Programming Assignment 3

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1 Deadline

10/22/2020 at 5 PM

2 Magnets

Imagine a $2 \times n$ board. A magnet is 2×1 piece (like a domino) with one side designated *positive* and the other side designed *negative*. Magnets can be placed anywhere on the board as long as the following rule is followed: The positive side of one magnet cannot be placed in an adjacent (diagonals do *not* count as adjacent) spot to the positive side of another magnet, and the negative side of one magnet cannot be placed in an adjacent (diagonals do *not* count as adjacent) spot to the negative side of another magnet. It is possible for a board position to remain empty.

Someone has placed markers on the board indicating that a positive must be in some places and a negative must be in others. Given M magnets, your goal will be to determine a configuration of the magnets in such a way that the markers are respected and all of the magnets are used.

2.1 Input and output

The first line of input.txt will be the total number of magnets that need to placed: M.

The next two lines of input will be the required configuration of the board. A $+$ symbol will indicate that the positive pole of some magnet is required to be in that position, a $-$ symbol will indicate that the negative pole of some magnet is required to be in that position. Either a pole or nothing at all can occur in a position with a $*$.

Your output file will consist of M lines, one for each magnet, that indicate where the magnets are to be placed, each with 4 space-separated integers on the line. The first two integers will be the x and y coordinates of the positive pole of the magnet and the second two integers will be the x and y coordinates of the negative pole of the magnet. Coordinates start at 0.

2.2 Example

For example, the input.txt file might look like the following:
5
+-+
****+

Your output.txt file should look like the following:
0 1 1 1
0 3 1 3
1 0 0 0
1 2 0 2
1 4 0 4

That output would indicate that the board you want looks like the following:
-+-+-
+-+-+

Notice that the pluses and minuses line up exactly with the pluses and minuses in the input. BEWARE: Magnets can be placed both horizontally and vertically.