CS101 Lab-3

Today's Linux Commands

- `mkdir -p ~/lab3g1` to create directory and `cd ~/lab3g1` to change your working directory to `~/lab3g1`
- Recall how to write, compile, and run C programs from previous labs.
  - `gcc hello.c -o hello.out` to compile program file `hello.c` into `hello.out`
- Today, we'll give structured input to our programs with **Input/Output Redirection.**
  - Manual typing is slow and cumbersome. Can't really test a program that takes 1000 input numbers and adds them
  - We use `<` on terminal to redirect input
  - The `<` tells the shell, "Don't wait for the keyboard; use this file instead!"
  - Usage: `./hello.out < input.txt` (assuming `hello.out` and `input.txt` are in the present working directory)
  - Warning: write the `input.txt` exactly as you would give regular input. Use whitespaces/linebreaks correctly.
  - As with input, we can also redirect output with `>` The `>` tells the shell, "Don't wait print on terminal; use this file to store output instead!"
  - `/hello.out < input.txt > output.txt` assuming reads input from `input.txt` and writes the output to `output.txt` (in the same working directory).

Today's Computer Engineering

- We will open a computer case and have a look at some parts like Motherboard/CPU, RAM, Hard Disk, and internal wiring. Wear your apron! :-)

Instructions for the lab assignment:

When you are done with the following programs, raise your hand and a lab instructor will verify your **first** program and ask a couple of questions. You will be graded upon the correctness of your program, naming of your variables, and indentation and comments in your code.

1. Write a program to take input of an expression two signed integers and an operator: `a c b`. Here, `c` is an operator in `{+, -, *, /, % }` and `a` and `b` are integers with absolute values less than `1000`. The program should then evaluate the expression and print the result. If the user wants to divide by `0`, you should print an error message.

2. Write a program that takes input two long doubles `a` and `b`. It should then swap their values and print the swapped values. Write your input in `input.txt` file and use **input redirection** to pass it to the executable file. You should use **output redirection** to save the output as `output.txt`.

3. Write a program that takes the length of the hypotenuse of a right-angled triangle as int and one if its angle as either radian or degrees (in double). It should then print the lengths of the adjacent and opposite sides. If the input angle or the length of the hypotenuse is invalid (i.e. no such right-angled triangle can exist), you should print an error message.