DEBAGNIK KAR

KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY (KIIT)
Deemed to be University U/S 3 of the UGC Act, 1956

KIIT School of Electronics Engineering

1804373
ETC-06

WCN Lab Report (EC-3094)

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Experiment Number	01
Date of Experiment	15/12/2020
Date of Submission	12/01/2020
Name of student	Debagnik Kar
Roll Number	1804373
Section	ETC-06

Aim of the Experiment :-

The aim of the experiment is simulation and calculation of throughput for a star connected network with 2 TCP and 1 UDP connection (using NS2 simulator).

Software Requirement :-

- Network Simulator 2

- Trace graph

Problem statement :-

Simulate and analyze the results for the following star connected network of 10 nodes with 2 TCP and 1 UDP connection (using NS2 Simulator).
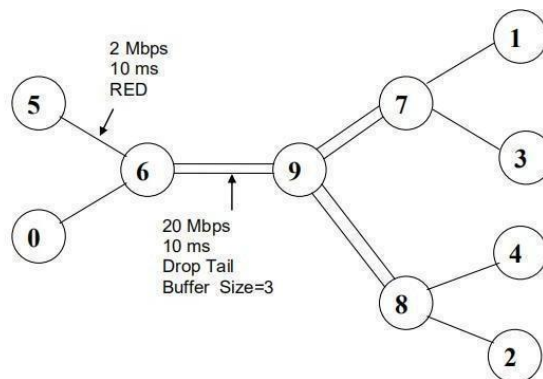
In this network of 10 nodes (node '0' through '9'), two FTP applications are running over TCP at nodes n(0) & n(1). Another CBR application is running over UDP at node n(2). The destinations of node 0, 1, 2 are 3, 4, and 5 respectively. The rest of the nodes are the intermediate routers. All the links are full duplex. Schedule: All the TCP connections start at 0.5 second and stop at 10.5 second. The UDP connection start at 1 sec and stops at 10 sec. Simulation time is from 0.5 sec to 11 sec.
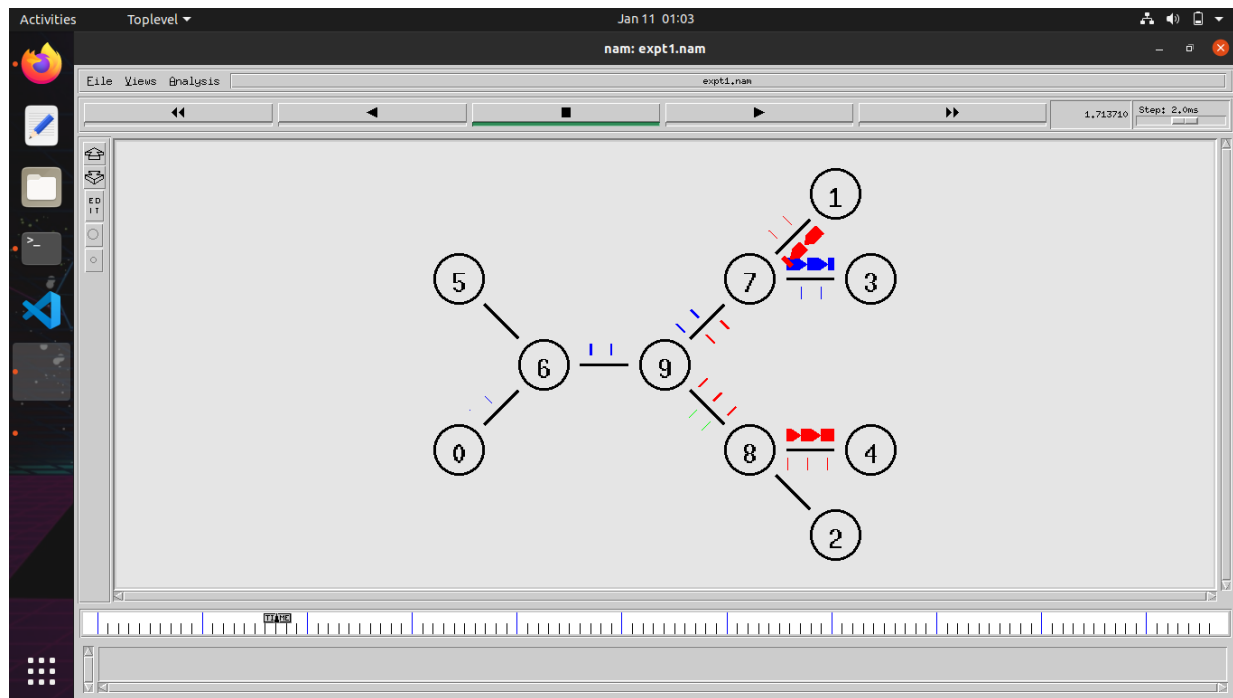
Observation :-

