

CSCI 330 – Midterm Exam #1 Review

General Notes for Midterm Examination:

- **Few** multiple-choice
- **No** fill-in-the-blank
- Short answer and coding questions
- Partial credit awarded
- Four to Five pages (note: some problems will have lots of room)
- Problem Solving-esque questions:
 - Grammars, parse trees
 - Weakest preconditions
 - Simple program proof
 - Give the output of OCaml code
 - Write simple OCaml code

Material

Chapter 1

- Language evaluation criteria (readability, writability, reliability, cost)
- Orthogonality
- Influences on language design (computer architecture, programming methodologies)
- Language categories (imperative, functional, logic, object-oriented)
- Implementation methods (compilation, interpretation, hybrid)

Chapter 3

- Definitions (lexemes, tokens, recognizer, generator)
- BNF and Context-Free Grammars, derivations and parse trees
- Ambiguity in grammars, operator precedence, left vs right associativity
- Attribute grammars
- Operational semantics (uses, basic concepts)
- Denotational semantics (uses, understanding rules)
- Axiomatic semantics (assertions, weakest preconditions, simple proof)

Functional Programming and OCaml

- Mathematical Function Derivation
- No variables (binding instead)
- No loops (recursion instead)
- Pattern matching
- OCaml (understand and write simple functions – not writing tail recursion)
- Simple recursion vs. tail recursion