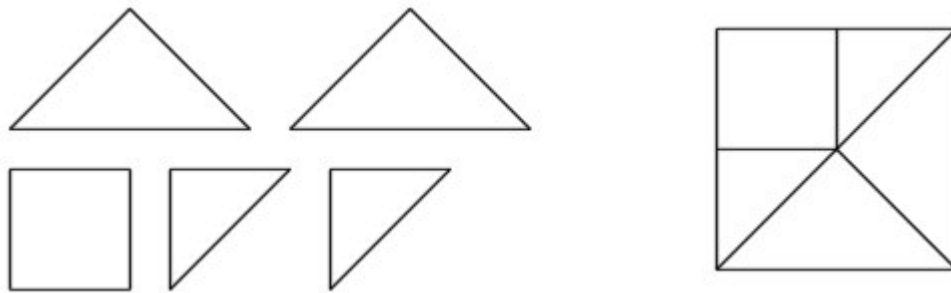


Problem H

Square Puzzle

Input: Standard Input
Output: Standard Output
Time Limit: 3 Seconds

Given the pieces of a puzzle, determine if they can be put together so they form a square of a given size. The pieces may be rotated but not flipped, and all pieces must be used. Pieces may of course not overlap.



The pieces to the left can be moved and rotated so they form the square to the right.

The shape of the pieces will be given as simple polygons. All vertices will have integer coordinates, and will be given in counter-clockwise direction. The sides of the pieces will either be horizontal, vertical or diagonal.

Input

The first line in the input contains an integer **P**, the number of puzzles to follow (at most **20**). Each puzzle starts with a line containing two integers, **n** and **m** (both between **1** and **6**, inclusive). **n** is the number of pieces in the puzzle, while **m** is the length of the side of the square you want to create.

Then follows **n** lines, each describing a piece. Each line starts with an integer **k**, the number of vertices in the polygon. Then follows **k** pair of integers, the **x**- and **y**-coordinates for the vertices. All coordinates in a particular puzzle will be between **0** and **m**, inclusive.

Output

For each puzzle, output on a single line either "yes" or "no", depending on whether you can form a **m** x **m** square using all the pieces.

Sample Input

```
2
5 6
4 0 0 3 0 3 3 0 3
3 0 0 3 3 0 3
3 0 0 3 3 0 3
3 0 0 6 0 3 3
3 0 0 6 0 3 3
```

Output for Sample Input

```
yes
no
```

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

Problemsetter: Jimmy Mårdell, Member of Elite Problemsetters' Panel

"This ritual has become so familiar to me. Stand up. Walk over to important personage. Extend both hands; seize said person's hand in one and proffered envelope/plaque in other. Smile and, just as the camera flashes, accidentally blink. Return to seat. I've been to so many Waterloo banquets, many of them in this very room. Believe it or not, for some of them I even wore a suit! Thankfully that was only a temporary phase. After all, doing something eccentric is the key to being remembered."

--Derek Kisman (In a speech of an Award Banquet)