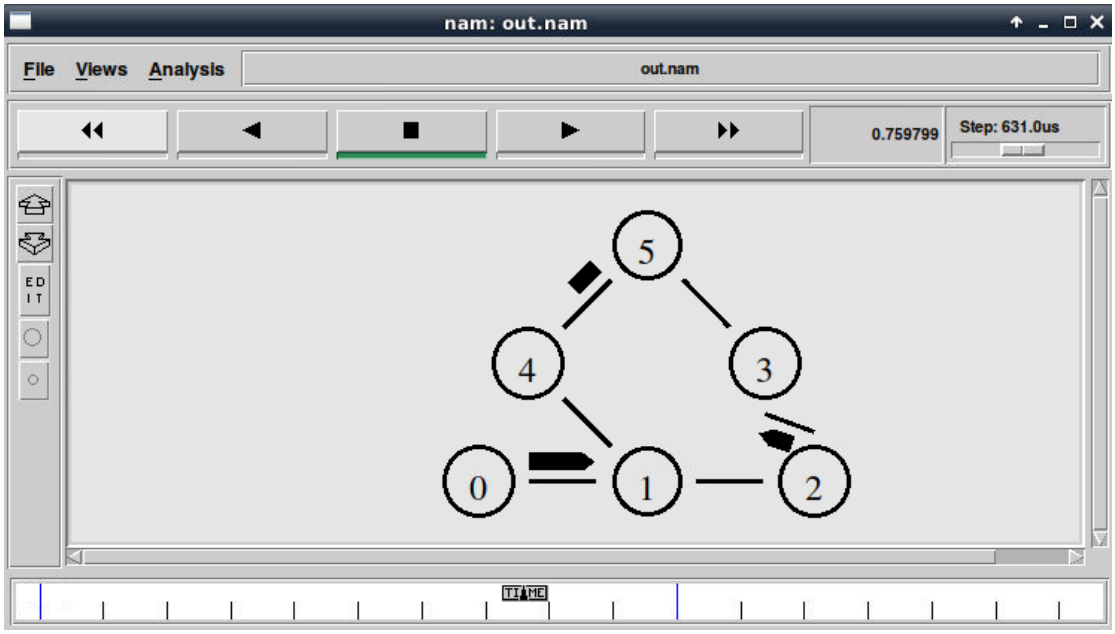
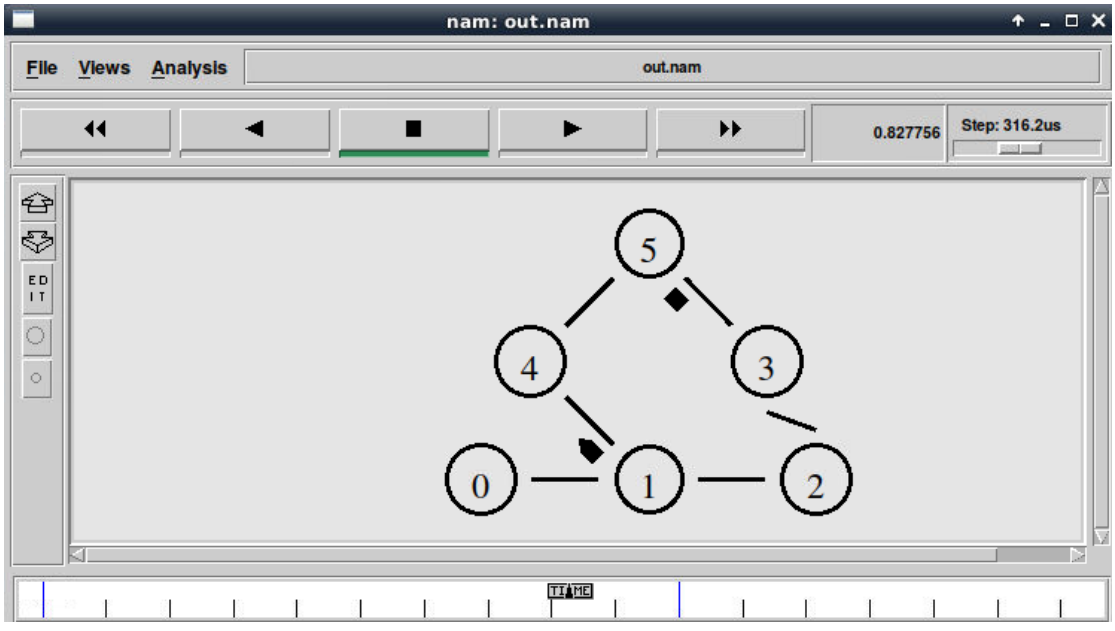
Written by Maowen Zhou, z5166834, for COMP9331 Lab6.

