Operating Systems Course Overview

Instructor: Kartik Gopalan

Class website:
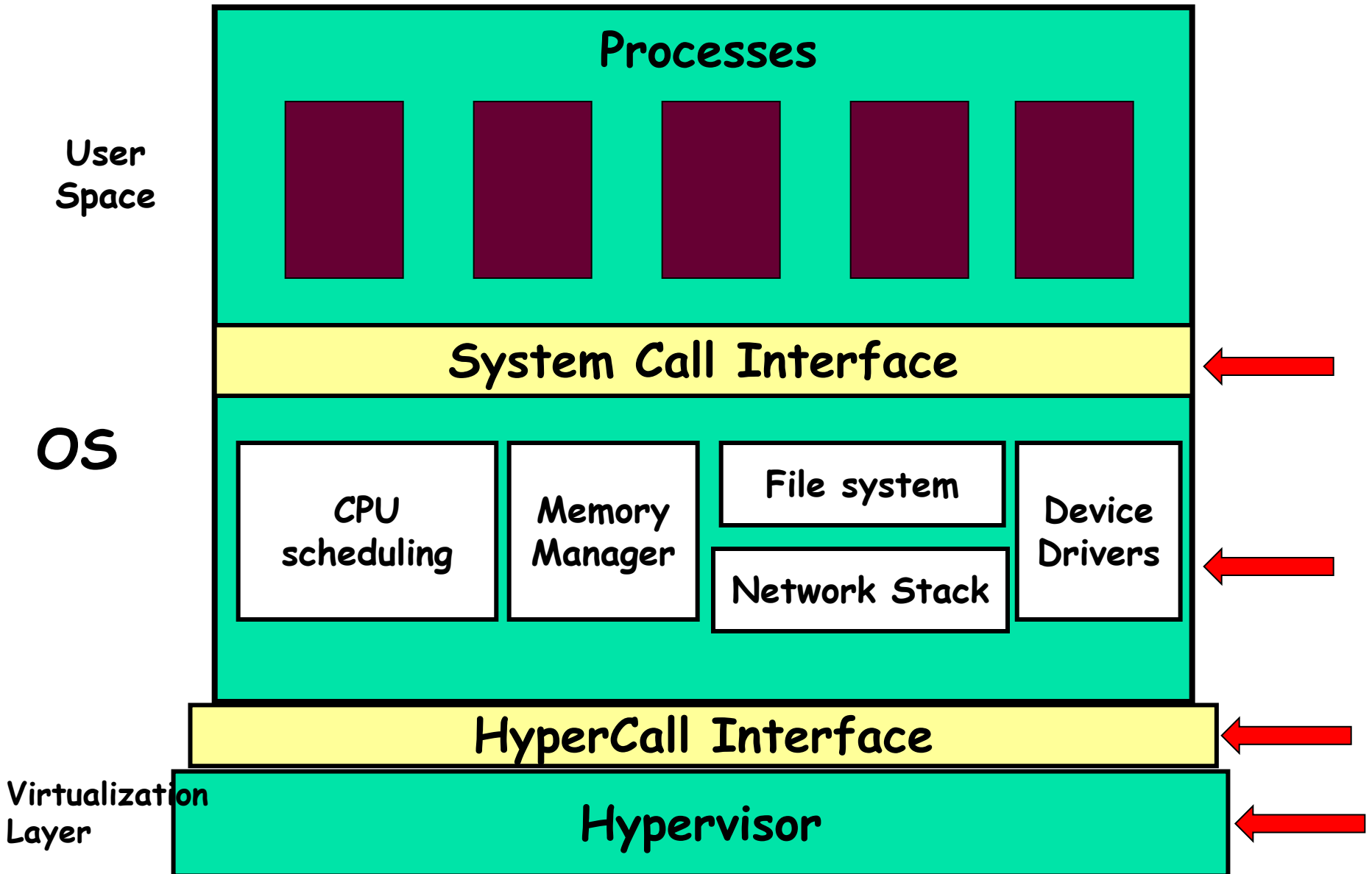http://cs550.github.io

Interfaces in a Computer System

(1)

