Problem A. Bmail Computer Network

Time limit 4000 ms
Mem limit 262144 kB

Once upon a time there was only one router in the well-known company Bmail. Years went by and over time new routers were purchased. Every time they bought a new router, they connected it to one of the routers bought before it. You are given the values p_i — the index of the router to which the i-th router was connected after being purchased ($p_i < i$).

There are n routers in Boogle in total now. Print the sequence of routers on the path from the first to the n-th router.

Input

The first line contains integer number n ($2 \le n \le 200000$) — the number of the routers. The following line contains $n - 1$ integers $p_2, p_3, \ldots, p_n$ ($1 \le p_i < i$), where p_i is equal to index of the router to which the i-th was connected after purchase.

Output

Print the path from the 1-st to the n-th router. It starts with 1 and ends with n. All the elements in the path should be distinct.

Sample 1

Input	Output
8 1 1 2 2 3 2 5	1 2 5 8

Sample 2

Input	Output
6 1 2 3 4 5	1 2 3 4 5 6

Sample 3

Input	Output
7 1 1 2 3 4 3	1 3 7