Exercise 1:

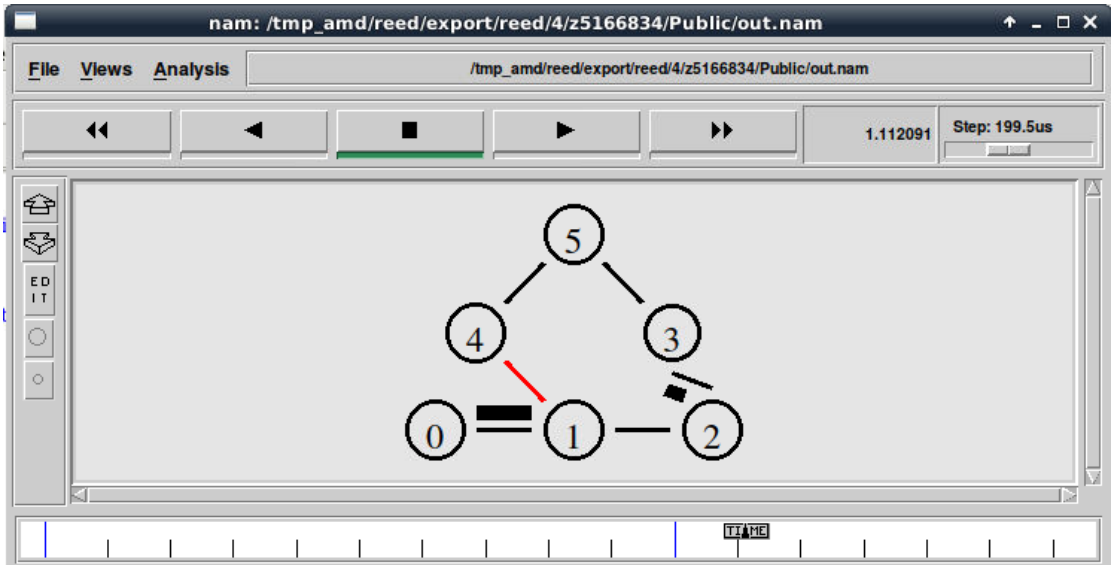
Q1:

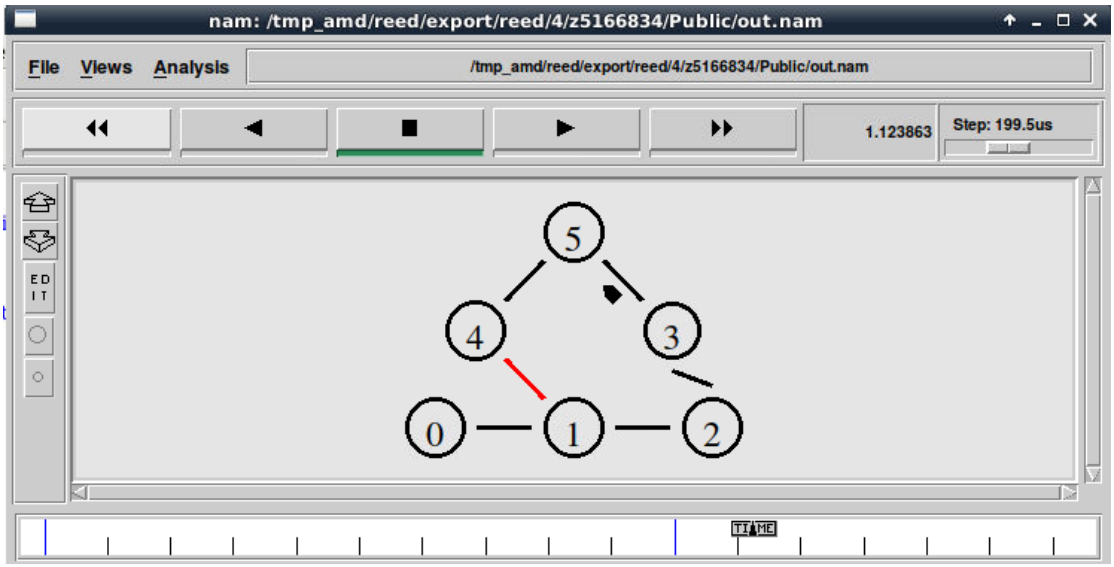




Node 0 communicates with node 1, node 1 communicates with node 4, and node 4 communicates with node 5. Node 2 communicates with node 3, node 3 communicates with node 5. There are two routes, one is 0 – 1 – 4 - 5, another is 2 – 3 – 5. They do not change over time.

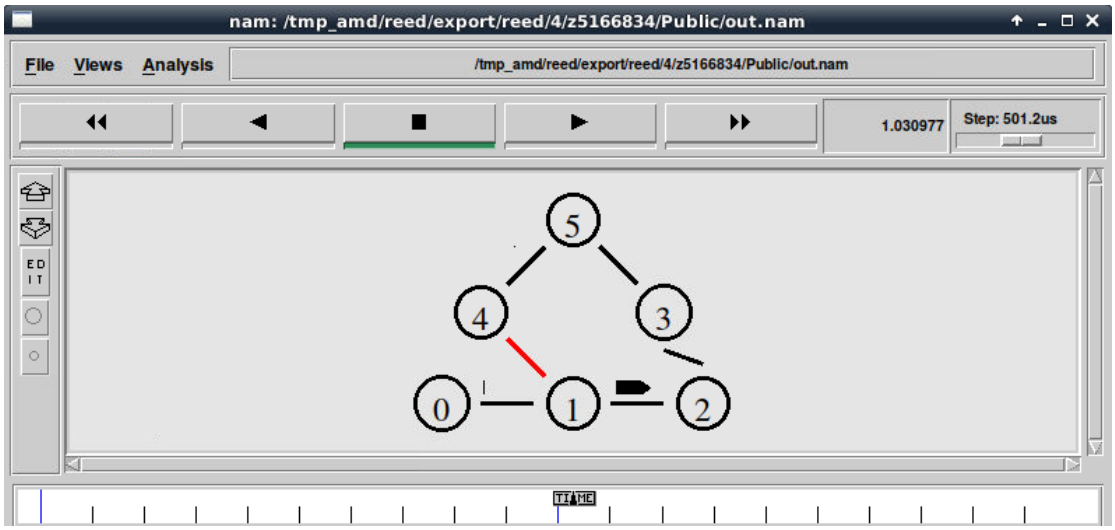
Q2:



