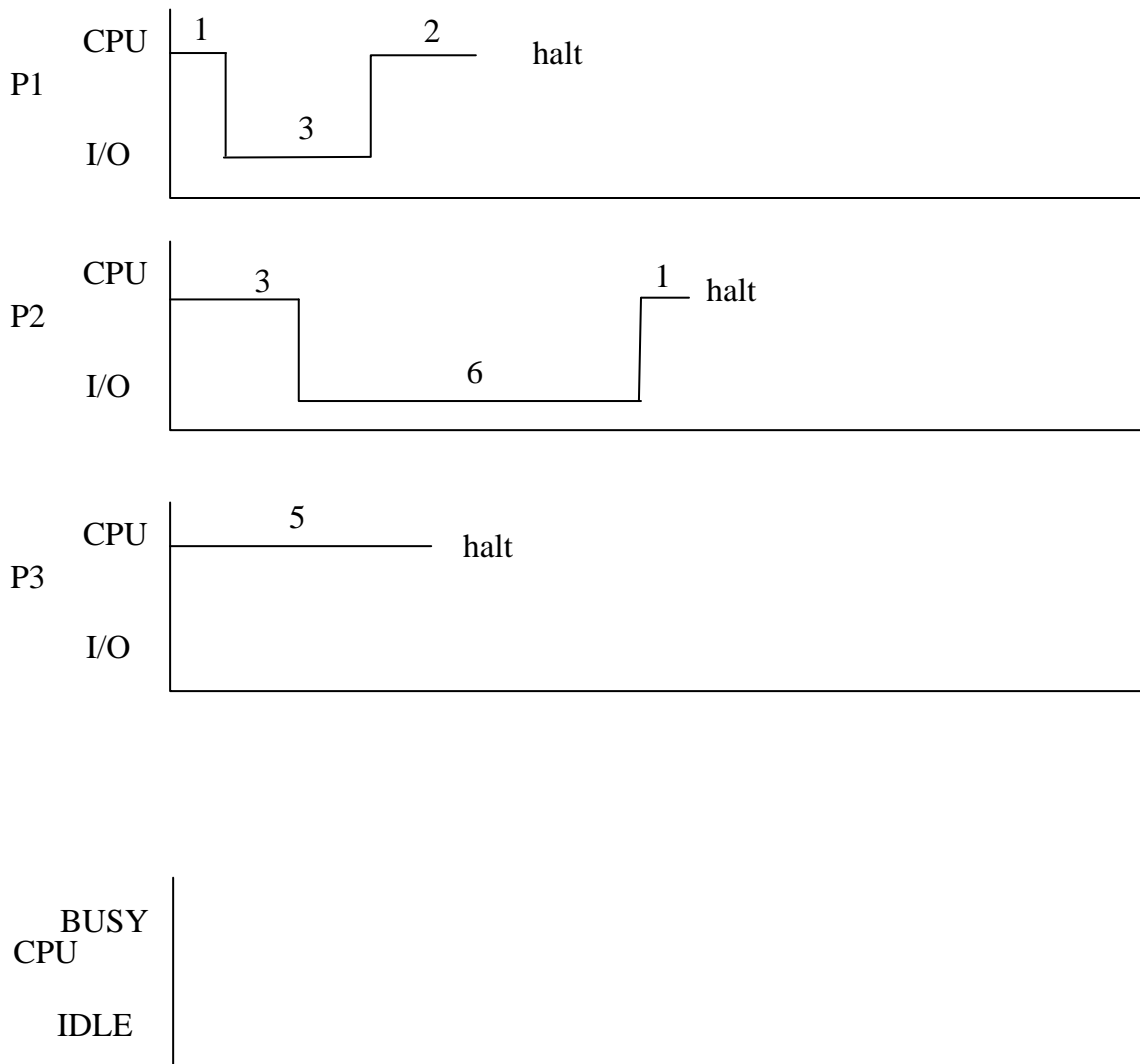


- Individual CPU and I/O requirements for 3 processes are shown below using a generic unit of time. If these processes execute in a time sharing environment where the CPU scheduling algorithm used by the OS is Round Robin with a time slice of 3 time units, you are to describe below how the CPU will be assigned to each process and for how long until all 3 processes have finished execution. You can assume that P1 gets to the ready queue just before P2, and P2 just before P3. You can assume that interrupts will be generated when a process needs I/O, when an I/O is finished, and when the time slice expires. Also assume that the time slice is reset with every interrupt and that the I/O for the processes are different so that there is no I/O queue. Assume also that an interrupt from a completed I/O for process “X” will place process “X” in the ready queue BEHIND the process that was just interrupted.



2. Suppose that a scheduling algorithm (at the level of short-term CPU scheduling) favors those processes that have used the least processor time in the recent past. Why will this algorithm favor I/O-bound processes and yet not permanently starve CPU-bound processes?
3. Assume you are given a uniprocessor system with one gigabyte of memory and a 300 gigabyte disk. The OS on the machine has a demand paged virtual memory system with a local page replacement policy and a multi-level feedback queue (MLFQ) CPU scheduler. On the system there are two compute-intensive jobs running: Job-A and Job-B. Job-A has a working set of 50 gigabytes while Job-B has a working set of 100 megabytes. Assume you left the system to run for a while until it reached a steady state with both jobs running.
 - a. Which job would you expect to have a higher CPU scheduling priority from the MLFQ scheduler?
 - b. Assume you add a second CPU to system, how would this affect the priorities of the jobs?
 - c. Assume you switch from a local to a global page replacement policy, how does this change affect the priorities of the jobs?

Justify your answer and state any assumptions you make.