COMPUTER NETWORKS LABORATORY

ASSIGNMENT 5

NAME: Abhishek Rathod
ENR. NO. : 17114004
BATCH: CS1

Github-link :- https://github.com/rathodabhishek36/CSN-361-Computer-Networks-Laboratory

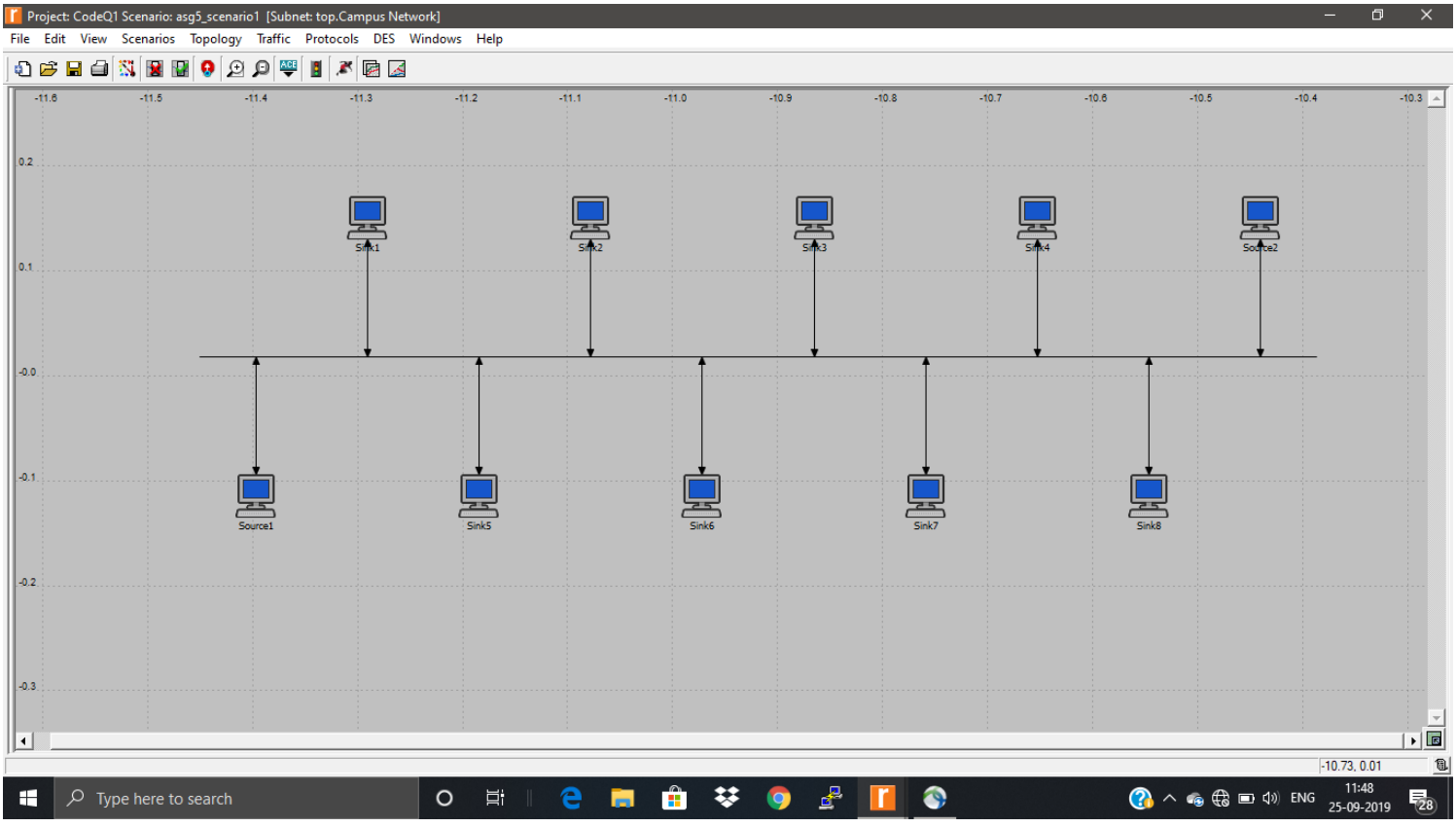
Q.1) Using OPNET create Bus topology among a set of N computer nodes out of which two nodes are source and the rest are sink nodes. Model the traffic of source and sink nodes individually and demonstrate the packet transfer between them using Ethcoax (Ethernet using coaxial) cables. Use network scale as the "campus" of area 1km x 1km.

