

# CS150-01 Assignment 4

## Retirement

**Date Assigned:** Monday, October 4, 2004

**Date Due:** Wednesday, October 13, 2004

**Points:** 50 (40 for the program, 10 for the documentation)

### 1 Problem statement

As soon as you start working, you should begin investing in a retirement plan. The sooner you start investing, the better your retirement.

Write a C++ program that will allow the user to input a yearly salary, a percentage of that yearly salary to invest in retirement, a yearly interest rate, and the number of years that you will continue investing. For every month you should print the beginning balance (initially zero), investment amount, interest earned, ending balance, and the year of investment (start from one).

Your output should look exactly like the following:

```
Retirement Calculator
```

```
Enter your yearly income: 25000.0
```

```
Enter the percentage of your income you want to invest: 0.03
```

```
Enter the fixed interest rate you expect to make on your investment: 0.08
```

```
Enter the number of years until retirement: 1
```

Beginning	Investment	Interest	Ending	Year
Balance	Amount	Earned	Balance	
0.00	62.50	0.42	62.92	1
62.92	62.50	0.84	126.25	1

```
.....
```

## 2 You need to do the following for this assignment

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### 1. Program Documentation

- (a) **Assignment Details and Introduction:** At the top of the page, write down the course number, assignment number, your name, my name, due date and submission date. After that, write one paragraph describing what your program does. Here you are restating the problem in your own words
- (b) **Problem Analysis:** Identify the input to your program, the output from your program, and any internal data in your program. You should also identify the data type and indicate whether it should be a variable or a constant.
- (c) **Algorithm:** Write out the steps that you'll need to do complete the program. Be as detailed as possible. It will help you write the program. When writing the steps of the algorithm, don't write any C++ code.
- (d) **Test Results:** These are solutions to the problem using some method other than your computer program. They are often done by hand, but could include experimental or other results. These results should be explicitly compared to those from the program to demonstrate that the program works. The number of specific cases done should be sufficient to prove beyond a reasonable doubt that the program works.

### 2. Program Implementation:

- (a) Write the C++ code then build and run it in Visual Studio .NET. Name your project "04Retirement-PUNetId", e.g. "04Retirementkhoj0332".
- (b) Make sure to comment your code.
- (c) Follow the coding standards. Use the coding standards that I handed out with the previous assignment.
- (d) Test the code as much as you can for different values to make sure it works.
- (e) Remember, code that does not build or run loses 70% of the points.

## 3 What to turn in

1. Turn in your program documentation to me in class on the day it's due. These should be hard copies. You may write them by hand or use a word processing program to generate them, but please make sure that they are neat and easy to read!
2. Turn in a hard copy of your code attached to the documentation. You must make sure that your code follows the coding standards in order for you to receive full credit.
3. Place your completed project folder in the CS150-01 Drop folder by 1pm on Wednesday, October 13. Anything turned in after that but before 1pm on Thursday, October 14, will be considered late and you will automatically lose 20% of the grade. Your project MUST be created in Visual Studio .NET, and you MUST submit the complete Visual Studio .NET project folder otherwise you will receive a zero on this assignment.
4. Submit two text files containing the output from your program after running it with the following data:
  - (a) Annual starting salary of \$35,000, investing 4% of your salary annually, expecting a 7% return, for 40 years.
  - (b) Annual starting salary of \$35,000, investing 4% of your salary annually, expecting a 12% return, for 40 years.