

North Western University

Department of Computer Science and Engineering

Sessional Final Report

Title: Introduction to computer network using NS2
based on the domain as www.w3schools.com

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1. Overview of the project

This is a networking project. Here we can see the pass of network bus from one node to another node. Here we use zenmap and ns2(network simulator 2) for our project work. Firstly we install Ubuntu virtually in our windows operation system. We connect 4 different networks with a laptop and connect with the w3schools. W3schools is our targeted ip. And then we get scan the targeted ip with zenmap and take the tropology graph. After that we make an excel sheet with this tropology graph. After that we install and open ns2. We write code and make the same node as we see in tropology graphs. Then we connect the nodes and run that. After run we can see the pass of network from network bus. We can also detect the fault of passing data or data loss from this graph. This is the main purpose of this projects.

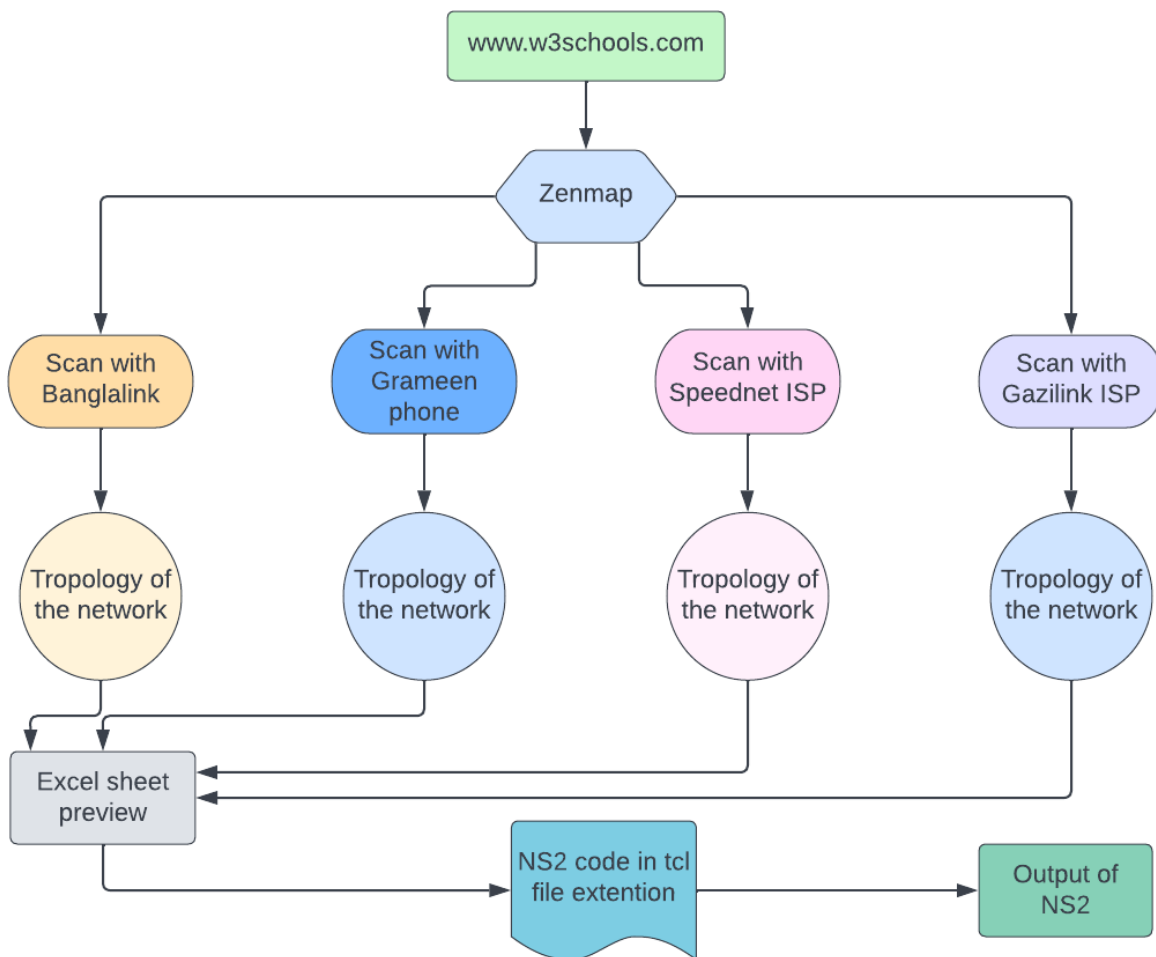


Fig 1 : Bird's eye view of the project

2.Introduction to Zenmap

Zenmap is a software that is a graphical user interface for security scanner. This is used for scanning a network and see the details about the network. It also can create a graph of tropology via which we can see how many networks are connected behind the networks. Zenmap has many features. Some of them are Target, Profile, Scan, Open scan, Namp Output, Posts / Hosts Tropology, Host Details etc. In Target field, the domain name which we selected for experiment needs to be written for scan. In Profile we can set different kind of network profile. After all of that we have to press scan and the we can see the Namp Output section. By Namp Output the host details can be shown. After scanning a domainwe can see the details about thet by this section. We can see the Script Pre-scanning and scanning ports of the domain. We can see the SYN Stealth Scan Timing, network distance and many other things. We can also see a overview of tropology by click on the tropology. Host details show the details about host. It also show the accuracy, host status, host address, hostname etc in Host Details section. Zenmap is too much important for see and investigate about a network. We can see any type of fault in network by zenmap.

