Course Introduction
Class Description

• General-purpose data structures and algorithms
• Topics:
  – managing complexity,
  – lists,
  – queues,
  – trees,
  – heaps,
  – hash tables,
  – graphs.
Class Description

• Prerequisites:
  – CS 162 (Intro to Computer Science)
  – MATH 231 (Elements of Discrete Mathematics)
  – Basic programming skills
  – Some prior experience with Unix
Why study data structures?

Fundamental in program design.

Design efficient programs!

You don’t want to write a program that takes forever to run and occupies all the memory..

Nor does any company want this (interview questions)
Why study data structures

• Simplify programming
  – Many structures are common and well-studied
  – Knowing those saves a lot of time
  – As well as debugging effort
Example

- The search problem:

  - How fast can we do it?
  - What if we need to:
    - Update the list very often
    - Search many times

Where is it?

Eric Zimmerman

John Doe
Mary Lin
Amanda Jones
Tasha Funchess
Carolyn Chandler
...
• Awareness when programming:
  – How long will my program take to run?
  – How much memory will it take?
  – Can I design it to be more efficient?
  – How much more efficient?
  – What does it take to make it more efficient?
• Instructor: Prashant Kumar
• Office: 2110 KEC
• Office hours: Mon 10-12 PM
• Textbook (required)
  – Dr. Budd’s Online Textbook
• Reference Book (Highly recommended)
  – C Pocket Reference
• Course Website:
  http://people.oregonstate.edu/~kumarp/CS261/
Structure of the Course

- Weekly Reading
- Lectures
- Worksheets
- 5 Assignments
- 1 Midterm
- 1 Final Exam

Final Grade Breakdown
- 40% Assignments
- 30% Midterm
- 30% Final Exam
• You may use *any development environment* to write your code
• We will write our code in ‘C’ with the C99 standard
• I *highly* recommend that you become very familiar with a debugger and debugging strategies
  – Variables view
  – Expressions
  – Step over, into, out
• All assignments must compile (using gcc) and execute in the linux environment on flip.engr.oregonstate.edu
  – First recitation will exercise this
Preparation and Attendance

• Regularly attend class

• If you miss a class, you are still responsible for learning the material covered during that class.
Conduct

• Be on time

• You are encouraged to ask questions
Academic Honesty -- Homework

• Honesty:
  – Absolutely essential for learning to occur
  – Forms the foundation of your professional integrity

• Ok
  Discuss concepts, general approaches, bugs
Collaboration

• You are expected to do your own work!
• OK to talk about **general** approaches and strategies with other students
• Do not simply let someone else tell you how to solve the problem
• Do not let someone else copy your work
Makeup Policy for the Exams

• Contact the instructor at least 5 days in advance to arrange for an alternate date/time
• When the student is disabled, check http://ds.oregonstate.edu/
• No makeup for students who miss a midterm, or final exam without an excused absence