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

Enter number of messages to simulate: 1000
Enter packet loss probability [enter 0.0 for no loss]:0.1
Enter packet corruption probability [0.0 for no corruption]:0.1
Enter average time between messages from sender's layer5 [> 0.0]:200
Enter window size [>0]:8
Enter retransmission timeout [> 0.0]:30
Enter trace level:3
Enter random seed: [>0]:1234
        GENERATE NEXT ARRIVAL: creating new arrival
          INSERTEVENT: time is 0.000000
          INSERTEVENT: future time will be 43.433943

EVENT time: 43.433943, type: 1, fromlayer5 entity: 0
        GENERATE NEXT ARRIVAL: creating new arrival
          INSERTEVENT: time is 43.433943
          INSERTEVENT: future time will be 67.360454

A_output at time 43.4339   CASE 1
          Message from A layer 5 aaaaaaaaaaaaaaaaaaa
          Current sender buffer size 0
          Seqno 0 expected ackno 1 checksum 214
          Find an empty space in the sender window. Send to layer3.
        TOLAYER3: seq: 0, ack 0, check: 214   TOLAYER3: scheduling arrival on other side
          INSERTEVENT: time is 43.433943
          INSERTEVENT: future time will be 45.660604
        START TIMER: starting timer at 43.433943
          INSERTEVENT: time is 43.433943
          INSERTEVENT: future time will be 73.433943
          Start timer at 43.4339 planned inter at 73.4339

EVENT time: 45.660604, type: 2, fromlayer3 entity: 1

B_input at time 45.6606   Sequence no 0 sent, received, ACKed
                                            without error
          Received seqno 0, expected seqno 0
          Pkt delivered, seqno 0, payload aaaaaaaaaaaaaaaaaaa

        TOLAYER3: seq: 0, ack 1, check: 213   TOLAYER3: scheduling arrival on other side
          INSERTEVENT: time is 45.660604
          INSERTEVENT: future time will be 47.569475
          Ack sent to layer3 by B, ackno 1

EVENT time: 47.569475, type: 2, fromlayer3 entity: 0

A_input at time 47.5695
          Checksum confirmed 255
          ACKno 1 first_unacked_no 0
        STOP TIMER: stopping timer at 47.569475
          Timer stops at 47.5695
          Number of pkt acked 1
          Window advanced by 1

EVENT time: 67.360454, type: 1, fromlayer5 entity: 0
        GENERATE NEXT ARRIVAL: creating new arrival
          INSERTEVENT: time is 67.360454
          INSERTEVENT: future time will be 83.315531

EVENT time: 99.327830, type: 2, fromlayer3 entity: 1

CASE 2

B_input at time 99.3278
    Received seqno 1, expected seqno 1
    Pkt delivered, seqno 1, payload bbbbbbbbbbbbbbbbbbbb

B receives packet no 1, but ACK loses

   TOLAYER3: packet being lost
    Ack sent to layer3 by B, ackno 2

EVENT time: 104.009186, type: 2, fromlayer3 entity: 1

B_input at time 104.009
    Received seqno 2, expected seqno 2
    Pkt delivered, seqno 2, payload cccccccccccccccccccc

B receives packet no 2, sends ACK for it

   TOLAYER3: seq: 0, ack 3, check: 173   TOLAYER3: scheduling arrival on other side
   INSERTEVENT: time is 104.009186
   INSERTEVENT: future time will be 107.678671
    Ack sent to layer3 by B, ackno 3

EVENT time: 107.678671, type: 2, fromlayer3 entity: 0

A_input at time 107.679
    Checksum confirmed 255
    ACKno 3 first_unacked_no 1

A receives ACK for packet no 2, slides window by 2

   STOP TIMER: stopping timer at 107.678671
    Timer stops at 107.679
    Number of pkt acked 2
    Window advanced by 2

EVENT time: 2271.419416, type: 1, fromlayer5 entity: 0
    GENERATE NEXT ARRIVAL: creating new arrival
     INSERTEVENT: time is 2271.419416
     INSERTEVENT: future time will be 2670.332957

CASE 3

A_output at time 2271.42

A sends packet no 12, but it loses

    Message from A layer 5 mmmmmmmmmmmmmmmmmmm
    Current sender buffer size 0
    Seqno 12 expected ackno 13 checksum 230
    Find an empty space in the sender window. Send to layer3.
   TOLAYER3: packet being lost
   START TIMER: starting timer at 2271.419416
    INSERTEVENT: time is 2271.419416
    INSERTEVENT: future time will be 2301.419416
    Start timer at 2271.42 planned inter at 2301.42