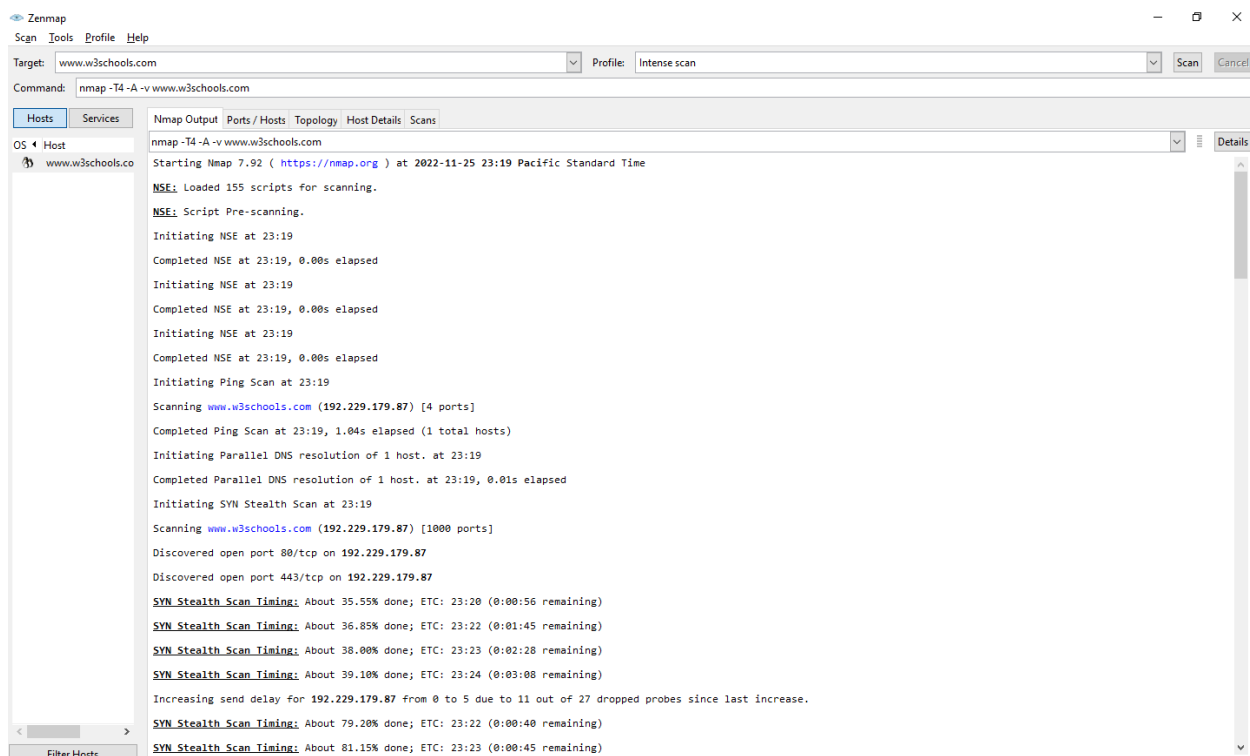


Fig 2 : Zenmap interface

3. Different host to domain

The name of our domain is w3schools. We use w3schools for our targeted domain. We connect with www.w3schools.com domain by different networks and check the data about the networks.

Hosts :

We connect the network with speednet broadband connection. Then we check details about that network

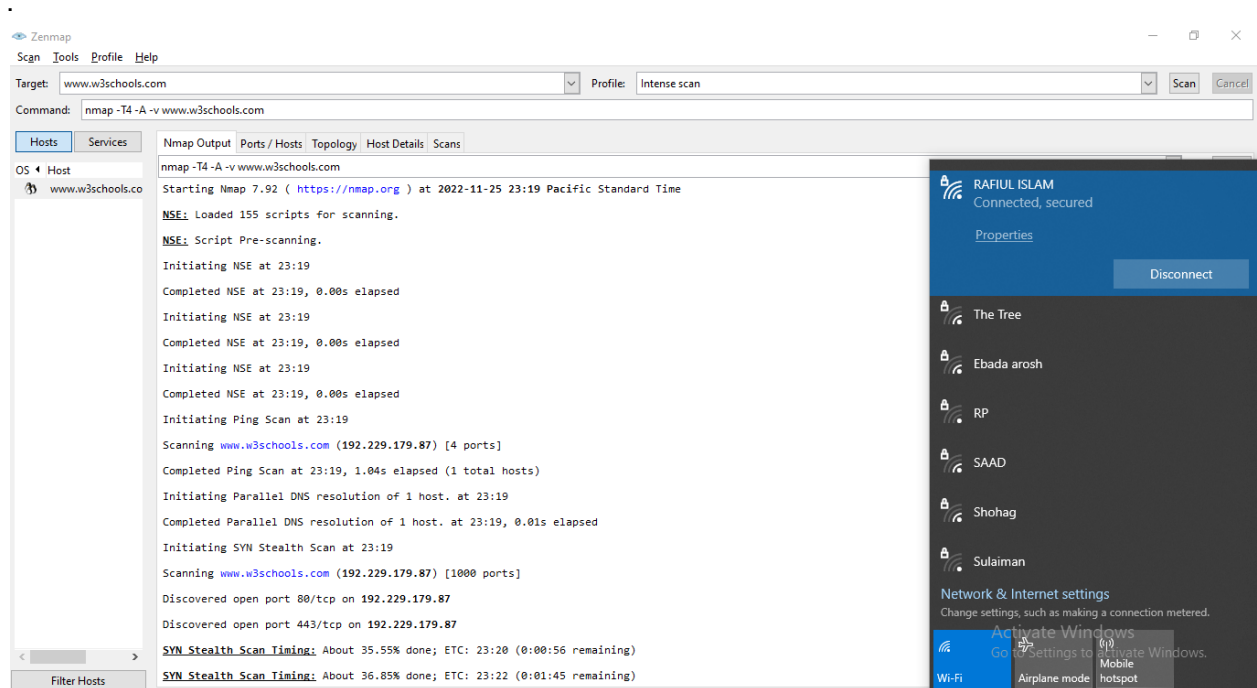


Fig 3 : Speednet network Zenmap scan output

Fig 3 is the speednet network connection which name is edited by the user. This is not the provider name. They just use there user name.

Then we connect with banglalink network. As the same way we check the network details and tropology graphs.

