

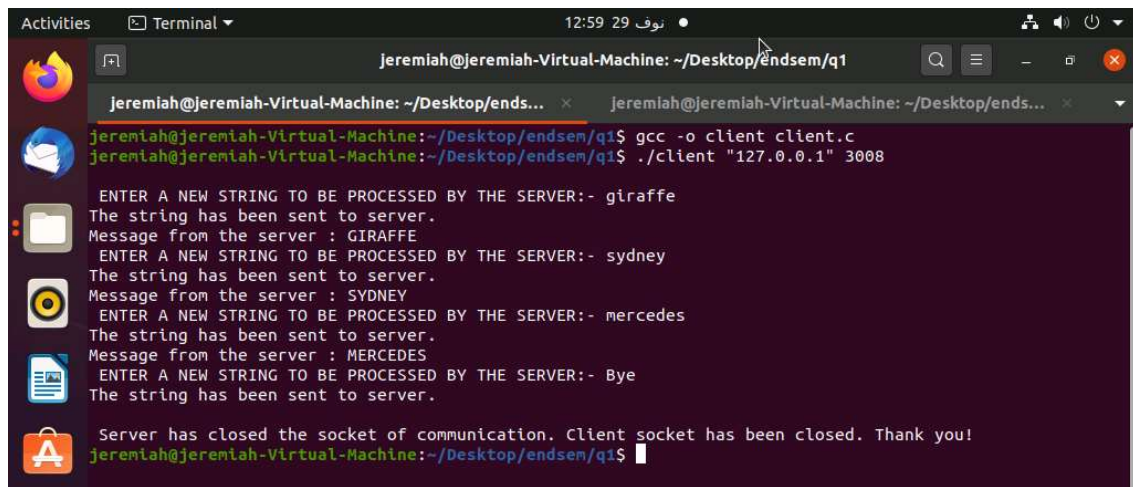
NETWORKS LAB ENDSEM

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106119055 | CSE -A

Q1)

Client side :-

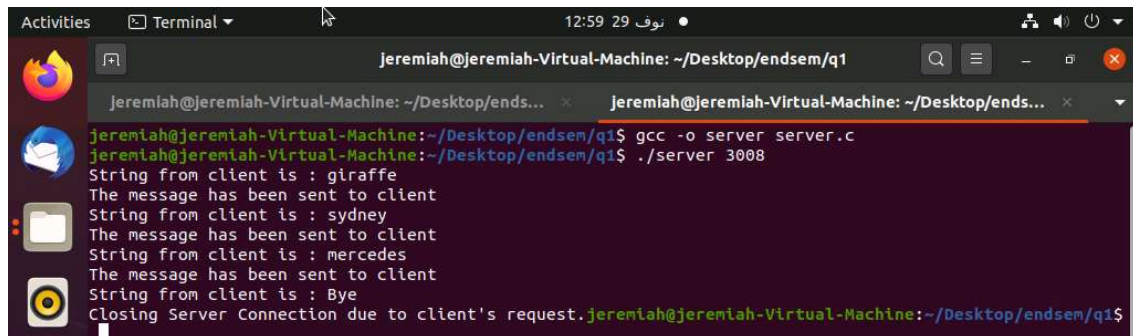


```
jeremiah@jeremiah-Virtual-Machine: ~/Desktop/endsem/q1
jeremiah@jeremiah-Virtual-Machine: ~/Desktop/endsem/q1$ gcc -o client client.c
jeremiah@jeremiah-Virtual-Machine: ~/Desktop/endsem/q1$ ./client "127.0.0.1" 3008

ENTER A NEW STRING TO BE PROCESSED BY THE SERVER:- giraffe
The string has been sent to server.
Message from the server : GIRAFFE
ENTER A NEW STRING TO BE PROCESSED BY THE SERVER:- sydney
The string has been sent to server.
Message from the server : SYDNEY
ENTER A NEW STRING TO BE PROCESSED BY THE SERVER:- mercedes
The string has been sent to server.
Message from the server : MERCEDES
ENTER A NEW STRING TO BE PROCESSED BY THE SERVER:- Bye
The string has been sent to server.

Server has closed the socket of communication. Client socket has been closed. Thank you!
jeremiah@jeremiah-Virtual-Machine: ~/Desktop/endsem/q1$
```

