WC '18 Contest 4 S3 - Dance Royale

Time limit: 2.5s **Memory limit:** 128M

Woburn Challenge 2018-19 Round 4 - Senior Division

Billy is trying his hand at the latest popular game taking the world by storm: *Dance Royale*.

In *Dance Royale*, there are N $(1 \leq N \leq 300\,000)$ locations on a map (numbered from 1 to N). Each location i has a destination number D_i $(0 \leq D_i \leq N, D_i \neq i)$, which is used during gameplay (as described below).

There are also M $(2 \leq M \leq 300\,000)$ players, with the i-th player beginning the game at location L_i $(1 \leq L_i \leq N)$. Each player has some sick dance moves.

The game proceeds in sets of three phases as follows:

1. For each unordered pair of players still in the game, if they are currently at the same location and have not yet had a dance-off against one another, then they engage in a dance-off against one another. Nobody is harmed in the process, a good time is simply had.
2. For each player still in the game, let d be their current location's destination number. If $d = 0$, then they're forced to permanently leave the game. Otherwise, they move to location d.
3. If there are fewer than 2 players left in the game, then the game ends. Otherwise, the process repeats itself from phase 1.

Note that the game may last forever, which is fine — Billy is accustomed to extended periods of mental focus.

After the game has either ended or has gone on for an infinite amount of time, how many dance-offs will end up having taken place in total?

Subtasks

In test cases worth $6/28$ of the points, $N \leq 50$, $M \leq 50$, and $D_i > 0$ for each i.
In test cases worth another $6/28$ of the points, $N \leq 2\,000$, and $D_i > 0$ for each i.
In test cases worth another $10/28$ of the points, $D_i > 0$ for each i.

Input Specification

The first line of input consists of two space-separated integers, N and M.
N lines follow, the i-th of which consists of a single integer, D_i, for $i = 1 \ldots N$.
M lines follow, the i-th of which consists of a single integer, L_i, for $i = 1 \ldots M$.

Output Specification

Output a single integer, the number of dance-offs which will take place.

Sample Input 1

```
4 4
4
3
1
3
4
2
3
4
```

Sample Output 1

```
3
```

Sample Input 2

```
5 6
4
0
4
1
1
4
2
5
3
2
2
```

Sample Output 2

```
4
```

Sample Explanation

In the first case:

- Right off the bat, a dance-off will occur between players 1 and 4, as they both occupy location 4.
- Then, in the second cycle of the phases, players 1, 2, and 4 will all find themselves at location 3, resulting in player 2 having dance-offs with both players 1 and 4. Note that players 1 and 4 will not repeat their dance-off against one another.
- The game will end up continuing forever with all 4 players in action, but no more dance-offs will ever take place.

In the second case:

- Right off the bat, dance-offs will occur between player pairs $(2, 5)$, $(2, 6)$, and $(5, 6)$, due to players 2, 5, and 6 all occupying location 2. These 3 players will then leave the game in phase 2.
- Then, in the second cycle of the phases, players 1 and 3 will both find themselves at location 1 and will therefore have a dance-off.
- The game will end up continuing forever with 3 players remaining, but no more dance-offs will ever take place.