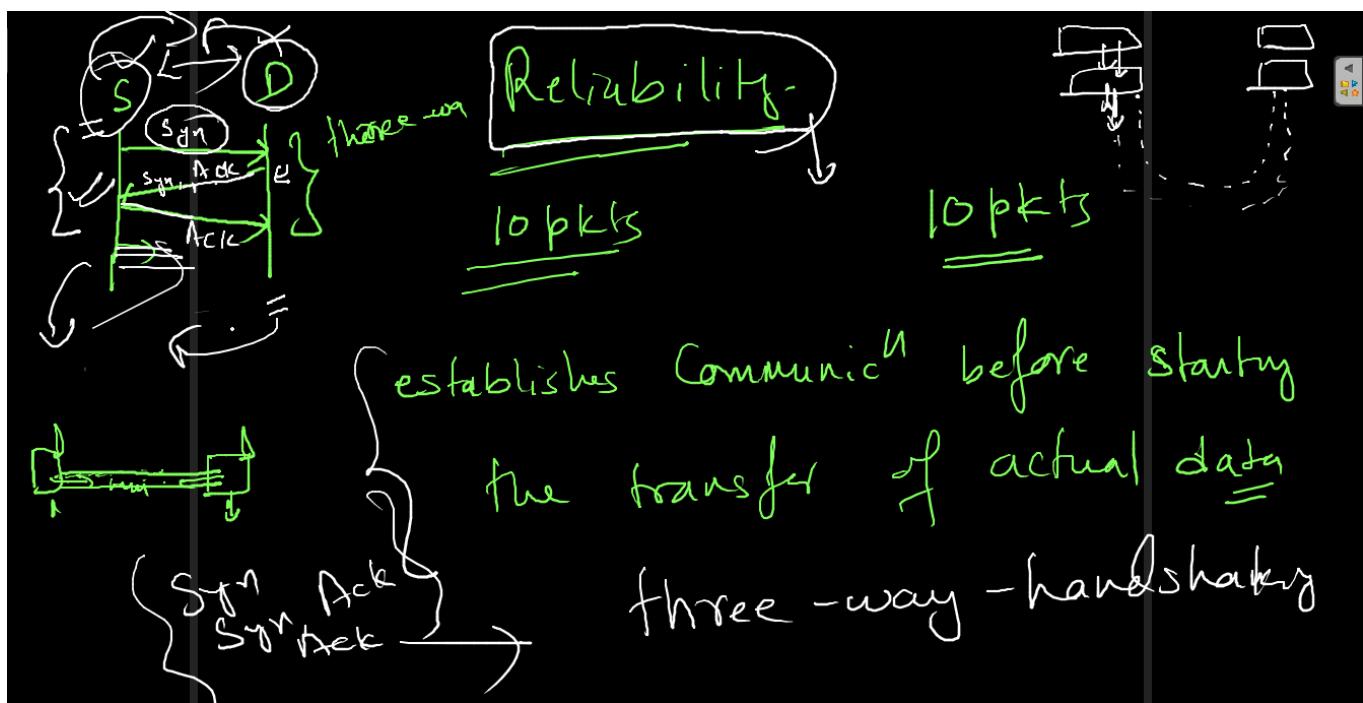
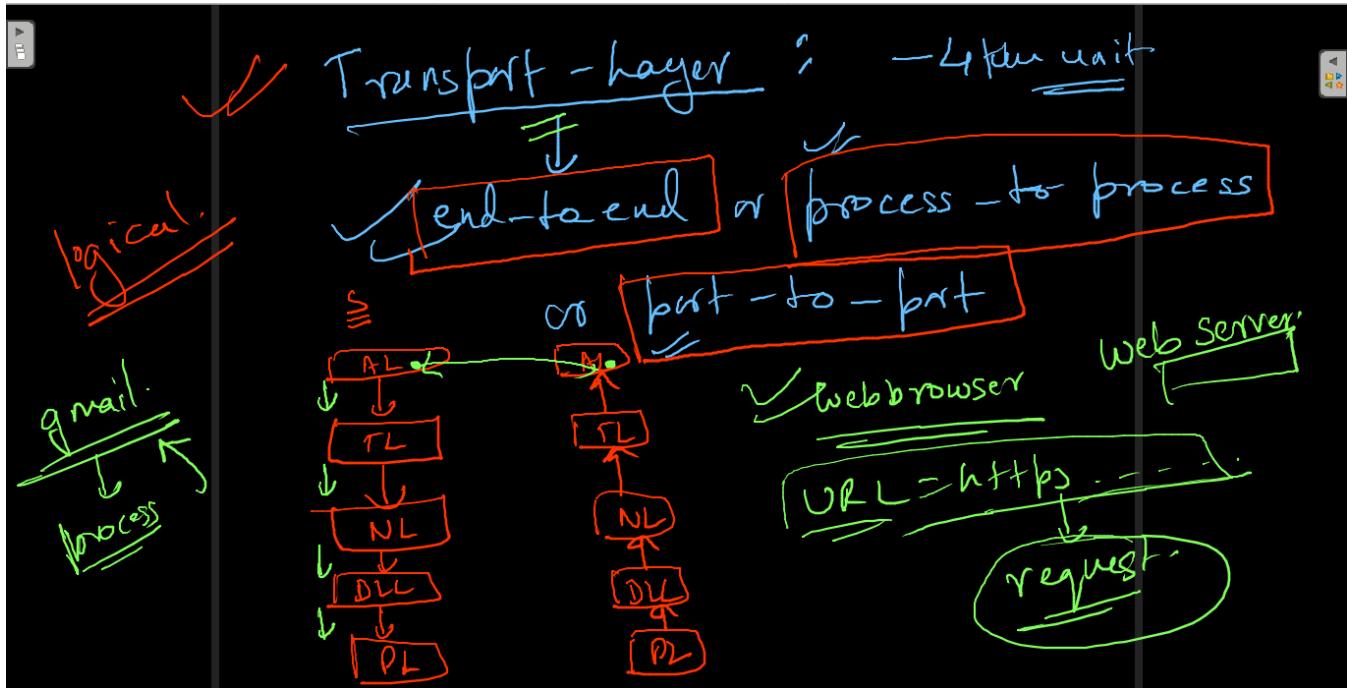
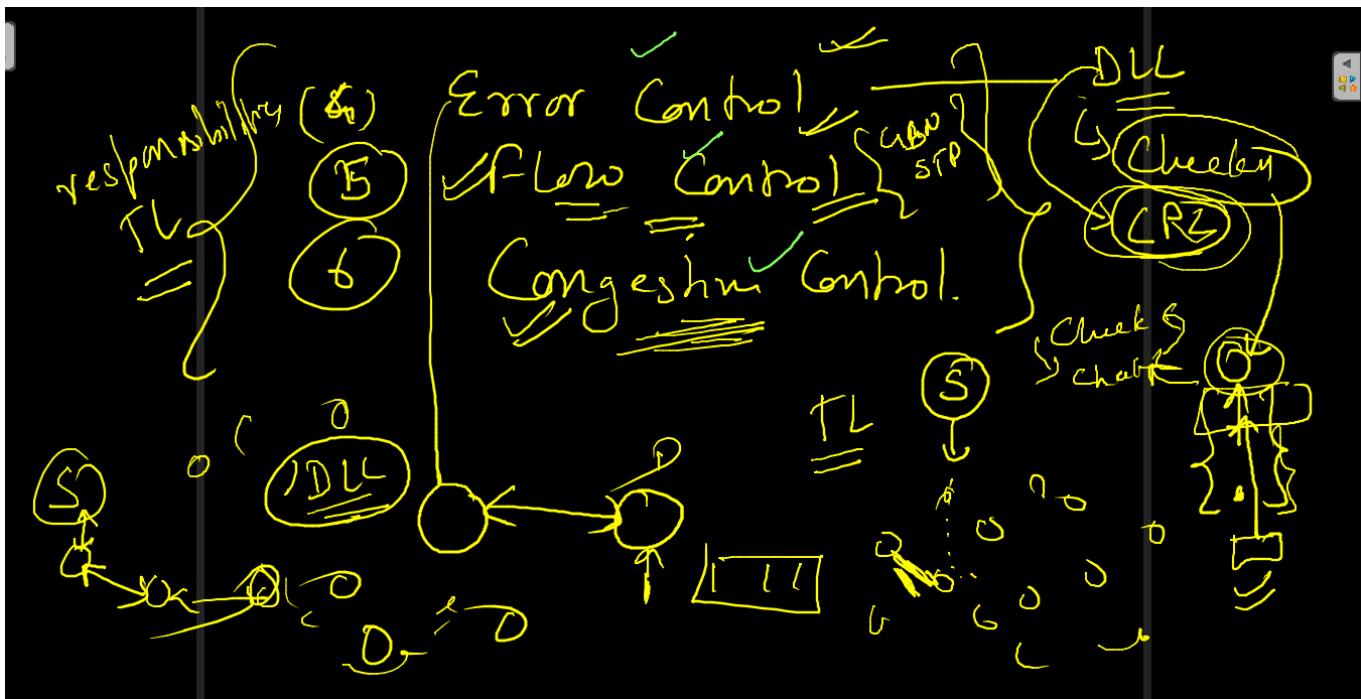
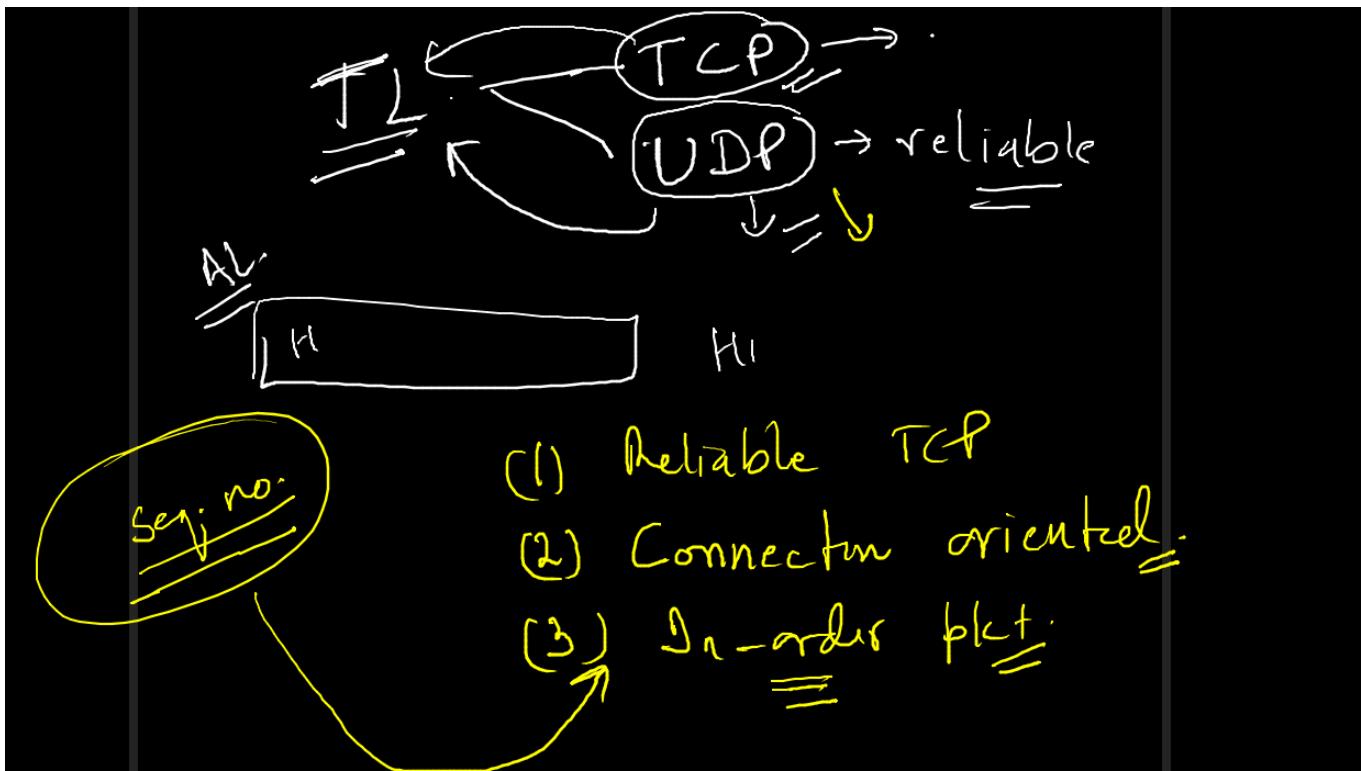
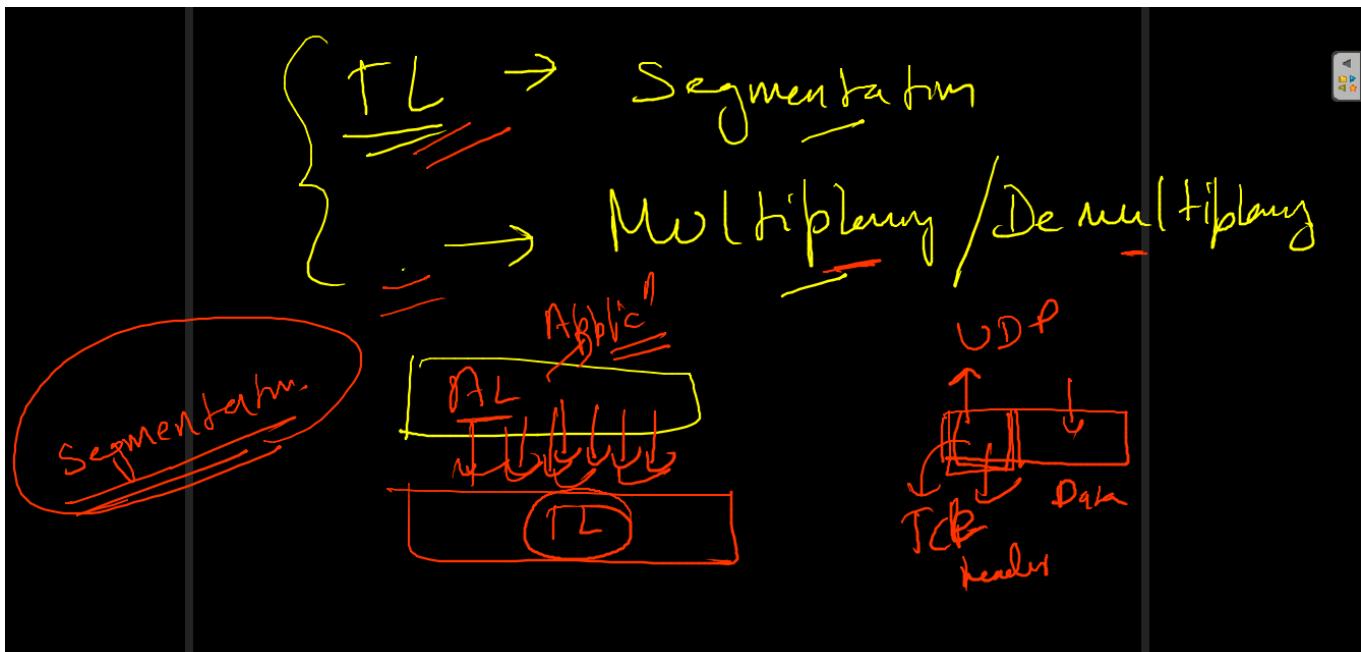
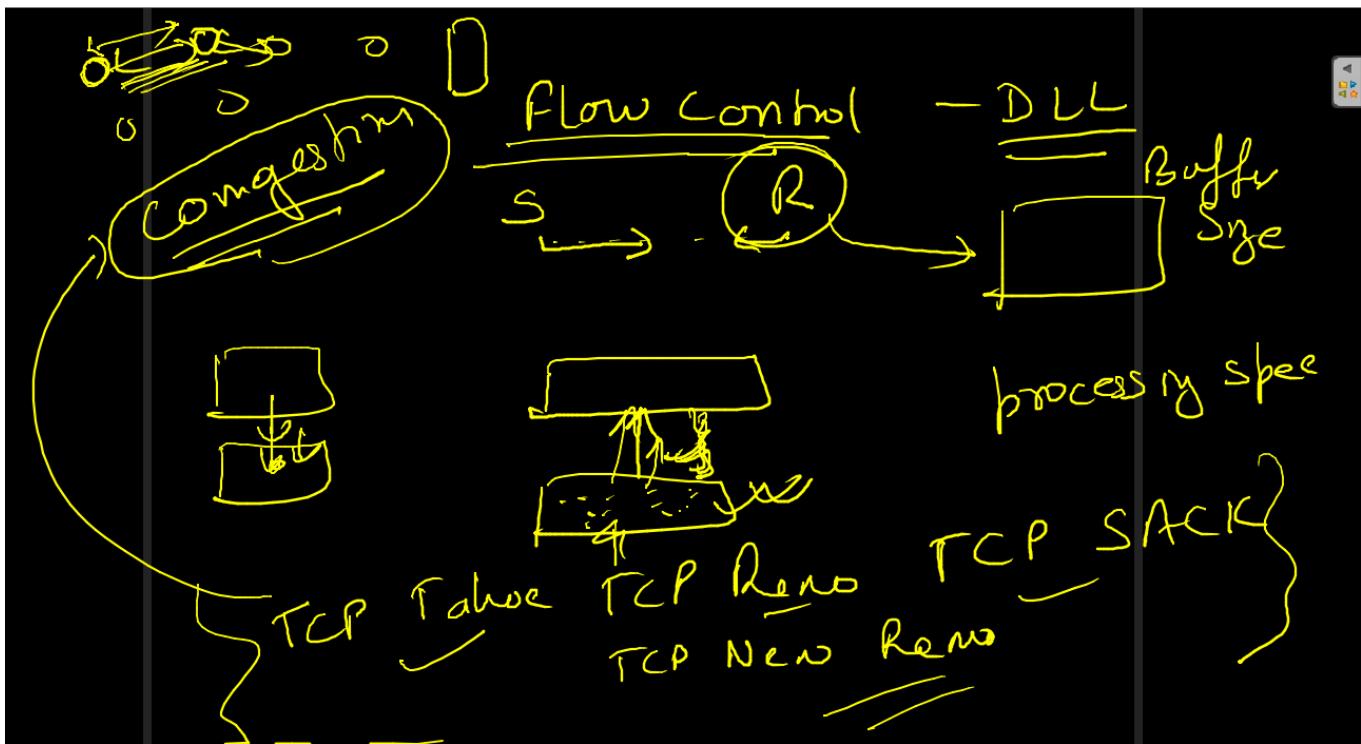
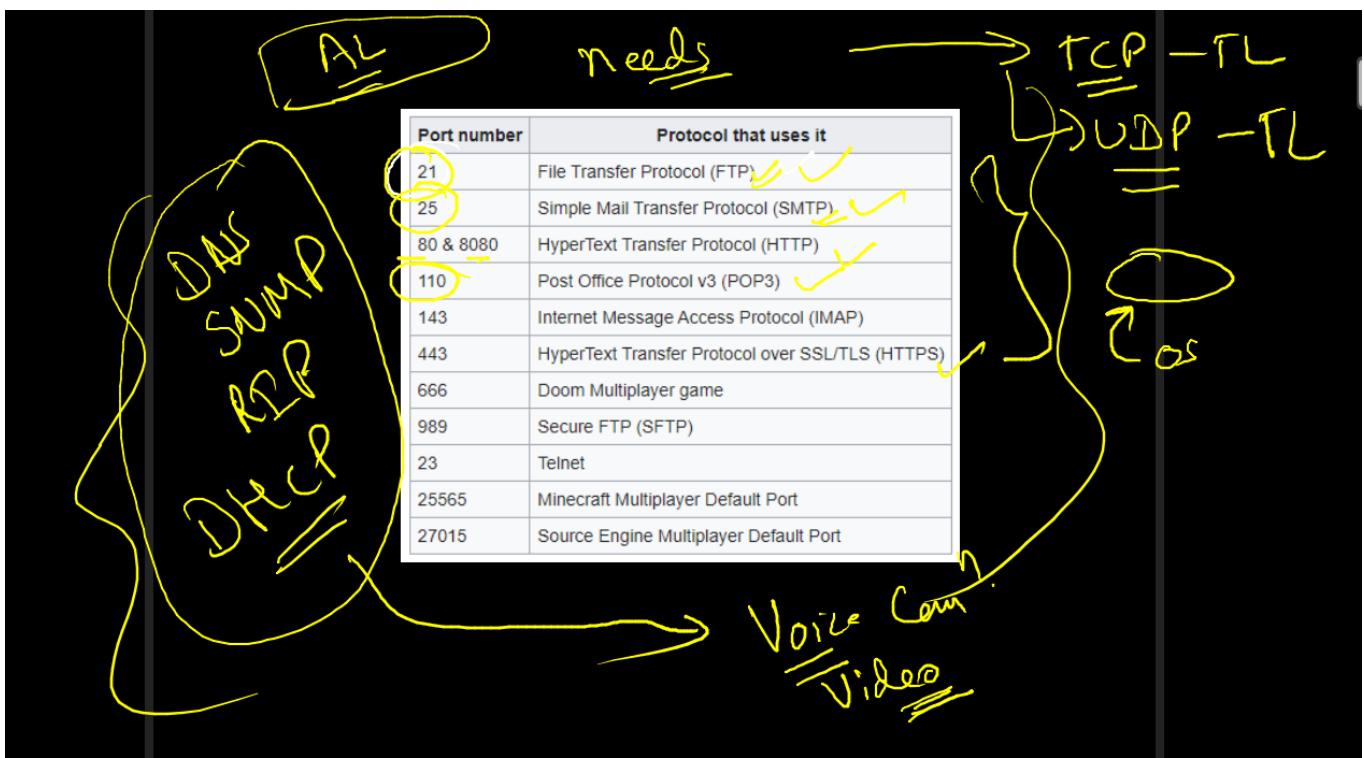
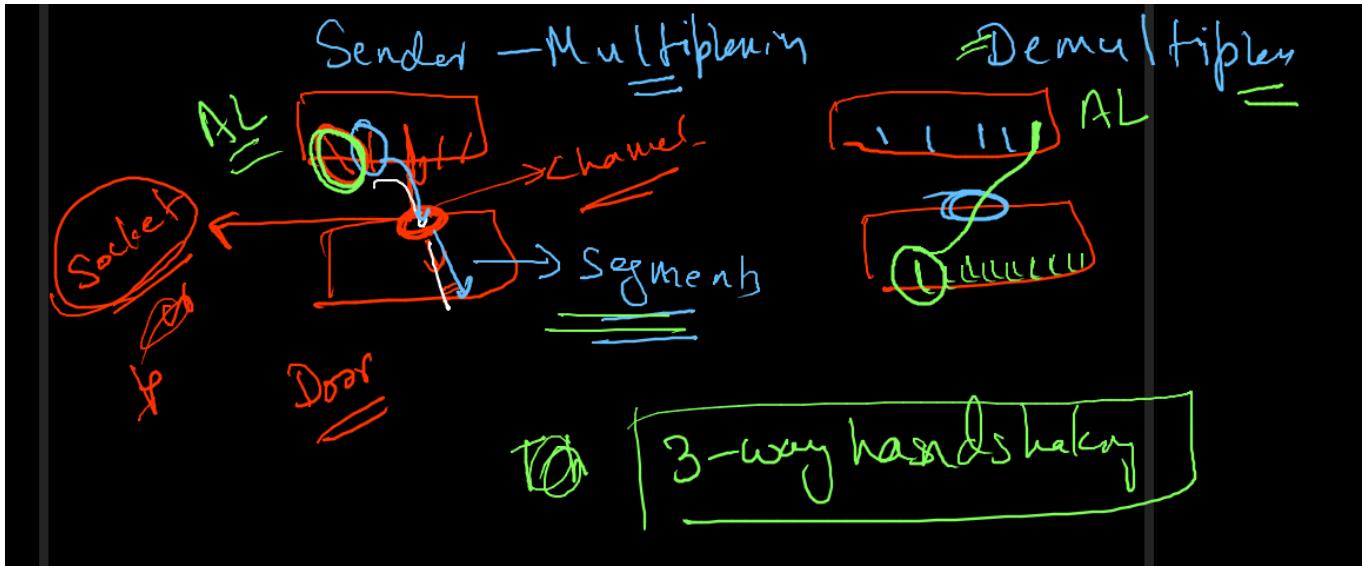


