

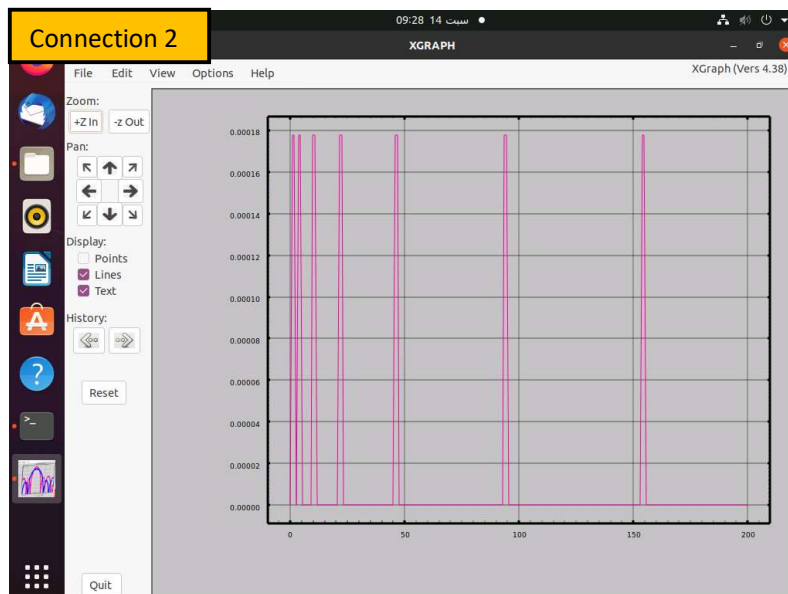
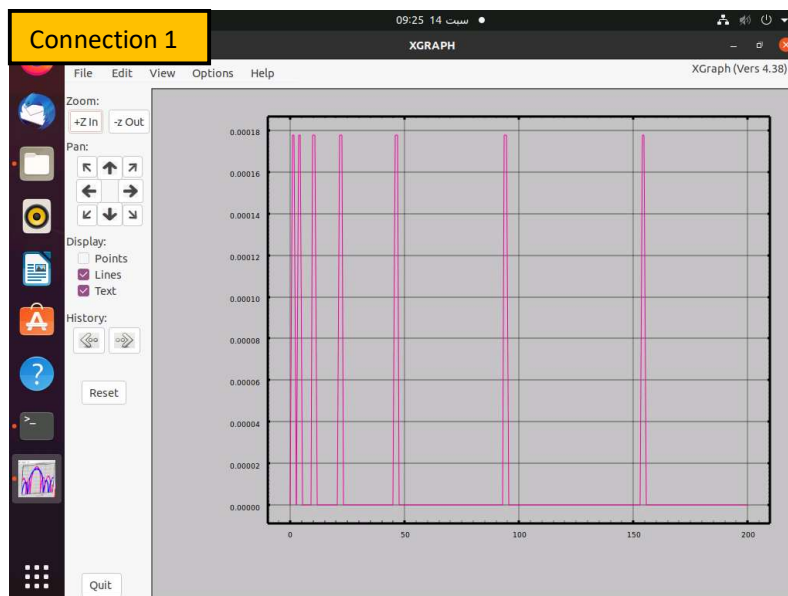
OUTPUT

