Review of the Course

66.648 Compiler Design Lecture (04/23/97)

Computer Science

Rensselaer Polytechnic

Lecture Outline

- Review of the course material
- Examples
- Administration

What is a compiler?

Different Phases of the compiler.

Different tools for the compiler.

Software and Hardware architectures

Lexical Analyzer

Regular expression

DFA and NFA

Lex and flex

Tokens

Syntax Analyzer

- Context Free Grammar and Languages
- Top-down and bottom-up parsing
- LL and LR parsing
- LALR parsing
- YACC and bison
- parse tree

Syntax Directed Translation

- Attributes- inherited and synthesized
- Derivation of attributes
- Annotating parse tree
- Syntax tree

Semantic Analyzer

- Types and derivation of types
- Encoding of types
- Type Checking
- unification
- Syntax tree

Data-Structures

- Symbol Tables
- Operations on symbol tables
- Scope rules
- Function scopes
- Storage of arrays and structures
- Static, Dynamic and Heap Storage organization

Run time structures

Activation records

Parameter Passing

Static and Dynamic Binding

Macro processing

Run time Libraries

Intermediate Code Generation

Post fix

Syntax tree

Three Address code

Byte code

Quadruples, Triples and indirect triples

Code Generation

Basic Blocks

Code generation

Register assignment

Code ordering

Generation of temporary Variables.

Code Optimization

Control and Data Flow Graphs

Data Flow equations

Dominators

Loops in Graphs

use-def chains

Computation of fix points - iterative procedures

9 optimizations and their computation.

Sample Problem

- HTML parser.
- Balanced (), [], {}.
- What is the grammar?
- How do we write a parser?

Comments and Feedback

- Project 3 is due this Friday. Please start studying for the exam.