WEEK 2

Bash Hands-on and Linux Internals Kick-start

Prerequisite Modules: Computer Systems Refresher and Bash Kick-start

Sr. No.	Topic	Difficulty Level (L, M, H)	Lab Outline	Comments	Completed (Y/N)
1	Bash Signals	L → M	Bash script to test signals i.e. CTRL + C		Y
2	Bash Signal Traps	L → M	Bash script to trap signals i.e. CTRL + C and do a Clean exit		Y
3	Bash Process Scheduling	L → M	Crontab, at		Y
4	Pipes and FIFO	M	Interprocess-communication lab using mkfifo	Theory	Y
5	Job Control Commands	L	Execute a process, run in foreground and background, Use & to put a process in background, kill processes Using signals		Y
6	Message Queues	M	N/A	Theory	Y
7	Shared Memories	M	Write c program to create shared memory segment, and read + write using independent processes. Inspect Shared memory system with 'ipcs' utility		Y
8	Process and Process Management	L → M	N/A	Theory	Y
9	MARS Path Finder Case	M	N/A	Theory and case-study: http://research.microsoft.com/en-us/um/people/mbj/Mars_Pathfinder/Mars_Pathfinder.html	Y
10	Priorities - Priority inversion & Inheritance	M	Implement the concepts from case-study in #9, Prioritize processes, and invert priorities, observe the Behavior of OS Scheduler		Y
11	Fork and Exec	M	Write a C program to implement fork and exec system Calls for process creation, inspect the differences Between fork twice and fork and exec		Y
12	Semaphores	M → H	Acquire locks on program in #7 using semaphores. Inspect Shared memory system and semaphores with 'ipcs' utility		Y
13	Virtual Memory Sub-system (VMM)	M → H	N/A	Theory on MMU, TLB, Terminologies: Paging, page faults,page frame reclaiming, page replacement algorithms	Y
14	Documentation on /proc, /dev, /udev, /bin, /sbin	M	N/A	Theory	Y
		L = 1 L → M = 4 M = 7 M → H = 2 H = 0			