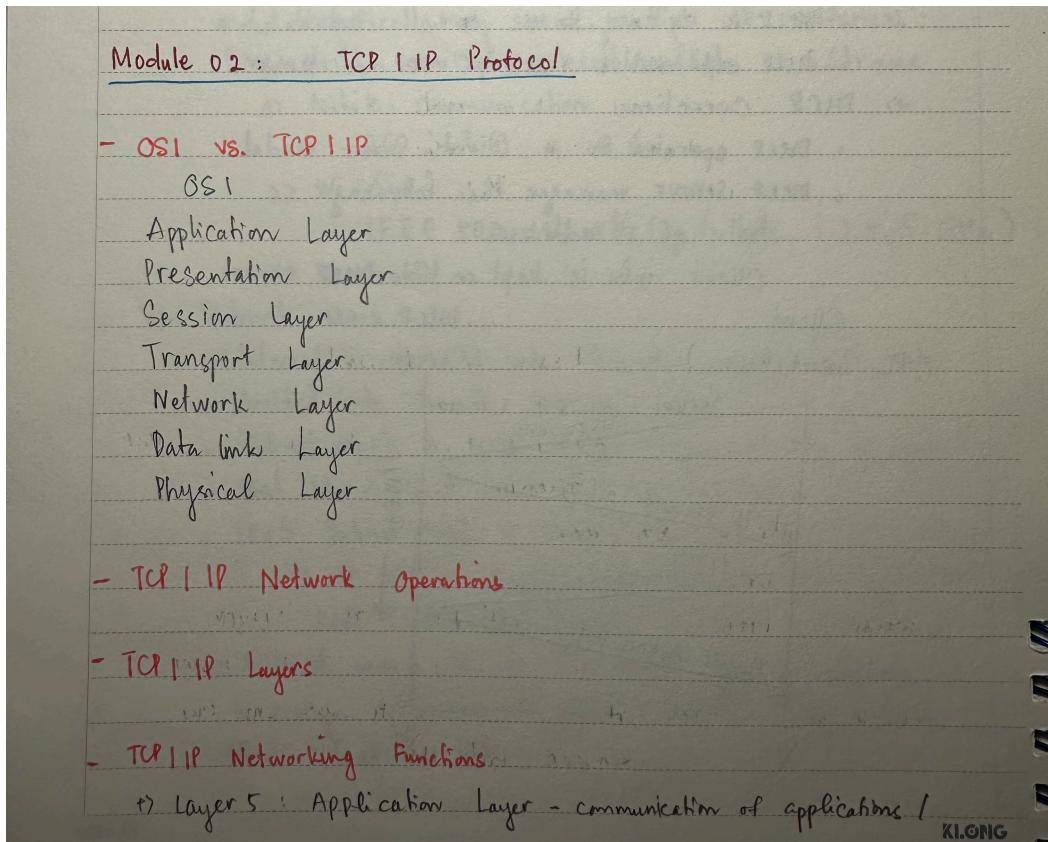


2. TCP/IP Protocol

Note:



server services between separate computers / hosts.

→ Layer 4: transport Layer → provides port delivery to the application at the destination computer and more. (TCP, UDP)

→ Layer 3: Internet Protocol (IP) Layer

→ Inter-networking = Internet

→ Enables a packet to go thought multiple different interconnected networks.

→ Support addressing & routing functions.

→ Layer 2: Network Access Layer (NAL)

→ Layer 1: Physical Layer

- IPv4

→ Protocol Terminology

1 octet = 1 byte = 8 bits

Word = Group of multiple bits

16 bit word, 32 bit word, etc.

Flag = 1 bit Control Function

Flag = { 0 : clear
1 : set }

→ IPv4 Packet

• IP Packet is called a Datagram

• IPv4 Packet = Header + Payload

Header = IPv4 Header

Payload = TCP / UDP header + Data (payload segment)

• IPv4 Essential Functions

Inter-Networking

Routing

Version	IHL	DS	ECN	Total Length	Flags	Fragment offset
Identification						
Time to live		Protocol				Header Checksum
						Source Address
						Destination Address
						Options Padding

KI.GNG

Version (4 bits)

IHL (Internet Header Length) (4 bits)

DS & ECN (8 bits)

DS (differentiated Services) (6 bits)

ECN (2 bit)

Total Length (16 bits)

- IPv6

→ IPv6 Packet Header

Version | DS | ECN | Flow Label

Payload length | Next header | Hop limit

Source Address

Destination Address

Version (4 bit)

DS & ECN (8 bit)

Flow Label (20 bit)

Payload length (16 bit)

Next header (8 bits)

Hop limit (8 bits)

→ IPv6 Address

• IPv6 Address length : 128 bits

- UDP

→ UDP (User datagram protocol)

• UDP provides port information for application connection

• Connectionless : UDP does not establish any end-to-end connection manager to check on the received packets.

→ Port

• UDP provides port information of the source and destination computers, for application connection.

- TCP

→ TCP Header

• TCP Header minimum length is 20 octets

• TCP header contains various data segment flow control functionalities

