Homework Assignment 2 - Recursive Algorithms

Prewords

- Deadline for submission is 10-06-2017 11:59 PM (PST).

- Please submit your assignment online at the submission page.

- Please upload a pdf file with the following naming conventions LastnameFirst-Name_HW2.pdf

- If you submit a hand-written scan of your homework, please submit also a physical copy of your homework through the homework box.

- This is NOT a group assignment!!! You are allowed to ask everybody and use every kind of help - BUT you need to submit your own solution.

Grading

We will grade your work according to the following criteria:
- Question 1 - 10 Points
- Question 2 - 20 Points - 5 for the algorithm, 10 for the recursion tree, 5 for prove of the order of growth

Problem sets

Problem 1.
Prove that $Sumsq(n) = \frac{2n^3+3n^2+n}{6}$

```
Sumsq(n)
{
        if n==1 then return 1
        else return (Sumsq(n−1)+n*n)
}
```

Problem 2.
Given is the following run time equation: $F(n) = 2F(n/2) + n, F(1) = 1$

(a) Write an algorithm for the run time equation. (Algorithm does not have to do anything useful.)

(b) Solve the recurrence using recursion tree.

(c) What is the order of growth? Prove it! (BigO per definition)