CS2106

Introduction to **O**perating **S**ystems

Lecturer

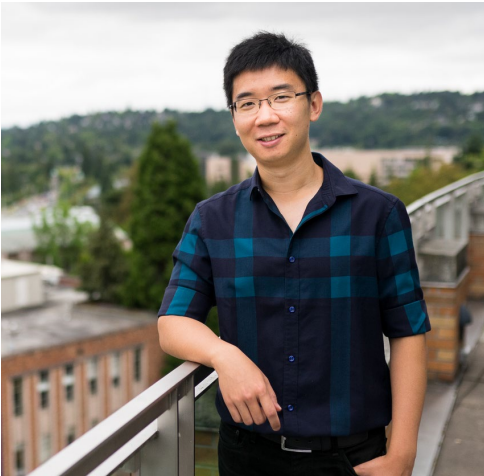
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Course Objectives

- **Synopsis:**
  - Introduces **basic concepts** in operating systems
  - Focuses on these areas:
    - OS Structure and Architecture
    - **Process** Management
    - **Memory** Management
    - **File** Management
    - OS **Protection Mechanism**

- **Objectives:**
  - Identify and understand major functionalities of modern operating systems
  - Able to extend and apply the knowledge in future related courses

Specific Learning Outcomes

- After this course, you should:
  - understand how an OS **manages computational resources** for multiple users and applications, and the impact on application performance
  - appreciate the **abstractions and interfaces** provided by OS
  - be comfortable in **writing multi-process/threaded programs** and avoid common pitfalls such as deadlocks, starvation and race conditions
  - be comfortable **writing system programs** that utilizes POSIX system calls for process, memory and I/O management
  - be able to **self-learn advanced OS topics**

Assessment Weightage

- **Weightage for various components:**
  - Tutorials: **10%** (quizzes)

  - Lab Assignments: **30%**

  - Midterm: **20%**
    - Wed, 29 Sep, 2pm (Week 7)
    - Face-to-face (tentative)

  - Exam: **40%**
    - Fri, 26 Nov, 2:30pm
    - Face-to-face (tentative)

Assessment – Lab Assignments (35%)

- **Four Graded** Lab Assignments:
  - Each assignment spans 3 weeks
    - Simple exercise(s) related to the core problem (1%)
    - Complete the assignment (the remainder %)
  - Lab session for:
    - Clarify lab questions and clear doubt
    - Demo the simple exercise(s) to lab TA for the (1%)
  - Submit online (details TBC) - you can work from home
  - "Simple" programming questions:
    - **Linux on x86**, using C

- Reasons:
  - Put the theory in lecture into actual practice
    - Learn Linux (or Unix in general)
    - Learn to interact with OS or simulate aspects of OS

Assessment - Plagiarism

- **In NUS, we take a serious stand on plagiarism cases**
  - All lab assignments will be sent for plagiarism checks

- **Plagiarism for lab assignment submission:**
  - Once detected:
    - Both *parts* receive **zero** for that lab/exam
  - Repeat offender:
    - Zero for that particular CA component
    - Report to higher authority

Resources

- **Mainly on LumiNUS:**
  - Forums:
    - Lectures
    - Tutorials
    - Labs
  - Files:
    - Lectures, tutorials and labs
  - Multimedia:
    - Lecture recordings
  - Announcements

References

- Main *supplementary* text:
  - Modern Operating System (4th Edition), by **Andrew S. Tanenbaum**, Pearson, 2009
  - Operating System Concepts (8th Edition), by

    Abraham Silberschatz, **Peter Baer Galvin** &

      Greg Gagne, McGraw Hill, 2010

- Lecture notes:
  - As self-contained as possible

Acknowledgement

- Many of the lecture materials are created by **A/P Soo Yuen Jien**

  - Lecture notes and tutorials reused with minor changes

  - Labs are new!