COSC326 Etude 6 – For Sale Report

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The strategy that I implemented follows relatively simple and conservative guidelines. Where possible in the bidding phase, I aimed to spend as little money as possible, and tried not to spend anything unless the outcome appeared to be worth it. In the selling phase, I tried to sell each property for no less than what they were worth i.e. to at least break even.

There are two main algorithms used; one to decide how much money to bid during the first phase, and one to decide which properties to sell during the second phase. The algorithm for placing a bid begins by finding the property with the maximum value that is currently available, and the property with the minimum value that is currently available. The algorithm then progresses to consider four cases. If the player does not have enough money to beat the current bid, the player drops out. If the difference between the maximum and minimum properties is small, the player does not bid. This rule was placed because there would not be much to gain on bidding for the highest property, when the player could save their money and take the lowest property, which would still be a similar outcome to winning that round. If the previous bid is more than what the maximum current property is worth, the player drops out. This rule is so that the player doesn't get carried away when bidding on a property. Finally, the player bids a small amount of money if all the previous conditions are not met, i.e. if the maximum property is still higher than the previous bid.

The algorithm for choosing which property to sell follows similar conventions to the bidding algorithm: it aims to sell properties for no less than they are worth, and to save the highest valued properties for the highest cheques. Similar to the last algorithm, this one begins by finding the maximum and minimum available cheques that are in play. There are then five conditions considered. If the highest cheque in play exceeds the value of the player's highest property, then the player plays their highest property. If the highest cheque is almost as high as the player's highest valued property, the player plays their second highest valued property. If the highest cheque is higher than the players lowest value property, but not close to the player's highest valued property, the player plays their second lowest property. If the highest cheque is worth less than the player's lowest valued property, the lowest property is played. And finally, if the difference between cheque cards is minimal, the player plays the lowest property, as the outcome will be similar no matter what.

When this algorithm was tested against 5 other players, (of whom used a combination of random and null strategies), this algorithm came out in first or second place the majority of the time. There were a few times where it came out lower on the scoreboard, but when used in the right situations, this strategy seems fairly strong. This strategy takes advantage of situations where other players spend their money too quickly trying to win a round, and in places where other players end up spending a lot of money on a round where the outcome will be similar no matter what. This is because each time that the player bids, it is as little as is required to beat the previous bid, and no bid is placed where the remaining available properties are similar. This results in more coins for later rounds, or more coins leftover at the end. During the selling phase, only using the lowest property for similar

cheques is pretty failsafe, saving the higher valued properties for when the stakes are higher. I think this strategy could be used in conjunction with strategies that are aimed to cater to different situations to create a strong game plan.