CPSC 110 **Lab 2** Due: Fri Sept. 20, 2024, 9:00am

### General Lab Instructions:

1. All assignments will be submitted through Canvas. If you submit multiple times, the most recent submission will be graded.
2. You will typically explain your code from the last lab to the instructor at the beginning of the next lab to receive your full marks and feedback.
3. If you work with other people, list all of your names on the assignment. Each assignment will specify how many others you can work with.
4. Please review the collage's plagiarism policies. As a general rule, copy/paste should never be used for any code. Ever. You may discuss topics with other students and reference online materials, but the final assignment must be written by the student. If you reference materials/people besides the textbook/instructor then cite this in a file `contributions.txt`. Full citations are not necessary, a bullet point list of the materials/people that you references is suitable.
5. Code will be graded for functionality as well as quality. This means code that should be easy to read with descriptive variable names and appropriate comments.
6. You should aim to stick to the concepts we have already covered in class. For example, do not use "if statements" on assignment 1 since it was not covered in lecture 1. If you have studied programming elsewhere then it is tempting to jump ahead, but full marks will only be given to assignments that are focused on this course's content.
7. Code that cannot run successively in Python 3 will receive a zero. Make sure you are using the correct python version and allow yourself enough time for thorough testing.
8. At the start of each assignment will be a list of the required files for submission. All files should be compressed in one zip folder named `<studentnumber>`$_{<}yourname > \_LAB < number > \_CPSC110.zip$. For example: `21870110_LUKESKYWALKER_LAB01_CPSC110.zip`

## Lab 2 Instructions:

- Total Points: 30
- Due: Fri Sep. 20, 2023, 9:00am
- Required files:
    1. `temperature.py`
    2. `seasons.py`
    3. `quiz.py`
    4. `contributions.txt`

# 1 Seasons [7 points]

There are four seasons in the year: spring, summer, fall and winter. While the exact dates that the seasons change vary a little bit from year to year because of the way that the calendar is constructed, we will use the following dates for this exercise:

- Spring begins March 20th
- Summer begins June 21
- Fall begins September 22
- Winter begins December 21

Write a program that reads a month and day from the user. The user will enter the name of the month as a string, followed by the day within the month as an integer. Then your program should display the season associated with the date that was entered.

Save the program in a file `seasons.py`

# 2 Temperature Conversion [8 points]

Write a program to convert a temperature from any unit to any unit. Ask the user to enter the temperature and then the unit (either Celsius, Fahrenheit or Kelvin). Then ask what unit the user wants to convert to (also Celsius, Fahrenheit or Kelvin). The program then must choose the appropriate formula to do the conversion and print the final temperature. Make sure this works with all unit combinations (even Celsius to Celsius)

| | |
|---|---|
| Celsius to Fahrenheit | °F = 9/5 ( °C) + 32 |
| Kelvin to Fahrenheit | °F = 9/5 (K - 273) + 32 |
| Fahrenheit to Celsius | °C = 5/9 (°F - 32) |
| Celsius to Kelvin | K = °C + 273 |
| Kelvin to Celsius | °C = K - 273 |
| Fahrenheit to Kelvin | K = 5/9 (°F - 32) + 273 |

Save the program in a file `temperature.py`

# 3 Quiz Time [15 points]

Now is your chance to write your own quiz. This quiz can ask any questions you like (movie trivia, historical facts, math questions, etc.)

However, I will give you some requirements for your quiz:

1. Create your own quiz with 5 questions. You can ask questions that require:
   (a) a number as an answer (e.g., What is 1+1?)
   (b) text (e.g. What is Justin Trudeau's middle name?)
   (c) a selection (Which of these choices are correct? A, B, or C?)

2. You must ask at least 2 different types of questions. E.g. You cannot ask only math questions or only multiple choice questions.
3. Let the user know if he or she gets the question correct. Print a message depending on the user's answer.
4. You need to keep track of how many questions they get correct.
5. At the end of the program print the percentage of questions the user gets right.

To build this, each question will require an if/else statement. Save the program in a file `quiz.py`

Sample run of a quiz program:

```
Quiz time!

How many movies are there in the Star Wars series? 6
no.

What is 3*(2-1)? 3
Correct!

What is 3*2-1? 5
Correct!

Who wrote the musical Hamilton?
A. Andrew Lloyd Webber
B. Steven Levenson
C. Lin-Manuel Miranda
D. Jessie Nelson
? C
Correct!

What is real name of Spider-Man?
A. Tony Stark
B. Peter Parker
C. Steve Rogers
D. Trick question! No one knows his real name
? D
Correct!

Congratulations, you got 4 answers right.
That is a score of 80.0 percent.
```