Name: **UIN:**

Assignment #2

(Due by: 9/12/2023)

a) Use the data from assignment #1 to compute:

1. Compute value at risk at 99% confidence level for next 10 days for the five stocks assuming the money under management is $100 million for each stock. Compute the portfolio's VaR (now the money under management is $500 million)
2. Compute the Sharpe ratios for the five stocks using annual quantities
3. Compute the maximum drawdown for each stock.

b) You are playing two very simple gambling games with your friend: 1) a $1 bet based on a coin flip. That is, you each bet $1 and flip a coin: heads you win your friend's $1, tails you lose, and your friend takes your dollar; 2) just betting $100 (instead of $1) on a single coin flip? We do a computer simulation to show the risk difference between the two games following the steps:

1. For the first game, generate 100 times of coin flip (the coin is a fair one, i.e., the chance is the same for a head up or a tail up) and compute the overall outcome in dollar; for the second game, just generate one coin flip, and record your outcome in dollar.
2. Repeat step (1) for 1,000,000 times and record your outcomes for both games.
3. Based on the obtained 1,000,000 outcomes, compute their mean values and standard deviations for both games.
4. Plot the distributions of outcomes for both games (you need bin the 1,000,000 outcomes into different value ranges. For example, you may choose value ranges such as -$100 to -$90, -$90 to -$80, …, $90 to $100, and count how many outcomes allocated in each of these bins)