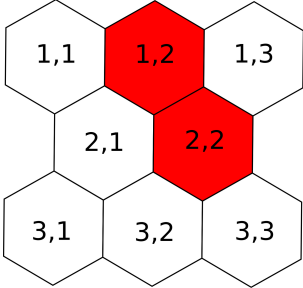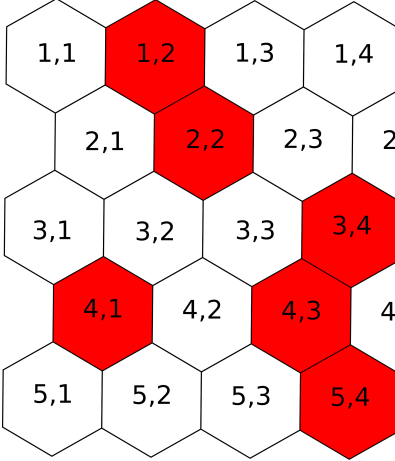On the next line we have the number Q that represents the number of queries, followed by Q query lines, where each query is of the form " a row column" or " k row column". If the first letter of the query is a it means that the queen wants to activate the cell (row, column), otherwise, if the first letter of the query is k the queen wants to know the perimeter of the section that the cell (row, column) belongs to.

Standard output

The output consists of a number of lines equal to the number of k queries, where every line represents the answer to each query where the queen wants to know the perimeter of the section.

Constraints and notes

- $2 \leq N \leq 100$
- $2 \leq M \leq 100$
- $1 \leq Q \leq 10^5$
- The queries will consist of only valid cells.

Input	Output	Explanation
3 3 0 1 0 0 1 0 0 0 5 a 1 3 k 2 2 k 2 1 a 3 1 k 3 1	12 0 6	
5 5 0 1 0 0 0 0 1 0 0 0 0 0 1 1 1 0 1 0 0 0 0 1 1 8 a 2 1 k 2 1 k 1 2 k 3 4 k 4 1 k 5 5 a 3 3 k 3 3	12 12 22 6 22 34	