CS 241, Fall 2013

August 26, 2013
Operating Systems?
“System”

• *system*:
  – A set of connected things or parts forming a larger and more complex whole.
  – An integrated set of elements that accomplish a defined objective.
Challenges

• **Accessing Resources:**
  – CPU (processes/threads), RAM, storage, network, ...

• **Sharing/Coordinating Resources:**
  – Limited CPU, RAM, storage, network bandwidth
  – Synchronization, deadlock, communication

• **How it all works!**
The Team

• Wade Fagen
  – 2215 SC
  – wfagen2@illinois.edu
The Team

• **Teaching Assistants (TAs)**
  – Paul Bissonnette
  – Bobby Chen
  – Hongyang Li
  – Reza Shiftehfar

• **Lab Assistants:** TBA
Communications

• Course announcements and discussion:
  – Piazza (http://www.piazza.com/illinois/cs241/)
  – Access Code: _____________

• E-Mail
  – cs241help-fa13@cs.illinois.edu
    • Use for personal questions only. We will be unable to help on MP-related questions via e-mail!
Discussion Sections

• You must be registered for one discussion section.
  – Meets on Thursdays, starting next week

  – Small-group programming with a TA. Weekly “MiniMPs” will be done that are highly relevant to the MP and/or lecture material.

• Attendance isn’t required, but it will be worth your time.
Grading

Final Exam 30%

Midterm 20%

MPs 50%
- MP0 = 3%
- MP1 = 3%
- MP2 = 7%
- MP3 = 5%
- MP4 = 5%
- MP5 = 6%
- MP6 = 6%
- MP7 = 7%
- MP8 = 8%
MPs

- **Nine MPs**: MP0 – MP8
  - Length: 1 – 2 weeks
  - Longer/harder MPs ➔ Worth more of your grade!
  - Usually released on a Monday
  - Usually due on a Monday @11:59pm
Late Submissions

- **MP Policy:**
  - Up to 24 hours late, score scaled to 70%.
Regrades

- Regrade requests must be made within one week of the assignment grade being posted.
Exams

• **Midterm Exam**
  – Monday, Oct 14\textsuperscript{th} 7pm – 9pm

• **Final Exam**
  – Friday, Dec. 20\textsuperscript{th} 8am – 11am

  – *We are unable to give an earlier exam. Schedule your flights/travel accordingly!*
Academic Honesty

• All work in this course is **individual** work.

• What is cheating?
  – Copying code
  – Coping pseudo-code
  – Copying flow charts
  – Diagraming a program with your friend
  – Anything where someone else tells you *how* to do it.
Academic Honesty

• What is not cheating?
  – Talking about high-level concepts
  – Discussing MP requirements
  – Discussing the C language, compiler, or tools
  – Helping with a very specific debugging question, limited to a small portion of the program
    • “He fixed my code” is not an excuse, your submission must be your work.
Academic Honesty

• Penalty
  – First infraction
    • **Exam**: Automatic 0 on the exam.
    • **MP**: All involved parties receive a 0 on the MP. Additionally, a full letter grade may be deducted from your grade.
  – Next infraction:
    • Grade of F

– See course website for more information.
What will you do?

• Week 1-2: **Nuts & bolts**
  – Manipulate pointers and memory
  – Use UNIX system calls from within C programs
  – MP0: Introduction to C
  – MP1: Working with C pointers & strings

• Week 3-4: **Memory**
  – Understand memory allocation and virtualization
  – MP2: malloc (+contest!)
What will you do?

• Week 5-6: **Parallelism**
  – Create and manage processes and threads
  – Control scheduling of proc./threads
  – MP3: Shell
  – MP4: Multithreaded sorting
  – MP5: Scheduling algorithm simulator

• Week 7-11: **Cooperating parallelism**
  – Communicating & sharing resources between proc./threads
  – MP6: Parallel make
  – MP7: MapReduce
What will you do?

• Week 12-13: Networking
  – Use communication protocols (TCP/IP) and interfaces (Sockets)
  – Write distributed multi-threaded apps that talk across a network
  – MP8: Web server

• Week 14: Additional OS concepts
  – I/O and file systems
CS 241

http://courses.engr.illinois.edu/cs241/