CSCI 340 (Computational Models)
Dr. Schwartz
Review Sheet for Exam 2

This is intended as a guideline for studying for the second exam… but only as a guideline! I wouldn't have covered something if I didn't think it was important. If you are wondering about a topic and you don't see it here, ask me!

COVID-19 Note: For any questions that require drawing, there will be an assignment created in D2L that will be open during the exam period. You can take a photo of your work and upload it there.

Sample Types of Questions

- Short answer, multiple choice and true/false
- Output of Moore and Mealy machines
- Design a Moore or Mealy machine
- Prove that a language is not regular, using the pumping lemma
- Given an FA, convert it to a PDA
- Descriptions of languages defined by CFGs and PDAs
- Given a language description, create a CFG or PDA to accept it
- Show by parse tree or productions (as requested) that a particular string can be generated by a grammar
- Show that the language generated by a CFG is ambiguous
- Trace the path by which input can be accepted by a PDA using a table containing the current state, stack contents and tape contents.
- CFG transformations (killing lambda-productions and unit productions, converting to CNF)
- Given a CFG, construct a PDA that accepts the same language

Chapter 8 (Finite Automata with Output)

- Moore Machines – Definition and Examples
- Mealy Machines – Definition and Examples
- Equivalence of Moore and Mealy machines

Chapter 9 (Closure Properties of Regular Languages)

- Under which operations are regular languages closed?
- Proofs for closure of each operation

Chapter 10 (Nonregular languages)

- Pumping Lemma, proof and applications

Chapter 11 (Decidability with respect to regular languages)

- Definitions, terminology and methodology
- Which questions are decidable and what are the algorithms

Chapter 12 (Context-Free Grammars)

- Definition of context-free grammars
- Parse trees
- Production of a string
- Other definitions and terminology (ambiguity, etc.)

Chapter 13 (Grammatical Format)

- Regular grammars
- Chomsky Normal Form
- Leftmost derivations
- Other definitions and terminology

Chapter 14 (Pushdown Automata)

- Examples and definitions
- Example languages and machines

- Nondeterminism

Chapter 15 (PDA = CFG)

- Be able to create a PDA that accepts the language generated by a given CFG