CS & IT ENGINEERING



Lecture No-8



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TOPICS TO BE COVERED

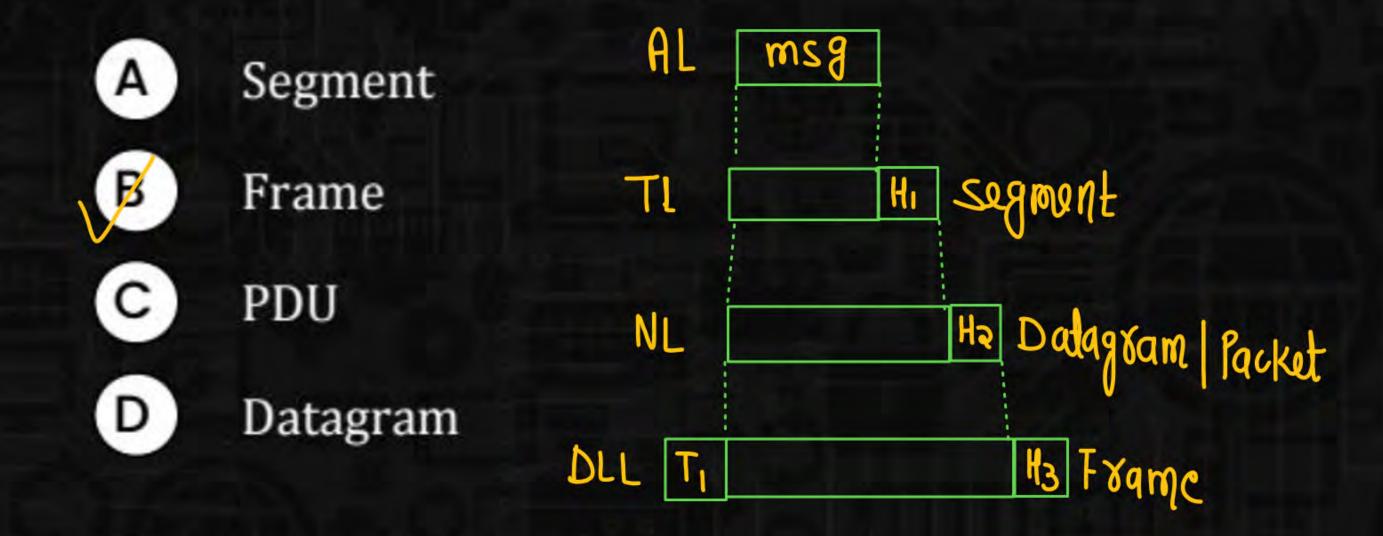
URG Flag & Urgent Pointer

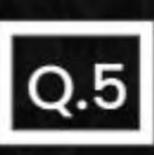
Flow control in TCP



Which one of the following options encapsulates packet?







Which layer is responsible for Segmentation & reassembly?





Application layer



Data Link layer



Transport layer



Presentation layer



Consider the following scenario where source and destination are connected via three intermediate Router

N=3

N→ Intermediate Node of Router

NL → N+2 → 3+2=5(P)

Let P be the number of times the packet visit Network Layer and Q be the number of times the packet visit data link layer during a transmission of packet from source to destination. The value of P + Q is: P + Q = 5 + 8 = 13



A system has 'n' layers protocol hierarchy. Applications generate messages of length 'm' bytes. At each of the layers, an 'h' byte header is added. What is the fraction of the network bandwidth wasted on headers?

- A (nh)
- B (m+nh)
- (nh)/(m+nh)
- D (m+nh)/(nh)



URG Flag & Urgent pointer

URG: Urgent flag



Urgent Flag is used to indicate that some Bytes are urgent in the data

Note:-

Sender create a segment and Insert the urgent data at the beginning of the segment

Urgent pointer: (166)

Urgent pointer Indicate end of the urgent data i.e. last urgent Byte

- If URG Flag = 0, Then we have no need to read the urgent pointer
- If URG Flag = 1 then we have to read the urgent pointer. С

Urgent Pointer (16 bit)



It is valid only if the urgent Flag is set. It is used where the segment contains urgent data. It defines a value that must be added to the sequence number to obtain the number of the last urgent Byte in the data section of the segment.

