COMPILATION INSTRUCTIONS:

To compile: javac Project.java

To run: java Project

TESTING

Test #1 (Base)

-- * Network Simulator v1.0 * --
Enter number of messages to simulate (> 0): [10] 10

Enter packet loss probability (0.0 for no loss): [0
.0] 0.0
Enter packet corruption probability (0.0 for no cor
ruption): [0.0] 0.0
Enter average time between messages from sender's l
ayer 5 (> 0.0): [1000] 1000
Enter window size (> 0): [8] 8
Enter retransmission timeout (>0.0) [15.0] 15.0
Enter trace level (>= 0): [0] 0
Enter random seed: [0] 2233
aOutput recieved: seqnum: 1 acknum: -1 checksum:
1542361408 payload: aaaaaaaa
aaaaaaaaaaaa
Time sent: 949574296150689
aOutput sent: seqnum: 1 acknum: -1 checksum: 1542
361408 payload: aaaaaaaaaaaa
aaaaaaaa
bInput recieved: seqnum: 1 acknum: -1 checksum: 1
542361408 payload: aaaaaaaaa
aaaaaaaaaaaa
Next seqno = 2
bSeq = 1
Expected checksum: 1542361408
New ackPkt: seqnum: 1 acknum: 1 checksum: 2 payl
oad:
New bSeq: 2
Time ackd: 9.49574301132517E14
aInput: seqnum: 1 acknum: 1 checksum: 2 payload:

aOutput recieved: seqnum: 2 acknum: -1 checksum:
-168580479 payload: bbbbbbbb
bbbbbbbbbbbb
Time sent: 949574305842357
aOutput sent: seqnum: 2 acknum: -1 checksum: -168
580479 payload: bbbbbbbbbbbb
bbbbbbbb
bInput recieved: seqnum: 2 acknum: -1 checksum: -
168580479 payload: bbbbbbbbb
bbbbbbbbbbb
Next seqno = 3
bSeq = 2
Expected checksum: -168580479
New ackPkt: seqnum: 2 acknum: 2 checksum: 4 payl
oad:
New bSeq: 3
aTimerInterrupt: seqnum: 2 acknum: -1 checksum: -
168580479 payload: bbbbbbbbb
bbbbbbbbbbb
Time ackd: 9.49574311334604E14
aInput: seqnum: 2 acknum: 2 checksum: 4 payload:

bInput recieved: seqnum: 2 acknum: -1 checksum: -
168580479 payload: bbbbbbbbb
bbbbbbbbbbb
Next seqno = 3
bSeq = 3
Expected checksum: -168580479
Last ackPkt: seqnum: 2 acknum: 2 checksum: 4 pay
load:
Time ackd: 9.49574315491391E14
aInput: seqnum: 2 acknum: 2 checksum: 4 payload:

stopTimer: Warning: Unable to cancel your timer
aOutput recieved: seqnum: 3 acknum: -1 checksum:
-1879522366 payload: ccccccc
ccccccccccccc
Time sent: 949574317961777
aOutput sent: seqnum: 3 acknum: -1 checksum: -187
9522366 payload: ccccccccccc
ccccccccc
bInput recieved: seqnum: 3 acknum: -1 checksum: -

1879522366 payload: cccccccc
ccccccccccc
Next seqno = 4
bSeq = 3
Expected checksum: -1879522366
New ackPkt: seqnum: 3 acknum: 3 checksum: 6 payl
oad:
New bSeq: 4
Time ackd: 9.49574322884786E14
aInput: seqnum: 3 acknum: 3 checksum: 6 payload:

aOutput recieved: seqnum: 4 acknum: -1 checksum:
704503043 payload: dddddddd
dddddddddd
Time sent: 949574324821066
aOutput sent: seqnum: 4 acknum: -1 checksum: 7045
03043 payload: dddddddddddd
dddddddd
bInput recieved: seqnum: 4 acknum: -1 checksum: 7
04503043 payload: ddddddddd
dddddddddd
Next seqno = 5
bSeq = 4
Expected checksum: 704503043
New ackPkt: seqnum: 4 acknum: 4 checksum: 8 payl
oad:
New bSeq: 5
Time ackd: 9.49574329547881E14
aInput: seqnum: 4 acknum: 4 checksum: 8 payload:

aOutput recieved: seqnum: 5 acknum: -1 checksum:
-1006438844 payload: eeeeeee
eeeeeeeeeeee
Time sent: 949574331537454
aOutput sent: seqnum: 5 acknum: -1 checksum: -100
6438844 payload: eeeeeeeeee
eeeeeeee
bInput recieved: seqnum: 5 acknum: -1 checksum: -
1006438844 payload: eeeeeee
eeeeeeeeeee
Next seqno = 6
bSeq = 5

