WEEK 7

Networking - TCPIP Layer-2 to Layer-4 RAW Sockets Programming

Prerequisite Modules: Computer Systems Refresher and Bash Kick-start, Bash Hands-on and Linux Internals Kick-start, Linux Hands-on - Virtualization and IP Networking Basics, Linux Hands-on - Virtualization and IP Networking Labs on Routing & Switching, Networking - Ethernet and LAYER-II Internals

Sr. No.	Topic	Difficulty Level (L, M, H)	Lab Outline	Comments	Completed (Y/N)
1	Layer-2 – MAC – Raw Sockets	M → H	Write C code for Layer-2 frame, transmit frame from station-1 and verify at station-2 using a sniffer	Programming custom Layer-2 Frame, WireShark Sniffer	Y
2	Layer-3 – IP – Raw Sockets	M → H	Write C code for Layer-3 frame, transmit frame from station-1 and verify at station-2 using a sniffer, verify both L2 and L3 frames	Programming custom Layer-3 Frame, WireShark Sniffer	Y
3	Layer-4 – TCP and UDP – Raw Sockets	M → H	Write C code for Layer-4 UDP frame, transmit frame from station-1 and verify at station-2 using a sniffer. Repeat for TCP.	Programming custom Layer-4 Frames, UDP and TCP client server programming, WireShark Sniffer, TCP in-depth: handshake/synchronization, use cases for TCP and UDP	Y
		L = 0 L → M = 0 M = 0 M → H = 3 H = 0			