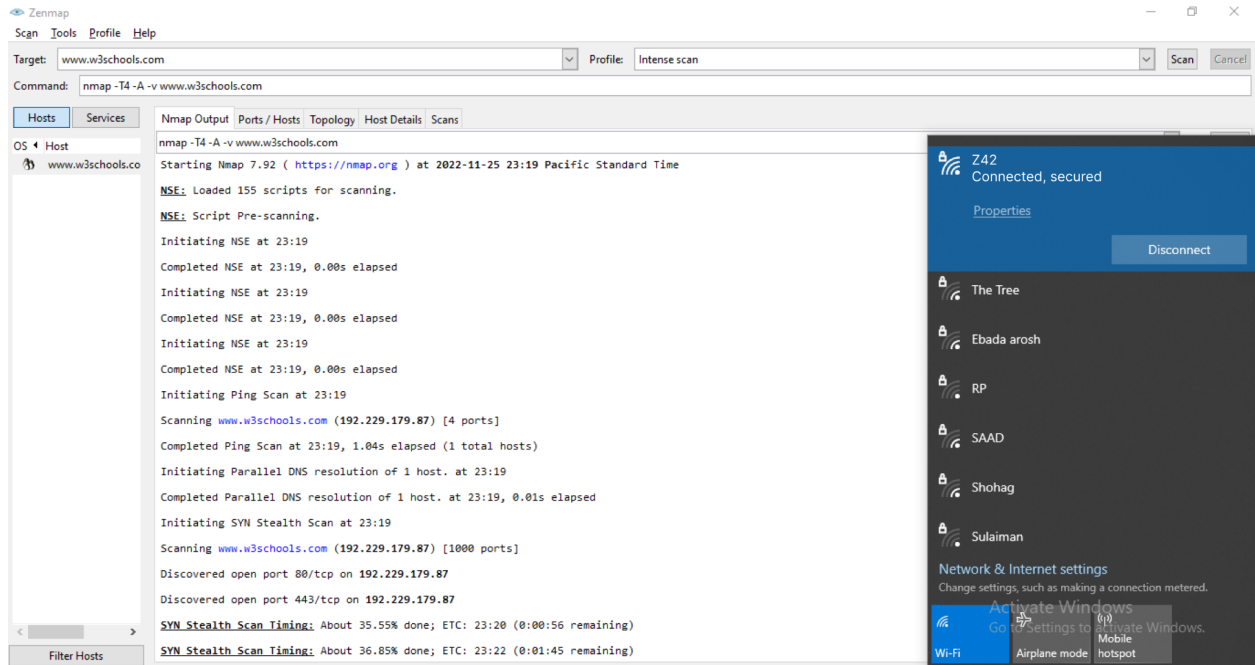


Fig 4 : Banglalink network connected by phone scan by Zenmap output

Here fig 3 shows the banglalink network. We connect this network by phone hotspot. For this, here's showing only the phone name.

After that we connect with grameenphone.

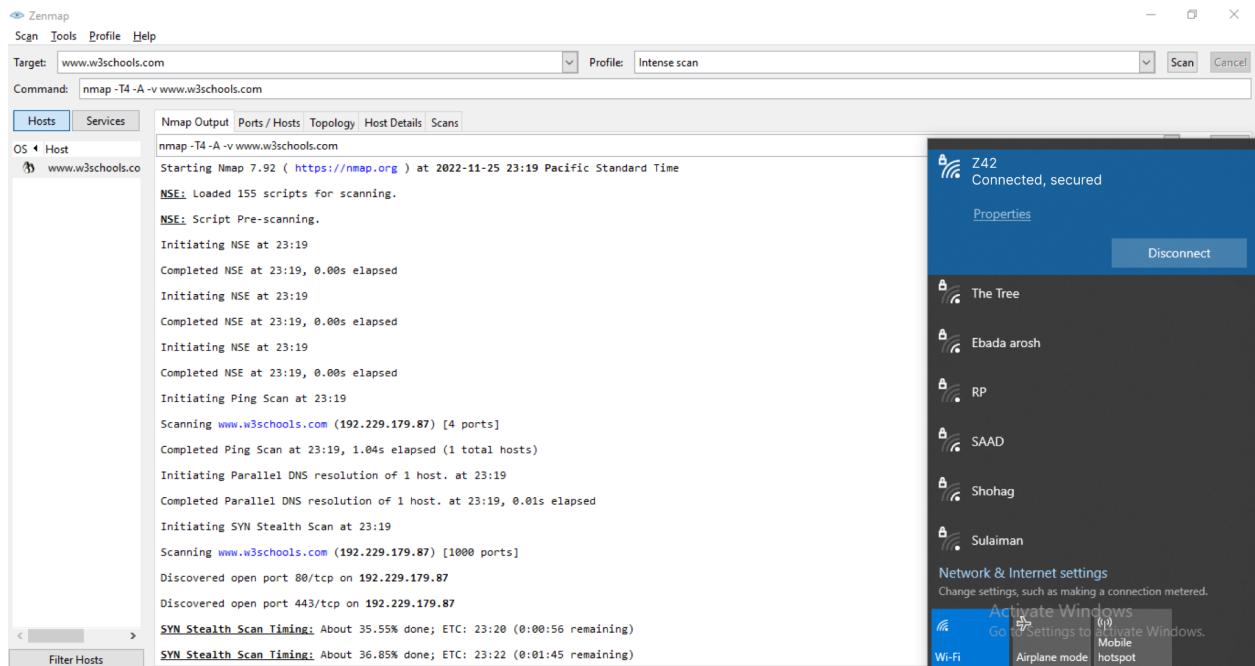


Fig 5 : Grmeen phone network connected by phone scan by Zenmap output

Here fig 3 shows the grameen phone network. We connect this network by phone hotspot. For this, here's showing only the phone name.

We connect with gazilink broadband connection. We also scan the networks as usual and check the details with topology graphs.

