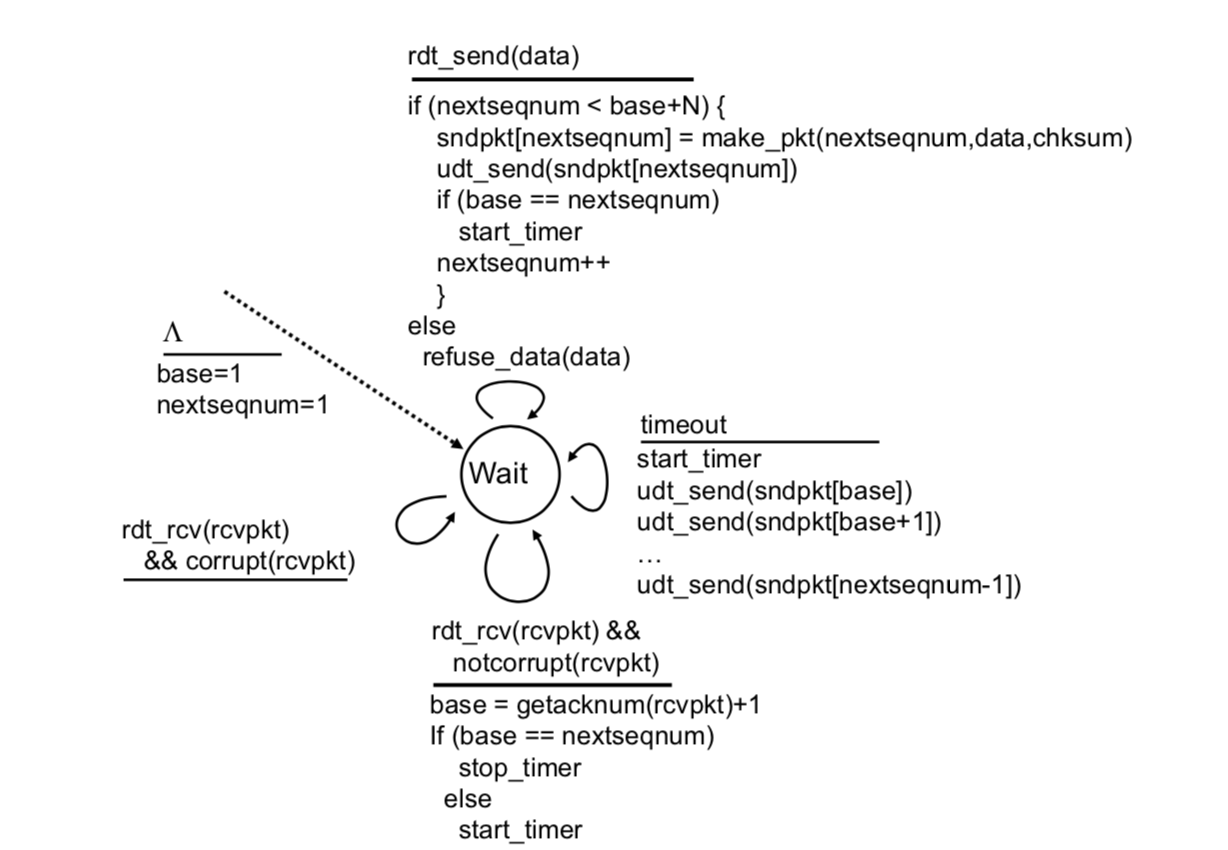
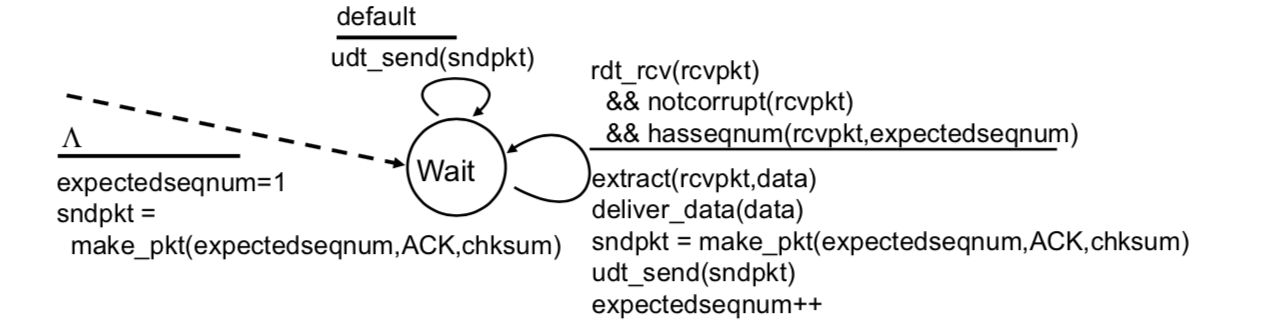
**GBN Summary Doc**

*Design*

*Sender FSM:*

*Receiver FSM:*

*General Design Procedure:*

I started by implementing this as a unidirectional implementation based on the FSMs above and my Stop-And-Wait program. Once I had this working properly for transferring data from A to B. I changed my original “sender” and “receiver” structs to two instances (A and B) of the same “host” struct that would contain the information necessary to send data from layer 5 and receive data from layer 3. From there, I essentially duplicated the original A to B data transfer functionality, but this time implementing it for B to A.

