電腦網路導論HW2

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1. [GBN Programming]

(a) ./b06502147 20 0.1 0.1 10 2

increment為15秒，因考慮average rtt為五秒

輸出結果如下：（使用到哪個Function，重送哪些Data都已經寫在log裡面）

```
-----  Stop and Wait Network Simulator Version 1.1 --------

the number of messages to simulate: 20
packet loss probability: 0.100000
packet corruption probability: 0.100000
average time between messages from sender's layer5: 10.000000
TRACE: 2
EVENT time: 18.705740,  type: 1, fromlayer5  entity: 0
  A_output: send packet0 in window:: aaaaaaaaaaaaaaaaaaaa
  start timer
EVENT time: 24.170835,  type: 2, fromlayer3  entity: 1
  B_input: got packet0: aaaaaaaaaaaaaaaaaaaa
  B_input: send ACK (ack=0)
EVENT time: 29.402449,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=0)
EVENT time: 35.124840,  type: 1, fromlayer5  entity: 0
  A_output: send packet1 in window:: bbbbbbbbbbbbbbbbbbbb
  start timer
EVENT time: 37.145336,  type: 2, fromlayer3  entity: 1
  B_input: got packet1: bbbbbbbbbbbbbbbbbbbb
  B_input: send ACK (ack=1)
          TOLAYER3: packet being corrupted
EVENT time: 41.612602,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 50.124840,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 1
          TOLAYER3: packet being lost
EVENT time: 52.094032,  type: 1, fromlayer5  entity: 0
  A_output: send packet2 in window:: cccccccccccccccccccc
EVENT time: 57.366261,  type: 2, fromlayer3  entity: 1
  B_input: got packet2: cccccccccccccccccccc
  B_input: send ACK (ack=2)
EVENT time: 60.679379,  type: 1, fromlayer5  entity: 0
  A_output: send packet3 in window:: dddddddddddddddddddd
EVENT time: 61.568901,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=2)
  A_input: start timer
EVENT time: 68.333923,  type: 2, fromlayer3  entity: 1
  B_input: got packet3: dddddddddddddddddddd
  B_input: send ACK (ack=3)
EVENT time: 71.746826,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=3)
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EVENT time: 78.498627,  type: 1, fromlayer5  entity: 0
  A_output: send packet4 in window:: eeeeeeeeeeeeeeeeeee
         TOLAYER3: packet being lost
  start timer
EVENT time: 80.240677,  type: 1, fromlayer5  entity: 0
  A_output: send packet5 in window:: fffffffffffffffffff
EVENT time: 84.399261,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=3)
         TOLAYER3: packet being lost
EVENT time: 93.498627,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 4 5
         TOLAYER3: packet being corrupted
EVENT time: 99.336594,  type: 2, fromlayer3  entity: 1
  B_input: got packet4: eeeeeeeeeeeeeeeeeee
  B_input: send ACK (ack=4)
         TOLAYER3: packet being lost
EVENT time: 99.877747,  type: 1, fromlayer5  entity: 0
  A_output: send packet6 in window:: ggggggggggggggggggg
         TOLAYER3: packet being lost
EVENT time: 108.498627,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 4 5 6
         TOLAYER3: packet being lost
EVENT time: 109.095840,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=4)
         TOLAYER3: packet being lost
EVENT time: 110.645912,  type: 1, fromlayer5  entity: 0
  A_output: send packet7 in window:: hhhhhhhhhhhhhhhhhhh
EVENT time: 111.782578,  type: 1, fromlayer5  entity: 0
  A_output: send packet8 in window:: iiiiiiiiiiiiiiiiiii
EVENT time: 114.369942,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
         TOLAYER3: packet being corrupted
EVENT time: 123.151199,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
EVENT time: 123.280724,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 123.498627,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 4 5 6 7 8
EVENT time: 123.598984,  type: 1, fromlayer5  entity: 0
  A_output: send packet9 in window:: jjjjjjjjjjjjjjjjjjj
EVENT time: 127.970482,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
EVENT time: 128.898392,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=4)
  A_input: start timer
EVENT time: 130.602631,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=4).
EVENT time: 131.632248,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
         TOLAYER3: packet being lost
EVENT time: 133.610626,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
EVENT time: 133.620605,  type: 1, fromlayer5  entity: 0
  A_output: send packet10 in window:: kkkkkkkkkkkkkkkkkkk
EVENT time: 135.416962,  type: 2, fromlayer3  entity: 1
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    B_input: got packet5: fffffffffffffffffff
    B_input: send ACK (ack=5)
EVENT time: 137.529694,  type: 2, fromlayer3  entity: 1
    B_input: got packet6: ggggggggggggggggggg
    B_input: send ACK (ack=6)
EVENT time: 141.568481,  type: 2, fromlayer3  entity: 0
    A_input: got NAK (ack=4).
EVENT time: 143.898392,  type: 0, timerinterrupt    entity: 0
    A_timerinterrupt: start timer
    A_timerinterrupt: resend packet(seq): 5 6 7 8 9 10
            TOLAYER3: packet being lost
            TOLAYER3: packet being lost
            TOLAYER3: packet being corrupted
EVENT time: 144.221039,  type: 2, fromlayer3  entity: 1
    B_input: got packet7: hhhhhhhhhhhhhhhhhhh
    B_input: send ACK (ack=7)
EVENT time: 149.399658,  type: 1, fromlayer5  entity: 0
    A_output: send packet11 in window:: lllllllllllllllllll
EVENT time: 149.693649,  type: 2, fromlayer3  entity: 1
    B_input: got packet8: iiiiiiiiiiiiiiiiiii
    B_input: send ACK (ack=8)
            TOLAYER3: packet being lost
EVENT time: 151.416458,  type: 2, fromlayer3  entity: 0
    A_input: got ACK (ack=5)
    A_input: start timer
EVENT time: 154.161697,  type: 2, fromlayer3  entity: 0
    A_input: got ACK (ack=6)
    A_input: start timer
EVENT time: 155.080505,  type: 2, fromlayer3  entity: 1
    B_input: got packet9: jjjjjjjjjjjjjjjjjjj
    B_input: send ACK (ack=9)
EVENT time: 157.018112,  type: 1, fromlayer5  entity: 0
    A_output: send packet12 in window:: mmmmmmmmmmmmmmmmmmm
EVENT time: 162.984818,  type: 2, fromlayer3  entity: 0
    A_input: got ACK (ack=7)
