

# CIS365 Programming Assignment 1

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## 1 Overview

In this assignment, you will write a collection of C# console applications. You will use these applications as an opportunity to practice the use of the basic control structures in C#.

## 2 Problem 1: Displaying triangles

Write an application in C# that displays the following patterns side-by-side as listed below:

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

```

*****      **              **      *****
*****      *              *      *****

```

All asterisks should be displayed by a single statement of the form *Console.WriteLine('\*')*; which causes asterisks to be displayed side-by-side. A statement of the form *Console.WriteLine()*; can be used to write to the next line. A statement of *Console.Write(' ')*; can be used to display the whitespace between patterns. Note that you will need to be quite clever in your use of *for* statements in the program. Do **NOT** just copy and past the above text into a a collection of *Console.WriteLine()* calls.

### 3 Problem 2: Pythagorean Triples

A right triangle can have sides whose lengths are all integers. The set of these integer values for the lengths of the sides of a right triangle is called a *Pythagorean triple*. Note that sum of the squares of two of the sides must be equal to square of the hypotenuse. Write an application in C++ to find all of the triples for values of the sides and hypotenuse less than 500. Use a collection of nested for loops that try all possibilities.

### 4 Problem 3: Palindromes

A palindrome is a sequence of characters that reads the same backwards as well as forwards. For example, each of the following five digit numbers are palindromes: 11111, 22222, 45554, and 11611. Write an application in C# that reads a five-digit number and determines if it is a palindrome. If the number is not five digits long, then display an error message and allow the user to enter a new value. *Hint*: Use the remainder and division operations to pick off the digits of the number one digit at a time, from right to left.

### 5 Submitting your program

Please combine the source code and a screen shot of the output from each solution to these problems into a single PDF document. Your submission document must be in PDF format; submission of documents in any other format will result in deduction of points from your grade. Attach your submission to the assignment entry in Blackboard.