Relazione secondo assegnamento

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1 Prima richiesta

L'esercizio si divide tra lato mandante (A) e lato ricevitore (B).

Inizialmente sia il lato mandante che il lato ricevitore chiamano rispettivamente la funzione A_init() e B_init() per inizializzare le variabili necessarie al corretto scambio di pacchetti.

Quando il lato A vuole spedire un messaggio al lato B, il livello 5 chiama la funzione A_output() per inviare i dati al livello 3. Tale funzione manda il pacchetto al livello 3 attraverso la funzione tolayer3() e richiama la funzione starttimer(), la quale aziona il countdown timer. A questo punto il lato A rimane in attesa di ricevere l'ack per il pacchetto inviato.

L'ack viene ricevuto tramite la funzione A_input(), che provvede a verificarne la corretta ricezione e, in caso affermativo, interrompe e resetta il countdown timer. Allo scadere del timer, nel caso in cui non sia stato ricevuto alcun ack per il pacchetto inviato, viene richiamata la funzione A_timerinterrupt() che provvederà a resettare il timer e rispedire il pacchetto verso il livello 3.

Quando un pacchetto viene ricevuto a lato ricevitore, il livello 3 chiama la funzione B_input(). Tale funzione effettua i controlli per verificarne la corretta ricezione del pacchetto, in caso affermativo, invia il pacchetto al livello 5 e provvede alla trasmissione dell'ack richiamando la funzione send_ack().

A-side (sender)   B-side (receiver)
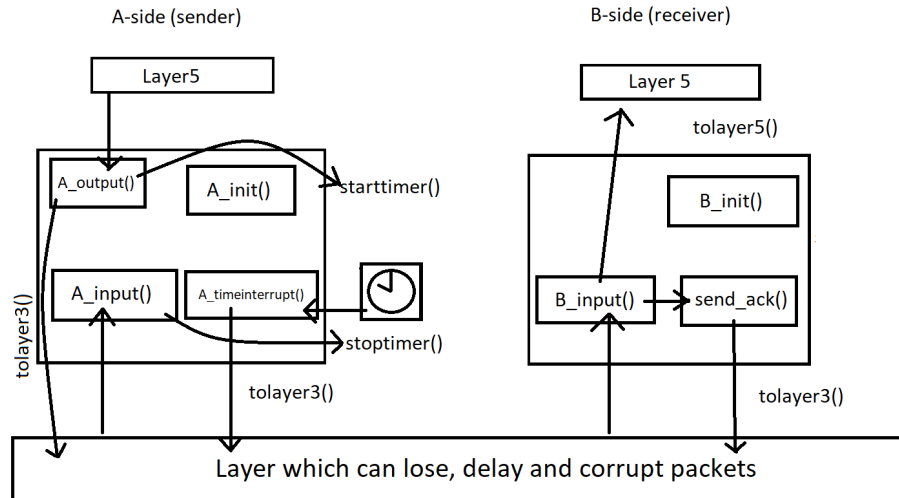
2 Seconda Richiesta

2.1 Premessa

La consegna dell'esercizio richiedeva di implementare una soluzione del simulatore utilizzando il protocollo stop and wait. Tale protocollo solitamente non necessita di alcun buffer di memorizzazione, ma in questo caso ci è sembrato giusto utilizzare una coda di messaggi non ancora inviati poichè il simulatore una volta passati i messaggi alla funzione "A_output()" non si preoccupa più di riinviare i suddetti nel caso in cui dovessero essere scartati.

2.1.1 Strutture utilizzate

Per separare gli stati veri e propri dei due lati (mandante, ricevitore), sono state utilizzate due strutture "senderSide" e "receiverSide" contenenti le variabili utili a descrivere le informazioni necessarie per l'implementazione del protocollo stop and wait.

Le variabili contenute in tali strutture vengono inizializzate al momento della chiamata delle funzioni "A_init()" e "B_init()".

Per fare in modo che i messaggi non vengano persi al momento della chiamata della funzione "A_output()", abbiamo utilizzato una coda nella quale i suddetti vengono inseriti al momento della chiamata della funzione stessa. Il prossimo messaggio da inviare verrà dunque preso dalla testa della coda, ad ogni chiamata della funzione.

2.1.2 Descrizione delle routine

A_init():

provvede all'inizializzazione delle variabili della struttura senderSide.

B_init():

provvede all'inizializzazione delle variabili della struttura receiverSide.

A_output(message):

prende come argomento il messaggio che si vuole inviare e lo aggiunge alla coda. Successivamente, solo se il lato mandante non è già in attesa di ricevere l'ack per un pacchetto spedito, prende il primo messaggio in testa alla coda e crea un nuovo pacchetto inizializzandone il sequence number, il payload e il valore di checksum. Una volta creato il pacchetto richiama la funzione tolayer3() e la funzione starttimer() per provvedere all'invio di tale pacchetto e per azionare il countdown timer.

