

Problem C

A Popularity Problem

Input File: *testdata.in*

Time Limit: 2 seconds

Problem Description

Consider a set $A = \{a_1, a_2, \dots, a_N\}$ of N men, and a set $B = \{b_1, b_2, \dots, b_N\}$ of N women, where each member of A has a preference list over some members of B and vice versa.

Actually, it can be modeled as a bipartite graph $G = (A \cup B, E)$, where each vertex ranks its neighbors in a strict order of preference. Every vertex $v \in A \cup B$ seeks to be assigned to one of its neighbors. Note E may not be complete and the preference lists are symmetric, i.e., a is in b 's preference list if and only if b is in a 's preference list. For convenience, we use i to index the i -th man and woman respectively, for $i = 1$ to N .

A matching M is a set of edges, no two of which share an endpoint. Let $M(x)$ denote x 's partner in M . For any two matchings M_0 and M_1 , we say vertex u prefers M_0 to M_1 if u is better-off in M_0 than in M_1 , i.e., u is either matched in M_0 and unmatched in M_1 or matched in both and prefers $M_0(u)$ to $M_1(u)$. Let $f(M_0, M_1)$ be the number of vertices that prefer M_0 to M_1 . We call a matching M *popular* if $f(M, M') \geq f(M', M)$ for all matching M' . Your task is to write a program to find the size of the largest popular matching.

Technical Specification

1. All the numbers are non-negative integers.
2. K : the number of test cases. $K \leq 10$.
3. N : the number of men and women, respectively. $N \leq 1000$.
4. m_i : the length of the i -th man's preference list. $m_i \geq 0$.
5. $pm_{i,j}$: the i -th man's j th preference, $pm_{i,j} \in B$.
6. w_i : the length of the i -th woman's preference list. $w_i \geq 0$.
7. $pw_{i,j}$: the i -th woman's j th preference, $pw_{i,j} \in A$.

Input File Format

The first line of the input file contains an integer $K (\leq 10)$ indicating the number of test cases to follow. Each test case starts with a positive integer $N (\leq 1000)$ indicating the number of men and the number of women. Then, there are $2N$ lines following. In a line with multiple integers, two adjacent ones are separated by at least one space character.

The i -th line of the first N following lines, has the format $m_i \ pm_{i,1} \ pm_{i,2} \dots pm_{i,m_i}$, where m_i indicates the length of the i -th man's preference list and the following m_i distinct numbers $pm_{i,1} \ pm_{i,2} \dots pm_{i,m_i}$ indicate the indices of preferred women with preference in decreasing order, i.e., the i -th man prefers $pm_{i,j}$ to $pm_{i,j+1}$.

Similarly, the i -th line of the next N lines has the format $w_i \ pw_{i,1} \ pw_{i,2} \dots pw_{i,w_i}$, where the first number w_i indicates the length of the i -th woman's preference list and the following w_i distinct numbers $pw_{i,1} \ pw_{i,2} \dots pw_{i,w_i}$ indicate the indices of preferred men with preference in decreasing order.

Output Format

For each test case, output the size of the largest popular matching, i.e., the number of edges in the matching.

Sample Input

```
1
2
2 1 2
1 1
2 1 2
1 1
```

Sample Output for the Sample Input

```
2
```