Part 1, Evaluation function.

First, my evaluation function will check all the possible groups (4 coins in a group) for a certain coin on the board in Right, Down, Up Right, and Down Right four directions. Since a coin's Up Left, Up, Left and Down Left will be in another coin's group, so here I only have 4 directions. And for each scenario, a different value will be generated. (1) if all the four coins are empty, then 0; (2) if both opponent and play have coins in a group, then 0 as well; (3) if 1 me + 3 empty, then 1; (4) if 2 me + 2 empty, then 10; (5) if 3 me + 1 empty, then 100; (6) if 4 me, then a huge number will be generated, because obviously 4 in a row means win the game (7) I did exactly the same thing but negative value for 1 opponent + 3 empty, 2 opponent + 2 empty, 3 opponent + 1 empty, and 4 opponent. At the end of evaluating the whole board, a score will be generated, such that this score means the value of each state. Since I wrote 2 for loops for this algorithm, so every coin in the board will be checked.

One working example: such in this board, every coin's value will be generated, and the final score (-332) will be calculated as the state value. The opponent has a larger chance to win.
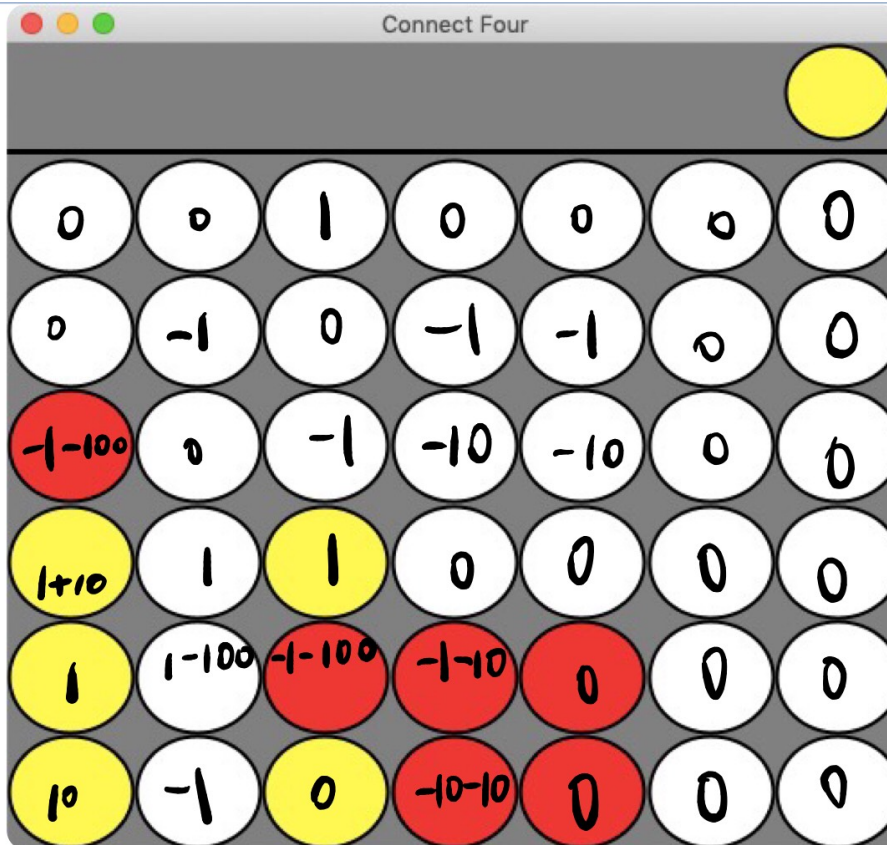
Part 3,

Against StupidAI

Win: 5 Lost: 0 Draw: 0 Points:5 My minimax_916863014_Jiaru Clearly beat StupidAI no matter in Player 1 or Player 2 positions. Seed_1 seed_2 and seed_5 in player 2 position, seed_3 and seed_4 in player 1 position.

Against RandomAI
Win: 5 Lost:0 Draw:0 Points:5 My minimax_916863014_Jiaru Clearly beat RandomAI no matter in Player 1 or Player 2 positions. Seed_6 seed_7 and seed_8 in player 2 position, seed_9 and seed_10 in player 1 position. (This is different from previous one).

Against MonteCarloAI
Win: 8 Lost: 2 Draw:0 Points:8 My minimax_916863014_Jiaru beat against MonteCarloAI in seed_11, seed_12, seed_13, seed_14, seed_15 in player 2 position, beat against MonteCarloAI in seed_16, seed_17, seed_18, seed_19, seed_20 in player 1 position.
(Only lost in seed_11, seed_15)

Total Points: 5+5+8=18 (out of 20)

Part 4,
Successor function: for the max player, always make a move to the state which will return the max value within the max depth, for the min player, always make a move to a state which will generate the min value within the max depth. Reorder max in descending order and reorder min player in ascending order.

Part 5,
My alphabeta_916863014_Jiaru beat MonteCarloAI in player 2 position from seed_1 to seed_10, and from seed_11 to seed_20 beat MonteCarloAI in player 1 position. My AI won all the games in no matter player 1 or player 2 position.
Win: 20
Lost: 0
Draw: 0
Total points: 20 (out of 20)