Expected checksum: -1006438844
New ackPkt: seqnum: 5 acknum: 5 checksum: 10 pay
load:
New bSeq: 6
Time ackd: 9.49574336285998E14
aInput: seqnum: 5 acknum: 5 checksum: 10 payload
:
aOutput recieved: seqnum: 6 acknum: -1 checksum:
1577586565 payload: ffffffff
ffffffffffff
Time sent: 949574338286606
aOutput sent: seqnum: 6 acknum: -1 checksum: 1577
586565 payload: fffffffffff
ffffffff
bInput recieved: seqnum: 6 acknum: -1 checksum: 1
577586565 payload: ffffffff
ffffffffffff
Next seqno = 7
bSeq = 6
Expected checksum: 1577586565
New ackPkt: seqnum: 6 acknum: 6 checksum: 12 pay
load:
New bSeq: 7
Time ackd: 9.49574342822359E14
aInput: seqnum: 6 acknum: 6 checksum: 12 payload
:
aOutput recieved: seqnum: 7 acknum: -1 checksum:
-133355322 payload: gggggggg
gggggggggg
Time sent: 949574344677320
aOutput sent: seqnum: 7 acknum: -1 checksum: -133
355322 payload: gggggggggg
gggggggg
bInput recieved: seqnum: 7 acknum: -1 checksum: -
133355322 payload: gggggggg
gggggggggg
Next seqno = 8
bSeq = 7
Expected checksum: -133355322
New ackPkt: seqnum: 7 acknum: 7 checksum: 14 pay
load:
New bSeq: 8

Time ackd: 9.49574349435715E14
aInput: seqnum: 7 acknum: 7 checksum: 14 payload
:
aOutput recieved: seqnum: 8 acknum: -1 checksum:
-1844297209 payload: hhhhhhh
hhhhhhhhhhhhh
Time sent: 949574351255148
aOutput sent: seqnum: 8 acknum: -1 checksum: -184
4297209 payload: hhhhhhhhhhh
hhhhhhhhh
bInput recieved: seqnum: 8 acknum: -1 checksum: -
1844297209 payload: hhhhhhhh
hhhhhhhhhhhh
Next seqno = 9
bSeq = 8
Expected checksum: -1844297209
New ackPkt: seqnum: 8 acknum: 8 checksum: 16 pay
load:
New bSeq: 9
Time ackd: 9.49574355884852E14
aInput: seqnum: 8 acknum: 8 checksum: 16 payload
:
aOutput recieved: seqnum: 9 acknum: -1 checksum:
739728200 payload: iiiiiiiii
iiiiiiiiii
Wrap around
Time sent: 949574358245891
aOutput sent: seqnum: 9 acknum: -1 checksum: 7397
28200 payload: iiiiiiiiiiii
iiiiiii
bInput recieved: seqnum: 9 acknum: -1 checksum: 7
39728200 payload: iiiiiiiii
iiiiiiiii
Next seqno = 10
bSeq = 9
Expected checksum: 739728200
New ackPkt: seqnum: 9 acknum: 9 checksum: 18 pay
load:
New bSeq: 10
Time ackd: 9.49574362795855E14
aInput: seqnum: 9 acknum: 9 checksum: 18 payload
:

aOutput recieved: seqnum: 10 acknum: -1 checksum:
 -971213687 payload: jjjjjjj
jjjjjjjjjjjjj
Wrap around
Time sent: 949574365165183
aOutput sent: seqnum: 10 acknum: -1 checksum: -97
1213687 payload: jjjjjjjjjjj
jjjjjjjjj
bInput recieved: seqnum: 10 acknum: -1 checksum:
-971213687 payload: jjjjjjj
jjjjjjjjjjjjj
Next seqno = 11
bSeq = 10
Expected checksum: -971213687
New ackPkt: seqnum: 10 acknum: 10 checksum: 20 p
ayload:
New bSeq: 11
Time ackd: 9.49574369502768E14
aInput: seqnum: 10 acknum: 10 checksum: 20 paylo
ad:
Simulator terminated at time 9458.906826990571
Sent packets: 21
Retransmitted packets: 1
Received packets: 22
Lost packets: -1
Corrupt packets: 0
Average RTT: 49419.07816968542 ms

Test #2 (Recommended) (Not all information could be
 shown)