*Sample Output*

Key:

Corrupted ACK/NACK Packet Event

Corrupted ACK/NACK Packet Response

Lost ACK/NACK Packet Event

Lost ACK/NACK Packet Response

Corrupted Data Packet Event

Corrupted Data Packet Response

Lost Data Packet Event

Lost Data Packet Response

Output:

----- Network Simulator Version 1.1 --------

Enter the number of messages to simulate: 45

Enter packet loss probability [enter 0.0 for no loss]:0.2

Enter packet corruption probability [0.0 for no corruption]:0.2

Enter average time between messages from sender's layer5 [ > 0.0]:10.0

Enter TRACE:2

EVENT time: 6.965711, type: 1, fromlayer5 entity: 1

[6.965711 B\_output() Seq: 1] --> Sending new packet to A

EVENT time: 11.168114, type: 1, fromlayer5 entity: 0

[11.168114 A\_output() Seq: 1] --> Sending new packet to B

EVENT time: 13.216425, type: 2, fromlayer3 entity: 0

[13.216425 A\_input() Seq: 1] --> Received valid packet from B. Sending Ack: 1

TOLAYER3: packet being lost

EVENT time: 13.858004, type: 1, fromlayer5 entity: 0

[13.858004 A\_output() Seq: 2] --> Sending new packet to B

EVENT time: 20.696243, type: 2, fromlayer3 entity: 1

[20.696243 B\_input() Seq: 1] --> Received valid packet from A. Sending Ack: 1

EVENT time: 21.850939, type: 2, fromlayer3 entity: 0

[21.850939 A\_input() Ack: 1] --> Received valid ACK from B

[21.850939 A\_input() A.base: 2 != A.next\_seq\_num: 3] --> Restarting timer for A

EVENT time: 25.316151, type: 2, fromlayer3 entity: 1

[25.316151 B\_input() Seq: 2] --> Received valid packet from A. Sending Ack: 2

EVENT time: 31.485765, type: 2, fromlayer3 entity: 0

[31.485765 A\_input() Ack: 2] --> Received valid ACK from B

[31.485765 A\_input() A.base: 3 == A.next\_seq\_num: 3] --> Stopping timer for A

EVENT time: 33.198532, type: 1, fromlayer5 entity: 1

[33.198532 B\_output() Seq: 2] --> Sending new packet to A

EVENT time: 33.228985, type: 1, fromlayer5 entity: 1

[33.228985 B\_output() Seq: 3] --> Sending new packet to A

TOLAYER3: packet being lost

EVENT time: 36.965710, type: 0, timerinterrupt entity: 1

[36.965710 B\_timerintterupt()] --> Resending packet 1 to A

[36.965710 B\_timerintterupt()] --> Resending packet 2 to A

[36.965710 B\_timerintterupt()] --> Resending packet 3 to A

EVENT time: 39.041481, type: 2, fromlayer3 entity: 0

[39.041481 A\_input() Seq: 2] --> Received valid packet from B. Sending Ack: 2

EVENT time: 42.324482, type: 2, fromlayer3 entity: 1

[42.324482 [B\_input() Ack: 2] --> Received valid ACK from A

[42.324482 [B\_input() B.base: 3 != B.next\_seq\_num: 4] --> Restarting timer for B

EVENT time: 44.993275, type: 2, fromlayer3 entity: 0

[44.993275 A\_input() Seq: 1] --> Received unordered packet from B. Resending Ack: 2

EVENT time: 46.017170, type: 2, fromlayer3 entity: 0

[46.017170 A\_input() Seq: 2] --> Received unordered packet from B. Resending Ack: 2

TOLAYER3: packet being corrupted

EVENT time: 46.284016, type: 1, fromlayer5 entity: 1

[46.284016 B\_output() Seq: 4] --> Sending new packet to A

EVENT time: 47.398537, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 2] --> Received duplicate ACK from A. Ignoring

EVENT time: 54.282707, type: 1, fromlayer5 entity: 1

[54.282707 B\_output() Seq: 5] --> Sending new packet to A

TOLAYER3: packet being lost

EVENT time: 54.412659, type: 2, fromlayer3 entity: 1

[54.412659 B\_input() Seq: -1] --> Received corrupted packet from A. Resending Ack: 2

EVENT time: 54.484245, type: 2, fromlayer3 entity: 0

[54.484245 A\_input() Seq: 3] --> Received valid packet from B. Sending Ack: 3

EVENT time: 55.804588, type: 2, fromlayer3 entity: 1

[55.804588 [B\_input() Ack: 3] --> Received valid ACK from A

[55.804588 [B\_input() B.base: 4 != B.next\_seq\_num: 6] --> Restarting timer for B

EVENT time: 56.135918, type: 2, fromlayer3 entity: 0

[56.135918 A\_input() Seq: 4] --> Received valid packet from B. Sending Ack: 4

TOLAYER3: packet being lost

EVENT time: 64.309517, type: 2, fromlayer3 entity: 0

[64.309517 A\_input() Ack: 2] --> Received duplicate ACK from B. Ignoring

EVENT time: 71.933197, type: 1, fromlayer5 entity: 1

[71.933197 B\_output() Seq: 6] --> Sending new packet to A

EVENT time: 72.275742, type: 1, fromlayer5 entity: 1

[72.275742 B\_output() Seq: 7] --> Sending new packet to A

TOLAYER3: packet being lost

EVENT time: 76.316208, type: 2, fromlayer3 entity: 0

[76.316208 A\_input() Seq: 6] --> Received unordered packet from B. Resending Ack: 4

EVENT time: 80.191978, type: 2, fromlayer3 entity: 1

[80.191978 [B\_input() Ack: 4] --> Received valid ACK from A

[80.191978 [B\_input() B.base: 5 != B.next\_seq\_num: 8] --> Restarting timer for B

EVENT time: 86.024231, type: 1, fromlayer5 entity: 1

[86.024231 B\_output() Seq: 8] --> Sending new packet to A

TOLAYER3: packet being lost

EVENT time: 88.118553, type: 1, fromlayer5 entity: 1

[88.118553 B\_output() Seq: 9] --> Sending new packet to A

EVENT time: 91.938881, type: 2, fromlayer3 entity: 0

[91.938881 A\_input() Seq: 9] --> Received unordered packet from B. Resending Ack: 4

TOLAYER3: packet being corrupted

EVENT time: 98.949181, type: 1, fromlayer5 entity: 1

[98.949181 B\_output() Seq: 10] --> Sending new packet to A

EVENT time: 101.708145, type: 2, fromlayer3 entity: 1

[101.708145 B\_input() Seq: -1] --> Received corrupted packet from A. Resending Ack: 2

TOLAYER3: packet being corrupted

EVENT time: 106.643806, type: 2, fromlayer3 entity: 0

[106.643806 A\_input() Seq: 10] --> Received unordered packet from B. Resending Ack: 4