Q1

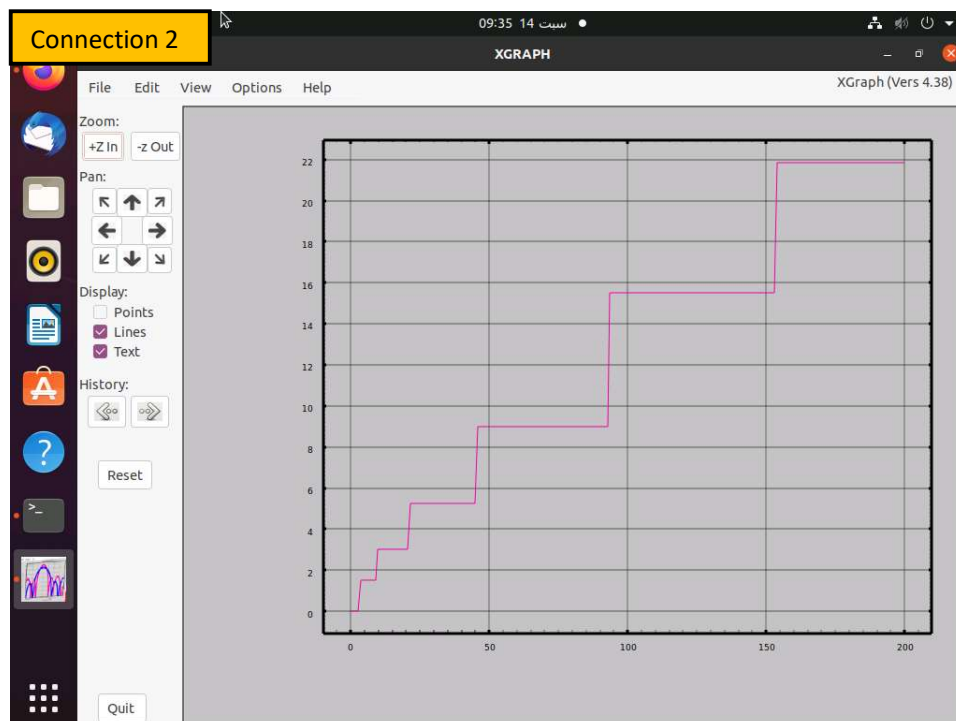
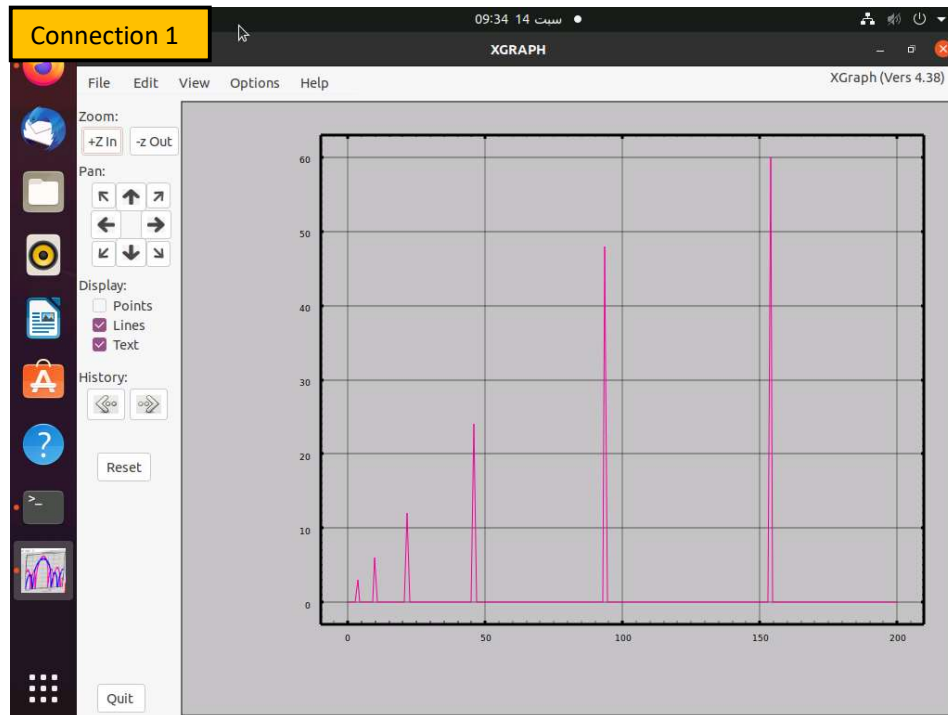
Simulate the given network for 200 sec and plot the graph of the following: a) TCP throughput Vs Simulation time (for every 50secs). b) TCP packet delays Vs Simulation time (for every 50sec) c) Packet loss Vs Simulation time (for every 50sec) For each link, data rate and propagation delay are given.

Do note: In this simulation, node 0 has been linked to node 4 as an ftp connection 1 (agent1 - sink), while node 1 has been linked to node 5 as ftp connection 2. (agent2 – sink2) Both agents have same priority.

