Computer Network Laboratory

Assignment 5

Name: Gagan Kumre
Enrollment Number: 17114028
Class: 3rd year, B.Tech CSE
Course: CSN-361

GitHub link - https://github.com/gagankumre/CSN361/tree/master/Assignment

Two problems were given for this assignment. They are-

Problem 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.

Here we have 20 nodes connected via bus. Node_0 and Node_1 are the source nodes and rest are sinks.

Algorithms and data structure used :

1. **Node:** Denotes the systems which are interacting through the network and we have used ethcoax_station model to implement them.
2. **Bus:** Denotes the link through which data is transferred between any two nodes in the network.
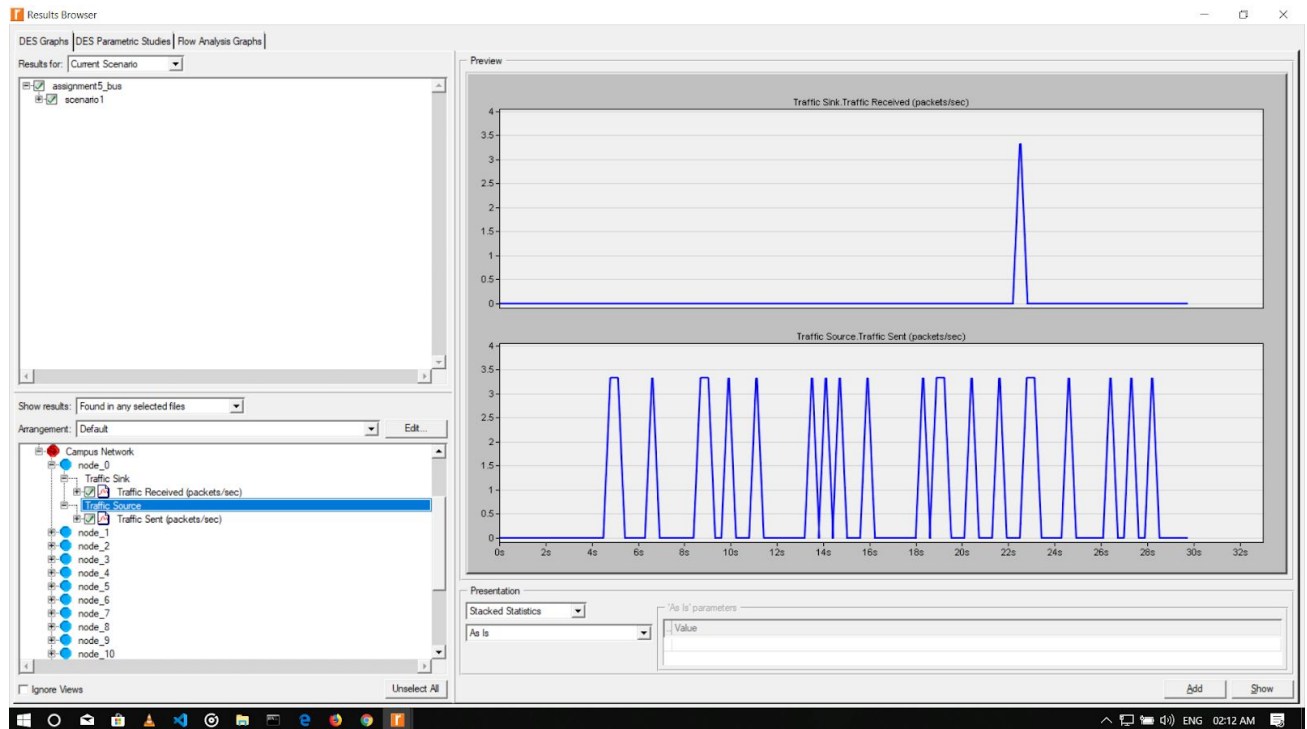3. We have used **eth_coax** model to implement the links.