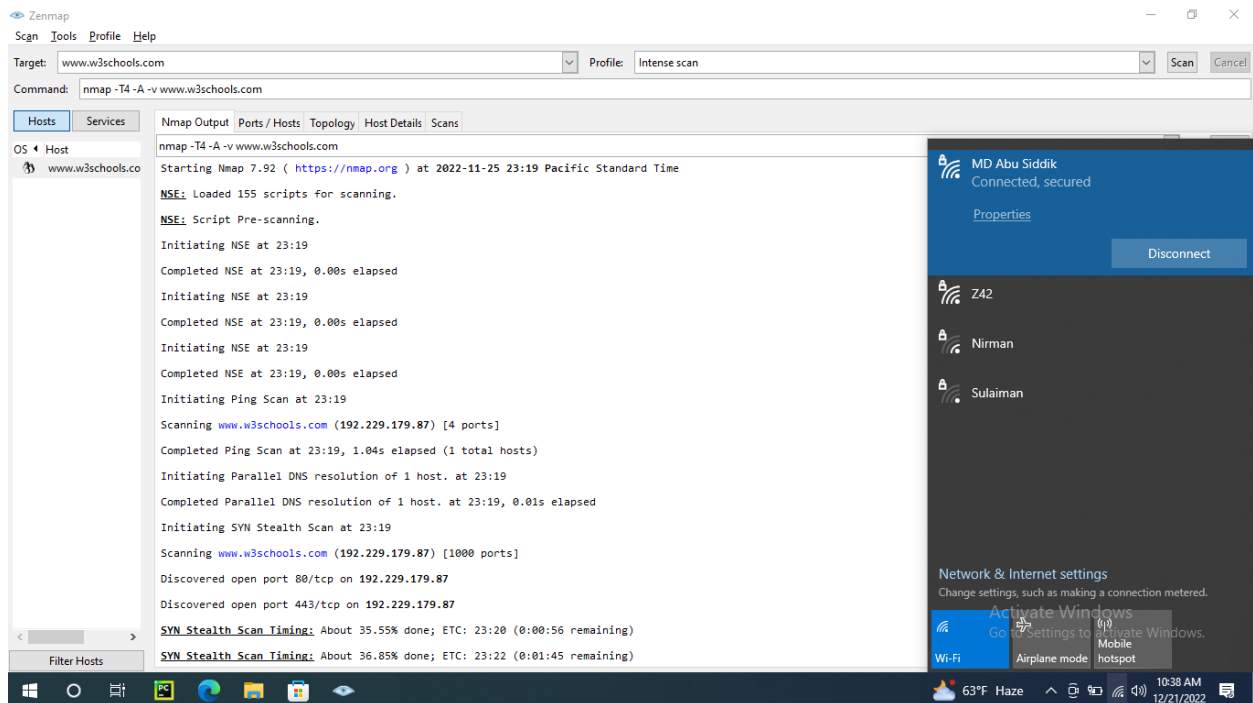


Fig 6 : Gazilink ISP Zenmap scan output

Here Fig 6 shows the Gazilink ISP output after scanning.

4.Design Network Topology

Network topology is the overall overview of a network by a graph. By this graph we can see all details about the network in a graph. Network topology can be physical and also can be logical. We all able to see the all network nodes behind the networks. Usually we're not able to see all the nodes. For this we use this kind of topology design for see the details about a networks.

	Website : www.w3schools.com	
	Network : Banglalink	
SL No	IP Address	Services
1	192.168.238.83	domain,http
2	192.168.0.1	telnet,http
3	10.174.21.1	
4	10.20.245.217	
5	203.76.104.166	ssh,msrpc,netbios-ssn,microsoft-ds
6	203.76.118.249	ssh,msrpc,netbios-ssn,microsoft-ds
7	203.76.118.253	ssh,telnet,msrpc,netbios-ssn,microsoft-ds
8	103.9.104.105	msrpc,netbios-ssn,microsoft-ds
9	103.9.104.65	
10	103.9.104.97	
11	123.255.90.58	
12	212.188.2.105	
13	212.188.28.214	
14	192.229.179.87	

Fig 8 : Service table of Banglalink

	Website: www.w3schools.com	
	Network : SpeedNet	
SL No	IP Address	Services
1	192.168.1.1	
2	172.17.5.1	
3	103.79.183.210	bgp,pptp,cisco-sccp
4	103.26.246.241	smtp,kerberos-sec,pop3,bgp,ms-lsa,http-alt,https-alt,filenet-tms
5	157.119.185.222	
6	149.6.149.255	h323q931,cisco-sccp,dc,sip
7	154.54.56.77	h323q931,cisco-sccp,dc,sip
8	192.229.179.87	h323q931,cisco-sccp,dc,sip

Fig 9 : Service table of speednet

	Website : www.w3schools.com	
	Network : Grameen Phone	
SL No	IP Address	Services
1	192.168.0.1	telnet,http
2	172.18.1.10	bgp,pptp,cisco-sccp
3	103.80.71.65	
4	103.26.246.101	echo,submission,LSA-or-nterm
5	157.119.185.85	
6	180.87.36.84	
7	180.87.36.83	
8	180.87.98.37	
9	129.250.8.241	
10	129.250.2.123	
11	129.250.3.101	
12	129.250.2.67	
13	192.229.179.87	

Fig 10 : Service table of Grameen Phone

	Website : www.w3schools.com	
	Network : Gazilink	
SL No	IP Address	Services
1	192.168.43.1	
2	10.99.249.22	
3	123.49.0.1	echo,ftp,ssh,telnet,smtps,ftps,nfsd-status,h323q931,cisco-sccp,dc,sip
4	93.186.133.137	echo,ftp,ssh,telnet,hosts2-ns,bgp,shell,ldp,h323q931,cisco-sccp,dc,sip
5	195.22.213.218	ftp,ssh,telnet,bgp,shell,ldp,h323q931,cisco-sccp,dc,sip
6	195.22.213.173	
7	95.211.113.154	
8	103.199.87.194	
9	192.229.179.87	http,https

Fig 11 : Service table of Gazilink

Website : www.w3schools.com

Operator Name	Color	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
BL		192.168.238.83	10.71.70.129	10.71.72.65	10.71.74.129	103.15.166.78	103.15.166.77
GP		192.168.43.184	10.170.176.129	10.245.238.50	202.56.7.113	43.224.113.241	103.124.224.187
Gazi-link		192.168.19.94	10.7.4.1	172.16.1.5	10.56.77.53	103.199.87.152	103.199.87.194
Speednet		192.168.88.1	2.2.2.13	45.114.86.33	172.31.3.57	172.31.39.1	217.157.187.122

Fig 12 : First-half excel sheet tracert

Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14
103.15.166.77	103.131.187.130	163.47.199.133	163.47.83-5 noc.tiscali.com	103.16.153-28 noc.tiscali.com	103.16.153-17 noc.tiscali.com	15133.sgw.eqn k.com	de- 65.core1.sgw.ed geocarcan.net	141.108.45.113 target IP
103.124.224.187	103.124.224.192	180.87.39.346	180.87.38.1	180.87.38.74	172.23.78.234	115.110.206.154	192.229.179.87 target IP	
103.199.87.194	de- 112.border1.sgw ed.geocarcan.net	de- 66.core1.sgw.ed geocarcan.net	192.229.179.87 target IP					
217.157.187.122	182.79.154.149	192.229.179.87 target IP						