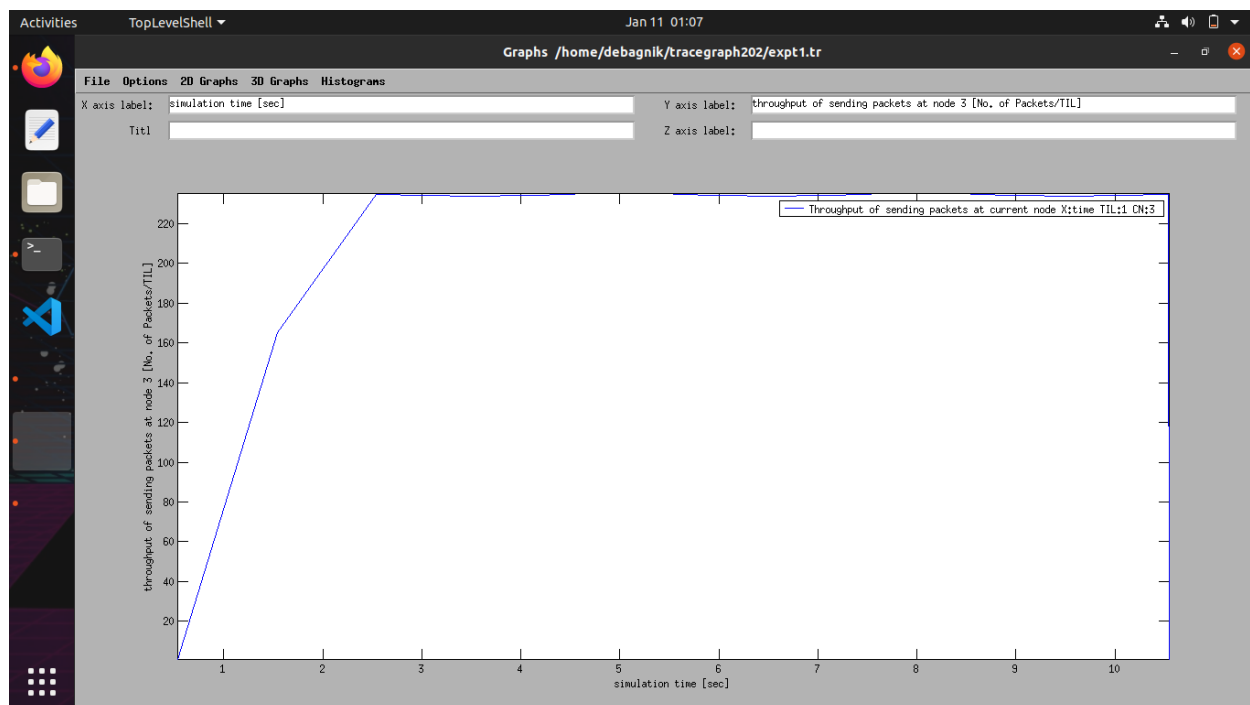

Fig 1.1: NAM Simulation of the code

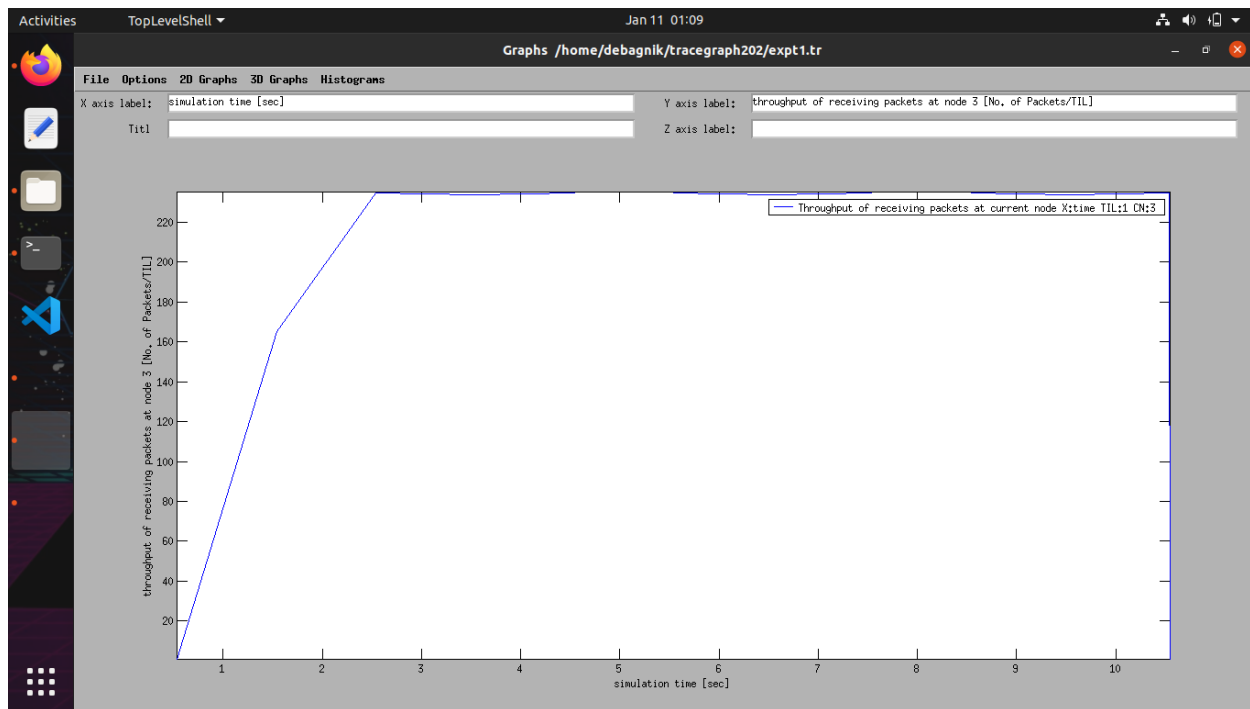*Fig 1.2: Throughput