Algorithms :-

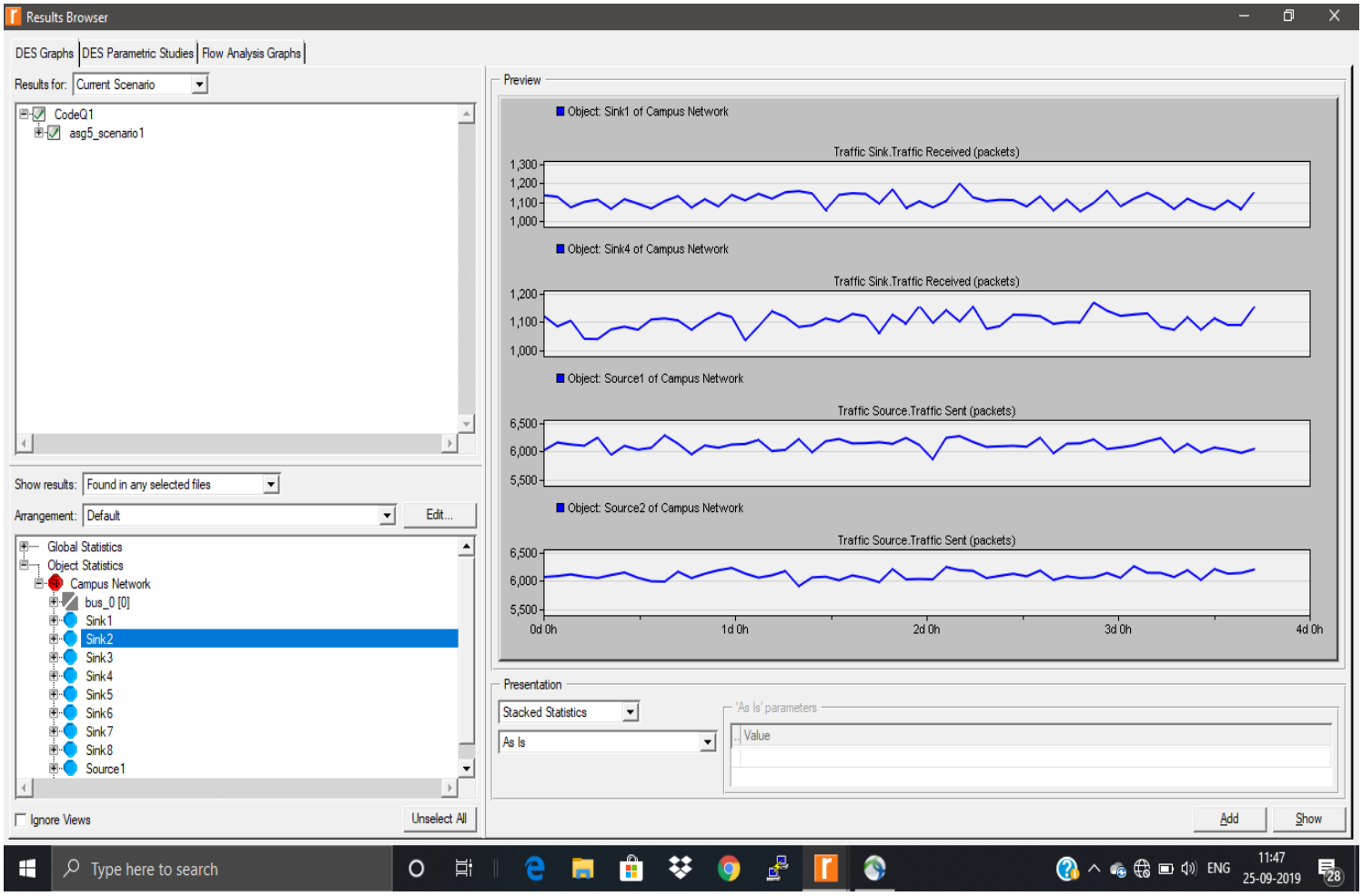
No algorithms used.

