CMP 426

Points: 100

This homework should be done individually.

Answer all Questions and submit your work on Blackboard.

No late assignment will be accepted.

No emailed work will be accepted

You need to read chapter 1 and 2 to answer these questions.

1. (10 points) The services and functions provided by an operating system can be divided into two main categories. Briefly describe the two categories, and discuss how they differ.
2. (10 points) Describe three general methods for passing parameters to the operating system.
3. (10 points) What are the two models of interprocess communication? What are the strengths and weaknesses of the two approaches?
4. (10 points) Why is the separation of mechanism and policy desirable?
5. (10 points) What are the advantages of using loadable kernel modules?
6. (10 points) How do clustered systems differ from multiprocessor systems? What is required for two machines belonging to a cluster to cooperate to provide a highly available service?
7. (10 points) 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.
8. (10 points) 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
9. (20 points) Direct memory access is used for high-speed I/O devices in order to avoid increasing the CPU's execution load.

a. How does the CPU interface with the device to coordinate the transfer?
b. How does the CPU know when the memory operations are complete?
c. The CPU is allowed to execute other programs while the DMA controller is transferring data. Does this process interfere with the execution of the user programs? If so, describe what forms of interference are caused