CS 5204
Operating Systems
Fall 2005
Godmar Back
About Me

- Undergraduate Work at Humboldt and Technical University Berlin
- PhD University of Utah
- Postdoctoral Work at Stanford University
- Joined Virginia Tech as Assistant Professor August 2004
- Research Interests:
  - Operating systems, runtime systems and compilers: focus on building reliable systems.
Course Facts

• Meet MWF 11:15am-12:05pm McBryde 230 (NOT 212!)

• Will use class website as primary means of communication
    Recommend using Firefox to access website

• Will use Blackboard Portal for grades & forum
  – [http://learn.vt.edu](http://learn.vt.edu)
Prerequisite/Force-Add

• I expect that everybody who is interested in taking this class will be able to do so
• Send email to gback@cs.vt.edu with your name and student id if you are not yet officially enrolled
Email Etiquette

• Please make sure your From: line has your full name.

• Picture shows how to enter it in vt’s webmail.
About This Class

• Graduate Level Operating Systems
  – Emphasis on preparing students for research
    • Read and evaluate research papers
    • Learn from experienced researchers
    • Learn OS by studying systems
  – Projects
    • Unstructured problems
  – Presentations (2)
    • Of others’ research and your own
Reading Material

- Assigned research papers are *primary* reading
- Textbooks for background include
  - Silberschatz, Galvin, Gagne: *Operating Systems Concepts*
  - Nutt: *Operating Systems*
  - Stallings: *Operating Systems Internal and Design Principles*
  - Tanenbaum: *Modern Operating Systems*
  - Tanenbaum & van Steen: *Distributed Systems: Principles and Paradigms*
Format

• Discussions + lecture
• Paper evaluations
• Speaker evaluations
• Two student presentations
  – one for assigned research paper
  – one for term project
• Term project
Discussions

• Everybody reads assigned papers before class
• Submit brief evaluation form
  – Proves you’ve read the paper
  – Enables you to contribute to discussion
• Instructions on how to submit will be on website
Late Policy

- No late submissions will be accepted.
- Instead, you have six wildcards:
  - Six dates on which you can skip evaluations without penalty
  - Need not be announced beforehand
- Contact instructor for exceptions in severe circumstances only
- Unlikely to grant incompletes (I)
Paper Evaluation Form

• What problem does the paper attack? How does it relate to and improve upon previous work in its domain?
• What are the key contributions of the paper?
• Briefly describe how the paper’s experimental methodology supports the paper’s conclusions.
• Write down one question you plan to bring up in the discussion.
Your Presentation

- 2 parts
- First, present research as if it were your own
  - Giving background if necessary
- Then, change roles:
  - Evaluate research from your perspective: add insights, criticism, etc.
- Help lead subsequent discussion
Preparing Your Presentation

• Guidelines for presentations are posted on class website
  – Strongly recommend you read them
• Every student must meet with instructor to discuss slides.
  – Tentative Time:
    • Monday 1pm for Wednesday presentation
    • Wednesday 1pm for Friday presentation
  – You must have your slides ready by that time.
Getting Feedback

• Speaker evaluation forms
• TA compiles forms
• You do this as a courtesy to your fellow students who benefit from your feedback
Speaker Evaluation Form

• Content
  – Did the speaker extract and emphasize the paper’s main contributions?
  – Did the speaker put the presented work in context?

• Form
  – Slides: Were the slides readable and concise?
  – Presentation: Was the presentation understandable and clear?
  – Other comments you wish to provide, if any
Class Participation

• Important
• Usually proportional to preparation
• Will give you feedback
  – Insufficient
  – Sufficient
  – Above average
Midterms

- Two short (~ 1 hour) exams!
- Tentative date for midterm 1: Oct 17
- Midterm 2: probably before Thanksgiving
- Covers material from lectures and discussion
Term Project

• Two Choices:
  – Survey Paper
  – Programming Project

• Milestones
  – Project proposal
  – Will post schedule

• Final Presentation
  – To teaching staff during or before final’s week
Survey Paper

• Done individually
• Explore research area or controversy
• Do not merely summarize \( n \) papers
• Rather
  – Identify problems, ideas and concepts in related (or contrasting) research and approaches
  – Learn and discuss trade-offs
  – Evaluate approaches
Survey Topics: Examples

• Threads vs. Events
• Soft Updates vs. Journaling File Systems
• Virtualization Techniques
• Multi-tasking/resource control in a JVM
• Techniques for reliability in OS

• … pick your own topic of interest here
Programming Project

• Done in teams of 1-2 students (3 if project size warrants) – like to see 2 students as the norm

• Many options:
  – Build small distributed system
    • E.g., small P2P system; distributed web cache
    • Distribute existing system
  – Perform experiments
    • E.g., characterize Linux workloads
  – Modify or improve existing system
    • E.g., add failure report facility to Linux

• ... your own idea
Grading

• 30% Midterm
• 10% Paper Evaluations + Class Participation
• 10% Research Paper Presentation
• 40% Term Project
• 10% Final Presentation
• *These may be subject to change*
Honor Code

• Will be strictly enforced in this class
• Do not cheat
  – Observe collaboration policy outlined in syllabus
• Do not plagiarize
  – Use proper citations
• Read the policies posted on the website
  – Note reference to “codes of ethics used by professional societies in the United States (my emphasis)”
• If in doubt, ask!