CS 538

Introduction to the Theory and Design of Programming Languages

Charles N. Fischer

Spring 2004

http://www.cs.wisc.edu/~fischer/cs538.html
Class Meets

Mondays, Wednesdays & Fridays,
11:00 — 11:50
1227 Engineering Hall

Instructor

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Office Hours:
10:30 - Noon, Tuesdays & Thursdays, or by appointment
Teaching Assistant

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Office Hours:

1:30 - 3:00, Wednesdays & Fridays, or by appointment
Key Dates

- February 20:  Homework #1 (tentative)
- March 24:  Programming Assignment #1 - Scheme (tentative)
- March 29:  Midterm Exam (tentative)
- April 12:  Programming Assignment #2 - Standard ML (tentative)
- April 28:  Programming Assignment #3 - Prolog (tentative)
- May 7:  Programming Assignment #4 - Pizza, C# and Python
- May 13:  Final Exam 2:45pm- 4:45pm
Class Text

• Required text:
  “Foundations of Programming Languages,”
  Seyed Roosta,

• Suggested supplemental Class Text:
  “Modern Programming Languages,”
  Adam Webber,

• Handouts and Web-based reading will also be used.
Reading Assignment

- Roosta: Chapters 1-3 (as background)
- Webber: Chapters 1, 10, 18 (as background)

Class Notes

- The transparencies used for each lecture will be made available prior to, and after, that lecture on the class Web page (under the “Lecture Nodes” link).
Instructional Computers

Departmental Unix Machines (nova1-nova60) have been assigned to CS 538. All necessary compiler, interpreters and tools will be loaded onto these machines.

You may also use your own PC or workstation. It will be your responsibility to load needed software (instructions on where to find needed software are included on the class web page).

The Systems Lab teaches brief tutorials on Unix if you are unfamiliar with that OS.
Academic Misconduct Policy

- You must do your own assignments — \textbf{no} copying or sharing of solutions.
- You may discuss general concepts and Ideas.
- All cases of misconduct \textbf{must be reported} to the Dean’s office.
- Penalties may be \textbf{severe}.
Program & Homework Late Policy

• An assignment may be handed in one, two, or three class periods late, but not any later.

• One late period will be debited 10%, two late periods will be debited 20%, three late periods will be debited 30%.

• All students are given 4 “free” late periods. That is, the first 40% in late debits will be automatically forgiven.

• Your 4 free late periods may be used at any time, and in any combination.
<table>
<thead>
<tr>
<th>Approximate Grade Weights</th>
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<tr>
<td>Homework 1</td>
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<tr>
<td>Program 1 - Scheme</td>
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<td>Program 3 - Prolog</td>
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<td>Program 4 - Pizza, C# &amp; Python</td>
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<td>Midterm Exam</td>
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Programming Languages to be Considered in Detail

1. Scheme

A modern variant of Lisp.

A Functional Language: Functions are “first class” data values.

Dynamically Typed: A variable’s type may change during execution; no type declarations are needed.

All memory allocation and deallocation is automatic.

Primary data structures, lists and numbers, are unlimited in size and may grow without bound.

Continuations provide a novel way to suspend and “re-execute” computations.