

CS343 - Operating Systems

Introduction & Course Overview



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Few Important Information

❖ Instructors:

❖ T. Venkatesh [t.venkat@iitg.ac.in]

❖ John Jose [johnjose@iitg.ac.in]

❖ Teaching Assistants

❖ Amit Puri, Sivakumar S., Abhijit Das

❖ Joys Maria Joseph, Sunil Dasharath Shinde, Navneet Kumar, Aayush Jaiswal

❖ Microsoft Teams [Lecture Videos, Live discussion, Slides, Quiz, Viva Voce]

❖ Piazza [Discussion Forum]

❖ Weekly videos (~ 3 to 4) will be uploaded (every Monday) in MS Teams

❖ Live Session - Every Tuesday, 3:00 PM to 4:00 PM

Grading

❖ Grading Scheme

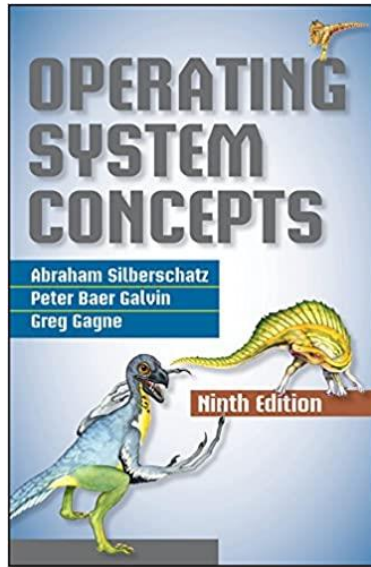
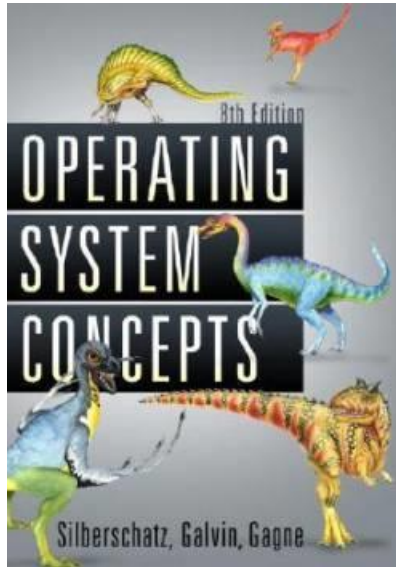
- ❖ Quiz-1 (Sept), Quiz-2 (Oct), Quiz-3 (Nov) - 45%
- ❖ Interaction in Live Sessions - 5%
- ❖ Viva Voce-1 (Oct) - 25%
- ❖ Viva Voce-2 / End Sem Exam (Nov/Dec) - 25%

There might be slight changes in the weightage in unavoidable cases.

Reference Books

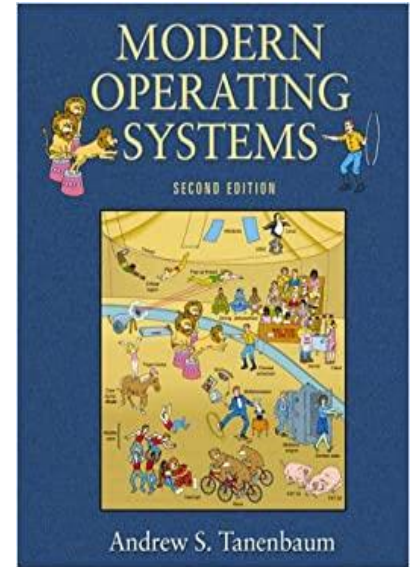
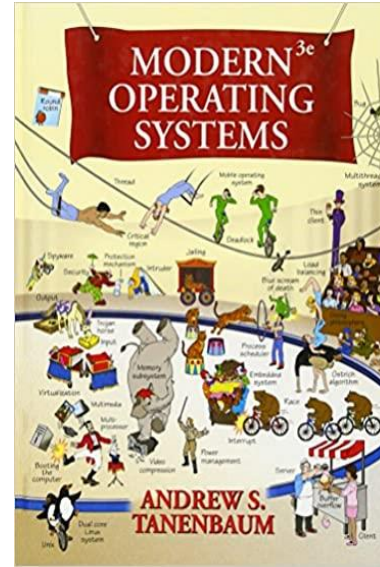
Operating System Concepts (6th to 9th edition)

Abraham Silberschatz, Peter Baer Galvin,
Greg Gagne,



Modern Operating Systems (2nd / 3rd edition)

Andrew S. Tanenbaum,



Syllabus

September 2020

- ❖ Week-1: Elementary computer architecture and introduction to operating systems. Types of OS, abstract view of OS and its functional structure.
- ❖ Week 2: Process management, process states, CPU scheduling, scheduling criteria and scheduling algorithms.
- ❖ Week 3: Process vs threads, multithreading model, thread libraries.
- ❖ Week 4: Operations on processes, inter process communication, process synchronization -critical sections, semaphores, monitors

Syllabus

October 2020

- ❖ Week 5: Classical synchronization problems, deadlock characterization, prevention, avoidance, detection and recovery techniques.
- ❖ Week 6: Introduction to memory management, partitions & allocation technique, free space management, address mapping, segmentation and paging, page tables.
- ❖ Week 7: Virtual memory concepts, page replacement strategies, working set schemes, frame allocation techniques and thrashing.
- ❖ Week 8: Storage Management: Hard disk structure, disk management, swap space management, disk scheduling, RAID structure.

Syllabus

November 2020

- ❖ Week 9: File management; access and control methods, directory structure, file system structure, file system and directory implementation. Allocation methods and free space management.
- ❖ Week 10: I/O subsystem, structure and organization, polled vs interrupt-driven I/O, DMA . Classification of I/O devices, buffering, caching, scheduling, spooling.
- ❖ Week 11: Protection; design principles, authentication schemes, access matrix, ACLs and capabilities, covert channels. Security and user authentication, system and network threats, security defenses and firewalls.
- ❖ Week 12: Introduction to distributed operating systems, design issues, distributed file systems, distributed synchronization.

How can you master this course? Few tips

- ❖ Regularly listen videos. 3 to 4 videos (150 minutes max) per week.
- ❖ If needed go through difficult concepts multiple times.
- ❖ Do not depend only on slides/videos, read sections from the text book.
- ❖ Post queries in Piazza.
- ❖ Attend the live session on every Tuesday with out fail.
- ❖ Solve questions given at end of each chapter in the text book.
- ❖ Start your preparation for quiz and viva voce well in advance.
- ❖ Value knowledge above marks. Enhance conceptual clarity.
- ❖ I promise that you will enjoy this course.

Thank you

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