

CS4104 Spring 2007 Homework Assignment 1
Due at 11:00pm on Tuesday, January 30
50 Points

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

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

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.