A_input(packet):

prende come argomento il pacchetto ricevuto e viene chiamata dal livello 3 al momento della ricezione. Inizialmente controlla che il lato A sia effettivamente in stato di attesa dell'ack, in caso affermativo procede con i controlli di checksum e verifica che tale pacchetto abbia il sequence number atteso. Se tutti i controlli sono andati a buon fine, richiama la funzione stoptimer() per fermare il timer precedentemente attivato ed aggiorna il sequence number che verrà assegnato al prossimo pacchetto inviato dalla funzione A_output().

A_timerinterrupt():

viene richiamata al momento in cui il countdown timer scade. La routine controlla che il lato A stia effettivamente attendendo un ack e, in caso affermativo, procede ad un nuovo invio dell'ultimo pacchetto che non ha ricevuto l'ack, azionando nuovamente il timer.

B_input(packet):
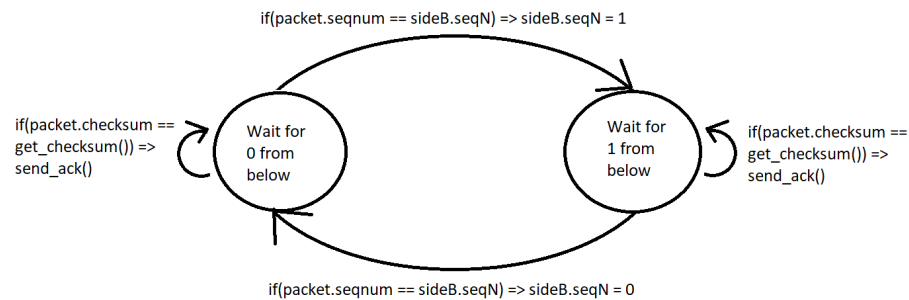
prende come argomento il pacchetto ricevuto e viene chiamata dal livello 3 al momento della ricezione dello stesso. Effettua il controllo sul checksum del pacchetto e nel caso in cui il pacchetto non sia corrotto, provvede all'invio dell'ack attraverso la funzione send_ack().

Tale funzione crea il pacchetto da inviare inizializzandone acknum e checksum e richiama la funzione "tolayer3()".

La routine aggiorna il sequence number atteso dal lato B solo se il sequence number dell'ultimo pacchetto ricevuto corrisponde con quello atteso.

2.1.3   Modello a stati finiti

Descrizione del comportamento del lato ricevente attraverso una macchina a stati finiti.

if(packet.seqnum == sideB.seqN) => sideB.seqN = 1

if(packet.checksum == get_checksum()) => send_ack()

Wait for 0 from below

Wait for 1 from below

if(packet.checksum == get_checksum()) => send_ack()

if(packet.seqnum == sideB.seqN) => sideB.seqN = 0

2.1.4   Test comportamentali

Caso 1:
La probabilità di corruzione e di perdita dei pacchetti è nulla.

Il lato A invia un pacchetto al lato B e si mette in attesa di riceverne l'ack, non permettendo l'invio di nessun altro pacchetto, ma mettendo in coda tutti i messaggi che arrivano alla funzione A_output().

Il lato B ricevuto il pacchetto, invia l'ack al lato A e aggiorna il sequence number atteso.

