CS342: Organization of Prog. Languages

Topic 16: Course Review

- Programming paradigms and languages.
- Interpreters and translators.
- Lexical and syntactic structure.
- Scoping mechanisms.
- Control flow.
- Types.

Programming Paradigms and Languages

- Different language families.
- Scheme: Functional programming.
- C++/Java: Object-oriented programming.
- XSLT: Pattern-match programming.
Interpreters and Translators

- Interpretation of a language.
- Hardware and software implementation.
- Composition of interpreters.
- Translation from one language to another.
- Composition of translators.
- Optimization.
- Compilation.
- Bootstrapping.
Lexical and Syntactic Structure

- Lexical analysis/scanning
- Syntactic analysis/parsing
- Formal language theory
- Character sets
- Syntax extension via macros
Scoping Mechanisms

- Dynamic scoping
- Lexical scoping
- Closures
- Implementation
Control Flow

- Conditional evaluation and iteration
- Tail recursion
- Iterator objects and generators
- Continuations
- Lazy evaluation
Typing

- Basic types
- Mutable vs immutable types
- Subtypes, type lattices
- Dependent types
- Relation to OO
- Type inference.
Q + A

• Concepts

• Scheme

• XSLT

• Assignments

• Exam

• Summer jobs