Fig 13 : Last-half excel sheet tracert

Website : www.w3schools.com

Operator Name/Color	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9	Level 10	Level 11	Level 12	Level 13	Level 14
BL	192.168.238.83	10.71.70.129	10.71.72.65	10.71.74.129	103.15.166.78	103.15.166.77	103.131.187.130	163.47.199.133	163.47.83-5 noc.tiscali.com	103.16.153-28 noc.tiscali.com	103.16.153-17 noc.tiscali.com	15133.sgw.eqn k.com	de- 65.core1.sgw.ed geocarcan.net	141.108.45.113 target IP
GP	192.168.43.184	10.170.176.129	10.245.238.50	202.56.7.113	43.224.113.241	103.124.224.187	103.124.224.192	180.87.39.346	180.87.38.1	180.87.38.74	172.23.78.234	115.110.206.154	192.229.179.87 target IP	
Gazi-link	192.168.19.94	10.7.4.1	172.16.1.5	10.56.77.53	103.199.87.152	103.199.87.194	de- 112.border1.sgw ed.geocarcan.net	de- 66.core1.sgw.ed geocarcan.net	192.229.179.87 target IP					
Speednet	192.168.88.1	2.2.2.13	45.114.86.33	172.31.3.57	172.31.39.1	217.157.187.122	182.79.154.149	192.229.179.87 target IP						

Fig 14 : Full excel sheet tracert

6.Introduction to NS2

The full form of ns2 is Network Simulator 2. This is a widely used open source simulator. This is a very useful simulator for a networking student or network engineer. Ns2 is used for simulation of a network and analysis that by which network flow can be shown easily and any kind of problem can be detected. This is use for routing protocol, traffic moden and an extensive library of simulation scripts. It also provide a very easy and useful interface for code. By using this interface an user can easily make a network simulation by write code easily.

NS2 is a linux based software. For this the installation process of a windows user is quit different. We needs to install ubuntu virtually on WSL. After installing linux we install the ns2 and started to code.