Il lato A ricevuto il pacchetto cambia il proprio stato da "in attesa dell'ack" a "in attesa di un messaggio dal layer 5" ed aggiorna il sequence number che sarà assegnato al prossimo pacchetto da inviare (i successivi pacchetti da inviare vengono presi dalla testa della coda).

```
----- * ARQ Network Simulator Version 1.1 * ------

Enter number of messages to simulate: 40
Enter packet loss probability [enter 0.0 for no loss]:0.0
Enter packet corruption probability [0.0 for no corruption]:0.0
Enter average time between messages from sender's layer5 [ > 0.0]:10
Enter window size [>0]:1
Enter retransmission timeout [> 0.0]:20
Enter trace level:2
Enter random seed: [>0]:2233

EVENT time: 9.181188,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> aaaaaaaaaaaaaaaaaaaa

A_output: packet with snum 0 send -> aaaaaaaaaaaaaaaaaaaa


EVENT time: 11.710562,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> bbbbbbbbbbbbbbbbbbbb


EVENT time: 14.562120,  type: 2, fromlayer3  entity: 1
B_input: recv message: aaaaaaaaaaaaaaaaaaaa

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 17.071139,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 29.176305,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> cccccccccccccccccccc

A_output: packet with snum 1 send -> bbbbbbbbbbbbbbbbbbbb


EVENT time: 31.216773,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> dddddddddddddddddddd


EVENT time: 38.104831,  type: 2, fromlayer3  entity: 1
B_input: recv message: bbbbbbbbbbbbbbbbbbbb

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 46.134831,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> eeeeeeeeeeeeeeeeeeee


EVENT time: 46.495560,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 55.994751,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> ffffffffffffffffffff

A_output: packet with snum 0 send -> cccccccccccccccccccc
```

```
EVENT time: 58.933073,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> ggggggggggggggggggg


EVENT time: 60.843379,  type: 2, fromlayer3  entity: 1
B_input: recv message: ccccccccccccccccccc

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 69.073428,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 76.968902,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> hhhhhhhhhhhhhhhhhhh

A_output: packet with snum 1 send -> ddddddddddddddddddd


EVENT time: 78.770104,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> iiiiiiiiiiiiiiiiiii


EVENT time: 83.117527,  type: 2, fromlayer3  entity: 1
B_input: recv message: ddddddddddddddddddd

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 85.464492,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 91.162450,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> jjjjjjjjjjjjjjjjjjj

A_output: packet with snum 0 send -> eeeeeeeeeeeeeeeeeee


EVENT time: 94.589068,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> kkkkkkkkkkkkkkkkkkk


EVENT time: 95.220038,  type: 2, fromlayer3  entity: 1
B_input: recv message: eeeeeeeeeeeeeeeeeee

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 99.421278,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 102.116153,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> lllllllllllllllllll

A_output: packet with snum 1 send -> fffffffffffffffffff
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EVENT time: 108.433149,  type: 2, fromlayer3  entity: 1
B_input: recv message: ffffffffffffffffffff

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 112.803125,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> mmmmmmmmmmmmmmmmmmmm


EVENT time: 113.973388,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 116.520280,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> nnnnnnnnnnnnnnnnnnnn

A_output: packet with snum 0 send -> gggggggggggggggggggg


EVENT time: 124.210608,  type: 2, fromlayer3  entity: 1
B_input: recv message: gggggggggggggggggggg

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 128.147893,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 129.616382,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> oooooooooooooooooooo

A_output: packet with snum 1 send -> hhhhhhhhhhhhhhhhhhhh


EVENT time: 130.294504,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> pppppppppppppppppppp


EVENT time: 133.628101,  type: 2, fromlayer3  entity: 1
B_input: recv message: hhhhhhhhhhhhhhhhhhhh

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 139.356761,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 149.752495,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> qqqqqqqqqqqqqqqqqqqq

A_output: packet with snum 0 send -> iiiiiiiiiiiiiiiiiiii
```

```
EVENT time: 155.510269,  type: 2, fromlayer3   entity: 1
B_input: recv message: iiiiiiiiiiiiiiiiiiii

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 160.039735,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 163.759880,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> rrrrrrrrrrrrrrrrrrrr

A_output: packet with snum 1 send -> jjjjjjjjjjjjjjjjjjjj


EVENT time: 168.403882,  type: 2, fromlayer3   entity: 1
B_input: recv message: jjjjjjjjjjjjjjjjjjjj

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 175.762688,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 179.742424,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> ssssssssssssssssssss