Server side :-

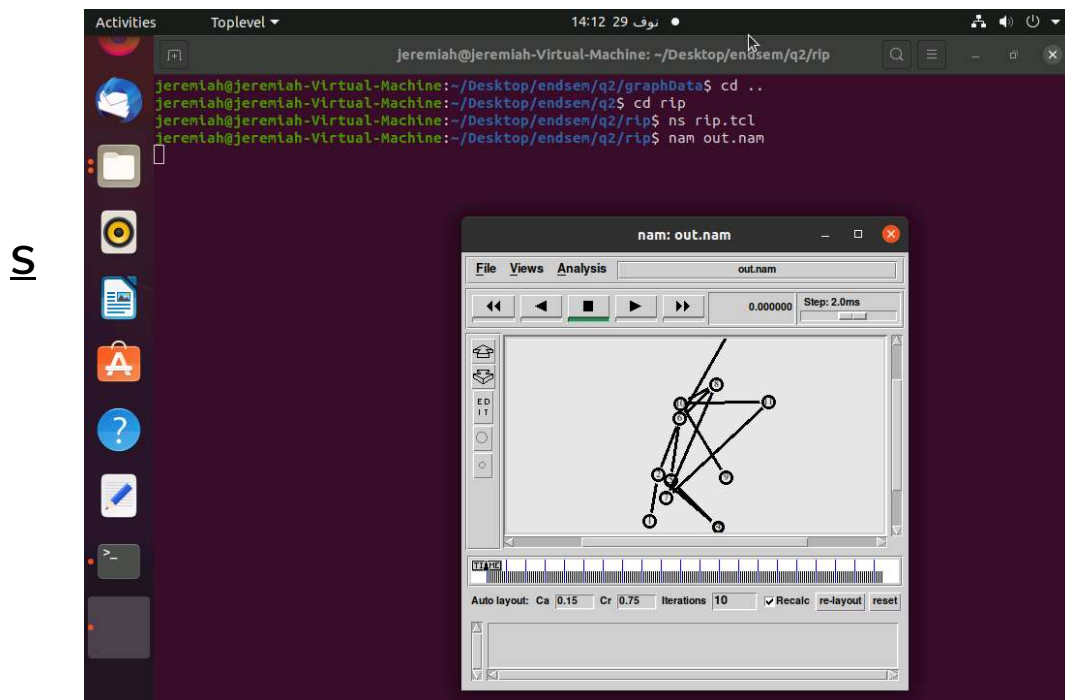


```
jeremiah@jeremiah-Virtual-Machine: ~/Desktop/endsem/q1
jeremiah@jeremiah-Virtual-Machine: ~/Desktop/endsem/q1$ gcc -o server server.c
jeremiah@jeremiah-Virtual-Machine: ~/Desktop/endsem/q1$ ./server 3008

String from client is : giraffe
The message has been sent to client
String from client is : sydney
The message has been sent to client
String from client is : mercedes
The message has been sent to client
String from client is : Bye
Closing Server Connection due to client's request.
jeremiah@jeremiah-Virtual-Machine: ~/Desktop/endsem/q1$
```

