It's finally christmas and Tom has been waiting for Santa Claus all year! This year he was a good boy and he won a load of presents. There were *m* boxes under his tree, but Santa Claus surprised him, and some boxes have other boxes inside them. So a box has either other boxes inside it or a toy. All boxes have different sizes, but Tom likes big boxes, so the first present he will open will be the largest, and after opening some box *i*, he will choose the largest between the presents he had before opening *i* and the ones revealed by *i*. However, there are many boxes, and after opening *k* presents Tom will get tired. Find out how many toys did Tom get before he got tired.

Input

The first line contains integers n ($1 \leq n \leq 10^5$), m ($1 \leq m \leq n$) and k ($1 \leq k \leq n$), the total number of presents, the number of boxes under Tom's tree and how many boxes Tom can open before he gets tired, respectively.

The second line has n distinct integers s_i, representing the size of i-th box ($1 \leq s_i \leq 10^9$). *Note that in this problem box x within y can have size greater than y.*

The i-th of the next n lines contains integer q_i, followed by q_i integers representing the ID of boxes that are inside box i. If q_i is 0, that means i-th box has a toy inside it!

The fourth and last line has m integers representing the IDs of boxes that are under Tom's tree.

Output

You should output a single line containing how many toys did Tom get after opening k boxes.

Sample Input

```
10 2 6
1 30 14 11 4 6 2 2 5 1
0
2 3 4
0
2 5 6
2 7 8
2 9 10
0
0
0
0
```

Sample Output

```
2
```

1 2