CMP 426 and CMP 697: Operating Systems

Department of Computer Science
Lehman College, The City University of New York
Spring 2020

Instructor: Gwang Jung
Email: gwang.jung@lehman.cuny.edu
Phone: 718-960-8785
Office: Gillet Hall (GI) 100-C
Lecture Schedule: Tuesdays and Thursdays: 6:00 AM -- 7:40 PM (GI 311)
Office Hours: Tuesdays and Thursdays: 3:00 PM -- 5:30 PM (GI 100C), and other time by appointment
Click Here to view CMP 426/697 Course Syllabus:

Course Objectives:

Operating systems and their role in various types of computer systems,
Topics include: introduction to computer systems, process and thread concepts, threads/process synchronization, memory management, storage management, file system, security and protection
Textbook:

- A. Silberschatz, P. Galvin, and G. Gagne, Operating System Concepts, 10th Edition, Wiley, 2018. ISBN 978-1-119-29967-7
- Textbook Web Site: textbook web site

References:

- Lecture notes and course web site

Evaluation:

- 2 Exams -- midterm and final exams: 80%
- 4 assignments: 25%
- Research paper (for graduate students only): 10%
- Class participation: 10%

Exam Schedule:

- **TBA**

Course Outline and Schedule:

- Overview (chapters 1 to 2)
    1. Introduction: An Overview of Operating Systems
    2. Computer System Structures
- Process Management (chapters 3 to 5)
    1. Processes
    2. Threads and Concurrency
    3. CPU Scheduling
- Process Synchronization (chapters 6 to 8)
    1. Synchronization Tools
    2. Synchronization Examples
    3. Deadlock
- Memory Management (chapters 9 to 10)

    1. Main Memory
    2. Virtual Memory
- Storage Management (chapters 11 to 12)
    1. Mass-Storage Structure
    2. I/O Systems
- File System (chapters 13 to 15)
    1. File System Interface
    2. File System Implementation
    3. File System Internals
- Security and Protection (chapters 16 to 17)
    1. Security
    2. Protection

Software Used for the Course:

- Oracle Virtual Box, Linux (Ubuntu, Fedora, or Centos), MingGW GCC (GNU Compiler Collection) for Windows 10

Lecture Notes:

- chapter 1: OSch01.pdf
- chapter 2: OSch02.pdf
- chapter 3: OSch03.pdf
- chapter 4: OSch04.pdf
- chapter 5: OSch05.pdf
- chapter 6: OSch06.pdf
- chapter 7: OSch07.pdf
- chapter 8: OSch08.pdf
- chapter 9: OSch09.pdf
- chapter 10: OSch10.pdf
- chapter 11: OSch11.pdf
- chapter 12: OSch12.pdf
- chapter 13: OSch13.pdf
- chapter 14: OSch14.pdf
- chapter 15: OSch15.pdf

Homework Assignments: **TBA**

- **Students should work on the homework assignments for preparing exams, but do not need to submit the homework assignments to the instructor**

Assignments: **TBA**

Research Survey Paper Assignment (for graduate students only):

- Research Paper (10-12 pages double space in 12 fonts) in various contemporary research areas such as: threading issues in Linux kernels, fast mutual exclusions, virtualization and cloud computing, file systems in solid state devices, in-memory file systems, in memory DBMS, security and protection
- Research Paper Proposal Due: March 5, 2020 (2-3 pages of extended abstract with at least 5 academic research papers as references)