**Lab #0: Trial Lab   
CS1010 AY2017/8 Semester 1   
Date of release: 21 August 2017, Monday, 8am.   
Submission deadline: Week 3, before your discussion session.   
School of Computing, National University of Singapore**

**0 Introduction**

This is a non-graded lab. However, you need to submit your program on **CodeCrunch** before your first discussion session, and show your discussion leader (DL) during your first discussion session the submission log.

This lab requires you to do only 1 exercise.

If you have any questions on any lab exercise, please may post your queries **on the relevant IVLE discussion forum**. Important: Do **NOT** post your programs (partial or complete) for lab assignments in the forum before the deadline!

**1 Exercise 1: Volume of a Box**

**1.1 Learning objectives**

* Using CodeCrunch.
* Run through edit-compile-run cycle of program development.
* Using the UNIX environment.
* Detection and correction of errors in a program.

**1.2 Task statement**

Write a program **box\_volume.c** that reads three positive integers representing the length, width and height of a box, and computes the volume of the box.

You may assume that the volume of the box does not exceed the maximum value representable in the int data type. (What is that value? See [1.5 Exploration](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1_5) below.)

Check sample run for input and output format, and submit your program through [CodeCrunch](https://codecrunch.comp.nus.edu.sg/" \t "_blank).

**1.3 Sample run**

Sample run using interactive input (user's input shown in blue; output shown in **bold purple**). Note that the first two lines (in green) below) are commands issued to compile and run your program on UNIX.

$ gcc -Wall box\_volume.c -o box\_volume

$ box\_volume

Enter length: 12

Enter width : 3

Enter height: 10

**Volume = 360**

**1.4 Important notes**

* You may download a skeleton program box\_volume.c from the next section (section 1.5). The skeleton file is almost complete and you just need to correct a few statements in the program.
* CodeCrunch awards marks for correctness ONLY if your output adheres to the given format. Hence, do not add any other characters (such as blanks that are not asked for in your output, or change the spelling in your output. The following outputs will all be graded as **incorrect** for this exercise:
  + volume = 360 (reason: "Volume" mis-spelt as "volume")
  + Volume=360 (reason: spaces around = sign missing)
  + Volume = 360 (reason: additional spaces before "Volume")
  + Volume   =   360 (reason: too many spaces around = sign)
  + Volume = 360. (reason: additional dot at end of line)
* The last output statement in your program must end with a new line character '\n'. Otherwise, it is possible that your program may fail the correctness test of CodeCrunch.

**1.5 Skeleton file and sample test data**

* [box\_volume.c](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/skeleton/box_volume.c)
* Input files: [box1.in](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/input/box1.in) | [box2.in](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/input/box2.in) | [box3.in](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/input/box3.in) | [box4.in](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/input/box4.in) | [box5.in](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/input/box5.in)
* Output files: [box1.out](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/output/box1.out) | [box2.out](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/output/box2.out) | [box3.out](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/output/box3.out) | [box4.out](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/output/box4.out) | [box5.out](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/testdata/output/box5.out)

**1.6 Explanation on input and output files**

Note that in Section 1.5 above we provide the input and output files for your ease of checking. In writing your programs, you may assume that the input data are entered interactively (through stdin, i.e. the keyboard), and the outputs of your program are displayed on the monitor (stdout).

CodeCrunch takes your submitted program, compiles and runs it on each of the test data input files provided, using a technique called input file redirection.

You can use the technique too. If you have an input file, say, **box1.in**, that contains the input data, you could make your program reads in data from this file instead of entering the data interactively through the keyboard. For example, assuming that your program is called **a.out**, the following command:

a.out < box1.in

runs **a.out** which draws the input data from the file box1.in.

You may also use output redirection to redirect the output of your program to a file, instead of showing it on the monitor. For example:

a.out < box1.in > 1.out

The above command saves the output of your program to the file 1.out. You may then compare the content of this file with the content of the provided output file box1.out with the expected answer, by using the UNIX diff command as follows:

diff 1.out box1.out

If the diff command does not produce any output, it means that the two files 1.out and box1.out are identical.

**1.7 Number of submissions**

For this exercise, the number of submissions is **99**.

**1.8 Exploration**

What is the largest value available for int data type? Search the Internet for the answer, and write a separate program (no need to submit this) to test it out.

**2 Deadline**

You must submit the program on CodeCrunch in the presence of your DL during your first discussion session.

**3 Reading**

Read up [Lab Guidelines](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/labguide.html) to prepare yourself for subsequent lab assignments.

* [0 Introduction](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section0)
* [1 Exercise 1: Volume of a Box](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1)
  + [1.1 Learning objectives](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1_1)
  + [1.2 Task statement](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1_2)
  + [1.3 Sample run](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1_3)
  + [1.4 Important notes](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1_4)
  + [1.5 Skeleton file and sample test data](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1_5)
  + [1.6 Explanation on input and output files](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1_6)
  + [1.7 Number of submissions](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1_7)
  + [1.8 Exploration](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section1_8)
* [2 Deadline](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section2)
* [3 Reading](http://www.comp.nus.edu.sg/~cs1010/labs/2017s1/lab0/lab0.html#section3)

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