EVENT time: 106.663368, type: 1, fromlayer5 entity: 1

[106.663368 B\_output() Seq: 11] --> Sending new packet to A

EVENT time: 107.314087, type: 1, fromlayer5 entity: 1

[107.314087 B\_output() Seq: 12] --> Sending new packet to A

TOLAYER3: packet being corrupted

EVENT time: 109.596230, type: 2, fromlayer3 entity: 0

[109.596230 A\_input() Seq: -1] --> Received corrupted packet from B. Resending Ack: 4

EVENT time: 110.191978, type: 0, timerinterrupt entity: 1

[110.191978 B\_timerintterupt()] --> Resending packet 5 to A

[110.191978 B\_timerintterupt()] --> Resending packet 6 to A

TOLAYER3: packet being corrupted

[110.191978 B\_timerintterupt()] --> Resending packet 7 to A

[110.191978 B\_timerintterupt()] --> Resending packet 8 to A

[110.191978 B\_timerintterupt()] --> Resending packet 9 to A

[110.191978 B\_timerintterupt()] --> Resending packet 10 to A

[110.191978 B\_timerintterupt()] --> Resending packet 11 to A

[110.191978 B\_timerintterupt()] --> Resending packet 12 to A

TOLAYER3: packet being corrupted

EVENT time: 113.771393, type: 2, fromlayer3 entity: 0

[113.771393 A\_input() Seq: 11] --> Received unordered packet from B. Resending Ack: 4

EVENT time: 113.865677, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 4] --> Received duplicate ACK from A. Ignoring

EVENT time: 117.127304, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 4] --> Received duplicate ACK from A. Ignoring

EVENT time: 123.053680, type: 1, fromlayer5 entity: 1

[123.053680 B\_output() Seq: 13] --> Sending new packet to A

EVENT time: 123.163460, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 4] --> Received duplicate ACK from A. Ignoring

EVENT time: 123.400345, type: 2, fromlayer3 entity: 0

[123.400345 A\_input() Seq: 999999] --> Received corrupted packet from B. Resending Ack: 4

TOLAYER3: packet being lost

EVENT time: 128.585403, type: 1, fromlayer5 entity: 1

[128.585403 B\_output() Seq: 14] --> Sending new packet to A

TOLAYER3: packet being lost

EVENT time: 130.672241, type: 1, fromlayer5 entity: 1

[130.672241 B\_output() Seq: 15] --> Sending new packet to A

EVENT time: 131.055054, type: 2, fromlayer3 entity: 0

[131.055054 A\_input() Seq: 5] --> Received valid packet from B. Sending Ack: 5

TOLAYER3: packet being corrupted

EVENT time: 135.121368, type: 2, fromlayer3 entity: 1

[135.121368 B\_input() Seq: -1] --> Received corrupted packet from A. Resending Ack: 2

EVENT time: 137.469406, type: 2, fromlayer3 entity: 0

[137.469406 A\_input() Seq: 6] --> Received corrupted packet from B. Resending Ack: 5

EVENT time: 140.191986, type: 0, timerinterrupt entity: 1

[140.191986 B\_timerintterupt()] --> Resending packet 5 to A

TOLAYER3: packet being lost

[140.191986 B\_timerintterupt()] --> Resending packet 6 to A

TOLAYER3: packet being corrupted

[140.191986 B\_timerintterupt()] --> Resending packet 7 to A

[140.191986 B\_timerintterupt()] --> Resending packet 8 to A

TOLAYER3: packet being lost

[140.191986 B\_timerintterupt()] --> Resending packet 9 to A

TOLAYER3: packet being corrupted

[140.191986 B\_timerintterupt()] --> Resending packet 10 to A

TOLAYER3: packet being corrupted

[140.191986 B\_timerintterupt()] --> Resending packet 11 to A

[140.191986 B\_timerintterupt()] --> Resending packet 12 to A

[140.191986 B\_timerintterupt()] --> Resending packet 13 to A

[140.191986 B\_timerintterupt()] --> Resending packet 14 to A

[140.191986 B\_timerintterupt()] --> Resending packet 15 to A

EVENT time: 145.600128, type: 2, fromlayer3 entity: 1

[145.600128 [B\_input() Ack: 5] --> Received valid ACK from A

[145.600128 [B\_input() B.base: 6 != B.next\_seq\_num: 16] --> Restarting timer for B

EVENT time: 146.964096, type: 2, fromlayer3 entity: 0

[146.964096 A\_input() Seq: 7] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 148.189194, type: 2, fromlayer3 entity: 0

[148.189194 A\_input() Seq: 8] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 149.318222, type: 2, fromlayer3 entity: 0

[149.318222 A\_input() Seq: 9] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 149.939102, type: 1, fromlayer5 entity: 1

[149.939102 B\_output() Seq: 16] --> Sending new packet to A

EVENT time: 153.834091, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 154.733994, type: 1, fromlayer5 entity: 0

[154.733994 A\_output() Seq: 3] --> Sending new packet to B

EVENT time: 155.449188, type: 2, fromlayer3 entity: 0

[155.449188 A\_input() Seq: 10] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 161.215958, type: 1, fromlayer5 entity: 0

[161.215958 A\_output() Seq: 4] --> Sending new packet to B

EVENT time: 161.552017, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 161.972748, type: 2, fromlayer3 entity: 0

[161.972748 A\_input() Seq: 11] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 164.480667, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 171.448593, type: 2, fromlayer3 entity: 0

[171.448593 A\_input() Seq: 12] --> Received corrupted packet from B. Resending Ack: 5

EVENT time: 173.887161, type: 2, fromlayer3 entity: 1

[173.887161 B\_input() Seq: 3] --> Received valid packet from A. Sending Ack: 3

EVENT time: 175.600128, type: 0, timerinterrupt entity: 1

[175.600128 B\_timerintterupt()] --> Resending packet 6 to A

[175.600128 B\_timerintterupt()] --> Resending packet 7 to A

[175.600128 B\_timerintterupt()] --> Resending packet 8 to A

[175.600128 B\_timerintterupt()] --> Resending packet 9 to A

TOLAYER3: packet being lost

[175.600128 B\_timerintterupt()] --> Resending packet 10 to A

[175.600128 B\_timerintterupt()] --> Resending packet 11 to A

TOLAYER3: packet being lost

[175.600128 B\_timerintterupt()] --> Resending packet 12 to A

[175.600128 B\_timerintterupt()] --> Resending packet 13 to A

TOLAYER3: packet being corrupted

[175.600128 B\_timerintterupt()] --> Resending packet 14 to A

TOLAYER3: packet being lost

[175.600128 B\_timerintterupt()] --> Resending packet 15 to A

TOLAYER3: packet being corrupted

[175.600128 B\_timerintterupt()] --> Resending packet 16 to A

EVENT time: 175.908279, type: 1, fromlayer5 entity: 1

[175.908279 B\_output() Seq: 17] --> Sending new packet to A

TOLAYER3: packet being lost

EVENT time: 176.473495, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 178.566223, type: 2, fromlayer3 entity: 1

