CS4104 Spring 2007 Homework Assignment 12
Due at 11:00pm on Tuesday, April 17
50 Points

1. [20 points] Consider this algorithm for finding the maximum element in an array: First sort the array and then select the last (maximum) element. What (if anything) does this reduction tell us about the upper and lower bounds to the problem of finding the maximum element in a sequence? Why can we not reduce SORTING to finding the maximum element?

2. [15 points] Use a reduction to prove that multiplying two upper triangular $n \times n$ matrices is just as expensive (asymptotically) as multiplying two arbitrary $n \times n$ matrices.

3. [15 points]

(a) If P isn't in $\mathcal{NP}$, is P not in $\mathcal{P}$?

(b) if P isn't in $\mathcal{P}$, is P not in $\mathcal{NP}$?