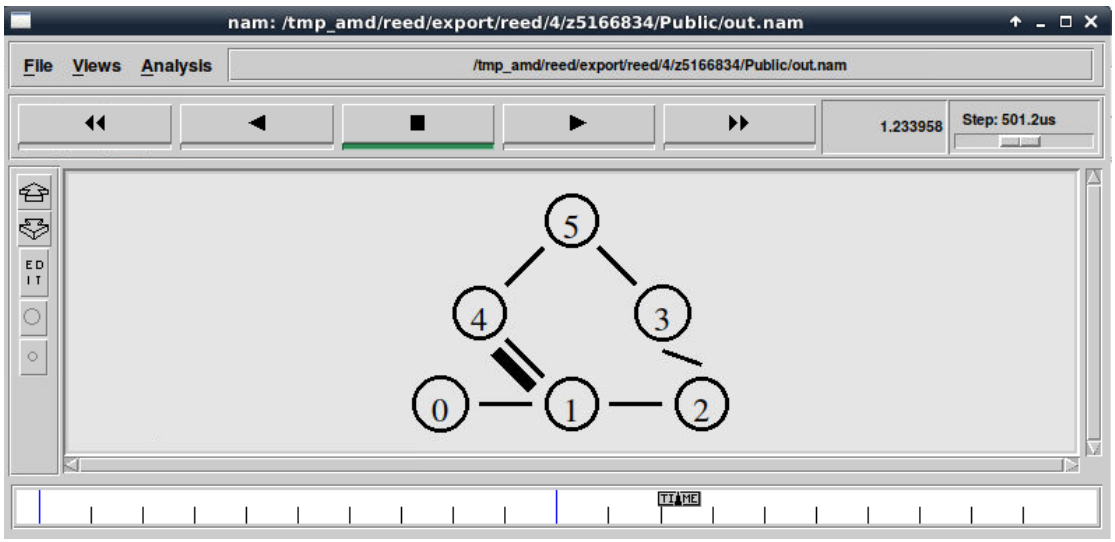


At time 1.0 the link between node 1 and node 4 goes down and at time 1.2 the link restores its connection. The route is actually affected, all the data sent from node 0 is lost.

Q3:

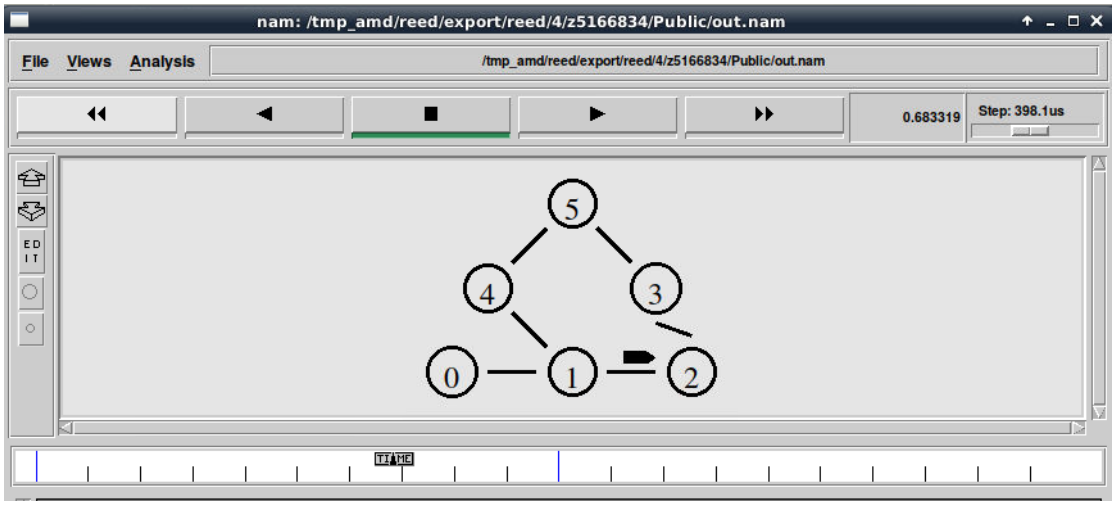


Yes, there is additional traffic between node 1 and node 2 now. At time 1.0 the data sent from node 0 is transmitted through the link between node 1 and node 2.



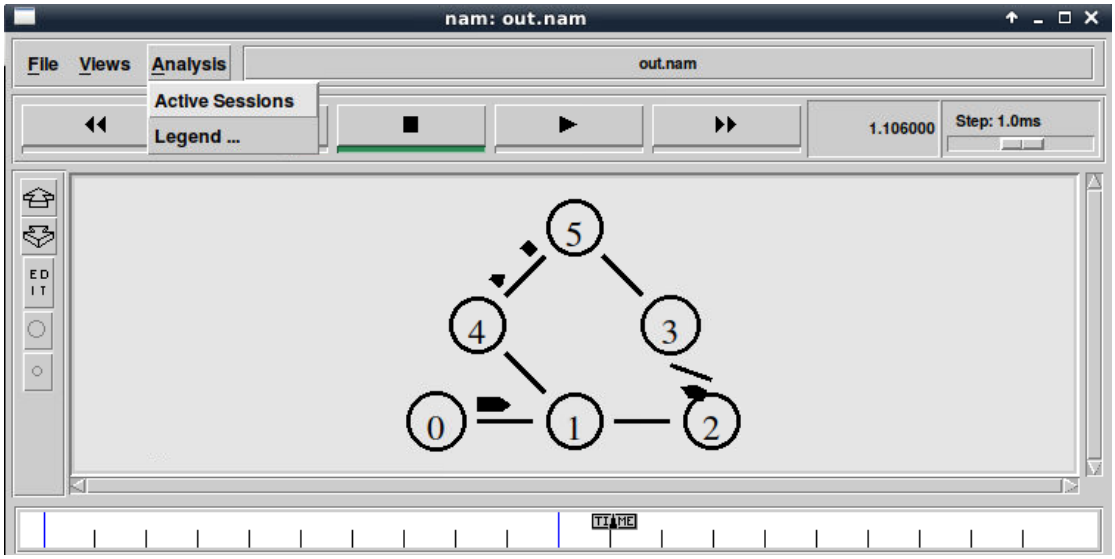
And at time 1.2, the link between node 1 and node 4 is back online, so the data is transmitted through this link again.