A_output: packet with snum 0 send -> kkkkkkkkkkkkkkkkkkkk


EVENT time: 184.223762,  type: 1, fromlayer5   entity: 0
A_output: a packet is not yet acked. Message enqueued -> tttttttttttttttttttt


EVENT time: 189.248573,  type: 2, fromlayer3   entity: 1
B_input: recv message: kkkkkkkkkkkkkkkkkkkk

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 191.028901,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 195.227515,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> uuuuuuuuuuuuuuuuuuuu

A_output: packet with snum 1 send -> llllllllllllllllllll


EVENT time: 200.318949,  type: 2, fromlayer3   entity: 1
B_input: recv message: llllllllllllllllllll

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 200.884426,  type: 1, fromlayer5   entity: 0
A_output: a packet is not yet acked. Message enqueued -> vvvvvvvvvvvvvvvvvvvv
```

```
EVENT time: 202.606311,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 213.113193,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> wwwwwwwwwwwwwwwwwww

A_output: packet with snum 0 send -> mmmmmmmmmmmmmmmmmmm


EVENT time: 214.848201,  type: 2, fromlayer3  entity: 1
B_input: recv message: mmmmmmmmmmmmmmmmmmm

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 224.106052,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 232.038331,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> xxxxxxxxxxxxxxxxxxx

A_output: packet with snum 1 send -> nnnnnnnnnnnnnnnnnnn


EVENT time: 237.639821,  type: 2, fromlayer3  entity: 1
B_input: recv message: nnnnnnnnnnnnnnnnnnn

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 238.734855,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 238.976409,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> yyyyyyyyyyyyyyyyyyy

A_output: packet with snum 0 send -> ooooooooooooooooooo


EVENT time: 241.599414,  type: 2, fromlayer3  entity: 1
B_input: recv message: ooooooooooooooooooo

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 246.085482,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 253.799860,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> zzzzzzzzzzzzzzzzzzz

A_output: packet with snum 1 send -> ppppppppppppppppppp
```

```
EVENT time: 261.053499,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> aaaaaaaaaaaaaaaaaaaa


EVENT time: 262.610004,  type: 2, fromlayer3  entity: 1
B_input: recv message: pppppppppppppppppppp

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 272.572924,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 273.555101,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> bbbbbbbbbbbbbbbbbbbb

A_output: packet with snum 0 send -> qqqqqqqqqqqqqqqqqqqq


EVENT time: 280.206641,  type: 2, fromlayer3  entity: 1
B_input: recv message: qqqqqqqqqqqqqqqqqqqq

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 282.487869,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> cccccccccccccccccccc


EVENT time: 285.729545,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> dddddddddddddddddddd


EVENT time: 286.452223,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> eeeeeeeeeeeeeeeeeeee


EVENT time: 289.203833,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 302.876064,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> ffffffffffffffffffff

A_output: packet with snum 1 send -> rrrrrrrrrrrrrrrrrrrr


EVENT time: 305.095309,  type: 2, fromlayer3  entity: 1
B_input: recv message: rrrrrrrrrrrrrrrrrrrr

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 309.669271,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0
```

```
EVENT time: 322.422559,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> gggggggggggggggggggg

A_output: packet with snum 0 send -> ssssssssssssssssssss


EVENT time: 332.143498,  type: 2, fromlayer3  entity: 1
B_input: recv message: ssssssssssssssssssss

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 337.110508,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> hhhhhhhhhhhhhhhhhhhh


EVENT time: 339.312113,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> iiiiiiiiiiiiiiiiiiii


EVENT time: 341.597736,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 346.236763,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> jjjjjjjjjjjjjjjjjjjj

A_output: packet with snum 1 send -> tttttttttttttttttttt


EVENT time: 350.655232,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> kkkkkkkkkkkkkkkkkkkk


EVENT time: 351.114841,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> llllllllllllllllllll


EVENT time: 352.216193,  type: 2, fromlayer3  entity: 1
B_input: recv message: tttttttttttttttttttt

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 354.234657,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 361.475265,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> mmmmmmmmmmmmmmmmmmmm

A_output: packet with snum 0 send -> uuuuuuuuuuuuuuuuuuuu


EVENT time: 369.533097,  type: 2, fromlayer3  entity: 1
B_input: recv message: uuuuuuuuuuuuuuuuuuuu

B_input: send ACK for snum -> 0
B_input: update snum -> 1
```

```
EVENT time: 376.500137,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> nnnnnnnnnnnnnnnnnnnn


EVENT time: 377.108615,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 384.209723,  type: 1, fromlayer5  entity: 0
Simulator terminated at time 384.209723197119
```

