CS 410P

# LAB 3L

## Purpose

This exercise gives you practice with understanding the problem, creating proper expressions, and output formatting.

## Problem

A) If P dollars (called the principal) is invested at 4% interest rate compunded annually, then the future value of the investment after n years is given by the formula:

$$\text{future value} = P\left(1 + \frac{r}{100}\right)^n.$$

Calculate future value of an investment after the user enters the principal, interst rate, and number of years.

B) The present value of f dollars at interest rate r% compounded annually for n years is the amount of money that must be invested now in order to grow to f dollars (called the future value) in n years where the interest rate is r% per year. The formula for present value is:

$$\text{present value} = \frac{f}{\left(1 + \frac{r}{100}\right)^n}.$$

Calculate the present value of an investment after the user enters the future value, interest rate, and number of years.

## Output Formatting

The dollar amounts must be displayed with as a currency value with appropriate comma separators, the interest rate should be displayed as a percentage and the number of years should be an integer.

## Sample Program Run

The public folder for the lab has 2 samples showing you the inputs and output for 2 different program executions. Look at the samples to decide how the input (prompts) should be accepted from the user and the type of output desirable.

## Grade Key (Part A and Part B are worth equal points)

| A | Name, comments | 5 |
|---|---|---|
| B | Proper inputs and prompts | 10 |
| C | Expression value correct, result is accurate | 40 |
| D | Works correctly for various input values (both integer and floating point inputs) | 15 |
| E | Output formatting according to specification | 30 |