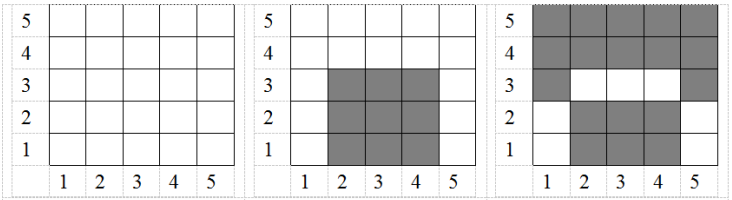
Problem B. Black and White

Input file: standard input
Output file: standard output
Time limit: 1s

Consider a square map with $N \times N$ cells. We indicate the coordinate of a cell by (i, j), where $1 \leq i, j \leq N$. Each cell has a color either white or black. The color of each cell is initialized to white. The map supports the operation $flip([x_{low}, x_{high}], [y_{low}, y_{high}])$, which flips the color of each cell in the rectangle $[x_{low}, x_{high}] \times [y_{low}, y_{high}]$. Given a sequence of flip operations, our problem is to count the number of black cells in the final map. We illustrate this in the following example. Figure (a) shows the initial map. Next, we call $flip([2, 4], [1, 3])$ and obtain Figure (b). Then, we call $flip([1, 5], [3, 5])$ and obtain Figure (c). This map contains 18 black cells.



(a) initial map | (b) after flipping the rectangle [2,4]×[1,3] | (c) after flipping the rectangle [1,5]×[3,5]

Input

The first line contains the number of test cases T ($T < 10$). Each test case begins with a line containing two integers N and K ($1 < N, K < 10000$), where N is the parameter of the map size and K is the number of flip operations. Each subsequent line corresponds to a flip operation, with four integers: $x_{low}, x_{high}, y_{low}, y_{high}$.

Output

For each test case, output the answer in a line.

Example

standard input	standard output
1 5 2 2 4 1 3 1 5 3 5	18