User-level processes

(2)

Libraries

(3)   (3)

Operating System

Drivers	Memory Manager	Scheduler

(8)   (8)   (8)   (7)   (7)

Execution hardware

(9)

(10)   (10)

System Interconnect (Bus)

Memory Translation

(12)

Controllers
(13)

(11)

Controllers
(14)

I/O Devices

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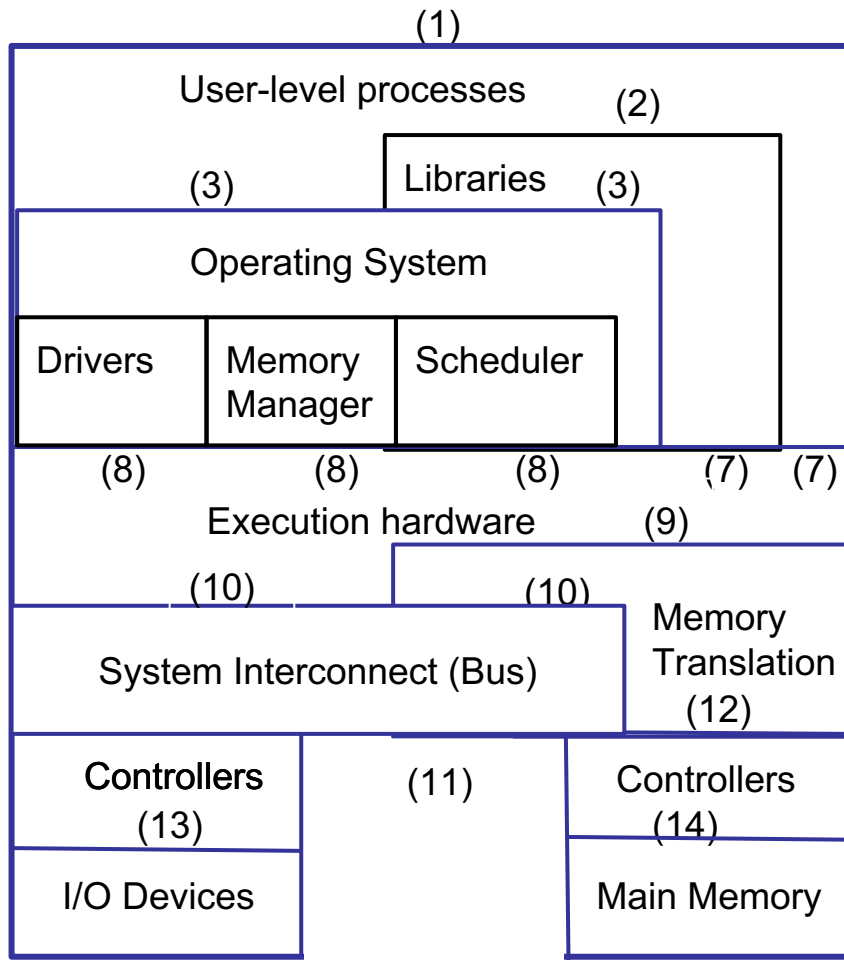
User ISA : 7
System ISA : 8
Syscalls : 3
ABI : 3, 7
API : 2,7

ISA = Instruction Set Architecture
ABI = Application Binary Interface
API = Application Programming
            Interface

Layers of Software

Processes

User Space

System Call Interface ⬅

OS

CPU scheduling

Memory Manager

File system

Network Stack

Device Drivers ⬅

HyperCall Interface ⬅

Virtualization Layer

Hypervisor ⬅

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

Class Logistics

- Course Material
  - Lecture slides and papers posted on the class website
  - Andrew Tanenbaum, Modern Operating Systems, 3rd or 4th edition
  - Operating Systems: Three Easy Pieces
    - http://pages.cs.wisc.edu/~remzi/OSTEP/
    - Online and free
  - No need to buy the books unless you want to.