7.Source code of NS2

```
V -t * -v 1.0a5 -a 0
W -t * -x 688.677673 -y 611.869385
A -t * -n 1 -p 0 -o 0x7fffffff -c 30 -a 1
A -t * -h 1 -m 1073741823 -s 0
c -t * -i 23 -n blue
c -t * -i 27 -n green
c -t * -i 25 -n black
c -t * -i 29 -n red
n -t * -a 35 -s 35 -S UP -v circle -c black -i black -x 659.300781 -y 583.716614 -Z 0.0
n -t * -a 36 -s 36 -S UP -v circle -c black -i black -x 639.512207 -y 583.920593 -Z 0.0
n -t * -a 37 -s 37 -S UP -v circle -c black -i black -x 625.843811 -y 583.716614 -Z 0.0
n -t * -a 38 -s 38 -S UP -v circle -c black -i black -x 608.095276 -y 583.512573 -Z 0.0
n -t * -a 39 -s 39 -S UP -v circle -c black -i black -x 591.162842 -y 582.696594 -Z 0.0
n -t * -a 40 -s 40 -S UP -v circle -c black -i black -x 568.926208 -y 583.920593 -Z 0.0
n -t * -a 41 -s 41 -S UP -v circle -c black -i black -x 553.421753 -y 582.084534 -Z 0.0
n -t * -a 42 -s 42 -S UP -v circle -c black -i black -x 536.489197 -y 581.880554 -Z 0.0
n -t * -a 43 -s 43 -S UP -v circle -c black -i black -x 522.004761 -y 582.492554 -Z 0.0
n -t * -a 44 -s 44 -S UP -v circle -c black -i black -x 502.012207 -y 581.472534 -Z 0.0
n -t * -a 45 -s 45 -S UP -v circle -c black -i black -x 485.895752 -y 581.880554 -Z 0.0
n -t * -a 46 -s 46 -S UP -v circle -c black -i black -x 469.779297 -y 582.696594 -Z 0.0
n -t * -a 47 -s 47 -S UP -v circle -c black -i black -x 452.030762 -y 582.288574 -Z 0.0
n -t * -a 48 -s 48 -S UP -v circle -c black -i black -x 436.322296 -y 582.288574 -Z 0.0
n -t * -a 10 -s 10 -S UP -v circle -c black -i black -x 679.089355 -y 611.869385 -Z 0.0
n -t * -a 11 -s 11 -S UP -v circle -c black -i black -x 629.719910 -y 611.053406 -Z 0.0
n -t * -a 12 -s 12 -S UP -v circle -c black -i black -x 603.607178 -y 609.217346 -Z 0.0
n -t * -a 13 -s 13 -S UP -v circle -c black -i black -x 574.230347 -y 608.197327 -Z 0.0
n -t * -a 14 -s 14 -S UP -v circle -c black -i black -x 556.481812 -y 608.605347 -Z 0.0
n -t * -a 15 -s 15 -S UP -v circle -c black -i black -x 531.185059 -y 609.421326 -Z 0.0
n -t * -a 16 -s 16 -S UP -v circle -c black -i black -x 501.604156 -y 607.585327 -Z 0.0
n -t * -a 0 -s 0 -S UP -v circle -c black -i black -x 688.677673 -y 546.587524 -Z 0.0
n -t * -a 17 -s 17 -S UP -v circle -c black -i black -x 482.019653 -y 607.585327 -Z 0.0
n -t * -a 1 -s 1 -S UP -v circle -c black -i black -x 667.053040 -y 546.383484 -Z 0.0
n -t * -a 18 -s 18 -S UP -v circle -c black -i black -x 456.518890 -y 605.749268 -Z 0.0
n -t * -a 2 -s 2 -S UP -v circle -c black -i black -x 632.984009 -y 543.527405 -Z 0.0
n -t * -a 19 -s 19 -S UP -v circle -c black -i black -x 433.262207 -y 604.117188 -Z 0.0
n -t * -a 20 -s 20 -S UP -v circle -c black -i black -x 685.413574 -y 566.784119 -Z 0.0
n -t * -a 3 -s 3 -S UP -v circle -c black -i black -x 608.095276 -y 539.855347 -Z 0.0
n -t * -a 21 -s 21 -S UP -v circle -c black -i black -x 657.872742 -y 567.600159 -Z 0.0
n -t * -a 4 -s 4 -S UP -v circle -c black -i black -x 575.454346 -y 537.815308 -Z 0.0
```

```

n -t * -a 31 -s 31 -S UP -v circle -c black -i black -x 475.287445 -y 563.112000 -Z 0.0
n -t * -a 32 -s 32 -S UP -v circle -c black -i black -x 453.662811 -y 562.295959 -Z 0.0
n -t * -a 33 -s 33 -S UP -v circle -c black -i black -x 435.710297 -y 561.071960 -Z 0.0
n -t * -a 34 -s 34 -S UP -v circle -c black -i black -x 686.229492 -y 584.124634 -Z 0.0
l -t * -s 0 -d 20 -S UP -r 1000000 -D 0.02 -c black -o 99.2deg
l -t * -s 0 -d 1 -S UP -r 1000000 -D 0.02 -c black -o 180.5deg
l -t * -s 1 -d 2 -S UP -r 1000000 -D 0.02 -c black -o 184.8deg
l -t * -s 2 -d 3 -S UP -r 1000000 -D 0.02 -c black -o 188.4deg
l -t * -s 3 -d 4 -S UP -r 1000000 -D 0.02 -c black -o 183.6deg
l -t * -s 4 -d 5 -S UP -r 1000000 -D 0.02 -c black -o 179.6deg
l -t * -s 5 -d 6 -S UP -r 1000000 -D 0.02 -c black -o 183.1deg
l -t * -s 6 -d 7 -S UP -r 1000000 -D 0.02 -c black -o 183.3deg
l -t * -s 7 -d 8 -S UP -r 1000000 -D 0.02 -c black -o 181.0deg
l -t * -s 8 -d 9 -S UP -r 1000000 -D 0.02 -c black -o 182.5deg
l -t * -s 10 -d 34 -S UP -r 1000000 -D 0.02 -c black -o 284.4deg
l -t * -s 10 -d 11 -S UP -r 1000000 -D 0.02 -c black -o 180.9deg
l -t * -s 11 -d 12 -S UP -r 1000000 -D 0.02 -c black -o 184.0deg
l -t * -s 12 -d 13 -S UP -r 1000000 -D 0.02 -c black -o 182.0deg
l -t * -s 13 -d 14 -S UP -r 1000000 -D 0.02 -c black -o 178.7deg
l -t * -s 14 -d 15 -S UP -r 1000000 -D 0.02 -c black -o 178.2deg
l -t * -s 15 -d 16 -S UP -r 1000000 -D 0.02 -c black -o 183.6deg
l -t * -s 16 -d 17 -S UP -r 1000000 -D 0.02 -c black -o 180.0deg
l -t * -s 17 -d 18 -S UP -r 1000000 -D 0.02 -c black -o 184.1deg
l -t * -s 18 -d 19 -S UP -r 1000000 -D 0.02 -c black -o 184.0deg
l -t * -s 20 -d 34 -S UP -r 1000000 -D 0.02 -c black -o 87.3deg
l -t * -s 20 -d 21 -S UP -r 1000000 -D 0.02 -c black -o 178.3deg
l -t * -s 21 -d 22 -S UP -r 1000000 -D 0.02 -c black -o 183.5deg
l -t * -s 22 -d 23 -S UP -r 1000000 -D 0.02 -c black -o 182.9deg
l -t * -s 23 -d 24 -S UP -r 1000000 -D 0.02 -c black -o 178.8deg
l -t * -s 24 -d 25 -S UP -r 1000000 -D 0.02 -c black -o 183.3deg
l -t * -s 25 -d 26 -S UP -r 1000000 -D 0.02 -c black -o 182.9deg
l -t * -s 26 -d 27 -S UP -r 1000000 -D 0.02 -c black -o 184.9deg
l -t * -s 27 -d 28 -S UP -r 1000000 -D 0.02 -c black -o 180.7deg
l -t * -s 28 -d 29 -S UP -r 1000000 -D 0.02 -c black -o 181.3deg
l -t * -s 29 -d 30 -S UP -r 1000000 -D 0.02 -c black -o 175.1deg
l -t * -s 30 -d 31 -S UP -r 1000000 -D 0.02 -c black -o 181.3deg
l -t * -s 31 -d 32 -S UP -r 1000000 -D 0.02 -c black -o 182.2deg
l -t * -s 32 -d 33 -S UP -r 1000000 -D 0.02 -c black -o 183.9deg
l -t * -s 34 -d 35 -S UP -r 1000000 -D 0.02 -c black -o 180.9deg
l -t * -s 35 -d 36 -S UP -r 1000000 -D 0.02 -c black -o 179.4deg

```

```

l -t * -s 44 -d 45 -S UP -r 1000000 -D 0.02 -c black -o 178.5deg
l -t * -s 45 -d 46 -S UP -r 1000000 -D 0.02 -c black -o 177.1deg
l -t * -s 46 -d 47 -S UP -r 1000000 -D 0.02 -c black -o 181.3deg
l -t * -s 47 -d 48 -S UP -r 1000000 -D 0.02 -c black -o 180.0deg
q -t * -s 39 -d 38 -a 0.5
q -t * -s 34 -d 35 -a 0.5
q -t * -s 40 -d 39 -a 0.5
q -t * -s 39 -d 40 -a 0.5
q -t * -s 45 -d 44 -a 0.5
q -t * -s 40 -d 41 -a 0.5
q -t * -s 5 -d 4 -a 0.5
q -t * -s 45 -d 46 -a 0.5
q -t * -s 5 -d 6 -a 0.5
q -t * -s 10 -d 11 -a 0.5
q -t * -s 15 -d 14 -a 0.5
q -t * -s 15 -d 16 -a 0.5
q -t * -s 21 -d 20 -a 0.5
q -t * -s 26 -d 25 -a 0.5
q -t * -s 21 -d 22 -a 0.5
q -t * -s 32 -d 31 -a 0.5
q -t * -s 26 -d 27 -a 0.5
q -t * -s 9 -d 8 -a 0.5
q -t * -s 20 -d 0 -a 0.5
q -t * -s 37 -d 36 -a 0.5
q -t * -s 32 -d 33 -a 0.5
q -t * -s 2 -d 1 -a 0.5
q -t * -s 43 -d 42 -a 0.5
q -t * -s 37 -d 38 -a 0.5
q -t * -s 2 -d 3 -a 0.5
q -t * -s 48 -d 47 -a 0.5
q -t * -s 43 -d 44 -a 0.5
q -t * -s 13 -d 12 -a 0.5
q -t * -s 13 -d 14 -a 0.5
q -t * -s 18 -d 17 -a 0.5
q -t * -s 24 -d 23 -a 0.5
q -t * -s 6 -d 5 -a 0.5
q -t * -s 18 -d 19 -a 0.5
q -t * -s 29 -d 28 -a 0.5
q -t * -s 24 -d 25 -a 0.5
q -t * -s 6 -d 7 -a 0.5

