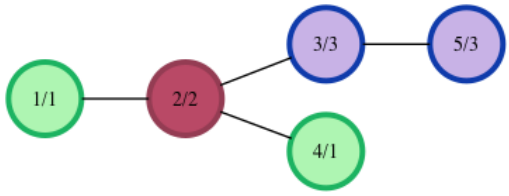
Find the nearest clone

In this challenge, there is a connected undirected graph where each of the nodes is a color. Given a color, find the shortest path connecting any two nodes of that color. Each edge has a weight of 1. If there is not a pair or if the color is not found, print -1.

For example, given $graph\_nodes = 5$, and 4 edges $g\_from = [1, 2, 2, 3]$ and $g\_to = [2, 3, 4, 5]$ and colors for each node are $arr = [1, 2, 3, 1, 3]$ we can draw the following graph:



Each of the nodes is labeled [node]/[color] and is colored appropriately. If we want the shortest path between color 3, blue, we see there is a direct path between nodes 3 and 5. For green, color 1, we see the path length 2 from $1 \rightarrow 2 \rightarrow 4$. There is no pair for node 4 having color 2, red.

Function Description

Complete the *findShortest* function in the editor below. It should return an integer representing the length of the shortest path between two nodes of the same color, or -1 if it is not possible.

findShortest has the following parameter(s):

- *g_nodes*: an integer, the number of nodes
- *g_from*: an array of integers, the start nodes for each edge
- *g_to*: an array of integers, the end nodes for each edge
- *ids*: an array of integers, the color id per node
- *val*: an integer, the id of the color to match

Input Format

The first line contains two space-separated integers n and m, the number of nodes and edges in the graph.
Each of the next m lines contains two space-separated integers $g\_from[i]$ and $g\_to[i]$, the nodes connected by an edge.
The next line contains n space-seperated integers, $ids[i]$, representing the color id of each node from 1 to n.
The last line contains the id of the color to analyze.

Note: The nodes are indexed from 1 to n.

Constraints

$1 \leq n \leq 10^6$
$1 \leq m \leq 10^6$
$1 \leq ids[i] \leq 10^8$

The graph is acyclic.

Output Format

Print the single integer representing the smallest path length or -1.

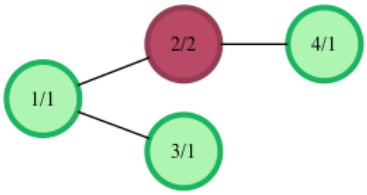
Sample Input 0

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

Sample Output 0

```
1
```

Explanation 0



In the above image the distance between the closest nodes having color label 1 is 1.

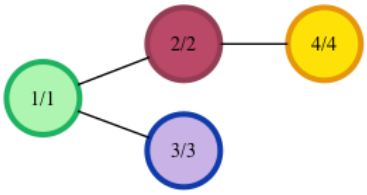
Sample Input 1

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

Sample Output 1

```
-1
```

Explanation 1



Sample Input 2

```
5 4
1 2
1 3
2 4
3 5
1 2 3 3 2
2
```

Sample Output 2

```
3
```

Explanation 2