Caso 2:

La probabilità di corruzione e perdita del pacchetto è 0.2.

Il lato A invia un pacchetto al lato B e si mette in attesa di riceverne l'ack, non permettendo l'invio di nessun altro pacchetto, ma mettendo in coda tutti i messaggi che arrivano alla funzione A_output(). In questo caso il pacchetto inviato potrebbe essere corrotto o perduto.

In entrambe le situazioni, il lato A si accorgerà della non corretta ricezione del pacchetto da parte di B solo allo scadere del countdown timer, che farà ritrasmettere tale pacchetto.

Il lato B, ricevuto il pacchetto, controlla la correttezza di tale. In caso affermativo, invia l'ack al lato A ed aggiorna il sequence number atteso solo se il sequence number del pacchetto ricevuto corrisponde con esso.

Nel caso in cui il sequence number del pacchetto non corrisponda con il sequence number atteso significa che l'ack per un pacchetto non è stato ricevuto correttamente dal lato A, perciò il lato B procede comunque alla ritrasmissione dell'ack.

Il pacchetto contenente l'ack potrebbe essere corrotto o perduto. In entrambe le situazioni il lato A allo scadere del countdown timer procederà alla ritrasmissione del pacchetto.

Il lato A ricevuto correttamente l'ack per il pacchetto cambia il proprio stato da "in attesa dell'ack" a "in attesa di un messaggio dal layer 5" ed aggiorna il sequence number che sarà assegnato al prossimo pacchetto da inviare (i successivi pacchetti da inviare vengono presi dalla testa della coda).

```
----- * ARQ Network Simulator Version 1.1 * ------

Enter number of messages to simulate: 75
Enter packet loss probability [enter 0.0 for no loss]:0.2
Enter packet corruption probability [0.0 for no corruption]:0.2
Enter average time between messages from sender's layer5 [ > 0.0]:10
Enter window size [>0]:1
Enter retransmission timeout [> 0.0]:20
Enter trace level:2
Enter random seed: [>0]:2233

EVENT time: 9.181188,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> aaaaaaaaaaaaaaaaaaaa

A_output: packet with snum 0 send -> aaaaaaaaaaaaaaaaaaaa

          TOLAYER3: packet being corrupted

EVENT time: 11.710562,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> bbbbbbbbbbbbbbbbbbbb


EVENT time: 14.562120,  type: 2, fromlayer3  entity: 1
B_input: packet corrupted.

EVENT time: 29.176305,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> cccccccccccccccccccc


EVENT time: 29.181188,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: aaaaaaaaaaaaaaaaaaaa


EVENT time: 31.216773,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> dddddddddddddddddddd


EVENT time: 31.690207,  type: 2, fromlayer3  entity: 1
B_input: recv message: aaaaaaaaaaaaaaaaaaaa

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 40.618732,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 46.134831,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> eeeeeeeeeeeeeeeeeeee

A_output: packet with snum 1 send -> bbbbbbbbbbbbbbbbbbbb


EVENT time: 54.525559,  type: 2, fromlayer3  entity: 1
B_input: recv message: bbbbbbbbbbbbbbbbbbbb

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 55.994751,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> ffffffffffffffffffff
```

```
EVENT time: 58.933073,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> gggggggggggggggggggg


EVENT time: 59.374187,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 76.968902,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> hhhhhhhhhhhhhhhhhhhh

A_output: packet with snum 0 send -> cccccccccccccccccccc

          TOLAYER3: packet being lost

EVENT time: 78.770104,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> iiiiiiiiiiiiiiiiiiii


EVENT time: 91.162450,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> jjjjjjjjjjjjjjjjjjjj


EVENT time: 94.589068,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> kkkkkkkkkkkkkkkkkkkk


EVENT time: 96.968902,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: cccccccccccccccccccc


EVENT time: 102.116153,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> llllllllllllllllllll


EVENT time: 105.198950,  type: 2, fromlayer3  entity: 1
B_input: recv message: cccccccccccccccccccc

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 111.347575,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 112.803125,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> mmmmmmmmmmmmmmmmmmmm

A_output: packet with snum 1 send -> dddddddddddddddddddd


EVENT time: 115.150090,  type: 2, fromlayer3  entity: 1
B_input: recv message: dddddddddddddddddddd

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 116.520280,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> nnnnnnnnnnnnnnnnnnnn
```

```
EVENT time: 119.207678,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 129.616382,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> oooooooooooooooooooo

A_output: packet with snum 0 send -> eeeeeeeeeeeeeeeeeeee


EVENT time: 130.294504,  type: 1, fromlayer5   entity: 0
A_output: a packet is not yet acked. Message enqueued -> pppppppppppppppppppp


EVENT time: 133.817621,  type: 2, fromlayer3   entity: 1
B_input: recv message: eeeeeeeeeeeeeeeeeeee

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 140.134617,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 149.752495,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> qqqqqqqqqqqqqqqqqqqq

A_output: packet with snum 1 send -> ffffffffffffffffffff

          TOLAYER3: packet being corrupted

EVENT time: 155.292734,  type: 2, fromlayer3   entity: 1
B_input: packet corrupted.

EVENT time: 163.759880,  type: 1, fromlayer5   entity: 0
A_output: a packet is not yet acked. Message enqueued -> rrrrrrrrrrrrrrrrrrrr


EVENT time: 169.752495,  type: 0, timerinterrupt    entity: 0
A_timerinterrupt: A is resending packet: ffffffffffffffffffff


EVENT time: 177.442824,  type: 2, fromlayer3   entity: 1
B_input: recv message: ffffffffffffffffffff

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 179.742424,  type: 1, fromlayer5   entity: 0
A_output: a packet is not yet acked. Message enqueued -> ssssssssssssssssssss


EVENT time: 181.380108,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0
```

```
