Problem L. Multiplication Table

Peter learned about multiplication in school yesterday. He was so excited about it that he stayed up late writing out a very large multiplication table, which looks like this:

1	2	3	4	5	6	7	8	9	10	$\cdots$
2	4	6	8	10	12	14	16	18	20	$\cdots$
3	6	9	12	15	18	21	24	27	30	$\cdots$
4	8	12	16	20	24	28	32	36	40	$\cdots$
5	10	$\cdots$								
6	12	$\cdots$								
7	14	$\cdots$								
$\cdots$										

The value of the j^{th} column of the i^{th} row in this table is $i \times j$ (assuming that rows and columns are indexed starting from 1). You may assume that the table has infinitely many rows and columns.

Last night, even after Peter finally fell asleep, he kept on dreaming about the table. He thought he saw some part of the table as a rectangle with R rows and C columns. (Peter's rectangle did not necessarily start from the first row or first column, but it was in the same orientation as the table.) After he woke up, he wrote down the entire rectangle, using '`?`' for the numbers that he didn't remember.

Now Peter would like to know whether the rectangle of numbers from his dream could have really existed in the table or not. Can you help him determine this?

Input

The first line of the input gives the number of test cases, T. T test cases follow.

Each test case begins with one line with 2 numbers R and C, the numbers of rows and columns in Peter's rectangle.

Then, R more lines follow. Each line consists of C space-separated values, each of which may be either a number or '`?`'. A '`?`' indicates that Peter could not remember the number in that cell.

Output

For each test case, output one line containing "`Case #x: y`", where `x` is the test case number (starting from 1) and `y` is "`Yes`" if it matches part of the table, and "`No`" otherwise.

Limits

- $1 \leq T \leq 100$.
- $1 \leq R, C \leq 1000$.
- All numbers that Peter remembers are between 1 and 10^9.

Sample input and output

Sample Input	Sample Output
5 3 3 4 ? 8 ? 9 ? ? ? ? 3 4 ? ? ? ? ? ? ? ? 3 6 8 12 1 2 1000000000 ? 1 2 ? 1 2 1 ? ?	Case #1: Yes Case #2: No Case #3: Yes Case #4: No Case #5: Yes

Note

In Case #1, the rectangle could match the part of the table starting from the second column of the second row:

$$\begin{matrix} 4 & 6 & 8 \\ 6 & 9 & 12 \\ 8 & 12 & 16 \end{matrix}$$

In Case #2, it is impossible for the rectangle to match part of the table. (In particular, no row of the table contains 3, 6, 8, 12 as consecutive numbers.)

Note that in Case #3, the unknown value must be greater than 10^9 (for example, it could be 2×10^9). The limit of 10^9 is only on the numbers that Peter remembers.

In Case #4, no value can come before 1 in the table.