Diagram of sending packets at nodes 3*

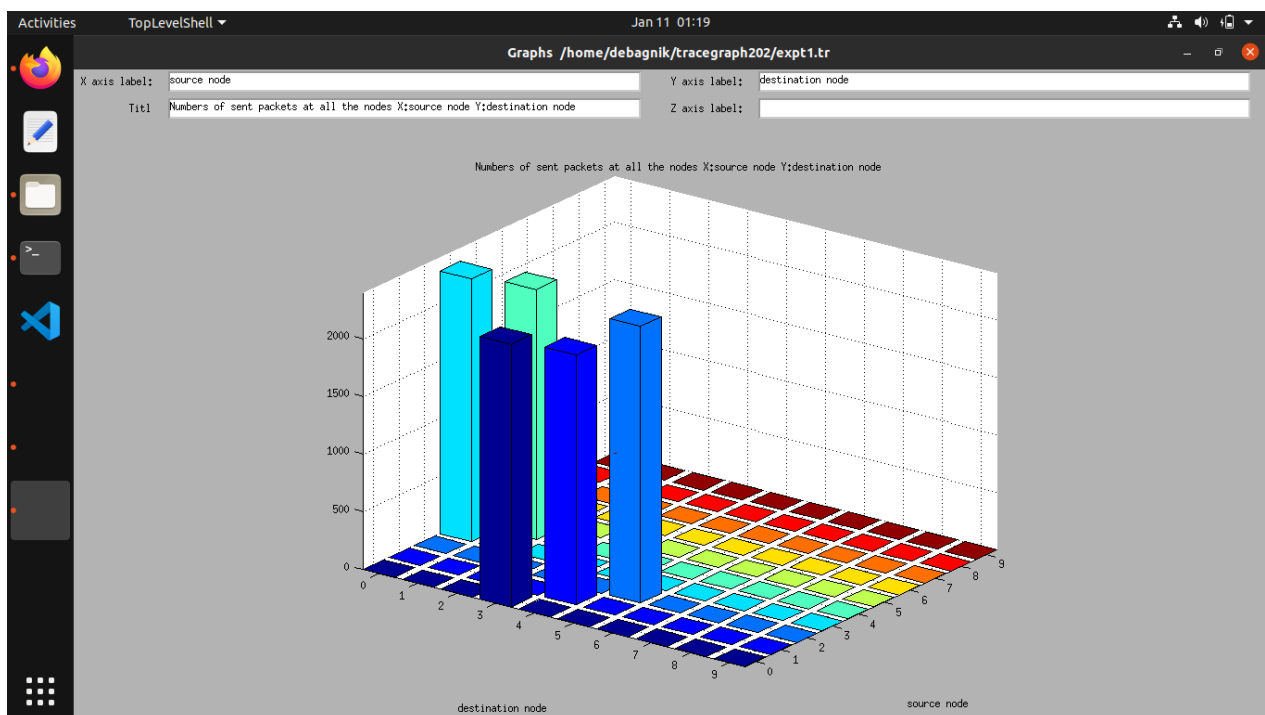*Fig 1.3: Throughput of receiving packets at current node*