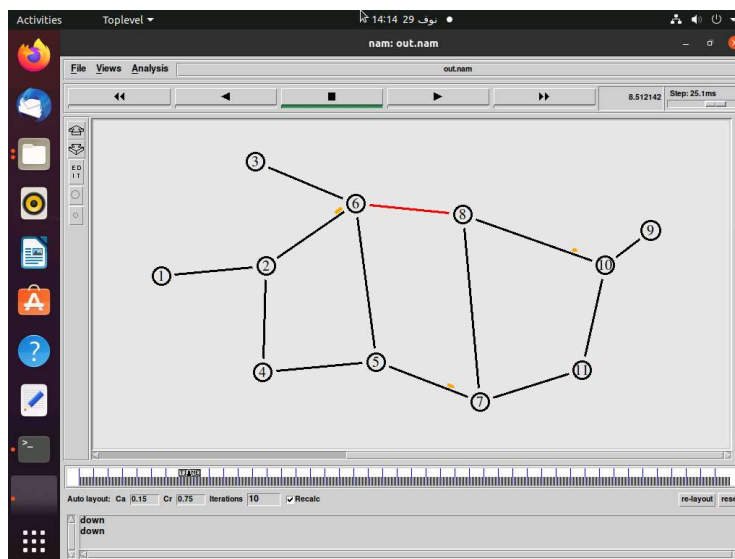
Q2)