Q1) a : TCP throughput Vs Simulation time (for every 50secs)

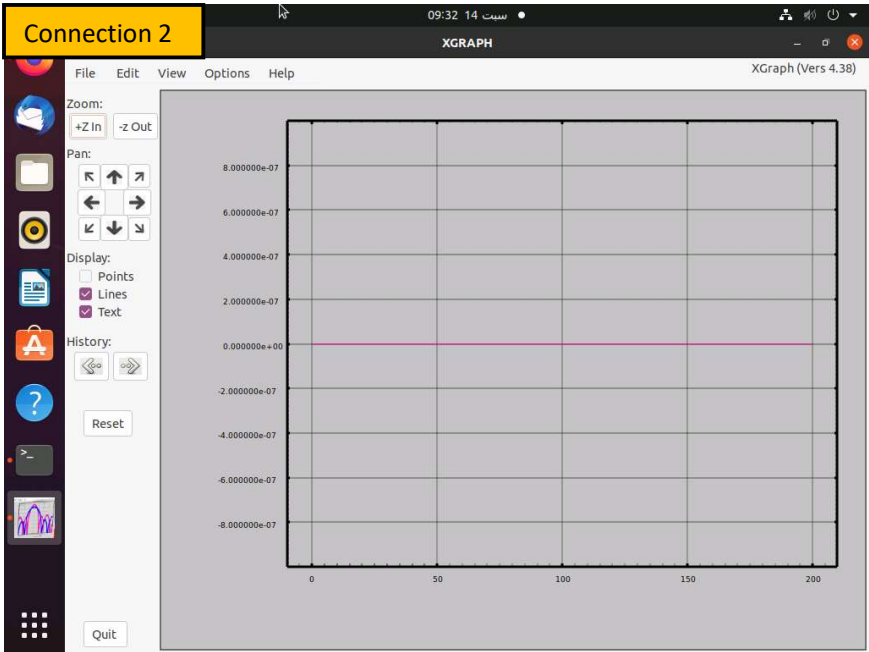
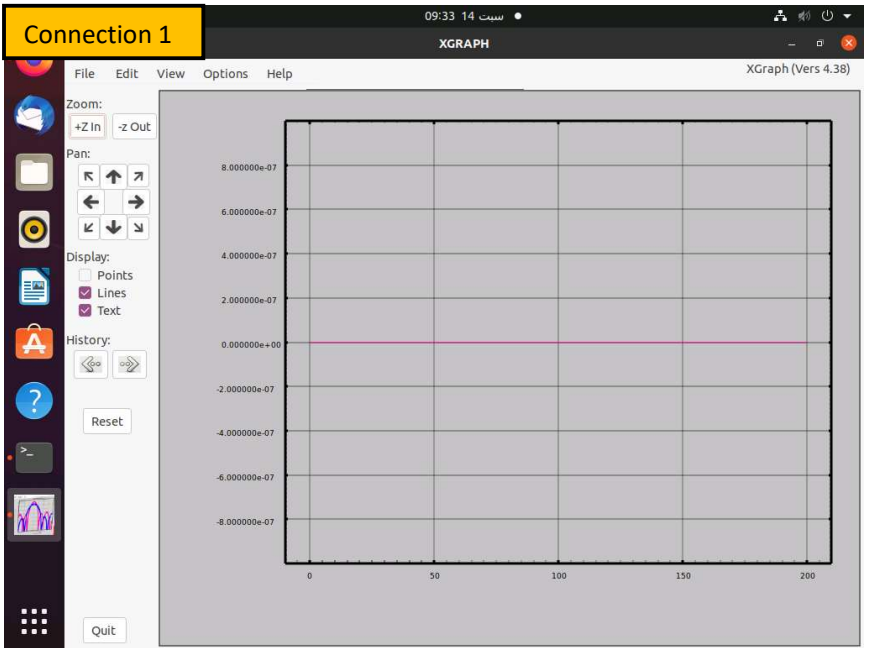


Q1 (b) TCP packet delays Vs Simulation time



(DO SCROLL DOWN)

Q1 (C) : Packet loss Vs Simulation time



(DO SCROLL DOWN)