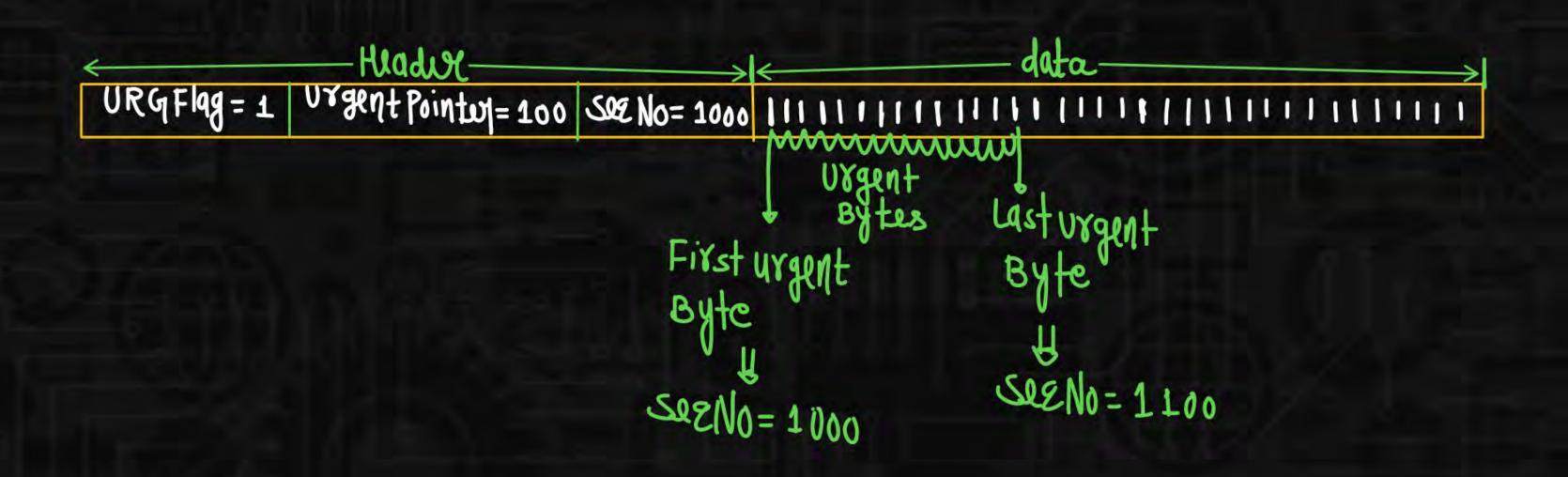
URG Flag = 1

Urgent pointon = 1000

Sezulna No = 1000

Last urgent Byte See No = 1000+100 = 1100



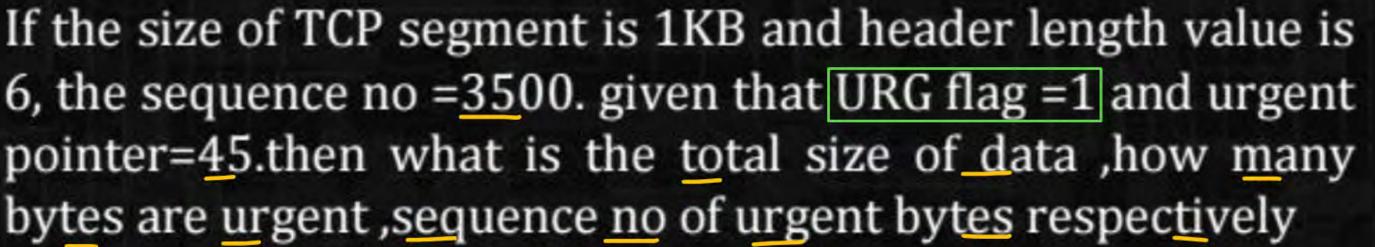


Note:



JF Urgent pointer = x Then No of Urgent Bytes = x+1









1000 byte ,45 byte ,sequence no= 3500-3544



1024 byte ,45 byte ,sequence no= 3500-3544



1000 byte ,46 byte ,sequence no= 1024-1070



1000 byte ,46 byte ,sequence no= 3500-3545

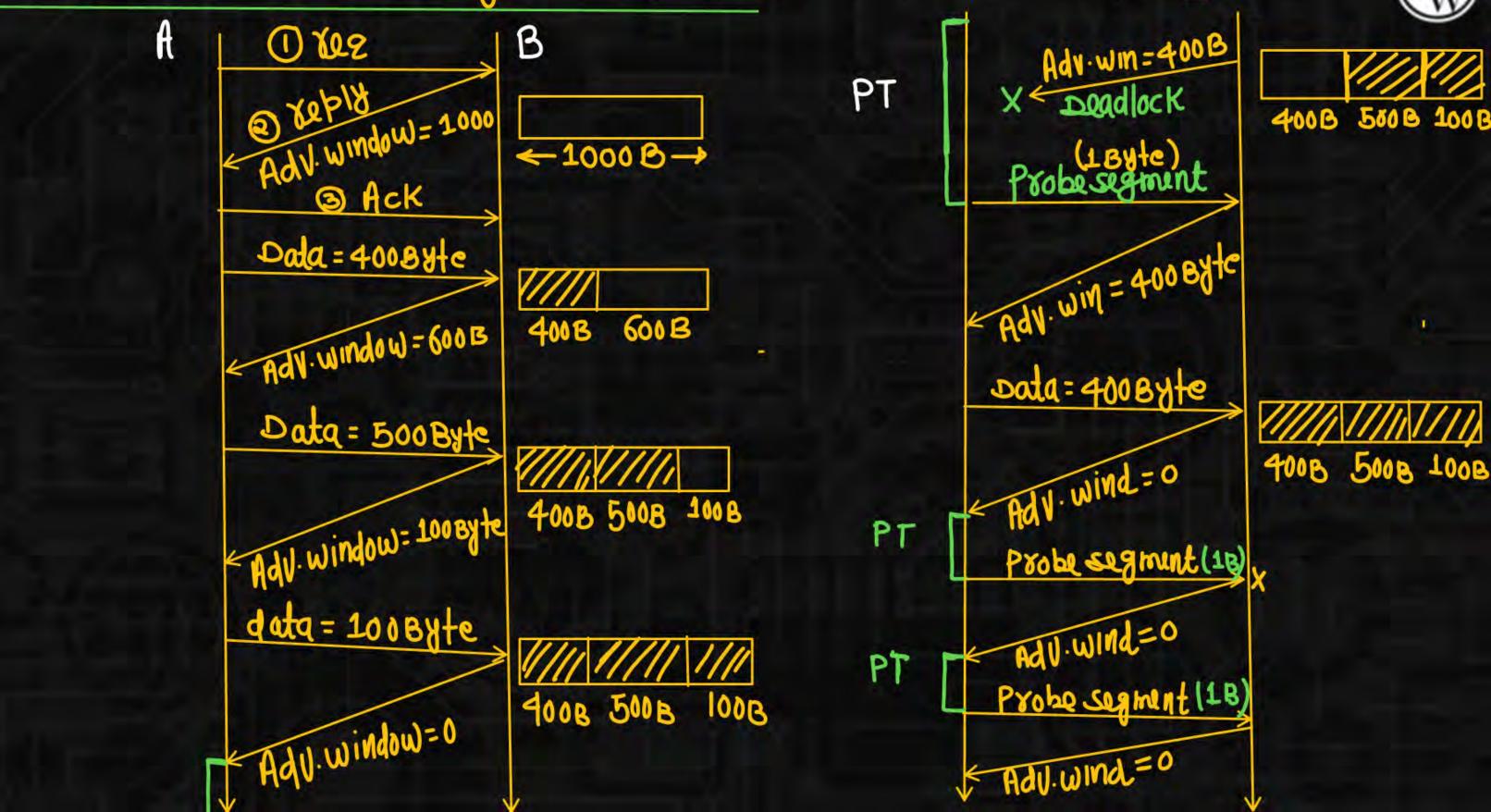


Last urgent Byte seguence Number = 3500+45 = 3545



Window size or Adwrtising window (16bit) Used For Flow control

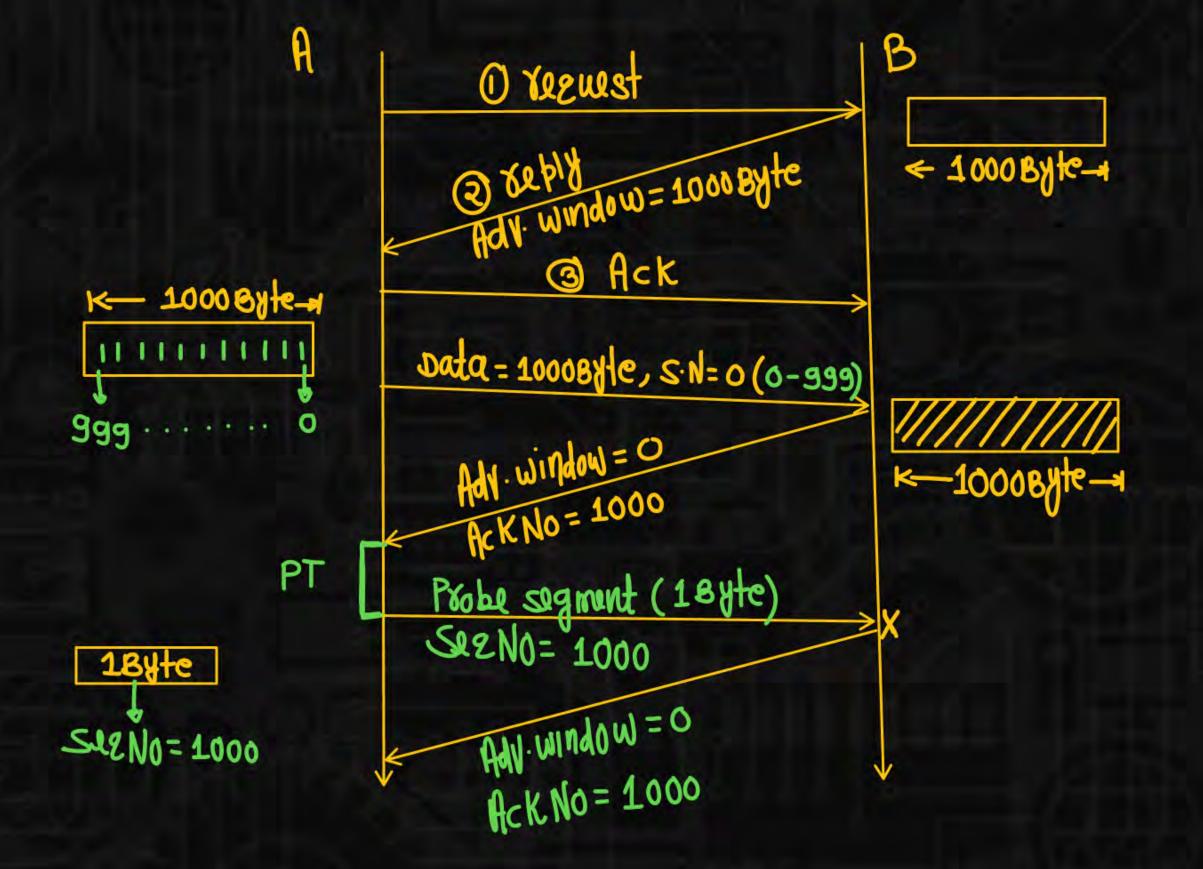




Persistent timer



- Whenever receiver announce that my receiving capacity is zero then sender should stop the transmission this might be lead to Deadlock.