[178.566223 B\_input() Seq: 4] --> Received valid packet from A. Sending Ack: 4

TOLAYER3: packet being corrupted

EVENT time: 179.352631, type: 2, fromlayer3 entity: 0

[179.352631 A\_input() Seq: 13] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 184.733994, type: 0, timerinterrupt entity: 0

[184.733994 A\_timerintterupt()] --> Resending packet 3 to B

[184.733994 A\_timerintterupt()] --> Resending packet 4 to B

EVENT time: 185.306290, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 185.325333, type: 2, fromlayer3 entity: 0

[185.325333 A\_input() Seq: 15] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 186.957825, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 188.403244, type: 1, fromlayer5 entity: 0

[188.403244 A\_output() Seq: 5] --> Sending new packet to B

EVENT time: 189.477615, type: 2, fromlayer3 entity: 0

[189.477615 A\_input() Ack: 2] --> Received duplicate ACK from B. Ignoring

EVENT time: 190.026871, type: 1, fromlayer5 entity: 0

[190.026871 A\_output() Seq: 6] --> Sending new packet to B

EVENT time: 194.164444, type: 1, fromlayer5 entity: 0

[194.164444 A\_output() Seq: 7] --> Sending new packet to B

TOLAYER3: packet being lost

EVENT time: 194.923218, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 198.564636, type: 2, fromlayer3 entity: 0

[198.564636 A\_input() Seq: 6] --> Received corrupted packet from B. Resending Ack: 5

TOLAYER3: packet being corrupted

EVENT time: 199.081360, type: 2, fromlayer3 entity: 1

[199.081360 B\_input() Seq: 3] --> Received unordered packet from A. Resending Ack: 4

EVENT time: 200.559357, type: 1, fromlayer5 entity: 1

[200.559357 B\_output() Seq: 18] --> Sending new packet to A

EVENT time: 202.270462, type: 2, fromlayer3 entity: 0

[202.270462 A\_input() Seq: 7] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 203.442413, type: 2, fromlayer3 entity: 1

[203.442413 B\_input() Seq: 4] --> Received unordered packet from A. Resending Ack: 4

TOLAYER3: packet being corrupted

EVENT time: 204.627304, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 205.600128, type: 0, timerinterrupt entity: 1

[205.600128 B\_timerintterupt()] --> Resending packet 6 to A

[205.600128 B\_timerintterupt()] --> Resending packet 7 to A

TOLAYER3: packet being corrupted

[205.600128 B\_timerintterupt()] --> Resending packet 8 to A

[205.600128 B\_timerintterupt()] --> Resending packet 9 to A

[205.600128 B\_timerintterupt()] --> Resending packet 10 to A

[205.600128 B\_timerintterupt()] --> Resending packet 11 to A

[205.600128 B\_timerintterupt()] --> Resending packet 12 to A

[205.600128 B\_timerintterupt()] --> Resending packet 13 to A

[205.600128 B\_timerintterupt()] --> Resending packet 14 to A

[205.600128 B\_timerintterupt()] --> Resending packet 15 to A

[205.600128 B\_timerintterupt()] --> Resending packet 16 to A

[205.600128 B\_timerintterupt()] --> Resending packet 17 to A

[205.600128 B\_timerintterupt()] --> Resending packet 18 to A

TOLAYER3: packet being corrupted

EVENT time: 210.795242, type: 2, fromlayer3 entity: 0

[210.795242 A\_input() Seq: 9] --> Received corrupted packet from B. Resending Ack: 5

TOLAYER3: packet being corrupted

EVENT time: 210.905396, type: 1, fromlayer5 entity: 0

[210.905396 A\_output() Seq: 8] --> Sending new packet to B

EVENT time: 213.331924, type: 2, fromlayer3 entity: 1

[213.331924 B\_input() Seq: 5] --> Received valid packet from A. Sending Ack: 5

EVENT time: 214.733994, type: 0, timerinterrupt entity: 0

[214.733994 A\_timerintterupt()] --> Resending packet 3 to B

TOLAYER3: packet being lost

[214.733994 A\_timerintterupt()] --> Resending packet 4 to B

[214.733994 A\_timerintterupt()] --> Resending packet 5 to B

[214.733994 A\_timerintterupt()] --> Resending packet 6 to B

[214.733994 A\_timerintterupt()] --> Resending packet 7 to B

[214.733994 A\_timerintterupt()] --> Resending packet 8 to B

EVENT time: 215.079514, type: 2, fromlayer3 entity: 0

[215.079514 A\_input() Seq: 10] --> Received corrupted packet from B. Resending Ack: 5

EVENT time: 215.770126, type: 2, fromlayer3 entity: 1

[215.770126 B\_input() Seq: 6] --> Received valid packet from A. Sending Ack: 6

TOLAYER3: packet being corrupted

EVENT time: 219.953079, type: 2, fromlayer3 entity: 0

[219.953079 A\_input() Seq: 11] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 222.777893, type: 2, fromlayer3 entity: 1

[222.777893 B\_input() Seq: -1] --> Received corrupted packet from A. Resending Ack: 6

TOLAYER3: packet being lost

EVENT time: 225.670212, type: 2, fromlayer3 entity: 0

[225.670212 A\_input() Seq: 12] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 228.321945, type: 2, fromlayer3 entity: 0

[228.321945 A\_input() Seq: 13] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 230.326553, type: 1, fromlayer5 entity: 1

[230.326553 B\_output() Seq: 19] --> Sending new packet to A

TOLAYER3: packet being lost

EVENT time: 232.773026, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 234.511749, type: 1, fromlayer5 entity: 0

