Computational Structures

Tim Sheard
Portland State University

Class Preliminaries
Acknowledgements:

• I would like to thank Sava Krstic for a set of notes that I have based my slides on.
Contact Details:

• Tim Sheard:
  – Office: Fourth Ave Building (FAB) 120-04
  – Telephone: (503) 725-2410
  – Email: sheard@cs.pdx.edu

• CS 311:
  – http://web.cecs.pdx.edu/~sheard/course/CS311/index.html
Teaching assistant:

- “Harry” Xingzhi Pan
- Email: pan.xingzhi@gmail.com
- Office hour: 1:00-2:00pm M&W

• Further arrangements to be made as the class progresses.
Time and Location:

• Currently scheduled:
  – Tues & Thurs, 14:00-15:50 pm
  – URBAN 204
  – 20 classes

• Midterm:
  – Most probably Tuesday April 26, 2011

• Final:
  – Monday, June 6, 2011  -- 10:15 am - 12:05 PM.
Methods of assessment:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Quizzes (15 min, weeks 3 &amp; 8, closed book)</td>
<td>15%</td>
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<tr>
<td>Homework (8 weekly homeworks)</td>
<td>40%</td>
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<tr>
<td>Midterm (most probably Nov 4, open book)</td>
<td>15%</td>
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<tr>
<td>Final exam (Dec 11, open book)</td>
<td>30%</td>
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<tr>
<td>TOTAL</td>
<td>100%</td>
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Policies:

• By default, all deadlines are firm.

• We will be as flexible as possible in accommodating special circumstances; but advance notice will make this a lot easier.
Academic Integrity

• We follow the standard PSU guidelines for academic integrity. Students are expected to be honest in their academic dealings. Dishonesty is dealt with severely.

• Examinations. Notes and such, only as the instructor allows.

• Homework.
  – Discussion is good;
  – Items turned in should be your own individual work. You are encouraged to talk to other people about the homework problems, but you must write up your answers independently. If you're stuck with a problem, please ask for help.
Course Text:

• *Discrete Structures, Logic, and Computability*
  • *(3rd ed)*
    – James L. Hein
    – Published by Jones and Bartlett

• Home page of the text book:
It looks like this!
Syllabus

• Mathematical Preliminaries
  • (.5 week, review)

• Finite Automata and Regular Languages
  • (3.5 weeks, chapter 11)

• Pushdown Automata and Context-Free Languages
  • (2.5 weeks, chapter 12)

• Turing Machines and Undecidability
  • (2.5 weeks, chapter 13)

• Computability
  • (1 week, chapter 14)
Today’s Assignments

• Review Readings
  – Sets 1.1, 1.2
  – Strings 1.3.3, 3.1.2, 3.2.2
  – Logic 6.1, 6.2, 6.3, 7.1
  – Proofs 4.4

• You should know this review material

• In today’s lecture we will review
  • basic operations on sets
  • definition and operations on strings
  • definition and operations on languages
  • statements, predicates, and quantifiers
  • Converse and contrapositive
  • Proofs - By contradiction