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
  – MATH 231
  – 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
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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?
Class Information

• Instructor: Prashant Kumar
• Office: 3040 KEC
• Office hours: Mon 4-6PM
• Textbook (required)
  – Dr. Budd’s Online Textbook
• Reference Book (Highly recommended)
  – C Pocket Reference
• Course Website:
  http://people.oregonstate.edu/~kumarp/CS261_Summer18/
Structure of the Course

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

Final Grade Breakdown
40% Assignments
30% Midterm
30% Final Exam
Program Development

- 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.

• Do not expect a private tutorial if you skip lectures and/or recitations.
Conduct

- Be on time
- Mute cell phones
- You are encouraged to ask questions
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