Design Document and Test Plan

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Name of programming challenge for which you submit this document: Retirement Calculations

# Pseudocode

*(See Ch. 1.6 in our textbook for an example of how to write detailed pseudocode)*

Start with main() function and immediately begin declaring variables:

- int P : principal

- float r : interest rate

- int t : # of years money is left in account

- float RS : total calculated at the end of the program

The program should take input from the user. It will ask the user to input a number for P, then a number for r, and finally a number for t.

After that, all of these variables will be used in the final calculation, which is RS = P x (1 + r)^t.

The program will then give an output of the final calculation and return an integer to the user of RS.

After all of this, there will be checks on input for what the program takes in. Characters such as letters, symbols, or anything that is not a number will not be taken in to input, and the program will ask you to try again.

# Test Plan

*(See Ch. 5.13 in our textbook for an example of how to write a test plan)*

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| --- | --- | --- | --- |
| **Test #** | **Purpose** | **Input** | **Expected Output** |
| 1. Correct Input #1 | Checks to make sure that the typed input gives the correct output. | (user prompt to enter P): 1000  (user prompt to enter r as a decimal): 0.025  (user prompt to enter t): 20 | Your retirement savings will be $1638.62 |
| 1. Correct Input #2 | Checks to make sure that the typed input gives the correct output. | (user prompt to enter P): 1000  (user prompt to enter r): 0.025  (user prompt to enter t): 40 | Your retirement savings will be $2685.06 |
| 1. Correct Input #3 | Checks to make sure that the typed input gives the correct output. | (user prompt to enter P): 1500  (user prompt to enter r): 0.025  (user prompt to enter t): 20 | Your retirement savings will be $2457.92 |
| 1. Correct Input #4 | Checks to make sure that the typed input gives the correct output. | (user prompt to enter P): 1500  (user prompt to enter r): 0.025  (user prompt to enter t): 60 | Your retirement savings will be $6599.68 |
| 1. Correct Input #5 | Checks to make sure that the typed input gives the correct output. | (user prompt to enter P): 2000  (user prompt to enter r): 0.025  (user prompt to enter t): 60 | Your retirement savings will be $8799.57 |
| … | *(Feel free to add more test cases)* |  |  |