Learning Goals:

- learn to write a basic c++ program
- learn to compile and run a basic c++ program
- apply basic c++ syntax to compute a value
- learn to use git to submit lab files

What to hand in:

- Hand all of the following in using Git. For details on how to use Git, please see "How to submit labs and assignments" on the course page (csci.viu.ca/~carruths/Courses/CSCI160). For this lab, there is an example at the end of lab of how to do this.
  - Lab1Prelab.pdf
    - **For this lab only: it is due with the lab1.cpp and checklist. Future labs, you should submit using git the night before your lab.**
  - Lab1Checklist.pdf
    - Due: 23:59, three days following your assigned lab section (i.e. Tuesday Lab is due Friday, Thursday Lab is due Sunday)
  - lab1.cpp
    - Due: 23:59, three days following your assigned lab section (i.e. Tuesday Lab is due Friday, Thursday Lab is due Sunday)
- Note:
  - late submissions will be penalized 20% per day, and will not be marked after 3 days so that solutions can be posted in a timely manner
  - all work must be individual. Plagiarized work will result in a mark of 0. Further penalties may apply.

Marking Scheme:

- Prelab is completed on time – 1 mark
- All files meet given specifications and requirements – 6 marks
- Code readability and comments – 2 marks
- Self-assessment is consistent with quality of work – 1 marks

Part 1:

In lab, we will write a simple C++ program that computes the average time the user spends commuting. The program will prompt the user to enter two values:

- The distance they travel to school in kilometers
- The typical speed they travel in kilometers per hour

The program will then compute the amount of time spent commuting in minutes, and output it to the console:

$$\text{(distance travelled)} \div \text{(speed)}$$

Part 2:

Before submitting your program, modify it so that it:

- outputs a short description of that the program will do
- accepts a third value: the time the user spends looking for parking

- outputs (in addition to the commute time) the total time, including finding a parking spot

(distance travelled) ÷ (speed) + (find parking)

Specifications:

Your lab1.cpp program will

- Describe what the program will do
- In this order:
  - Prompt the user to enter distance they travel to school in kilometers
  - Prompt the user to enter the typical speed they travel in kilometers per hour
  - Calculate the amount of time needed to get to school
  - Output this value to the user in **minutes**
  - Prompt the user to enter the amount of time taken to find parking
  - Output the total time taken in minutes in a meaningful way
- Terminate safely

Requirements:

- Code compiles and runs with no warnings
- Code terminates safely (no crashes)
- Code compiles with no errors

Code Readability and Comments:

- header comment includes:
  - name of author
  - name of program
  - brief description of purpose of program
- Brief comment for all variable declarations
- Brief comment for all logical blocks
- Layout:
  - correct placement of braces
- Correct naming conventions followed
- Appropriate use of constants

Bonus:

- Output the total times in hours and minutes:
  - e.g. for 97 minutes output, `01:37`

Assumptions:

- No error checking is required
- All values entered by the user are positive (> 0)
- All values entered are numerical

Submitting Lab 1

Use the following command to submit your first lab. Please note that where you see 10 must replace this with 09 if you’re in the Tuesday lab section.

Create your submission location folder (this will be different from where you work on your labs):

Fork the lab (please see the StudentGit instructions to set up the remainder of your labs)

```
ssh csci fork csci160-10/lab1 csci160-10/$USER/lab1
```

You should see output that looks something like this:

```
    Cloning into bare repository '/home/csciadm/repositories/csci160-
    10/sarahstu/lab1.git'...
    done.
    csci160-10/lab1 forked to csci160-10/sarahstu/lab1
    Populating new csci160-10/sarahstu/lab1 repo with default files.
    Cloning into 'lab1'...
```

Move into your submission directory:

```
cd ~/csci160
```

clone lab1:

```
git clone csci:csci160-10/$USER/lab1
```

You should see output that looks something like this:

```
    Cloning into 'lab1'...
    remote: Counting objects: 4, done.
    remote: Compressing objects: 100% (2/2), done.
    remote: Total 4 (delta 0), reused 0 (delta 0)
    Receiving objects: 100% (4/4), 349 bytes | 0 bytes/s, done.
```

NOTE: This command will only work if either the directory doesn't exist, or if it exists and is empty. If you've already put files in your lab directory and try to clone, you'll see an error like this:

```
fatal: destination path 'lab3' already exists and is not an empty directory.
```

Move into lab1, and see what's there:

```
cd lab1
ls
```

You should see output that looks something like this:

```
     README
```

We'll work together in lab to create lab1.cpp

Once you're done, copy the Lab1Checklist.pdf and Lab1Prelab.pdf into this directory

Take a look, and make sure everything is there:

```
ls
```

You should see output that looks something like this:

```
lab1.cpp  Lab1Checklist.pdf Lab1Prelab.pdf README
```

add each file to the repository:

```
git add lab1.cpp
git add Lab1Checklist.pdf
git add Lab1Prelab.pdf
```

commit the files:

```
git commit –m "submitting lab1"
```

You should see output that looks something like this:

```
[master 4d03f93] submitting lab1
 3 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 lab1.cpp
 create mode 100644 Lab1Checklist.pdf
 create mode 100644 Lab1Prelab.pdf
```

push the files:

```
git push
```

You should see output that looks something like this:

```
Counting objects: 4, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 143.00 KiB | 0 bytes/s, done.
Total 4 (delta 0), reused 0 (delta 0)
remote: course = 'csci160-10'
remote: assign = 'lab1'
remote: user = 'sarahstu'
remote: Deadline: 2019-09-15 23:59:00
remote: Now:      2019-09-08 13:29:25
remote: lab1 OK - within deadline
To csci:csci160-10/sarahstu/lab1
   72733cb..4d03f93  master -> master
```