

## Project Three: Retirement Planning

For this project you will build a tool which simulates a portfolio's value over time while incorporating distributions (withdrawals).

### Inputs: (10 points)

User inputs:

**Portfolio Value, Portfolio Weights, Age, Desired Distribution, Inflation Estimate**

### Part 1: (20 points)

Generate 100 return streams for bonds and equities. Given the portfolio weights, blend the two streams into a portfolio stream. We can assume that the portfolio is rebalanced every year.

Each return should be a random sampling of equity and bond returns from their distribution which we will calculate using historical returns and standard deviations.

### Part 2: (10 points)

Create a table which displays the 25<sup>th</sup>, 50<sup>th</sup> and 75<sup>th</sup> percentiles of these return streams.

### Part 3: (15 points)

Given the current portfolio weights, provide the user with the maximum possible distribution **(adjusted each year for inflation)** where assets last until the horizon age 95% of the time, where X is given by the user.

### Part 4: (15 points)

Given the desired annual distribution (adjusted each year for inflation), find the amount of assets needed to last 95% of the time.

### Part 5: (15 points)

For part 4, allow the user to add a stress test. The stress test will inflict a 10% loss in the first two years, then proceed according to the return streams generated.

**15 points for professional look, ease of use, display, etc.**