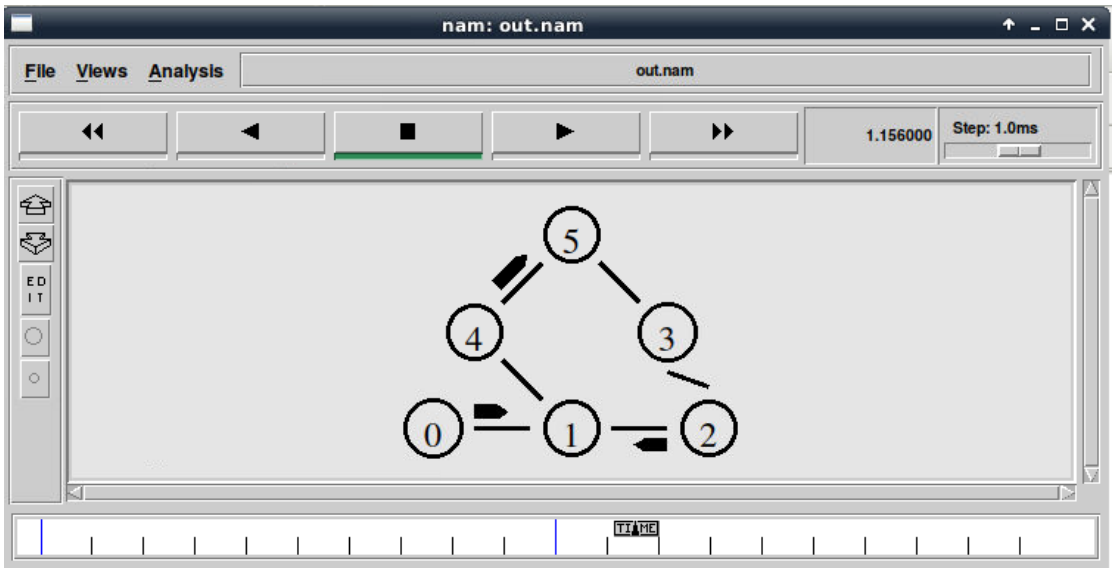
Q4:



The default cost of a link is 1. The cost to reach node 4 from node 1 is set to 3 now, so the data sent from node 0 is transmitted through the link between node 1 and node 2 to reach node 5, because the cost of the route 1 – 2 – 3 – 5 is cheaper.