[234.511749 A\_output() Seq: 9] --> Sending new packet to B

TOLAYER3: packet being lost

EVENT time: 235.139755, type: 2, fromlayer3 entity: 0

[235.139755 A\_input() Seq: 14] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 235.600128, type: 0, timerinterrupt entity: 1

[235.600128 B\_timerintterupt()] --> Resending packet 6 to A

[235.600128 B\_timerintterupt()] --> Resending packet 7 to A

[235.600128 B\_timerintterupt()] --> Resending packet 8 to A

TOLAYER3: packet being corrupted

[235.600128 B\_timerintterupt()] --> Resending packet 9 to A

TOLAYER3: packet being corrupted

[235.600128 B\_timerintterupt()] --> Resending packet 10 to A

[235.600128 B\_timerintterupt()] --> Resending packet 11 to A

[235.600128 B\_timerintterupt()] --> Resending packet 12 to A

[235.600128 B\_timerintterupt()] --> Resending packet 13 to A

[235.600128 B\_timerintterupt()] --> Resending packet 14 to A

[235.600128 B\_timerintterupt()] --> Resending packet 15 to A

[235.600128 B\_timerintterupt()] --> Resending packet 16 to A

[235.600128 B\_timerintterupt()] --> Resending packet 17 to A

[235.600128 B\_timerintterupt()] --> Resending packet 18 to A

[235.600128 B\_timerintterupt()] --> Resending packet 19 to A

EVENT time: 236.984940, type: 2, fromlayer3 entity: 1

[236.984940 B\_input() Seq: -1] --> Received corrupted packet from A. Resending Ack: 6

TOLAYER3: packet being lost

EVENT time: 237.560181, type: 2, fromlayer3 entity: 0

[237.560181 A\_input() Seq: 15] --> Received unordered packet from B. Resending Ack: 5

TOLAYER3: packet being lost

EVENT time: 241.970566, type: 2, fromlayer3 entity: 0

[241.970566 A\_input() Seq: 16] --> Received unordered packet from B. Resending Ack: 5

EVENT time: 243.660416, type: 2, fromlayer3 entity: 0

[243.660416 A\_input() Ack: 3] --> Received valid ACK from B

[243.660416 A\_input() A.base: 4 != A.next\_seq\_num: 10] --> Restarting timer for A

EVENT time: 246.574921, type: 2, fromlayer3 entity: 1

[246.574921 B\_input() Seq: 8] --> Received unordered packet from A. Resending Ack: 6

TOLAYER3: packet being corrupted

EVENT time: 250.748764, type: 2, fromlayer3 entity: 1

[250.748764 B\_input() Seq: 4] --> Received unordered packet from A. Resending Ack: 6

EVENT time: 250.780594, type: 1, fromlayer5 entity: 1

[250.780594 B\_output() Seq: 20] --> Sending new packet to A

EVENT time: 253.453415, type: 2, fromlayer3 entity: 0

[253.453415 A\_input() Seq: 6] --> Received valid packet from B. Sending Ack: 6

TOLAYER3: packet being corrupted

EVENT time: 258.913422, type: 2, fromlayer3 entity: 1

[258.913422 B\_input() Seq: 5] --> Received unordered packet from A. Resending Ack: 6

TOLAYER3: packet being corrupted

EVENT time: 259.944183, type: 2, fromlayer3 entity: 0

[259.944183 A\_input() Seq: 7] --> Received valid packet from B. Sending Ack: 7

EVENT time: 262.112885, type: 2, fromlayer3 entity: 1

[262.112885 B\_input() Seq: 6] --> Received unordered packet from A. Resending Ack: 6

EVENT time: 262.667542, type: 1, fromlayer5 entity: 0

[262.667542 A\_output() Seq: 10] --> Sending new packet to B

EVENT time: 264.785492, type: 1, fromlayer5 entity: 1

[264.785492 B\_output() Seq: 21] --> Sending new packet to A

TOLAYER3: packet being lost

EVENT time: 265.600128, type: 0, timerinterrupt entity: 1

[265.600128 B\_timerintterupt()] --> Resending packet 6 to A

[265.600128 B\_timerintterupt()] --> Resending packet 7 to A

[265.600128 B\_timerintterupt()] --> Resending packet 8 to A

[265.600128 B\_timerintterupt()] --> Resending packet 9 to A

TOLAYER3: packet being corrupted

[265.600128 B\_timerintterupt()] --> Resending packet 10 to A

TOLAYER3: packet being lost

[265.600128 B\_timerintterupt()] --> Resending packet 11 to A

[265.600128 B\_timerintterupt()] --> Resending packet 12 to A

TOLAYER3: packet being lost

[265.600128 B\_timerintterupt()] --> Resending packet 13 to A

[265.600128 B\_timerintterupt()] --> Resending packet 14 to A

[265.600128 B\_timerintterupt()] --> Resending packet 15 to A

[265.600128 B\_timerintterupt()] --> Resending packet 16 to A

TOLAYER3: packet being corrupted

[265.600128 B\_timerintterupt()] --> Resending packet 17 to A

[265.600128 B\_timerintterupt()] --> Resending packet 18 to A

TOLAYER3: packet being corrupted

[265.600128 B\_timerintterupt()] --> Resending packet 19 to A

[265.600128 B\_timerintterupt()] --> Resending packet 20 to A

[265.600128 B\_timerintterupt()] --> Resending packet 21 to A

TOLAYER3: packet being lost

EVENT time: 268.023712, type: 2, fromlayer3 entity: 0

[268.023712 A\_input() Seq: 8] --> Received valid packet from B. Sending Ack: 8

EVENT time: 268.761688, type: 2, fromlayer3 entity: 1

[268.761688 B\_input() Seq: 7] --> Received valid packet from A. Sending Ack: 7

EVENT time: 272.040070, type: 2, fromlayer3 entity: 1

[272.040070 B\_input() Seq: 8] --> Received valid packet from A. Sending Ack: 8

EVENT time: 273.169220, type: 2, fromlayer3 entity: 0

[273.169220 A\_input() Seq: 10] --> Received unordered packet from B. Resending Ack: 8