EVENT time: 184.223762,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> tttttttttttttttttttt

A_output: packet with snum 0 send -> gggggggggggggggggggg


EVENT time: 188.235481,  type: 2, fromlayer3   entity: 1
B_input: recv message: gggggggggggggggggggg

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 193.964141,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 195.227515,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> uuuuuuuuuuuuuuuuuuuu

A_output: packet with snum 1 send -> hhhhhhhhhhhhhhhhhhhh


EVENT time: 200.884426,  type: 1, fromlayer5   entity: 0
A_output: a packet is not yet acked. Message enqueued -> vvvvvvvvvvvvvvvvvvvv


EVENT time: 200.985290,  type: 2, fromlayer3   entity: 1
B_input: recv message: hhhhhhhhhhhhhhhhhhhh

B_input: send ACK for snum -> 1
          TOLAYER3: packet being lost
B_input: update snum -> 0

EVENT time: 213.113193,  type: 1, fromlayer5   entity: 0
A_output: a packet is not yet acked. Message enqueued -> wwwwwwwwwwwwwwwwwwww


EVENT time: 215.227515,  type: 0, timerinterrupt    entity: 0
A_timerinterrupt: A is resending packet: hhhhhhhhhhhhhhhhhhhh


EVENT time: 219.756981,  type: 2, fromlayer3   entity: 1
B_input: recv message: hhhhhhhhhhhhhhhhhhhh

B_input: send ACK for snum -> 1

EVENT time: 224.400983,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 232.038331,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> xxxxxxxxxxxxxxxxxxxx

A_output: packet with snum 0 send -> iiiiiiiiiiiiiiiiiiii


          TOLAYER3: packet being lost

EVENT time: 238.976409,  type: 1, fromlayer5   entity: 0
A_output: a packet is not yet acked. Message enqueued -> yyyyyyyyyyyyyyyyyyyy
```

```
EVENT time: 252.038331,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: iiiiiiiiiiiiiiiiiii


EVENT time: 253.799860,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> zzzzzzzzzzzzzzzzzzz


EVENT time: 259.397137,  type: 2, fromlayer3  entity: 1
B_input: recv message: iiiiiiiiiiiiiiiiiii

B_input: send ACK for snum -> 0
          TOLAYER3: packet being corrupted
B_input: update snum -> 1

EVENT time: 261.053499,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> aaaaaaaaaaaaaaaaaaa


EVENT time: 268.903287,  type: 2, fromlayer3  entity: 0
A_input: packet corrupted

EVENT time: 272.038331,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: iiiiiiiiiiiiiiiiiii


EVENT time: 273.555101,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> bbbbbbbbbbbbbbbbbbb


EVENT time: 273.818659,  type: 2, fromlayer3  entity: 1
B_input: recv message: iiiiiiiiiiiiiiiiiii

B_input: send ACK for snum -> 0

EVENT time: 278.910092,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 282.487869,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> ccccccccccccccccccc

A_output: packet with snum 1 send -> jjjjjjjjjjjjjjjjjjj


EVENT time: 284.775231,  type: 2, fromlayer3  entity: 1
B_input: recv message: jjjjjjjjjjjjjjjjjjj

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 285.729545,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> ddddddddddddddddddd


EVENT time: 286.452223,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> eeeeeeeeeeeeeeeeeee
```

```
EVENT time: 286.510239,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 302.876064,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> ffffffffffffffffff

A_output: packet with snum 0 send -> kkkkkkkkkkkkkkkkkk

EVENT time: 312.133915,  type: 2, fromlayer3  entity: 1
B_input: recv message: kkkkkkkkkkkkkkkkkk

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 317.735405,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 322.422559,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> gggggggggggggggggg

A_output: packet with snum 1 send -> llllllllllllllllll

EVENT time: 323.517594,  type: 2, fromlayer3  entity: 1
B_input: recv message: llllllllllllllllll

B_input: send ACK for snum -> 1
         TOLAYER3: packet being corrupted
B_input: update snum -> 0

EVENT time: 326.140599,  type: 2, fromlayer3  entity: 0
A_input: packet corrupted

EVENT time: 337.110508,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> hhhhhhhhhhhhhhhhhh

EVENT time: 339.312113,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> iiiiiiiiiiiiiiiiii

EVENT time: 342.422559,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: llllllllllllllllll

EVENT time: 346.236763,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> jjjjjjjjjjjjjjjjjj

EVENT time: 346.908628,  type: 2, fromlayer3  entity: 1
B_input: recv message: llllllllllllllllll

B_input: send ACK for snum -> 1

EVENT time: 350.655232,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> kkkkkkkkkkkkkkkkkk
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EVENT time: 351.114841,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> lllllllllllllllllllll


EVENT time: 355.718772,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 361.475265,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> mmmmmmmmmmmmmmmmmmmmm

A_output: packet with snum 0 send -> mmmmmmmmmmmmmmmmmmmmm

          TOLAYER3: packet being corrupted

EVENT time: 371.438185,  type: 2, fromlayer3  entity: 1
B_input: packet corrupted.

EVENT time: 376.500137,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> nnnnnnnnnnnnnnnnnnnnn


EVENT time: 381.475265,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: mmmmmmmmmmmmmmmmmmmmm


EVENT time: 384.209723,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> ooooooooooooooooooooo


EVENT time: 388.126804,  type: 2, fromlayer3  entity: 1
B_input: recv message: mmmmmmmmmmmmmmmmmmmmm

B_input: send ACK for snum -> 0
          TOLAYER3: packet being lost
B_input: update snum -> 1

EVENT time: 392.478408,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> ppppppppppppppppppppp


EVENT time: 395.090182,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> qqqqqqqqqqqqqqqqqqqqq


EVENT time: 401.475265,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: mmmmmmmmmmmmmmmmmmmmm


EVENT time: 408.216193,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> rrrrrrrrrrrrrrrrrrrrr


EVENT time: 410.472457,  type: 2, fromlayer3  entity: 1
B_input: recv message: mmmmmmmmmmmmmmmmmmmmm

B_input: send ACK for snum -> 0
```

```