Fig 1.4: 3D diagram of number of packets at all the nodes

Conclusion :-

In this experiment we have constructed a star connected network and simulated with the help of NS2 software. After simulation both 2D and 3D graph was obtained and analyzed with the help of Trace Graph.

Experiment Number	02
Date of Experiment	22/12/2020
Date of Submission	12/01/2020
Name of student	Debagnik Kar
Roll Number	1804373
Section	ETC-06

Aim of the Experiment :-

Design and simulation of an IEEE 802.3 Ethernet Local Area Network (LAN) and observation of the TCP window using NS2 Simulator.

Software Requirement :-

- NS 2 (Network Simulator v2)

- NAM (Network Animator)

- Trace graph

- Xgraph

Theory:-

Ethernet is a set of technologies and protocols that are used primarily in LANs. It was first standardized in 1980s by IEEE 802.3 standard. IEEE 802.3 defines the physical layer and the medium access control (MAC) sub-layer of the data link layer for wired Ethernet networks. Ethernet is classified into two categories: classic Ethernet and switched Ethernet

IEEE 802.3: This was the original standard given for 10BASE-5. It used a thick single coaxial cable into which a connection can be tapped by drilling into the cable to the core. Here, 10 is the maximum throughput, i.e., 10 Mbps, BASE denoted use of baseband transmission, and 5 refers to the maximum segment length of 500m.
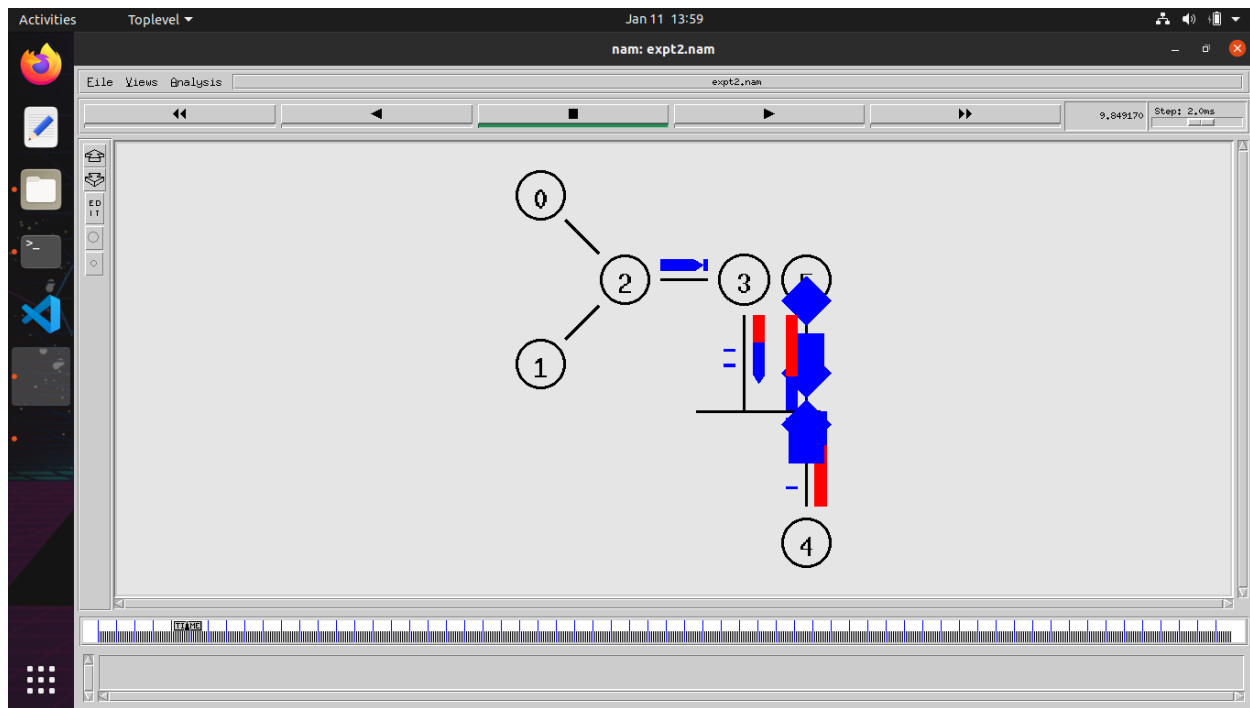
Observation :-

