COMP 4030/6030 -- Assignment 4

Due: 10/03/2017 before class.

**For this assignment, submit a hard copy in class.**

1. (20 Points) Use repeated substitution to find the complexity (in terms of Θ) of the following equation:

T(1) = 1

T(n) = 1 + T(n/3).

1. (20 Points) Use repeated substitution to find the complexity (in terms of Θ) of the following equation:

T(1) = 1

T(n) = 1 + 2T(n-1).

1. (30 points) **(A)** find the running time equation of the following function, **(B)** use repeated substitution to the its complexity in terms of Θ. The input is a list, L. The input size, n, is the number of items in L.

def foo(L):

if L == []:

return 0

sum = 0

for x in L:

sum = sum + x

A = L[0: len(L)//2]

return sum + foo(A)

1. (30 points) **(A)** find the running time equation of the following function, **(B)** use repeated substitution to the its complexity in terms of Θ. The input is a list, L. The input size, n, is the number of items in L.

def bar(L):

if L == []:

return 0

sum = 0

for x in L:

sum = sum + x

A = L[1:]

return sum + bar(A)