- Read the course policies on the class website.
- Website will also have office hours, test dates, assignments, test samples etc.

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, Q-22, and remote.cs.binghamton.edu

- Access to blackboard
  - For submitting your assignments
  - Getting grades
  - http://blackboard.binghamton.edu

- A VM to work on
  - Either on google cloud, or your own machine, or G-7/Q-22 lab
  - Your own Linux kernel that you will work with.

Students with disabilities

- Please contact me, preferably, within the first two weeks of class.

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

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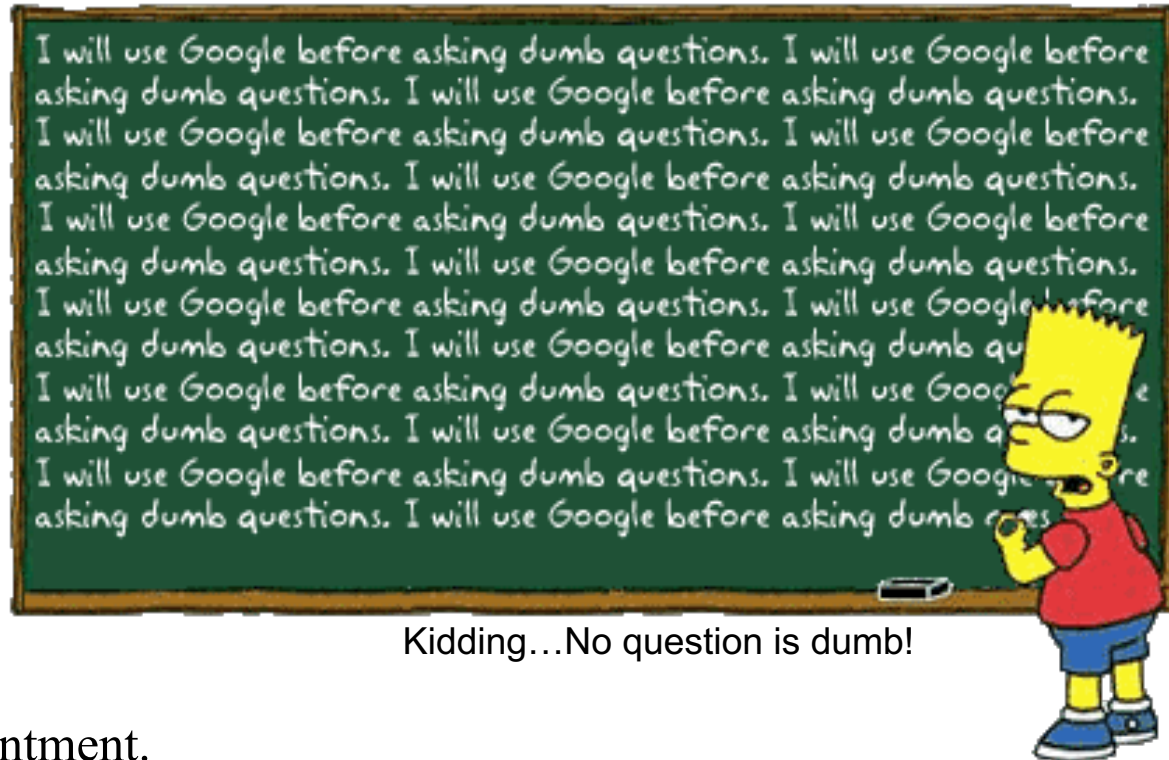 - We will promptly work with you and SSD to fix it.

To ask or not to ask?

