Questions asked 1

Submissions

Dynamic Grid

6pt	Not attempted **1392/1881 users** correct (74%)
8pt	Not attempted **1288/1368 users** correct (94%)

gBalloon

9pt	Not attempted **353/666 users** correct (53%)
17pt	Not attempted **266/338 users** correct (79%)

IP Address Summarization

10pt	Not attempted **123/236 users** correct (52%)
19pt	Not attempted **73/118 users** correct (62%)

Virtual Rabbit

11pt	Not attempted **18/166 users** correct (11%)
20pt	Not attempted **3/8 users** correct (38%)

Top Scores

nhho	100
sundar95	80
Shaon	80
ajkrish95	80
ojas.deshpande	80
NAFIS	69
JunoYu	69
wcwswsws	69
karanaggarwal	69
VotBear	69

Problem A. Dynamic Grid

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input 6 points	Solve A-small
Large input 8 points	Solve A-large

Problem

We have a grid with **R** rows and **C** columns in which every entry is either 0 or 1. We are going to perform **N** operations on the grid, each of which is one of the following:

- Operation M: Change a number in one cell of the grid to 0 or 1
- Operation Q: Determine the number of different *connected regions* of 1s. A connected region of 1s is a subset of cells that are all 1, in which any cell in the region can be reached from any other cell in the region by traveling between cells along edges (**not** corners).

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each test case starts with one line with two integers, **R** and **C**, which represent the number of rows and columns in the grid. Then, there are **R** lines of **C** characters each, in which every character is either `0` or `1`. These lines represent the initial state of the grid.

The next line has one integer, **N**, the number of operations to perform on the grid. **N** more lines follow; each has one operation. All operation Ms will be of the form `M x y z`, meaning that the cell at row x and column y should be changed to the value z. All operation Qs will be of the form `Q`.

Output

For each test case, output one line containing "Case #x:", where x is the test case number (starting from 1). Then, for every operation Q in the test case, in order, output one line containing the number of connected regions of 1s.

Limits

$1 \le \mathbf{T} \le 10$.
$1 \le \mathbf{R}, \mathbf{C} \le 100$.
$0 \le \mathbf{x} < \mathbf{R}$.
$0 \le \mathbf{y} < \mathbf{C}$.
$0 \le \mathbf{z} \le 1$.

Small dataset

$1 \le \mathbf{N} \le 10$.

Large dataset

$1 \le \mathbf{N} \le 1000$.

Sample

Input	Output
1 4 4 0101 0010 0100 1111 7 Q M 0 2 1 Q M 2 2 0 Q M 2 1 0 Q	Case #1: 4 2 2 2