes an edge between i and p_i in the first tree.

The third line contains $m-1$ integers $q_1, \dots, q_{m-1}$ ($i < q_i \le m$); the i-th of them denotes an edge between i and q_i in the second tree.

It is guaranteed that in both trees, exactly the vertices $1 \dots k$ are leaves. It is guaranteed that the sum of $n + m$ over all test cases doesn't exceed $2 \cdot 10^5$.

Output

For each test case, print the answer on a separate line as follows.

- If there is no solution, print `IMPOSSIBLE`.
- Otherwise, print a string with length k. The i-th character in the string should be `B` if the i-th leaf is blue, and `R` otherwise.

Example

standard input	standard output
2 7 7 5 5 6 6 7 7 5 6 5 6 7 7 5 4 4 4 5 5 4 4 4	RBBR RBB