NoThanks Assignment report

The NoThanks assignment gives way to many different implementations to creating an AI, yet given the rather simple complexity of the game, I wanted to keep the AI itself simple as well. The AI has three different conditions on which it chooses to pick a card. I created 3 different AI strategies ("Simple","PLUS","Sabotage") and concluded with "Simple" being the best suited for the final hand in. It consists of three different conditions:

- If ones own coin pile is equal to 3
- If the card on the pile would diminish or equalize the penalty
- If the amount of coins on the card would equalize the penalty given by the card

The first condition resulted on testing, when three coins are still in your money bank the AI has still options to go to the different other conditions and limiting it to one coin resulted by testing up until 10 coins and 3 having the best resulting score overall. A interesting note to make is the fact that I implemented posted different variations against each other. When the coin value was set to the same value on two AI's with the "Simple" strategy, the "PLUS" AI won. If both values differed in the "Simple" AI's, the 3 coin value won each time, even against the "PLUS" AI. Making the final pick rather difficult given that the result depends on the play style of your opponent and having all opponents choosing the exact same strategy as well as exact same value for the coin parameter seems very improbable.

The second and third conditions seem rather straight forward. They are set up to diminish or equalize the penalty and thus play the game optimally if only considering one's own benefit.

All implementations reflect strategies I would use myself to play the game, as mentioned above "Simple", tries to maximizes it's own outcome, totally disregarding other players, given that many strategies may benefit from trying to sabotage the opponents, yet the only true way of keeping your own score low is by focusing on your own collection. The two other implementations I created, tried to implement an opponent based strategy by either sabotaging the other player or by maximizing the coin revenue, yet the results do show that focusing on your own penalty does end up winning the majority of games.

The following two paragraphs will go a bit deeper into the other two AI's implementations.

The second implementation "PLUS" has as similar approach to "SIMPLE", yet it tries to keep the stack going a bit to increase the coin collection on the card. Thus it will only pick a card when there is a specific amounts of coins on the card and if it equalizes or diminishes the penalty.

The third implementation "Sabotage", tries to take cards from the pile that other players would need to diminish their penalty, yet with this strategy the AI focuses on all players and is not able to keep its own penalty low.