CS150 Assignment 1
A Gradeschool Fraction Calculator

Date assigned: Wednesday, September 16, 2009
Design document due: Friday, September 18, 2009, **5pm** (5 points)
Program due: Friday, September 25, 2009, **9:15am** (25 points)

The purpose of this assignment is for you to write a complete program with Visual Studio 2008, and use arithmetic operators. If you run into any problems with this assignment, it is important that you come and see me <u>early</u> so that I can help. Also, it is very important for you to do this assignment on your own. Every assignment you will be doing from now on will require the techniques you learned in class and in the lab, so it's very important for you to get the hang of them.

Here is the problem that you are to solve

> Young gradeschoolers often have trouble adding fractions and computing the decimal equivalent of a given fraction. You are to write a complete C++ program that will give the gradeschooler the ability to enter any two fractions. As output, your program is to print the two fractions, their sum as a fraction (this fraction does not need to be reduced to lowest terms), and the decimal equivalent of the resulting fraction. You can assume that the value zero is never entered for the denominator and that each numerator and denominator will be a whole number.

Here is exactly what your program is to output, and user input is in bold (asterisks and all):

```
***********************
* Fraction Calculator *
***********************

Enter Fraction #1's numerator: 1
Enter Fraction #1's denominator: 2

Enter Fraction #2's numerator: 2
Enter Fraction #2's denominator: 3

1/2 + 2/3 = 7/6 which in decimal is 1.16667
```

To complete this assignment you must submit the following:

1. An electronic copy of your program on Turing

   a. Create a new C++ project in Visual Studio. You should follow the same steps that you did during the lab to create the project. Name your project **01FractionPUNet**. It is *vital* that you name your project correctly!

b. Type the solution (fully documented/commented) to the problem into your project. The comment block at the top of the program needs to contain your name, the date the assignment is due, the class name, assignment number and name, and a brief description of the program.

c. Pay attention to the example output! Your program's output should look **exactly** like the example output! The spacing and newlines in your output must match exactly.

d. Make sure that your program compiles and runs correctly. If you get any errors, double check that you typed everything correctly. Be aware that C++ is case-sensitive.

e. Once you are sure that the program works correctly it is time to submit your program. You do this by logging on to Turing and placing your complete project folder in the **CS150-02 Drop** folder.

f. The program must be in the drop folder by 9:15am on the day that it is due. Anything submitted after that will be considered late.

2. A hard copy of your program

a. The hard copy must be placed on the instructor's desk by 9:15 am on the day that it is due.

b. The hard copy must be printed in color, double-sided, and stapled if necessary.

3. An electronic copy of your design document

a. Before you start you need to think about the data in your program and the calculations you will need to perform. Answer the following questions in a BoxerApp document (named CS150_01ProgramDesignPUNetID) and share it with the instructor (profchadd@gmail.com). Be sure to answer the questions in complete sentences where appropriate. This design document is due on **Friday at 5pm.** The last page of this document explains how to use BoxerApps.

b. Design Questions:
   1. Briefly describe the data that your program will need to use.
   2. List the variable declarations necessary to store the data listed in 1.
   3. Describe why you have chosen each of the data types that you used in 2.
   4. Briefly describe the calculations you will need to perform in your program. Be sure to explain which variables from 1. will be used in each calculation.

Good luck! And remember, if you have any problems, come and see me straight away. ☺

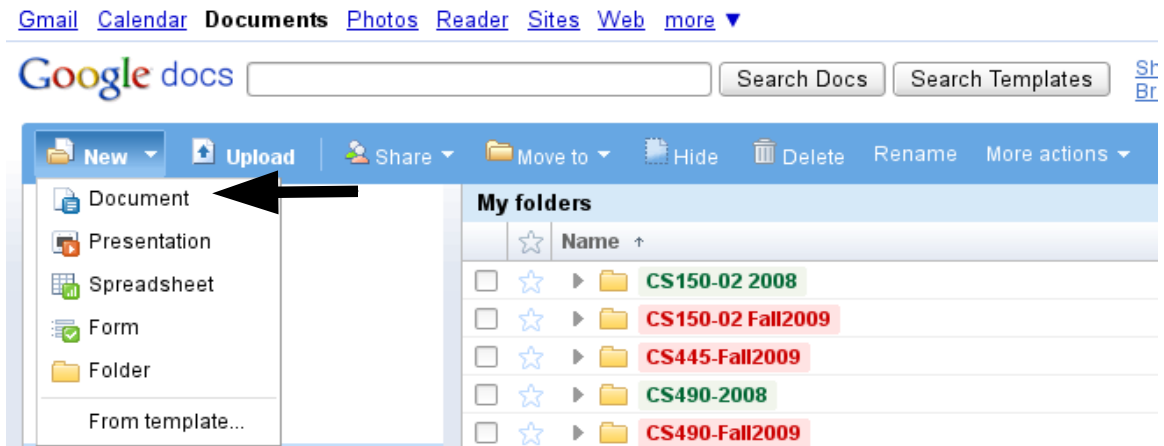As a reminder, here are the assignment rules as detailed in the syllabus:

