CSCA20 - Lab 3

Selection

Learning Objectives

In this lab, we will be practicing using if statements. While there will be many ways you could solve this lab and get it working properly, your focus should be on doing it in a clean and simple way that avoids having lots of unnecessary nested if statements (if blocks inside if blocks)

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:

- Presents the user with the following options:
  - A - Add a new grade
  - R - Report
  - Q - Quit
- If the user chooses `A`, the system should ask them for a grade, and the system should either print `PASS` or `FAIL` depending on whether the user entered a passing or failing grade
- If the user chooses `R`, the system should tell them how many grades have been entered so far, and the total number of grades which have been passing
- If the user chooses `Q`, the system should... well... you can probably figure this one out for yourself

Lab

In this lab, we are going to build a simple system for inputting grades and calculating averages

Your program should build on the pre-lab program, with the following additions:

- If a user adds an invalid grade (below 0 or above 100), the system should warn the user and ignore the entered grade
- For each (valid) grade entered, the system should report back the corresponding GPA (you can find the conversion at `https://www.utsc.utoronto.ca/registrar/u-t-grading-scheme`
- In addition to reporting the total number of (valid) grades entered, and the total number of passes, the system should also report the average (as calculated by the sum of the grades/total valid grades entered) and the average GPA (as calculated by the sum of the GPA scores/total valid grades entered)

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)

Averages are good, but grade distributions are better. Add the following features to your program

- Add to the report the total number of each grade achieved (e.g., how many `A+` and how many `B-`)
- Use pyplot's histogram feature to draw a histogram of the GPAs entered