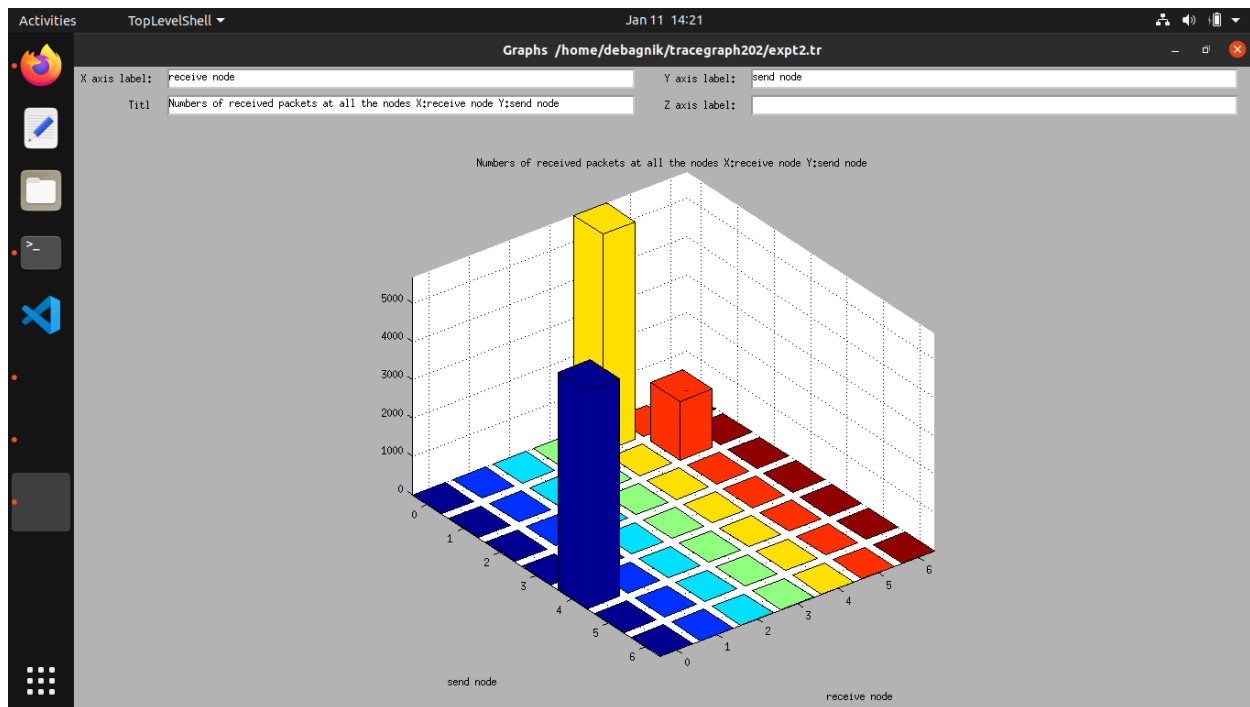*Fig 2.1: Network Animator simulation*
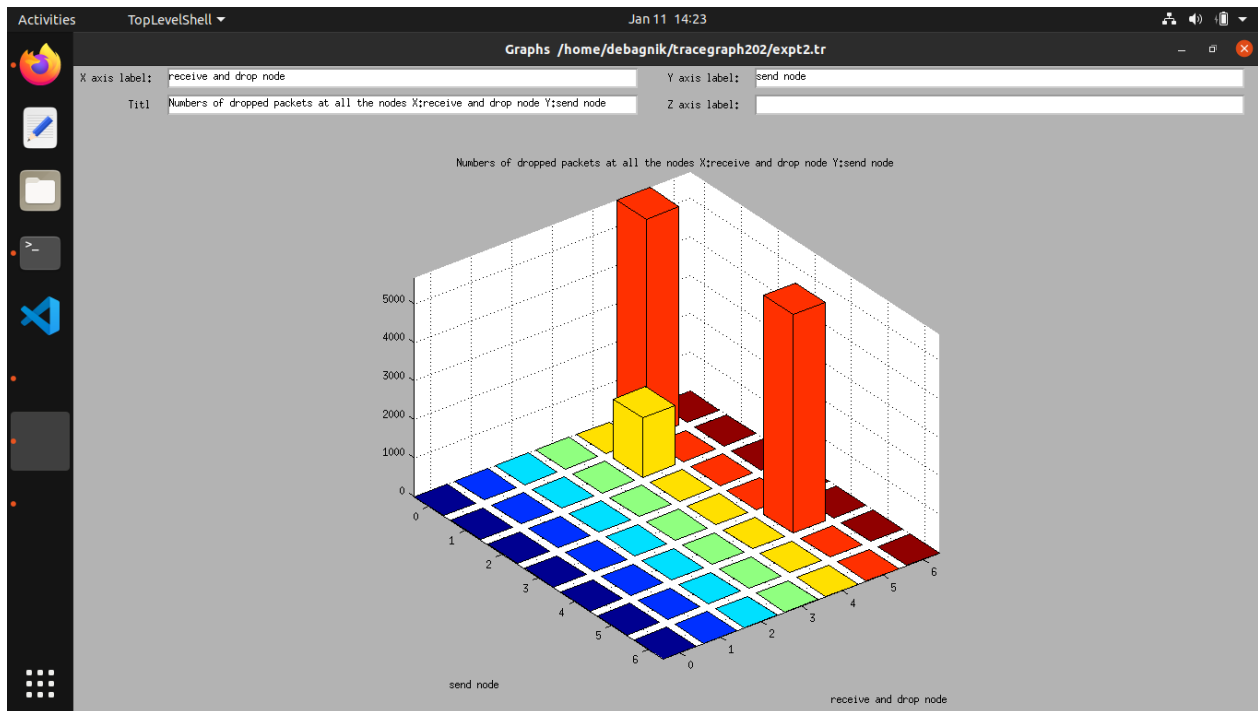

