There are total n players in the game, and every player has a level denoted by an integer. The levels of n players are distinct.

This game is famous because it has a special system - "Unique Skills":

- There are m kinds of unique skills, numbered with $1, 2, ..., m$.
- There are also m kinds of skill books, numbered with $1, 2, ..., m$.
- A player can use unique skill i only if he has skill book i with him.
- A player can own different kinds of skill books. However, for each kind of skill book, a player can own at most one copy of it.

The shop in the game sells the skill books of all unique skills, but it has special rules:

- Every skill book has a limited number of copies.
- The buyer can buy the skill book if there is still copies left in the shop.
- If the book is sold out, the shop will steal it from the *target player* of the buyer so that the buyer can get the book.
- *target player* of a buyer is defined as:
  - Among the players with the desired skill book and level greater than the buyer, the one with minimum level becomes the *target player*.
  - If such player doesn't exist, among the players with the desired skill book, the one with maximum level becomes the *target player*.

Given the buyers of skill books at each moment, please keep track of the owners of every skill book.

Input

The first line contains three integers n, m and q — the number of players, the number of unique skills and the number of queries. The players are labeled $1, 2, ..., n$. The unique skills are labeled $1, 2, ..., m$.

The second line contains n integers $p_1, p_2, ..., p_n$ — the levels of every player, from 1 to n. It is guaranteed that the levels of n players are distinct.

The third line contains m integers $u_1, u_2, ..., u_m$ — the number of copies of every skill book, from 1 to m.

Then following q lines, each line contains two integers x and y, denoting player x buys a skill book y.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq m \leq 10$
- $1 \leq q \leq 10^6$
- $1 \leq p_i \leq 10^6, \forall 1 \leq i \leq n$
- $1 \leq u_i \leq 10^3, \forall 1 \leq i \leq m$

Submissions
Rankings
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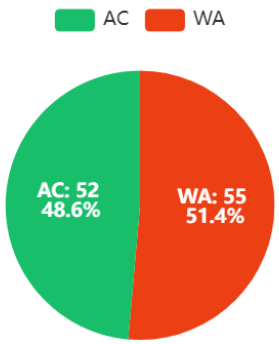
Information

ID	3
Time Limit	2500MS
Memory Limit	256MB
IO Mode	Standard IO
Created By	ta_david
Level	Hidden
Score	100
Tags	Show

Statistic Details



many kinds of unique skills the buyer can use after buying a skill book.

After q queries, output n lines. For line i, first output an integer denoting how many kinds of unique skills player i can use at the last moment, then output the labels of player i's unique skills in ascending order.

Sample Input 1

```
5 3 9
4 8 7 6 3
2 2 1
1 1
1 2
2 1
2 2
2 3
4 1
3 1
1 3
1 3
```

Sample Output 1

```
1
2
1
2
3
1
1
3
3
3 1 2 3
1 2
1 1
0
0
```

Language: C++ Theme: Solarized Light

```
1
```

You have solved the problem

Submit for Sample Test Submit

Contest has ended

Sample Test Input **Sample Test Output**

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