Command Line Sample (Running rip for example):-

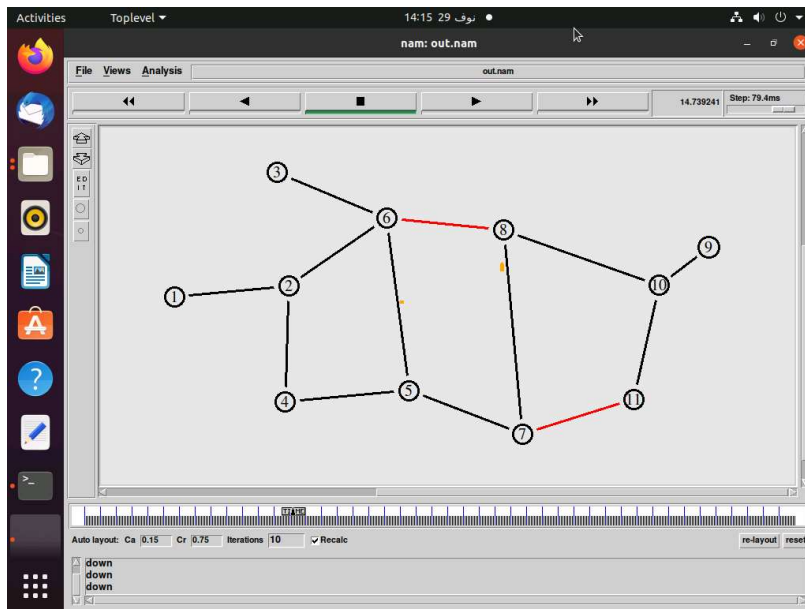


Some simulation snippets:-

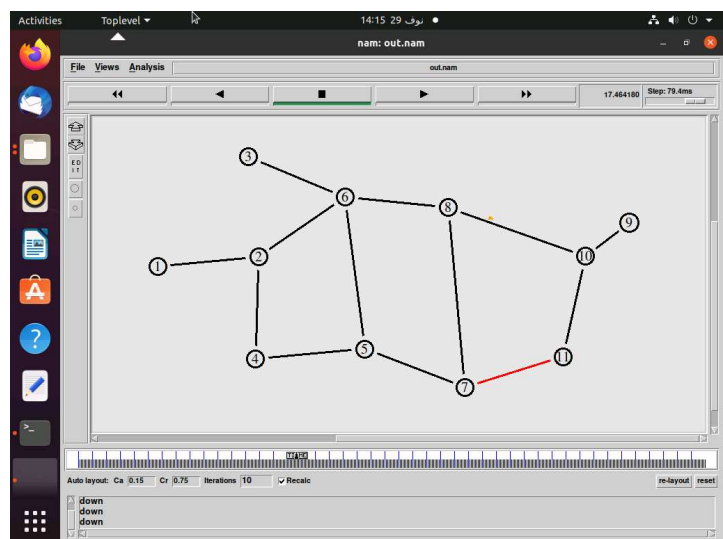
Do note: Green -> Tcp , Orange -> Udp



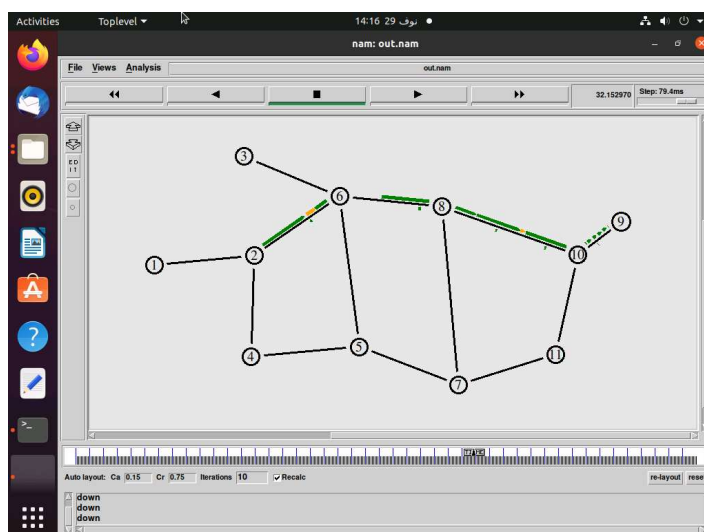