Messages: 20
Window Size: 8
Retransmission timeout: 20
Seed: 2233
Loss probability: 0.2
Corruption probability: 0.2
Trace level: 2
Mean arrival time: 10

bInput recieved: seqnum: 9 acknum: -1 checksum: 7
39728200 payload: iiiiiiiii
iiiiiiiii
Next seqno = 14
bSeq = 6
Expected checksum: 739728200
Last ackPkt: seqnum: 5 acknum: 5 checksum: 10 pa
yload:

EVENT time: 123.30048524430066 type: 2 entity: 1
bInput recieved: seqnum: 5 acknum: -1 checksum: -
1006438844 payload: eeeeeeee
eeeeeeeeeeee
Next seqno = 14
bSeq = 6
Expected checksum: -1006438844
Last ackPkt: seqnum: 5 acknum: 5 checksum: 10 pa
yload:

EVENT time: 123.40986358226263 type: 2 entity: 0
Time ackd: 9.4973941956816E14
aInput: seqnum: 5 acknum: 5 checksum: 10 payload
:
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 124.39551988280891 type: 2 entity: 1
bInput recieved: seqnum: 6 acknum: -1 checksum: 1
577586565 payload: fffffffff
fffffffffff
Next seqno = 14
bSeq = 6
Expected checksum: 1577586565
New ackPkt: seqnum: 6 acknum: 6 checksum: 12 pay
load:
New bSeq: 7