1. **Programming Assignments:** All assignments are to be programmed in C++ in Visual Studio. Both the electronic copy and hardcopy of your assignments are due at 1pm on the day that they are due.

   - The hardcopy must be placed on the instructor's desk before 9:15am on the day the assignment is due. If the hardcopy uses more than one sheet, then all sheets must be stapled. The code must be printed doubled-sided and in color. Failure to submit a hardcopy of the assignment will result in a loss of 30% of the assignment points.

   - The electronic copy must be placed in the `CS150-02 Drop' folder on Turing by 9:15am on the day the assignment is due. Failure to submit an electronic copy will result in a loss of 70% of the assignment points.

   - A program that does not successfully compile or produces no output loses 70% of the assignment grade.

   - Assignments can be turned in up to 24 hours late with a penalty of 10% of the grade. If the assignment is between 24 and 48 hours late you will lose 20% of your grade. Anything turned in later than 48 of the assignment deadline will NOT be accepted.

   - *One exception.* I do allow one programming assignment to be turned in up to ONE day late without penalty. Your reason does not matter and I do not need to know why. All other late assignments will carry the standard loss of points. To use this gift, you *must* send me an email before 1pm on the day the assignment is due. This email is to have GIFT as the subject and you must include your name and the assignment number and name in the body of the email. If this information is not included in the email then the assignment will be considered late.

   - Make sure that you test your programs before submitting them. You may only submit your assignment once.

   - All code in any form generated from this course becomes the intellectual property of Pacific University. You may not share this code with anyone without obtaining written permission from Pacific University.

   The printers in Marsh are slow. Do NOT expect to be able to print your code 10 minutes before class!
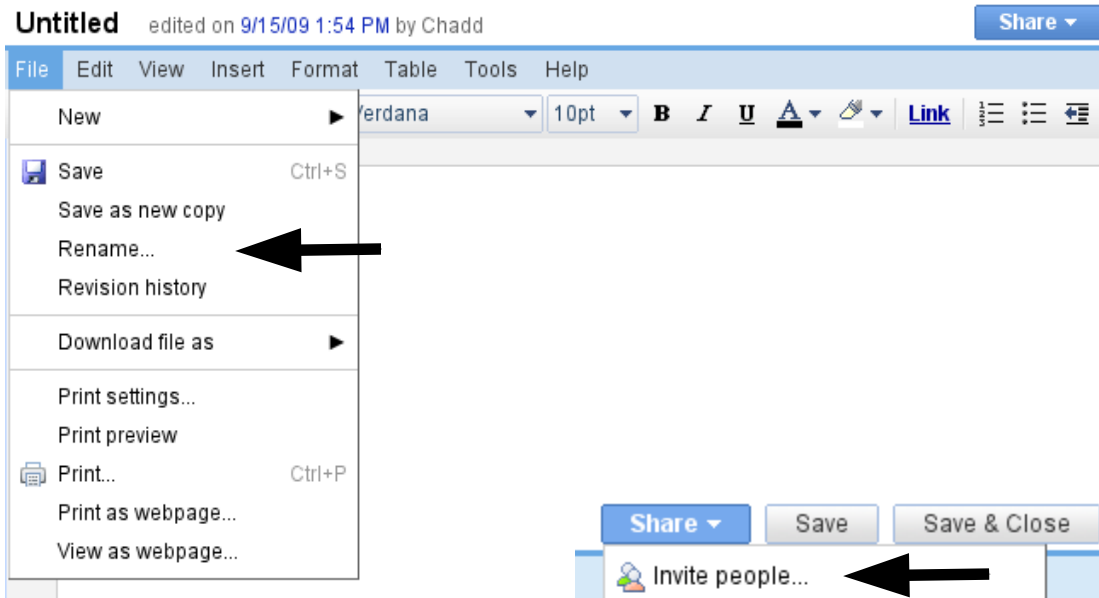
Log on to **BoxerMail** and open up **BoxerApps**

http://www.pacificu.edu/uis/

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- Rename the document to CS150_ 01ProgramDesignPUNetID

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  document!
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