CSCE 313-200
Introduction to Computer Systems
Spring 2024

Preliminaries

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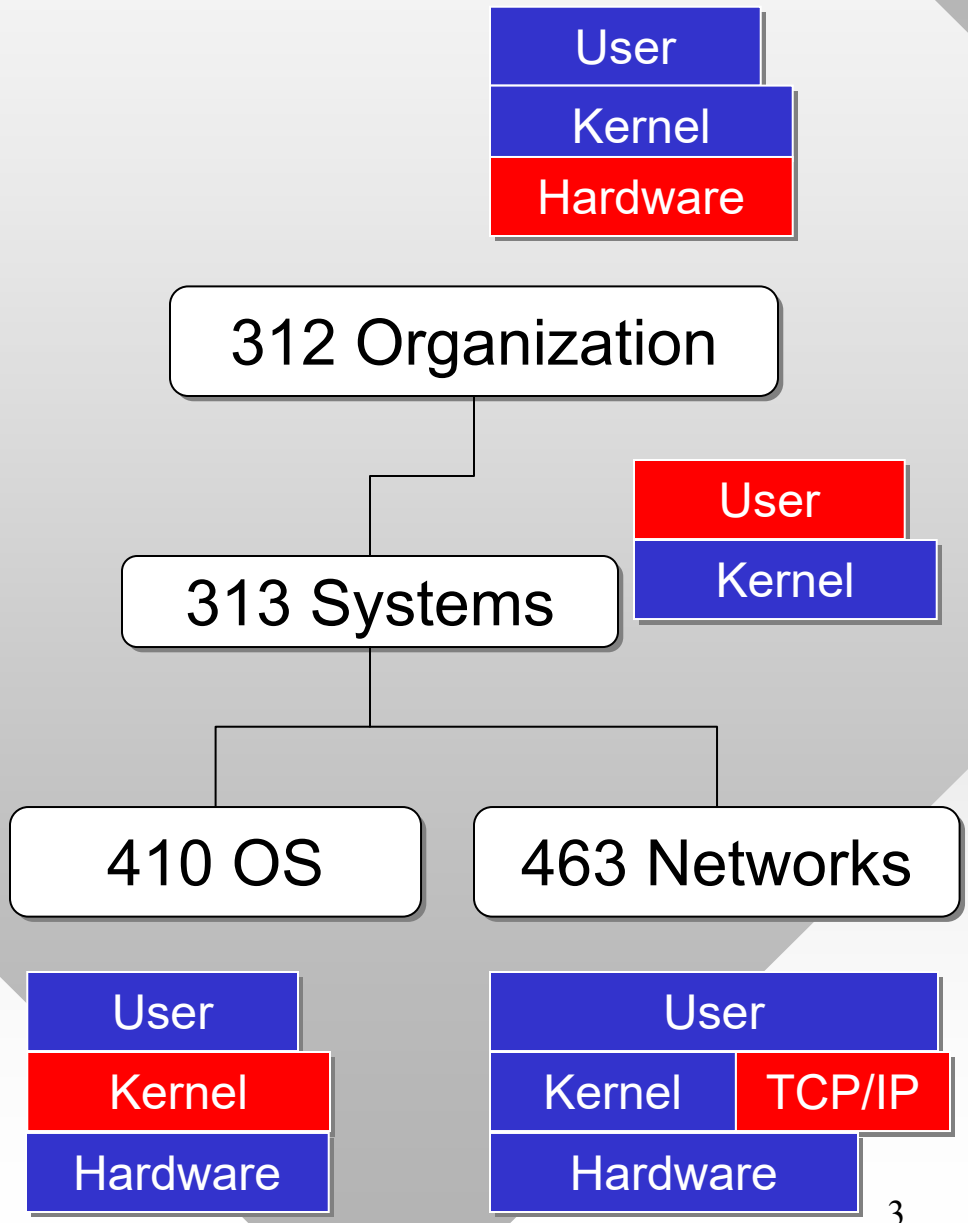
Agenda

