Welcome to CSE 322: Intro. to Formal Models

- More popularly known as: Theory 101
- Instructor: Rajesh Rao (rao@cs.washington.edu)
- TA: Pradeep Shenoy (pshenoy@cs)
- Guest appearances:
Syllabus and Course Information

- Browse class web page for syllabus and course information:
- Lecture slides will be made available on the website
- Add yourself to the mailing list see the web page
- Textbook
  - Introduction to the Theory of Computation (1997)
  - By Michael Sipser (at MIT)

Today’s Agenda

- Course Topics
- Course Goals
- How do I get an A? Homework, exams, etc…
- Review of Selected Topics from Chapter 0
  - Sets and Mathematical Notation
  - Functions and Relations
  - Strings and Languages
Course Topics

- Mathematical Preliminaries (Chap. 0)
- Regular Languages and Finite Automata (Chap. 1)
- Context-Free Languages and Pushdown Automata (Chap. 2)
- Turing Machines and the Church-Turing Thesis (Chap. 3)
- Decidable and Undecidable Languages (Chap. 4)
- Selected topics from Chap. 5

Course Goals

- General Goals:
  - Learn to mathematically express and analyze a problem or statement about computation
  - Learn to prove mathematical theorems about computation
  - Hone your analytical skills for your future career!
Course Goals

Specific Goals:
- Understand how problems can be classified as computationally “easy” or “hard” using abstract computational “machines”
- Learn about regular expressions, finite automata, context-free grammars, and Turing Machines
- Discover their applications in string searching, compilers, hardware design, programming languages, and algorithmic analysis

How do I get an A in this class?
- Answer: Practice, Practice, Practice (solving problems)
- Weekly homework assignments (50%)
  - Total of about 7 assignments
  - Collaborative/group work is encouraged but only after you have tried to solve each problem by yourself first
  - No copying of solutions – explain in your own words!!
  - See Course Policies regarding this on the Web
  - No late submissions: due in the beginning of class on due date
- Midterm exam (20%)
  - Monday, November 4, 2002
- Final exam (30%)
  - Monday, December 16, 2002 from 8:30-10:20 a.m.
Okay, time to wake up…

Let’s begin with some basics…
- Review of things you probably already know:
  - Sets and mathematical notation
  - Functions
  - Relations
  - Strings
  - Languages
Next Class: Proving things – how and why…

✦ Things to do:
  ➔ Visit course website
  ➔ Sign up for mailing list (instructions on website)
  ➔ Read Chapter 0