Fig 2.2: Graph of packets received at all nodes

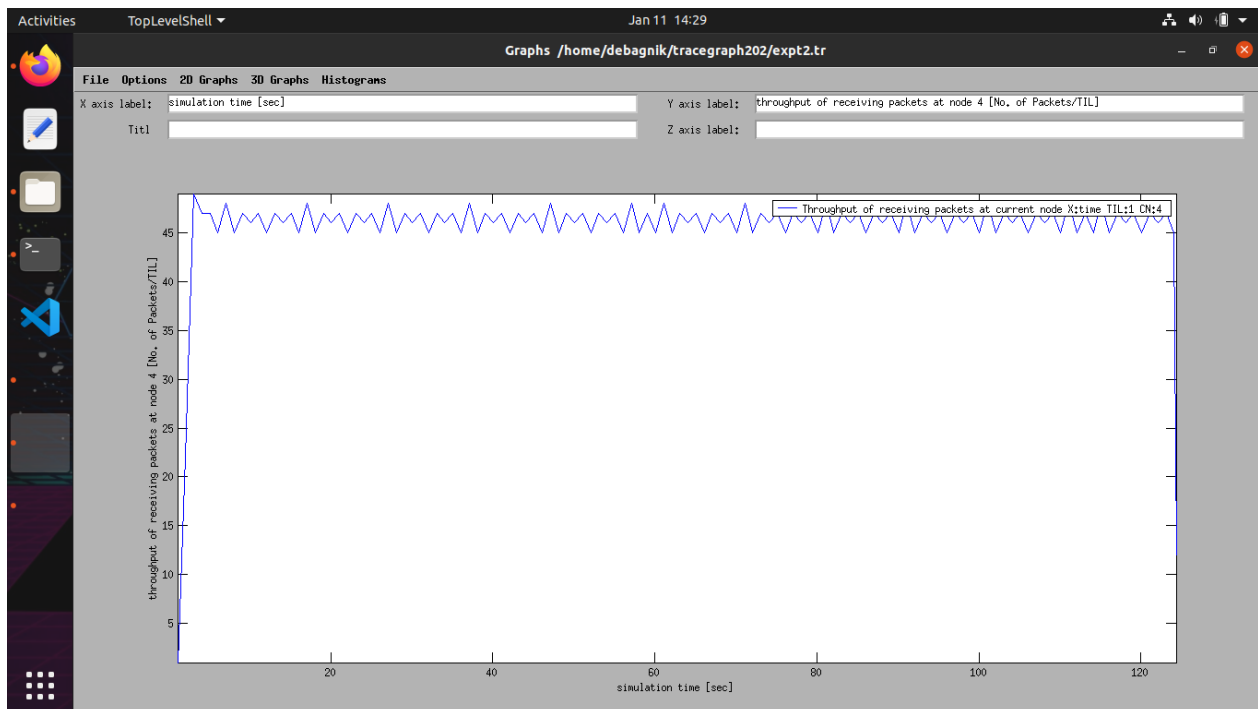*Fig 2.3: Graph of packets dropped at all nodes*

