SFWRENG 2MP3 – Programming for Mechatronics
Fall 2018

Assignment 2: Loops, Switch Case Statements

Note: Weekly course assignments account for 20% of the final course grade. **This assignment is due September 23rd, 2018 at 11:59pm.**

Objectives

The purpose of this activity is to develop a greater understanding of loops and switch case statements within the C programming language.

Tasks

In order to complete this assignment, you must submit a written report of the C code and output for each of the following questions.

Question 1a: Using a for loop create a program that will ask a user to enter an integer 1-10 that will produce a diamond pattern with 2*n -1 rows

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Example Input: 4

Example Output:

```
   *
  ***
 *****
*******
 *****
  ***
   *
```

</div>

Question 1b: Alter the code for 1a to accomplish the same tasks using do while loops

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Example Input: 5

Example Output:

```
    *
   ***
  *****
 *******
*********
 *******
  *****
   ***
    *
```

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Question 2: Create a program that will use the math library (math.h) to execute the quadratic formula given a, b and c values (floating point values), as well as a decimal precision to display (ex. 2 decimal points) the root values

Example Input:

Please enter an a value: 3.0

Please enter a b value: 15.6

Please enter a c value: -8

Please enter an integer value of the number of decimal places: 2

Example Output: The first root is located at 0.47 and the second root is located at -5.67

Question 3a: Create a program that uses if statements to convert a 12-point grade scale to a 4-point grade scale given a floating-point value

Example Input: 7.8

Example Output: 2.9

Question 3b: Alter the code for 3a to accomplish the same task but using switch case statements

Example Input: 9.2

Example Output: 3.4