# Problem 4: Charging your Electric Vehicle in Manhattan

Time limit: 2 seconds

Manhattan is the most densely populated of New York City's five boroughs. It is a famous for its 'grid-like' structure with streets crossing top to bottom and left to right resulting in several blocks. Due to its high density and vertical living resulting from some of the highest skyscrapers in the world, traffic congestion and pollution are some of the major problems of the borough.

The city's new mayor has come up with a brilliant solution to reduce congestion, promote sustainable living, and reduce its carbon footprint. Since all blocks are connected with other blocks on the left, right, top, or bottom, you can use any path to cross Manhattan. The mayor has suggested that all streets linking different blocks be replaced with pressure sensitive material such that when cars drive through these roads, it generates and stores electricity at the center of each block. To discourage pollution, electric vehicles driving on these roads can charge themselves from this stored energy, free of cost when they pass through the center point of that block. However, to discourage more traffic by people trying to leverage this free electricity and roaming around those blocks endlessly, all cars can only make down and right turns.

Your daily commute is such that you need to traverse Manhattan while going to office. You enter the top-left block and exit the bottom-right block. To control traffic, the city adjusts the amount of energy you can receive while going through a particular block and these values are published online. Assuming the borough has $N \times M$ blocks, plan you path through Manhattan such that you benefit from maximal free charging as you traverse the borough according to the published energy for each block at that time.

## Input

The first line contains an integer as number of test cases. For each test first line contains two integers, $N$ and $M(1 \leq N, M \leq 1000)$, representing the dimensions of Manhattan, i.e., $N$ blocks downwards and $M$ blocks from left to right. The next $N$ lines each contain $M$ integers, where the ***j-th*** integer in the ***i-th*** line, $A[i][j](0 \leq i, j \leq 1000)$, represents the charge available while traversing $block(i, j)$.

## Output

Output a single integer, the maximum charge you can get by the time you exit from the bottom-right corner.

## Sample input & output

The following is an example of a sample input and corresponding correct outputs.

| Sample input | Sample Output |
|---|---|
| 1<br>3 3<br>1 3 1<br>1 5 1<br>4 2 1 | 12 |