Betting Simulator Project for DSO 570

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initial_wealth = float(input("How much money do you have at the start of this game? \n Please type in a number:")) #Recording imputs

bet_size = float(input("\n How much money do you want to wager? \n Please type in a number:")) #Recording imputs

fraction_at_risk = bet_size / initial_wealth

#Defining the returns depending on the outcomes of the coin flip
return_if_heads = 1
return_if_tails = -1

#Defining the probabilties of the outcomes of the coin flip (assuming its a biased coin bc the house always wins)
prob_of_heads = 0.49
prob_of_tails = 1 - prob_of_heads

#Generating a Random coin using Numpy library
import numpy as np
random_return = np.random.choice([return_if_heads, return_if_tails],
                                 p=[prob_of_heads, prob_of_tails])

print("\n The coin flip gave a return of {} %.".format(100*random_return))

#Getting current wealth
current_wealth = initial_wealth * (1 + (fraction_at_risk*random_return))

print("\n You have {} dollars remaining.".format(round(current_wealth, 2)))


total_number_of_plays = 1
minimum_bet_size = 0.01
continue_playing = input("Do you want to play again? \n Please respond \'Yes\' or \'No\':")

while (current_wealth >= minimum_bet_size) \
& (continue_playing.lower() == 'yes') \
&(total_number_of_plays < 500):

    if current_wealth >= minimum_bet_size:

        if total_number_of_plays > 1:
            continue_playing = input("Do you want to play again? \n Please respond \'Yes\' or \'No\':")

        if continue_playing.lower() == 'yes':

            initial_wealth = current_wealth

            bet_size = float(input("\n How much money do you want to wager? \n Please type in a number:"))

            #To see that the player doesn't bet what they don't have
            while bet_size > initial_wealth:
                print('\n *WARNING* You cannot bet more than your current wealth, which is $ {}.'.format(round(current_wealth, 2)))
                bet_size = float(input("\n How much money do you want to wager? \n Please type in a number:"))

            fraction_at_risk = bet_size / initial_wealth

            #Defining the returns depending on the outcome of the coin flip
            return_if_heads = 1
            return_if_tails = -1

            #Defining the probabilties of the outcomes of the coin flip (assuming its a biased coin bc the house always wins)
            prob_of_heads = 0.49
            prob_of_tails = 1 - prob_of_heads

            import numpy as np
            random_return = np.random.choice([return_if_heads, return_if_tails],
                                             p=[prob_of_heads, prob_of_tails])

            #Printing the results of the coin flip
            print("\n The coin flip gave a return of {} %.".format(100*random_return))


            current_wealth = initial_wealth * (1 + (fraction_at_risk*random_return))
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            #Printing the resulting terminal wealth
            print("\n You have {} dollars remaining.".format(round(current_wealth, 2)))
            #Updating the total number of plays
            total_number_of_plays = total_number_of_plays+1

        else:
            #Thanking the user for playing
            print('Thanks for playing, your final wealth is $ {}.'.format(round(current_wealth, 2)))

    else:
        #For when the user is broke and cannot play any longer
        print("You have reached ruin and do not have enough capital to continue playing.")
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 The coin flip gave a return of 100 %.

 You have 85.0 dollars remaining.
Do you want to play again?
 Please respond 'Yes' or 'No':yes

 How much money do you want to wager?
 Please type in a number:25

 The coin flip gave a return of 100 %.

 You have 110.0 dollars remaining.
Do you want to play again?
 Please respond 'Yes' or 'No':yes

 How much money do you want to wager?
 Please type in a number:10

 The coin flip gave a return of -100 %.

 You have 100.0 dollars remaining.
Do you want to play again?
 Please respond 'Yes' or 'No':yes

 How much money do you want to wager?
 Please type in a number:100

 The coin flip gave a return of 100 %.

 You have 200.0 dollars remaining.
Do you want to play again?
 Please respond 'Yes' or 'No':yes

 How much money do you want to wager?
 Please type in a number:200

 The coin flip gave a return of 100 %.

 You have 400.0 dollars remaining.
Do you want to play again?
 Please respond 'Yes' or 'No':yes

 How much money do you want to wager?
 Please type in a number:10

 The coin flip gave a return of -100 %.

 You have 390.0 dollars remaining.
Do you want to play again?
 Please respond 'Yes' or 'No':yes

 How much money do you want to wager?
 Please type in a number:390

 The coin flip gave a return of -100 %.

 You have 0.0 dollars remaining.
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