OS Homework 1 - Lizi Chen lc3397@nyu.edu

What is multiprogramming?

Multiprogramming happens when given a single processor, two or more programs/applications are loaded into memory, but each program must be running individually. Assume one program is running with one single processor while another program is executed with this processor, then the two programs have to share the single processor, meaning one has to wait another one or vice versa until one of them properly finished.

Why was timesharing not widespread on second generation computers?

The second generation computers do not have necessary protection hardwares for multiple timesharing users.

What is spooling? Do you think that advanced personal computers will have spooling as a standard feature in the future?

Simultaneous Peripheral Operation OnLine is the process where a peripheral has its jobs listed in one file which is temporary, so this peripheral doesn't hold the system. This way the system performs more efficiently and has a better time management.

For example, a printer is slower than a PC, so in order for the PC to keep working in another process, the jobs that are to be performed by the printer are saved in this temporary file.

Advance personal computers will have spooling because this saves processing time from the CPU or the system, having a more efficient and better performance when need it.

5. On early computers, every byte of data read or written was handled by the CPU (i.e., there was no DMA). What implications does this have for multiprogramming?

Multiprogramming paradigm makes sure that CPU is always processing and working while the I/O may be waiting. Without Direct Memory Accessing, the CPU will have to take care of the I/O tasks, thus multiprogramming will not be helpful here. Thus the CPU is always busy with data handling.