Q1

- In slow start, a sender doubles its window size every RTT if all sent packets were acknowledged
-
- T/F

T rue

Q2

- In steady state, a sender increases its window size by one packet for each acknowledgement
-
- T/F False

Q3

- A sender that underestimates the round-trip time of a connection may unnecessarily induce a TCP timeout
- T/F

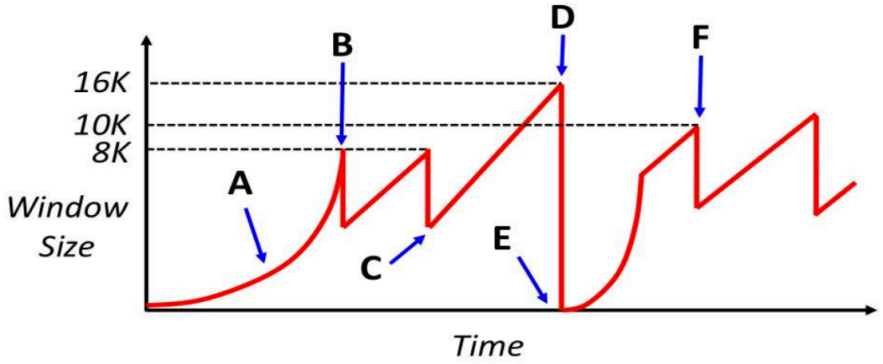
True

Q4

- After detecting packet loss through a timeout, TCP halves its window size as a response to the path congestion
-
- T/F