EVENT time: 410.865810,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> ssssssssssssssssssss

EVENT time: 412.691702,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 429.757988,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> ttttttttttttttttttt

A_output: packet with snum 1 send -> nnnnnnnnnnnnnnnnnnnn

EVENT time: 434.331950,  type: 2, fromlayer3  entity: 1
B_input: recv message: nnnnnnnnnnnnnnnnnnnn

B_input: send ACK for snum -> 1
         TOLAYER3: packet being lost
B_input: update snum -> 0

EVENT time: 441.809137,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> uuuuuuuuuuuuuuuuuuuu

EVENT time: 449.757988,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: nnnnnnnnnnnnnnnnnnnn

EVENT time: 459.478927,  type: 2, fromlayer3  entity: 1
B_input: recv message: nnnnnnnnnnnnnnnnnnnn

B_input: send ACK for snum -> 1
         TOLAYER3: packet being lost

EVENT time: 459.634999,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> vvvvvvvvvvvvvvvvvvvv

EVENT time: 468.725242,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> wwwwwwwwwwwwwwwwwwww

EVENT time: 469.757988,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: nnnnnnnnnnnnnnnnnnnn

EVENT time: 473.705252,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> xxxxxxxxxxxxxxxxxxxx

EVENT time: 479.212226,  type: 2, fromlayer3  entity: 1
B_input: recv message: nnnnnnnnnnnnnnnnnnnn

B_input: send ACK for snum -> 1

EVENT time: 485.191656,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0
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EVENT time: 485.191656,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 492.281869,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> yyyyyyyyyyyyyyyyyyyy

A_output: packet with snum 0 send -> oooooooooooooooooooo

          TOLAYER3: packet being lost

EVENT time: 510.593585,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> zzzzzzzzzzzzzzzzzzzz


EVENT time: 512.281869,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: oooooooooooooooooooo


EVENT time: 514.300333,  type: 2, fromlayer3  entity: 1
B_input: recv message: oooooooooooooooooooo

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 522.358165,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 530.508744,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> aaaaaaaaaaaaaaaaaaaa

A_output: packet with snum 1 send -> pppppppppppppppppppp


EVENT time: 538.084262,  type: 2, fromlayer3  entity: 1
B_input: recv message: pppppppppppppppppppp

B_input: send ACK for snum -> 1
          TOLAYER3: packet being corrupted
B_input: update snum -> 0

EVENT time: 540.397717,  type: 2, fromlayer3  entity: 0
A_input: packet corrupted

EVENT time: 546.895962,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> bbbbbbbbbbbbbbbbbbbb


EVENT time: 550.508744,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: pppppppppppppppppppp


EVENT time: 553.669546,  type: 2, fromlayer3  entity: 1
B_input: recv message: pppppppppppppppppppp

B_input: send ACK for snum -> 1
```

```
EVENT time: 557.962584,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> cccccccccccccccccccc


EVENT time: 561.667776,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 567.680898,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> dddddddddddddddddddd

A_output: packet with snum 0 send -> qqqqqqqqqqqqqqqqqqqq


EVENT time: 572.746513,  type: 2, fromlayer3  entity: 1
B_input: recv message: qqqqqqqqqqqqqqqqqqqq

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 575.875118,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> eeeeeeeeeeeeeeeeeeee


EVENT time: 581.184484,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 582.274239,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> ffffffffffffffffffff

A_output: packet with snum 1 send -> rrrrrrrrrrrrrrrrrrrr


EVENT time: 587.718894,  type: 2, fromlayer3  entity: 1
B_input: recv message: rrrrrrrrrrrrrrrrrrrr

B_input: send ACK for snum -> 1
          TOLAYER3: packet being corrupted
B_input: update snum -> 0

EVENT time: 589.755547,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> gggggggggggggggggggg


EVENT time: 590.575274,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> hhhhhhhhhhhhhhhhhhhh


EVENT time: 596.968505,  type: 2, fromlayer3  entity: 0
A_input: packet corrupted

EVENT time: 602.274239,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: rrrrrrrrrrrrrrrrrrrr


EVENT time: 606.559526,  type: 2, fromlayer3  entity: 1
B_input: recv message: rrrrrrrrrrrrrrrrrrrr

B_input: send ACK for snum -> 1
          TOLAYER3: packet being corrupted
```

```
EVENT time: 607.538072,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> iiiiiiiiiiiiiiiiiiii


EVENT time: 607.870174,  type: 2, fromlayer3  entity: 0
A_input: packet corrupted

EVENT time: 610.771813,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> jjjjjjjjjjjjjjjjjjjj


EVENT time: 620.548723,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> kkkkkkkkkkkkkkkkkkkk


EVENT time: 622.274239,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: rrrrrrrrrrrrrrrrrrrr


EVENT time: 624.876370,  type: 2, fromlayer3  entity: 1
B_input: recv message: rrrrrrrrrrrrrrrrrrrr

B_input: send ACK for snum -> 1

EVENT time: 634.593463,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 635.984375,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> llllllllllllllllllll

A_output: packet with snum 0 send -> ssssssssssssssssssss


EVENT time: 637.850948,  type: 2, fromlayer3  entity: 1
B_input: recv message: ssssssssssssssssssss

B_input: send ACK for snum -> 0
          TOLAYER3: packet being lost
B_input: update snum -> 1

EVENT time: 639.463485,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> mmmmmmmmmmmmmmmmmmmm


EVENT time: 640.655538,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> nnnnnnnnnnnnnnnnnnnn


EVENT time: 641.144444,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> oooooooooooooooooooo


EVENT time: 655.984375,  type: 0, timerinterrupt   entity: 0
A_timerinterrupt: A is resending packet: ssssssssssssssssssss


EVENT time: 657.047273,  type: 2, fromlayer3  entity: 1
B_input: recv message: ssssssssssssssssssss

B_input: send ACK for snum -> 0
          TOLAYER3: packet being corrupted
```