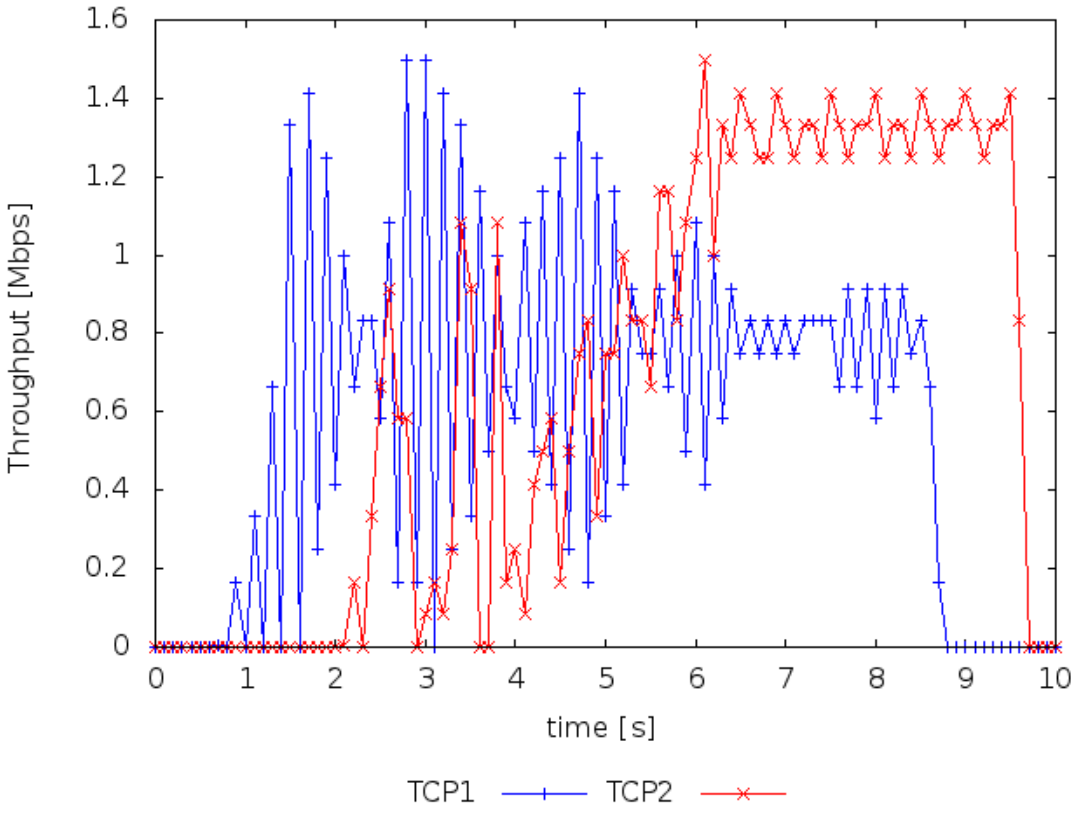
Q5:





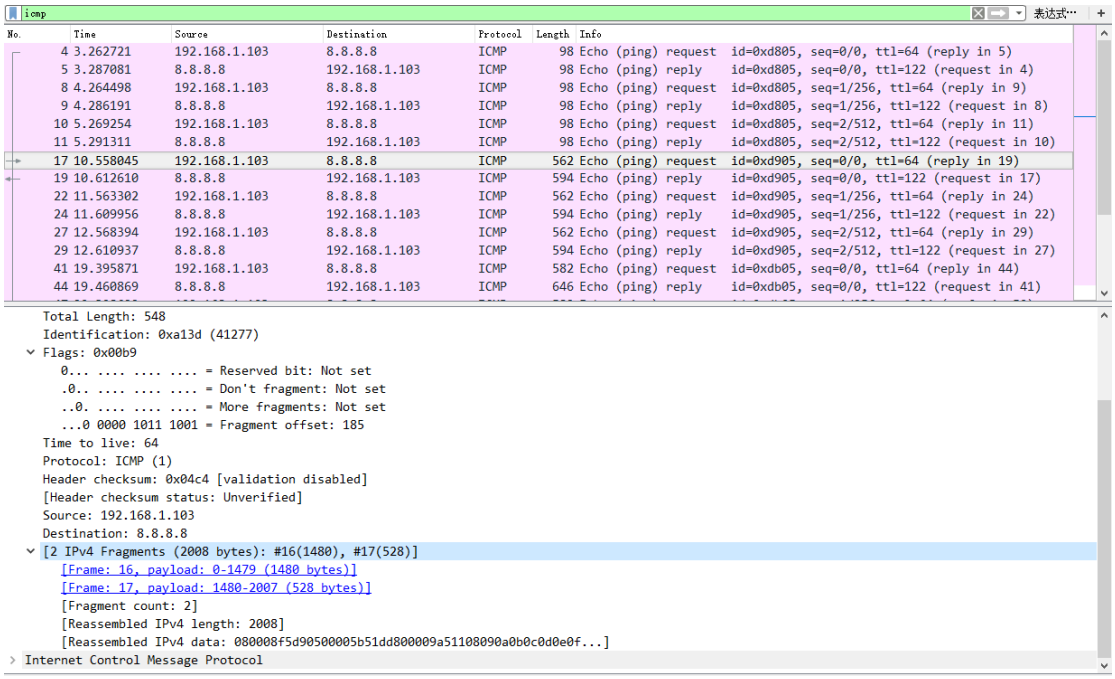
The node 2 is transmitting its data using two routes to reach node 5, one is 2-1-4-5, another is 2-3-5. The effect of “Node set multipath_ 1” is allow all nodes in the simulation use multipaths where applicable, to choose different path to transmit data.

