

Operating Systems

CMPT 424 • Fall 2026

– Student Presentations - 150 points

Background

I've been teaching this class for a long time. And our book, though very readable, is also old. While we're primarily here to master the fundamentals, standing on the shoulders of giants who developed the field, we also need to lean towards the future. To that end, each of you will research and prepare a 10-minute presentation to educate your classmates and me on modern research questions and challenges in the topics we cover throughout the semester.

The form is five slides :

1. Title / your name and e-mail / a favorite (better yet, silly) quote
2. [20 points] Introduce the topic, problem, and one key question
Example: X is an important topic in Operating Systems because it's what allows us to Y, and without it, we'd be Z.
3. [20 points] What the book says; what Alan presented — show one figure from our book or my slides
Example: Alan taught us X; here's what X doesn't handle these days, and here's what would break if we didn't address this.
4. [30 points] What has changed — show one figure from a modern research paper.
Cite a recent paper and explain how the figure you're showing came to be; i.e., how did the paper's authors arrive at that? Explain how it addressed the problem you noted in the prior slide.
5. [30 points] One open problem
Tell us some specific aspect of this that remains unsolved and why it's hard, and, if you had a year to research it, what would you explore and try?

[50 points] The presentation itself: speaking voice, pace, eye contact, presence . . . all that great stuff you learned in your First Year Seminar that will serve you well in your career and in life.

After your presentation, e-mail me your slide deck.

General Resources

- usenix.org
- SIGOPS.org/s/conferences/sosp/2024/accepted.html
- SIGOPS.org/s/conferences/sosp/2025/accepted.html
- [LWN.net](https://lwn.net)

These are just to get you started. Feel free to use more.

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September 21

- CLIs and GUIs
- System Calls and APIs
- Mono-kernels and micro-kernels

September 28

- Low level process representation
- Cleaning up processes, zombies
- Amdahl's and Gustafson's Laws and their relevance today
- Thread mappings: 1:1, 1:M, M:1, M:M

October 5

- Memory protection and relocation
- Memory management and reclamation
- Memory allocation (other than First, Best, and Worst - fit)

October 26

- CPU scheduling

November 2

- *Anything from the topics we've covered before today*

November 9

- Swapping
- Paging - new page table structures

November 16

- Modern (or weird) file systems
- How to use a database as a file system

November 23

- Transactional File Systems
- Deadlock detection and resolution

Consider these suggestions and guidelines. You are free to venture out into different areas so long as we have already covered them in class before you present them.