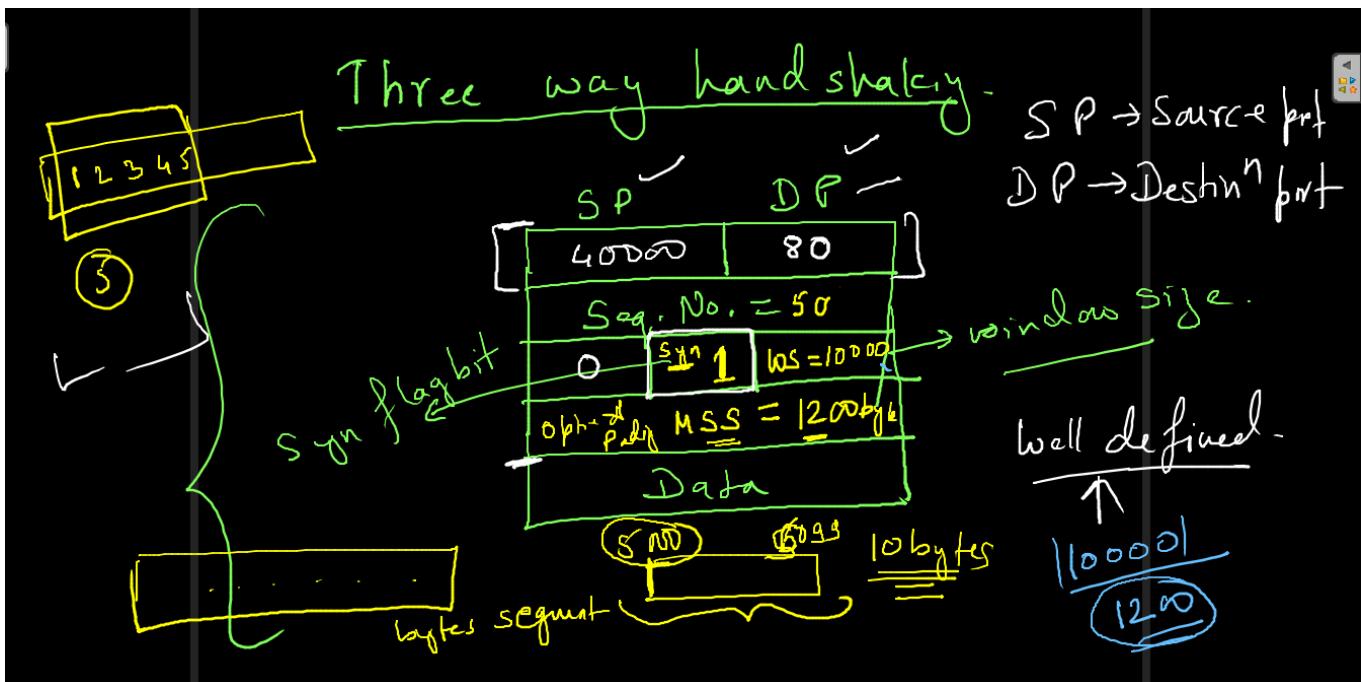
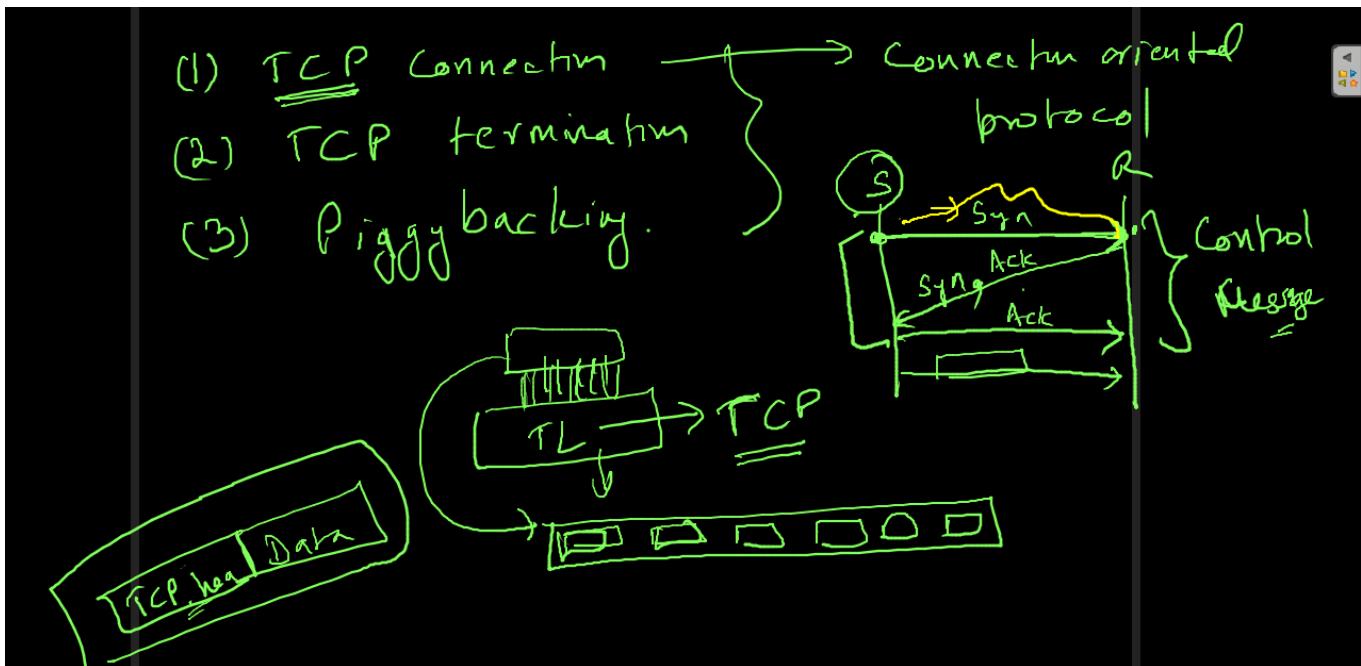
UNIT - IV