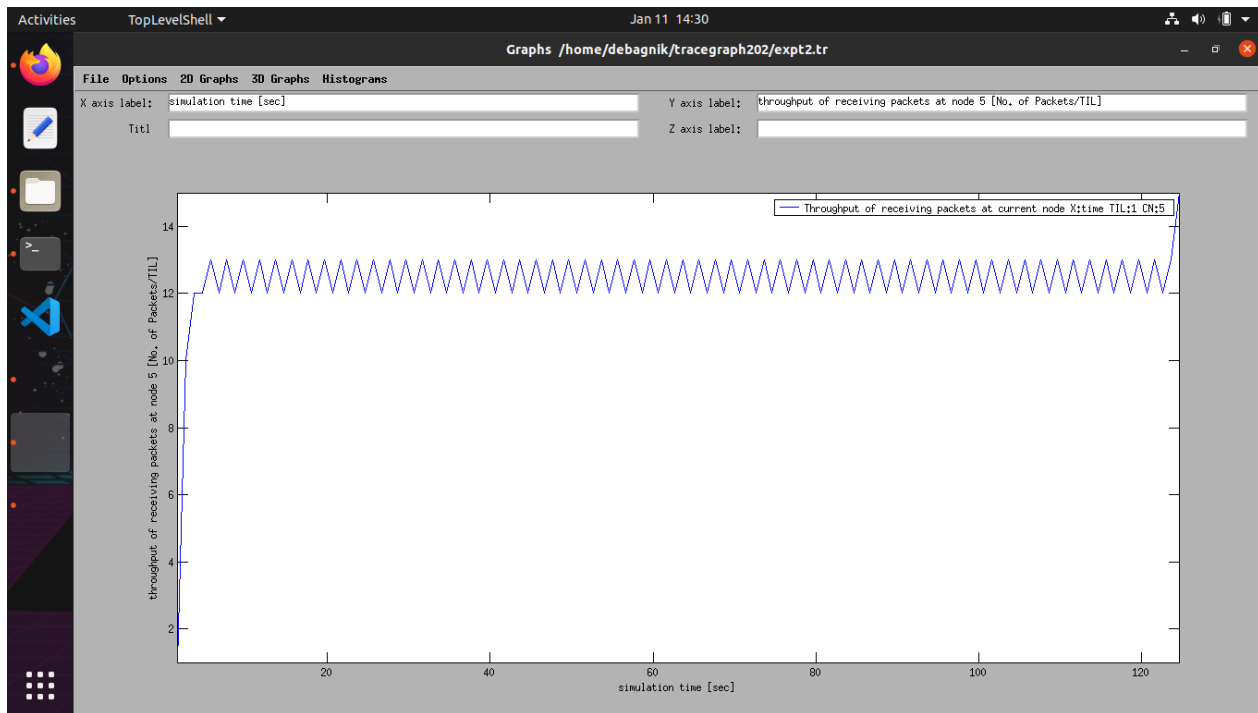*Fig 2.4: Throughput of the packets received between nodes 0 and 4*