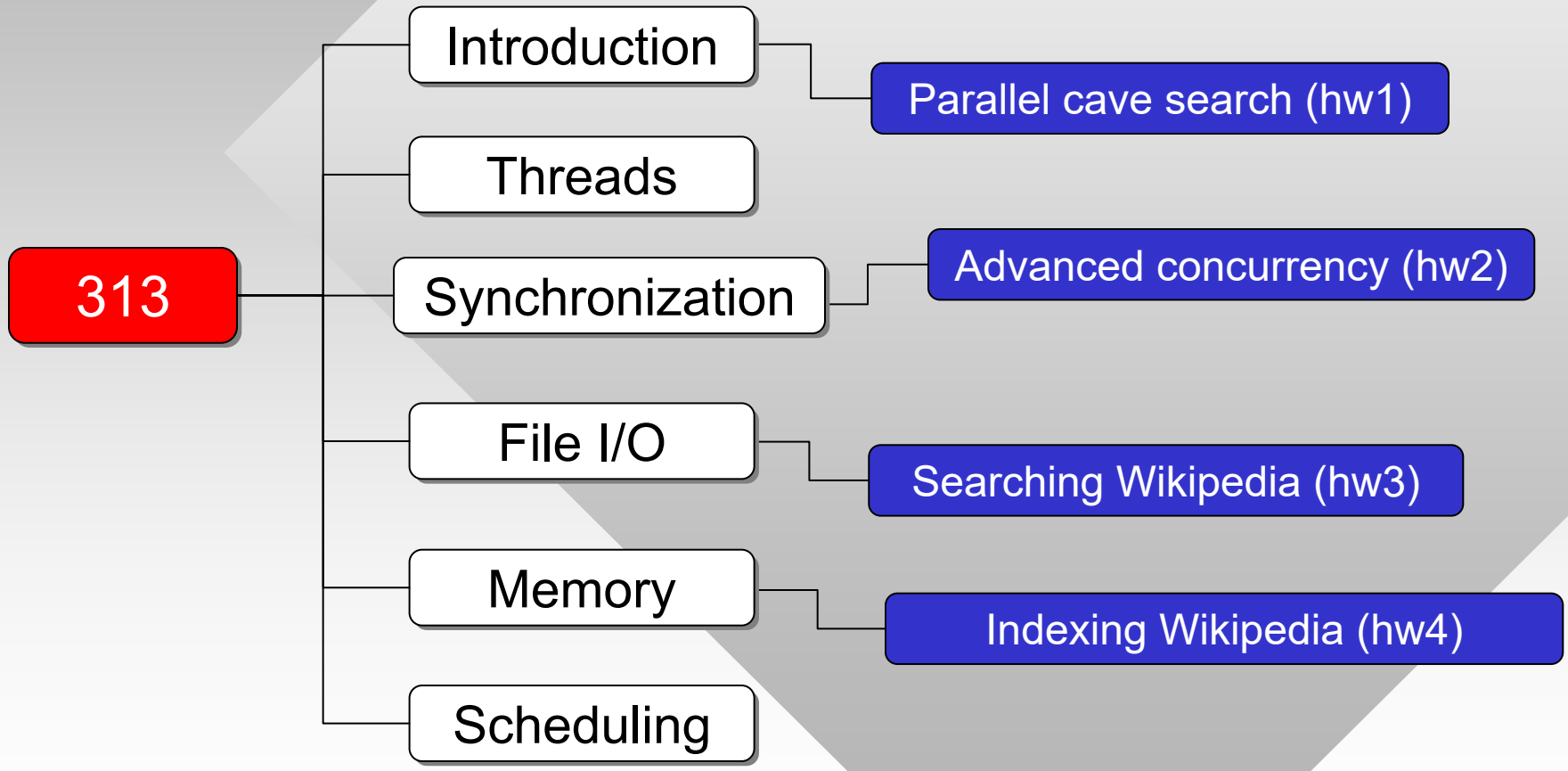
- Big picture and roadmap
- Syllabus
- Academic integrity
- Homework expectations
- Wrap-up

Big Picture

- This course covers the user level
- Serves as a foundation for 410 and 463
  - They go deeper into the kernel
- Systems programming
  - Key factor is app performance
  - Benchmarking, optimization, efficiency will be our focus



Roadmap


313
Introduction
Parallel cave search (hw1)
Threads
Synchronization
Advanced concurrency (hw2)
File I/O
Searching Wikipedia (hw3)
Memory
Indexing Wikipedia (hw4)
Scheduling

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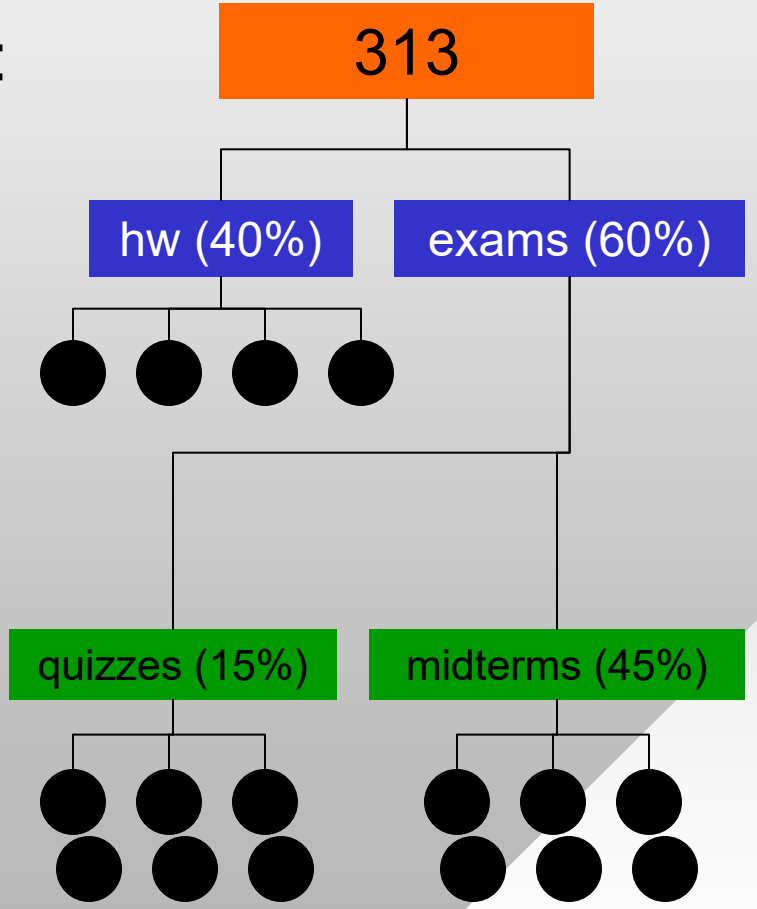
Syllabus