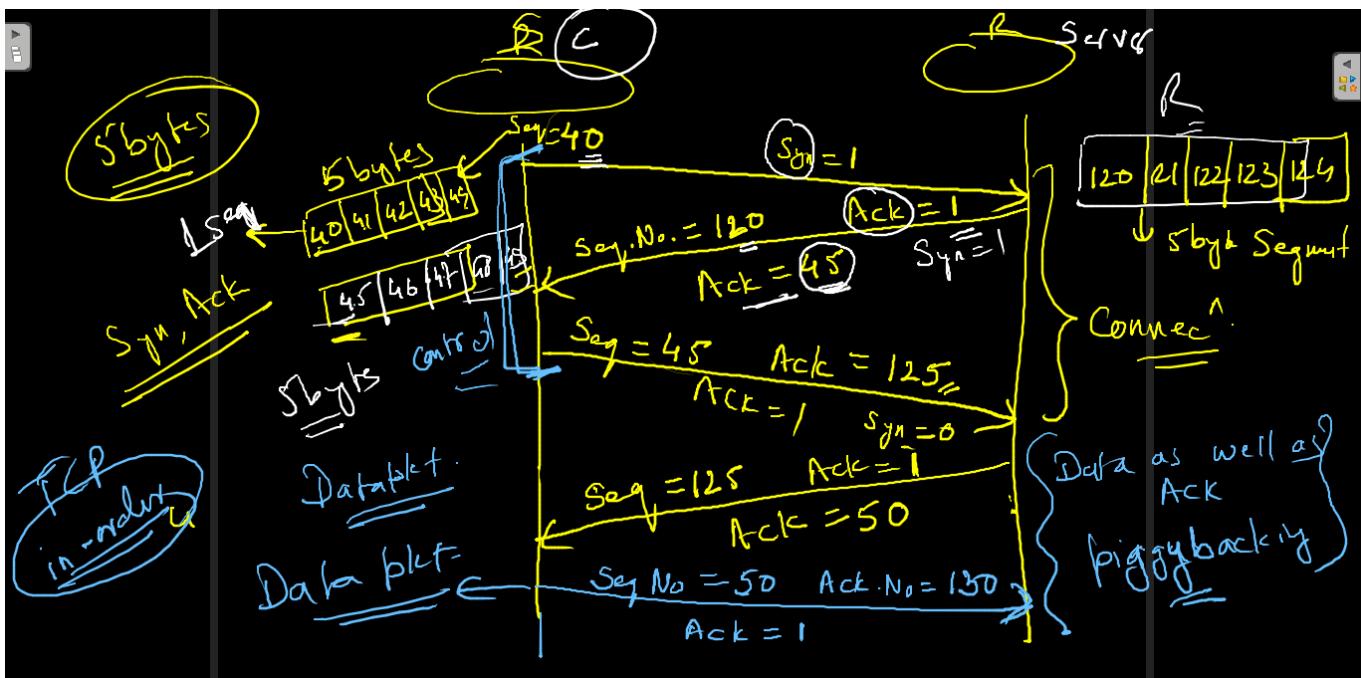
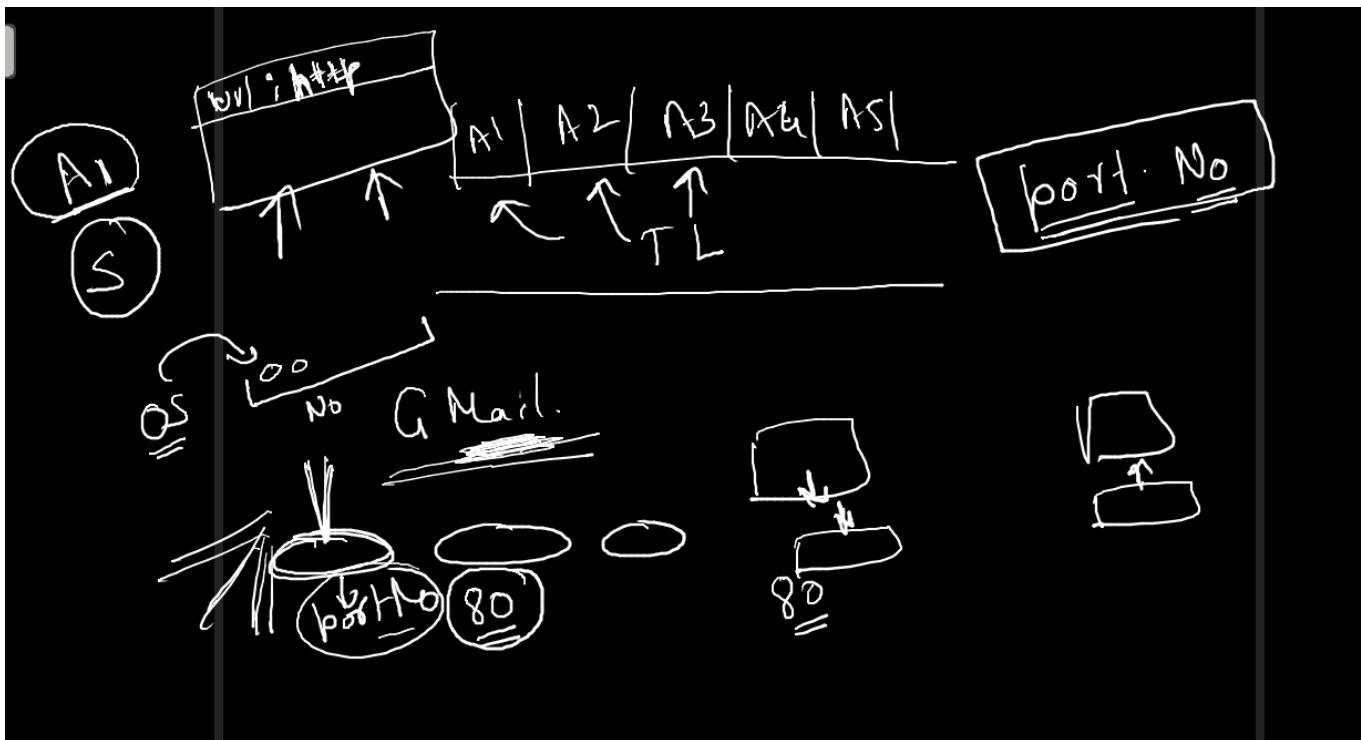