- To correct the deadlock problem, TCP uses a persistent timer. When the sender receive an acknowledgment with a window size zero, it start a persistent timer.
- When the persistent timer goes off, the sender send a special segment called as Probe segment.
- This segment contain only one Byte of data. It has a sequence number, but its sequence number is never acknowledged.
- It is even ignored in calculating the sequence number for the rest of the data.
- probe segment alters the receiving TCP that ACK was lost and should be resent
- The value of the persistent timer is set to the value of retransmission timer. How ever if a response is not received from the receiver; another probe segment is sent and the value of persistent timer will be doubled and reset.

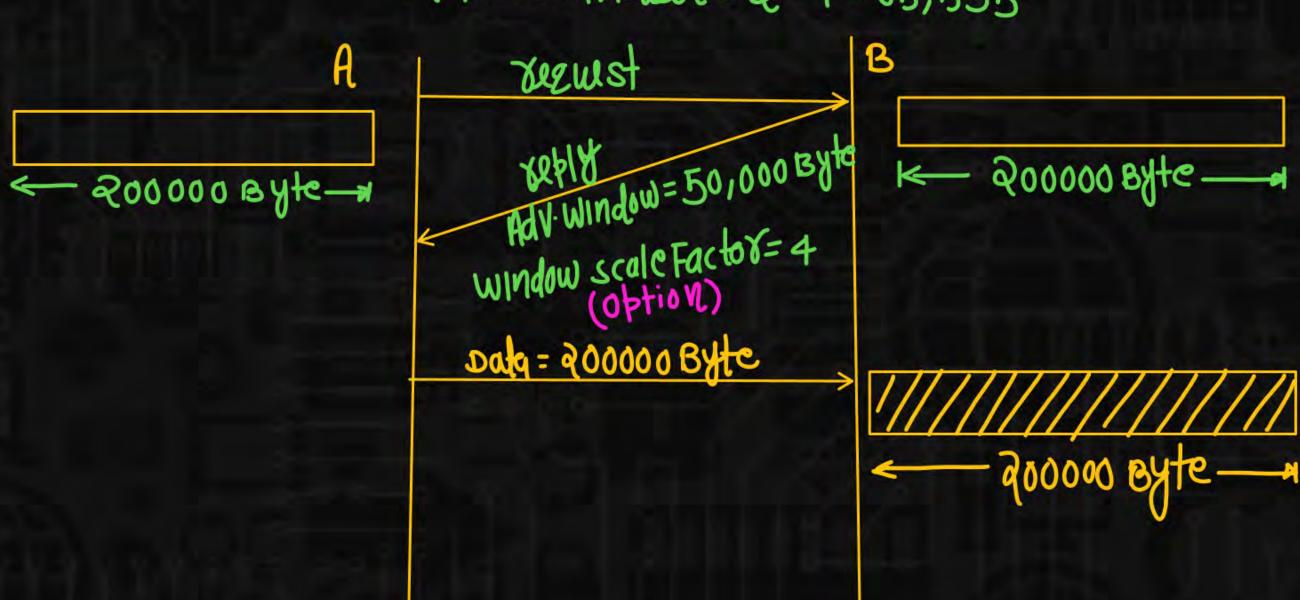






Window size = 16 bit

Maximum Number = 2^{16} 1 = 65,535





Note: According to RFC-1312 the maximum window size by using the window scale option = 20 Byte = 1GB

$$=(2^{16})*(2^{14})=2^{30}$$

window

Window scaling Factor (Option)



