Perfect Matching

Credit Suisse organizes a private banking career information session for its potential future private bankers and currently employed private bankers. There are n private bankers and m participants.

Assume for each participant, they want to meet a number of private bankers and similarly, for each private banker they want to recruit a number of participants. However, only one-on-one meetings are possible. So for each session, one participant can only meet one banker.

If Credit Suisse has a list of preferences from participants and private bankers, how many sessions are needed in order to fulfil everyone's preferences?

Constraints

- Every banker and participant must have at least one preference.

Input format

The first line relates to the private bankers, and the second line relates to the participants.

The first integer in each line is the number of bankers/participants.

The subsequent integer input is the preference of bankers/participants, the preference of each person is separated by `,`.

For example:

```
2 1&2,2
2 1,2
```

The first line of input means that there are two private bankers. The preference of banker 1 is to meet participants 1 & 2, and the preference of banker 2 is to meet participant 2 only.

The second line of input means that there are two participants. The preference of participant 1 is to meet banker 1 only, and the preference of participant 2 is to meet banker 2 only.

Output format

An integer that is the minimum number of sessions required to fulfil everyone's preferences.

Examples

Example 1

Input

```
2 1,2&3
3 1,2,2
```

Output

```
2
```

i.e. In the first session, banker 1 will meet with participant 1 (fulfilling banker 1's preference and participant 1's preference) and banker 2 will meet with participant 2 (fulfilling banker 2's first preference and participant 2's preference). Another session is needed to fulfil banker 2's second preference and participant 3's only preference. In the second session, banker 2 will meet with participant 3 (fulfilling banker 2's second preference and banker 3's preference) and banker 1 will meet with participant 2. After two sessions, everyone's preferences have been fulfilled.

Example 2

Input

```
3 1,1,1
3 3,1,1
```

Output

```
3
```

i.e. There are many ways to arrive at this solution. This is just one of them. In the first session, banker 1 will meet with participant 1 (fulfilling banker 1's preference), banker 2 will meet with participant 2 and banker 3 will meet with participant 3. In the second session, banker 2 will meet with participant 1 (fulfilling banker 2's preference), banker 3 will meet with participant 2, and banker 1 will meet with participant 3 (fulfilling participant 3's preference). This leaves banker 3, participant 1, and participant 2's preferences. So in the third session, banker 3 will meet with participant 1 (fulfilling banker 3's preference and participant 1's preference), banker 1 will meet with participant 2 (fulfilling participant 2's preference), and banker 2 will meet with participant 3. After three sessions, everyone's preferences have been fulfilled.