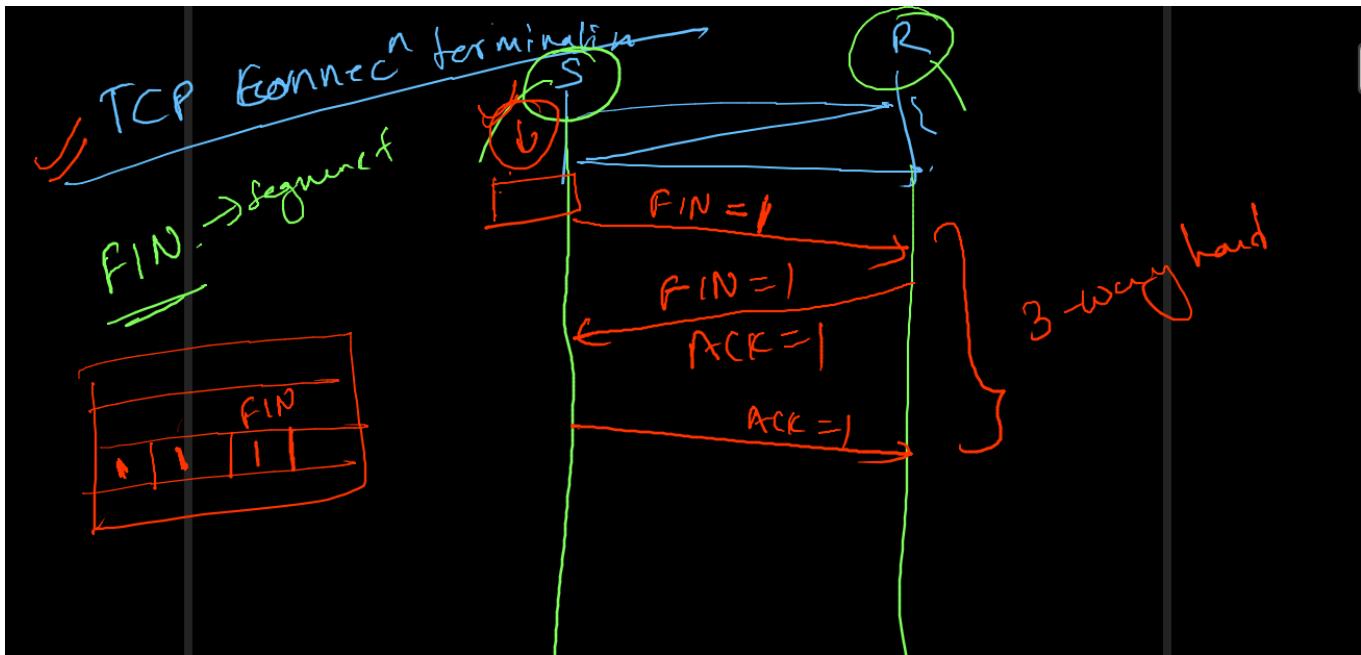
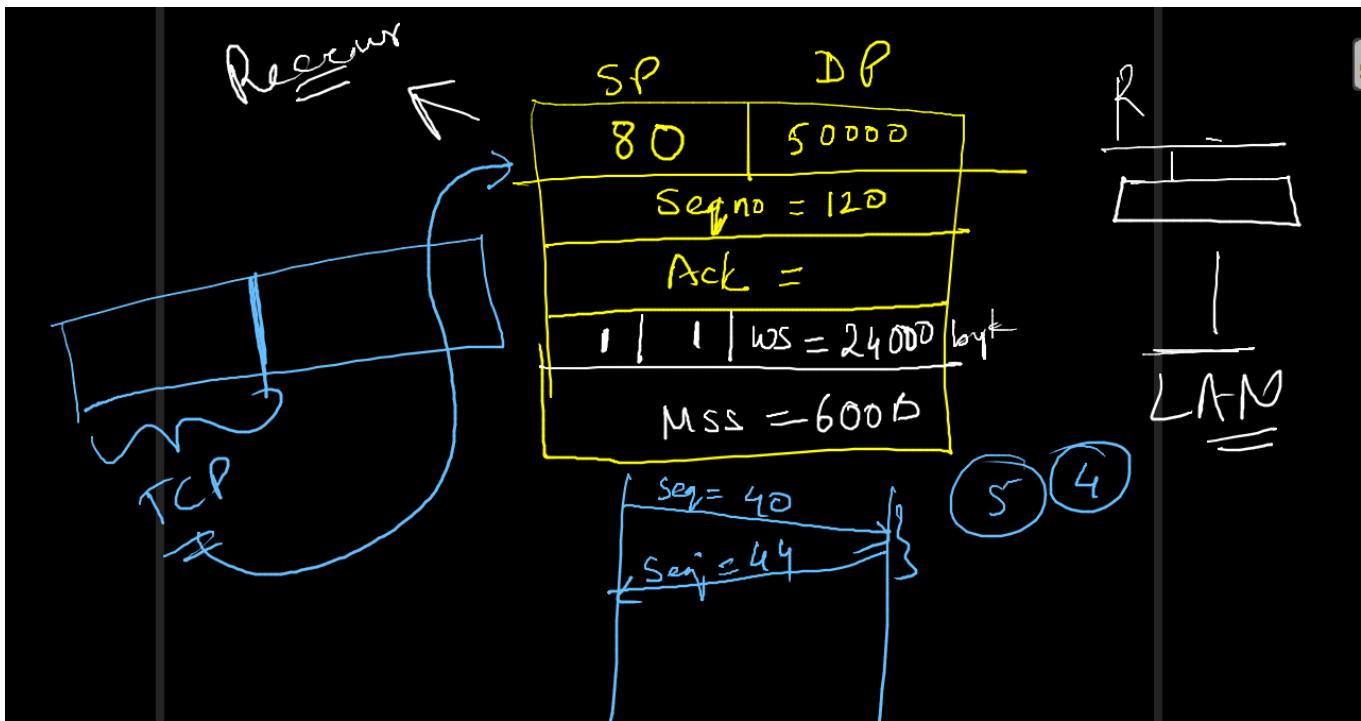


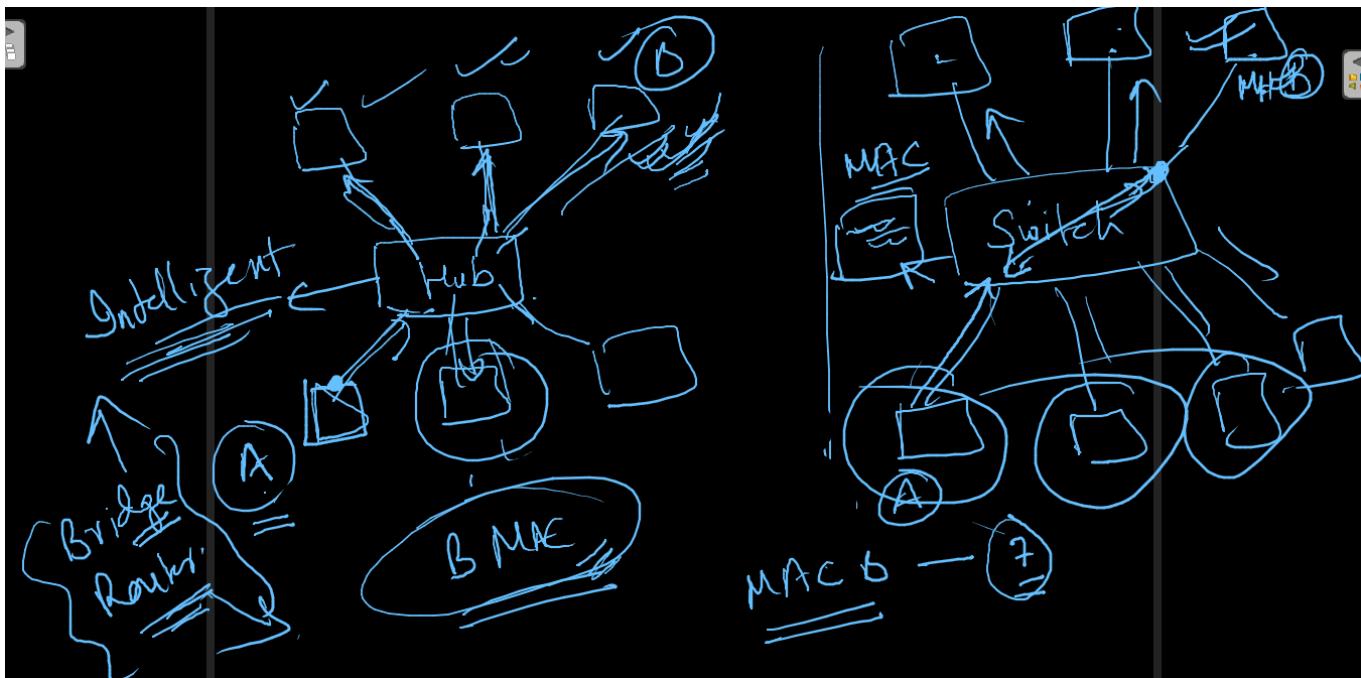
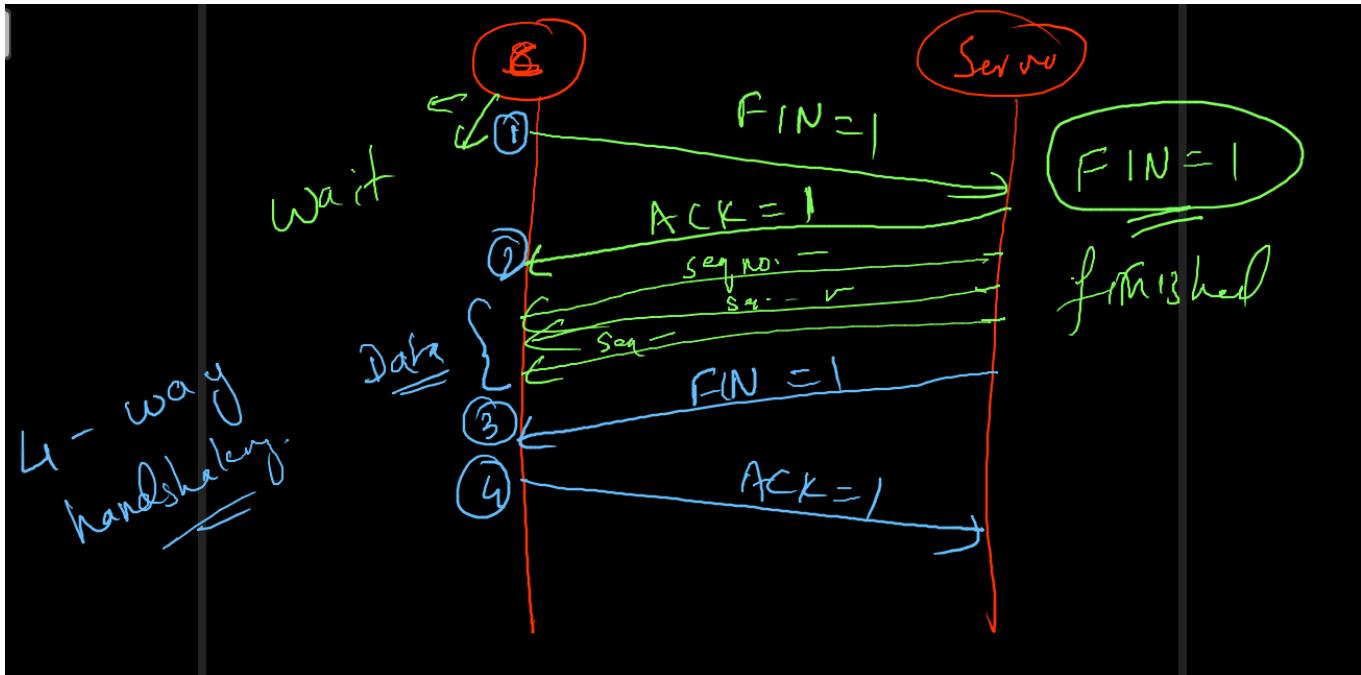