    A_input: start timer
EVENT time: 163.906403,  type: 2, fromlayer3  entity: 1
    B_input: got packet10: kkkkkkkkkkkkkkkkkkk
    B_input: send ACK (ack=10)
            TOLAYER3: packet being corrupted
EVENT time: 168.231949,  type: 2, fromlayer3  entity: 0
    A_input: got ACK (ack=9)
    A_input: start timer
EVENT time: 173.394577,  type: 2, fromlayer3  entity: 1
    B_input: not expected seq! send NAK (ack=10)
EVENT time: 175.368652,  type: 1, fromlayer5  entity: 0
    A_output: send packet13 in window:: nnnnnnnnnnnnnnnnnnn
EVENT time: 175.899796,  type: 2, fromlayer3  entity: 1
    B_input: not expected seq! send NAK (ack=10)
EVENT time: 177.554398,  type: 2, fromlayer3  entity: 0
    A_input: packet corrupted!!
EVENT time: 177.931900,  type: 1, fromlayer5  entity: 0
    A_output: send packet14 in window:: ooooooooooooooooooo
EVENT time: 180.550781,  type: 2, fromlayer3  entity: 0
    A_input: got ACK (ack=10)
    A_input: start timer
EVENT time: 182.159073,  type: 2, fromlayer3  entity: 1
    B_input: not expected seq! send NAK (ack=10)
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EVENT time: 184.463547,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=10).
EVENT time: 188.060028,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=10)
EVENT time: 189.643890,  type: 2, fromlayer3  entity: 1
  B_input: got packet11: lllllllllllllllllll
  B_input: send ACK (ack=11)
EVENT time: 192.065552,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=10).
EVENT time: 192.179214,  type: 2, fromlayer3  entity: 1
  B_input: got packet12: mmmmmmmmmmmmmmmmmmmm
  B_input: send ACK (ack=12)
EVENT time: 193.328247,  type: 2, fromlayer3  entity: 1
  B_input: got packet13: nnnnnnnnnnnnnnnnnnnn
  B_input: send ACK (ack=13)
          TOLAYER3: packet being corrupted
EVENT time: 195.550781,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 11 12 13 14
EVENT time: 195.982330,  type: 1, fromlayer5  entity: 0
  A_output: send packet15 in window:: pppppppppppppppppppp
EVENT time: 197.501953,  type: 2, fromlayer3  entity: 1
  B_input: got packet14: oooooooooooooooooooo
  B_input: send ACK (ack=14)
EVENT time: 201.196442,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=10).
EVENT time: 201.220169,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=14)
EVENT time: 205.574463,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=11)
  A_input: start timer
EVENT time: 206.091843,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=14)
EVENT time: 208.872269,  type: 1, fromlayer5  entity: 0
  A_output: send packet16 in window:: qqqqqqqqqqqqqqqqqqqq
EVENT time: 208.896225,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=12)
  A_input: start timer
EVENT time: 212.631073,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=14)
EVENT time: 215.664673,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 216.738815,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=14)
EVENT time: 219.517395,  type: 2, fromlayer3  entity: 1
  B_input: got packet15: pppppppppppppppppppp
  B_input: send ACK (ack=15)
          TOLAYER3: packet being corrupted
EVENT time: 222.170059,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=14)
  A_input: start timer
EVENT time: 222.840225,  type: 2, fromlayer3  entity: 1
  B_input: got packet16: qqqqqqqqqqqqqqqqqqqq
  B_input: send ACK (ack=16)
EVENT time: 223.575684,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=14).
EVENT time: 224.720016,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=14).
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EVENT time: 228.237030,  type: 1, fromlayer5  entity: 0
  A_output: send packet17 in window:: rrrrrrrrrrrrrrrrrrrr
EVENT time: 233.476212,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=14).
EVENT time: 233.601898,  type: 1, fromlayer5  entity: 0
  A_output: send packet18 in window:: ssssssssssssssssssss
           TOLAYER3: packet being lost
EVENT time: 234.770187,  type: 2, fromlayer3  entity: 1
  B_input: got packet17: rrrrrrrrrrrrrrrrrrrr
  B_input: send ACK (ack=17)
           TOLAYER3: packet being lost
EVENT time: 236.743500,  type: 1, fromlayer5  entity: 0
  A_output: send packet19 in window:: tttttttttttttttttttt
EVENT time: 237.170059,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 15 16 17 18 19
           TOLAYER3: packet being lost
EVENT time: 240.662155,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=14).
EVENT time: 241.174484,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=17)
           TOLAYER3: packet being lost
EVENT time: 242.997849,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=17)
           TOLAYER3: packet being lost
EVENT time: 244.533493,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 244.535355,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=17)
           TOLAYER3: packet being lost
EVENT time: 248.658463,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=16)
  A_input: start timer
EVENT time: 251.555450,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=17)
EVENT time: 252.969818,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=17)
EVENT time: 257.718506,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=17)
  A_input: start timer
EVENT time: 263.133240,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=17).
EVENT time: 272.718506,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 18 19
EVENT time: 274.666412,  type: 2, fromlayer3  entity: 1
  B_input: got packet18: ssssssssssssssssssss
  B_input: send ACK (ack=18)
EVENT time: 277.030945,  type: 2, fromlayer3  entity: 1
  B_input: got packet19: tttttttttttttttttttt
  B_input: send ACK (ack=19)
EVENT time: 280.461945,  type: 2, fromlayer3  entity: 0
  A_output: got ACK (ack=18)
  A_input: start timer
EVENT time: 287.080841,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=19)
 Simulator terminated at time 287.080841
 after sending 20 msgs from layer5
```
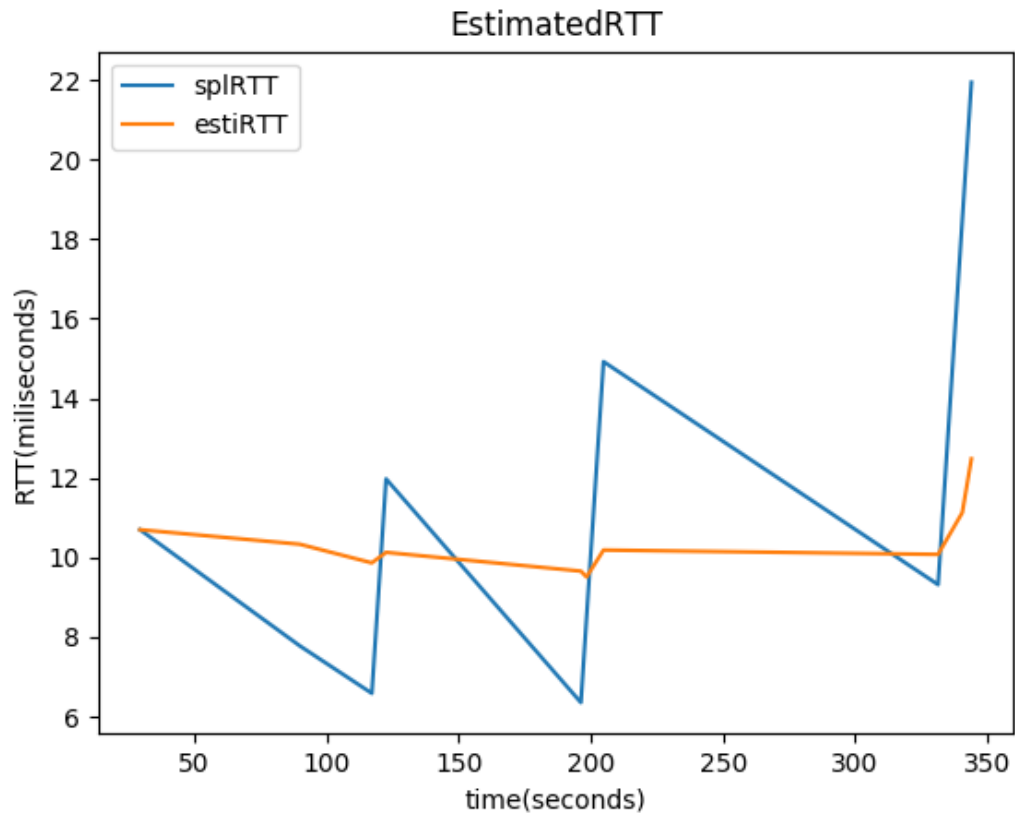
(b) ./b06502147 50 0.3 0.3 10 2