Screenshots :-

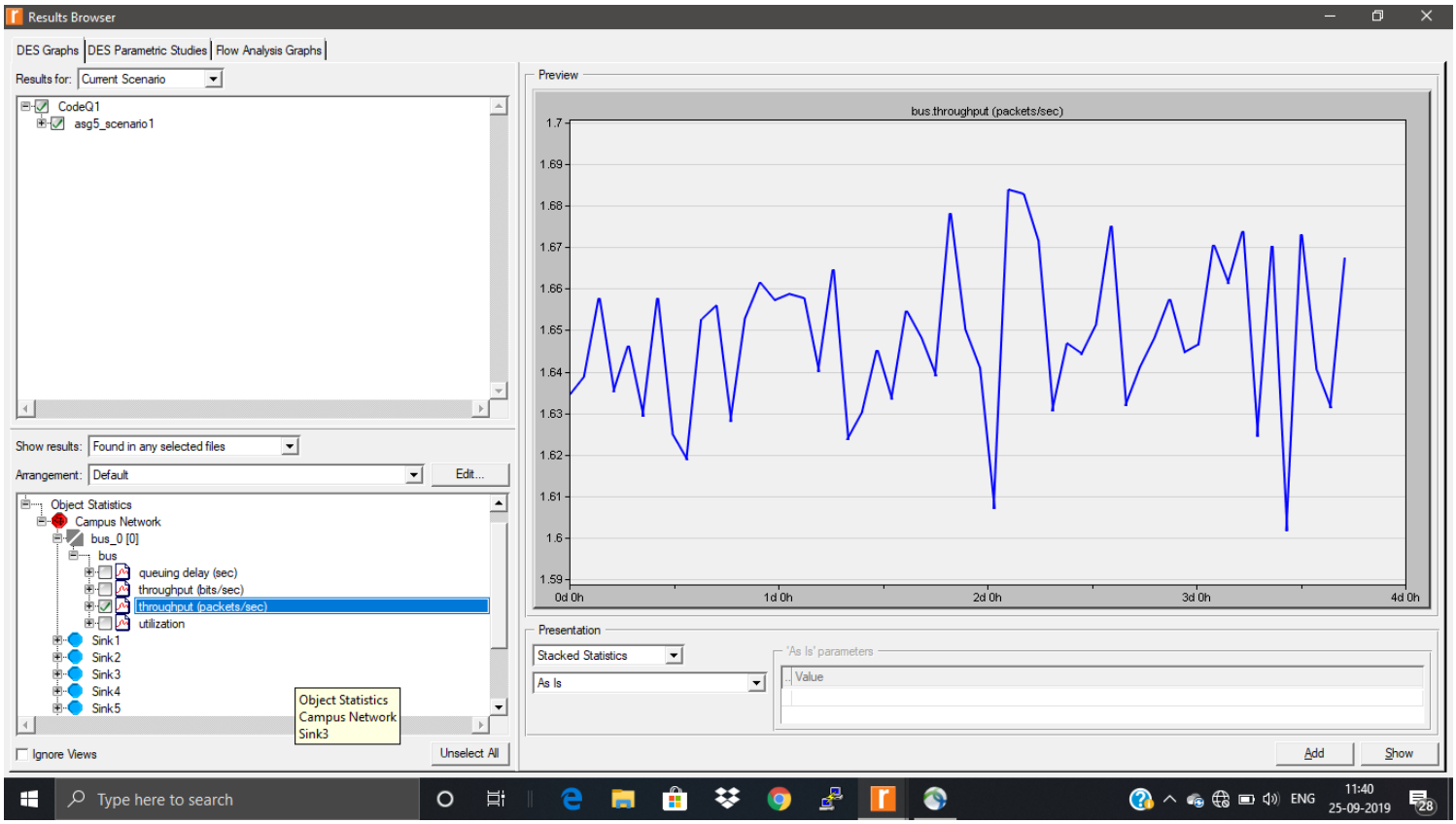
1. The screenshot of bus topology. There are 10 nodes in the network of which 2 nodes are source nodes and the rest 8 nodes are sink nodes.



2. It shows changes in the number of packets between the 2 source nodes and two of the sink nodes. The graph is formed over a period of one week.



3. In terms of communication cable/ethernet, throughput or network throughput is the rate of successful message delivery over a communication channel.



Data structures used :-

Node – Used for sending and receiving packets.