EVENT time: 273.660400, type: 0, timerinterrupt entity: 0

[273.660400 A\_timerintterupt()] --> Resending packet 4 to B

[273.660400 A\_timerintterupt()] --> Resending packet 5 to B

[273.660400 A\_timerintterupt()] --> Resending packet 6 to B

[273.660400 A\_timerintterupt()] --> Resending packet 7 to B

TOLAYER3: packet being lost

[273.660400 A\_timerintterupt()] --> Resending packet 8 to B

[273.660400 A\_timerintterupt()] --> Resending packet 9 to B

[273.660400 A\_timerintterupt()] --> Resending packet 10 to B

TOLAYER3: packet being corrupted

EVENT time: 275.524200, type: 1, fromlayer5 entity: 0

[275.524200 A\_output() Seq: 11] --> Sending new packet to B

EVENT time: 279.277252, type: 2, fromlayer3 entity: 0

[279.277252 A\_input() Seq: 12] --> Received unordered packet from B. Resending Ack: 8

EVENT time: 279.509033, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 282.046356, type: 1, fromlayer5 entity: 1

[282.046356 B\_output() Seq: 22] --> Sending new packet to A

TOLAYER3: packet being corrupted

EVENT time: 283.273621, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 287.816498, type: 2, fromlayer3 entity: 0

[287.816498 A\_input() Seq: 13] --> Received corrupted packet from B. Resending Ack: 8

EVENT time: 292.962616, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 295.600128, type: 0, timerinterrupt entity: 1

[295.600128 B\_timerintterupt()] --> Resending packet 6 to A

[295.600128 B\_timerintterupt()] --> Resending packet 7 to A

[295.600128 B\_timerintterupt()] --> Resending packet 8 to A

[295.600128 B\_timerintterupt()] --> Resending packet 9 to A

TOLAYER3: packet being lost

[295.600128 B\_timerintterupt()] --> Resending packet 10 to A

[295.600128 B\_timerintterupt()] --> Resending packet 11 to A

[295.600128 B\_timerintterupt()] --> Resending packet 12 to A

TOLAYER3: packet being lost

[295.600128 B\_timerintterupt()] --> Resending packet 13 to A

TOLAYER3: packet being lost

[295.600128 B\_timerintterupt()] --> Resending packet 14 to A

[295.600128 B\_timerintterupt()] --> Resending packet 15 to A

TOLAYER3: packet being corrupted

[295.600128 B\_timerintterupt()] --> Resending packet 16 to A

[295.600128 B\_timerintterupt()] --> Resending packet 17 to A

TOLAYER3: packet being lost

[295.600128 B\_timerintterupt()] --> Resending packet 18 to A

[295.600128 B\_timerintterupt()] --> Resending packet 19 to A

TOLAYER3: packet being corrupted

[295.600128 B\_timerintterupt()] --> Resending packet 20 to A

TOLAYER3: packet being lost

[295.600128 B\_timerintterupt()] --> Resending packet 21 to A

TOLAYER3: packet being corrupted

[295.600128 B\_timerintterupt()] --> Resending packet 22 to A

TOLAYER3: packet being lost

EVENT time: 296.721466, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 297.142914, type: 2, fromlayer3 entity: 0

[297.142914 A\_input() Seq: 999999] --> Received corrupted packet from B. Resending Ack: 8

TOLAYER3: packet being corrupted

EVENT time: 299.566467, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 299.605896, type: 1, fromlayer5 entity: 0

[299.605896 A\_output() Seq: 12] --> Sending new packet to B

TOLAYER3: packet being corrupted

EVENT time: 301.094269, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 5] --> Received duplicate ACK from A. Ignoring

EVENT time: 302.497925, type: 1, fromlayer5 entity: 0

[302.497925 A\_output() Seq: 13] --> Sending new packet to B

EVENT time: 303.245483, type: 2, fromlayer3 entity: 0

[303.245483 A\_input() Seq: 16] --> Received unordered packet from B. Resending Ack: 8

EVENT time: 303.660400, type: 0, timerinterrupt entity: 0

[303.660400 A\_timerintterupt()] --> Resending packet 4 to B

[303.660400 A\_timerintterupt()] --> Resending packet 5 to B

[303.660400 A\_timerintterupt()] --> Resending packet 6 to B

[303.660400 A\_timerintterupt()] --> Resending packet 7 to B

[303.660400 A\_timerintterupt()] --> Resending packet 8 to B

[303.660400 A\_timerintterupt()] --> Resending packet 9 to B

[303.660400 A\_timerintterupt()] --> Resending packet 10 to B

[303.660400 A\_timerintterupt()] --> Resending packet 11 to B

TOLAYER3: packet being lost

[303.660400 A\_timerintterupt()] --> Resending packet 12 to B

TOLAYER3: packet being corrupted

[303.660400 A\_timerintterupt()] --> Resending packet 13 to B

TOLAYER3: packet being lost

EVENT time: 308.606476, type: 2, fromlayer3 entity: 1

[308.606476 B\_input() Seq: -1] --> Received corrupted packet from A. Resending Ack: 8

EVENT time: 309.833374, type: 2, fromlayer3 entity: 0

[309.833374 A\_input() Seq: -1] --> Received corrupted packet from B. Resending Ack: 8

EVENT time: 311.060272, type: 2, fromlayer3 entity: 0

[311.060272 A\_input() Ack: 4] --> Received valid ACK from B

[311.060272 A\_input() A.base: 5 != A.next\_seq\_num: 14] --> Restarting timer for A

EVENT time: 313.286804, type: 1, fromlayer5 entity: 0

[313.286804 A\_output() Seq: 14] --> Sending new packet to B

EVENT time: 314.298798, type: 2, fromlayer3 entity: 1

[314.298798 [B\_input() Ack: 7] --> Received valid ACK from A

[314.298798 [B\_input() B.base: 8 != B.next\_seq\_num: 23] --> Restarting timer for B

EVENT time: 314.374451, type: 1, fromlayer5 entity: 0

[314.374451 A\_output() Seq: 15] --> Sending new packet to B

TOLAYER3: packet being lost

EVENT time: 315.635345, type: 1, fromlayer5 entity: 1

[315.635345 B\_output() Seq: 23] --> Sending new packet to A

EVENT time: 316.828888, type: 2, fromlayer3 entity: 1

[316.828888 B\_input() Seq: 10] --> Received unordered packet from A. Resending Ack: 8

