

Elf Employment

Filenames: *elf*, *elf_small* (for partial credit)

Time limit: 6 seconds

Santa has a very difficult job. Sure, he gets a lot of credit for it in December, but almost no one thinks about the insane amount of planning that goes into making all of his Christmas Eve deliveries go smoothly throughout the rest of the year.

As almost everyone knows, Santa employs n elves, each one an expert craftsman who produces a unique toy. His elves each produce one of each toy per day, so if he asks them to work for 3 days, he will have 3 copies of each of the n types of toys.

As far fewer people know, Santa also employs a ruthless gang of Russian KGB agents to spy on m young children. From the intel they gather, Santa knows whether each child was naughty or nice this year, as well as which of the n toys that his elves make are toys this child would like. Santa wants to make sure that each nice child receives a toy he or she likes, and each naughty child receives a toy he or she doesn't like.



The Problem

Rumor has it that the North Pole's financial assets might get frozen soon, so Santa needs your help to find the minimum number of days he needs his elves to work this year in order to be able to give all children an appropriate gift. Can you help him?

The Input

The first line of input will contain a single positive integer, c ($c \leq 100$), representing the number of input cases to process. The input cases follow. The first line of each input case will contain two integers n ($2 \leq n \leq 300$), the number of different models of toys, and m ($2 \leq m \leq 300$), the number of children Santa is stalking. m lines follow, describing the children Santa pays his KGB agents to watch. Each of these lines starts with either "naughty" or "nice", depending on the behavior of this child. After that it contains an integer t_i ($1 \leq t_i \leq n-1$), the number of toys this child likes, followed by t_i unique integers in between 1 and n , inclusive, indicating which of the n toys the child likes. Santa's elves produce a diverse enough set of toys that there is always at least one toy each child likes, and one toy each child doesn't like. The minimum of n and m will exceed 50 in at most 15 cases.

Partial Credit Input (50%)

The number of different toys, n , and the number of different children, m , will both be less than or equal to 5.

The Output

For each input case, print a single integer on a line by itself: the number of days Santa needs his elves to work in order to have enough toys to be able to give each child an appropriate gift.

Sample Input

```
2
4 3
nice 2 1 3
naughty 2 2 4
nice 1 1
4 3
nice 2 1 3
nice 2 2 4
nice 1 1
```

Sample Output

```
2
1
```