E. Trains and Statistic

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Vasya commutes by train every day. There are n train stations in the city, and at the i-th station it's possible to buy only tickets to stations from $i+1$ to a_i inclusive. No tickets are sold at the last station.

Let $\rho_{i,j}$ be the minimum number of tickets one needs to buy in order to get from stations i to station j. As Vasya is fond of different useless statistic he asks you to compute the sum of all values $\rho_{i,j}$ among all pairs $1 \le i < j \le n$.

Input

The first line of the input contains a single integer n ($2 \le n \le 100\,000$) — the number of stations.

The second line contains n - 1 integer a_i ($i+1 \le a_i \le n$), the i-th of them means that at the i-th station one may buy tickets to each station from $i+1$ to a_i inclusive.

Output

Print the sum of $\rho_{i,j}$ among all pairs of $1 \le i < j \le n$.

Examples

input
4 4 4 4

output
6

input
5 2 3 5 5

output
17

Note

In the first sample it's possible to get from any station to any other (with greater index) using only one ticket. The total number of pairs is 6, so the answer is also 6.

Consider the second sample:

- $\rho_{1,2} = 1$
- $\rho_{1,3} = 2$
- $\rho_{1,4} = 3$
- $\rho_{1,5} = 3$
- $\rho_{2,3} = 1$
- $\rho_{2,4} = 2$
- $\rho_{2,5} = 2$
- $\rho_{3,4} = 1$
- $\rho_{3,5} = 1$
- $\rho_{4,5} = 1$

Thus the answer equals $1 + 2 + 3 + 3 + 1 + 2 + 2 + 1 + 1 + 1 = 17$.