CSE 506: Operating Systems

Introduction
Today’s Lecture

• Course Overview
• Course Topics
• Grading
• Logistics
• Academic Integrity Policy
• Key concepts from Undergrad Operating Systems
Course Overview (1/3)

• Caveat 1: This is only the 2\textsuperscript{nd} time I teach this class.
• Caveat 2: The 1\textsuperscript{st} time I taught it, it was too easy.

• Operating Systems are the \textit{software} that \textit{managers} computers’ \textit{resources}
Course Overview (2/3)

• Ever wonder what the OS does, anyway?

• Operating System is an umbrella term
  – *Kernel*: resource manager
  – *Standard Libraries*: APIs to interface with the kernel
  – *Utilities*: tools to work with system

• This course is mostly about the *kernel*
  – What’s inside the kernel
  – What interface this presents to libraries and software
Course Overview (3/3)

• This course is hard, roughly like CSE 502
  – In CSE 502, you learn what’s inside a CPU
  – In CSE 506, you learn what’s inside an OS

• This is a project course
  – Learn why things are the way they are, first hand
  – We will build an operating system
  – If you don’t know C, you need to learn it quickly
  – If you do not work hard on the project, you will fail
Course Topics

- Intro/Review
- What Software Expects of the OS
- What Hardware Provides to the OS
- **Virtual Memory**
- **Scheduling**
- **Storage**
- Networking
- Multi-threading
- Multi-processing

Will devote most attention to items in **bold**
### Grading (Standard Option)

<table>
<thead>
<tr>
<th></th>
<th>Due Date</th>
<th>Points</th>
<th>Grading</th>
<th>Required?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Homework</td>
<td>March 20</td>
<td>20</td>
<td>Curve 0 to 100</td>
<td>No</td>
</tr>
<tr>
<td>2 Warm-up Projects</td>
<td>Feb 17, Feb 26</td>
<td>10,10</td>
<td>All or nothing</td>
<td>No</td>
</tr>
<tr>
<td>1 Course Project</td>
<td>Last class</td>
<td>100</td>
<td>See below</td>
<td>Yes</td>
</tr>
<tr>
<td>1 Final</td>
<td></td>
<td>30</td>
<td>Absolute value</td>
<td>No</td>
</tr>
<tr>
<td>Participation</td>
<td></td>
<td>10</td>
<td>Curve 0 to 100</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Course Project

<table>
<thead>
<tr>
<th>Course Project</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperative OS</td>
<td>60</td>
</tr>
<tr>
<td>Preemptive OS</td>
<td>70</td>
</tr>
<tr>
<td>Preemptive OS w/ File System</td>
<td>80</td>
</tr>
<tr>
<td>Preemptive OS w/ File System and Network</td>
<td>90</td>
</tr>
<tr>
<td>Multi-processor OS w/File System and Network</td>
<td>100</td>
</tr>
</tbody>
</table>

Without curve, need 100 points to get an A
Grading (Research Option)

• If you are...
  – Pursuing a PhD
  – Pursuing an MS thesis
  – Planning to take 523/524 with me

• You may select a research option for the grade
  – Only available with instructor’s approval

• When selecting this option...
  – Must work alone on everything
  – Attain at least 60 points of the Standard Option
  – Grade will be based on subjective research progress

Note: Of the two, this is the harder option
Logistics (1/4)

• Project milestones
  – There are no official project milestones
  – If you need milestones, send me a milestone schedule
    • I will deduct 5 points for each milestone you miss

• Books
  – Operating System Concepts
    by Silberschatz, Galvin, Gagne (tried and true)
  – Operating Systems: Principles and Practice
    by Anderson and Dahlin (beta)
  – The C Programming Language
    by Kernighan and Ritchie (definitive guide to C)
Logistics (2/4)

• Working in groups
  – Permitted on everything except Final
  – Groups may range in size from 1 to 80 people
    • Points deducted on group work are multiplied by group size
    • Permission of instructor is needed for group size greater than two

• Attendance
  – Optional (but highly advised)
  – No laptop, tablet, or phone use in class
    • Don’t test me - I will deduct grade points
Logistics (3/4)

- Blackboard
  - Only used for posting grades

- Course Mailing List
  - Subscription is **required**

- Late Policy
  - All deadlines are **before** the start of lecture on due date
  - 1-point deducted for each late day (in 24-hour increments)
    - Multiplied by number of group members
Logistics (4/4)

• Wait list is currently full
• Grad students often over-enroll
  – Space likely to open up in first week
  – If you want in, keep showing up for a few lectures
• Worst case: 506 in the fall
  – Offered every semester going forward
Academic Integrity Policy

• Probably different from other classes
  – Much more open, but much more strict
  – Resembles the “real world”

• Actual Policy:
  – All submitted work must have an explicit Copyright label containing your name.
  – All submitted work must have an explicit license.
  – All Copyright laws of the United States must be respected.

I will enforce this policy very strictly
Copyright Example 1

- Copyright © 2013 by Mike Ferdman. All rights reserved.
Copyright Example 2

• Copyright © 2013 by Mike Ferdman. Permission to copy and distribute verbatim copies permitted.
Copyright Example 3

- Copyright © 2013 by Mike Ferdman. This work is licensed under GPLv3, details in accompanying COPYING file.
Questions?