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Deliverables for Assignment 2

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1. I used the heuristic for scoring based on the following article: https://medium.com/analytics-vidhya/artificial-intelligence-at-play-connect-four-minimax-algorithm-explained-3b5fc32e4a4f with a few modifications. My heuristic looked for all possible ways to establish a connect 4, i.e. horizontal, diagonal, and vertical. I captured these in a window then added points based on how close they were to a connect 4 in each variation. If there were 4 in a row they received 1000 points, 50 points for 3 with 1 empty, 20 points with 2 and 2 empty, and -40 points if the opponent had 3 with 1 empty. This means that the ai will always attempt to put a board piece in a place that maximizes its path to victory.
2. The algorithm can explore a depth of 2 given a time constraint of 3 seconds and 5 seconds. The algorithm can explore a depth of 3 given a time constraint of 10 seconds.
3. Yes, I am able to beat my algorithm with the current heuristic by simply prioritizing the best move to get to connect4 over the best move with the highest probability of empty tiles.
4. The player that goes first generally does better because Alpha-Beta will always choose the best tile placement for itself and since the first player will see more of the board first therefore maximizing its chances. This was the case everytime I ran it with a depth of 3.