

Practice 1

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#4)

- a. The operating system should not allocate the whole processor to certain programs until it's no longer needed. With the multiprogramming design pattern in place the operating system should be able to control the control switch between different processes. One program should use the whole processor until it's finished then the operating system's kernel should regain control to execute the next program.
- b. The operating system should use paging. Paging is when virtual memory (secondary memory, i.e.. hard disk) is used to store the whole program and then chunks of data are transported back and forth to the primary memory (RAM) when the processor needs it through the help of the operating system.
- c. The operating system should not allow all the space to be occupied, because of paging all the memory should not be used up all at once. The operating system should maintain a queue for jobs to be done from different users and use round robin techniques to allocate the jobs.

#9) An operating system would support communication between applications and regions of memory shared between the applications. Through these messages the applications can communicate with each other and the memory, so when an application crashes the memory can be stored while the application comes back online.

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#1) The x86 hardware switches to the kernel stack before saving the process state in order to not save the process while still in an error state. This gives the user time to fix the process and allow the processor to switch back into the user stack.

#7)

- a. This instruction would be used when the user needs to manually switch from the kernel to the user stack.
- b. The system will move the stack pointer from the interrupt stack to the user stack and then the system will move to that new address and continue the execution of the process.