Efficient Algorithms and Programming

Week 10

Reading before Monday November 5th

CLR Chapter 36.1–2.

Exercises for Monday November 5th

1. In section 36.1: Exercises 36.1-1, 36.1-5, 36.1-6 (important!), 36.1-7.
2. In section 36.2: Exercises 36.2-1, 36.2-8.
3. Consider the following two (trivial) problems:

   Problem I: Given constants a and b, solve the linear equation $ax + b = 0$.

   Problem II: Given constants A, B, and C, solve the equation $Ax^2 + Bx + C = 0$.

   Think about how you can *prove* that Problem II is harder than Problem I. (Try to ignore that they are both constant-time solvable!)

Programming assignment for Friday November 12th

Solve Exercise 6.3 in the BDD-note using your BDD-package (you will need to implement ANYNONSAT). Hand in a printout of the source code.

On the course web there are six files containing circuits of increasing size (the format should be obvious). For each circuit, construct the BDD representing the functionality of the circuit. This requires you to make a simple parser for the format and you probably also need a hash-table (mapping names to BDD node numbers) to store the intermediate results.

Hand in a plot of the size of the BDD as a function of the size of the circuit and your comments to the plot.

Reading for next week

CLR Chapter 36.3-4