After 8s. Link bw 6 and 8 is down. Rerouting is done



After 12s, link 7-11 is down as well



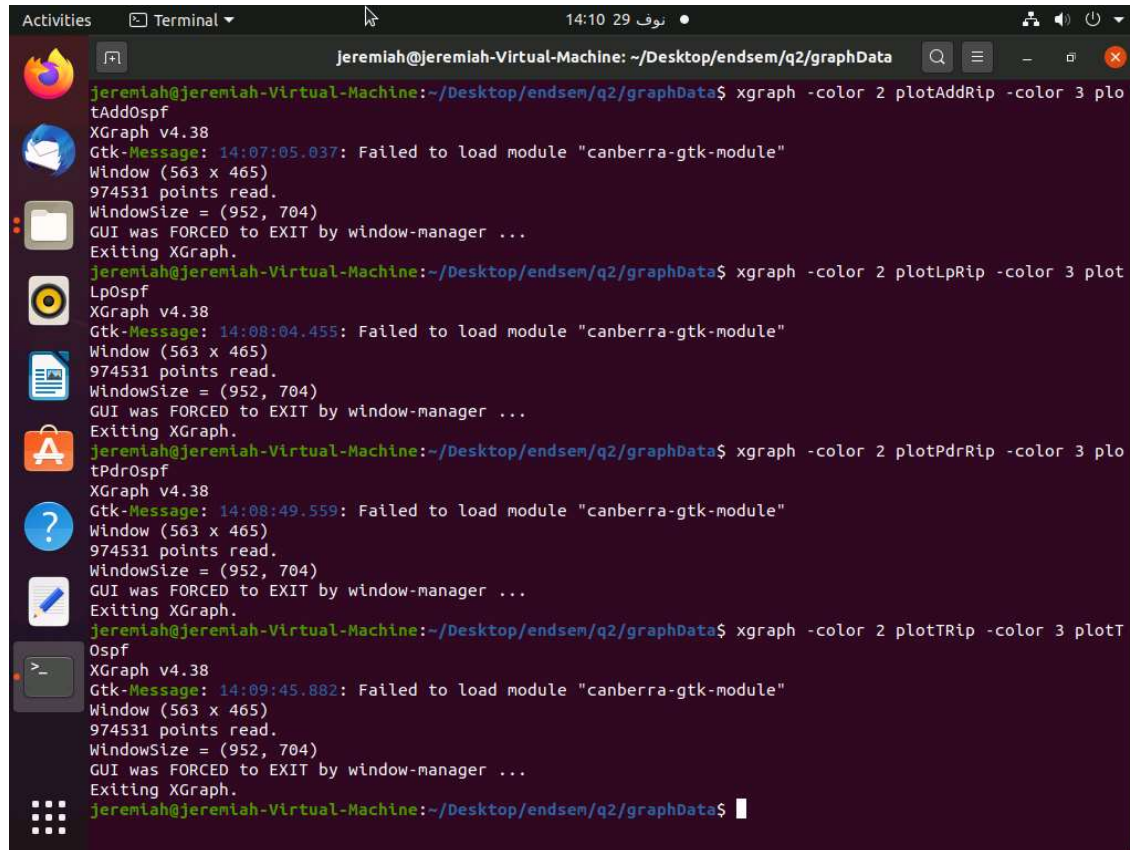
After 16s, link bw 6-8 is restored



After 30s, Tcp begins to transmit (green) and also at 24s, link bw 7&11 is restored as well.

