

CS2106

Introduction to Operating Systems

People



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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 be able to:
 - 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
 - **write multi-process/thread programs** and avoid common pitfalls such as deadlocks, starvation and race conditions
 - **write system programs** that utilizes POSIX syscall for process, memory and I/O management
 - **self-learn advanced OS topics**

Assessment Weightage

- Weightage for various components:
 - Tutorials: 5%
 - Lab Assignments: 25%
 - Midterm: 20%
 - **TBC: 11th March (evening) OR 14th March (around noon)**
 - TBC: Pending venue confirmation and Timing
 - Exam: 50%
 - **30th April, Thursday, 1pm**

Assessment – Lab Assignments (25%)

■ Four Graded Lab Assignments:

- Each assignment spans ~2 weeks
 - You will be assigned to “Segment A” / “Segment B” within the lab group
- Lab session for:
 - Demo your solution to lab TA
 - For fairness: Segment will alternate to go first, i.e. Lab 1 = (A, B) | Lab 2 = (B, A)...
- "Simple" programming questions:
 - Linux on x86, using C

■ Motivation:

- 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 **parties** receive zero for that lab/exam
 - Repeat offender:
 - Zero for that particular CA component
 - Report to higher authority

AI Declaration

- In CS2106, we believe:
 - AI tools can be beneficial in teaching and learning
 - AI can be integrated meaningfully into the course (activity, assessment)
- However, this does not happen automatically:
 - We (both teachers and learners) have to take responsibilities
 - [Teachers] Will incorporate AI appropriately, highlight and clarify use
 - [Students] Mindful of the use, mindful of own learning process

Resources

- Mainly on Canvas:
 - Quizzes:
 - Lecture Q&A
 - Files
 - Lectures, Tutorials, Labs, General Information
 - Videos:
 - Lecture webcast and live stream
 - Announcements
- Individual instructor may have technology tools / platforms they prefer
 - will be mindful of disruption

References

- **Main supplementary text:**

- Modern Operating System (4th Edition), by Andrew S. Tanenbaum, Pearson, 2016
 - Operating System Concepts (8th Edition), by
 - Abraham Silberschatz, Peter Baer Galvin &
 - Greg Gagne, McGraw Hill, 2010

- **Lecture notes:**

- Will attempt to make it as self-contained as possible