Lecture 0
Course Introduction

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Content of This Course

- We will study the theory of operating systems
  - Virtualization, concurrency, persistence
  - Management of CPU, memory, I/O and storage

- We will learn the implementation of operating systems
  - Build an operating system kernel by yourself (uCore)
  - Run your OS on (emulated) RISC-V CPU (via QEMU)

Goals of This Course

- Be competent with process concepts and CPU scheduling.
- Be competent with memory hierarchy and memory management.
- Be familiar with process control blocks, system calls, context switching, interrupts, and exception control flows.
- Be familiar with process synchronization, inter-process communication, and threads.
- Be familiar with multi-threaded programming.
- Be familiar with file systems, disk scheduling algorithms and I/O.
- Be exposed to security

Reference Books

- **Operating System Concepts**, 9th Edition, Abraham Siberschatz et. al. (a.k.a. the Dinosaur Book)

- **Operating Systems: Three Easy Pieces,** Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau
  - https://pages.cs.wisc.edu/~remzi/OSTEP/

Course Structure

- Lectures (2 hours)
  - Get the main ideas and concepts (mostly in English, may repeat in Chinese if needed)
  - lectures will not follow textbooks (but read textbooks will help you understand better)
  - Download slides (before class, and check for updates after)
  - Take notes and ask questions
- Lab (2 hours)
  - Tutorials on kernel code and lab assignments
  - Do the lab exercises / projects
- Lectures and labs are integrated
  - Content are mostly sync-ed
  - All assignments (even written ones) submitted through labs

Gradings

- Lecture participation: 10%
  - Attendance and quiz
  - Get 100 points in quiz
- Lab participation: 15%
  - In-class assignments
- Assignment: 40%
  - Written and coding
- Mid-term exam: 15%
- Final exam: 20%

Grading Policy

- Late submission policy:
  - No late submission allowed
- Guidelines on collaboration
  - Write up all assignments **ON YOUR OWN**
  - Discussion is allowed, but form your own ideas, words, code
- Zero tolerance on plagiarism
  - Software will be used to detect plagiarism cases!
  - Serious cases will be reported to university
  - Sign academic misconduct agreement with CSE Department