Source – Used for sending packets.

Sink – Used for receiving packets.

Packet – The basic unit of exchange for network layer.

Frame – The basic unit of exchange for the physical layer.

Bus – Used to transfer data between connected nodes.

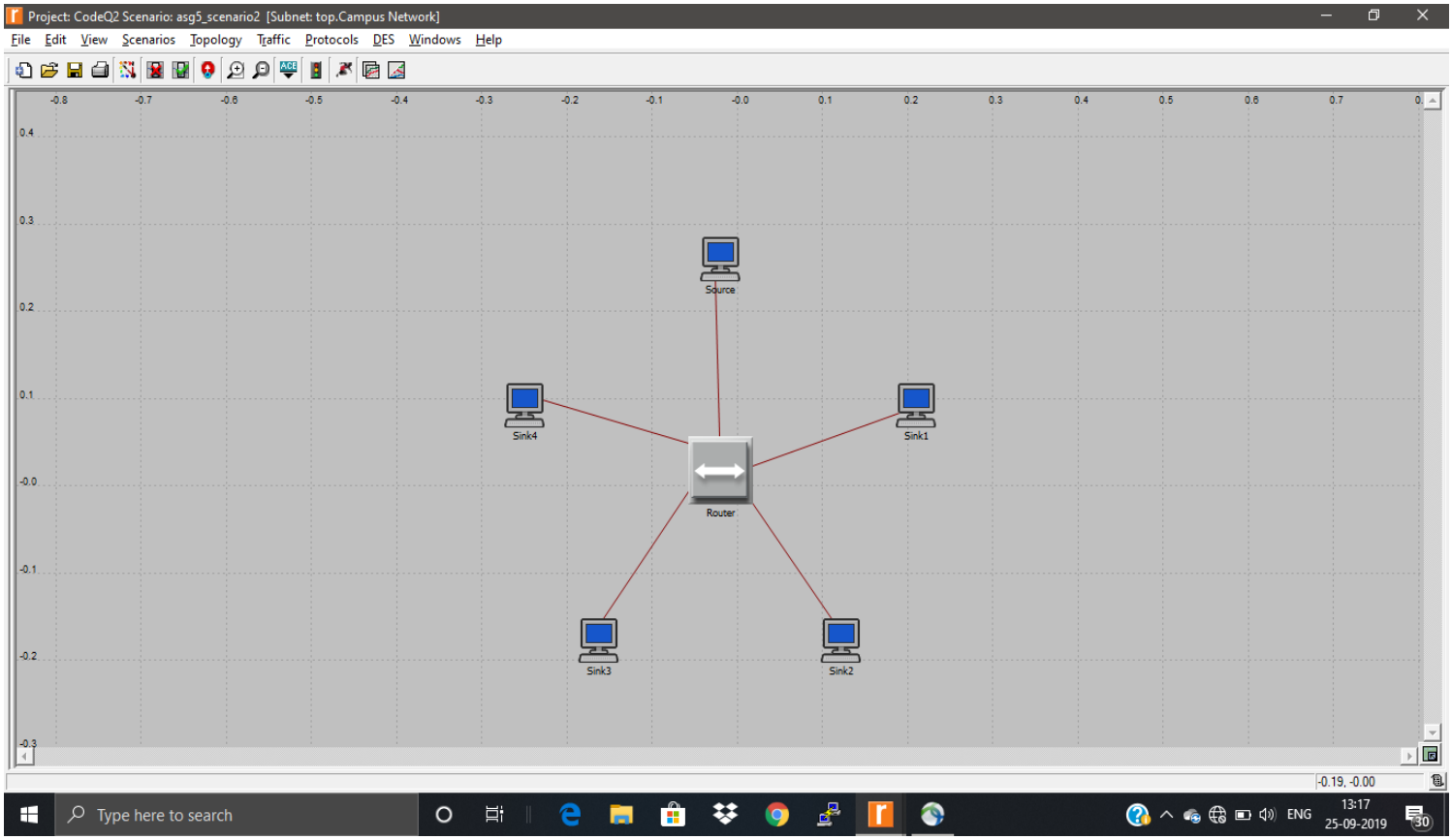
Question 2: Using OPNET create Star topology among a set of N computer nodes out of which one node is source and the rest are sink nodes. Model the traffic of source and sink nodes individually and demonstrate the packet transfer between them using Ethcoax (Ethernet using coaxial) cables. Use network scale as the "campus" of area 1km x 1km.

