Problem I
Inazuma Cube Device

Time Limit: 6 seconds Memory Limit: 1GB

E.T. the gray alien loves playing Genshin Impact but he is not very good at the game. He is currently trying to solve a cube device puzzle in the Inazuma region but has been stuck for several hours. He is now requesting your help to solve it.



Figure I.1: A cube device puzzle.



Figure I.2: A player striking a cube device.

There are n cubes scattered across the puzzle ground, numbered from 1 to n. Each cube has a flower with k petals. At any time, a cube can have anywhere from 1 to k of its petals lit. When the player strikes a cube, the number of lit petals increases by one – unless all k petals are already lit, in which case the cube resets to having only one lit petal. The puzzle is solved when every cube has all k of its petals lit.

Some pairs of cubes have a one-directional chain reaction from one cube to another: striking one cube also increases the number of lit petals on the other cube, but not vice versa. For any such chain reaction from cube a to cube b (where striking cube a increases the number of lit petals on both cube a and cube b), the cube numbers must satisfy $a < b$, meaning that all chain reactions go from a smaller-numbered cube to a larger-numbered cube. Note that if there is a chain reaction from cube a to cube b, and another chain reaction from cube b to cube c, striking cube a does not affect cube c (unless there is another chain reaction from cube a to cube c directly).

E.T. would like to know the minimum number of times he must strike the cubes to solve the puzzle.

Input

The first line of input contains three integers n, m, and k ($1 \le n \le 2 \cdot 10^5$, $0 \le m \le 5 \cdot 10^5$, $m \le \frac{n(n-1)}{2}$, $1 \le k \le 10^9$), the number of cubes, the number of directed relations, and the number of petals per cube.

The next n lines each contain a single integer. The integer on the ith line is the initial number of lit petals on cube i. All those integers are between 1 and k, inclusive.

Each of the next m lines contains two integers a and b ($1 \leq a < b \leq n$), describing a one-directional chain reaction from cube a to cube b. All chain reactions are unique.

Output

Output a single integer, the minimum number of times E.T. the alien must strike the cubes, or -1 if this puzzle is impossible to solve.

Explanation of Sample Case 1

We can solve the puzzle in 22 strikes:

1. Strike cube 5 4 times. Then, cube 5 has 10 lit petals.
2. Strike cube 2 9 times. Then, cube 2 has 8 lit petals, cube 3 has 5, and cube 4 has 8.
3. Strike cube 3 5 times. Then, cube 3 has 10 lit petals.
4. Strike cube 1 2 times. Then, both cube 1 and cube 2 have 10 lit petals. Note that striking cube 1 does not increase the number of lit petals on cube 3 or cube 4.
5. Strike cube 4 2 times. Then, all cubes have 10 lit petals.

Sample Input 1	Sample Output 1
5 3 10 8 9 6 9 6 1 2 2 3 2 4	22