Lazy employees   P76991_en

Xavier works at a company with n employees (between 0 and $n-1$) and q tasks to do (between 0 and $q-1$). Every task has a list of all the employees that can do it. Note that it is allowed that more than one employee does the same task, and that the same employee does more than one task. There are ℓ employees that are really lazy, and they will not work under any circumstances. Moreover, there are e eccentric employees. Each such employee x has a list of employees such that x will only accept to work if at least one of the employees of his list also works. Under all those constraints, is it possible to do all the tasks of the company?

Input

Input consists of several cases. Every case begins with n and q. Follow q lines: the i-th line starts with a number m_i between 1 and n, followed by a list of m_i different employees that can do task i. Follow ℓ and the ℓ lazy employees. Finally, we have information about the eccentricities: First we have e, followed by e lines, each one with an eccentric employee x, a number r_x between 1 and $n-1$, followed by a list of the r_x employees in x's list (all different and $\neq x$). Assume that n and q are between 1 and 10^4, $\sum m_i \leq 5q$, $\sum r_x \leq 5n$, and $0 \leq \ell + e \leq n$. The lazy and the eccentric employees are all different.

Output

For each case, print "YES" if all the tasks can be done, and "NO" otherwise.

Sample input 1

```
1 1
1   0
0
0

5 2
4   3 2 1 0
5   0 1 2 3 4
2   1 0
2
2 2   0 1
3 2   2 1

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

Sample output 1

```
YES
NO
YES
```

Problem information

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