CS350 - Operating Systems

Course Overview

Class website:
http://www.cs.binghamton.edu/~kartik/cs350/
Class Hours and Location

• Lectures
  • Mon & Wed 8am to 9:30am
  • Room LH 004

• Recitation
  • Thu 11:40am to 1:05pm
  • Room: ENGB G-7
Instructor

• Kartik Gopalan

• Office: Room Q-17, Engineering Building

• Office hours
  • MW — 9:30am to 10am
  • Outside the class or in office.

• Email: kartik@binghamton.edu
Teaching Assistant

• Piush Sinha
  • psinha1@binghamton.edu

• Office Hours
  • TBA

• Location: ENGB G-7
Interfaces in a Computer System

User ISA : 7
System ISA : 8
Syscalls : 3
ABI : 3, 7
API : 2, 7

ISA = Instruction Set Architecture
ABI = Application Binary Interface
API = Application Programming Interface
Layers of Software

User Space

Processes

System Call Interface

CPU scheduling
Memory Manager
File system
Network Stack
Device Drivers

HyperCall Interface

Hypervisor

Virtualization Layer

OS
Coverage of Topics

- Processes and Threads
- CPU Scheduling
- Memory Management
- Concurrency
- File Systems
- Input/Output
- Security
- Virtualization
- Basics of Programming in the Linux Kernel
- Other topics as appropriate
Required Course Material

- Lecture slides and papers
  - Posted on the class website

- Andrew Tanenbaum, Modern Operating Systems, 3rd or 4th edition
**Recommended textbooks**

**OS Concepts**
- Silberschatz, Galvin, Gagne, *Operating System Concepts*, 7th or 8th edition
- James E. Smith, Ravi Nair, *Virtual Machines: Versatile Platforms for Systems and Processes*

**Programming**
- Kernighan, Ritchie, *The C Programming Language*
  - This book is also available online for free at [http://lwn.net/Kernel/LDD3/](http://lwn.net/Kernel/LDD3/)
Credit hours and course expectations

This course is a 4-credit course, which means that students are expected to do at least 12.5 hours of course-related work or activity each week during the semester. This includes scheduled

- class lecture/discussion meeting times
- time spent completing assigned readings
- studying for tests and examinations
- participating in lab sessions
- preparing written and programming assignments, and
- other course-related tasks.
Prerequisites

- **CS220** - Must be familiar with basics of computer system architecture
- **CS240** - You MUST be comfortable with programming in C
  - If you are not comfortable with C, please first take a remedial undergraduate programming course.
  - This course will not cover programming basics.
- Proficiency in using at least one debugger is expected.
  - For example gdb or ddd.
  - You MUST know how to debug your own user-level code.
  - We will help you with kernel debugging techniques, assuming you know how to debug user-level code.
- You must also be comfortable working and programming in the Unix/Linux environment.
  - If not, please teach yourself working in UNIX/Linux environment in the first week by looking up online tutorials and attending the first Lab.
  - This course will not cover UNIX/Linux basics in depth.
Evaluation Criteria

- 60% - Class Tests
  - Once every two or three weeks in class

- 40% - Assignments
  - Once every two or three weeks
Accounts you need

• BU Email account
  • <yourid>@binghamton.edu
  • For communicating with me and TA
  • For receiving announcements

• CS LDAP Account
  • to log into machines in G-7 and Q-22

• “Network Boot” image in the G-7 instructional lab
  • Your own Linux kernel that you will work with.
  • Explained during Lab

• Access to blackboard
  • For submitting your assignments
  • Getting grades
  • http://blackboard.binghamton.edu
Students with disabilities

- Please contact me within first two weeks of class.

- Please contact the SSD office for any accommodations.
  - Bring me their letter.

- Don’t hesitate to tell me if some aspect of the class is not working for you.
  - We will promptly work with you and SSD to fix it.
To ask or not to ask?

- Instructor and TAs are not psychics!
  - If you don’t ask, then we won’t know how to help.

- Please let us know if...
  - You are lost
  - You don’t understand something
  - You don’t have the background
  - Class can be improved in certain ways

- Feel free to give anonymous feedback online
  - Especially in the middle of the semester
  - Though direct feedback is always welcome.

- Ask for help early
  - Don’t wait till the last minute
Asking questions

- Make Google your friend!
  - Can’t beat the response time!

- Email me/TAs anytime

- Stop by during office hours

- Any other time
  - Please email me for an appointment.
  - Otherwise, you may not find me, or you may find me busy with something else.

Kidding... No question is dumb!
Stressed?

- Keep the perspective
  - This is only one little course in the scheme of “things”.

- If you are overwhelmed with the course, talk to us.

- If you are depressed or panicking.
  - Seek professional counseling.
  - http://counseling.binghamton.edu/
  - Hope you won’t need to 😊
Academic Integrity

• Means
  • Do your own work. Don't do others' work.
  • Don't ask/give solutions, including code.
  • Don't get code from the Internet.
  • Protect your code

• Moss: A tool for detecting software plagiarism will be used.

• Please read the policies on course web page

• Dishonesty ➔
  • You can get an F grade
  • Be referred to the Dean’s office

• It's better to submit an imperfect assignment of your own than to submit a perfect but copied one.
  • You can get partial grades for incomplete work.
  • But you'll get F for copied work.

http://library.kcc.hawaii.edu/main/instruction_info/
Missed Exams/Assignments

- No makeup exams/assignments.

- Except for medical emergencies or jury duty when accompanied with valid documentation.

- Plan your other commitments (travel, interviews etc) around deadlines.
Questions?