**Programing Principles**

**ISA 5085**

Python Project

Write a Python program that demonstrates the key principals learned in class. You can use the example I provided (retirement calculator) or something else more interesting to you. (for example a banking program, library management program, online store with sales, inventory and customer list)

Your grade will be based on the following:

Neat, efficient code

Effective comments

Does it run properly?

Quality of the input and output (neat, formatted, etc)

Turned in on time (11/18)

Python items to be included:

String manipulation, user input, exception handling, at least 1 function, file access (read or write), loops (for or while), containers (list, tuple or dictionary)

Bonus items:

Modules, object oriented programming, CSV files

If you’d like me to review what you have before the project is due, I will give you feedback and you can make adjustments. I will only grade the final submission.

Collaboration

This is an individual project, however it is ok to ask for help from your fellow students or from me. Do not share code with each other, but it’s ok to help point someone in the right direction.

Example Project:

Overview

Create a retirement planning program that requests background parameters from the user, then projects retirement savings and safe withdrawal amount (using the 4% rule) at retirement.

Requirements

1. Request the following user input: current age, age at retirement, current savings, annual savings amount, average rate of return
2. For each year until retirement, calculate and display the return rate, projected return and the new balance using a random return value that is 20% higher or lower than the expected rate.
3. For the year of retirement, display ending balance and a recommended annual withdrawal amount of 4% of the total portfolio
4. **BONUS:** Ask the user if they would like to run a Monte Carlo simulation. If “yes”, ask for the number of iterations in the test. Run the calculations from item 2 above for the given number of times and report the highest, lowest, mean and median of the ending values (displayed in step 3) for each iteration.
5. Provide an option to save the results to a file.