EVENT time: 316.942535, type: 1, fromlayer5 entity: 0

[316.942535 A\_output() Seq: 16] --> Sending new packet to B

TOLAYER3: packet being corrupted

EVENT time: 317.029968, type: 2, fromlayer3 entity: 0

[317.029968 A\_input() Seq: 18] --> Received unordered packet from B. Resending Ack: 8

EVENT time: 317.925018, type: 2, fromlayer3 entity: 1

[317.925018 [B\_input() Ack: 8] --> Received valid ACK from A

[317.925018 [B\_input() B.base: 9 != B.next\_seq\_num: 24] --> Restarting timer for B

EVENT time: 319.161560, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 8] --> Received duplicate ACK from A. Ignoring

EVENT time: 322.318207, type: 2, fromlayer3 entity: 0

[322.318207 A\_input() Seq: 999999] --> Received corrupted packet from B. Resending Ack: 8

TOLAYER3: packet being lost

EVENT time: 323.360779, type: 2, fromlayer3 entity: 1

[323.360779 B\_input() Seq: 4] --> Received unordered packet from A. Resending Ack: 8

TOLAYER3: packet being lost

EVENT time: 324.436584, type: 2, fromlayer3 entity: 1

[324.436584 B\_input() Seq: 5] --> Received unordered packet from A. Resending Ack: 8

TOLAYER3: packet being corrupted

EVENT time: 329.639496, type: 2, fromlayer3 entity: 0

[329.639496 A\_input() Seq: 6] --> Received unordered packet from B. Resending Ack: 8

EVENT time: 331.032867, type: 2, fromlayer3 entity: 1

[331.032867 B\_input() Seq: 6] --> Received unordered packet from A. Resending Ack: 8

EVENT time: 333.979095, type: 1, fromlayer5 entity: 1

[333.979095 B\_output() Seq: 24] --> Sending new packet to A

TOLAYER3: packet being lost

EVENT time: 336.191162, type: 2, fromlayer3 entity: 1

[336.191162 B\_input() Seq: 8] --> Received unordered packet from A. Resending Ack: 8

EVENT time: 336.625244, type: 2, fromlayer3 entity: 0

[336.625244 A\_input() Seq: 7] --> Received corrupted packet from B. Resending Ack: 8

TOLAYER3: packet being corrupted

EVENT time: 337.392487, type: 2, fromlayer3 entity: 1

[337.392487 B\_input() Seq: 9] --> Received valid packet from A. Sending Ack: 9

EVENT time: 338.788239, type: 2, fromlayer3 entity: 1

[338.788239 B\_input() Seq: 10] --> Received corrupted packet from A. Resending Ack: 9

EVENT time: 340.884613, type: 2, fromlayer3 entity: 0

[340.884613 A\_input() Seq: 8] --> Received unordered packet from B. Resending Ack: 8

TOLAYER3: packet being corrupted

EVENT time: 341.060272, type: 0, timerinterrupt entity: 0

[341.060272 A\_timerintterupt()] --> Resending packet 5 to B

[341.060272 A\_timerintterupt()] --> Resending packet 6 to B

[341.060272 A\_timerintterupt()] --> Resending packet 7 to B

[341.060272 A\_timerintterupt()] --> Resending packet 8 to B

[341.060272 A\_timerintterupt()] --> Resending packet 9 to B

[341.060272 A\_timerintterupt()] --> Resending packet 10 to B

[341.060272 A\_timerintterupt()] --> Resending packet 11 to B

[341.060272 A\_timerintterupt()] --> Resending packet 12 to B

TOLAYER3: packet being lost

[341.060272 A\_timerintterupt()] --> Resending packet 13 to B

[341.060272 A\_timerintterupt()] --> Resending packet 14 to B

TOLAYER3: packet being lost

[341.060272 A\_timerintterupt()] --> Resending packet 15 to B

[341.060272 A\_timerintterupt()] --> Resending packet 16 to B

TOLAYER3: packet being corrupted

EVENT time: 346.994812, type: 2, fromlayer3 entity: 0

[346.994812 A\_input() Seq: 9] --> Received valid packet from B. Sending Ack: 9

EVENT time: 347.477875, type: 2, fromlayer3 entity: 1

[347.477875 B\_input() Seq: 11] --> Received unordered packet from A. Resending Ack: 9

TOLAYER3: packet being lost

EVENT time: 347.925018, type: 0, timerinterrupt entity: 1

[347.925018 B\_timerintterupt()] --> Resending packet 9 to A

TOLAYER3: packet being lost

[347.925018 B\_timerintterupt()] --> Resending packet 10 to A

TOLAYER3: packet being corrupted

[347.925018 B\_timerintterupt()] --> Resending packet 11 to A

TOLAYER3: packet being lost

[347.925018 B\_timerintterupt()] --> Resending packet 12 to A

[347.925018 B\_timerintterupt()] --> Resending packet 13 to A

[347.925018 B\_timerintterupt()] --> Resending packet 14 to A

[347.925018 B\_timerintterupt()] --> Resending packet 15 to A

[347.925018 B\_timerintterupt()] --> Resending packet 16 to A

[347.925018 B\_timerintterupt()] --> Resending packet 17 to A

[347.925018 B\_timerintterupt()] --> Resending packet 18 to A

[347.925018 B\_timerintterupt()] --> Resending packet 19 to A

TOLAYER3: packet being lost

[347.925018 B\_timerintterupt()] --> Resending packet 20 to A

[347.925018 B\_timerintterupt()] --> Resending packet 21 to A

[347.925018 B\_timerintterupt()] --> Resending packet 22 to A

[347.925018 B\_timerintterupt()] --> Resending packet 23 to A

[347.925018 B\_timerintterupt()] --> Resending packet 24 to A

EVENT time: 351.006714, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 8] --> Received duplicate ACK from A. Ignoring

EVENT time: 352.081909, type: 1, fromlayer5 entity: 1

[352.081909 B\_output() Seq: 25] --> Sending new packet to A

EVENT time: 354.753662, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 8] --> Received duplicate ACK from A. Ignoring

