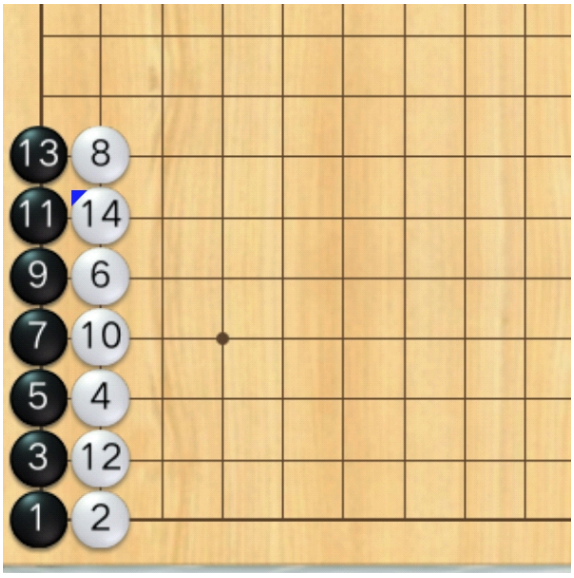
Problem A. New Gomoku

Time limit: 1 second
Memory limit: 256 megabytes



Traditional Gomoku, or *five in a row*, is played on a small board and ends immediately when five pieces of the same color are aligned. However, in "New Gomoku," the rules are different. The rules of New Gomoku are as follows:

- The board is larger, with a length and width of 1 000.
- Black and white players take turns placing their pieces, starting with the black player. A coordinate that has already been placed with a piece cannot be placed again.
- If exactly 5 pieces of the same color are arranged to form an unbroken line of five pieces (horizontally, vertically, or diagonally at 45°/135° to the horizontal line), it is called a set of *five in a row*. The game does not end when one side gets a set of five in a row.
- The game ends when the predetermined number of moves is reached.

Your task is to output the total number of *five in a row* for the player who just placed their piece after each of the n moves in the given sequence.

Input

There are multiple test cases in a single test file. The first line of the input contains a single integer T ($1 \le T \le 10^4$), indicating the number of test cases.

For each test case:

- The first line contains an integer n ($1 \le n \le 10^4$), indicating the number of moves.
- The next n lines each contain two integers x_i, y_i ($1 \le x_i, y_i \le 1\,000$) representing the coordinates of the i-th move, ensuring that all coordinates in the same data set are unique.

It is guaranteed that the total sum of n over all test cases does not exceed 10^4, i.e., $\sum n \le 10^4$.

Output

For each test case, output a single line with n numbers, where the i-th number indicates the total number of *five in a row* for the player who just placed their piece after the i-th move

Example

standard input	standard output
1 14 1 1 2 1 1 2 2 3 1 3 2 5 1 4 2 7 1 5 2 4 1 6 2 2 1 7 2 6	0 0 0 0 0 0 0 0 1 0 2 1 3 3