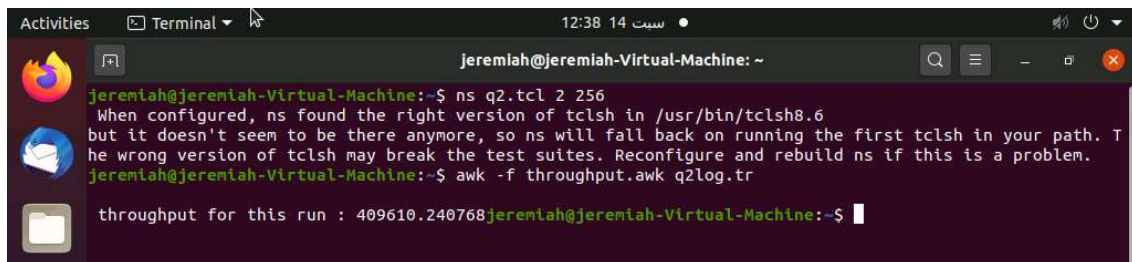
Q2)

Simulate a mesh network with N nodes. The nodes are numbered sequentially started from 1. The odd numbered stations are sources and even numbered nodes re destinations. Assume that the all source nodes have UDP data from the starting of the simulation till the end of the simulation. Find the performance of the network in terms of throughput for the following cases. Constant size UDP packets, varying $N=2, 5, 10$ and 15

A) Constant size UDP packets, varying $N=2, 5, 10$ and 15

Constant Packet Size Chosen: 256 bits

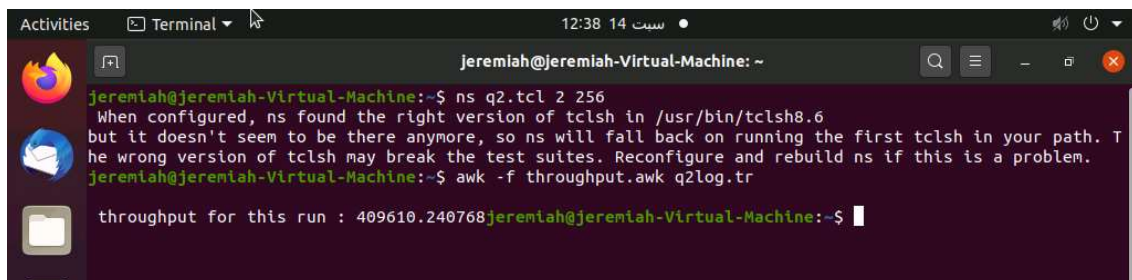
- **$N=2$**

A terminal window titled 'Jeremiah@Jeremiah-Virtual-Machine: ~' showing the execution of a network simulation. The user runs 'ns q2.tcl 2 256'. The output shows a warning about the tclsh version and then the throughput result: 'throughput for this run : 409610.240768'.

```
Jeremiah@Jeremiah-Virtual-Machine:~$ ns q2.tcl 2 256
When configured, ns found the right version of tclsh in /usr/bin/tclsh8.6
but it doesn't seem to be there anymore, so ns will fall back on running the first tclsh in your path. T
he wrong version of tclsh may break the test suites. Reconfigure and rebuild ns if this is a problem.
Jeremiah@Jeremiah-Virtual-Machine:~$ awk -f throughput.awk q2log.tr

throughput for this run : 409610.240768Jeremiah@Jeremiah-Virtual-Machine:~$
```