- Instructor: Dmitri Loguinov, WF 3-4pm in 209 PETR
- TA: Gabriel Stella, TR 4-5pm in 212 PETR
- Books:
  - W. Stallings, “Operating Systems: Internals and Design Principles,” Pearson, 9th edition (2017)
  - J.M. Hart, “Windows System Programming,” 2010
  - J. Duffy, “Concurrent Programming on Windows,” 2008
- Website: http://irl.cse.tamu.edu/courses/313
  - Slides, future test dates, homework, useful material
  - Piazza: http://piazza.com/tamu/spring2024/csce313200
- Homework submissions & grades
  - http://canvas.tamu.edu

Syllabus 2

- Homework (40% of final grade):
  - 4 programming assignments
  - Explore different aspects of computer systems
- Exams (60% of final grade):
  - Closed-book, no cheat-sheets
  - 6 quizzes (15% of final grade):
    - C++ coding and synchronization problems, pointers, review questions and problems from the book
  - 6 midterms (45% of final grade):
    - Cover lecture/homework topics



Syllabus 3

- Grade distribution
  - 90-100% (A), 80-89% (B), 70-79% (C), 60-69% (D), 0-59% (F)
- If you run into a coding problem
  - Perform investigation, obtain insight into the problem
  - Others might have experienced similar issues (e.g., stackoverflow has lots of useful answers)
- But if this doesn't work, do not hesitate to ask for help
  - Homework may be time-consuming if you're stuck on basic things (compilation, threading, deadlocks, APIs)
  - Multi-threaded programs are generally hard to debug
  - The instructor and TA can provide a ton of help if needed

Syllabus 4

- If issue solved, answer your own question
  - Help others on piazza with their posts
- Where to ask questions
  - Office hours and labs (bring a laptop), during class, through Piazza (general concepts), and email (code-specific)
- Prerequisites: competent C/C++ and debugging skills
  - Expect heavy coding
- Read my tutorial on pointers, debugging, APIs
  - http://irl.cs.tamu.edu/courses/313/systems%20notes.pdf
  - Call stack, breakpoints, immediate/watch/thread window, common debugging techniques, stepping thru code

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Academic Integrity

Exceptions: class sample code, API documentation, interaction with TA/instructor

- No teamwork, no external help
  - All submissions must be 100% original and yours
- Student rules 20.1.2.3.5 Plagiarism
  - The appropriation of another person's ideas, processes, results, or words without giving appropriate credit
- Student rules 20.1.2.3.1 Cheating:
  - Intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise. *Unauthorized materials may include anything or anyone that gives a student assistance* and has not been specifically approved in advance by the instructor
- All parties involved in misconduct penalized equally
  - **F* in the class or expulsion from university**

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Homework

- Must use Visual Studio 2022 + default SDK
  - Download Community Edition for free from Microsoft https://visualstudio.microsoft.com/vs/
  - When installing, only need “Desktop Development with C++” in the set of options
  - Can use Microsoft APIs or C++11 threads/synchronization
- Windows laptop/desktop would be great for most tasks
- For non-Windows users
  - Use *Azure for Students* (cloud services) – see course website
  - https://azure.microsoft.com/en-us/free/students
- Remote Desktop
  - ts.cse.tamu.edu or ts2.cse.tamu.edu, use AUTH\tamuID
  - Needs VPN or campus wifi

Homework 2

- Homework:
  - Due at 10am, 20% penalty per day (no points after 5 days)
  - Delays for personal reasons must be requested in advance
- What to submit
  - Add a comment to the top of each cpp/h file with your full name, class, and semester
  - Create a zip containing only *.sln, *.cpp, *.h, *.vc*proj*, delete everything else (especially the hidden directory .vs)
  - *Preserve the original directory structure inside the zip*
  - Upload to canvas.tamu.edu
  - Submitted code should compile as is, release & debug

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Wrap-up

- Homework #1 is due in 3 parts
  - Part 1 (1/26): connect to 1 robot, obtain its room, disconnect cleanly (25%)
  - Part 2 (2/9): single-threaded search (25%)
  - Part 3 (2/23): full multi-threaded version + report (50%)
- Before next class
  - Read hw1p1, study my systems programming tutorial, and think of questions to ask
  - Experiment with VS 2022