Everybody knows how to play tic-tac-toe. If accidentally you do not know the rules of this game, you can always consult Wikipedia.

In this problem we will use a slightly different version of tic-tac-toe. First, the game board is not limited to 3×3 cells, but considered infinite. Also in order to win a player must get not 3 but at least k noughts or crosses in a line (horizontal, vertical or diagonal).

In modified tic-tac-to version it is not so easy to determine a winner. So in this problem you will be given a list of turns performed by the players during the game and you need to determine the winner.

Input

There is a number of tests T $(T \le 100)$ on the first line. Each test case is described by the two numbers n k $(n \le 10^5$, $k \le 5)$, where n stands for number of turns for both players and k for winning line size. Next line contains n pairs of signed 32-bit integers x y — coordinates of each players turn. All turns have been performed sequentially by both players and crosses have always started a game.

Output

For each test case output a single line 'Case T: S'. Where T is the test case number (starting from 1) and S is equal to 'crosses' or 'noughts' if one of them has a winning line. If nobody yet has won a game output 'none' and if both players have winning lines output 'error' for S.

Sample Input

```
2
3 2
0 0 1 1 1 0
4 2
0 0 -1 0 1 1 -1 1
```

Sample Output

```
Case 1: crosses
Case 2: error
```