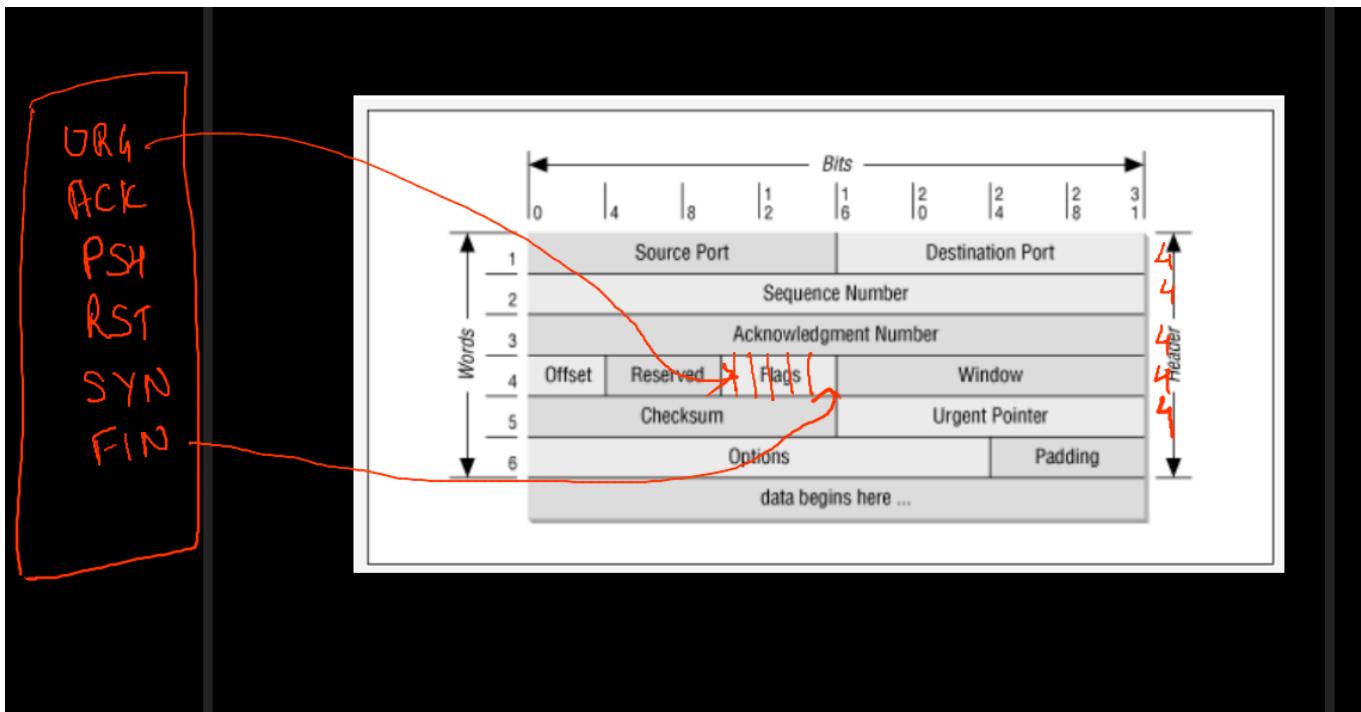








TCP Header Format

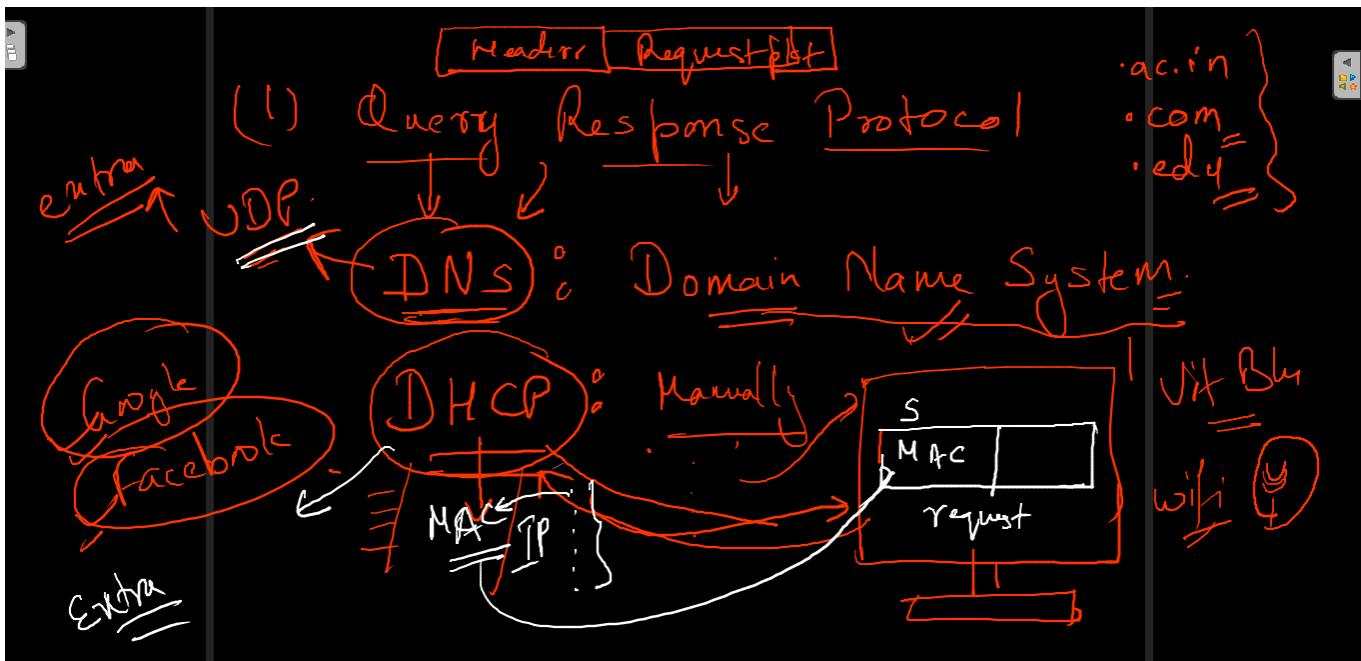


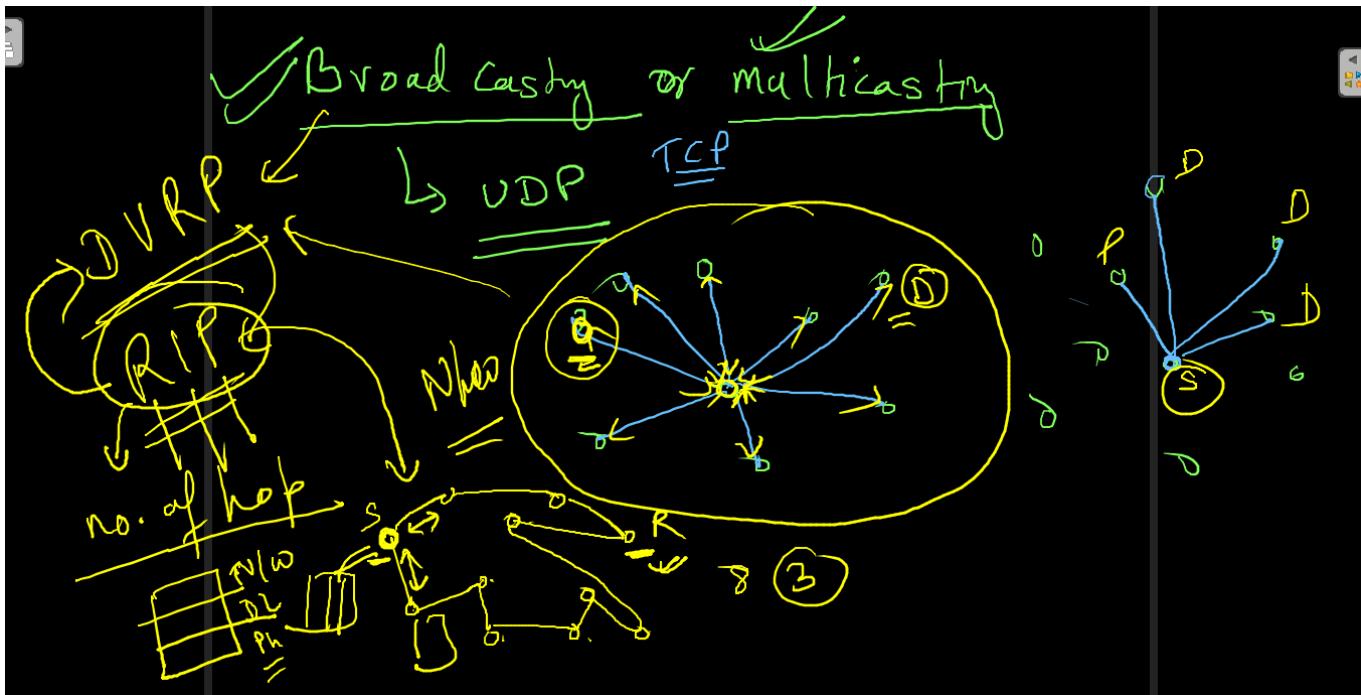
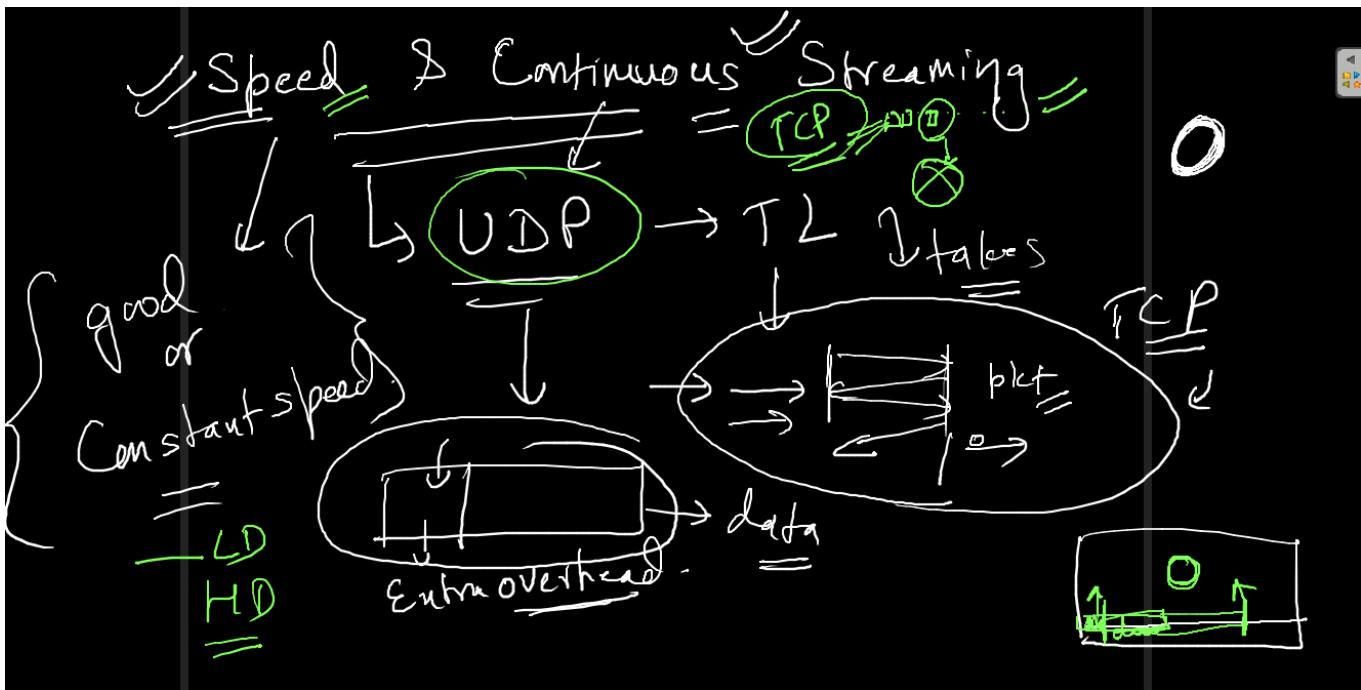
TCP Header + TCP Data + Pseudo IP Header

