

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

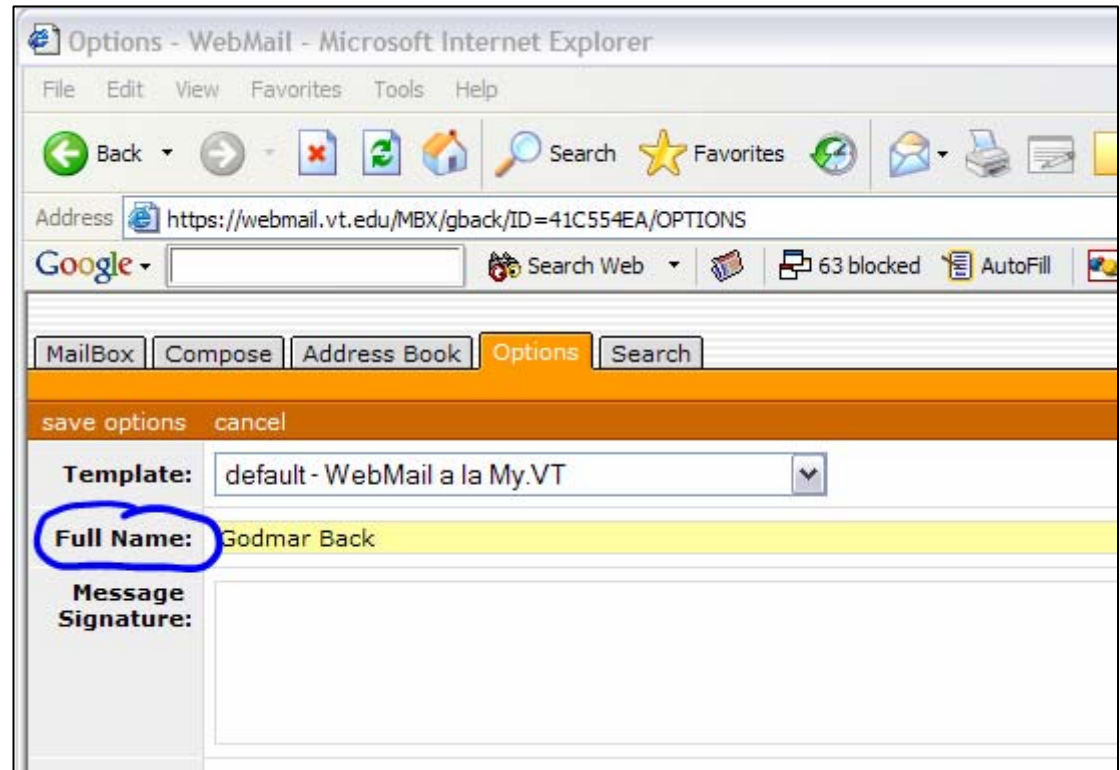
- Meet MWF 11:15am-12:05pm McBryde 230 (NOT 212!)
- Will use class website as primary means of communication
 - <http://courses.cs.vt.edu/~cs5204/fall05-gback>
Recommend using Firefox to access website
- Will use Blackboard Portal for grades & forum
 - <http://learn.vt.edu>

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!