

MAT 450 — Operating Systems, Spring 2005

Review Sheet #1

- Chapter 1
 - User view and. System view p4–11
 - Single processor vs. multiprocessor (advantages) p 12–13
 - cluster systems (advantages?) p14
 - OS structure (multiprogramming, time-sharing) p 15 – 16
 - processes, job pool, job scheduling, CPU scheduling, swapping, virtual memory (p17)
 - Interrupts (hardware and software) p 18
 - kernel mode vs. user mode (privileged instructions) p 18–19
 - timers and other resources p 20
 - OS responsibilities (processes, files, caching etc) p21–26
 - protection and security p26–27
 - distributed systems and real-time systems p28–29
- Chapter 2
 - OS services for the user p40
 - OS services for the system p41
 - UI vs GUI p41–42
 - System calls p43–44
 - System call interface and groups p46–48
 - System programs p55–56
 - Mechanism vs. Policy p57
 - OS languages (high level vs low level) p57–58
 - OS Structure (simple,layer, microkernel, modules) p59–63
 - Virtual machines p65–66
 - SYSGEN - purpose, information and implementation p70
 - system boot (bootstrap, implementation) p 71
- Chapter 3
 - Processes (user vs. OS) p 81
 - processes in memory p82

- program vs. process p83
- The states of a process p 83
- Process Control Block p 84
- Process Scheduling (scheduler, job queue, ready queue, queuing diagram) p85-88
- Long-term vs. short-term scheduler p88
- I/O bound vs. CPU bound processes p88
- context-switch p89
- process tree p90-91
- Resources of a child process (advantages and disadvantages) p91
- Concurrent execution of process (or wait) p92
- System calls (fork, execlp, wait, perror,exit) p 93-95
- process creation diagram p93
- Process Termination p95
- Early termination of the child (advantages) p95
- Independent vs. Cooperating processes p96
- Reasons to allow process to share (information sharing, computational speedup, modularity, convenience) p96
- IPC mechanisms (two fundamental models, diagrams) p96-97
- Shared memory p97-98, 102
 - * Advantages
 - * Implementation
 - * Synchronization
 - * Unbounded vs. bounded buffer
 - * System calls (shmget, shmat, shmdt, shmctl)
- Message Passing Systems p99-102
 - * direct communication (properties, symmetry and asymmetry)
 - * indirect communication (properties)
 - * Ownership of a mailbox (process, OS, both)
 - * Synchronous (blocking) vs. Asynchronous (non-blocking)
 - * buffers (zero capacity, bounded, unbounded)