

Baltic OI '17 P6 - Cat in a tree

Time limit: 1.0s **Memory limit:** 1G

Baltic Olympiad in Informatics: 2017 Day 2, Problem 3

A cat lives in a tree that has N nodes. She will demarcate her territory by *marking* some of the tree nodes. Marked nodes may not be closer to each other than distance D . Find the maximum number of nodes that the cat can mark.

Input Specification

First line has two integers, N and D . The 0^{th} node is the root node of the tree. Then follows $N - 1$ lines, the i^{th} of which contain a single integer x_i with $0 \leq x_i < i$ (starting with $i = 1$). This means that node x_i is connected to node i .

Constraints

We always have $1 \leq N, D \leq 2 \times 10^5$. For subcases, the inputs have these further restrictions:

- **Group 1: 11 points** $N \leq 18$
- **Group 2: 40 points** $N \leq 1\,500$
- **Group 3: 49 points** No further restrictions.

Output Specification

Output should contain one integer: the maximum number of nodes that can be marked.

Sample Input 1

```
4 3
0
0
1
```

Sample Output 1

```
2
```

Sample Input 2

3 1000

0

0

Sample Output 2

1