False

Q5

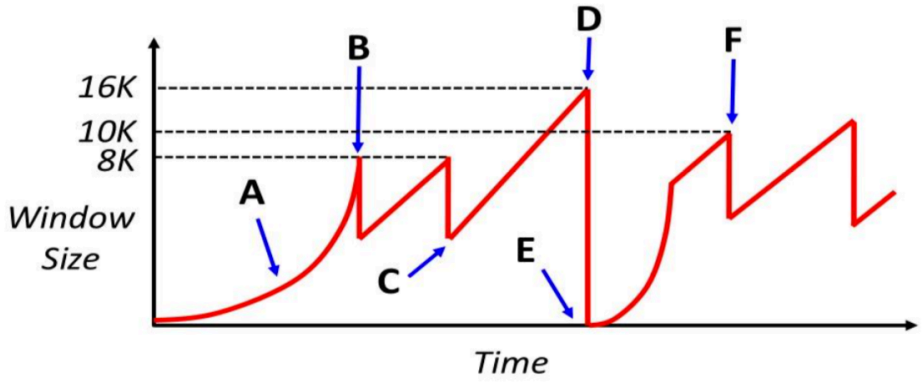


1. Name the event at B which occurs that causes the sender to decrease its window

(a) Triple Duplicate Ack
(b) Slow Start
(c) Packet loss
(d) Time out

A

Q6

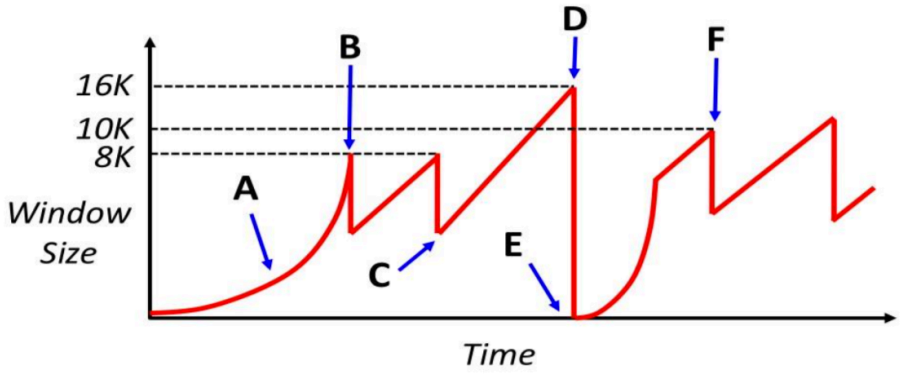


2. Does the event at B necessitate that the network discarded a packet ?

(a) Yes
(b) No
(c) Don't know

B

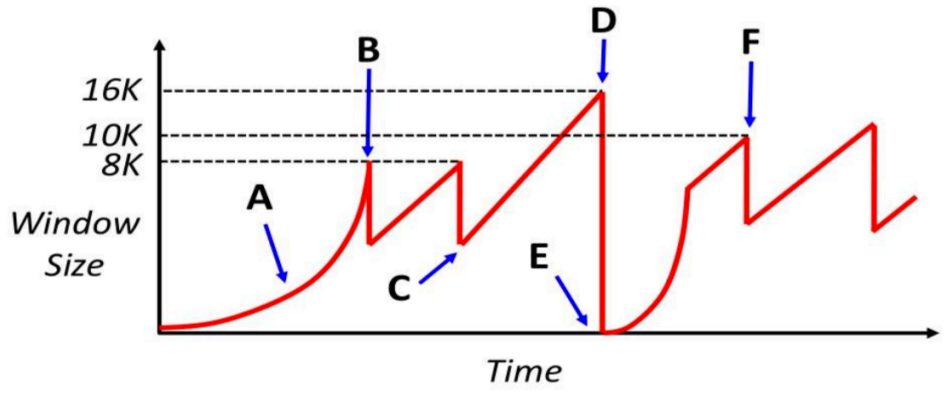
Q7



3. Name the event at D which occurs that causes the sender to decrease its window.

(a) Triple Duplicate Ack
(b) Slow Start D
(c) Packet loss
(d) Time out

Q8

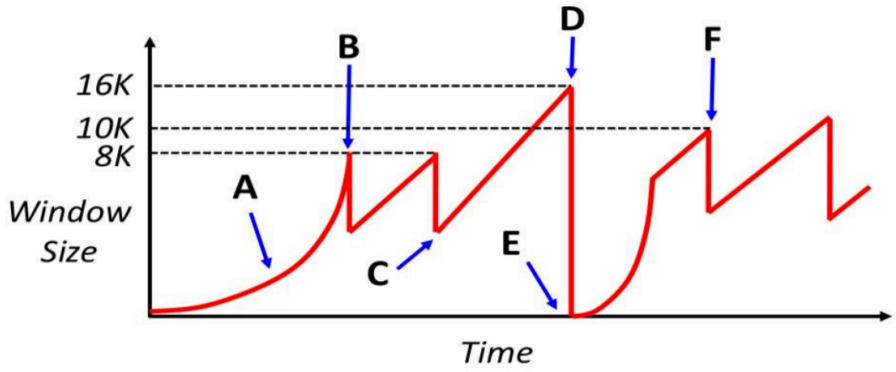


4. Does the event at D necessitate that the network discarded a packet

(a) Yes
(b) No
(c) Don't know

b

Q9

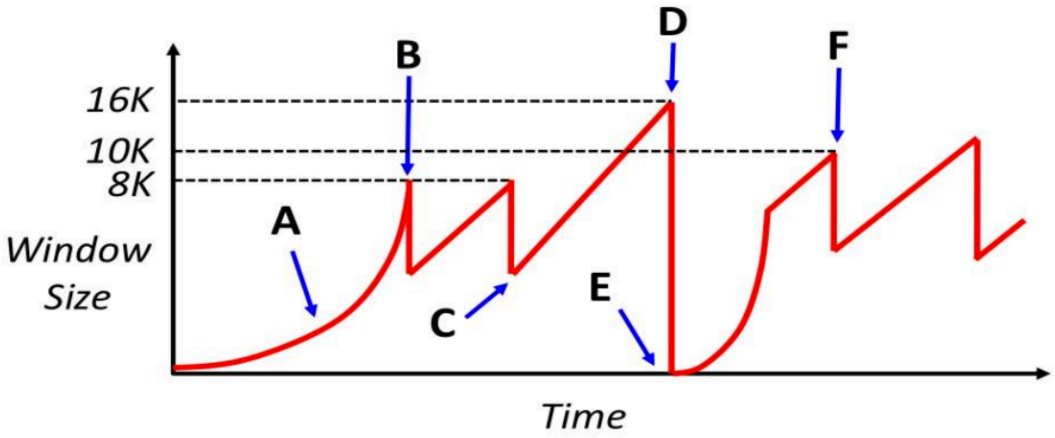


5. For a lightly-loaded network, is the event at D MORE likely or LESS likely to occur when the sender has multiple TCP segments outstanding