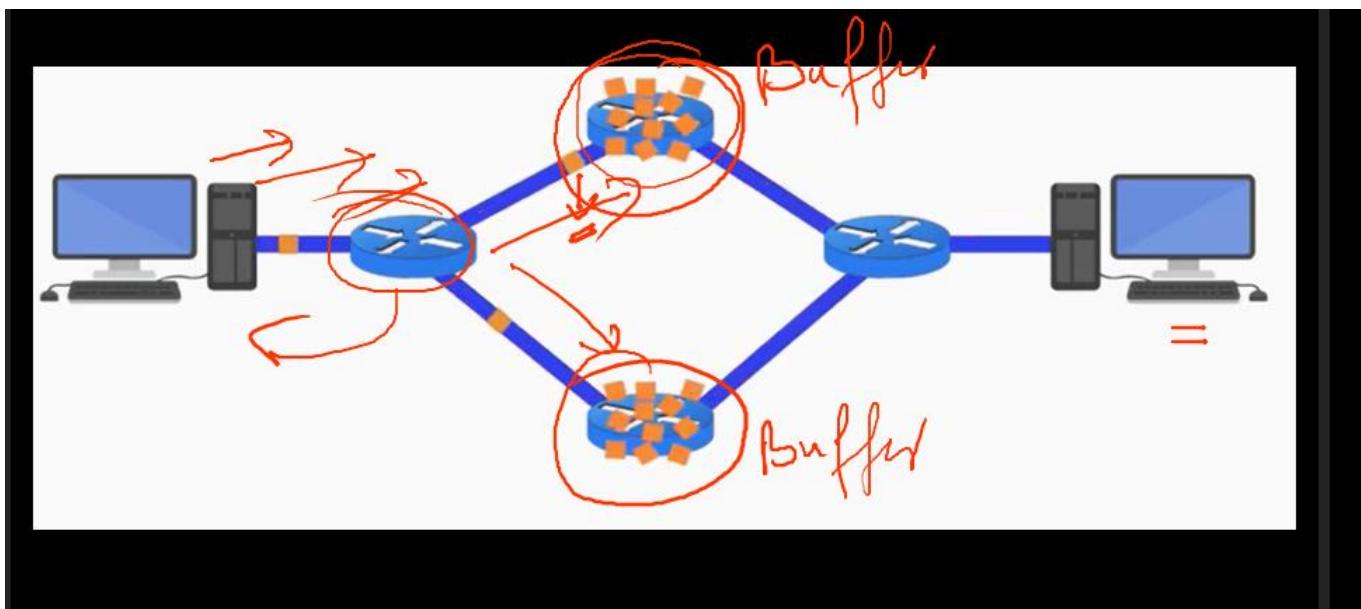
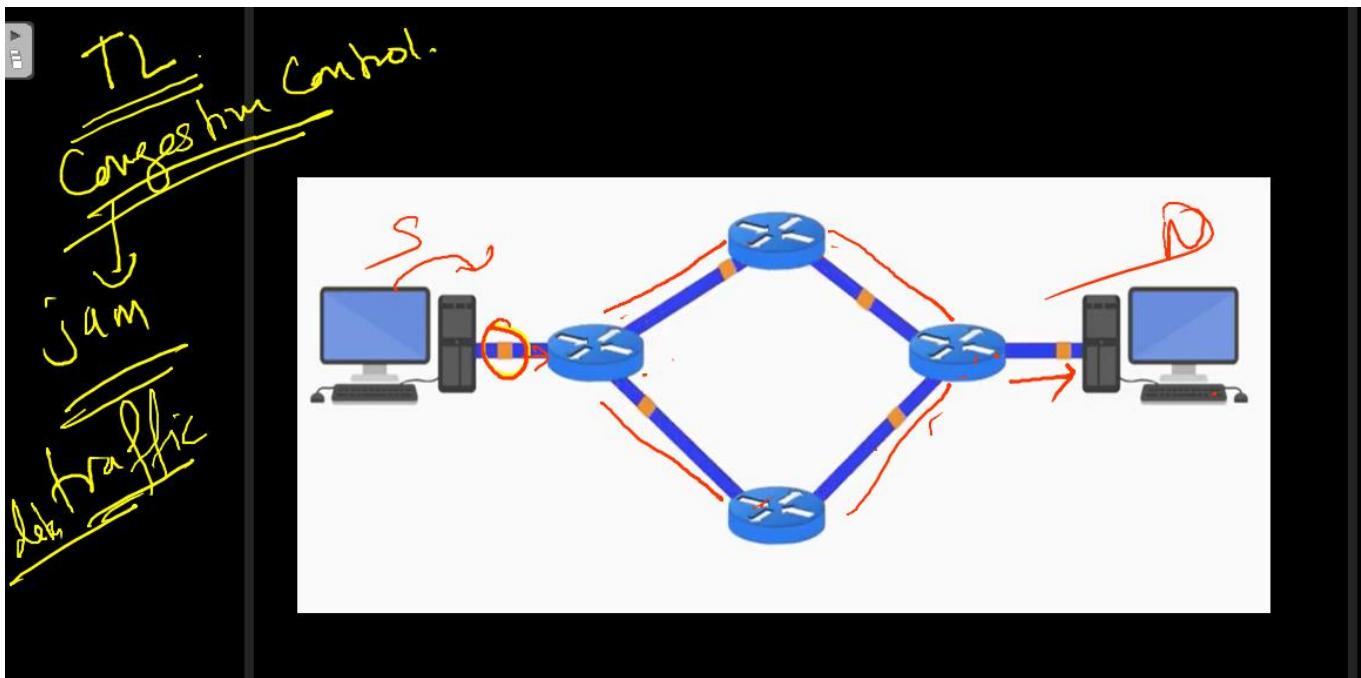
Checksum → Unique value
or
hash value

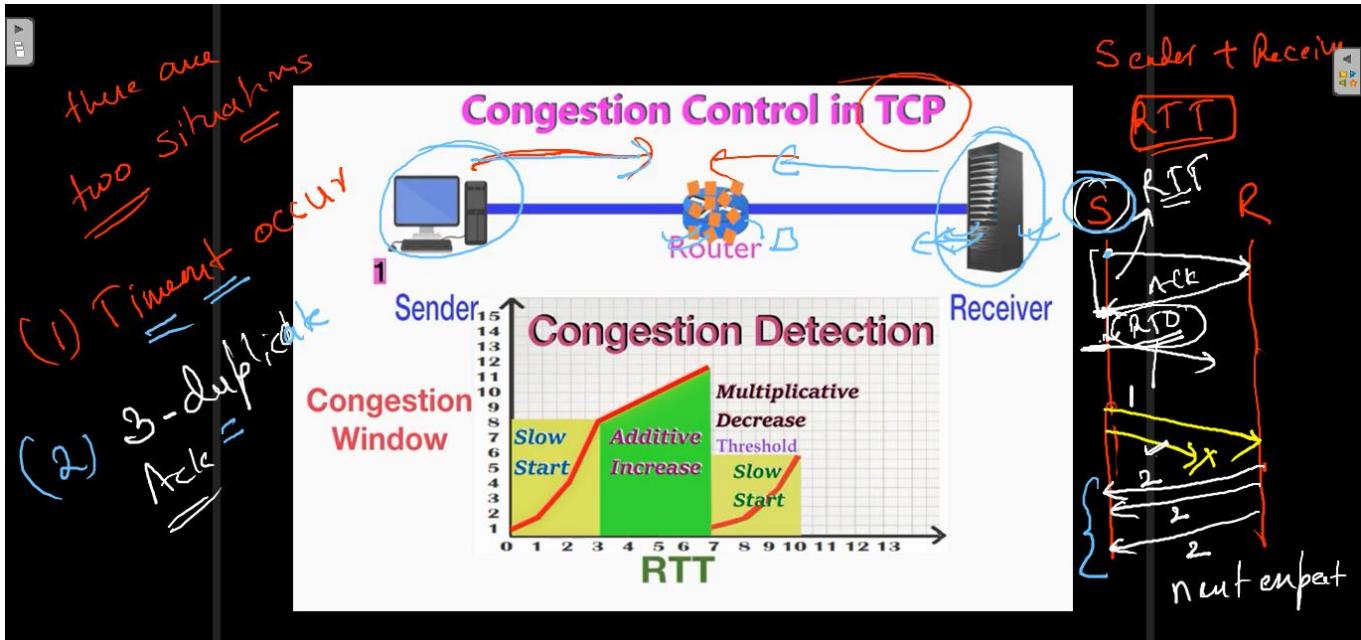
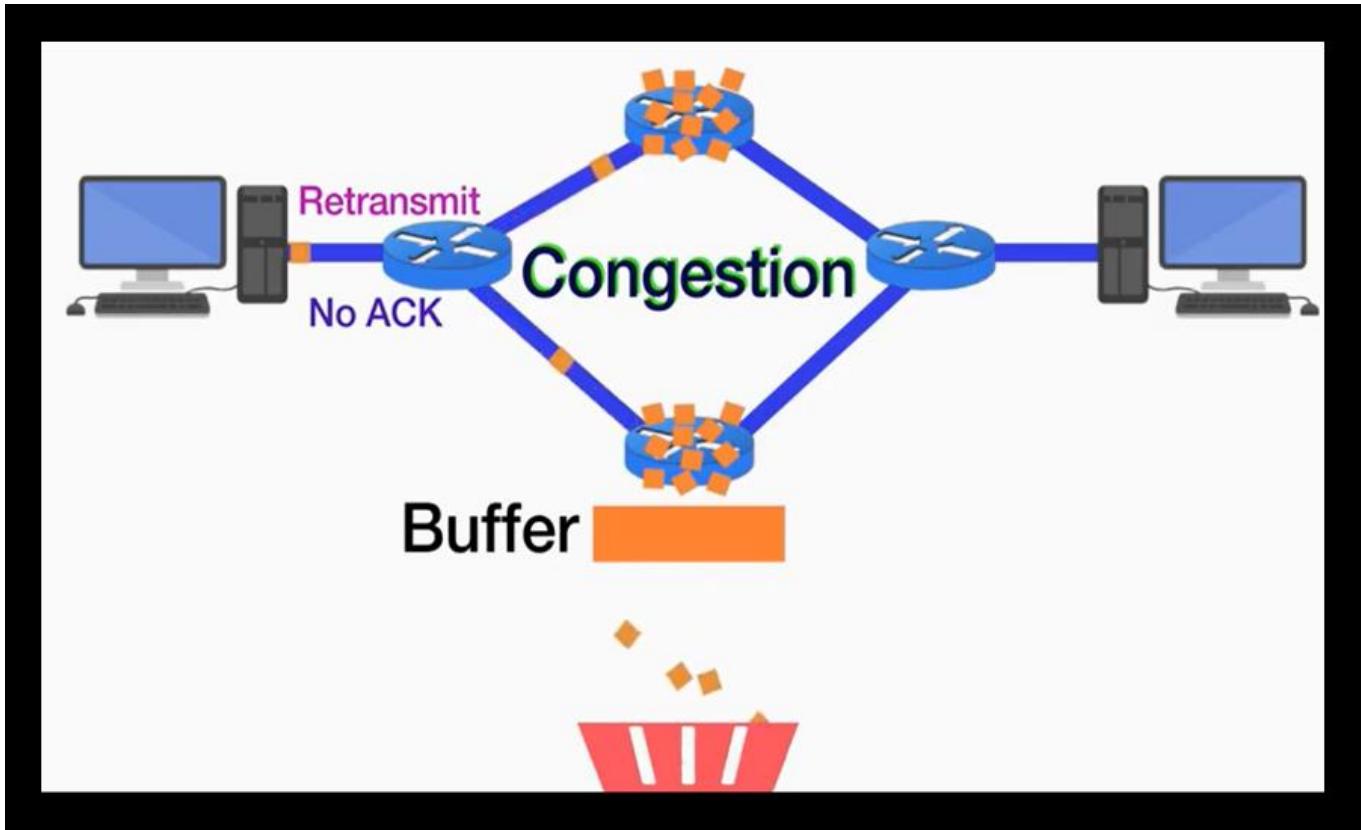


