Lesson 6 Problem 2 Solution

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Problem 2.
The first player has a winning strategy. With their first move, they place a stone in the center square. With each of the subsequent moves, they make a move which is symmetrical to the previous move of the second player. Note that after the move of the first player, the board is always symmetrical across the center. Now let us show that the first player can always make their move. If the second player can make a move, since the board was symmetrical, the first player has the symmetrical move also available to them. Note that since the central square is already taken, two symmetrical stones are at least 2 squares apart, which means that the symmetrical move of the first player could not have been taken away by the stone the first player placed. Then the first player can always make a move, and so then can never lose. Then they must win, since the game is finite.