Graphs:-

Commands Screenshot:-



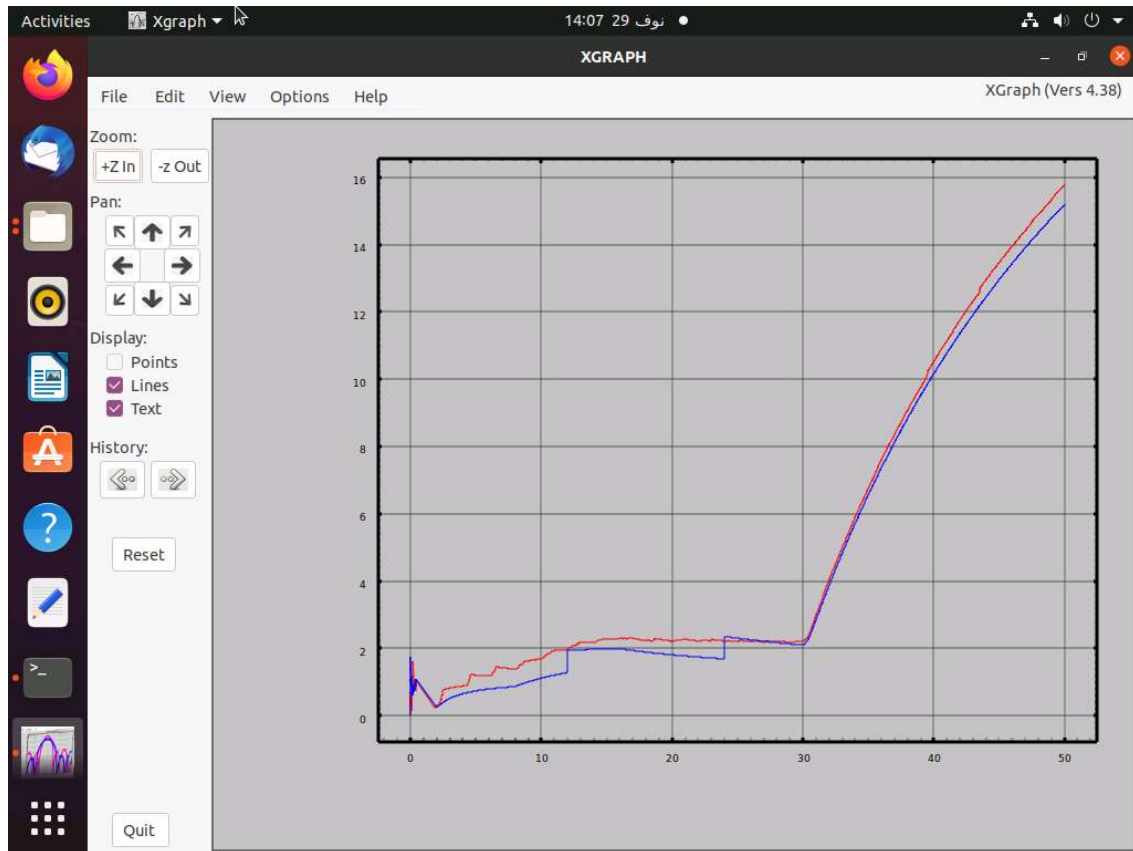
```
Jeremiah@Jeremiah-Virtual-Machine: ~/Desktop/endsem/q2/graphData
Jeremiah@Jeremiah-Virtual-Machine:~/Desktop/endsem/q2/graphData$ xgraph -color 2 plotAddRip -color 3 plo
tAdd0spf
XGraph v4.38
Gtk-Message: 14:07:05.037: Failed to load module "canberra-gtk-module"
Window (563 x 465)
974531 points read.
WindowSize = (952, 704)
GUI was FORCED to EXIT by window-manager ...
Exiting XGraph.
Jeremiah@Jeremiah-Virtual-Machine:~/Desktop/endsem/q2/graphData$ xgraph -color 2 plotLpRip -color 3 plot
Lp0spf
XGraph v4.38
Gtk-Message: 14:08:04.455: Failed to load module "canberra-gtk-module"
Window (563 x 465)
974531 points read.
WindowSize = (952, 704)
GUI was FORCED to EXIT by window-manager ...
Exiting XGraph.
Jeremiah@Jeremiah-Virtual-Machine:~/Desktop/endsem/q2/graphData$ xgraph -color 2 plotPdrRip -color 3 plo
tPdr0spf
XGraph v4.38
Gtk-Message: 14:08:49.559: Failed to load module "canberra-gtk-module"
Window (563 x 465)
974531 points read.
WindowSize = (952, 704)
GUI was FORCED to EXIT by window-manager ...
Exiting XGraph.
Jeremiah@Jeremiah-Virtual-Machine:~/Desktop/endsem/q2/graphData$ xgraph -color 2 plotTRip -color 3 plotT
Ospf
XGraph v4.38
Gtk-Message: 14:09:45.882: Failed to load module "canberra-gtk-module"
Window (563 x 465)
974531 points read.
WindowSize = (952, 704)
GUI was FORCED to EXIT by window-manager ...
Exiting XGraph.
Jeremiah@Jeremiah-Virtual-Machine:~/Desktop/endsem/q2/graphData$
```