```

```
q -t * -s 23 -d 24 -a 0.5
q -t * -s 28 -d 29 -a 0.5
+ -t 0 -s 9 -d 8 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 0} ----- null}
- -t 0 -s 9 -d 8 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 0} ----- null}
h -t 0 -s 9 -d 8 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 -1} ----- null}
+ -t 0 -s 19 -d 18 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 0} ----- null}
- -t 0 -s 19 -d 18 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 0} ----- null}
h -t 0 -s 19 -d 18 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 -1} ----- null}
+ -t 0 -s 33 -d 32 -p tcp -e 40 -c 25 -i 2 -a 25 -x {33.0 20.0 0} ----- null}
- -t 0 -s 33 -d 32 -p tcp -e 40 -c 25 -i 2 -a 25 -x {33.0 20.0 0} ----- null}
h -t 0 -s 33 -d 32 -p tcp -e 40 -c 25 -i 2 -a 25 -x {33.0 20.0 -1} ----- null}
+ -t 0 -s 48 -d 47 -p tcp -e 40 -c 23 -i 3 -a 23 -x {48.0 34.0 0} ----- null}
- -t 0 -s 48 -d 47 -p tcp -e 40 -c 23 -i 3 -a 23 -x {48.0 34.0 0} ----- null}
h -t 0 -s 48 -d 47 -p tcp -e 40 -c 23 -i 3 -a 23 -x {48.0 34.0 -1} ----- null}
r -t 0.02032 -s 9 -d 8 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 0} ----- null}
+ -t 0.02032 -s 8 -d 7 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 0} ----- null}
- -t 0.02032 -s 8 -d 7 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 0} ----- null}
h -t 0.02032 -s 8 -d 7 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 -1} ----- null}
r -t 0.02032 -s 19 -d 18 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 0} ----- null}
+ -t 0.02032 -s 18 -d 17 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 0} ----- null}
- -t 0.02032 -s 18 -d 17 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 0} ----- null}
h -t 0.02032 -s 18 -d 17 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 -1} ----- null}
r -t 0.02032 -s 33 -d 32 -p tcp -e 40 -c 25 -i 2 -a 25 -x {33.0 20.0 0} ----- null}
+ -t 0.02032 -s 32 -d 31 -p tcp -e 40 -c 25 -i 2 -a 25 -x {33.0 20.0 0} ----- null}
- -t 0.02032 -s 32 -d 31 -p tcp -e 40 -c 25 -i 2 -a 25 -x {33.0 20.0 0} ----- null}
h -t 0.02032 -s 32 -d 31 -p tcp -e 40 -c 25 -i 2 -a 25 -x {33.0 20.0 -1} ----- null}
r -t 0.02032 -s 48 -d 47 -p tcp -e 40 -c 23 -i 3 -a 23 -x {48.0 34.0 0} ----- null}
+ -t 0.02032 -s 47 -d 46 -p tcp -e 40 -c 23 -i 3 -a 23 -x {48.0 34.0 0} ----- null}
- -t 0.02032 -s 47 -d 46 -p tcp -e 40 -c 23 -i 3 -a 23 -x {48.0 34.0 0} ----- null}
h -t 0.02032 -s 47 -d 46 -p tcp -e 40 -c 23 -i 3 -a 23 -x {48.0 34.0 -1} ----- null}
r -t 0.04064 -s 8 -d 7 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 0} ----- null}
+ -t 0.04064 -s 7 -d 6 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 0} ----- null}
- -t 0.04064 -s 7 -d 6 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 0} ----- null}
h -t 0.04064 -s 7 -d 6 -p tcp -e 40 -c 27 -i 0 -a 27 -x {9.0 0.0 -1} ----- null}
r -t 0.04064 -s 18 -d 17 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 0} ----- null}
+ -t 0.04064 -s 17 -d 16 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 0} ----- null}
- -t 0.04064 -s 17 -d 16 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 0} ----- null}
h -t 0.04064 -s 17 -d 16 -p tcp -e 40 -c 29 -i 1 -a 29 -x {19.0 10.0 -1} ----- null}
r -t 0.04064 -s 32 -d 31 -p tcp -e 40 -c 25 -i 2 -a 25 -x {33.0 20.0 0} ----- null}
+ -t 0.04064 -s 31 -d 30 -p tcp -e 40 -c 25 -i 2 -a 25 -x {33.0 20.0 0} ----- null}
```

```

$ns connect $udp $null
$udp set fid_ 2
#Setup a CBR over UDP connection
set cbr [new Application/Traffic/CBR]
$cbr attach-agent $udp
$cbr set type_ CBR
$cbr set packet_size_ 1000
$cbr set rate_ 1mb
$cbr set random_ false
#Schedule events for the CBR and FTP agents
$ns at 0.1 "$cbr start"
$ns at 0.3 "$ftp start"
$ns at 4.0 "$ftp stop"
$ns at 4.5 "$cbr stop"
#Detach tcp and sink agents (not really necessary)
$ns at 4.5 "$ns detach-agent $n0 $tcp ; $ns detach-agent $n24 $sink"
#Call the finish procedure after 5 seconds of simulation time
$ns at 5.0 "finish"
#Print CBR packet size and interval
puts "CBR packet size = [$cbr set packet_size_]"
puts "CBR interval = [$cbr set interval_]"
#Run the simulation
$ns run

```

Fig 15 : Source code of NS2

8. Output topology of NS2

After complete the code ins ns2 it's time for run and see the output in graphical interface.