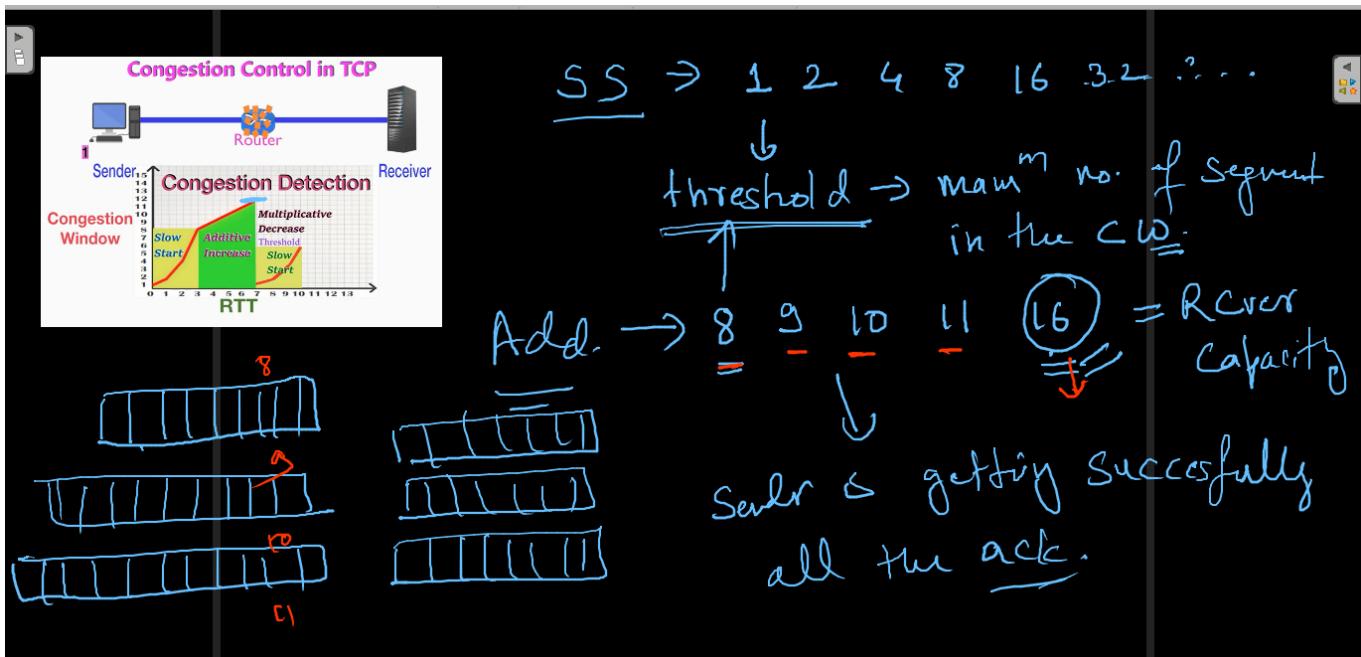
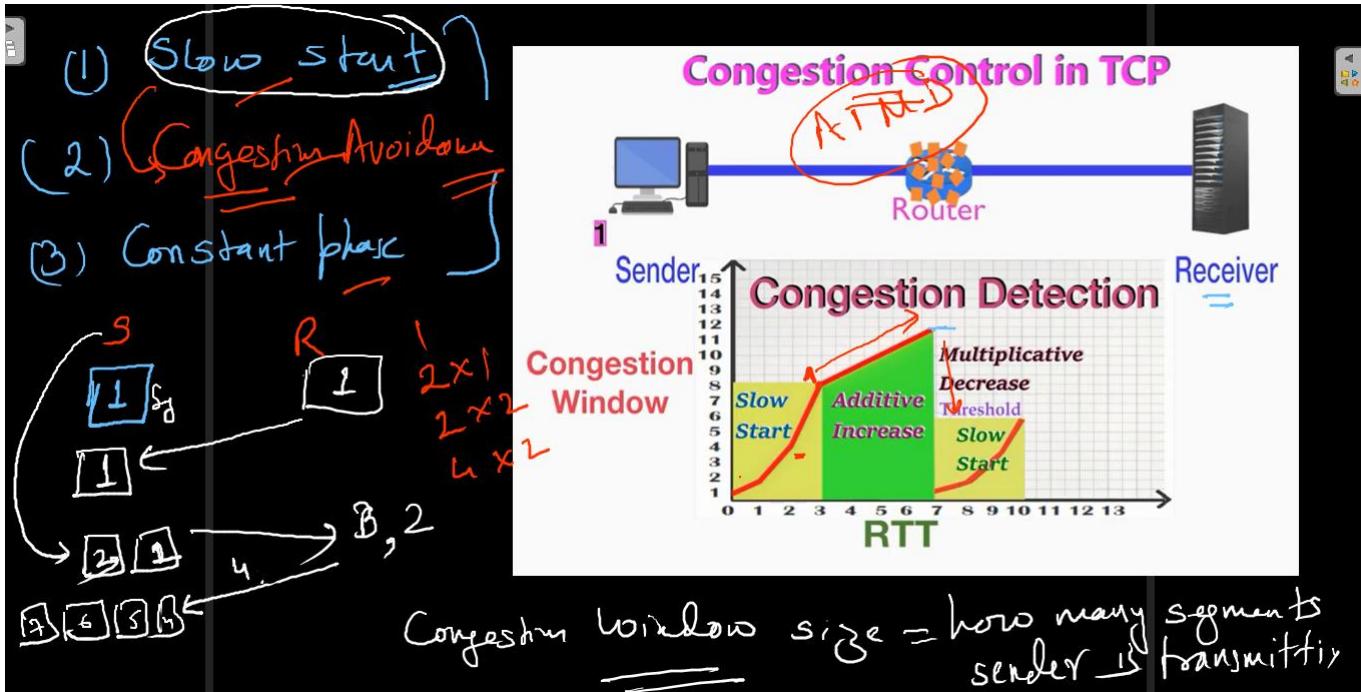
Applications OR Application layer protocols that needs/uses UDP at TL