Do note:

Blue -> ospf

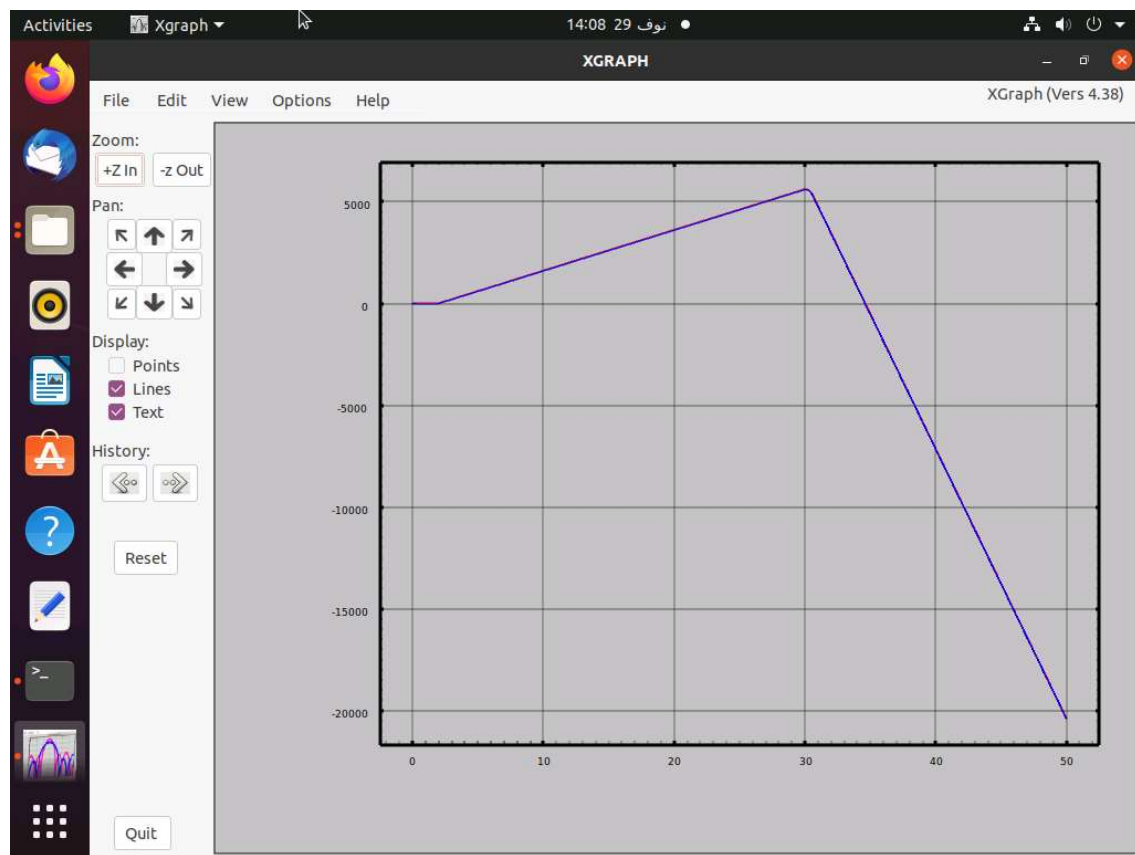
Red -> rip

Average Delivery Delay:-



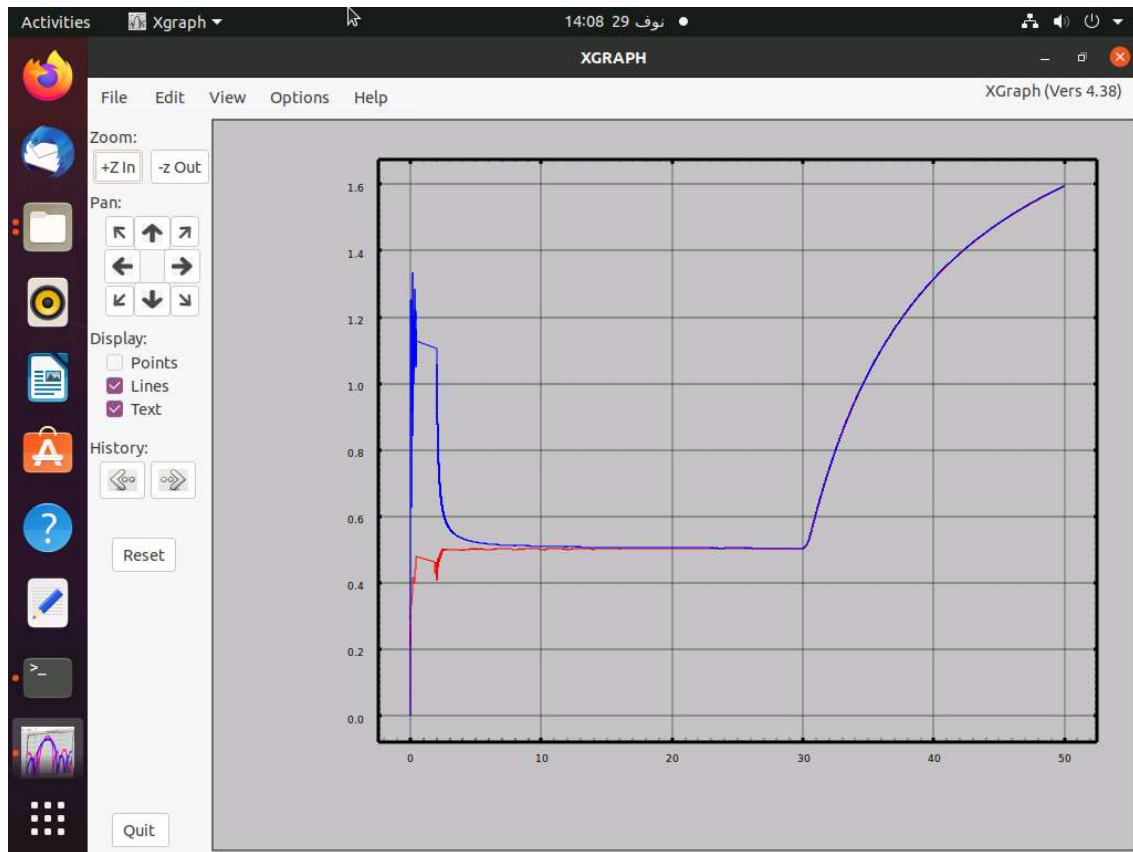
Here we can see that in initial stages, rip underperforms ospf and for a while at the middle, they converge. However from $t = 35s$ onwards, they diverge and ospf again beats rip.