- Instructor and TAs are not a 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

- Ask for help early
  - Don't wait till the last minute

- Feel free to give feedback
  - Especially in the middle of the semester
  - Direct feedback is always welcome.
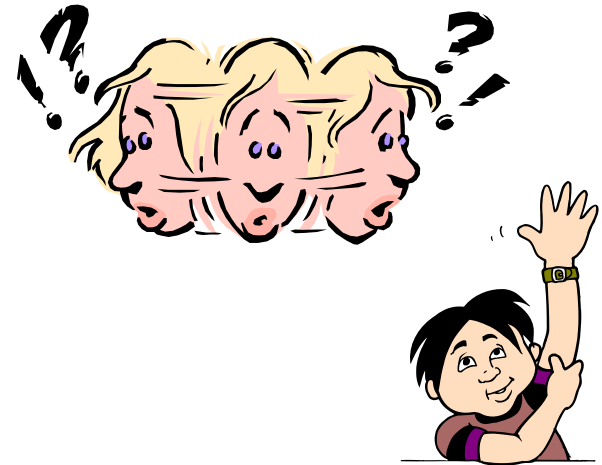
Asking Questions

- 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.

I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb questions. I will use Google before asking dumb qu... I will use Google before asking dumb questions. I will use Googl... I will use Google before asking dumb questions. I will use Goog... asking dumb questions. I will use Google before asking dumb a...s. I will use Google before asking dumb questions. I will use Google...fore asking dumb questions. I will use Google before asking dumb c...es

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.
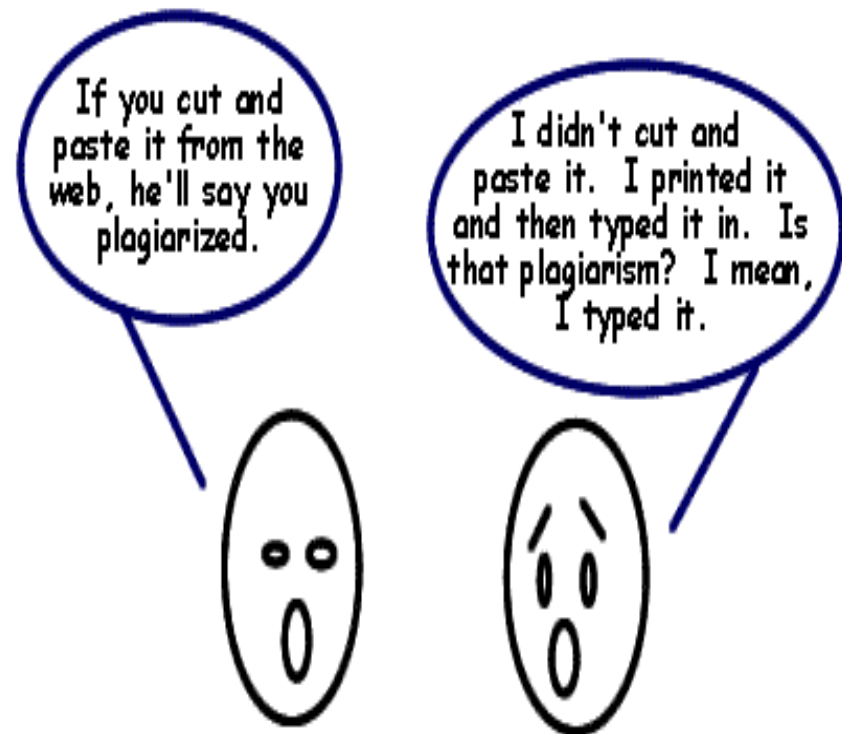
- Please read the **policies** on course web page
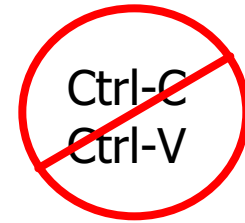 - http://www.cs.binghamton.edu/~kartik/policies.html

- Dishonesty ➔
  - You can get an F grade
  - Be referred to the Dean's office

- Its better to submit your own imperfect own than to submit a perfect copied one.
  - You get partial grades for incomplete work.
  - But you'll get F for copied work.

Ctrl-C
Ctrl-V

If you cut and paste it from the web, he'll say you plagiarized.

I didn't cut and paste it. I printed it and then typed it in. Is that plagiarism? I mean, I typed it.

http://library.kcc.hawaii.edu/main/instruction_info/plagiarism1.html

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.
  - Missing exams/deadlines due to such commitments is not a valid excuse.

Questions?