CS 236 Summer 2011: Exam 1 Review

• The exam will be held in the Testing Center from July 7 to July 8. Make sure to confirm the hours of the Testing Center long before you go.

• Homeworks 0 through 4 are great preparation for the exam. Make sure to pick up your graded homeworks from the TAs and to understand any mistakes you may have made.

Sets, Strings, and Languages

• Know basic set terminology and operators, such as union, intersection, cardinality, set membership, etc.

• Know and be able to apply the basic string operations, such as $V^3$, $V^*$, $V^+$, etc.

Finite State Machines

• Be able to determine the language recognized by a given finite state machine.

• Be able to define a finite state machine to recognize a given language.

• Be able to convert from a diagram of a finite state machine to the corresponding formal definition of the finite state machine and vice versa.

Grammars

• Know the difference between Simple $LL(1)$, $LL(1)$ without $\epsilon$, $LL(1)$, and context free grammars. Be able to specify whether or not a given grammar is any of these.

• Understand the FIRST function, be able to compute it for a given string, and be able to explain how it applies to parsing algorithms.

• Be able to recognize problems in a grammar, such as ambiguity, incorrect precedence, incorrect associativity, unreachable rules, unproductive non-terminals, etc.

• Be able to create an $LL(1)$ grammar with tails using $\epsilon$-rules (for numbers, parameter lists, variable names, etc.).

• Be able to produce strings from a grammar and describe the language produced by a grammar.

• Be able to create a parse table for an $LL(1)$ grammar and simulate the steps of the table-driven parsing algorithm.

Logic

• Understand what a proposition is.

• Know the basic logic operators: $\lor, \land, \neg, \Rightarrow$, etc.

• Be able to convert an English sentence into a set of logical propositions and a logical expression with the same meaning as the informal sentence.

• Be able to create a truth table for a simple logical expression.

• Be able to evaluate a given expression given the values of the propositions (variables) in the expression.