A knot is a string with the ends closed up, possibly with a knot in the middle. We draw knots on paper by indicating which strand is on top at each crossing, as in this example. We can stretch the string or move it around all we want without changing the knot, we just can't break the string.


A grid diagram of a knot is formed by making an $n \times n$ grid, and putting in each row and column two dots. Each dot is connected to the other dot in the same column with a vertical line and the other dot in its row by a horizontal line. Whenever a vertical line and a horizontal line cross, the vertical line goes on top. Here is a grid diagram of the earlier knot.


Your challenge is to make a grid diagram of the following knot with as small a grid as possible.


