THE UNIVERSITY OF THE WEST INDIES
Department of Computing
COMP1126–Introduction to Computer Science I

LAB1 – Simple python functions

Question 1
If you are given three sticks, you may or may not be able to arrange them in a triangle. For example, if one of the sticks is 12 inches long and the other two are 1 inch long, it is clear that you will not be able to get the shorter sticks to meet. For any three lengths, there is a simple test to see if it is possible to form a triangle:

"If any of the three lengths is greater than the sum of the other two, then you cannot form a triangle. Otherwise, you can."

a) Write a function in Python named `is_triangle` that takes three integers as arguments, and prints either `True` or `False` depending on whether you can or cannot form a triangle from sticks with the given lengths.

b) Write a function in Python called `semi_prmtr` that takes three integers `a`, `b` and `c` as arguments and returns the result of the following calculation:

```
(a+b+c)/ 2
```

c) Modify the `is_triangle` (call it `is_triangleV2`) function so that it now *returns* a boolean value. Using `is_triangleV2`, and `semi_prmtr`, write a function called `tri_Area` that takes three integers as arguments and returns the area of a valid triangle. Use the following formula:

$$area = \sqrt{s(s-a)(s-b)(s-c)}$$

where:
a,b and c are the lengths of the sides, and s= (a+b+c)/ 2

Question 2
Write a python program that takes a year as a parameter and returns true if the year is a leap year, otherwise it returns false. The input to this function must be an integer.

Leap Year Definition:

In the Gregorian Calendar, leap years are evenly divisible by 4, with the exception of centurial years that are not evenly divisible by 400.

A leap year can be centurial or non centurial (e.g. 1600, 1996). Non centurial year must be divisible by 4 and not divisible by 100 (e.g. 1992, 2008). Centurial leap year must be divisible by 400 (e.g. 1600, 2000, 2400 are leap years and 1700, 1800, 1900, 2100 are not leap years).
(Remember, == is used to check equality and != is used to check for inequality)