Problem C
City Planning
Time limit: 5 seconds

Amanda lives in a city with lazy city planners. The city comprises N intersections with roads between them. The roads have a direction; that is, they are one-way. It is possible for a pair of intersections to have roads connecting them in both directions. It is also possible for an intersection to have a road to itself.

The lazy city planners keep a collection of M lists of intersections. The lists are labelled from 1 to M. The roads out of an intersection i are defined by a number ℓ_i, which means that there is an outgoing road from i to each intersection in list number ℓ_i from the collection of M lists.

Amanda lives at intersection 1 and works at intersection N. What is the minimum number of roads she needs to travel down to get from home to work?

Input

The first line of input contains two integers, N ($2 \leq N \leq 500\,000$), which is the number of intersections, and M ($1 \leq M \leq 500\,000$), which is the number of lists.

The next M lines describe the lists. The kth of these lines contains an integer c ($1 \leq c \leq N$) followed by c distinct integers $a_1, a_2, \ldots, a_c$ ($1 \leq a_i \leq N$), which are the intersections in list k. The total length of all lists is at most $500\,000$.

The final line of input contains N integers $\ell_1, \ell_2, \ldots, \ell_N$ ($1 \leq \ell_i \leq M$), which denote that intersection i's outgoing roadways are the list labelled ℓ_i.

Output

Display the minimum number of roads Amanda must travel. If it is impossible for her to reach work, display -1 instead.

Sample Input 1	Sample Output 1
3 2 1 2 1 3 1 2 1	2

Sample Input 2	Sample Output 2
3 1 1 2 1 1 1	−1