

Outline for September 30, 2008

1. Greetings and felicitations!
 - a. Review course management
2. Evolution of operating systems
3. First generation (vacuum tubes): hardware only, open shop
4. Second generation (transistors)
 - a. Separation of programmers and operators
 - b. Batching, satellite systems, buffering
 - c. Device independence, resident loaders, first operating system, JCL
 - d. Atlas system: extracodes, interrupts, virtual memory
5. Third generation (integrated circuits)
 - a. Spooling, job scheduling, multiprogramming
 - b. Protection, traps, fence registers, privileges, system calls, time sharing
 - c. Virtual machines: levels of abstraction; example: THE system
 - i. Level 0: hardware
 - ii. Level 1: segment controller process
 - iii. Level 2: operator console (message interpreter)
 - iv. Level 3: I/O handlers
 - v. Level 4: user processes
 - d. Customer service, compatibility
6. Fourth generation (VLSI)
 - a. Minicomputers: rise of the UNIX operating system
 - b. Microcomputers: workstations, personal computers, open operating systems
7. Networked and distributed operating systems
8. Operating system functions
 - a. I/O functions
 - i. Read data: polling, interrupts
 - ii. Direct memory access (DMA)
 - b. Process functions
 - i. Create, delete, schedule
 - ii. Synchronize, communicate
 - c. Memory functions
 - i. Share memory among many processes: address transformation
 - ii. Memory management
 - d. Secondary storage functions
 - i. Space management and addressing
 - ii. When to move data; scheduling
 - e. User interface functions
 - i. Enable users to run processes easily
 - f. Other desirable features
 - i. Efficient
 - ii. Reliable
 - iii. Maintainable
 - iv. Small