**PROG1780 – Programming Fundamentals: Fall 2016**

**Assignment 3**

**[Maximum points: 25]**

1. In this part of the assignment, you are required to create a C# Console Application project. The project name should be A3<FirstName><LastName>P1. For example a student with first name John and Last name Smith would name the project A3JohnSmithP1.

You are creating a console based math program. This program will be shown as a menu with several options. The menu should be created with a do loop.

The first option is to display a list of even numbers beginning at 0. Once this option is selected, the program asks the user for the number of even numbers to display. After the user provides this input, all the values should be displayed at once. This option should be created using a "for" loop.

The second option is to display a sequence of perfect squares. The program should begin by printing the square of 1, and ask the user if they to continue or stop and return to the original menu. If the user does not want to quit, the next square is printed. This continues until the user wishes to end the sequence. This option should be created using a while loop.

The third option is to exit the program. Any invalid option entered by the user should prompt the menu to reappear and ask the same three options.

Any numeric entry by the user should not crash if the user enters a string.

Your program must:

* 1. Use the appropriate loop for each segment. [3 marks]
  2. Encapsulate the logic of options 1 and 2 each within their own method. [4 marks]
  3. The functionality of the menu is correct as described. [3 marks]
  4. Proper error handling. [3 marks]
  5. Adhere to coding standards as described by the course. Marks will be taken off wherever coding standards are not followed.

1. In this part of the assignment, you are required to create a C# Console Application project. The project name should be A3<FirstName><LastName>P2. For example a student with first name John and Last name Smith would name the project A3JohnSmithP2.

Write a C# (console) program to create an interface that acts as a simple two number calculator. Your program should continue doing calculations until it is closed or exited. [2 Marks]

Instead of a GUI keypad, this calculator will use console input to accept the two numbers to be used in the calculation. This calculator needs to prompt the user for ONE selection of any of these simple math operators: plus, minus, multiply, or divide. Three (3) inputs will need to be prompted: one for the selected mathematical operation, one for the first input, and one for the second input. The output will be displayed when the mathematical operation is known and the two inputs (numbers) are entered. The output will not be editable by the user. After the calculation is executed, the application will display error messages (or other status message), and can be as you deem appropriate. [4 marks]

This calculator will handle all errors using try/catch statements. The error message output should display at least 3 different types of error (or status) messages, depending on what the user has done incorrectly. Your program should be able to catch all possible errors the user may do, it should not crash. [6 marks]

The format for submitting the assignment is as follows:

1. **Printouts Handed in Class**: Assignment Cover sheet properly filled, followed by the marking rubric and the printout of c# source code from Parts 1 and 2.
2. **eConestoga Submission**: A single compressed (.zip format) archive file containing the entire project folder for each of the programs (Part 1 & Part 2) submitted to eConestoga.
3. **Demonstration of the Programs in Class**: Please have both programs running on your desktop when you are ready to demonstrate your work.