

3671 Construction Schedule

There are many tasks which need to be done in order to construct a building. In order to perform these tasks, there should be a reasonable schedule. There might be relations between tasks. The difficulty we meet in creating a schedule is that the schedule has to satisfy all given relations among the given tasks.

Given a set of tasks and their relations, your task is to write a program to check whether it is possible to create a schedule to perform the tasks.

Input

The input consists of several data sets. The first line of the input file contains the number of data sets which is a positive integer and is not bigger than 20. The following lines describe the data sets.

For each data set, the first line contains two integer numbers n ($1 \leq n \leq 500$), and k ($0 \leq k \leq 20000$) separated by spaces, where n denotes the total number of tasks, and k denotes the total number of relations. The next k following lines describe k relations among the tasks. Let t_j be a starting time of the task j , $j = 1, 2, \dots, n$. Each relation is in one of the two forms:

- $x \ y \ v$ means task x must not start after task y starts v days, i.e. $t_x \leq t_y + v$,
- $x \ y \ -v$ means task x must not start before task y starts v days, i.e. $t_x \geq t_y + v$, where v is a positive integer not greater than 10,000.

Output

For each test case, write in one line 'YES' if it is possible to construct a schedule to satisfy all the given relations among the given tasks, 'NO' otherwise.

Sample Input

```
2
2 2
1 2 -2
1 2 1
2 1
1 2 -1
```

Sample Output

```
NO
YES
```