EVENT time: 127.01852473525192 type: 2 entity: 1
bInput recieved: seqnum: 7 acknum: -1 checksum: -
133355322 payload: ?gggggggg
ggggggggggg

```
Next seqno = 14
bSeq = 7
Expected checksum: -960255506
Last ackPkt: seqnum: 6  acknum: 6  checksum: 12  pa
yload:
toLayer3: packet being corrupted

EVENT time: 128.47547837763602  type: 2  entity: 0
Time ackd: 9.4973942625O993E14
aInput: seqnum: 5  acknum: 5  checksum: 10  payload
:
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 129.181188390759  type: 0  entity: 0
aTimerInterrupt: seqnum: 6  acknum: -1  checksum: 1
577586565  payload: ffffffff
ffffffffffff
aTimerInterrupt: seqnum: 7  acknum: -1  checksum: -
133355322  payload: ggggggggg
gggggggggggg
toLayer3: packet being corrupted
aTimerInterrupt: seqnum: 8  acknum: -1  checksum: -
1844297209  payload: hhhhhhhh
hhhhhhhhhhhh
aTimerInterrupt: seqnum: 9  acknum: -1  checksum: 7
39728200  payload: iiiiiiiiii
iiiiiiiiii
Next seqno = 14
aTimerInterrupt: seqnum: 10  acknum: -1  checksum:
-971213687  payload: jjjjjjjj
jjjjjjjjjjjj
Next seqno = 14
aTimerInterrupt: seqnum: 11  acknum: -1  checksum:
1612811722  payload: kkkkkkkk
kkkkkkkkkkkk
Next seqno = 14
toLayer3: packet being lost
aTimerInterrupt: seqnum: 12  acknum: -1  checksum:
-98130165  payload: llllllll
llllllllllll
Next seqno = 14
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aTimerInterrupt: seqnum: 13 acknum: -1 checksum:
-1809072052 payload: mmmmmmmm
mmmmmmmmmmmmmm
Next seqno = 14
toLayer3: packet being corrupted

EVENT time: 129.61638233588673 type: 1 entity: 0

EVENT time: 130.2945036164434 type: 1 entity: 0

EVENT time: 131.5045930356761 type: 2 entity: 1
bInput recieved: seqnum: 8 acknum: -1 checksum: -
1844297209 payload: hhhhhhhh
hhhhhhhhhhhh
Next seqno = 14
bSeq = 7
Expected checksum: -1844297209
Last ackPkt: seqnum: 6 acknum: 6 checksum: 12 pa
yload:

EVENT time: 136.91344950712605 type: 2 entity: 0
Time ackd: 9.49739436841521E14
aInput: seqnum: 5 acknum: 5 checksum: 10 payload
:
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 140.31473738822592 type: 2 entity: 1
bInput recieved: seqnum: 9 acknum: -1 checksum: 7
39728200 payload: iiiiiiiiii
iiiiiiiiii
Next seqno = 14
bSeq = 7
Expected checksum: 739728200
Last ackPkt: seqnum: 6 acknum: 6 checksum: 12 pa
yload:

EVENT time: 142.3581041901913 type: 2 entity: 0
Time ackd: 9.4973944088896E14
aInput: seqnum: 6 acknum: 6 checksum: 12 payload
:
startTimer: Warning: Attempting to start a timer th

at is already running

EVENT time: 146.966277047029 type: 2 entity: 1
bInput recieved: seqnum: 10 acknum: -1 checksum:
-971213687 payload: jjjjjjjj
jjjjjjjjjjjj
Next seqno = 14
bSeq = 7
Expected checksum: -971213687
Last ackPkt: seqnum: 6 acknum: 6 checksum: 12 pa
yload:
toLayer3: packet being lost

EVENT time: 149.181188390759 type: 0 entity: 0
aTimerInterrupt: seqnum: 7 acknum: -1 checksum: -
133355322 payload: ggggggggg
gggggggggggg
aTimerInterrupt: seqnum: 8 acknum: -1 checksum: -
1844297209 payload: hhhhhhhh
hhhhhhhhhhhh
aTimerInterrupt: seqnum: 9 acknum: -1 checksum: 7
39728200 payload: iiiiiiiii
iiiiiiiii
Next seqno = 14
aTimerInterrupt: seqnum: 10 acknum: -1 checksum:
-971213687 payload: jjjjjjjj
jjjjjjjjjjjj
Next seqno = 14
aTimerInterrupt: seqnum: 11 acknum: -1 checksum:
1612811722 payload: kkkkkkkk
kkkkkkkkkkkk
Next seqno = 14
aTimerInterrupt: seqnum: 12 acknum: -1 checksum:
-98130165 payload: llllllll
llllllllllll
Next seqno = 14
aTimerInterrupt: seqnum: 13 acknum: -1 checksum:
-1809072052 payload: mmmmmmmm
mmmmmmmmmmmmmm
Next seqno = 14
toLayer3: packet being corrupted

EVENT time: 149.75249488814967 type: 1 entity: 0
aOutput recieved: seqnum: 14 acknum: -1 checksum:
 -62905011 payload: qqqqqqqq
qqqqqqqqqqqq
Wrap around
toLayer3: packet being lost
Time sent: 949739452421772
aOutput sent: seqnum: 14 acknum: -1 checksum: -62
905011 payload: qqqqqqqqqqqq
qqqqqqqq

EVENT time: 151.6077150791955 type: 2 entity: 0
Time ackd: 9.49739454046984E14
aInput: seqnum: 6 acknum: 999999 checksum: 12 pa
yload:

EVENT time: 155.1044343394268 type: 2 entity: 0
Time ackd: 9.49739455527716E14
aInput: seqnum: 6 acknum: 6 checksum: 12 payload
:
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 155.9634693441572 type: 2 entity: 1
bInput recieved: seqnum: 11 acknum: -1 checksum:
1612811722 payload: kkkkkkkk
kkkkkkkkkkkk
Next seqno = 15
bSeq = 7
Expected checksum: 1612811722
Last ackPkt: seqnum: 6 acknum: 6 checksum: 12 pa
yload:
toLayer3: packet being corrupted

EVENT time: 157.10779137546916 type: 2 entity: 0
Time ackd: 9.49739460577836E14
aInput: seqnum: 6 acknum: 6 checksum: 12 payload
:
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 160.5374309518723 type: 2 entity: 1

