Assignment #3
Conditionals, Looping, Begin Functions
Due: Sunday, 10/23/16, 11:59pm

(90 pts) **Problem Statement:** Write a C++ program that calculates your current grade in the class as well as predicts your grade depending on future grades.

This assignment will **contain functions** for error checking, calculating the average, and prompting and getting input from the user. In this assignment, **we are going to make a grade calculator!!!** You will **ask the user how many tests, assignments, labs, recitation quizzes, recitation critiques, recitation designs, and if there is a final** for the class. Based on these numbers, you will **prompt the user for the scores for each of the categories** to calculate the average for a specific class.

Scores/grades can be floating point numbers, and some categories have different point scales, not just out of 100. The scores for the labs are out of 10 pts (not 100!!!). The recitations grade is based on quizzes, design, and critiques, and each of these have different weights and point scales. For recitation score calculation, follow these rules:

- The quizzes are out of different points for each quiz, 40% of recitation grade
- The critiques are out of 20 pts, 20% of recitation grade
- The designs are out of 10 pts, 40% of recitation grade

Since we have categories, we need to know **how much each category weighs** in the percentage of the grade. For example, our class has the following percentages: **labs – 10%, recitation – 20%, assignments – 30%, tests – 30%, final – 10%.**

If any category has a zero, then you will not prompt the user for weight or score!!! The average will be calculated out of the total percentage of weights, not always 100%. This way you can get an accurate current grade in the class and use it as a predictor for a grade.

Example Run:

```
How many tests? 1
How many assignments? 2
How many labs? 4
How many recitation quizzes? 2
How many recitation critiques? 1
How many recitation designs? 1
Is there a final? 0

Weight for recitation quizzes? 40
Weight for recitation designs? 40
Weight for recitation critiques? 20

Recitation quiz 1 out of how many points? 5
```

```
Quiz 1 score: 5
Recitation quiz 2 out of how many points? 7
Quiz 2 score: 7

Recitation design score: 10
Recitation critique score: 20

Test 1 score: 100

Assignment 1 score: 100
Assignment 2 score: 100

Lab 1 score: 10
Lab 2 score: 10
Lab 3 score: 10
Lab 4 score: 10

Test weight: 30
Recitation weight: 20
Lab weight: 10
Assignment weight: 30

Your percentage in this class is: 100
```

For example, here are some functions you might want to have:

- start_calculator();
- is_positive_int();
- is_positive_float();
- is_in_range();
- calculate_average();
- get_num_tests();

- In addition, create any other functions you might need to properly modularize your code to 10 lines in each function.

(10 pts) **Program Style/Comments**

In your implementation, make sure that you include a program header in your program, in addition to proper indentation/spacing and other comments! Below is an example header to include. Make sure you review the style guidelines for this class, and begin trying to follow them, i.e. don't align everything on the left or put everything on one line! http://classes.engr.oregonstate.edu/eecs/fall2016/cs161-001/161_style_guideline.pdf

You are graded on having a **header, function headers with pre/post conditions, proper comments, and readable code with indentation** and vertical spacing that is CONSISTENT throughout your program. DO NOT align your entire program on the left

side. This will cause you to automatically lose the full 10 points. In addition, do not forget your program header!!!

Electronically submit your C++ program (**.cpp** file, not your executable!!!) by the assignment due date, using **TEACH**.