ECE 71 – Introduction to Computational Programming
Professor Gregory Kriehn – Fall 2017

Code Due By: Midnight on Friday, September 15, 2017
Writeup Due By: Class on Mon/Tue, September 18/19, 2017

HOMEWORK #5 – Quadrants

Write a program that tells the user which quadrant a pair of variables is in if the variables **x** and **y** are to be plotted on a **y** versus **x** graph using cascaded **if-else** statements. The 9 different conditions that you need to test for are:

Quadrant 1	Positive x Axis
Quadrant 2	Positive y Axis
Quadrant 3	Negative x Axis
Quadrant 4	Negative y Axis
	Origin

Specifications:
Include a prompt that asks a user to input a coordinate pair before you scan in the values from the keyboard, such as "**Input Coordinate Pair:**" (you must include a colon in your prompt). The program should then read in the values and determine where the point is located on the **xy** plot. Please note that the Grader Program will submit data to your program by entering two numbers that are separated by a space. The first number is associated with **x**, and the second with **y**.

The output should return one of the 9 string values listed above (exactly!) to the screen. When you print the results, do not print out anything other than one of the 9 phrases or words listed above. Please note that the Grader Program is case sensitive.

If you execute if you execute the program with the following underlined inputs, the output will be:

```
~> main.o
Input Coordinate Pair: 0.0 5.3
Positive y Axis
~>
```

For the above input (**0.0 5.3**), your program should display this exactly. If your program does not follow these specifications properly, the Grader Program will not accept your submission.

Develop your I/O diagram and pseudocode, debug your code, and submit to the Grader Program.

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HOMEWORK #06 – Grade Calculation Program

You are a tired professor and need help determining the final grades at the end of your C++ Programming course. You decide to write a program that converts a numerical grade into a letter grade and GPA.

Specifications:
You must use a **switch** statement to solve the problem.

Prompt the user to enter a numerical grade (assume that it is an integer). Then use the following scales to determine the final letter grade and GPA:

Numerical Score	Letter Grade	GPA
90 – 100	A	4.0
80 – 89	B	3.0
70 – 79	C	2.0
60 – 69	D	1.0
0 – 59	F	0.0

Print an error message if the grade is larger than 100 or less than 0.

HINT: Use an **if – else** statement to determine if you have an invalid grade. If you have an invalid grade, print an error message. Otherwise jump into your **switch** statement. As a further hint, break the grade into two digits and use the **switch** statement to test the ten's digit.

If you execute the program with the following underlined inputs, the output will be:

```
~> main.o
Welcome to the Grade Calculation Program

Enter Numerical Grade: -67
Error: Invalid Numerical Grade
~> main.o
Welcome to the Grade Calculation Program

Enter Numerical Grade: 88
Letter Grade: B
GPA: 3.0
~>
```

Develop your I/O diagram and pseudocode, debug your code, and submit to the Grader Program.