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bInput recieved: seqnum: 12  acknum: -1  checksum:
-98130165  payload: llllllllll
llllllllll
Next seqno = 15
bSeq = 7
Expected checksum: -98130165
Last ackPkt: seqnum: 6  acknum: 6  checksum: 12  pa
yload:
toLayer3: packet being corrupted

EVENT time: 162.2959074678792  type: 2  entity: 0
Time ackd: 9.49739465329915E14
aInput: seqnum: 6  acknum: 6  checksum: 12  payload
: ?
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 163.64116336558115  type: 2  entity: 0
Time ackd: 9.49739467167507E14
aInput: seqnum: 6  acknum: 6  checksum: 12  payload
: ?
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 163.75988036744286  type: 1  entity: 0

EVENT time: 169.181188390759  type: 0  entity: 0
aTimerInterrupt: seqnum: 7  acknum: -1  checksum: -
133355322  payload: gggggggg
gggggggggggg
toLayer3: packet being lost
aTimerInterrupt: seqnum: 8  acknum: -1  checksum: -
1844297209  payload: hhhhhhhh
hhhhhhhhhhhh
aTimerInterrupt: seqnum: 9  acknum: -1  checksum: 7
39728200  payload: iiiiiiiii
iiiiiiiii
Next seqno = 15
toLayer3: packet being lost
aTimerInterrupt: seqnum: 10  acknum: -1  checksum:
-971213687  payload: jjjjjjjj
jjjjjjjjjjjj
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Next seqno = 15
toLayer3: packet being corrupted
aTimerInterrupt: seqnum: 11 acknum: -1 checksum:
1612811722 payload: kkkkkkkk
kkkkkkkkkkkk
Next seqno = 15
toLayer3: packet being lost
aTimerInterrupt: seqnum: 12 acknum: -1 checksum:
-98130165 payload: lllllllll
llllllllllll
Next seqno = 15
aTimerInterrupt: seqnum: 13 acknum: -1 checksum:
-1809072052 payload: mmmmmmmm
mmmmmmmmmmmmmm
Next seqno = 15
aTimerInterrupt: seqnum: 14 acknum: -1 checksum:
-62905011 payload: qqqqqqqqq
qqqqqqqqqqq
Next seqno = 15

EVENT time: 170.25836970122378 type: 2 entity: 1
bInput recieved: seqnum: 5 acknum: -1 checksum: -
1006438844 payload: eeeeeeee
eeeeeeeeeeee
Next seqno = 15
bSeq = 7
Expected checksum: -1006438844
Last ackPkt: seqnum: 6 acknum: 6 checksum: 12 pa
yload:

EVENT time: 176.38227484969633 type: 2 entity: 0
Time ackd: 9.49739479787873E14
aInput: seqnum: 6 acknum: 6 checksum: 12 payload
:
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 179.7126071962645 type: 2 entity: 1
bInput recieved: seqnum: 7 acknum: -1 checksum: -
133355322 payload: ggggggggg
ggggggggggg
Next seqno = 15

bSeq = 7
Expected checksum: -133355322
New ackPkt: seqnum: 7 acknum: 7 checksum: 14 pay
load:
toLayer3: packet being corrupted
New bSeq: 8

EVENT time: 179.7424237800226 type: 1 entity: 0

EVENT time: 184.223761711478 type: 1 entity: 0

EVENT time: 185.6920377208777 type: 2 entity: 1
bInput recieved: seqnum: 8 acknum: -1 checksum: -
1844297209 payload: hhhhhhhh
hhhhhhhhhhhh
Next seqno = 15
bSeq = 8
Expected checksum: -1844297209
New ackPkt: seqnum: 8 acknum: 8 checksum: 16 pay
load:
New bSeq: 9

EVENT time: 187.46198919644763 type: 2 entity: 0
Time ackd: 9.49739488374222E14
aInput: seqnum: 7 acknum: 7 checksum: 14 payload
: ?
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 187.71050141911067 type: 2 entity: 1
bInput recieved: seqnum: 10 acknum: -1 checksum:
-971213687 payload: jjjjjjjj
jjjjjjjjjjjj
Next seqno = 15
bSeq = 9
Expected checksum: -971213687
Last ackPkt: seqnum: 8 acknum: 8 checksum: 16 pa
yload:

EVENT time: 189.181188390759 type: 0 entity: 0
aTimerInterrupt: seqnum: 8 acknum: -1 checksum: -
1844297209 payload: hhhhhhhh

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hhhhhhhhhhh
aTimerInterrupt: seqnum: 9  acknum: -1  checksum: 7
39728200  payload: iiiiiiiiii
iiiiiiiiii
Next seqno = 15
toLayer3: packet being lost
aTimerInterrupt: seqnum: 10  acknum: -1  checksum:
-971213687  payload: jjjjjjjj
jjjjjjjjjjjj
Next seqno = 15
aTimerInterrupt: seqnum: 11  acknum: -1  checksum:
1612811722  payload: kkkkkkkk
kkkkkkkkkkkk
Next seqno = 15
aTimerInterrupt: seqnum: 12  acknum: -1  checksum:
-98130165  payload: llllllllll
llllllllllll
Next seqno = 15
toLayer3: packet being lost
aTimerInterrupt: seqnum: 13  acknum: -1  checksum:
-1809072052  payload: mmmmmmmm
mmmmmmmmmmmmmm
Next seqno = 15
aTimerInterrupt: seqnum: 14  acknum: -1  checksum:
-62905011  payload: qqqqqqqqq
qqqqqqqqqqq
Next seqno = 15
toLayer3: packet being lost

EVENT time: 191.41959898678547  type: 2  entity: 0
Time ackd: 9.49739497654159E14
aInput: seqnum: 8  acknum: 8  checksum: 16  payload
:
startTimer: Warning: Attempting to start a timer th
at is already running

EVENT time: 195.22751548814355  type: 1  entity: 0
Simulator terminated at time 195.22751548814355
Sent packets: 77
Retransmitted packets: 55
Received packets: 53
Lost packets: 24
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Corrupt packets: 5
Average RTT: -6.337631024281386E12 ms
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