Introduction to 15-410/605

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Course Numbers

- Undergraduate $\implies 15-410$
- ECE M.S. students $\implies$ probably want 15-605
- SCS M.S. students, INI M.S. students $\implies 15-605$
- Ph.D. students $\implies$ probably want 15-605?
- Other – consult your advisor
  - Your advisor *must* contact me
Wait List

- Registrar's wait-list order is irrelevant
  - He has his ordering, we have ours
  - We admit based on readiness (mixed with need)
  - Usually our estimate centers on your advisor

- There may not be room for everybody
  - Some students will need to try again next semester

- If you're not on the wait list yet, you are invisible
  - Invisible students definitely won't get into the course!
  - If you are invisible, send mail before noon today
Wait List

• Background material (15-213) is not optional
  – M.S. students: take 213 and get an A (B may be ok)
  – Ph.D. students: have your advisor contact me

• Rare exceptions exist
  – Took a course with the 213 textbook – see me
  – Multiple years of specific industry experience – consult your advisor (today)

• Otherwise, please switch to 213 wait list instead
  – In some cases 213 may not be enough – consult advisor
Wait List

- ECE
  - Seniors: All in, I think?
  - Juniors: I *think* there is room for everybody?
  - M.S.: There is reason to hope, but not certainty

- INI
  - There is reason to hope, but not certainty

- Others? *I must hear from your advisor!*

- *If you are on the wait list, you must read your e-mail!!!*
Logistical Query #1

- Who has a class that conflicts with the 410 lecture?
  - Contact me after class (potential for big trouble)
Logistical Query #2

• Who had trouble with 213?
  – Contact me after class (potential for big trouble)
  – *If you didn't get a B or an A, see me*
  – *If the malloc() lab didn't go well, see me*
Self-Assessment

• Self-assessment exercise on course web site?
  – Not mandatory if you did well in 15-213
  – A very good sanity-check, though!
Textbook (traditional)

• Option 1
  – Operating System Concepts, 8th edition
    • Silberschatz, Galvin, & Gagne
• Multiple “cheap” options exist!
  – eBay/Amazon/Alibris/...
  – If you try an e-book edition instead of paper, please tell us if you like it
  – Used copies of 7th edition work pretty well
    • Web site lists reading assignments for 6th through 8th editions
Textbook (experimental)

• Option 2
  – Operating Systems: Principles & Practice
    • Anderson & Dahlin

• Main differences
  – More focus on typical modern kernels and hardware
  – Less focus on historical systems
  – Stronger coverage of file systems and storage
  – Weaker coverage of security

• Available online
Textbook (which one?)

• We think you can use either one
  – Heavily-tested material is typically covered in lecture
    and projects

• We are interested in your opinion!
    purchase vs. rental...
  – We will ask for your thoughts at the end of the
    semester
Outline

• People
  – Me, us, you

• Administrative information
  – Academic conduct

• Class goals

• Reading material
Dave Eckhardt

• Teaching Professor, CS
  – Ph.D., Computer Science, CMU, 2002
    • “An Internet-style Approach to Managing Wireless Link Errors”
      – http://www.cs.cmu.edu/~davide

• Building Unix kernels since ~1985
  – PDP-11, Version 7 Unix
  – “Not really a BSD bigot”
TA's

- Mixture of “repeat offenders” and “this year's model”
- As a team
  - Strong background
  - Here to help!
Yinz - Reading

• Read a Ph.D. thesis?
• Academic journal article?
• Attended an academic conference?
• Read a non-class CS book last semester?
Information Sources

Web site http://www.cs.cmu.edu/~410
  – You are *utterly required* to read the syllabus

Q: Can I used a linked list for...?
Q: I have a final exam conflict...
Q: The license server is down...
Q: AFS says “no such device”...
  – A: staff-410@cs.cmu.edu
Information Sources

Q: I am experiencing [delicate situation X] ...
A: e-mail to faculty

Note: most likely no Piazza this semester
  – Experiment was run in a previous semester
  – Results equivocal
Course Goals

• Operating Systems
  – What they are
  – Design decisions
  – Actual construction

• Team programming
  – Design, documentation
  – Source control
  – People skills
Course Plan

• Lectures
  - *Many* topics will be covered by text
  - But skipping many lectures *will* challenge your grade
    • The map is not the terrain, the slides are not the lecture
    • You will miss Q&A
  - We expect you to attend lectures
    • Details: see syllabus
Course Plan

• Projects
  – “Stack crawler” - readiness check [1-person project]
  – Bare-machine video game [1-person project]
  – Thread library
  – OS kernel
  – Kernel extension

• Project environment
  – Wind River Simics™ PC simulator
  – Your projects can also run on real PC hardware
Course Plan

• Homework assignments
  – \(~2\), to deepen understanding of selected topics

• Reading assignment
  – Pick something fun, write a *brief* report

• Mid-term, Final exam
  – Closed-book
Team programming

• Why?
  – Allows attacking larger problems
  – Teaches *job skills* you will need
    • Setting milestones
    • Setting up a productive work flow
    • Involving “management” before it's too late

• Team programming != “software engineering”
  – No requirement analysis
  – No release staging, design for growth, ...
  – Not a complete “life cycle”
Health Problems

• *Somebody* will probably get mono or pneumonia
  – If not, only because of something more creative

• Work-blocking health problem?
  – Go *early* to University Health (etc.)
  – *Avoid* “For the past two weeks I dragged myself to class but couldn't focus on programming”
  – Try to get paper documentation of work restrictions
  – Your program staff will inform instructors
    • CS: Cathy/Mary; ECE: Janet/Vickie/Jillian/Nesli
Partner Problems

• *Somebody* will have serious partner trouble
  
  - You need to “involve management” early
    
    * Sometimes (50%) we can fix the problem
    * If the problem can't be fixed, we can reduce the fallout
      
      - ...only if we know while the trouble is happening
    
    - *Don't* “buffer up” partner trouble until the last week of classes
      
      * At that point, we basically can't help
  
  - Details: see syllabus
Academic honesty

• See syllabus!
  - Reading the syllabus on this topic is not optional

• Learning is good
  - ...practices which avoid learning are *double-plus ungood*

• Plagiarism is bad
  - ...credit *must* be given where due

• “Outside code” is *not* a simple yes/no issue
  - You *must not read any outside code* without carefully consulting the syllabus
Academic conduct

• Being a partner
  – Responsible
    • I am writing three grad school applications next week
  – Irresponsible
    • [vanish for 1 week, drop class]
Closing

- “RISKS Digest” (en.wikipedia.org/wiki/RISKS_Digest)
  - Developers should read this
  - Managers should read this
  - Journalists should read this

- OSC textbook
  - Chapters 1, 2; Chapter 13.1, 13.2, 13.3.3

- OS:P+P textbook
  - Chapters 1, 2; Sections 3.0, 3.5; Section 11.3

- Start choosing a partner for P2/P3