**Python Programming Practical 4**

**Due: 1 Mar 2013**

**Instructions**

Submit the following by adding to your git repository cpy5python.git. Your files should be organized as follows:

[cpy5python]

[practical04]

q1\_sum\_series1.py

q2\_sum\_series2.py

q3\_find\_gcd.py

q4\_print\_reverse.py

q5\_count\_letter.py

q6\_compute\_sum.py

q7\_find\_largest.py

q8\_find\_uppercase.py

**1 (Summing series)** q1\_sum\_series1.py

Write a recursive function sum\_series1(i) to compute the following series:



**2 (Summing series)** q2\_sum\_series2.py

Write a recursive function sum\_series2(i) to compute the following series:



**3 (Computing greatest common divisor using recursion)** q3\_find\_gcd.py

The greatest common divisor (GCD) of two positive integers m and n, gcd(m, n) can be defined recursively as follows:

If m % n is 0, gcd(m, n) is n.

Otherwise, gcd(m, n) is gcd(n, m % n).

Write a recursive function gcd(m, n) to find the GCD. Write a test program that computes gcd(24, 16) and gcd(255, 25).

**4 (Reverse the digits in an integer recursively)** q4\_print\_reverse.py

Write a recursive function reverse\_int(n) that reverses the digits of an integer n:

For example, reverse\_int(12345) displays 54321.

**5 (Occurrences of a specified character in a string)**q5\_count\_letter.py

Write a recursive function count\_letter(str, ch) that finds the number of occurrences of a specified letter ch in a string str:

For example, count\_letter("Welcome", 'e') returns 2.

**6 (Summing the digits in an integer using recursion)**

Write a recursive function sum\_digits(n) that computes the sum of the digits in an integer n:

For example, sum\_digits(234) returns 9.

**7 (Finding the largest number in an array)**q7\_find\_largest.py

Write a recursive function find\_largest(alist) that returns the largest integer in an array alist.

For example, given alist = [5, 1, 8, 7, 2], sum\_digits(alist) returns 8.

**8 (Finding the number of uppercase letters in a string)** q8\_find\_uppercase.py

Write a recursive function find\_num\_uppercase(str) to return the number of uppercase letters in a string str.

For example, find\_num\_uppercase('Good MorninG!') returns 3.