Algorithm used:-

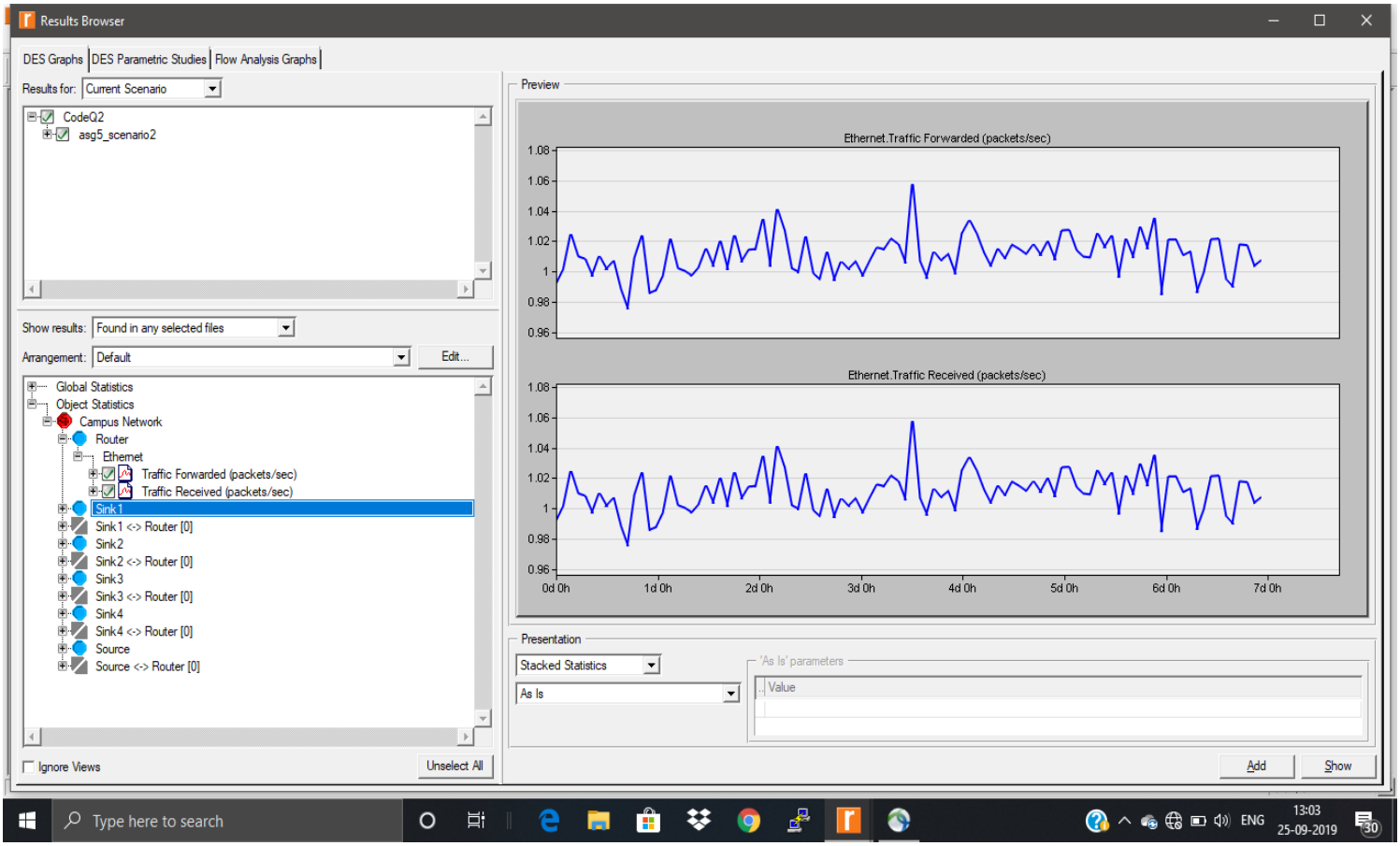
No algorithms used.

