- This is the return on lending function we use later on in the forecasting. Ultimately what this function does is it takes the amount, interest rate and duration, and from there it calculates what the lender will make in interest payments over that span.
- Here we're just going to collect the inputs from the client and grab the historical data using yfinance.
- Now begins the risk/asset analysis aspect of the tool. So before we do any portfolio forecasting, we want to give the client more insight to the type of assets they're interested in investing in and how they relate to one another. So for that we calculate percent change, correlation, annualized standard deviation and Sharpe ratios.
- Now with our tool, the annualized standard deviation is very important because we use that to rank the assets in terms of volatility, and we do that because what we provide to the client is 3 sample portfolios with the 5 assets they chose, that are weighted in accordance to risk appetite. (explain example)
- This next part is where we give our client some insight to how they can expect these assets to perform more or less. And so for that we calculate the cumulative returns for those portfolios using the daily returns data
- And now begins the forecasting aspect of our tool, where we leverage Monte Carlo simulations to predict the probability of different outcomes of these differently weighted portfolios. So as you can see here, we run 3 MC simulations each using either the low, med or high risk weight model.
- And finally we take all this data and create a dashboard so our client can visualize our analysis.

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- The last step in our tool is giving the client a general overview of the combined returns from their portfolios and lending. So like Hany mentioned early, we decide how much money from the total capital will be allocated to lending, based off of the level of risk for that portfolio. Additionally, when determining the profits made with lending, the higher the portfolio risk, the higher we set the interest rate. And again, the lending aspect to our tool is to hedge against the uncertainty of buying and holding assets. (Derrick runs functions, results are displayed). So below, we can see the summary results for all 3 portfolios, with their associated lending component. (walk through results).