

initialization:

ws=3

loss probability=0

node0 starts at 0 s

//the errors and the trailer here are not realistic, they are just examples

// use this just as a guideline “with a grain of salt”, as it is not a computer generated file.

input file

0000 aaaa

0000 b\$bbb

0000 ccc\$\$c

0000 d/\$ddd

0000 \$eeee\$

0100 aa

1000 bb

0000 cc

0001 dd

0100 ee

0000 ta

0000 tb

0000 tc

0011 fa

0010 fb

1100 fc

expected log file – the trailer calculations are not accurate

✓ At [0] , Node [0] , Introducing channel error with code =[0000]

At time [0.5], Node[0] [sent] frame with seq\_num=[0] and payload=[ \$aaaa\$ ] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

✓ Uploading payload=[ aaaa] and seq\_num =[0] to the network layer

At time[2.0 ], Node[1] Sending [ACK] with number [1] , loss [No]

At [0.5] , Node [0] , Introducing channel error with code =[0000]

✓ At time [1], Node[0] [sent] frame with seq\_num=[1] and payload=[ \$b/\$bbb\$ ] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

✓ Uploading payload=[ b\$bbb] and seq\_num =[1] to the network layer

At time[2.5 ], Node[1] Sending [ACK] with number [2] , loss [No]

✓ At [1] , Node [0] , Introducing channel error with code =[0000]

At time [1.5], Node[0] [sent] frame with seq\_num=[2] and payload=[ \$ ccc/\$/\$c\$ ] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ ccc\$/\$c ] and seq\_num =[2] to the network layer

At time[3.0 ], Node[1] Sending [ACK] with number [3] , loss [No]

✓ At [1.5] , Node [0] , Introducing channel error with code =[0000]

At time [2.0], Node[0] [sent] frame with seq\_num=[3] and payload=[ \$d///\$ddd\$ ] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ d/\$ddd] and seq\_num =[3] to the network layer

At time[3.5 ], Node[1] Sending [ACK] with number [0] , loss [No]

At [3.0] , Node [0] , Introducing channel error with code =[0000]

At time [3.5], Node[0] [sent] frame with seq\_num=[0] and payload=[ \$/\$eeee/\$\$ ] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].



Uploading payload=[ \$eeee\$] and seq\_num =[0] to the network layer

At time[5.0 ], Node[1] Sending [ACK] with number [1] , loss [No]

At [3.5] , Node [0] , Introducing channel error with code =[0100]

At time [4.0], Node[0] [sent] frame with seq\_num=[1] and payload=[ \$aa\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [yes], Duplicate [0], Delay [0].

At [4.0] , Node [0] , Introducing channel error with code =[1000]

At time [4.5], Node[0] [sent] frame with seq\_num=[2] and payload=[ \$bg\$] and trailer=[ 0001 ] , Modified [1 ] , Lost [No], Duplicate [0], Delay [0].

At [4.5] , Node [0] , Introducing channel error with code =[0000]

At time [5.0], Node[0] [sent] frame with seq\_num=[3] and payload=[ \$cc\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

At [6.0] , Node [0] , Introducing channel error with code =[0001]

At time [6.5], Node[0] [sent] frame with seq\_num=[0] and payload=[ \$dd\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [4].

Time out event at time [14], at Node[0] for frame with seq\_num=[1]

At time [14.5], Node[0] [sent] frame with seq\_num=[1] and payload=[ \$aa\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ aa] and seq\_num =[1] to the network layer

At time[16 ], Node[1] Sending [ACK] with number [2] , loss [No]

At [14.5] , Node [0] , Introducing channel error with code =[1000]

At time [15], Node[0] [sent] frame with seq\_num=[2] and payload=[ \$bg\$] and trailer=[ 0001 ] , Modified [1 ] , Lost [No], Duplicate [0], Delay [0].

At time[16.5 ], Node[1] Sending [NACK] with number [2] , loss [No]

At [15] , Node [0] , Introducing channel error with code =[0000]

At time [15.5], Node[0] [sent] frame with seq\_num=[3] and payload=[ \$cc\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

At [15.5] , Node [0] , Introducing channel error with code =[0001]

At time [16], Node[0] [sent] frame with seq\_num=[0] and payload=[ \$dd\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [4].

