CS-321
Languages and Compiler Design I

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There are 2 handouts today:
• Syllabus
• Checklist

Syllabus and Course Organization

Web page:  
www.cs.pdx.edu/~harry/compilers/syllabus.html

“Mailman” E-mail List
subscribe cs321-001
E-mail: harry@cs.pdx.edu

Textbook
Attendance - Roll Call
Two-term course: CS-321, CS-322
Project: Build a compiler!

Homeworks
Exams
Prerequisites

Questions???

To do list...
• Syllabus
• Checklist
• Print Documents
• Reading Assignments
• Hello-world assignment
• Project 0 (Tree)
• HW #1
Course Goals

• Study Compilers
  Design, Implementation, Theory

• Study Programming Languages
  Issues, Ideas, Approaches

• Improve Programming Skills
  Design & Implement a Complex System

Course Outline:

Intro / Overview
• Lexical Analysis
• Syntax
  CFG, Parsing Techniques
  Syntax-Directed Translation
• Context Sensitive Analysis
  Type checking

CS-321

SPARC Assembly Language
• Run-time Environments
• Code Generation
  Intermediate, Final
• Code Optimization
  Language Ideas & Issues

Project

The phases of your compiler
The Project

- Two terms to complete
- Broken into pieces (~ 2 weeks / assignment)
- Work individually
- We’ll use Java
- Grading
  Test Data: Must work correctly!
  Neatness, Comments, Style
  Quality of Code: Simple, well thought out
  Nothing Late!

Homeworks

- Weekly
- Work independently

Reading

- ~60 pages / week
- Must keep up!
- Read material before lectures
  [ Re-read chapters ]
- Will do textbook chapters in order
  Chapter 1 (Introduction)
  Chapter 2 (Scanning / Lexical Analysis)
Assignment: Week 1

- Read chapter 1 from textbook
- Look at my Java “Summary” Paper (62 pages)
  Scan and read what is unfamiliar
- Read my “Java Coding Style” document
- Type, compile, and execute “Hello World” program
  Before 2nd class meeting
- Do Project 0
  Before 3rd class meeting
- Look at / print out class lecture notes

Assignment: Week 2

- Programming Project 1
  Due before 5th class meeting
- Read chapter 2 from textbook
- HW #1
  Due before 4th class meeting

OVERVIEW

Source Program

Compiler

Target Program

Error Messages

E.g.,
Java, C++, PCAT, ...

E.g.,
Assembly Language
Machine Code
Bytecodes
Techniques are useful in similar tasks

Other Examples:
- Hardware Design Languages (HDLs)
- Query Processors
- Text Formatting

“Phases” of a Compiler

Source Code
Lexical Analyser
Syntax Analyser
Semantic Analyser
Intermediate Code Generation
Code Optimization
Target Code Generation
Target Code

Error Handling
Symbol Table Management