CS4104 Fall 2010 Homework Assignment 2
Due at 11:00pm on Wednesday, September 8
50 Points

Pledge: I (we) have not received unauthorized aid on this assignment. I (we) understand the answers that I (we) have submitted. The answers submitted have not been directly copied from another source, but instead are written in my (our) own words.

1. [15 points] Find a growth rate that cubes the run time when we double the input size.

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2. [20 points]

(a) Arrange n^2 apples in a square. From each row find the largest one and let A be the smallest of these. From each column find the smallest one and let B be the largest of these. Which apple is bigger, A or B?

(b) The lower bound on the worst cost of a problem has been defined as

$$\min_{\mathcal{A} \in \mathcal{A}_M} \left\{ \max_{I \in I_n} f_{\mathcal{A}}(I) \right\}.$$

Is this the same as

$$\max_{I \in I_n} \left\{ \min_{\mathcal{A} \in \mathcal{A}_M} f_{\mathcal{A}}(I) \right\}?$$

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3. [15 points] A chocolate company decides to promote its chocolate bars by including a coupon with each bar. A bar costs a dollar and with c coupons you get a new bar.

How much chocolate is a dollar worth?

Be careful! This problem is not particularly hard, but its not as trivial as it might seem if you are not paying attention.