Homework 1

Files to submit: **loan_cost.c**

Time it took Matthew to complete: 5 minutes

- All programs must compile without warnings when using the -Wall and -Werror options
- Submit only the files requested
  - Do **NOT** submit folders or compressed files such as .zip, .rar, .tar, .targz, etc
- Your program must match the output exactly to receive credit.
  - Make sure that all prompts and output match mine exactly.
  - Easiest way to do this is to copy and paste them
- All input will be valid unless stated otherwise
- The examples provided in the prompts do not represent all possible input you can receive.
- All inputs in the examples in the prompt are underlined
  - You don't have to make anything underlined it is just there to help you differentiate between what you are supposed to print and what is being given to your program
- If you have questions please post them on Piazza

For this problem you will be calculating the monthly payment on a loan as well as the cost of borrowing the loan. The payment amount of a loan is calculated as

$$payment = \frac{iP}{1-(1+i)^{-n}}$$

where

P = principal (amount you borrowed)
i = interest rate
n = total number of payments

Your program should ask the user for the following information in this oreder

1. The amount they are borrowing
2. The annual interest rate
   1. We will assume that interest is going to compounded monthly for this problem (the norm) so the actual interest rate to use in the formula will be $\frac{1}{12}$ of the annual interest rate
3. The number of payments to be made

Your program should report the monthly payment amount as well as the cost of the loan (total paid on the loan minus the principal).

Additional notes.

1. You will need to use the pow function to calculate the cost of the payment so don't forget to include math.h and to compile with -lm

Examples

1. Please enter the amount of money you borrowed: $1000
   Please enter the annual interest rate: .05
   Please enter the number of payments to be made: 12
   A loan of $1000.00 with an annual interest of 0.05 payed off over 12 months will have monthly payments of $85.61.
   In total you will pay $1027.29, making the cost of your loan $27.29.

2. Please enter the amount of money you borrowed: $60000
   Please enter the annual interest rate: .07
   Please enter the number of payments to be made: 120
   A loan of $60000.00 with an annual interest of 0.07 payed off over 120 months will have monthly payments of $696.65.
   In total you will pay $83598.11, making the cost of your loan $23598.11.