450 COMPILERS

COMPUTER SCIENCE

News

- Xamarin for Everyone
- CMPS 277/377
    - Mobile Development
    - Web Development
    - Enterprise Development

Administrivia

- Lab 01

- Lab 02 Thursday

- Phase I

Review

- ## Compilers

  - A program or set of programs that transforms source code written in a programming language (source language) into another computer language (target language)

- ## Lexicon

  - The vocabulary of a language

    - An analogy is to the dictionary of the English language

Review Continued

- ## Syntax

  - the set of rules, principles, and processes that govern the structure of sentences in a given language

Compilers

- Lexical Analysis
- Syntax Analysis
- Semantic Analysis
- Intermediate Code Generation
- Code Optimizer
- Code Generation

Lexical Analysis

- Also known as linear analysis
- Groups stream into tokens
- Ex. in C/C++
  - position = initial + rate * 60;

- Groups tokens
  - identifier position
  - Assignment symbol =
  - Identifier initial
  - Plus sign +
  - Identifier rate
  - Multiplication sign *
  - Integer 60

Syntax Analysis

- Also known as Hierarchical analysis or parsing

- Grouping tokens into grammatical phrases and are represented as a parse tree

- INSERT IMAGE of PARSE TREE

Semantic Analysis

- Checks the source program for semantic errors and gathers type information for code generation

- Uses hierarchical structure determined by syntax analysis to identify operators and operands

Backus-Naur Form

- The Extended/BNF is code that expresses the grammar of a formal language

- Consists of terminal symbols and non-terminal symbols

Open Source Compilers

- LLVM
  - Low Level Virtual Machine
- Roslyn