At time [18], Node[0] [sent] frame with seq\_num=[2] and payload=[ \$bb\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ bb] and seq\_num =[2] to the network layer

At time[19], Node[1] Sending [ACK] with number [3] , loss [No]

At [18] , Node [0] , Introducing channel error with code =[0000]

At time [18.5], Node[0] [sent] frame with seq\_num=[3] and payload=[ \$cc\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ cc] and seq\_num =[3] to the network layer

At time[19.5], Node[1] Sending [ACK] with number [0] , loss [No]

At [18.5] , Node [0] , Introducing channel error with code =[0001]

At time [19], Node[0] [sent] frame with seq\_num=[0] and payload=[ \$dd\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [4].

At [19] , Node [0] , Introducing channel error with code =[0100]

At time [19.5], Node[0] [sent] frame with seq\_num=[1] and payload=[ \$ee\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [yes], Duplicate [0], Delay [0].

At [20], Node [0] , Introducing channel error with code =[0000]

At time [20.5], Node[0] [sent] frame with seq\_num=[2] and payload=[ \$ta\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

At [20.5] , Node [0] , Introducing channel error with code =[0000]

At time [21], Node[0] [sent] frame with seq\_num=[3] and payload=[ \$tb\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ dd] and seq\_num =[0] to the network layer

At time[24.5], Node[1] Sending [ACK] with number [1] , loss [No]

Time out event at time [29.5], at Node[0] for frame with seq\_num=[1]

At time [30], Node[0] [sent] frame with seq\_num=[1] and payload=[ \$ee\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ ee] and seq\_num =[1] to the network layer

At time[31.5], Node[1] Sending [ACK] with number [2] , loss [No]

At [30] , Node [0] , Introducing channel error with code =[0000]

At time [30.5], Node[0] [sent] frame with seq\_num=[2] and payload=[ \$ta\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ ta] and seq\_num =[2] to the network layer

At time[32], Node[1] Sending [ACK] with number [3] , loss [No]

At [30.5] , Node [0] , Introducing channel error with code =[0000]

At time [31], Node[0] [sent] frame with seq\_num=[3] and payload=[ \$tb\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ tb] and seq\_num =[3] to the network layer

At time[32.5], Node[1] Sending [ACK] with number [0] , loss [No]

At [31] , Node [0] , Introducing channel error with code =[0000]

At time [31.5], Node[0] [sent] frame with seq\_num=[0] and payload=[ \$tc\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ tc] and seq\_num =[0] to the network layer

At time[33], Node[1] Sending [ACK] with number [1] , loss [No]

At [31.5] , Node [0] , Introducing channel error with code =[0011]

At time [32], Node[0] [sent] frame with seq\_num=[1] and payload=[ \$fa\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [1], Delay [4].

At time [32.1.], Node[0] [sent] frame with seq\_num=[1] and payload=[ \$fa\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [2], Delay [4].

Uploading payload=[ fa] and seq\_num =[1] to the network layer un-ordered delivery.  
At time[37.5], Node[1] Sending [ACK] with number [2] , loss [No] el mfrod yemshy bl trteb.

At [32.5] , Node [0] , Introducing channel error with code =[0010]

At time [33], Node[0] [sent] frame with seq\_num=[2] and payload=[ \$fb\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [1], Delay [0].

At time [33.1], Node[0] [sent] frame with seq\_num=[2] and payload=[ \$fb\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [2], Delay [0].

Uploading payload=[ fb] and seq\_num =[2] to the network layer  
At time[34.5], Node[1] Sending [ACK] with number [3] , loss [No]

At [33.5] , Node [0] , Introducing channel error with code =[1100]

At time [34], Node[0] [sent] frame with seq\_num=[3] and payload=[ \$fm\$] and trailer=[ 0001 ] , Modified [1 ] , Lost [Yes], Duplicate [0], Delay [0].

At time[35], Node[1] Sending [NACK] with number [3] , loss [No]

At time [36.5], Node[0] [sent] frame with seq\_num=[3] and payload=[ \$fc\$] and trailer=[ 0000 ] , Modified [-1 ] , Lost [No], Duplicate [0], Delay [0].

Uploading payload=[ fc] and seq\_num =[3] to the network layer  
At time[38], Node[1] Sending [ACK] with number [0] , loss [No]