CS120L – C Programming Language Labs
Fall 2014
Week 4: Basic Coding for Simple Problem Solving

From this lab onwards, we will be using C programming languages to solve real problems. And your solutions will be graded. For this lab, since we have only started to learn some basic data types, you may use the default program structure as follows.

```
#include <stdio.h>
int main()
{
      /*
      Declare variables
      e.g.
      int x;
      float y;
      double z;
      …
      */

      /*
      Scan input from the user
      e.g.
      scanf("%d %f %lf", &x, &y, &z);
      …
      */

      /*
      Print output to the screen
      e.g.
      printf("%d %.2f %.2lf", x, y, z);
      …
      */

      return 0;
}
```

You can compile your program using:
`gcc -Werror -Wall -Wextra -ansi -pedantic program.c –o program.exe`

(Please make sure that you don't use **`–o program.c`**, otherwise you will overwrite your source code).

Exercises
1. Modify the program for the greatest common divisor algorithm given in last week lab such that the algorithm can take in all kinds of integers: positive, negative or zero. (4 marks)

Input: a b
Where a and b are signed integers, which can be zero or negative.
Output: GCD of a and b.
GCD is always non-negative. If a is 0, GCD is b. If b is 0, GCD is a.

You should save the program in a file: "q1.c". Note: your program should only print the final result.

2. Write a program to find the remainder of a division between two floating-point numbers. For example: the remainder of a division between 8.56 and 2.45 is 1.21. We shall display the result with two digits after the decimal points. (4 marks)

Input: a and b
Where a and b are floating-point numbers that are assumed to have at most two decimal places (e.g. 102.85 and 0.20). It is also assumed that the user will only enter non-negative a, and positive b.
Output: The remainder of a/b (e.g. 1.21 in the above example).

You should save the program in a file: "q2.c". Note: your program should only print the final result.

3. Try out this piece of code:

```
int x;
scanf("%i", &x);
printf("%i", x);
```

a. Compile and execute your program. Upon executing, type in **0123**. What is the output? (1 mark)

b. Can you guess what happens? (1 mark)

You should save your answers in a text file: "q3.txt".

Deliverables
You should follow the guideline for the lab submission in the course website. In particular, you should go through Assignment Submission session carefully.

For this lab, you should submit a single ".zip" file, which contains q1.c, q2.c and q3.txt. You should name your ".zip" file as: cs120b_<your Digipen login id>_4.zip.

The deadline of submission is 26th September 23:59 and late submission will receive zero mark.