b小題會根據increment設置的不同而有很大的差異，例如在increment同樣設置15時，因為有0.3的封包loss而造成常常timeout，因此GBN會不斷重送data，而重送的data又不斷的loss或是corrupt，結果就是造成相同的packet不斷的被重送，如下圖所示：(完整的截圖由於太長，我會貼在pdf最後)
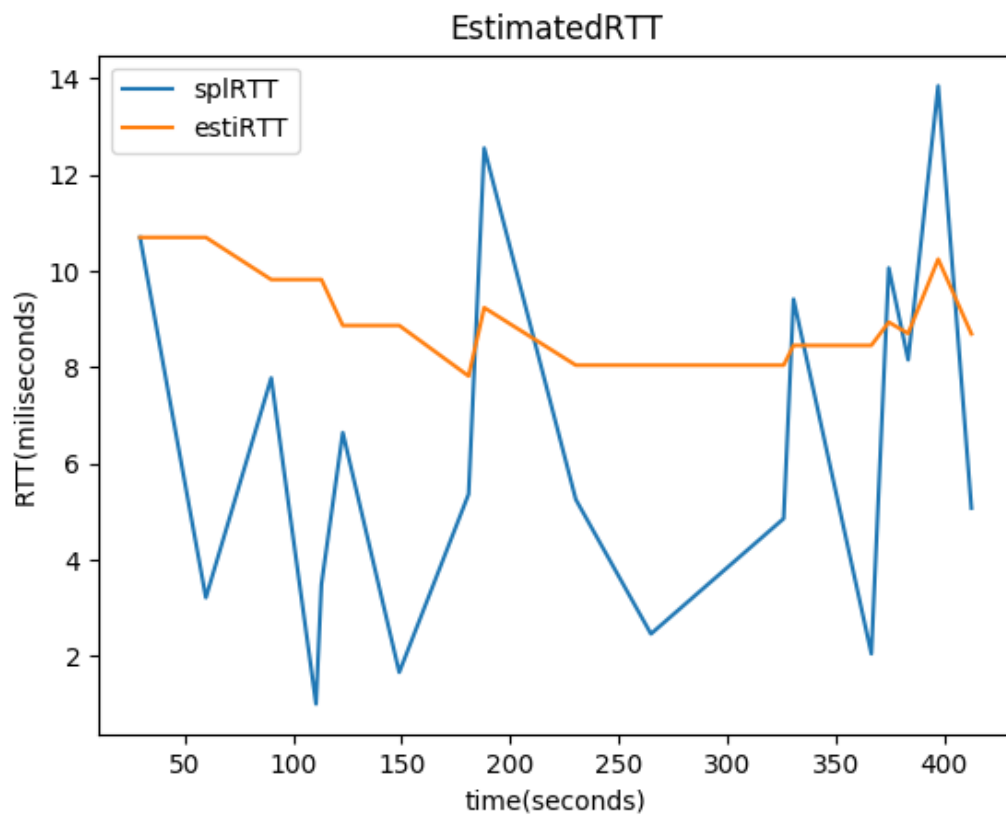
```
EVENT time: 545.104004,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 9 10 11 12 13 14 15 16
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
EVENT time: 546.708496,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=8)
          TOLAYER3: packet being corrupted
EVENT time: 548.804016,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 552.863586,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=8)
          TOLAYER3: packet being lost
EVENT time: 560.104004,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 9 10 11 12 13 14 15 16
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
```

2. 以下兩張分別是我對不同的alpha作圖，可以看見當alpha值較小的時候，EstimatedRTT較不會受到SampleRTT的影響，而能有平穩的表現。但當alpha=0.3時，則我們可以發現EstimatedRTT容易受到SampleRTT的影響而有上下起伏。

