

# CS 241: Wrap-up and beyond

CS 241

May 7, 2017

University of Illinois

# Announcements

## Review material posted by Friday

- Study guide
- Practice exam

## Review sessions

- Vote on Piazza 3pm – 10pm today

## MP Grading Round 2

- Same formula (50% “very late” multiplier)
- We **will** include MP2 (minus contest)

## Academic honesty detection

- One batch at the end

# What did you learn?

Write, compile, debug, and execute C programs

Interact with the operating system via POSIX system calls

Understand memory allocation and virtualization

Create and manage many processes and threads

Control scheduling of processes and threads

Communicate and share resources between threads

Use communication protocols (TCP/IP) and interfaces (sockets)

Write distributed multi-threaded apps that talk across a network

# What did you do?

Wrote a **real** memory allocator.

A **real** shell

Multiple **real** non-trivial parallel applications (merge sort, make)

A **real** framework for processing big data

A **real** web server

# Great Ideas in Computer Systems

## The power of layered abstractions

- Modularity to help deal with many complex interacting parts
- Virtualization of physical resources for flexibility

## Defensive programming

- Making your code robust to unexpected errors or strange inputs

## Concurrency

- to match the logical flow of events
- to deal with big data and big computation

## It's all just bits

- What is that thing, really?

# What will you do next?

Q: What did you enjoy about this class?

- A1: Processes/threads, memory, managing system resources?
- A2: Concurrency, synchronization, optimization?
- A3: Networking, client-server programming?
- A4: The tiny bit of security we did?
- A5: Programming / MP design
- A6: Nothing at all

# What will you do next?

## **Q: What did you enjoy about this class?**

- AI: Processes/threads, memory, managing system resources?
  - CS 423: Operating Systems
  - CS 424: Real-time Systems
  - CS 431: Embedded Systems
  - CS 433: Computer Systems Organization

# What will you do next?

## **Q: What did you enjoy about this class?**

- A2: Concurrency, synchronization, optimization?
  - CS 411: Database Systems
  - CS 420: Parallel Programming



# What will you do next?

## **Q: What did you enjoy about this class?**

- A3: Networking, client-server programming?
  - CS 414: Multimedia Systems
  - CS 425: Distributed Systems
  - CS 438: Computer Networking

# What will you do next?

## **Q: What did you enjoy about this class?**

- A4: The tiny bit of security we did?
  - CS 461: Computer Security I
  - CS 462: Computer Security II

# What will you do next?

## **Q: What did you enjoy about this class?**

- A5: Programming / MP design
  - CS 421: Programming Languages and Design
  - CS 426: Compiler Construction
  - CS 427: Software Engineering I

# What will you do next?

## Q: What did you enjoy about this class?

- A6: Nothing at all?
  - “Higher Level”
    - CS 465: User Interface Design
    - CS 398.VL (Spring 2014): Visualizing Literature
  - “More Applied”
    - CS 418/419: Computer Graphics
    - CS 446: Machine Learning
    - CS 440: Artificial Intelligence
  - “More Math”
    - CS 450: Numerical Analysis

# ICES forms