CS 432 Midterm 1 Study Guide

Fall 2018

You are expected to be able to perform the following tasks on the exam:

- List major phases of a compiler and describe the advantages, disadvantages, and complications arising from front-end/back-end separation.

- List and describe formal components of deterministic and non-deterministic automata with application to particular instances.

- Compare and contrast regular vs. context-free languages, descriptions, and automata.

- Compare and contrast deterministic vs. non-deterministic finite automata.

- Compare and contrast finite vs. pushdown automata.

- Analyze and synthesize regular expressions.

- Analyze, synthesize, and manipulate finite automata:

    - Thompson's construction
    - Subset construction
    - Minimization

- Analyze, synthesize, and manipulate grammars:

    - Ambiguity
    - Associativity
    - Precedence
    - Left recursion elimination
    - Left factoring
    - LL(1) conversion

- Discuss space and time costs for finite automata conversion and execution.

- Define and discuss specific terms or vocabulary related to any of the above concepts, including a detailed description of why and how they are relevant to the construction of a compiler.