Screenshots :

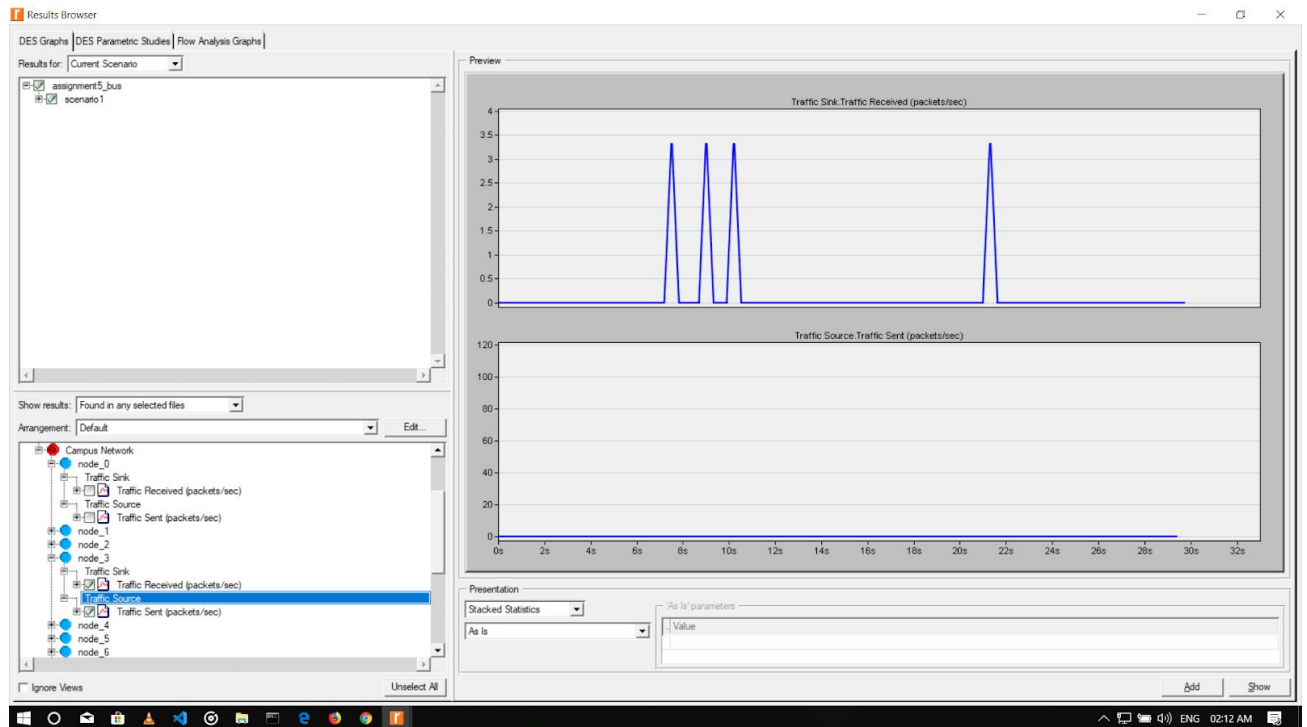## Simulation of bus topology(20 nodes):
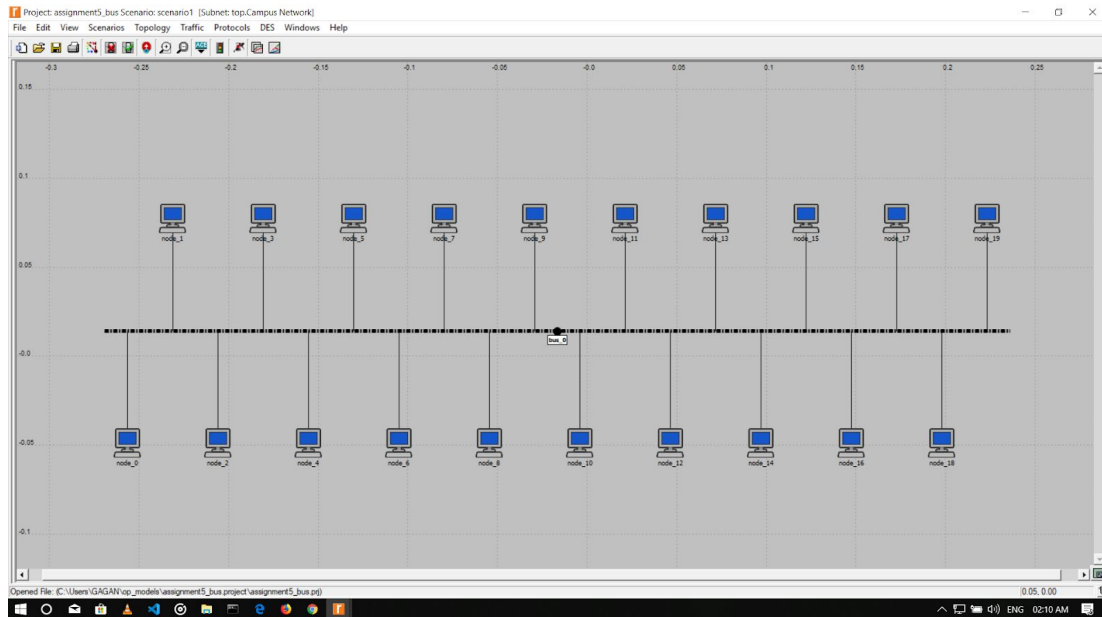
Overall packets sent and received per second:
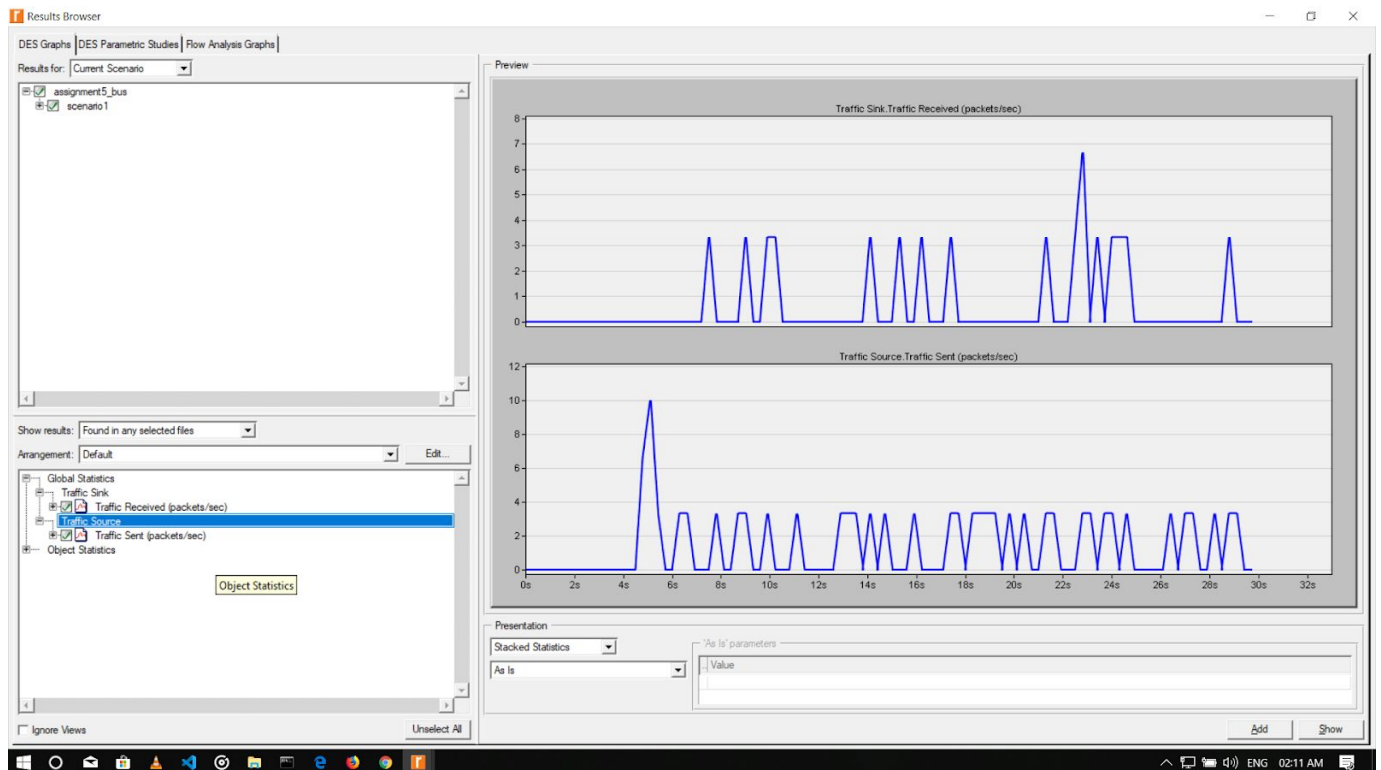
For node_0(source node), packets received and sent per second:

For node_3(source node), packets received and sent per second:

Problem 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.