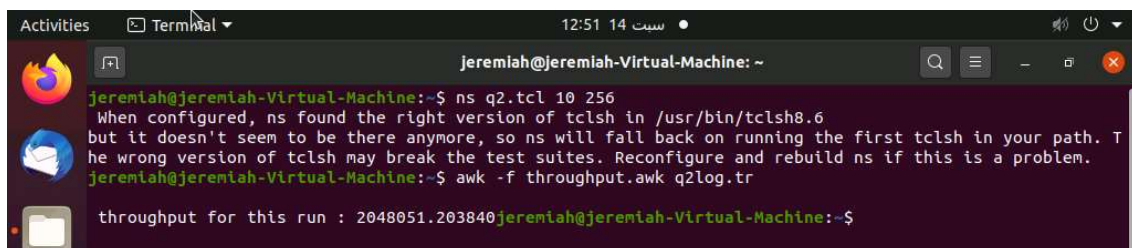
- **$N=5$**

A terminal window titled 'Jeremiah@Jeremiah-Virtual-Machine: ~' showing the execution of a network simulation. The user runs 'ns q2.tcl 5 256'. The output shows a warning about the tclsh version and then the throughput result: 'throughput for this run : 409610.240768'.

```
Jeremiah@Jeremiah-Virtual-Machine:~$ ns q2.tcl 5 256
When configured, ns found the right version of tclsh in /usr/bin/tclsh8.6
but it doesn't seem to be there anymore, so ns will fall back on running the first tclsh in your path. T
he wrong version of tclsh may break the test suites. Reconfigure and rebuild ns if this is a problem.
Jeremiah@Jeremiah-Virtual-Machine:~$ awk -f throughput.awk q2log.tr

throughput for this run : 409610.240768Jeremiah@Jeremiah-Virtual-Machine:~$
```

- **$N=10$**

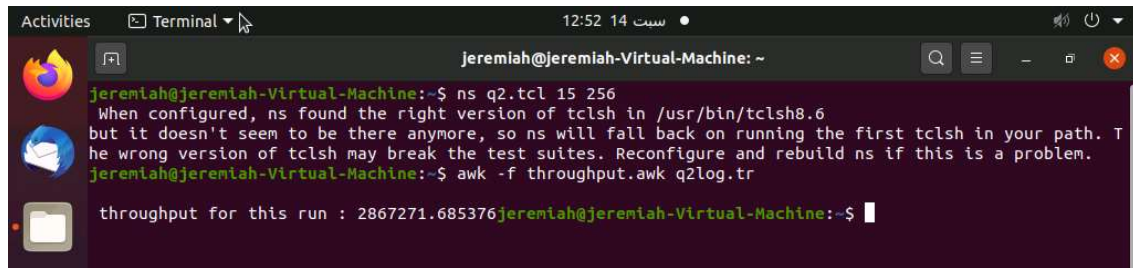
A terminal window titled 'Jeremiah@Jeremiah-Virtual-Machine: ~' showing the execution of a network simulation. The user runs 'ns q2.tcl 10 256'. The output shows a warning about the tclsh version and then the throughput result: 'throughput for this run : 2048051.203840'.

```
Jeremiah@Jeremiah-Virtual-Machine:~$ ns q2.tcl 10 256
When configured, ns found the right version of tclsh in /usr/bin/tclsh8.6
but it doesn't seem to be there anymore, so ns will fall back on running the first tclsh in your path. T
he wrong version of tclsh may break the test suites. Reconfigure and rebuild ns if this is a problem.
Jeremiah@Jeremiah-Virtual-Machine:~$ awk -f throughput.awk q2log.tr

throughput for this run : 2048051.203840Jeremiah@Jeremiah-Virtual-Machine:~$
```

(DO SCROLL DOWN)

- N=15:-



```

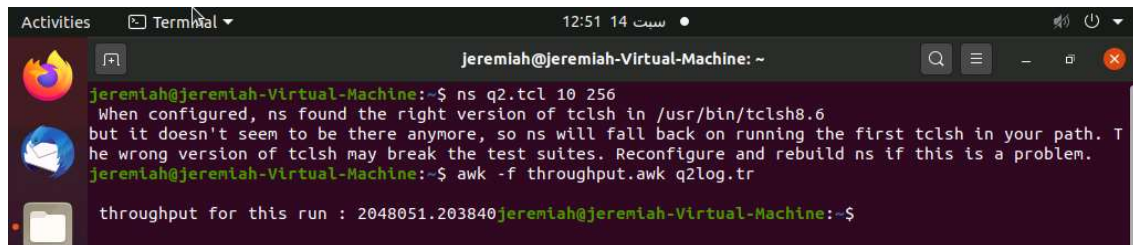
Activities  Terminal  12:52 14 سبت
Jeremiah@jeremiah-Virtual-Machine: ~
Jeremiah@jeremiah-Virtual-Machine:~$ ns q2.tcl 15 256
When configured, ns found the right version of tclsh in /usr/bin/tclsh8.6
but it doesn't seem to be there anymore, so ns will fall back on running the first tclsh in your path. T
he wrong version of tclsh may break the test suites. Reconfigure and rebuild ns if this is a problem.
Jeremiah@jeremiah-Virtual-Machine:~$ awk -f throughput.awk q2log.tr

throughput for this run : 2867271.685376Jeremiah@jeremiah-Virtual-Machine:~$