EVENT time: 354.818420, type: 2, fromlayer3 entity: 0

[354.818420 A\_input() Seq: 10] --> Received valid packet from B. Sending Ack: 10

TOLAYER3: packet being corrupted

EVENT time: 356.760956, type: 2, fromlayer3 entity: 1

[356.760956 B\_input() Seq: -1] --> Received corrupted packet from A. Resending Ack: 9

EVENT time: 359.558624, type: 2, fromlayer3 entity: 0

[359.558624 A\_input() Seq: 11] --> Received valid packet from B. Sending Ack: 11

EVENT time: 364.114685, type: 1, fromlayer5 entity: 1

[364.114685 B\_output() Seq: 26] --> Sending new packet to A

EVENT time: 366.412384, type: 2, fromlayer3 entity: 1

[366.412384 B\_input() Seq: 12] --> Received corrupted packet from A. Resending Ack: 9

TOLAYER3: packet being lost

EVENT time: 367.234283, type: 2, fromlayer3 entity: 0

[367.234283 A\_input() Seq: 12] --> Received valid packet from B. Sending Ack: 12

TOLAYER3: packet being lost

EVENT time: 368.252075, type: 2, fromlayer3 entity: 0

[368.252075 A\_input() Seq: 13] --> Received valid packet from B. Sending Ack: 13

EVENT time: 368.939789, type: 2, fromlayer3 entity: 1

[368.939789 B\_input() Seq: 13] --> Received unordered packet from A. Resending Ack: 9

EVENT time: 370.707550, type: 1, fromlayer5 entity: 0

[370.707550 A\_output() Seq: 17] --> Sending new packet to B

TOLAYER3: packet being corrupted

EVENT time: 371.060272, type: 0, timerinterrupt entity: 0

[371.060272 A\_timerintterupt()] --> Resending packet 5 to B

[371.060272 A\_timerintterupt()] --> Resending packet 6 to B

[371.060272 A\_timerintterupt()] --> Resending packet 7 to B

[371.060272 A\_timerintterupt()] --> Resending packet 8 to B

[371.060272 A\_timerintterupt()] --> Resending packet 9 to B

[371.060272 A\_timerintterupt()] --> Resending packet 10 to B

TOLAYER3: packet being lost

[371.060272 A\_timerintterupt()] --> Resending packet 11 to B

[371.060272 A\_timerintterupt()] --> Resending packet 12 to B

TOLAYER3: packet being corrupted

[371.060272 A\_timerintterupt()] --> Resending packet 13 to B

[371.060272 A\_timerintterupt()] --> Resending packet 14 to B

[371.060272 A\_timerintterupt()] --> Resending packet 15 to B

[371.060272 A\_timerintterupt()] --> Resending packet 16 to B

[371.060272 A\_timerintterupt()] --> Resending packet 17 to B

TOLAYER3: packet being corrupted

EVENT time: 375.452515, type: 2, fromlayer3 entity: 0

[375.452515 A\_input() Seq: 14] --> Received valid packet from B. Sending Ack: 14

EVENT time: 376.912140, type: 2, fromlayer3 entity: 1

[B\_input() Ack: 8] --> Received duplicate ACK from A. Ignoring

EVENT time: 377.925018, type: 0, timerinterrupt entity: 1

[377.925018 B\_timerintterupt()] --> Resending packet 9 to A

TOLAYER3: packet being corrupted

[377.925018 B\_timerintterupt()] --> Resending packet 10 to A

TOLAYER3: packet being lost

[377.925018 B\_timerintterupt()] --> Resending packet 11 to A

TOLAYER3: packet being corrupted

[377.925018 B\_timerintterupt()] --> Resending packet 12 to A

TOLAYER3: packet being lost

[377.925018 B\_timerintterupt()] --> Resending packet 13 to A

TOLAYER3: packet being corrupted

[377.925018 B\_timerintterupt()] --> Resending packet 14 to A

[377.925018 B\_timerintterupt()] --> Resending packet 15 to A

TOLAYER3: packet being lost

[377.925018 B\_timerintterupt()] --> Resending packet 16 to A

TOLAYER3: packet being lost

[377.925018 B\_timerintterupt()] --> Resending packet 17 to A

[377.925018 B\_timerintterupt()] --> Resending packet 18 to A

[377.925018 B\_timerintterupt()] --> Resending packet 19 to A

[377.925018 B\_timerintterupt()] --> Resending packet 20 to A

[377.925018 B\_timerintterupt()] --> Resending packet 21 to A

[377.925018 B\_timerintterupt()] --> Resending packet 22 to A

TOLAYER3: packet being lost

[377.925018 B\_timerintterupt()] --> Resending packet 23 to A

[377.925018 B\_timerintterupt()] --> Resending packet 24 to A

[377.925018 B\_timerintterupt()] --> Resending packet 25 to A

[377.925018 B\_timerintterupt()] --> Resending packet 26 to A

EVENT time: 379.363098, type: 2, fromlayer3 entity: 1

[379.363098 B\_input() Seq: 4] --> Received unordered packet from A. Resending Ack: 9

EVENT time: 380.046936, type: 2, fromlayer3 entity: 0

[380.046936 A\_input() Seq: 15] --> Received valid packet from B. Sending Ack: 15

EVENT time: 385.896027, type: 2, fromlayer3 entity: 1

[385.896027 B\_input() Seq: 5] --> Received unordered packet from A. Resending Ack: 9

TOLAYER3: packet being lost

EVENT time: 386.266144, type: 2, fromlayer3 entity: 0

[386.266144 A\_input() Seq: 16] --> Received valid packet from B. Sending Ack: 16

TOLAYER3: packet being lost

EVENT time: 388.715912, type: 1, fromlayer5 entity: 0

[388.715912 A\_output() Seq: 18] --> Sending new packet to B

EVENT time: 391.284302, type: 1, fromlayer5 entity: 0

[391.284302 A\_output() Seq: 19] --> Sending new packet to B

EVENT time: 391.720886, type: 1, fromlayer5 entity: 1

Simulator terminated at time 391.720886

after sending 45 msgs from layer5

25 successful ACKs were transferred between the hosts

Process finished with exit code 0