(a) MORE
(b) LESS
(c) ALMOST SAME

b

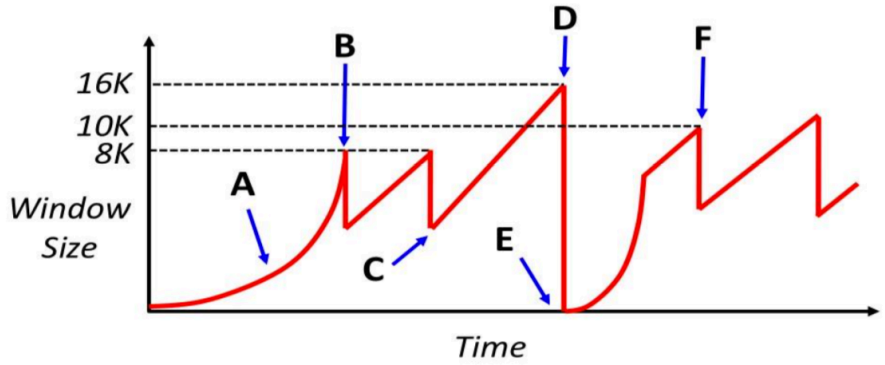
Q10



6. Consider the curved slope labeled by point A. Why does the TCP window behave in such a manner, rather than have a linear slope? (Put another way, why would it be bad if region A had a linear slope?)

it will get to halfvaue before timeout and then dicouver max acceptable throughput that the path can support. or the addive increase can take longer periods of time

Q11

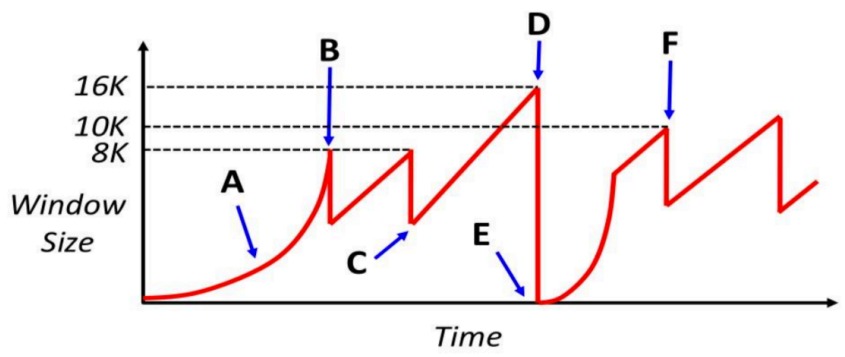


Assume that the network has an MSS of 1000 bytes and the round-trip-time between sender and receiver of 100 milliseconds.

Assume at time 0 the sender attempts to open the connection.

Also assume that the sender can "write" a full window's worth of data instantaneously, so the only latency you need to worry about is the actual propagation delay of the network.

Q12

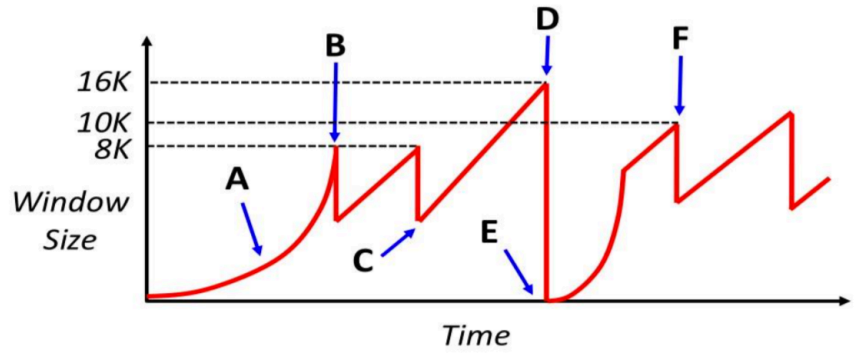


RTT = 100ms, MSS = 1000 bytes
7. How much time has progressed by point B ?

