

CS 4412 : Algorithm Analysis

Homework Assignment #1

Show all work neatly.

1) (6 points) Do 0.1 (a-f, m) from the text

2) (4 points) The Fabonacci series (named after the lesser know cousin of Fibonacci) is

$$f(n) = f(n-1) + f(n-2) \text{ for integer } n > 2 \text{ with } f(0) = f(1) = f(2) = 1$$

a) Show in psuedocode an exponential algorithm to solve this for an arbitrary integer n . As a function of n give a rough big O complexity class for the algorithm and justify your answer.

b) Show in psuedocode a linear algorithm to solve this for an arbitrary integer n . As a function of n give the exact number of adds and multiplies necessary for your algorithm to calculate $f(n)$.