Grade Book Detail

钟子鹏,

Quiz 3

Started: December 10, 2019, 11:02 am
Last change: December 10, 2019, 8:02 pm

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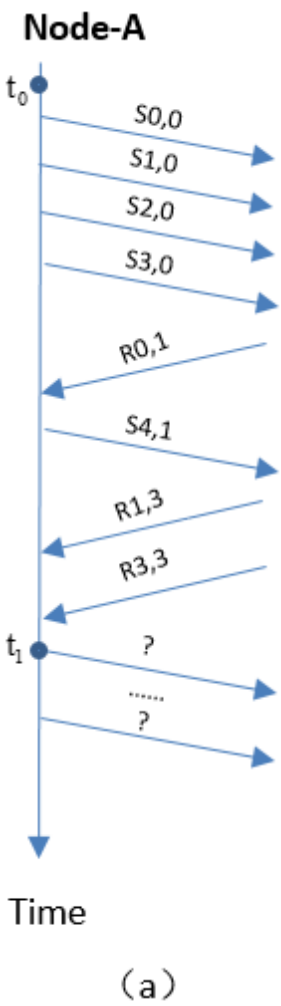
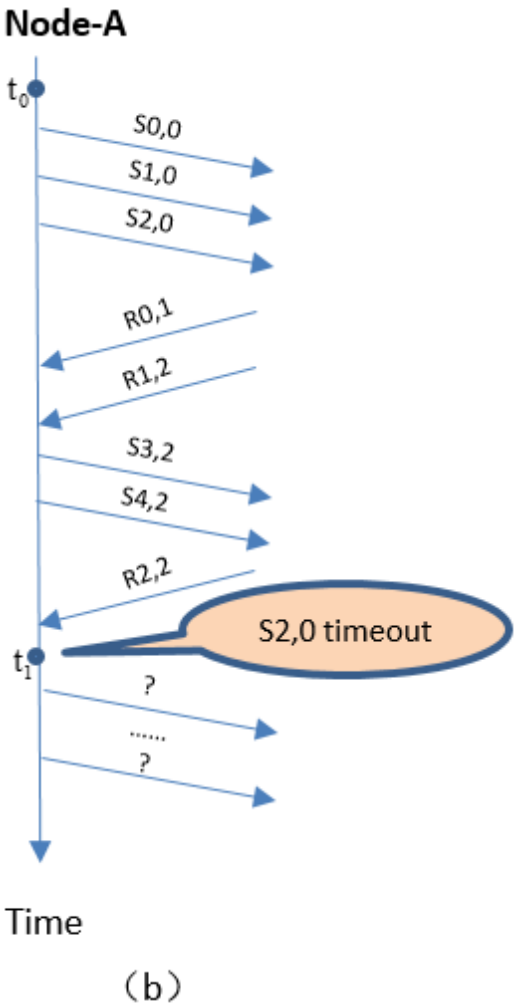
Both Node-A and Node-B use the Go-Back-N protocol for continuous two-way data transmission, both parties use piggyback acknowledgement, and the frame length is 1000 bits. Sx,y and Rx,y respectively denote the data frames sent by Node-A and Node-B, where x is the sequence number for the outgoing frame, y is the acknowledgment number which is the number for the next incoming frame to receive. The field length of sequence numbers and acknowledgment numbers of data frames is 3 bits. The data transmission rate of the channel is 10 Mbps and propagation time is 0.48 ms. The following figures show two scenarios in which the Node-A sends and receives data frames, at the initial time t_0 both sequence number and acknowledgment sequence number of Node-A is 0, and at t_1 Node-A has enough data to be transmitted.



(a)



(b)

1. For Figure (a), from t_0 to t_1, Node-A can confirm that
   how many frames Node-B has received correctly? 3
   Which ones are the frames received correctly? (Denote them as Sx,y)

   x **y**

First Frame: S 0 , 0

Last Frame: S 2 , 0

2. For Figure (a), from t_1, if no timeout occurred and no more data frame is received from Node-B,
how many data frames can Node-A send? 5
What are the first frame and the last frame (Denote them as Sx, y)?

	x	**y**
First Frame: S	5	2
Last Frame: S	1	2

3. For Figure (b), from t_0 to t_1, Node-A can confirm that
how many frames Node-B has received correctly? 2
What is the last frame? (Denote them as Sx,y)

	x	**y**
Last Frame: S	1	0

4. For Figure (b), from t_1, if no new timeout occurred and no more data frame is received from Node-B,
how many data frames does Node-A need to retransmit? 3
The retransmission frames will be (Denote them as Sx, y):

	x	**y**
First Frame: S	2	3
Last Frame: S	4	3

5. What is the sending time of a frame? 0.1 ms
What is the maximum channel utilization that Node-A can achieve ? 60 % (rounding integer)
(Tip: Please consider the transmission time of acknowledgment frame)

Show Answer
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Question 1: 100 (parts: 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5) out of 100 in 1 attempt(s)

Total: 100/100

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