Screenshots-

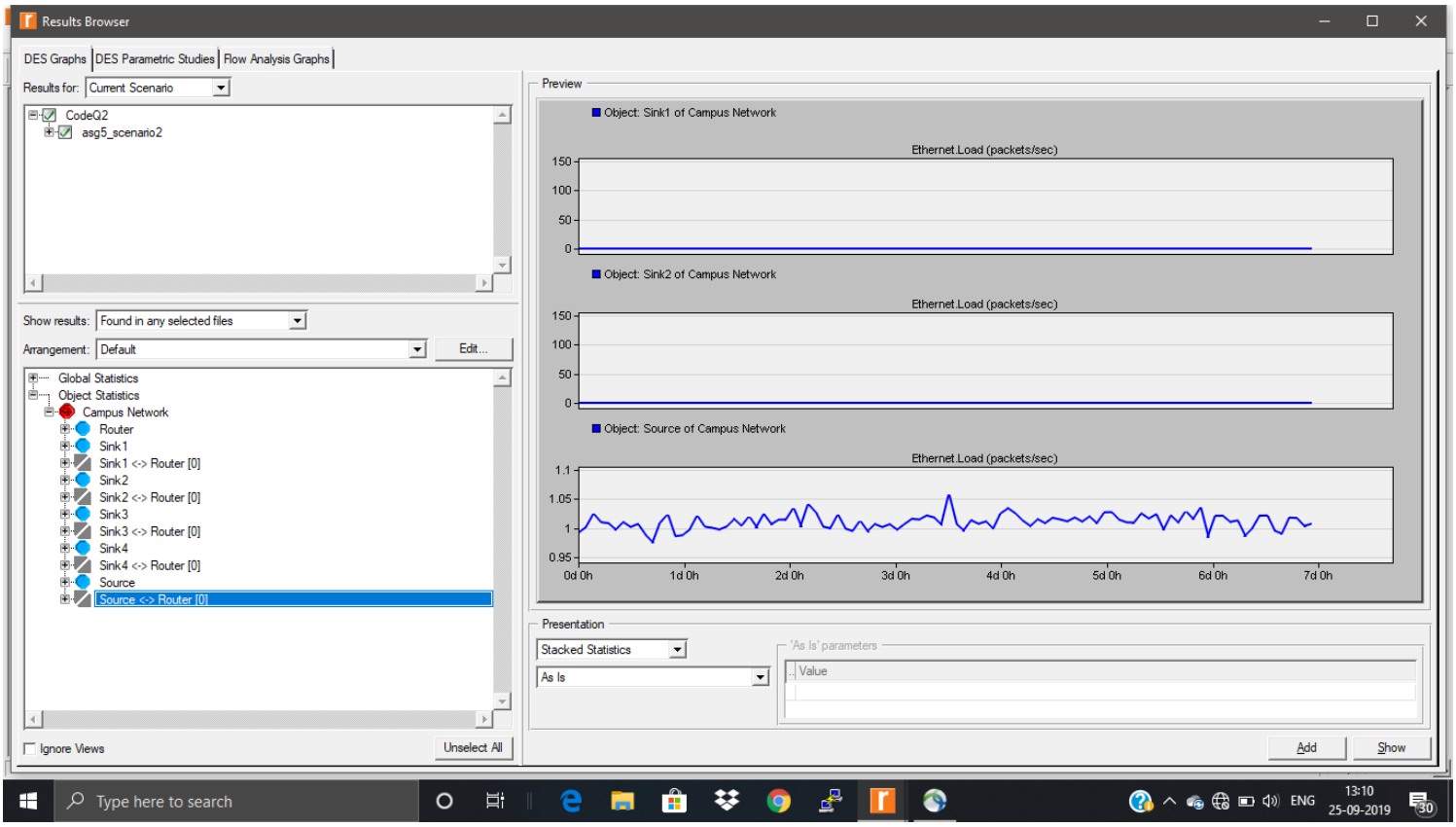
1. The screenshot of star topology. There are 5 nodes and a router in the network of which 1 node is source node and the rest 4 nodes are sink nodes.



