Problem Solving Methodology in IT (COMP1001)

Assignment Four
(Due at noon on 20 October 2018)

(Instructions: see the instructions in Blackboard)

Rocky K. C. Chang

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1. [Weight = 2] (Letter counting) Write a function that will ask from user for a word consisting of only letters in lower case and print out the frequency of the letters in the word. Make sure that you include the function call in your .py file. A sample of the printout is given below.

```
Please enter a word consisting of only English alphabets in lower cases:
pseudopseudohypoparathyroidism
# of a : 2
# of b : 0
# of c : 0
# of d : 3
# of e : 2
# of f : 0
# of g : 0
# of h : 2
# of i : 2
# of j : 0
# of k : 0
# of l : 0
# of m : 1
# of n : 0
# of o : 4
# of p : 4
# of q : 0
# of r : 2
# of s : 3
# of t : 1
# of u : 2
# of v : 0
# of w : 0
# of x : 0
# of y : 2
# of z : 0
```

2. [Weight = 4] (Binary number addition) In this question we revisit Q2 of Assignment 2 and implement *PROC0()* and *PROC1()*. First of all, we use a list of three elements to implement the addition table for adding two binary digits: `tableAdd = ["00", "01", "10"]`. Note that these are the only possible outcomes of adding two binary digits.

   With this *tableAdd*, implement the two functions *PROC0()* and *PROC1()* with the function signatures below.

```
Function PROC0(digit1, digit2)
  Input: digit1, digit2, each of which is either 0 or 1.
  Output: a string of two digits which is the sum of the two
  digits. Therefore, the result could be "00", "01" or "10".

Function PROC1(digit1, digit2, digit3)
  Input: digit1, digit2, digit3, each of which is either 0 or
  1.
  Output: a string of two digits which is the sum of the three
  digits. Therefore, the result could be "00", "01", "10", or
  "11".
```

   Also include the statements below in your .py file for testing.

```
print(PROC1(0,0,0))
print(PROC1(0,1,0))
print(PROC1(1,0,0))
print(PROC1(0,0,1))
print(PROC1(0,1,1))
print(PROC1(1,0,1))
print(PROC1(1,1,0))
print(PROC1(1,1,1))
```