EVENT time: 2301.419416, type: 0, timerinterrupt   entity: 0

A_inter at time 2301.42

Timeout, A retransmits packet no 12

    Retransmitted packet seqno 12 payload mmmmmmmmmmmmmmmmmmm
   TOLAYER3: seq: 12, ack 0, check: 230   TOLAYER3: scheduling arrival on other side
    INSERTEVENT: time is 2301.419416
    INSERTEVENT: future time will be 2310.975555
   START TIMER: starting timer at 2301.419416
    INSERTEVENT: time is 2301.419416
    INSERTEVENT: future time will be 2331.419416
    Start timer at 2301.42 planned inter at 2331.42

EVENT time: 55087.447737, type: 1, fromlayer5 entity: 0
    GENERATE NEXT ARRIVAL: creating new arrival
      INSERTEVENT: time is 55087.447737
      INSERTEVENT: future time will be 55091.537217

CASE 4

A_output at time 55087.4
      Message from A layer 5 aaaaaaaaaaaaaaaaaaa
      Current sender buffer size 1
      Seqno 14 expected ackno 15 checksum 200
      Find an empty space in the sender window. Send to layer3.
      TOLAYER3: packet being lost

A sends packet no 14, but it loses

EVENT time: 55091.537217, type: 1, fromlayer5 entity: 0
    GENERATE NEXT ARRIVAL: creating new arrival
      INSERTEVENT: time is 55091.537217
      INSERTEVENT: future time will be 55288.967559

A_output at time 55091.5
      Message from A layer 5 bbbbbbbbbbbbbbbbbbbb
      Current sender buffer size 2
      Seqno 15 expected ackno 0 checksum 180
      Find an empty space in the sender window. Send to layer3.
      TOLAYER3: seq: 15, ack 0, check: 180   TOLAYER3: scheduling arrival on other side
      INSERTEVENT: time is 55091.537217
      INSERTEVENT: future time will be 55099.440443

A sends packet no 15

EVENT time: 55094.428114, type: 2, fromlayer3 entity: 1

B_input at time 55094.4
      Received seqno 13, expected seqno 13
      Pkt delivered, seqno 13, payload zzzzzzzzzzzzzzzzzzz

      TOLAYER3: seq: 0, ack 14, check: 237   TOLAYER3: scheduling arrival on other side
      INSERTEVENT: time is 55094.428114
      INSERTEVENT: future time will be 55099.286081
      Ack sent to layer3 by B, ackno 14

B receives packet no 13, delivers it and sends ACK for it

EVENT time: 55099.286081, type: 2, fromlayer3 entity: 0

A_input at time 55099.3
      Checksum confirmed 255
      ACKno 14 first_unacked_no 13
    STOP TIMER: stopping timer at 55099.286081
      Timer stops at 55099.3
      Number of pkt acked 1
      Window advanced by 1
    START TIMER: starting timer at 55099.286081
      INSERTEVENT: time is 55099.286081
      INSERTEVENT: future time will be 55129.286081
      Start timer at 55099.3 planned inter at 55129.3

A receives ACK for packet no 13

EVENT time: 55099.440443, type: 2, fromlayer3 entity: 1

B_input at time 55099.4
      Received seqno 15, expected seqno 14
      Append SACK 15
      TOLAYER3: seq: 0, ack 14, check: 162   TOLAYER3: scheduling arrival on other side

B receives packet no 15, sends ACK for packet no 13 with SACK for 15

INSERTEVENT: time is 55099.440443
INSERTEVENT: future time will be 55109.306955
Ack sent to layer3 by B, ackno 14

EVENT time: 55109.306955, type: 2, fromlayer3 entity: 0

A_input at time 55109.3
Checksum confirmed 255
ACKno 14 first_unacked_no 14
Receive SACK 15
Duplicated ACK recieved. Restart timer at 55109.3 planned inter at 55139.3
STOP TIMER: stopping timer at 55109.306955
Retransmitted packet seqno 14 payload aaaaaaaaaaaaaaaaaaa
TOLAYER3: seq: 14, ack 0, check: 200   TOLAYER3: packet being corrupted
TOLAYER3: scheduling arrival on other side
INSERTEVENT: time is 55109.306955
INSERTEVENT: future time will be 55118.326670
START TIMER: starting timer at 55109.306955
INSERTEVENT: time is 55109.306955
INSERTEVENT: future time will be 55139.306955