alpha = 0.125

EstimatedRTT

alpha = 0.3

EstimatedRTT

1. b的輸出log:

```
-----   Stop and Wait Network Simulator Version 1.1 --------

the number of messages to simulate: 50
```

```
packet loss probability: 0.300000
packet corruption probability: 0.300000
average time between messages from sender's layer5: 10.000000
TRACE: 2
EVENT time: 18.705740,  type: 1, fromlayer5  entity: 0
 send packet0 in window:: aaaaaaaaaaaaaaaaaaaa
          TOLAYER3: packet being corrupted
  start timer
EVENT time: 24.170835,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=-1)
EVENT time: 26.352459,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=-1).
EVENT time: 35.124840,  type: 1, fromlayer5  entity: 0
 send packet1 in window:: bbbbbbbbbbbbbbbbbbbb
          TOLAYER3: packet being lost
EVENT time: 37.680447,  type: 1, fromlayer5  entity: 0
 send packet2 in window:: cccccccccccccccccccc
          TOLAYER3: packet being corrupted
EVENT time: 42.147713,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=-1)
          TOLAYER3: packet being lost
EVENT time: 46.394402,  type: 1, fromlayer5  entity: 0
 send packet3 in window:: dddddddddddddddddddd
EVENT time: 51.666630,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=-1)
EVENT time: 54.979748,  type: 1, fromlayer5  entity: 0
 send packet4 in window:: eeeeeeeeeeeeeeeeeeee
          TOLAYER3: packet being lost
EVENT time: 55.869270,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=-1).
EVENT time: 72.798996,  type: 1, fromlayer5  entity: 0
 send packet5 in window:: ffffffffffffffffffff
          TOLAYER3: packet being corrupted
EVENT time: 75.165337,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=-1)
          TOLAYER3: packet being lost
EVENT time: 87.586868,  type: 1, fromlayer5  entity: 0
 send packet6 in window:: gggggggggggggggggggg
EVENT time: 89.367973,  type: 1, fromlayer5  entity: 0
 send packet7 in window:: hhhhhhhhhhhhhhhhhhhh
          TOLAYER3: packet being lost
EVENT time: 93.835884,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=-1)
          TOLAYER3: packet being corrupted
EVENT time: 99.673851,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 103.149826,  type: 1, fromlayer5  entity: 0
EVENT time: 122.614822,  type: 1, fromlayer5  entity: 0
EVENT time: 124.559700,  type: 1, fromlayer5  entity: 0
EVENT time: 144.177399,  type: 1, fromlayer5  entity: 0
EVENT time: 144.307327,  type: 1, fromlayer5  entity: 0
EVENT time: 155.075500,  type: 1, fromlayer5  entity: 0
EVENT time: 155.756363,  type: 1, fromlayer5  entity: 0
EVENT time: 164.471634,  type: 1, fromlayer5  entity: 0
EVENT time: 173.969635,  type: 1, fromlayer5  entity: 0
EVENT time: 184.144333,  type: 1, fromlayer5  entity: 0
EVENT time: 184.633850,  type: 1, fromlayer5  entity: 0
EVENT time: 188.493881,  type: 1, fromlayer5  entity: 0
```

```
EVENT time: 205.785568,  type: 1, fromlayer5  entity: 0
EVENT time: 217.452087,  type: 1, fromlayer5  entity: 0
EVENT time: 218.705734,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 0 1 2 3 4 5 6 7
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
EVENT time: 219.131378,  type: 1, fromlayer5  entity: 0
EVENT time: 220.923248,  type: 1, fromlayer5  entity: 0
EVENT time: 223.346100,  type: 1, fromlayer5  entity: 0
EVENT time: 223.525009,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=-1)
          TOLAYER3: packet being lost
EVENT time: 227.186768,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=-1)
EVENT time: 230.203812,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=-1).
EVENT time: 236.097549,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=-1)
EVENT time: 238.330414,  type: 1, fromlayer5  entity: 0
EVENT time: 240.851608,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=-1).
EVENT time: 241.624588,  type: 1, fromlayer5  entity: 0
EVENT time: 241.715225,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=-1)
EVENT time: 247.102081,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=-1).
EVENT time: 251.646210,  type: 1, fromlayer5  entity: 0
EVENT time: 266.894958,  type: 1, fromlayer5  entity: 0
EVENT time: 268.459930,  type: 1, fromlayer5  entity: 0
EVENT time: 285.626801,  type: 1, fromlayer5  entity: 0
EVENT time: 286.790588,  type: 1, fromlayer5  entity: 0
EVENT time: 301.953064,  type: 1, fromlayer5  entity: 0
EVENT time: 317.414978,  type: 1, fromlayer5  entity: 0
EVENT time: 336.158295,  type: 1, fromlayer5  entity: 0
EVENT time: 351.937347,  type: 1, fromlayer5  entity: 0
EVENT time: 359.476135,  type: 1, fromlayer5  entity: 0
EVENT time: 376.867035,  type: 1, fromlayer5  entity: 0
EVENT time: 382.907593,  type: 1, fromlayer5  entity: 0
EVENT time: 393.274323,  type: 1, fromlayer5  entity: 0
EVENT time: 412.936493,  type: 1, fromlayer5  entity: 0
EVENT time: 418.705750,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 0 1 2 3 4 5 6 7
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
EVENT time: 421.151184,  type: 1, fromlayer5  entity: 0
EVENT time: 421.450989,  type: 2, fromlayer3  entity: 1
  B_input: got packet0: aaaaaaaaaaaaaaaaaaaa
  B_input: send ACK (ack=0)
```

```
              TOLAYER3: packet being corrupted
EVENT time: 423.986298,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 430.939178,  type: 2, fromlayer3  entity: 1
  B_input: got packet1: bbbbbbbbbbbbbbbbbbb
  B_input: send ACK (ack=1)
              TOLAYER3: packet being corrupted
EVENT time: 432.430359,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 433.444397,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
              TOLAYER3: packet being lost
EVENT time: 439.501740,  type: 1, fromlayer5  entity: 0
EVENT time: 441.224030,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
              TOLAYER3: packet being lost
EVENT time: 444.767090,  type: 1, fromlayer5  entity: 0
EVENT time: 447.125000,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
              TOLAYER3: packet being lost
EVENT time: 455.948120,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
              TOLAYER3: packet being lost
EVENT time: 457.531982,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
EVENT time: 460.890778,  type: 1, fromlayer5  entity: 0
EVENT time: 461.444733,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=1)
  A_input: start timer
EVENT time: 462.779114,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
EVENT time: 466.952820,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 478.941193,  type: 1, fromlayer5  entity: 0
 send packet8 in window:: iiiiiiiiiiiiiiiiiii
 send packet9 in window:: jjjjjjjjjjjjjjjjjjjj
EVENT time: 483.667999,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
EVENT time: 488.568237,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
              TOLAYER3: packet being lost
EVENT time: 489.358582,  type: 1, fromlayer5  entity: 0
EVENT time: 492.189758,  type: 1, fromlayer5  entity: 0
EVENT time: 493.406708,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 503.172424,  type: 1, fromlayer5  entity: 0
EVENT time: 515.991211,  type: 1, fromlayer5  entity: 0
EVENT time: 661.444702,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 2 3 4 5 6 7 8 9
              TOLAYER3: packet being lost
              TOLAYER3: packet being lost
              TOLAYER3: packet being lost
EVENT time: 668.275513,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
EVENT time: 674.780884,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 677.475769,  type: 2, fromlayer3  entity: 1
```

```
  B_input: not expected seq! send NAK (ack=1)
          TOLAYER3: packet being corrupted
EVENT time: 678.881409,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 686.825012,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
          TOLAYER3: packet being lost
EVENT time: 690.087036,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
          TOLAYER3: packet being corrupted
EVENT time: 696.887512,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
EVENT time: 699.801147,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 702.815979,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 861.444702,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 2 3 4 5 6 7 8 9
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
EVENT time: 868.630615,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
          TOLAYER3: packet being lost
EVENT time: 870.493530,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
          TOLAYER3: packet being corrupted
EVENT time: 874.618469,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
          TOLAYER3: packet being lost
EVENT time: 874.924500,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 881.151611,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
          TOLAYER3: packet being lost
EVENT time: 1061.444702,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 2 3 4 5 6 7 8 9
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
EVENT time: 1062.982178,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
          TOLAYER3: packet being corrupted
EVENT time: 1068.663452,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
EVENT time: 1070.156372,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 1070.510620,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
EVENT time: 1075.951904,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
```

```
EVENT time: 1079.224121,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
          TOLAYER3: packet being corrupted
EVENT time: 1081.351807,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
EVENT time: 1082.570801,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 1089.727173,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 1097.445435,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 1261.444702,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 2 3 4 5 6 7 8 9
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
EVENT time: 1267.057739,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
EVENT time: 1270.514160,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 1272.802856,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
EVENT time: 1277.261475,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=1)
          TOLAYER3: packet being lost
EVENT time: 1282.415649,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 1283.924438,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
EVENT time: 1285.966431,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
EVENT time: 1289.098022,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 1292.404175,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=1).
EVENT time: 1292.803955,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=1)
          TOLAYER3: packet being corrupted
EVENT time: 1294.261841,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 1461.444702,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 2 3 4 5 6 7 8 9
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
EVENT time: 1465.998413,  type: 2, fromlayer3  entity: 1
  B_input: got packet2: cccccccccccccccccc
  B_input: send ACK (ack=2)
          TOLAYER3: packet being corrupted
EVENT time: 1469.287720,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
          TOLAYER3: packet being lost
EVENT time: 1471.915894,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
```

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EVENT time: 1473.509277,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
          TOLAYER3: packet being lost
EVENT time: 1474.568237,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
          TOLAYER3: packet being lost
EVENT time: 1480.135376,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
          TOLAYER3: packet being lost
EVENT time: 1661.444702,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 2 3 4 5 6 7 8 9
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
EVENT time: 1663.578369,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
EVENT time: 1669.197388,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=2)
  A_input: start timer
EVENT time: 1669.265747,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
          TOLAYER3: packet being lost
EVENT time: 1674.778809,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
EVENT time: 1677.625366,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
          TOLAYER3: packet being corrupted
EVENT time: 1683.492065,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
EVENT time: 1683.996338,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 1687.797119,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
          TOLAYER3: packet being lost
EVENT time: 1689.811157,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 1692.992065,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 1696.727417,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
EVENT time: 1698.907593,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 1869.197388,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 3 4 5 6 7 8 9
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
EVENT time: 1878.340210,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
EVENT time: 1880.860718,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 1884.894531,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
```

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EVENT time: 1892.229858,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 1892.726074,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
          TOLAYER3: packet being corrupted
EVENT time: 1894.389526,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
EVENT time: 1898.099976,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 1905.596069,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 2069.197266,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 3 4 5 6 7 8 9
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
EVENT time: 2070.719727,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
EVENT time: 2077.533936,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
EVENT time: 2079.882812,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 2086.997314,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
EVENT time: 2088.055420,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 2091.672607,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
EVENT time: 2092.543701,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 2094.527588,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 2098.650635,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
          TOLAYER3: packet being lost
EVENT time: 2269.197266,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 3 4 5 6 7 8 9
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
EVENT time: 2276.803467,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
          TOLAYER3: packet being corrupted
EVENT time: 2280.340088,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
          TOLAYER3: packet being lost
EVENT time: 2283.568848,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
          TOLAYER3: packet being corrupted
EVENT time: 2283.892578,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
```

