A. Bmail Computer Network

Difficulty: 900
time limit per test: 4 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

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 $p_2, p_3, \ldots, p_n$ $(1 \le p_i \le i)$, 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.

Examples

input
8
1 1 2 2 3 2 5
output
1 2 5 8

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

input
7
1 1 2 3 4 3
output
1 3 7

1057A Bmail Computer Network
*special problem, dfs and similar, trees
https://codeforces.com/problemset/problem/1057/A
github.com/andy489