GandALF — Exercise Sheet 7

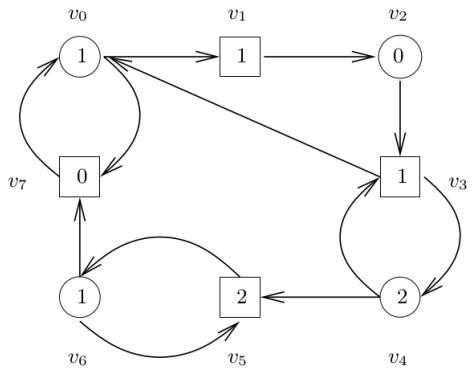
Write a program that determines the winner of a parity game on a singleton set.

Input. The input will consist of (you do not have to handle any input inconsistent with the following description):
A line with three natural numbers $n_0 n_1 m$.
$n_0 + n + 1$ lines with two numbers vc, where v is the index of a vertex and c is its colour. First n_0 numbers describe the vertices of Player 0, the remain ones – of Player 1
m lines with two numbers kl where (k, l) is an edge between two vertices (defined before). A line with an initial vertex v.

Output. A single digit denoting the number of the player who has the winning strategy on $\{v\}$ in the parity game (assuming that Player 0 wins iff the maximal number that occurs infinitely often if EVEN).

You may assume that all the numbers are between 0 and $2^{28} - 1$, and that the colors (c) are between 0 and $2^5 - 1$

Example. The following game from [2]



and $v = v_1$ can be represented as follows:

```
4 4 12
0 1
2 0
4 2
6 1
1 1
5 2
7 0
3 1
0 1
0 7
1 2
2 3
3 4
3 0
4 3
4 5
5 6
6 5
6 7
7 0
1
```

Then, the output should be

```
1
```

This exercise is worth 3 points; up to 2 extra points will be given to the fastest implementations.