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EVENT time: 2289.202637,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 2292.417236,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=2)
EVENT time: 2296.484863,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 2299.511230,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=2)
EVENT time: 2304.501221,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=2).
EVENT time: 2469.197266,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 3 4 5 6 7 8 9
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
EVENT time: 2476.723877,  type: 2, fromlayer3  entity: 1
  B_input: got packet3: dddddddddddddddddddd
  B_input: send ACK (ack=3)
          TOLAYER3: packet being corrupted
EVENT time: 2483.207031,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=3)
          TOLAYER3: packet being lost
EVENT time: 2485.664062,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 2486.811279,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=3)
          TOLAYER3: packet being lost
EVENT time: 2489.265625,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=3)
EVENT time: 2493.834717,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=3)
  A_input: start timer
EVENT time: 2497.628662,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=3)
          TOLAYER3: packet being corrupted
EVENT time: 2506.187744,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 2693.834717,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 4 5 6 7 8 9
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
EVENT time: 2699.528809,  type: 2, fromlayer3  entity: 1
  B_input: got packet4: eeeeeeeeeeeeeeeeeeee
  B_input: send ACK (ack=4)
          TOLAYER3: packet being lost
EVENT time: 2701.706055,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=4)
          TOLAYER3: packet being lost
EVENT time: 2706.827637,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
          TOLAYER3: packet being corrupted
EVENT time: 2709.650635,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 2711.466797,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
```

```
           TOLAYER3: packet being lost⊏
EVENT time: 2717.297852,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=4)
           TOLAYER3: packet being corrupted
EVENT time: 2725.643066,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 2726.913330,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
EVENT time: 2734.473389,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=4)
  A_input: start timer
EVENT time: 2934.473389,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 5 6 7 8 9
           TOLAYER3: packet being lost
           TOLAYER3: packet being lost
EVENT time: 2936.413818,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
EVENT time: 2942.263428,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=4).
EVENT time: 2945.425781,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
EVENT time: 2949.852295,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=4)
EVENT time: 2950.890625,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=4)
EVENT time: 2958.473389,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=4).
EVENT time: 3134.473389,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 5 6 7 8 9
EVENT time: 3143.582764,  type: 2, fromlayer3  entity: 1
  B_input: got packet5: ffffffffffffffffff
  B_input: send ACK (ack=5)
EVENT time: 3145.504150,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=5)
  A_input: start timer
EVENT time: 3148.139893,  type: 2, fromlayer3  entity: 1
  B_input: got packet6: gggggggggggggggggg
  B_input: send ACK (ack=6)
EVENT time: 3149.762695,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=6)
  A_input: start timer
EVENT time: 3153.816162,  type: 2, fromlayer3  entity: 1
  B_input: got packet7: hhhhhhhhhhhhhhhhhh
  B_input: send ACK (ack=7)
EVENT time: 3158.734863,  type: 2, fromlayer3  entity: 1
  B_input: got packet8: iiiiiiiiiiiiiiiiii
  B_input: send ACK (ack=8)
EVENT time: 3159.971191,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=7)
  A_input: start timer
EVENT time: 3164.593994,  type: 2, fromlayer3  entity: 1
  B_input: got packet9: jjjjjjjjjjjjjjjjjj
  B_input: send ACK (ack=9)
EVENT time: 3169.311523,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=8)
  A_input: start timer
```

```
EVENT time: 3173.821289,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=9)
 send packet10 in window:: kkkkkkkkkkkkkkkkkkk
  start timer
 send packet11 in window:: lllllllllllllllllll
 send packet12 in window:: mmmmmmmmmmmmmmmmmmm
         TOLAYER3: packet being lost
 send packet13 in window:: nnnnnnnnnnnnnnnnnnn
 send packet14 in window:: ooooooooooooooooooo
 send packet15 in window:: ppppppppppppppppppp
 send packet16 in window:: qqqqqqqqqqqqqqqqqqq
 send packet17 in window:: rrrrrrrrrrrrrrrrrrr
EVENT time: 3175.323486,  type: 2, fromlayer3  entity: 1
  B_input: got packet10: kkkkkkkkkkkkkkkkkkk
  B_input: send ACK (ack=10)
         TOLAYER3: packet being corrupted
EVENT time: 3177.463867,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 3183.244873,  type: 2, fromlayer3  entity: 1
  B_input: got packet11: lllllllllllllllllll
  B_input: send ACK (ack=11)
         TOLAYER3: packet being lost
EVENT time: 3187.907959,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=11)
         TOLAYER3: packet being lost
EVENT time: 3196.489746,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=11)
EVENT time: 3200.930908,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=11)
         TOLAYER3: packet being lost
EVENT time: 3201.479980,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=11)
  A_input: start timer
EVENT time: 3206.293457,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=11)
         TOLAYER3: packet being corrupted
EVENT time: 3208.219971,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 3212.278564,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=11)
EVENT time: 3217.593750,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=11).
EVENT time: 3401.479980,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 12 13 14 15 16 17
         TOLAYER3: packet being corrupted
         TOLAYER3: packet being corrupted
         TOLAYER3: packet being lost
         TOLAYER3: packet being corrupted
EVENT time: 3406.625488,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=11)
         TOLAYER3: packet being corrupted
EVENT time: 3408.932373,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=11)
         TOLAYER3: packet being lost
EVENT time: 3414.716064,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 3416.975098,  type: 2, fromlayer3  entity: 1
```

```
  B_input: packet corrupted! send NAK (ack=11)
          TOLAYER3: packet being corrupted
EVENT time: 3423.582275,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 3424.542725,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=11)
          TOLAYER3: packet being corrupted
EVENT time: 3432.021484,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 3434.400391,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=11)
          TOLAYER3: packet being lost
EVENT time: 3601.479980,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 12 13 14 15 16 17
          TOLAYER3: packet being lost
EVENT time: 3604.734863,  type: 2, fromlayer3  entity: 1
  B_input: got packet12: mmmmmmmmmmmmmmmmmmmmmm
  B_input: send ACK (ack=12)
          TOLAYER3: packet being lost
EVENT time: 3613.588867,  type: 2, fromlayer3  entity: 1
  B_input: got packet13: nnnnnnnnnnnnnnnnnnnn
  B_input: send ACK (ack=13)
          TOLAYER3: packet being lost
EVENT time: 3619.178711,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=13)
          TOLAYER3: packet being lost
EVENT time: 3622.335938,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=13)
EVENT time: 3624.500244,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=13)
EVENT time: 3628.364502,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=13)
  A_input: start timer
EVENT time: 3631.000244,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=13).
EVENT time: 3828.364502,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 14 15 16 17
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
EVENT time: 3836.520508,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=13)
          TOLAYER3: packet being lost
EVENT time: 3841.577393,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=13)
EVENT time: 3848.355957,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=13).
EVENT time: 4028.364502,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 14 15 16 17
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
EVENT time: 4030.732910,  type: 2, fromlayer3  entity: 1
  B_input: got packet14: oooooooooooooooooooo
  B_input: send ACK (ack=14)
```