A receives duplicate ACK for packet no 13 with SACK for 15, only retransmits packet no 14

A_output at time 44977.3
    Message from A layer 5 yyyyyyyyyyyyyyyyyyyy
    Current sender buffer size 0
    Seqno 8 expected ackno 9 checksum 6
    Find an empty space in the sender window. Send to layer3.
    TOLAYER3: seq: 8, ack 0, check: 6   TOLAYER3: packet being corrupted
    TOLAYER3: scheduling arrival on other side
      INSERTEVENT: time is 44977.251503
      INSERTEVENT: future time will be 44980.578478
    START TIMER: starting timer at 44977.251503
      INSERTEVENT: time is 44977.251503
      INSERTEVENT: future time will be 45007.251503
      Start timer at 44977.3 planned inter at 45007.3

EVENT time: 44980.181280, type: 1, fromlayer5 entity: 0
    GENERATE NEXT ARRIVAL: creating new arrival
      INSERTEVENT: time is 44980.181280
      INSERTEVENT: future time will be 45356.047243

A_output at time 44980.2
    Message from A layer 5 zzzzzzzzzzzzzzzzzzzz
    Current sender buffer size 1
    Seqno 9 expected ackno 10 checksum 242
    Find an empty space in the sender window. Send to layer3.
    TOLAYER3: seq: 9, ack 0, check: 242   TOLAYER3: scheduling arrival on other side
      INSERTEVENT: time is 44980.181280
      INSERTEVENT: future time will be 44989.003265

EVENT time: 44980.578478, type: 2, fromlayer3 entity: 1

B_input at time 44980.6
    Pkt corrupted, packet checksum 6 actual 197

EVENT time: 44989.003265, type: 2, fromlayer3 entity: 1

B_input at time 44989
    Received seqno 9, expected seqno 8
    Append SACK 9
    TOLAYER3: seq: 0, ack 8, check: 243   TOLAYER3: packet being corrupted
    TOLAYER3: scheduling arrival on other side
      INSERTEVENT: time is 44989.003265
      INSERTEVENT: future time will be 44992.343425
      Ack sent to layer3 by B, ackno 8

EVENT time: 44992.343425, type: 2, fromlayer3 entity: 0

A_input at time 44992.3
    Pkt corrupted, packet checksum 243 actual 209

EVENT time: 45007.251503, type: 0, timerinterrupt   entity: 0

A_inter at time 45007.3
    Retransmitted packet seqno 8 payload yyyyyyyyyyyyyyyyyyyy
    TOLAYER3: seq: 8, ack 0, check: 6   TOLAYER3: scheduling arrival on other side
      INSERTEVENT: time is 45007.251503
      INSERTEVENT: future time will be 45009.987396
    Retransmitted packet seqno 9 payload zzzzzzzzzzzzzzzzzzzz
    TOLAYER3: seq: 9, ack 0, check: 242   TOLAYER3: scheduling arrival on other side

CASE 5

A sends packet no 8, but it corrupts

A sends packet no 9

B receives corrupted packet

B receives packet no 9, sends ACK for packet no 7 and SACK packet no 9, but it corrupts

A receives corrupted packet

Timeout, A retransmits packet no 8 and 9 as GBN

INSERTEVENT: time is 45007.251503
INSERTEVENT: future time will be 45018.689322
START TIMER: starting timer at 45007.251503
INSERTEVENT: time is 45007.251503
INSERTEVENT: future time will be 45037.251503
Start timer at 45007.3 planned inter at 45037.3

EVENT time: 45009.987396, type: 2, fromlayer3 entity: 1

B_input at time 45010
Received seqno 8, expected seqno 8
Pkt delivered, seqno 8, payload yyyyyyyyyyyyyyyyyyyy

Pkt delivered, seqno 9, payload zzzzzzzzzzzzzzzzzzzz

B receives packet no 8, delivers it with buffered packet no 9, sends ACK for packet no 9

TOLAYER3: seq: 0, ack 10, check: 4   TOLAYER3: scheduling arrival on other side
INSERTEVENT: time is 45009.987396
INSERTEVENT: future time will be 45016.940519
Ack sent to layer3 by B, ackno 10

EVENT time: 45016.940519, type: 2, fromlayer3 entity: 0

A_input at time 45016.9
Checksum confirmed 255
ACKno 10 first_unacked_no 8
STOP TIMER: stopping timer at 45016.940519
Timer stops at 45016.9
Number of pkt acked 2
Window advanced by 2

A receives ACK for packet no 9, slides window by 2