(a) 200ms
(b) 300ms
(c) 400ms
(d) 600ms
(e) 700ms

c

Q13

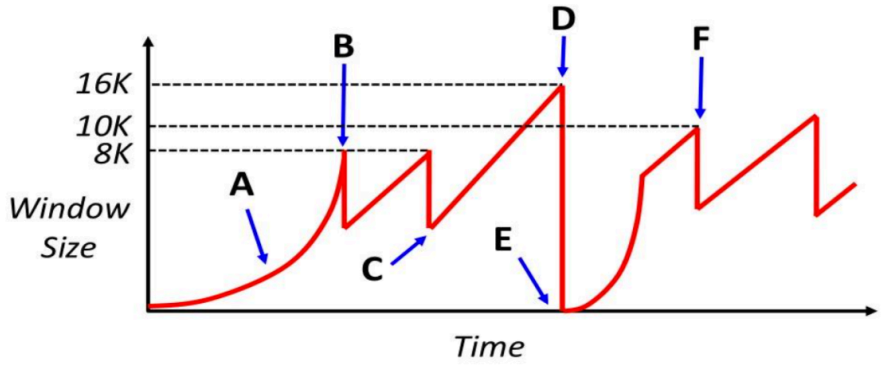


RTT = 100ms, MSS = 1000 bytes
8. How much time has progressed between points C and D?

(a) 800ms
(b) 1000ms
(c) 1200ms
(d) 1400ms

c

Q14

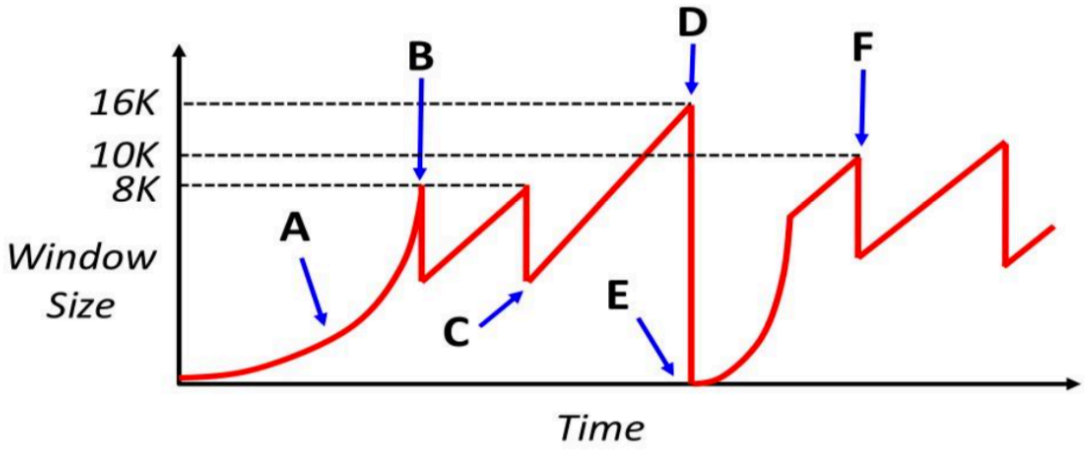


RTT = 100ms, MSS = 1000 bytes
9. How much time has progressed between points E and F?

(a) 400ms
(b) 600ms
(c) 800ms
(d) 900ms

b

Q15



10. If the sender shares its network with other clients whose traffic traverses the same IP routers, give one explanation for why point D is higher than point B?

changing cross traffic by other concurrent users acros the same routers