```
EVENT time: 4032.799316,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=14)
  A_input: start timer
EVENT time: 4035.258545,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=14)
          TOLAYER3: packet being lost
EVENT time: 4043.274414,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=14)
EVENT time: 4052.487549,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=14).
EVENT time: 4232.799316,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 15 16 17
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
EVENT time: 4241.910156,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=14)
EVENT time: 4251.528320,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=14).
EVENT time: 4432.799316,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 15 16 17
          TOLAYER3: packet being lost
EVENT time: 4441.779297,  type: 2, fromlayer3  entity: 1
  B_input: got packet15: pppppppppppppppppppp
  B_input: send ACK (ack=15)
          TOLAYER3: packet being corrupted
EVENT time: 4447.218750,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=15)
EVENT time: 4450.744141,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 4452.082031,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=15)
  A_input: start timer
EVENT time: 4652.082031,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 16 17
          TOLAYER3: packet being lost
EVENT time: 4653.888672,  type: 2, fromlayer3  entity: 1
  B_input: got packet16: qqqqqqqqqqqqqqqqqqqq
  B_input: send ACK (ack=16)
EVENT time: 4659.381348,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=16)
  A_input: start timer
EVENT time: 4859.381348,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 17
EVENT time: 4860.577637,  type: 2, fromlayer3  entity: 1
  B_input: got packet17: rrrrrrrrrrrrrrrrrrrr
  B_input: send ACK (ack=17)
EVENT time: 4870.054688,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=17)
 send packet18 in window:: ssssssssssssssssssss
          TOLAYER3: packet being lost
  start timer
 send packet19 in window:: tttttttttttttttttttt
 send packet20 in window:: uuuuuuuuuuuuuuuuuuuu
          TOLAYER3: packet being corrupted
```

```
   send packet21 in window:: vvvvvvvvvvvvvvvvvvv
             TOLAYER3: packet being lost
  send packet22 in window:: wwwwwwwwwwwwwwwwwww
  send packet23 in window:: xxxxxxxxxxxxxxxxxxx
  send packet24 in window:: yyyyyyyyyyyyyyyyyyy
             TOLAYER3: packet being lost
  send packet25 in window:: zzzzzzzzzzzzzzzzzzz
EVENT time: 4874.102539,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=17)
             TOLAYER3: packet being corrupted
EVENT time: 4877.130371,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=17)
             TOLAYER3: packet being lost
EVENT time: 4880.650879,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 4882.422363,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=17)
             TOLAYER3: packet being corrupted
EVENT time: 4889.525879,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 4890.036621,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=17)
             TOLAYER3: packet being lost
EVENT time: 4893.303711,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=17)
             TOLAYER3: packet being lost
EVENT time: 5070.054688,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 18 19 20 21 22 23 24 25
             TOLAYER3: packet being lost
             TOLAYER3: packet being corrupted
EVENT time: 5074.710938,  type: 2, fromlayer3  entity: 1
  B_input: got packet18: ssssssssssssssssss
  B_input: send ACK (ack=18)
             TOLAYER3: packet being corrupted
EVENT time: 5078.286621,  type: 2, fromlayer3  entity: 1
  B_input: got packet19: tttttttttttttttttt
  B_input: send ACK (ack=19)
             TOLAYER3: packet being lost
EVENT time: 5083.852539,  type: 2, fromlayer3  entity: 1
  B_input: got packet20: uuuuuuuuuuuuuuuuuuu
  B_input: send ACK (ack=20)
             TOLAYER3: packet being lost
EVENT time: 5083.993164,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 5086.848145,  type: 2, fromlayer3  entity: 1
  B_input: got packet21: vvvvvvvvvvvvvvvvvvv
  B_input: send ACK (ack=21)
EVENT time: 5089.082520,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=21)
  A_input: start timer
EVENT time: 5094.290039,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=21)
             TOLAYER3: packet being corrupted
EVENT time: 5099.684082,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=21)
EVENT time: 5102.331055,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
```

```
EVENT time: 5103.514648,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=21).
EVENT time: 5107.925293,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=21)
          TOLAYER3: packet being lost
EVENT time: 5289.082520,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 22 23 24 25
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
EVENT time: 5298.985840,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=21)
          TOLAYER3: packet being lost
EVENT time: 5308.744629,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=21)
          TOLAYER3: packet being corrupted
EVENT time: 5312.273926,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=21)
EVENT time: 5314.044434,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=21)
EVENT time: 5317.108887,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 5319.916016,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=21).
EVENT time: 5329.764160,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=21).
EVENT time: 5489.082520,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 22 23 24 25
          TOLAYER3: packet being lost
EVENT time: 5496.883301,  type: 2, fromlayer3  entity: 1
  B_input: got packet22: wwwwwwwwwwwwwwwwwwww
  B_input: send ACK (ack=22)
          TOLAYER3: packet being lost
EVENT time: 5498.172852,  type: 2, fromlayer3  entity: 1
  B_input: got packet23: xxxxxxxxxxxxxxxxxxxx
  B_input: send ACK (ack=23)
EVENT time: 5501.778809,  type: 2, fromlayer3  entity: 1
  B_input: got packet24: yyyyyyyyyyyyyyyyyyyy
  B_input: send ACK (ack=24)
EVENT time: 5506.592773,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=23)
  A_input: start timer
EVENT time: 5509.928223,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=24)
  A_input: start timer
EVENT time: 5709.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
          TOLAYER3: packet being lost
EVENT time: 5909.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
          TOLAYER3: packet being corrupted
EVENT time: 5911.034668,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=24)
EVENT time: 5912.749512,  type: 2, fromlayer3  entity: 0
```

```
  A_input: got NAK (ack=24).
EVENT time: 6109.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
          TOLAYER3: packet being lost
EVENT time: 6309.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
          TOLAYER3: packet being lost
EVENT time: 6509.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
          TOLAYER3: packet being lost
EVENT time: 6709.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
EVENT time: 6713.297852,  type: 2, fromlayer3  entity: 1
  B_input: got packet25: zzzzzzzzzzzzzzzzzzzz
  B_input: send ACK (ack=25)
          TOLAYER3: packet being lost
EVENT time: 6909.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
          TOLAYER3: packet being lost
EVENT time: 7109.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
          TOLAYER3: packet being lost
EVENT time: 7309.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
EVENT time: 7311.388184,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=25)
          TOLAYER3: packet being corrupted
EVENT time: 7315.454102,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 7509.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
EVENT time: 7517.959961,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=25)
          TOLAYER3: packet being corrupted
EVENT time: 7525.310547,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 7709.928223,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 25
EVENT time: 7717.951172,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=25)
EVENT time: 7727.151367,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=25)
 send packet26 in window:: aaaaaaaaaaaaaaaaaaaa
  start timer
 send packet27 in window:: bbbbbbbbbbbbbbbbbbbb
          TOLAYER3: packet being lost
 send packet28 in window:: cccccccccccccccccccc
          TOLAYER3: packet being lost
 send packet29 in window:: dddddddddddddddddddd
```

