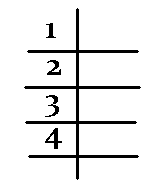
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**670263 Sistemas Operativos**

**Dr. Carlos González Flores**

**First Partial Exam – September 20, 2021**

1. - (25 points) Is a drum storage device better than a hard disk? Why? Why not? Explain why the two drums storage device did not work properly?

Yes, it is better because the drum storage is a separate storage, but it has less capacity than a normal hard disk.

Drum storages can’t work together because the rotary axis of the reading arms can be damaged

1. - (25 points) Explain with detail what happens if the CPU wants to execute an instruction and this instruction is not in Cache.

if the instruction is not in the cache, the cpu looks for the fastest memory available

first it looks in cache and if it does not find where to store the instruction, the cpu tries to store it in the fastest memory, that is, ram memory

3.- (25 points) What happens if the CPU executes a general instruction in kernel mode? What happens if the CPU executes an operating system instruction in user mode?

When you execute an instruction in kernel mode you give it easy and full access to the system hardware and when you run in user mode you don't have full access to all the operating system directories

4.-(25 points) On a multiple processor system, can Cache be shared? Can Memory be shared? Please explain

On a multiple processor system, can Cache be shared?

Yes, in a shared memory multiprocessor system with a separate cache memory for each processor, it is possible to have many copies of shared data: one copy in the main memory and one in the local cache of each processor that requested it. When one of the copies of data is changed, the other copies must reflect that change. Cache coherence is the discipline which ensures that the changes in the values of shared operands (data) are propagated throughout the system in a timely fashion.

Can Memory be shared?

Yes, in a multiple processor system all processes on the various CPUs share a unique logical address space, which is mapped on a physical memory that can be distributed among the processors. Each process can read and write a data item simply using load and store operations, and process communication is through shared memory.

Since all the CPUs share the address space, only a single instance of the operating system is required and when a process terminates or goes into a wait state for whichever reason, the O.S. can look in the process table (more precisely, in the ready process queue) for another process to be dispatched to the idle CPU.