CSC 1300 LAB 2

Fall 2024, April Crockett

Concepts

- Data types, variable definitions
- Arithmetic expressions
- Input, input with different data types
- Output
- Formatting your code for readability
- Formatting your output for improved user experience

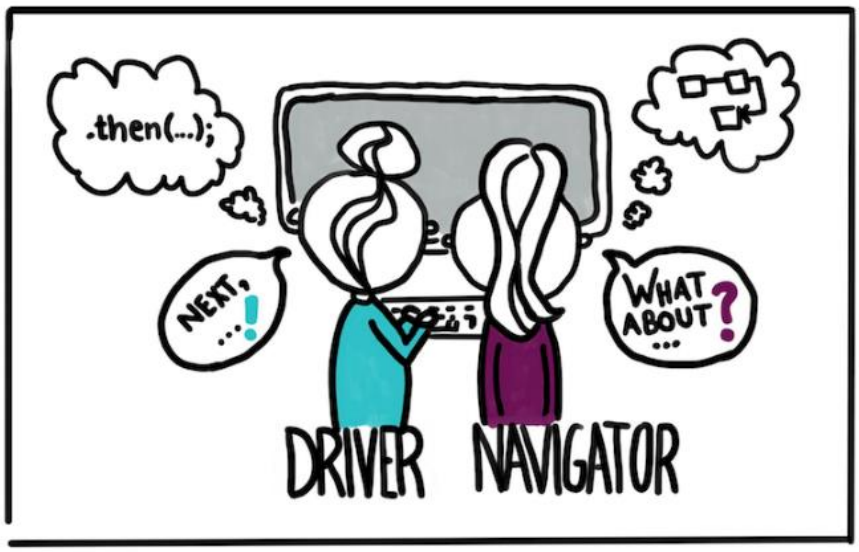
Paired Programming Assignment

Your Partner

Your lab instructor has assigned you a lab partner for this lab (or have allowed you to choose your partner).

You are required to complete this lab with your lab partner using paired programming techniques.

Your first step is to **exchange preferred contact information** just in case you are unable to complete the lab during lab and need to meet outside of lab class to finish.



Submission in iLearn

You will both upload the same exact zip file to your Lab 2 assignment in ilearn.

Each source file should have both of your names in the comment block at the top.

Both students will receive the same feedback and grade.

How to Pair Program

One of you can start writing (or debugging) the initial code (**DRIVER**) while the other reviews and suggests improvements (**NAVIGATOR**).

Take turns regularly (every 10 to 15 minutes) to ensure both of you are actively involved.

Part 1: TGI Fridays

Image from Zookeeper 2011 movie – Gorilla at TGI Fridays Scene - https://www.youtube.com/watch?v=8Ka7y4Rmk78

Part 1 Directions

You and your gorilla friend go to TGI Fridays to get some hot wings. Complete a given program so that the waitress can enter in how many hot wings you all order and it will calculate the total amount, including tax. Each individual hot wing is .99 cents. Sales tax for food is 8.5%.

Hint: tax and hot wing price are amounts that will never change in your program, so make them constant variables.

1. Get the partial program from the given folder for Lab 2 called **lab2a_given.cpp**.
2. Rename the program **lab2a.cpp**.
3. Complete the program as described above. It should behave like the sample output below.

Part 1 Sample Output

User input is highlighted in yellow.

```
Please input the number of hot wings purchased:  4
Your total bill is $4.30
```

Part 2: Reading in Different Data Types

Part 2 Directions

A user is at a convenience store and is purchasing two items. Get the item name, quantity, and price of each item and then calculate the total bill including tax where tax is 9.75%.

1. Name your program **lab2b.cpp**.
2. The names of the items should be strings. It is good practice to add the directive #include <string> at the top of your program.
3. Your program should look like the sample output below.

Part 2 Sample Output

User input is highlighted in yellow.

```
Please input the name of the first item:  Chocolate Milk
Please input the number of Chocolate Milk bought:  2
Pleae input the price of Chocolate Milk:  $3.99


Please input the name of the second item:  Broccoli
Please input the number of Broccoli bought:  3
Pleae input the price of Broccoli:  $2.50

The total bill is $16.99.
```

Part 3: Caesar Cipher

Image from https://goopenva.org/courseware/lesson/5166/overview

About the `char` Data Type

Characters are stored in memory as numbers as shown in the ASCII character chart (https://www.asciitable.com/). For example, the capital letter '**A**' is stored as the number **65** in memory. Therefore, you can add or subtract an integer from a character to get a different character. If I take the character '**A**' and subtract 1 in C++, I will get the '**@**' character.

Part 3 Directions

1. Create a program named **lab2c.cpp**.
2. Place a comment block at top with your & your partner's names, the title, today's date, and a description of this program.
3. Tell the user to enter in seven characters and that you will use a Caesar Cipher to decode it.
4. Then, allow the user to enter in seven characters, one at a time, while you will read in each character into a different char variable.
5. Print what the user entered.
6. Then, ask the user to enter the integer shift variable.
7. Then, add this value to each character.
8. Last, print the characters again.

Refer to the sample output below and use the sample input/output to test your program after you write it.

Part 3 Sample Output

User input is highlighted in yellow.

```
Enter in seven characters and I will use a modified Caesar Cipher to decode it.

First character: M
Second character: a
Third character: ^
Fourth character: @
Fifth character: h
Sixth character: Z
Seventh character: m

You entered Ma^@hZm
What integer should I use for the shift variable? 7
The text deciphered is TheGoat
```

Part 4: Dogs go to Prison

Image of Jack Crockett taken by April Crockett

Part 4 Directions

A new law has been passed in Tennessee where dogs must go to prison for multiple days if they steal other dog's bones.

- Write a program named **lab2d.cpp** where you help dogs figure out how many years they will have to go to prison.
- The dog will enter in how many bones they have stolen in their life.
- For each bone they have stolen, they are sentenced to **83 days in prison**.
- You must calculate the total number of days and then convert the days to years and print out the result.

Part 4 Sample Output

User input is highlighted in yellow.

```
How many bones have you stolen?  13

You must go to prison for 1079 days, which is 2.95616 years.
```

Part 5: Fill Out the Lab Report

You will fill out this lab report for every lab and it is part of your grade. To get credit, you must upload a screenshot of the confirmation page to this lab assignment. Name your screenshot **lab2ReportProof**.

Lab Report Link: https://tntech.co1.qualtrics.com/jfe/form/SV_d6BGc6kzQdSvBmS

What to Turn In

Create a zip file named **labPartner1username_labPartner2username_lab2** containing the following .cpp files and upload it to ilearn. Replace labPartner1username with one lab partner's TTU username and replace labPartner2username with the other lab partner's TTU username. Example: **`jdean42_acrockett43_lab2.zip`**

- lab2a.cpp
- lab2b.cpp
- lab2c.cpp
- lab2d.cpp
- lab2ReportProof

Remember, both lab partners should upload this zip file to their ilearn assignment, and your submissions should be **exactly** the same.