Exercise 2:



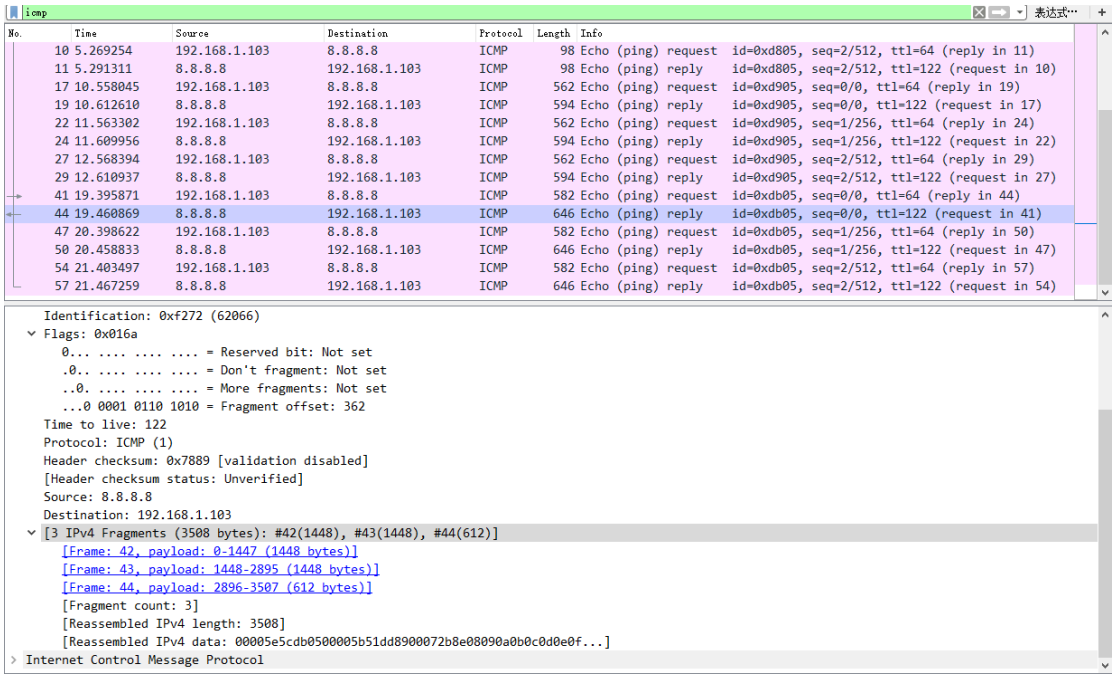
Exercise 3:

Q1:



The size of 2000 bytes of data has caused fragmentation, because the MTU of the link is 1500 bytes(1480 bytes payload and 20 bytes header). Router has fragmented the original datagram, and two fragments have been created when data size is specified as 2000.

Q2:



The reply from the destination for 3500-byte data also get fragmented, I think it is because the MTU of the link is fixed and both directions will be constrained by this.

Q3:

	ID	Length	Flag	Offset
Frame 39	31355	1500	1	0
Frame 40	31355	1500	1	185
Frame 41	31355	568	0	370

Q4:

No, fragmentation of fragments does not occurred. Because the size of the fragments are smaller than the MTU of the link, there is no need to further fragment.

Q5:

If one fragment is lost, then the whole packet needs to be transmitted again. The packet with one fragment missing will be discarded.