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EVENT time: 658.061464,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> pppppppppppppppppppp


EVENT time: 666.282601,  type: 2, fromlayer3  entity: 0
A_input: packet corrupted

EVENT time: 675.984375,  type: 0, timerinterrupt    entity: 0
A_timerinterrupt: A is resending packet: ssssssssssssssssssss


EVENT time: 677.924131,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> qqqqqqqqqqqqqqqqqqqq


EVENT time: 679.481094,  type: 2, fromlayer3  entity: 1
B_input: recv message: ssssssssssssssssssss

B_input: send ACK for snum -> 0

EVENT time: 681.484451,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 693.755303,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> rrrrrrrrrrrrrrrrrrrr

A_output: packet with snum 1 send -> tttttttttttttttttttt

           TOLAYER3: packet being lost

EVENT time: 711.638539,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> ssssssssssssssssssss


EVENT time: 713.755303,  type: 0, timerinterrupt    entity: 0
A_timerinterrupt: A is resending packet: tttttttttttttttttttt


EVENT time: 717.203131,  type: 2, fromlayer3  entity: 1
B_input: recv message: tttttttttttttttttttt

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 725.942961,  type: 2, fromlayer3  entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 726.737877,  type: 1, fromlayer5  entity: 0
A_output: Message enqueued -> tttttttttttttttttttt

A_output: packet with snum 0 send -> uuuuuuuuuuuuuuuuuuuu


EVENT time: 728.702048,  type: 1, fromlayer5  entity: 0
A_output: a packet is not yet acked. Message enqueued -> uuuuuuuuuuuuuuuuuuuu
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EVENT time: 728.857967,  type: 2, fromlayer3   entity: 1
B_input: recv message: uuuuuuuuuuuuuuuuuuuu

B_input: send ACK for snum -> 0
B_input: update snum -> 1

EVENT time: 737.484634,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 0 acked.
A_input: update snum -> 1

EVENT time: 746.236763,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> vvvvvvvvvvvvvvvvvvvv

A_output: packet with snum 1 send -> vvvvvvvvvvvvvvvvvvvv


EVENT time: 751.393567,  type: 2, fromlayer3   entity: 1
B_input: recv message: vvvvvvvvvvvvvvvvvvvv

B_input: send ACK for snum -> 1
B_input: update snum -> 0

EVENT time: 757.933592,  type: 2, fromlayer3   entity: 0
A_input: packet with snum 1 acked.
A_input: update snum -> 0

EVENT time: 762.760094,  type: 1, fromlayer5   entity: 0
A_output: Message enqueued -> wwwwwwwwwwwwwwwwwwww

A_output: packet with snum 0 send -> wwwwwwwwwwwwwwwwwwww

          TOLAYER3: packet being corrupted

EVENT time: 767.850581,  type: 1, fromlayer5   entity: 0
Simulator terminated at time 767.850581377605
```