```

b) N=10, varying packet sizes of 256 bits, 512 bits, 2048 bits, and 8192 bits

- 256 bits:-



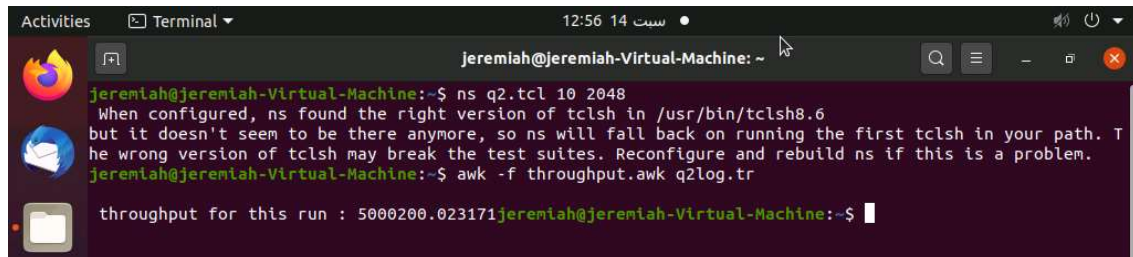
```

Activities  Terminal  12:51 14 سبت
Jeremiah@jeremiah-Virtual-Machine: ~
Jeremiah@jeremiah-Virtual-Machine:~$ ns q2.tcl 10 256
When configured, ns found the right version of tclsh in /usr/bin/tclsh8.6
but it doesn't seem to be there anymore, so ns will fall back on running the first tclsh in your path. T
he wrong version of tclsh may break the test suites. Reconfigure and rebuild ns if this is a problem.
Jeremiah@jeremiah-Virtual-Machine:~$ awk -f throughput.awk q2log.tr

throughput for this run : 2048051.203840Jeremiah@jeremiah-Virtual-Machine:~$

```

- 2048 bits:-



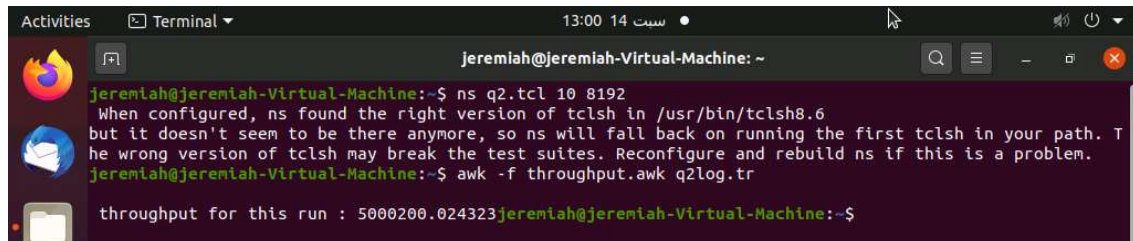
```

Activities  Terminal  12:56 14 سبت
Jeremiah@jeremiah-Virtual-Machine: ~
Jeremiah@jeremiah-Virtual-Machine:~$ ns q2.tcl 10 2048
When configured, ns found the right version of tclsh in /usr/bin/tclsh8.6
but it doesn't seem to be there anymore, so ns will fall back on running the first tclsh in your path. T
he wrong version of tclsh may break the test suites. Reconfigure and rebuild ns if this is a problem.
Jeremiah@jeremiah-Virtual-Machine:~$ awk -f throughput.awk q2log.tr

throughput for this run : 5000200.023171Jeremiah@jeremiah-Virtual-Machine:~$

```

- 8192 bits:-



```

Activities  Terminal  13:00 14 سبت
Jeremiah@jeremiah-Virtual-Machine: ~
Jeremiah@jeremiah-Virtual-Machine:~$ ns q2.tcl 10 8192
When configured, ns found the right version of tclsh in /usr/bin/tclsh8.6
but it doesn't seem to be there anymore, so ns will fall back on running the first tclsh in your path. T
he wrong version of tclsh may break the test suites. Reconfigure and rebuild ns if this is a problem.
Jeremiah@jeremiah-Virtual-Machine:~$ awk -f throughput.awk q2log.tr

throughput for this run : 5000200.024323Jeremiah@jeremiah-Virtual-Machine:~$

```

THANK YOU!