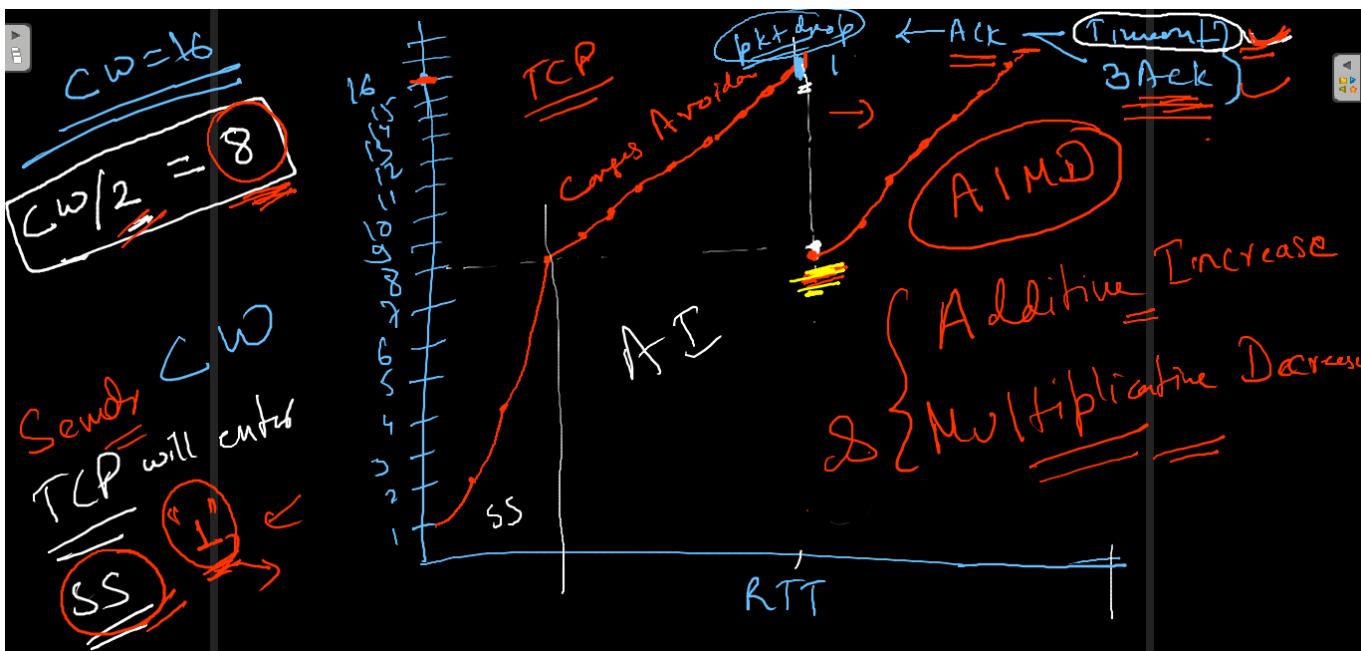
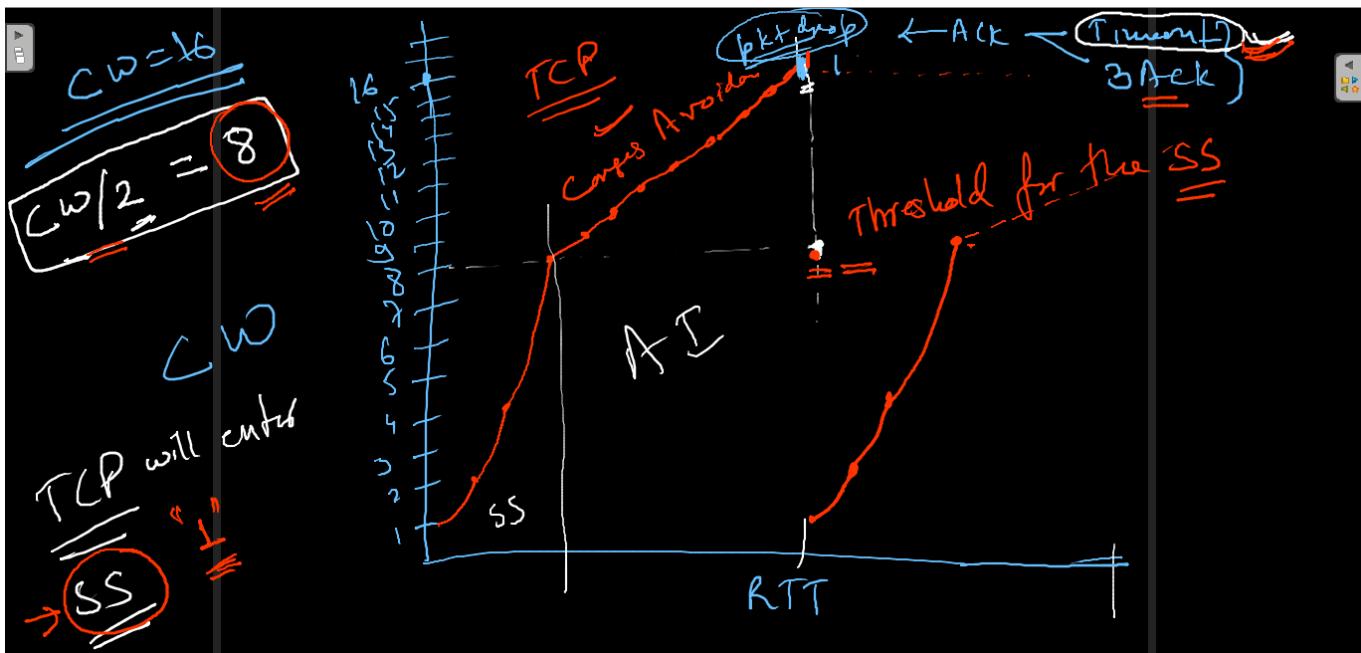


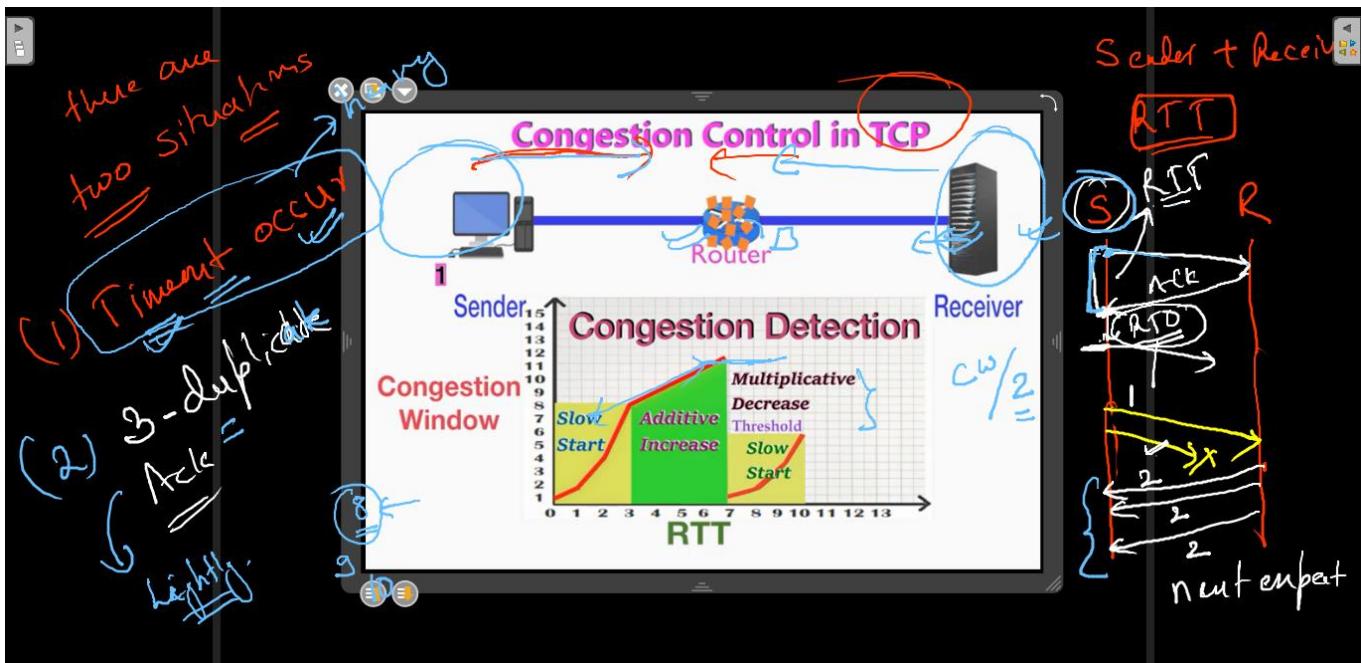
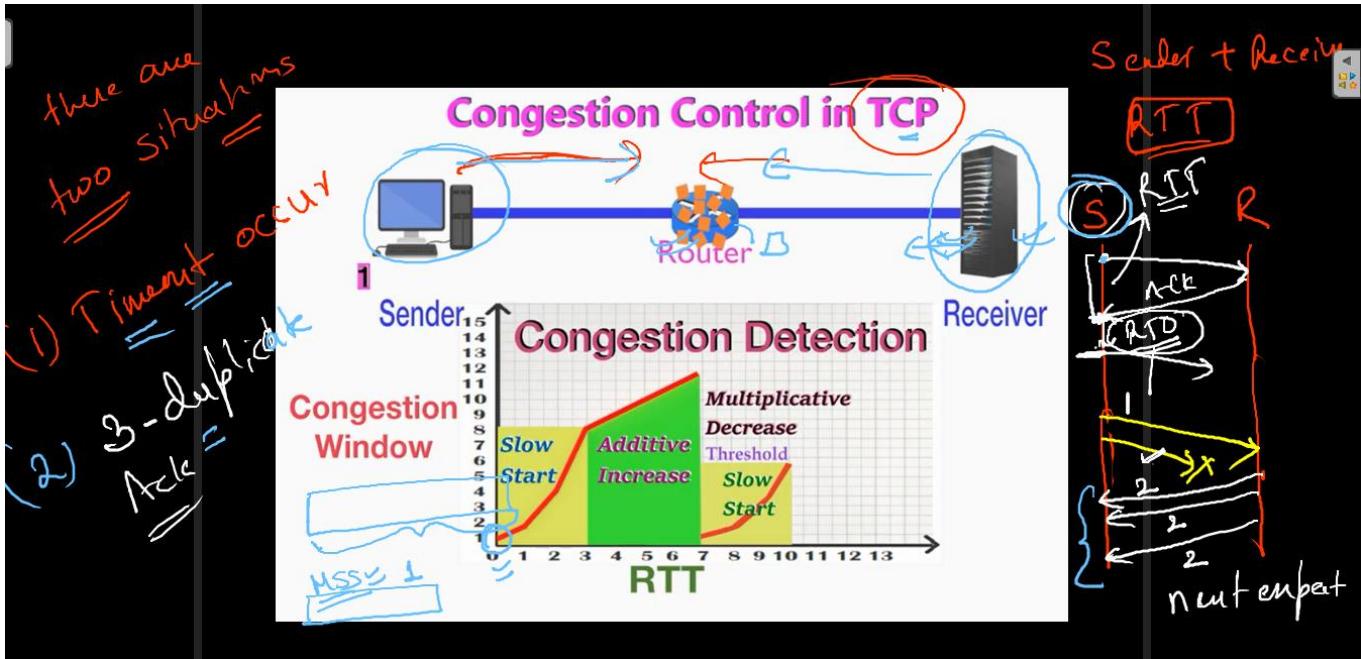










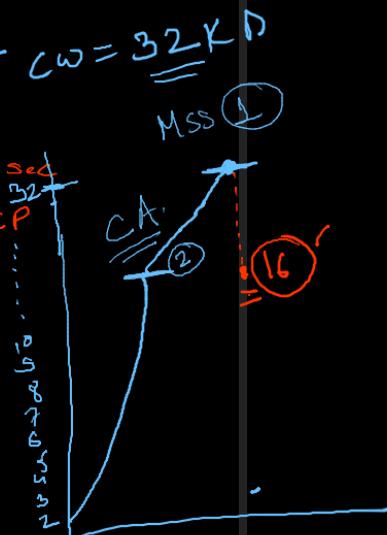


Q = Let the size of Congestion window of a TCP connection in two cases

Case 1: Timeout occurs
Case 2: 3-Ack Received

is 32KB. The RTT of a connection is 100ms and MSS = 2KB. The time taken (msec) by TCP connection to get back to 32KB CW is _____ and _____ respectively

$$32/2 = 16$$



Q = Let the size of Congestion window of a TCP connection in two cases

Case 1: Timeout occurs
Case 2: 3-Ack Received

is 32KB. The RTT of a connection is 100ms and MSS = 2KB. The time taken (msec) by TCP connection to get back to 32KB CW is _____ and _____ respectively

$$32, 16$$

$$\Rightarrow \boxed{2 \ 4 \ 8 \ 16} \quad 18 \ 20 \ 22 \ 24 \ 26 \ 28 \ 30 \ 32$$

$$\downarrow \rightarrow \text{threshold } SS \Rightarrow CW = 16$$

Q Let the size of Congestion window of a TCP connection in two cases

Case 1: Timeout occur $\Rightarrow \underline{\text{SS}}$

Case 2: 3-Ack Received

is $32KB$. The RTT of a connection is $100ms$

and MSS = $2KB$. The time taken (msec) by TCP connection to get back to $32KB$ CW is

— and — respectively

$$32 \Rightarrow 16 \Rightarrow 8 \Rightarrow 4 \Rightarrow 2 \Rightarrow 1$$

$$12 \times 100 = 1200$$

$$\text{RTT} \Rightarrow 11 \times 100 = 1100ms$$

$\underline{\text{CW}}$

$1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32$

Q Let the size of Congestion window of a TCP connection in two cases

Case 1: Timeout occur

Case 2: 3-Ack Received

$\Rightarrow \underline{\text{CA}} \Rightarrow$ additive increase

is $32KB$. The RTT of a connection is $100ms$

and MSS = $2KB$. The time taken (msec) by TCP connection to get back to $32KB$ CW is

$$32K/2 = 16 + 18 + 20 + 22 + 24 + 26 + 28 + 30 + 32$$

$$9 \times 100ms = 900ms$$

$$8 \times 100 = 800ms$$

