CSCA20 - Lab 1

Loops

Learning Objectives

This lab focuses on getting comfortable playing with the while and for loops, and combining them in interesting ways

Marks

Your TA will record your marks during the tutorial section. Part of your responsibility is to demonstrate your solutions to your TA accurately.

Arrived with pre-lab completed	/1
Showed up on time & worked through lab	/2
Successfully demonstrated working code	/1
TOTAL	/4

Prelab

You should come to the lab with a program that does the following:

- Asks the user how many training rounds they wish to perform
- (If the user doesn't enter a number between 1 and 5, ask again until they give you a sensible number)
- For as many rounds as the user requested, print out the round number
- Print a message to let the user know the training is complete

Lab

In this lab, we are going to build a training simulator for the **Universal Transmitter for Sonic Coordinates** (or UTSC for short). UTSC operators need to find the correct frequency with

minimal adjustments, so it's important that they practice using few moves, but also get close to the desired frequency.

The UTSC simulator should operate as follows:

- The trainer chooses the number of training rounds to complete
- For each round, the trainer chooses a target frequency (the operator should look away at this point)
- For each round, the operator tries to find the frequency using the following pattern:
  - The simulator will ask the user how much to increase the frequency by
  - The operator will enter numbers, increasing the frequency until it is greater than the target
  - The simulator will now ask the user how much to decrease the frequency by
  - The operator will enter numbers, decreasing the frequency until it is lower than the target
- At the end of each round, the total number of adjustments made, and the gap (target frequency - current frequency) is displayed
- At the end of all of the rounds, the simulator will display the total adjustments made overall, and the average gap

Postlab

(This section will not be marked, but it's good practice if you finish the lab early or want to continue to work at home)

Instead of only one round of increases and one round of decreases, try to create a version of the simulation that keeps alternating between increase and decrease until the gap (note that if you're going back and forth, the gap could be $target - current$ or $current - target$) is below some threshold set by the trainer