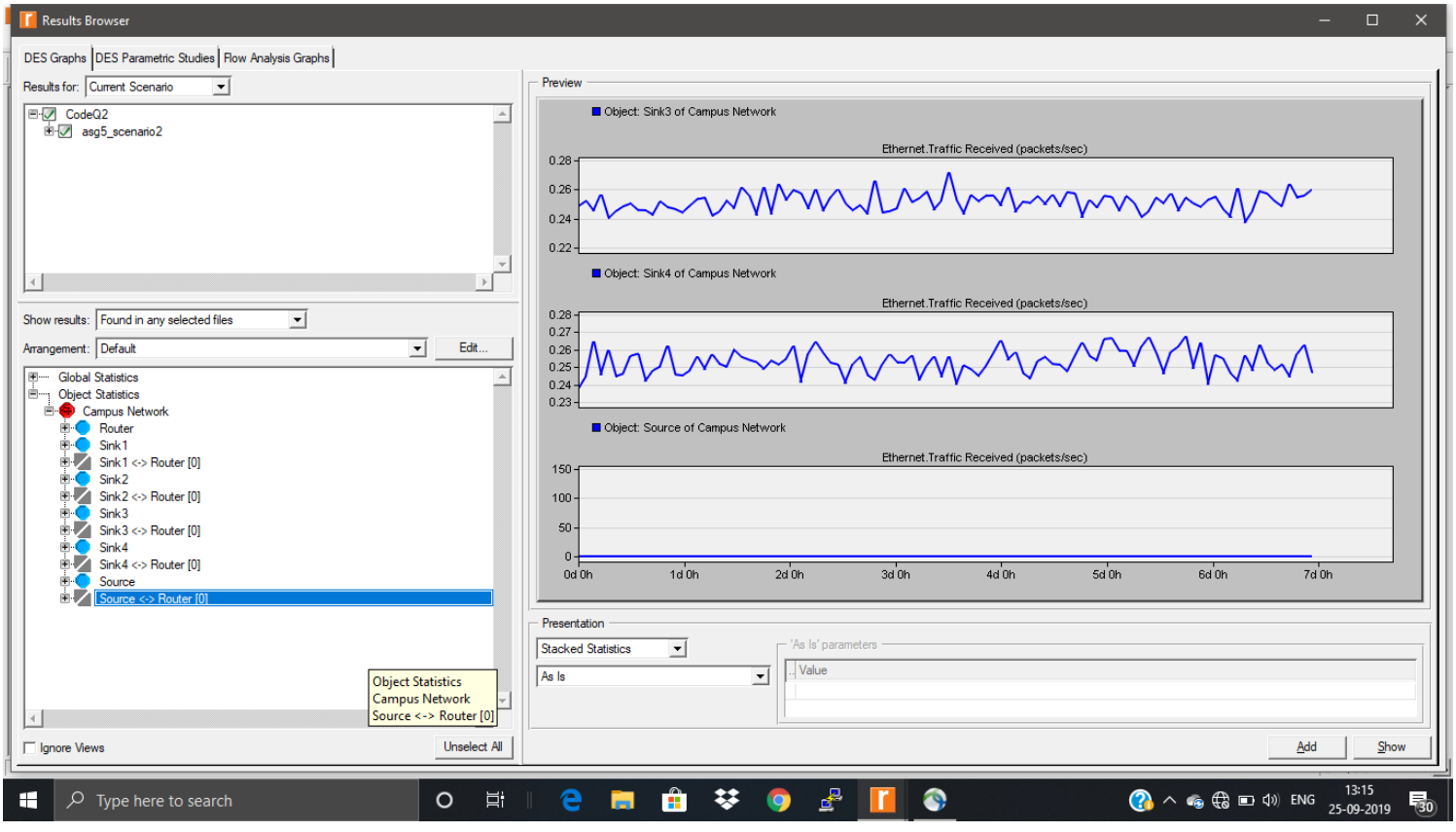
2. This shows the traffic received and the traffic forwarded from the router.



3. This shows the comparison between the load of the source and two sink nodes. We can see that the load is zero for the sink nodes and has some finite value for the source.



4. This shows the comparison between the packets received of the source and two sink nodes. Here, the source doesn't receive any packets, whereas the sink nodes receive some packets as sent to them from the router.



Data structures used :

Node – Used for sending and receiving packets.

Source – Used for sending packets.

Sink – Used for receiving packets.

Packet – The basic unit of exchange for network layer.

Frame – The basic unit of exchange for the physical layer.

Bus – Used to transfer data between connected nodes.

Ethernet Station – For receiving and sending packets.

Ethernet hub – Ethernet hubs work at the physical level, simply repeating any frames they receive on one port onto all other ports.