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Chapter 4

1. Command 1 will run at 100% CPU with priority 0 since it came in first (and both commands have the same importance), while command 2 waits. Then, command 2 runs at 100% CPU after. We know this because the command “5:100” is saying to run a process 5 times with only the CPU.
2. The 4:100 command will run first, and take four “ticks” (the word I have found to use during my research) using 100% CPU during those four ticks. When switching to do process “1:0”, we are now going to use the I/O to run this. So, for 1 tick, we use the CPU to run the process, but then must wait 5 ticks for the I/O (since it takes 5 ticks for the I/O to operate), then there is a return tick to return the answer which uses the CPU. This means that the second process runs 2 ticks for CPU and 5 for I/O. In total, we then see 6 ticks of CPU utilization and 5 ticks for I/O with a total of 11 ticks.
3. This will take 7 ticks to complete. Command “1:0” will run first, using the first tick to run the process (using the CPU), then go to the I/O for 5 ticks. During these 5 ticks, the CPU is unutilized, so “4:100” will run DURING those ticks. So, we’ll see that command run for 4 ticks utilizing the CPU while the I/O is “gone”. Then, the I/O comes back, and has a return tick utilizing the CPU. This results in 7 ticks to complete, and 6/7 utilizing the CPU, meaning that the change in order for these commands did in fact matter and create a difference. This resulted in much more efficient use of the CPU, and a reduction in the amount of ticks required to operate.
4. For this, we see that using the (-l 1:0,4:100 -c -S SWITCH ON END) command will stop the use of the CPU during the operation of I/O. This means, it will now be the case we saw for #2, where it takes a full 7 ticks to complete the I/O command, then the 4 ticks for our second command. This makes for 11 ticks, 6 utilizing the CPU.