```
 send packet30 in window:: eeeeeeeeeeeeeeeeeee
 send packet31 in window:: ffffffffffffffffff
          TOLAYER3: packet being lost
 send packet32 in window:: gggggggggggggggggg
          TOLAYER3: packet being corrupted
 send packet33 in window:: hhhhhhhhhhhhhhhhhh
EVENT time: 7735.698730,  type: 2, fromlayer3  entity: 1
  B_input: got packet26: aaaaaaaaaaaaaaaaaaa
  B_input: send ACK (ack=26)
EVENT time: 7739.887695,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=26)
          TOLAYER3: packet being lost
EVENT time: 7739.934570,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=26)
  A_input: start timer
EVENT time: 7744.247070,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=26)
EVENT time: 7750.283203,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=26).
EVENT time: 7750.342285,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=26)
EVENT time: 7754.824707,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=26)
          TOLAYER3: packet being lost
EVENT time: 7755.256348,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=26).
EVENT time: 7939.934570,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 27 28 29 30 31 32 33
          TOLAYER3: packet being lost
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
EVENT time: 7942.030273,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=26)
EVENT time: 7949.960938,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=26).
EVENT time: 7951.077637,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=26)
          TOLAYER3: packet being lost
EVENT time: 7956.859863,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=26)
          TOLAYER3: packet being lost
EVENT time: 8139.934570,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 27 28 29 30 31 32 33
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being lost
EVENT time: 8147.399902,  type: 2, fromlayer3  entity: 1
  B_input: got packet27: bbbbbbbbbbbbbbbbbbb
  B_input: send ACK (ack=27)
          TOLAYER3: packet being corrupted
EVENT time: 8153.839355,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 8156.584473,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=27)
```

```
              TOLAYER3: packet being lost
EVENT time: 8161.906250,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=27)
EVENT time: 8169.775879,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=27)
EVENT time: 8170.397949,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=27)
  A_input: start timer
EVENT time: 8178.741211,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=27)
              TOLAYER3: packet being corrupted
EVENT time: 8180.302246,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=27).
EVENT time: 8180.504395,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=27)
              TOLAYER3: packet being corrupted
EVENT time: 8185.855469,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 8188.479980,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 8370.398438,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 28 29 30 31 32 33
              TOLAYER3: packet being lost
              TOLAYER3: packet being lost
EVENT time: 8377.623047,  type: 2, fromlayer3  entity: 1
  B_input: got packet28: cccccccccccccccccccc
  B_input: send ACK (ack=28)
              TOLAYER3: packet being corrupted
EVENT time: 8383.973633,  type: 2, fromlayer3  entity: 1
  B_input: got packet29: dddddddddddddddddddd
  B_input: send ACK (ack=29)
              TOLAYER3: packet being corrupted
EVENT time: 8387.092773,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 8388.103516,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=29)
              TOLAYER3: packet being corrupted
EVENT time: 8388.342773,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 8396.498047,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 8397.011719,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=29)
              TOLAYER3: packet being lost
EVENT time: 8570.398438,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 28 29 30 31 32 33
              TOLAYER3: packet being corrupted
              TOLAYER3: packet being lost
              TOLAYER3: packet being lost
EVENT time: 8579.374023,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=29)
              TOLAYER3: packet being corrupted
EVENT time: 8582.458008,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 8585.615234,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=29)
```

```
              TOLAYER3: packet being lost
EVENT time: 8593.279297,  type: 2, fromlayer3  entity: 1
  B_input: got packet30: eeeeeeeeeeeeeeeeeee
  B_input: send ACK (ack=30)
EVENT time: 8597.923828,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=30)
EVENT time: 8600.749023,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=30)
  A_input: start timer
EVENT time: 8601.765625,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=30).
EVENT time: 8800.749023,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 31 32 33
              TOLAYER3: packet being lost
              TOLAYER3: packet being lost
EVENT time: 8810.547852,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=30)
EVENT time: 8817.225586,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=30).
EVENT time: 9000.749023,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 31 32 33
              TOLAYER3: packet being lost
EVENT time: 9003.668945,  type: 2, fromlayer3  entity: 1
  B_input: got packet31: ffffffffffffffffff
  B_input: send ACK (ack=31)
              TOLAYER3: packet being lost
EVENT time: 9006.000977,  type: 2, fromlayer3  entity: 1
  B_input: got packet32: gggggggggggggggggggg
  B_input: send ACK (ack=32)
              TOLAYER3: packet being lost
EVENT time: 9200.749023,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 31 32 33
              TOLAYER3: packet being corrupted
              TOLAYER3: packet being corrupted
EVENT time: 9206.301758,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=32)
              TOLAYER3: packet being lost
EVENT time: 9211.033203,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=32)
              TOLAYER3: packet being corrupted
EVENT time: 9217.118164,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 9220.178711,  type: 2, fromlayer3  entity: 1
  B_input: got packet33: hhhhhhhhhhhhhhhhhhhh
  B_input: send ACK (ack=33)
EVENT time: 9221.510742,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=33)
 send packet34 in window:: iiiiiiiiiiiiiiiiiii
              TOLAYER3: packet being corrupted
  start timer
 send packet35 in window:: jjjjjjjjjjjjjjjjjjjj
 send packet36 in window:: kkkkkkkkkkkkkkkkkkkk
              TOLAYER3: packet being lost
 send packet37 in window:: llllllllllllllllll
              TOLAYER3: packet being lost
```

