Problem A. Khalin Graph

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

Little George Khalin designed a new type of graphs. He doesn't like the letter K, so he dropped it.

Preorder of a tree (sometimes called **time-in order**) is obtained using the following procedure:

Let's fix the root of the tree, and direct all edges away from the root. Preorder of the subtree of a vertex v is v followed by preorders of subtrees of all its children (if any) in some order. A preorder of a tree with a fixed root is any preorder of the subtree of the root.

Note that there are multiple preorders of the same tree, since a preorder depends on the choice of the root, as well as the order in which children subtrees are considered at every vertex.

A **Halin graph** is a graph obtained using the following procedure:
There is a tree that we will call the **base tree** of the graph, which has at least 4 vertices and has no vertices of degree 2. One of its preorders is specified. The root of the tree with respect to this preorder is not a leaf.

Let $v_1, v_2, ..., v_m$ be the leaves of the tree in order they appear in the preorder. For each i from 1 to m, add an edge between the vertices v_i and $v_{(i \bmod m)+1}$ to the tree. Those edges are called **additional**. The resulting graph is the Halin graph with respect to the base tree and the specified preorder.

A **3-matching** of a graph G is a set of edges S such that the connected components of the graph formed by removal of all edges not in S from G are trees of size 3 or 1.

You are given a Halin graph. Find the number of its 3-matchings modulo 998 244 353.

Input

The first line contains a single integer n ($4 \le n \le 10^5$) the number of vertices in the base tree. Vertices are enumerated according to the preorder.

The second line contains $n - 1$ integers. i-th of them is p_i ($1 \le p_i \le i$), describing an edge between p_i-th and $i + 1$-th vertices in the base tree.

It is guaranteed that the base tree is a tree, has no vertices of degree 2, and that the vertex 1 is not a leaf.

Output

Output a single integer — the number of 3-matchings of the given graph modulo 998 244 353.

Examples

standard input	standard output
4 1 1 1	13
6 1 1 3 3 1	34
11 1 1 3 4 4 3 3 1 9 9	737

Note

In the first example the actual Halin graph is the complete graph on four vertices.

In the second example the leaves are $[2, 4, 5, 6]$, thus there are four additional edges — (2, 4), (4, 5), (5, 6), (6, 2).

Note that there is no letter K in the meaningful parts of the statement.