

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 the 4th time I teach this class.
- Caveat 2: The 2nd time I taught it, it was too hard.
- Caveat 3: The 3rd time I taught it, it was too easy.
- Caveat 4: Much of my setup was lost in a disk crash.
 - Most of it had to be recreated. Untested: beware of bugs.
- Operating Systems are
the *software*
that *managers*
computers' *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)

	Due Date	Points	Grading	Required?
1 Homework	October 8	20	Subjective	No
3 Warm-up Projects	Sep 12, 21, 28	10,10,10	Curve	No
1 Course Project	Last class	100	See below	Yes
1 Final		30	Absolute value	No
Participation		10	Linear	No

Course Project (Cooperative multi-tasking OS)	50 pts
Preemptive multi-tasking	+10 pts
Signals (INT on ^C, ALARM, SEGV) and pipes	+10 pts
On-disk r/w file system	+10 pts
On-disk swap and paging	+10 pts
TCP/IP Networking (lwIP)	+10 pts
Multi-core	+20 pts

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
 - **Design and Implementation of the FreeBSD Operating System**
by McKusick, Neville-Neil, and Watson.
 - *The C Programming Language*
by Kernighan and Ritchie (definitive guide to C)
 - Operating System Concepts
by Silberschatz, Galvin, Gagne (tried and true)
 - Operating Systems: Principles and Practice
by Anderson and Dahlin (beta)

Logistics (2/4)

- Working in groups
 - Permitted on everything except Final
 - Groups may range in size from 1 to 199 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
 - How will I remember? I'll take pictures of the classroom.

Logistics (3/4)

- Blackboard
 - Only used for posting grades
- Course Mailing List
 - Subscription is **required**
<https://piazza.com/stonybrook/fall2017/cse506/home>
- 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 always over-enroll
 - Space likely to open up in the first week
 - If you want in, keep showing up for a few lectures
- Worst case: 506 with Prof. Zadok in the spring
 - Offered every semester

Academic Integrity Policy

- Summary: don't cheat
- Details: don't take code from anyone for any reason
 - Unmodified third-party open-source libraries permitted
 - You may not look at code from previous years
 - You may not look at code from courses at other schools

I will enforce this policy very strictly

Questions?