CIS 230 – Spring 2006
Homework #2

Due Dates:
Part 1: Due in lab Monday, January 30, 2006 (To be shown to the instructor during lab. You will be allowed to keep these documents to finish your program)

- A description of the program (that you will include in your comments)
- Pseudocode for your program (see Psuedocode notes)

Part 2: Due by 10:00 AM, Wednesday, Feburary 1, 2006

- Your program code (your .cpp file)
- Your script run (your typescript file – see "script" notes)

Program Description:
Write a program that can convert Fahrenheit temperatures to Celsius and Celsius temperatures to Fahrenheit.

Use the following calculations:
C = (5 / 9) * (F -32)
F = (9 / 5) * C + 32

The program must:

- Tell the user what it does
- Prompt the user for a temperature
- Ask the user if that temperature is Fahrenheit ('f') or Celsius ('c')
- Display:
  - "Converting to Celsius…" Or "Converting to Fahrenheit…"
- Display the original temperature and the converted temperature (for example: "32 degrees Fahrenheit = 0 degrees Celsius")
- Ask the user if they would like to calculate another value. If so, repeat.

Programming requirements:

- Use at least one If Statement
- Use at least one While Statement
- Test to make sure that the user entered a valid option ('c' or 'f') (Program does not have to repeat **because** of this, but the user still must be asked if they would like to calculate another value.)

Programming tips:

- Remember integer division: 5 / 9 = 1. This is NOT the result we want for this equation.
- Check for both lower case and upper case letters (Remember the || Operator)

Compiling:
To compile (without linking, loading, and creating an executable) this program (with a file name of temp.cpp for example):
> g++ -c temp.cpp

To compile this program (with a file name of temp.cpp and an output file named temp.out):
> g++ temp.cpp –o temp.out

To run/test your program:
> temp.out

Submitting:

Compile your program, type "script" (see notes), execute your program with the following test values:

Test values:
104 f
0 c
9 r
20 c
86 f
-10 c

(You MUST use these values for your submission. You are free and encouraged to use other values for testing your program)

Once your program has finished, type "exit"

When you are confident that your program compiles and runs as expected, submit the following files using the submission tool on the qs-server.

Files:
.cpp file (feel free to name this youself.
typescript

>/class-files/gilden/230submit

(This is homework #2)

Script:
The "script" command is available in linux that captures everything that is displayed on the screen and saves it to a file (named "typescript" unless otherwise specified). When you are done recording, type "exit".

When you are finished testing your program, you will use "script" to capture your program runs.

A simple example:

Type:	Results:

> script
> formatted
  6
 18
124
--- 	
148
> exit
> more typescript
	Script started on Mon 23 Jan 2006 08:13:43 PM PST
	> formatted
	  6
	 18
	124
	--- 	
	148
	> exit
	exit
	
	Script done on Mon 23 Jan 2006 08:13:48 PM PST

Your program run might look something like:

Script started on Mon 23 Jan 2006 08:19:51 PM PST
> temp.out

Welcome to the temperature conversion program!

This program will convert a temperature into Fahrenheit or Celsius
Please enter a temperature: 32
Is that Fahrenheit ('f') or Celsius ('c')? f
Converting to Celsius...
32 degrees Fahrenheit = 0 degrees Celsius.
Would you like to calculate another temperature? y
Please enter a temperature: 40
Is that Fahrenheit ('f') or Celsius ('c')? c
Converting to Fahrenheit...
40 degees Celsius = 104 degrees Fahrenheit.
Would you like to calculate another temperature? n
Thank you for using this program.
blg10@qs-server:~/cis230/hw02> exit
exit

Script done on Mon 23 Jan 2006 08:20:23 PM PST

Psuedocode:
(information from C++ How to Program, 5th Edition, Deitel & Deitel, Pearson Education)

Pseudocode (or "fake" code) is an artificial and informal language that helps programmers develop algorithms without having to worry about the strict details of C++ syntax. Pseudocode is similar to everyday English; it is convenient and user friendly, although it is not an actual computer programming language.

Psuedocode does not execute on computers. Rather, it helps the programmer "think out" a program before attempting to write it in a language, such as C++.

A carefully prepared pseudocode program can easily be converted to a corresponding C++ program. In many cases, this simply requires replacing pseudocode statements with C++ equivalents.

Pseudocode normally describes only executable statements, which cause specific actions to occur after a programmer converts a program from pseudocode to C++ and the program is run on a computer. Declarations (that do not have initializers or do not involve constructor calls) are not executable statements.

Example:
A program accepts two integers from a user and displays the sum.

Pseudocode:
Prompt the user to enter the first integer
Input the first integer

Prompt the user to enter the second integer
Input the second integer

Add first integer and second integer, store result
Display result

If you need more information on pseudocode, you can visit:
http://www.csc.calpoly.edu/~jdalbey/SWE/pdl_std.html