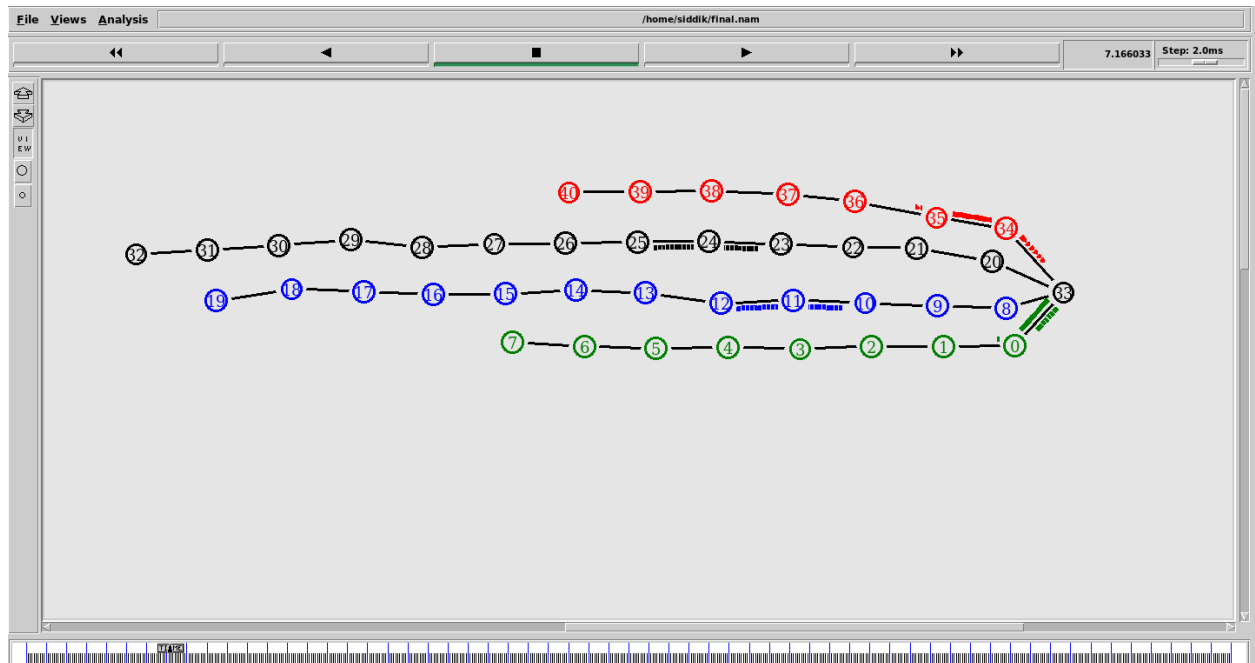


Fig 16 : First output of NS2

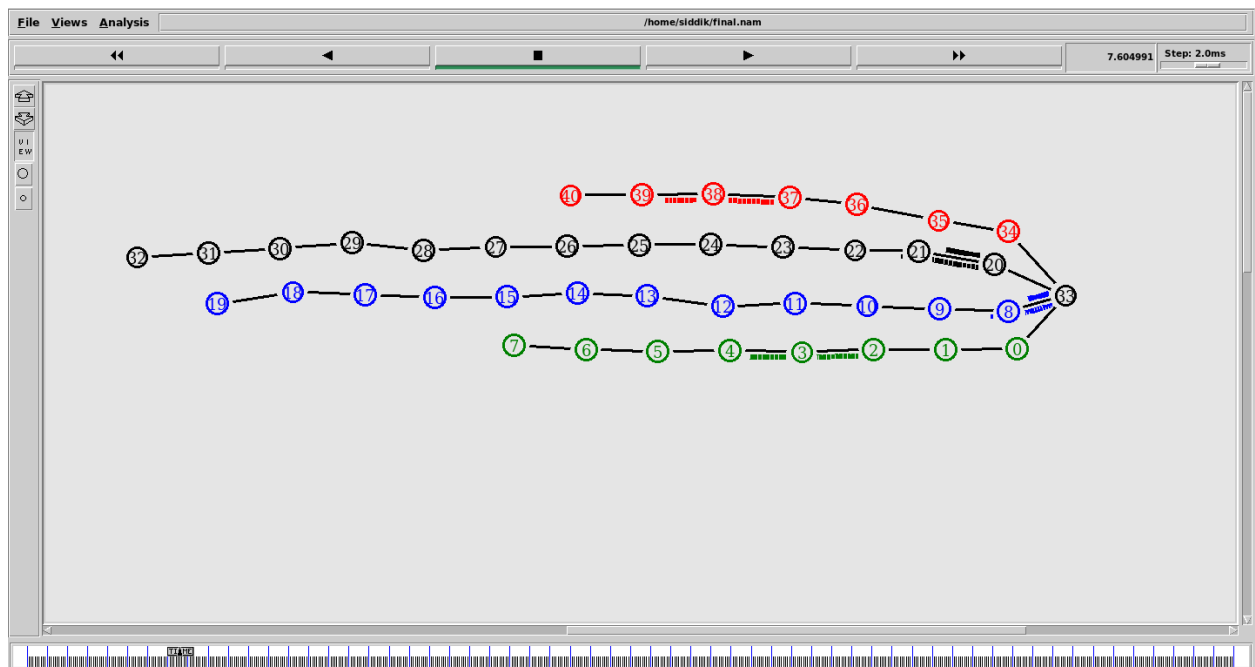


Fig 17 : Second output of NS2

10.Conclusion

Networking is a must things in modern life. In this digital world, nothing is out of networking. So gain knowledge about the networking is a must things for us. In this lab we can learn some very important things about networking. We're able to work with zenmap and ns2 by this lab which is a very useful and popular software. We also learn about wsl and ubuntu operating system from this lab which is very Nice and good experience for us. We gain so many skills from this lab about networking.

Zenmap is used for may large purpose. But we atleast learn the about that and we also use this software for this lab. Zenmap is a most popular and useful software for networking. We work with that. Network Simulator 2 is also a professional software for networking. We are able to use this professional software through this lab. Both tool are free and open sources. So we can use that in future.

11.Reference

[1] <https://beta.openai.com/playground>