# A. Party

time limit per test
3 seconds
memory limit per test
256 megabytes
input
standard input
output
standard output

A company has n employees numbered from 1 to n. Each employee either has no immediate manager or exactly one immediate manager, who is another employee with a different number. An employee A is said to be the <u>superior</u> of another employee B if at least one of the following is true:

- Employee A is the immediate manager of employee B
- Employee B has an immediate manager employee C such that employee A is the superior of employee C.

The company will not have a managerial cycle. That is, there will not exist an employee who is the superior of his/her own immediate manager.

Today the company is going to arrange a party. This involves dividing all n employees into several groups: every employee must belong to exactly one group. Furthermore, within any single group, there must not be two employees A and B such that A is the superior of B. What is the minimum number of groups that must be formed?

### Input

The first line contains integer n ( $1 \le n \le 2000$ ) — the number of employees.

The next n lines contain the integers pi ( $1 \le pi \le n$  or pi = -1). Every pi denotes the immediate manager for the i-th employee. If pi is -1, that means that the i-th employee does not have an immediate manager.

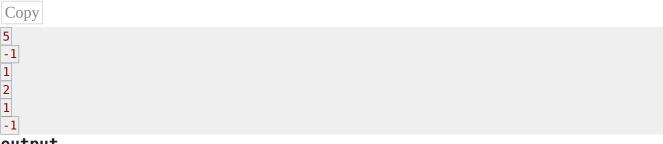
It is guaranteed, that no employee will be the immediate manager of him/herself ( $p_i \neq i$ ). Also, there will be no managerial cycles.

### **Output**

Print a single integer denoting the minimum number of groups that will be formed in the party.

# Examples

## input



## output

Copy

#### Note

For the first example, three groups are sufficient, for example:

- Employee 1Employees 2 and 4Employees 3 and 5