Operating Systems

Spring 2023 Schedule

Week of:

1. 1/18 Review Syllabus
   1. Introduction to Operating Systems
      - 1.1. Weekly Schedule
      - 1.2. Basic Operating System Concepts
      - 1.3. History of Operating Systems
      - 1.4. Current Operating Systems Research Topics

2. 1/30
      - 1.5. Computer Architecture
      - 1.6. Basics of How Operating Systems Work
      - 1.7. Parts of an Operating System
      - 1.8. Operating-System Design and Implementation
      - 1.9. Operating-System Structure

3. 2/6
      - 1.10. System Boot
      - 1.11. The Operating System Environment
      - 1.12. System Calls
   2. Machines and Low-level Software
      - 2.1. Types of Computer Architectures
      - 2.2. Machine Instructions

4. 2/13
      - 2.3. Binary Representation of Data
      - 2.4. Intel x86 Assembly Language

5. 2/20
      - 2.4. Intel x86 Assembly Language

6. 2/27 3. Processes Management
      - 3.1. Understanding Processes
      - 3.2. The Process Manager Job
      - 3.3. The Process Scheduler

7. 3/6
      - 3.3. The Process Scheduler
   4. Interprocess Communication and Synchronization
      - 4.1. Interprocess Communication

– Spring Break –

8. 3/20
      - 4.2. Synchronization Facilities
      - 4.3. Classic Synchronization Problems

      Multi-threaded programming

9. 3/27 Multi-threaded programming

10. 4/3 5. Memory Management
    - 5.1. Memory Management Hardware
    - 5.2. Legacy Memory Management Schemes
    - 5.3. Paged Memory Management

11. 4/10
    - 5.4. Virtual Memory Management
    - 5.5. Memory Management in Modern Operating Systems

12. 4/17 6. File System Management
    - 6.1. File System Abstractions
    - 6.2. A File
    - 6.3. Directories and File System Tables
    - 6.4. File System Services
    - 6.5. File System Standards
    - 6.6. File System Errors
    - 6.7. Disk Scheduling

13. 4/24 7. Device Management
    - 7.1. Device Drivers
    - 7.2. Waiting for I/O
    - 7.3. Blocking and Nonblocking I/O
    - 7.4. The Top and Bottom Halves of Drivers

14. 5/1
    - 7.5. Device Driver Implementation
    - 7.6. Using Buffers to Improve Performance

    8. Quick Review

15. 5/8 **Final Exam Week**