Here we have 10 peripheral nodes and a central node. Node_0 is the source node and the rest are sinks.

Algorithms and data structure used :

1. **Node:** Denotes the systems which are interacting through the network and we have used *ethernet16_hub* and *ethernet_station* to implement central node and periphery node respectively.
2. **Link:** Denotes the connection between the nodes and we have implemented it through *10BaseT* model.

Screenshots :

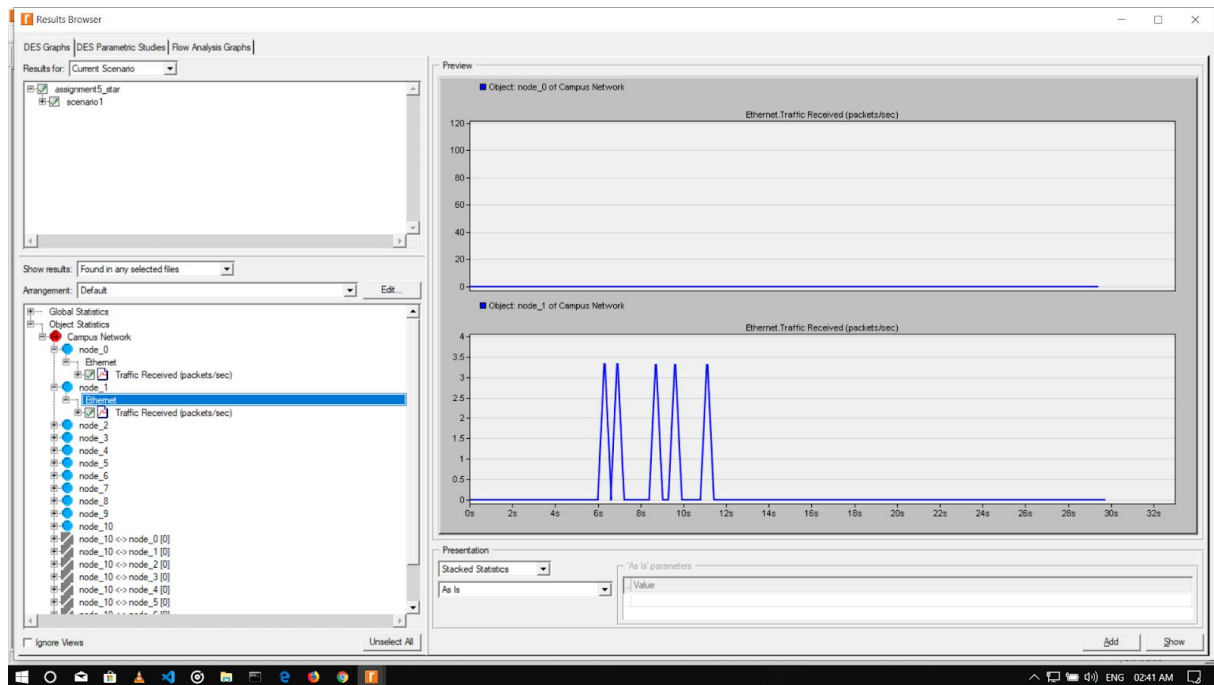### Simulation of ring topology(10 nodes):
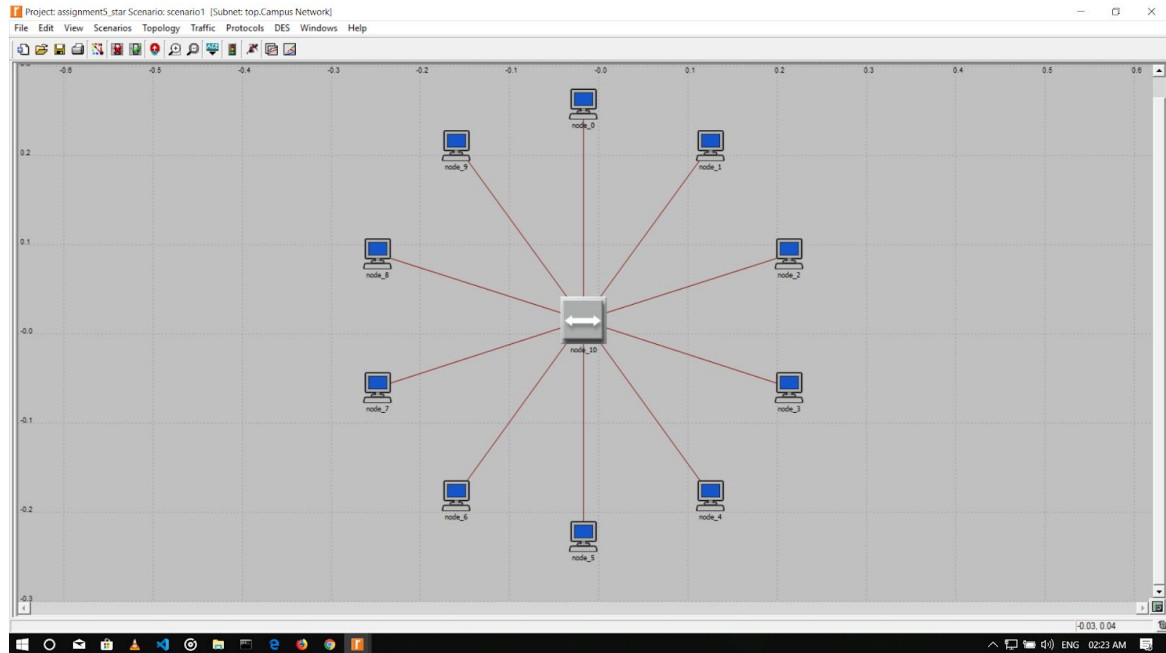
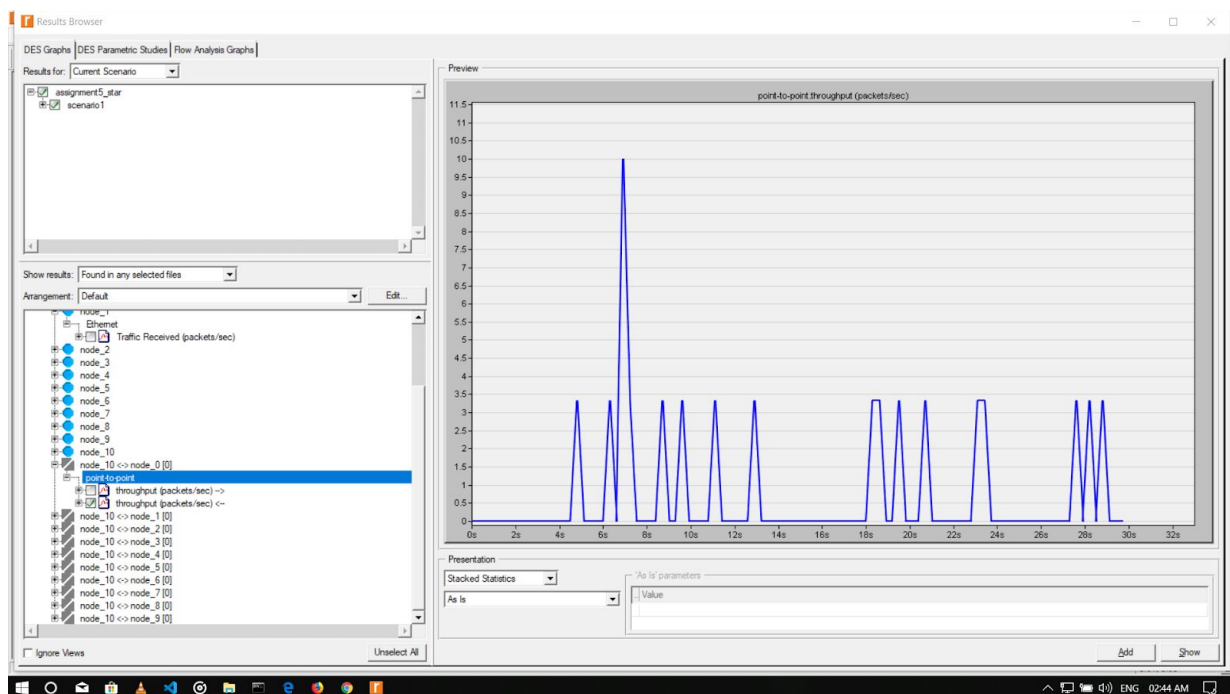### Overall packets sent and received per second:
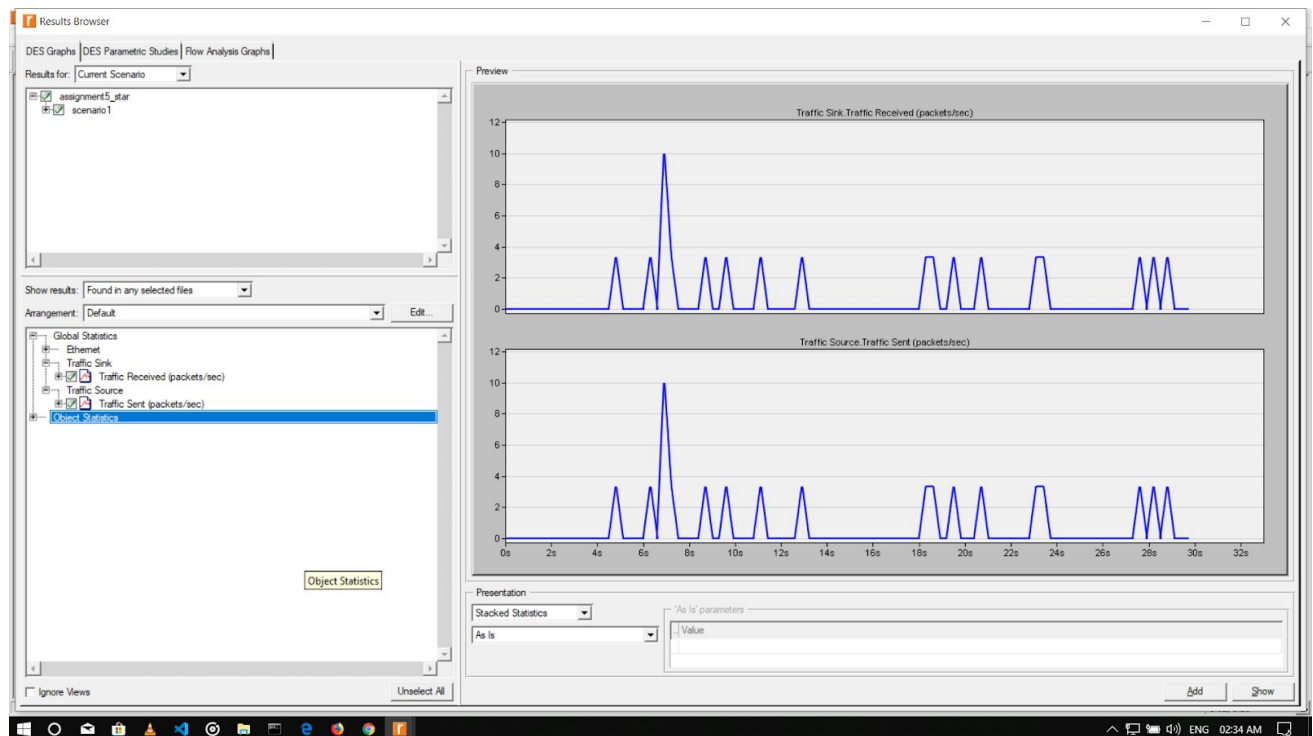
STATISTICS FOR NODES:

Node_0 is a source so traffic received is 0 and Node_1 has some non- zero traffic

STATISTICS FOR A LINK:

Point to point throughput of the link node_0 to node_10

Traffic received for the link node_0 to node_10 in packets per second