EE4204 CA1 Quiz

A0214561M

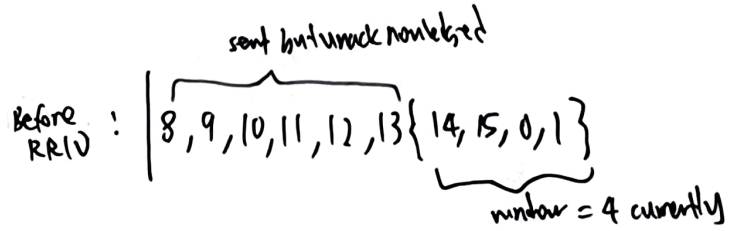
Qn	1	2	3	4	5	6	7
Ans	b	c	a	d	c	a	c

8. The bit pattern 10101011 <u>can</u> appear as part of the payload.

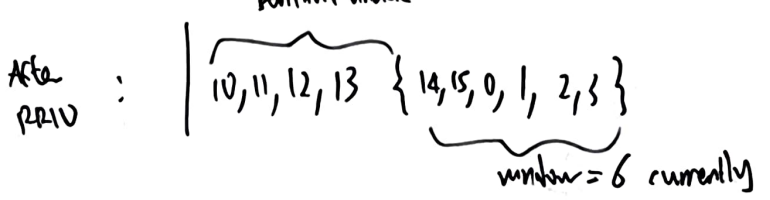
Since counter based framing includes the payload length in the count field of the header, the receiver can use the count value to determine the number of bytes to be accumulated to form a frame. Even if the special bit pattern 10101011 appears in payload, it will be interpreted as part of the Body and not to mark the start of another frame

9. 4 bit sequence number $\Rightarrow$ [0...15]

window size W = 10



when sender receives RRIV, frames 9 and earlier are acknowledged



sender window expands by 2 and updated as { 14, 15, 0, 1, 2, 3 }

A0245618M

10. 5th collision by host A ⇒ A delays by [0..31] slots

1st collision by host B ⇒ B delays by [0..1] slots

There are $32 \times 2 = 64$ possible combinations for delay by $\langle A, B \rangle$

out of which only $A = 0$ and $B = 1$ results in A winning the race

Probability that A wins the race $= \frac{1}{64} = 0.015625$

11. 1000 Byte frame, 1 Mbps link

4000 km, 5 μs/km propagation delay

i) Propagation time $T_p = 4000\text{ km} \times 5\,\mu s/\text{km}$

$= 20\text{ ms}$

Transmission time $T_f = \frac{\text{message size}}{\text{bandwidth}} = \frac{1000 \times 8\text{ bits}}{10^6\text{ bps}} = 8\text{ ms}$

$a = \frac{T_p}{T_f} = 2.5 \qquad W = 7 \geq 1 + 2a = 6$

If there are no errors, Utilization is 1 ⇒ 1 frame transmitted every T_f time

#frames sent per second $= \frac{1\text{ s}}{8\text{ ms}} = \underline{125}$

ii) If no errors, $U = 1$

Throughput $= U \times$ bandwidth

$= \underline{1\text{ Mbps}}$