C311 Programming Languages

Midterm

Study Guide

Programming Language Intro

- Language categories: declarative versus imperative, sub-categories (Von Neuman, functional, logic, and so on)
- Interpreted versus compiled
- Compilation steps

First Class Objects

- Definition of first / second / third class objects, examples
- Lambda Calculus: basic notation, relation to computability, incompleteness theorem

Scope

- Definitions: binding, scope, polymorphism, alias, dangling reference, memory leak
- Binding types: static vs dynamic, early vs late
- Scope types: static, lexical, dynamic
- Object allocation: stack versus heap, runtime stack
- Heap management schemes: first-fit, best-fit, worst-fit

Recursion

- Definition, base case, recursive call
- Tree of recursive calls
- Definition of tail recursive

Lisp

- Lisp concepts seen up to associative lists
- A page of syntax reference will be provided.
- Understanding Lisp code and writing small functions in Lisp