```
  send packet38 in window:: mmmmmmmmmmmmmmmmmmmm
          TOLAYER3: packet being lost
  send packet39 in window:: nnnnnnnnnnnnnnnnnnnn
          TOLAYER3: packet being lost
  send packet40 in window:: oooooooooooooooooooo
          TOLAYER3: packet being lost
  send packet41 in window:: pppppppppppppppppppp
EVENT time: 9228.520508,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=33)
EVENT time: 9233.348633,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=33).
EVENT time: 9236.709961,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=33)
EVENT time: 9240.728516,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=33).
EVENT time: 9243.901367,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=33)
          TOLAYER3: packet being corrupted
EVENT time: 9246.625000,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 9421.510742,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 34 35 36 37 38 39 40 41
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
EVENT time: 9425.646484,  type: 2, fromlayer3  entity: 1
  B_input: got packet34: iiiiiiiiiiiiiiiiiiii
  B_input: send ACK (ack=34)
          TOLAYER3: packet being lost
EVENT time: 9428.389648,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=34)
EVENT time: 9436.930664,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=34)
  A_input: start timer
EVENT time: 9437.875000,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=34)
          TOLAYER3: packet being lost
EVENT time: 9447.542969,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=34)
          TOLAYER3: packet being corrupted
EVENT time: 9450.870117,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 9636.930664,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 35 36 37 38 39 40 41
          TOLAYER3: packet being corrupted
EVENT time: 9646.668945,  type: 2, fromlayer3  entity: 1
  B_input: got packet35: jjjjjjjjjjjjjjjjjjjj
  B_input: send ACK (ack=35)
          TOLAYER3: packet being corrupted
EVENT time: 9647.914062,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=35)
EVENT time: 9651.123047,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 9655.107422,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=35)
```

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EVENT time: 9659.430664,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=35)
  A_input: start timer
EVENT time: 9663.898438,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=35).
EVENT time: 9664.043945,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=35)
EVENT time: 9667.388672,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=35)
EVENT time: 9672.331055,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=35)
          TOLAYER3: packet being lost
EVENT time: 9672.463867,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=35).
EVENT time: 9673.790039,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=35).
EVENT time: 9680.247070,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=35)
EVENT time: 9687.638672,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=35).
EVENT time: 9859.430664,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 36 37 38 39 40 41
          TOLAYER3: packet being corrupted
          TOLAYER3: packet being corrupted
EVENT time: 9862.708008,  type: 2, fromlayer3  entity: 1
  B_input: got packet36: kkkkkkkkkkkkkkkkkkk
  B_input: send ACK (ack=36)
          TOLAYER3: packet being lost
EVENT time: 9870.357422,  type: 2, fromlayer3  entity: 1
  B_input: got packet37: lllllllllllllllllll
  B_input: send ACK (ack=37)
EVENT time: 9872.083984,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=37)
          TOLAYER3: packet being lost
EVENT time: 9873.084961,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=37)
EVENT time: 9877.328125,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=37)
  A_input: start timer
EVENT time: 9880.291992,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=37)
          TOLAYER3: packet being corrupted
EVENT time: 9881.717773,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=37).
EVENT time: 9883.499023,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 9888.137695,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=37)
EVENT time: 9896.918945,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=37).
EVENT time: 10077.328125,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 38 39 40 41
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
          TOLAYER3: packet being lost
```

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EVENT time: 10277.328125,  type: 0, timerinterrupt    entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 38 39 40 41
          TOLAYER3: packet being corrupted
EVENT time: 10280.805664,  type: 2, fromlayer3  entity: 1
  B_input: got packet38: mmmmmmmmmmmmmmmmmmmm
  B_input: send ACK (ack=38)
EVENT time: 10283.600586,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=38)
  A_input: start timer
EVENT time: 10288.398438,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=38)
          TOLAYER3: packet being lost
EVENT time: 10295.671875,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=38)
EVENT time: 10301.496094,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=38)
EVENT time: 10304.159180,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=38).
EVENT time: 10313.426758,  type: 2, fromlayer3  entity: 0
  A_input: got NAK (ack=38).
EVENT time: 10483.600586,  type: 0, timerinterrupt    entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 39 40 41
          TOLAYER3: packet being lost
EVENT time: 10486.927734,  type: 2, fromlayer3  entity: 1
  B_input: got packet39: nnnnnnnnnnnnnnnnnnnn
  B_input: send ACK (ack=39)
EVENT time: 10490.435547,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=39)
  A_input: start timer
EVENT time: 10495.469727,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=39)
          TOLAYER3: packet being lost
EVENT time: 10690.435547,  type: 0, timerinterrupt    entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 40 41
          TOLAYER3: packet being corrupted
EVENT time: 10695.579102,  type: 2, fromlayer3  entity: 1
  B_input: got packet40: oooooooooooooooooooo
  B_input: send ACK (ack=40)
EVENT time: 10698.541016,  type: 2, fromlayer3  entity: 1
  B_input: packet corrupted! send NAK (ack=40)
          TOLAYER3: packet being corrupted
EVENT time: 10701.752930,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=40)
  A_input: start timer
EVENT time: 10709.721680,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 10901.752930,  type: 0, timerinterrupt    entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 41
EVENT time: 10910.429688,  type: 2, fromlayer3  entity: 1
  B_input: got packet41: pppppppppppppppppppp
  B_input: send ACK (ack=41)
          TOLAYER3: packet being corrupted
EVENT time: 10918.375000,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
```

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EVENT time: 11101.752930,  type: 0, timerinterrupt    entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 41
          TOLAYER3: packet being lost
EVENT time: 11301.752930,  type: 0, timerinterrupt    entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 41
EVENT time: 11308.158203,  type: 2, fromlayer3  entity: 1
  B_input: not expected seq! send NAK (ack=41)
EVENT time: 11309.636719,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=41)
 send packet42 in window:: qqqqqqqqqqqqqqqqqqqq
  start timer
 send packet43 in window:: rrrrrrrrrrrrrrrrrrrr
 send packet44 in window:: ssssssssssssssssssss
 send packet45 in window:: tttttttttttttttttttt
 send packet46 in window:: uuuuuuuuuuuuuuuuuuuu
 send packet47 in window:: vvvvvvvvvvvvvvvvvvvv
 send packet48 in window:: wwwwwwwwwwwwwwwwwwww
 send packet49 in window:: xxxxxxxxxxxxxxxxxxxx
          TOLAYER3: packet being lost
EVENT time: 11317.666016,  type: 2, fromlayer3  entity: 1
  B_input: got packet42: qqqqqqqqqqqqqqqqqqqq
  B_input: send ACK (ack=42)
          TOLAYER3: packet being corrupted
EVENT time: 11320.838867,  type: 2, fromlayer3  entity: 1
  B_input: got packet43: rrrrrrrrrrrrrrrrrrrr
  B_input: send ACK (ack=43)
EVENT time: 11325.076172,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 11325.973633,  type: 2, fromlayer3  entity: 1
  B_input: got packet44: ssssssssssssssssssss
  B_input: send ACK (ack=44)
          TOLAYER3: packet being corrupted
EVENT time: 11328.736328,  type: 2, fromlayer3  entity: 1
  B_input: got packet45: tttttttttttttttttttt
  B_input: send ACK (ack=45)
EVENT time: 11330.886719,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=43)
  A_input: start timer
EVENT time: 11335.473633,  type: 2, fromlayer3  entity: 0
  A_input: packet corrupted!!
EVENT time: 11337.995117,  type: 2, fromlayer3  entity: 1
  B_input: got packet46: uuuuuuuuuuuuuuuuuuuu
  B_input: send ACK (ack=46)
EVENT time: 11341.746094,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=45)
  A_input: start timer
EVENT time: 11346.424805,  type: 2, fromlayer3  entity: 1
  B_input: got packet47: vvvvvvvvvvvvvvvvvvvv
  B_input: send ACK (ack=47)
          TOLAYER3: packet being lost
EVENT time: 11349.490234,  type: 2, fromlayer3  entity: 1
  B_input: got packet48: wwwwwwwwwwwwwwwwwwww
  B_input: send ACK (ack=48)
EVENT time: 11350.783203,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=46)
  A_input: start timer
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EVENT time: 11352.174805,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=48)
  A_input: start timer
EVENT time: 11552.174805,  type: 0, timerinterrupt   entity: 0
  A_timerinterrupt: start timer
  A_timerinterrupt: resend packet(seq): 49
EVENT time: 11561.825195,  type: 2, fromlayer3  entity: 1
  B_input: got packet49: xxxxxxxxxxxxxxxxxxx
  B_input: send ACK (ack=49)
EVENT time: 11569.905273,  type: 2, fromlayer3  entity: 0
  A_input: got ACK (ack=49)
 Simulator terminated at time 11569.905273
 after sending 50 msgs from layer5
```