Math115r project

 I will be playing nim and scamming people utilizing the fibonacci numbers and the method I have learned in this class. First off the game of nim is a 2 player game where each player will take turns taking counters or something like sticks from a pile or group. If there are 10 counters and you and I are playing nim and you go first and take 2 (which you can only take 1 or 2 to start the game) then I can take anywhere from 1 to 4 obviously depending on how many are left because it is a strategic game. To consistently win this game you must understand the game's technical mathematical principles. The main approach to winning consistently and the approach I will use is utilizing fibonacci numbers, in fibonacci numbers each one is the sum of the 2 ones before. The basic rules of nim are that the initial setup begins with a group or pile of counters or something of that nature, you can also choose to bet some money which I will be doing to make money. With your partner then either player can take 1 or 2 counters, if the player chooses 1 counter the next player can only take up to 2x counters that the previous player took. The entire point of the game is to eventually take the last counter to win the game which comes with different strategies. The fibonacci numbers begin with 1, 2, 3, 5, 8, 13, and 21. The way to use these numbers to win is to think of the current amount of counters as a sum of fibonacci numbers because to get the next number in fibonacci you add the last 2 numbers. Also going first or second in this game could also mean winning or losing depending on how many counters you are starting with. I know whether or not to go first depending on if the starting number of counters is a fibonacci number.

 Relating to my major, I am in political science and my end goal is to attend Chase Law school, to do that requires money so I will play people in order to gain enough money to make it through and to law school and then eventually take the bar exam because that costs money also. I will play with friends and family and just people that want to occasionally play. Depending on the starting number of counters I will act like i'm being generous and nice by letting the other player go first when really It's part of the strategy to win. If there is an amount of counters where I would want to go first to win I would then ask the other player to play me in something like rock paper scissors to go first in order to win. One way of using the fibonacci strategy to win nim is by making small groups of the counters being used in fibonacci numbers so for example 1 counter in the first pile or group because 1 is the first fibonacci number and then in the second group you put 2 counters and then in the third group goes 3 counters and so on and so forth depending on how many counters you are playing with. Using this strategy the other player can also see the different small groups of counters but unless they have also learned this strategy they will not be able to tell what you are really doing. To win the game you have to make sure that in each pile or group the amount of counters left is a fibonacci number so 1, 2, 3, 5 etc and if it is not a fibonacci number you would need to take an amount to make it a fibonacci number. An example of this would be if there is a group of 5 and the other player takes 2 from that group or pile then there would be 3 so to be in the driver's seat of the game you would only take 1 from that pile because the next fibonacci number is 2 or you would not take any from that group at all and choose a different group, if that is the only group left and the other player took 2 and there is 3 left then you can and should take all 3 to win.