Lost Packets



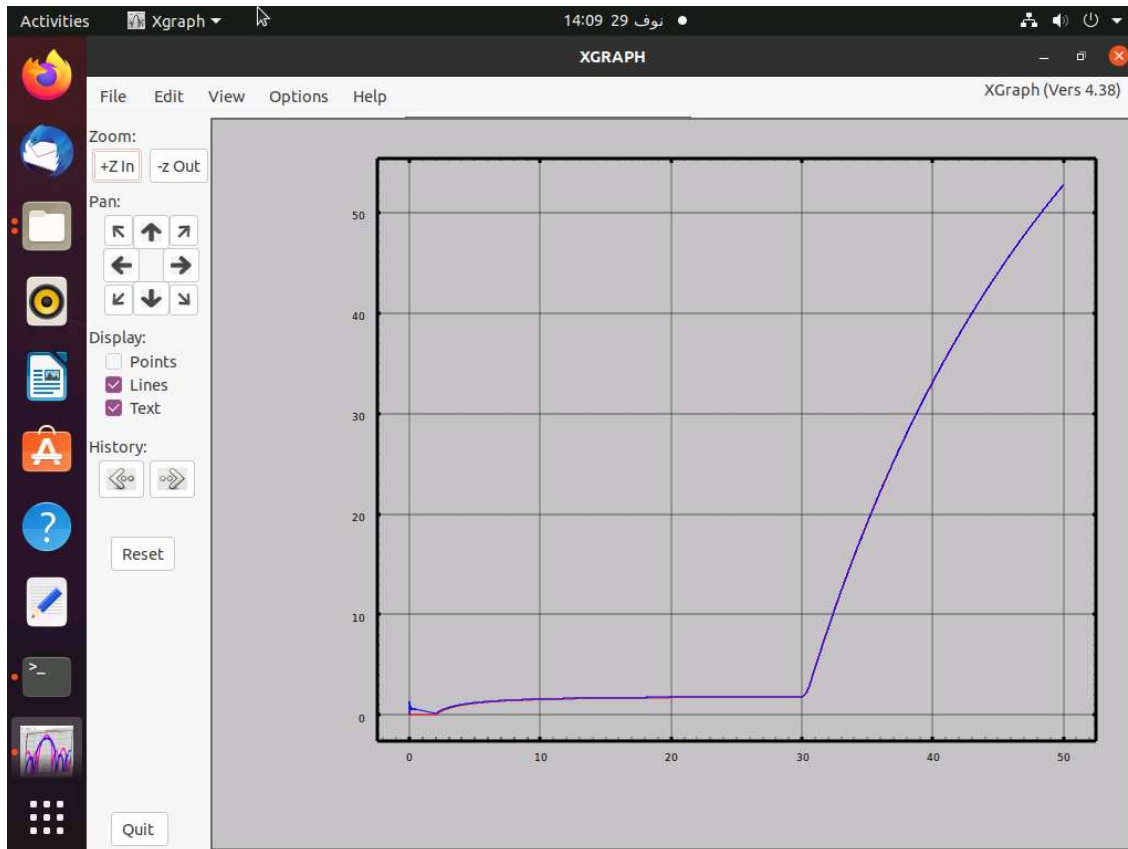
Here they converge throughput, indicating probably that packet loss for both ospf and rip are independent on the routing algorithm used and could be based more on tcp and udp connection choice.

Packet Delivery Ratio:-



Here there is a stark difference in PDR. Ospf has a higher pdr is the beginning, meaning its routing performs better and quicker. However they converge quickly soon at 9s.

Throughput:-



Once again, they converge here as well as in the case of dropped packets, implying that throughput is possibly dependent more on parameters such as bandwidth, connection choice, topology and less on routing style.