

411 Centipede Collisions

A small boy named Tommy has some toy centipedes that are a series of 1 centimeter segments. Tommy assembles his centipedes to any length he likes and places them on a 30 × 30 centimeter board that allows the centipedes to travel in 1 centimeter wide tracks that criss-cross the board.

The centipedes travel only parallel to either the *x* or *y* axis on the board. Centipede segments of the same centipede advance at the same time and centipedes advance in cyclic numerical order (all of centipede 0 first, then 1, etc.). When more than one segment of two or more centipedes occupy the same *x, y* coordinate, there is a centipede collision.

Anytime a collision occurs, all segments occupying the collision site stop and continue to occupy the collision site. All remaining segments on a centipede detach from the segment involved in the collision and continue their march until another collision occurs or an existing collision site is encountered or until the segments fall off the edge of the board. Anytime a segment enters a collision site, it becomes part of the collision.

Since Tommy left home without his centipede set, his mother has hired you to write a simulation program for his entertainment. Your program will simulate his board with a text printout of his grids. For example, Tommy may simulate 5 centipedes on his board that start out as shown on the grid on the left and finish as shown on the grid on the right (note the example grid is only 10 × 10 whereas Tommy's is 30 × 30.)

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9   . . . . .
8   . . . . .
7   1 1 1 1 1 . . . .
6   . 0 . . . . .
5   . 0 . . . . . 3
4   . 0 . . . 2 . . . 3
3   . 0 . . . 2 . . . 3
2   . . . . . 2 . . . 3
1   . . . . . 2 . . . 3
0   . . . . . 2 4 4 4 3
Y
/ X 0 1 2 3 4 5 6 7 8 9

9   . . . . .
8   . . . . .
7   . . . . . X . . . X
6   . . . . .
5   . . . . .
4   . . . . .
3   . . . . .
2   . . . . .
1   . . . . .
0   . X . . . . .
Y
/ X 0 1 2 3 4 5 6 7 8 9

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- Where
- 0 represents a centipede segment traveling from top to bottom,
 - 1 represents a centipede segment traveling from left to right,
 - 2 represents a centipede segment traveling from bottom to top,
 - 3 represents a centipede segment traveling from bottom to top,
 - 4 represents a centipede segment traveling from right to left, and
 - X represents a collision site involving 2 or more segments.

Your program will simulate up to 10 centipedes that travel on a 30 × 30 board. Tommy has 100 segments that he may use in his simulation. Of course, no centipede can be longer than 30 segments.

