HOMEWORK #1:

Going Fishing

Due Date: Friday, February the 5th, 11:59.59pm

For this assignment, you will submit a single C++ file called 'fishbomb.cpp'.
IMPORTANT: Include your name and section in comments at the top of your program file.
Your program should expect all input to come from 'cin', and all your output should be to 'cout'.

Problem:

Good News!! You have been hired by "Planet Express Softworks", a new division of "Planet Express Inc." and newest venture of Prof. Farnsworth. The business model is simple: you write the software, and the delivery crew delivers it. It is not like Prof. Farnsworth is greatly interested in software. He is just interested in using the profits to fund his research.

You have joined just in time. "Planet Express Softworks" has just found a use for you.

The Planet Express crew are going fishing and Bender is fishing the way robots are meant to do so: with dynamite!. Using sophisticated robot technology, Bender is scanning the surrounding area with a sonar device. The sonar's data represents the area around Bender as a grid of numbers, where each number represents the number of fish in each cell of the grid.

Help Bender choose which coordinate of the sonar data grid to throw his dynamite stick in order to maximize the number of fish ~~blown~~ caught. Bender's dynamite sticks explode with a blast that covers a 3x3 square in the grid.
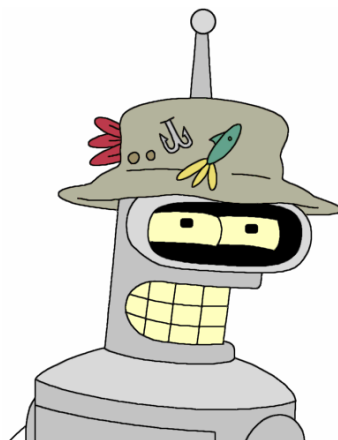
Ahhh… the joys of fishing

Input:

The first line of the input gives the number of test cases **T**.
The first line of each test case contains the numbers **W** and **H;** the width and height of the sonar data grid. **H** rows of **W** data points follow, describing the number of fish detected by the sonar. **W** and **H** will always be at least 3.

Output:

For each data grid, output one line containing "#g: (w, h) f", where **g** is the grid number (starting from 0), **(w, h)** is the cell coordinate in the fishing area where by throwing the dynamite stick Bender will get the most fish (the center of the explosion), and **f** is the number of fish to be caught. Coordinate (0,0) corresponds to the top-left corner

Implementation Requirements:

Given that you do not know beforehand how large a sonar data grid is, your program should dynamically allocate a 2D Array after the width and height of a grid is read. Make sure to de-allocate the 2D Array after you find the answer and before your program moves on to process the next grid. Do not use the C++ STL.

Sample:

Input	Output
3 3 3 1 0 0 0 1 0 0 2 1 6 3 4 1 2 0 0 6 0 7 1 4 2 3 3 4 6 2 2 1 4 4 1 0 0 3 0 1 0 1 0 2 1 4 0 0 0 1	#0: (1, 1) 5 #1: (1, 1) 28 #2: (2, 1) 12

NOTE: This is just a sample, your program will the thoroughly tested with a variety of test input cases.