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CSS 430

HW01

* 1.14 - What is the purpose of interrupts? How does an interrupt differ from a trap? Can traps be generated intentionally by a user program? If so, for what purpose?
  + The purpose of an interrupt is to transfer program control to a specific address
  + A trap is an interrupt that is software generated.
  + Traps can be generated intentionally via exceptions made by the user.
* 1.19 -
* Rank the following storage systems from slowest to fastest:
* a. Hard-disk drives
* b. Registers
* c. Optical disk
* d. Main memory
* e. Nonvolatile memory
* f. Magnetic tapes
* g. Cache
  + F, C, A, E, D, G, B
* 2.3 - What system calls have to be executed by a command interpreter or shell in order to start a new process on a UNIX system?
  + **Fork** followed by **Exec**
* 2.19 - What is the main advantage of the microkernel approach to system design? How do user programs and system services interact with microkernel architecture? What are the disadvantages of using the microkernel approach?
  + Advantages:
    - More operations done in user mode than in kernel mode
    - Reliable and simple design
    - Adding services requires no kernel modifications
  + User programs and system services interact via interprocess communication
  + Disadvantages:
    - Frequent interprocess communications
* 2.20 - What are the advantages of using loadable kernel modules?
  + Functionality can be added and removed from the kernel concurrently
* Choose one System from the slides in Lecture One (Eniac, System 360, Multics, Android, etc.) and describe in detail (one paragraph) its importance to the evolution of Operating Systems
  + Eniac was the first digital computer which was capable of solving large numerical problems. It allowed users to calculate trajectories 2400 times faster than humans on average. It was formerly a project residing at U-Penn when the researchers resigned and formed the Eckert-Mauchly Computer Corporation. This 30 ton beauty worth ~$700 thousand dollars in the 50/60’s is worth ~$7 million today. Its intent was to be used for artillery tables but it found its first use calculating equations for the hydrogen bomb.