Division game is a 2-player game. In this game, there is a matrix of positive integers with N rows and M columns. Players make their moves in turns. In each step, the current player selects a row. If the row contains all 1s, the player looses. Otherwise, the player can select any number of integers (but at least 1 and each of them should be greater than 1) from that row and then divides each of the selected integers with any divisor other than 1. For example, 6 can be divided by 2, 3 and 6, but cannot be divided by 1, 4 and 5. The player who first makes the matrix all 1s wins. In other words, if in his/her move, player gets the matrix with all 1s, then he/she looses. Given the matrix, your task is to determine whether the first player wins or not. Assume that both of the players will play perfectly to win.

Input

The first line has a positive integer T, $T \leq 50$, denoting the number of test cases. This is followed by each test case per line.

Each test case starts with a line containing 2 integers N and M representing the number of rows and columns respectively. Both N and M are between 1 and 50 inclusive. Each of the next N line each contains M integers. All these integers are between 2 and 10000 inclusive.

Output

For each test case, the output contains a line in the format 'Case #x: M', where x is the case number (starting from 1) and M is 'YES' when the first player has a winning strategy and 'NO' otherwise.

Sample Input

```
5
2 2
2 3
2 3
2 2
4 9
8 5
3 3
2 3 5
3 9 2
8 8 3
3 3
3 4 5
4 5 6
5 6 7
2 3
4 5 6
7 8 9
```

Sample Output

```
Case #1: NO
Case #2: NO
Case #3: NO
Case #4: YES
Case #5: YES
```