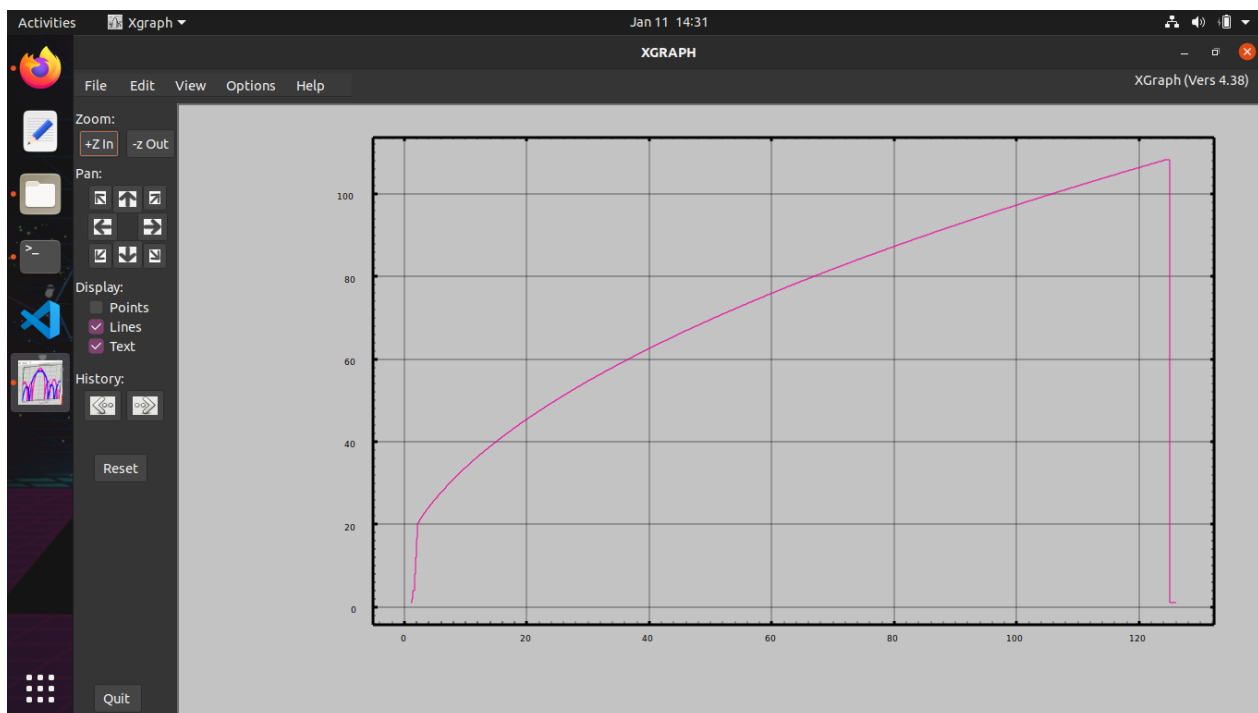*Fig 2.5: Throughput of the packet received between 1 and 5*

Fig 2.6: Plot of TCP Window by using XGraph

Conclusion :-

In this experiment we have constructed an IEEE 802.3 Ethernet Local Area Network (LAN) and simulated with the help of NS2 software. After simulation both 2D   graphs were obtained and analyzed with the help of Trace Graph and Xgraph.