NORTH WESTER UNIVERSITY

Department of computer science and Engineering

Sessional lab report

Course code: 3304

Course title: Computer Network Sessional

Title: Introduction To Computer Network Using NS2
Based on the domain as www.facebook.com

SUBMITTED TO:

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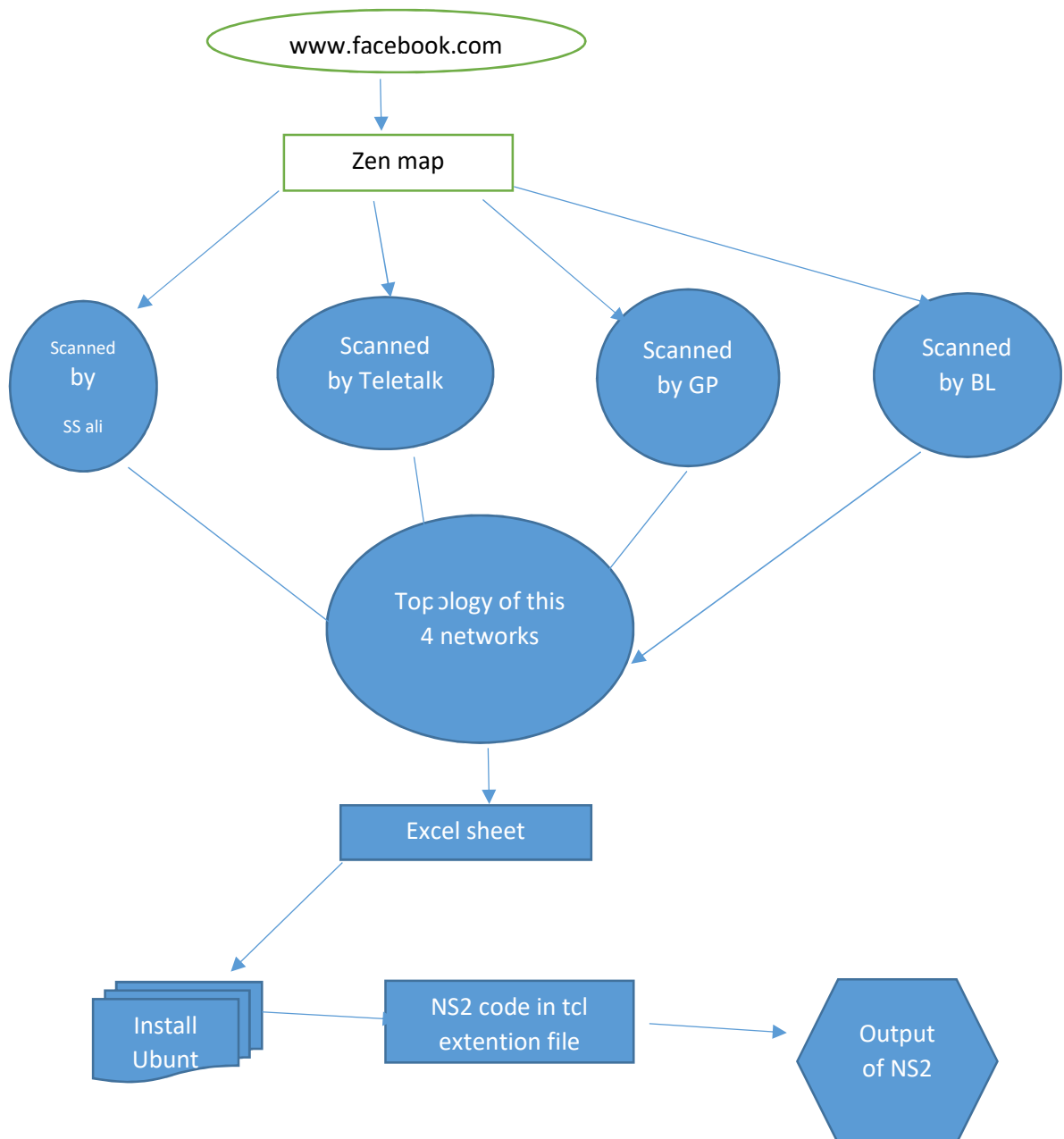| **Areana khanom**	**Sadman Hossain**	**Mikail Hossain**
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1.Overview of the project

The journey to the computer network's lab was well. It is very better facility for student interested in exploring the world of network engineering. In this project we searched to find IP addresses, protocol, network topology of computer network through zenmap. At first we selected a web site .That was www,facebook.com. Then we scanned it in zenmap app & we got network's IP addresses from different networks. We got network topology, protocol etc. Secondly, we created an IP routing by excel sheet. & then we use Ubuntu 18.04 and installed ns2 in it for routing graphical interface. We draw a figure on the basis on our excel sheet in Xming.

```
                        www.facebook.com

                            Zen map

   Scanned        Scanned         Scanned          Scanned
      by         by Teletalk       by GP            by BL
    SS ali

                     Topology of this
                        4 networks

                        Excel sheet

   Install          NS2 code in tcl           Output
   Ubunt            extention file             of NS2
```

2.Introduction to zenmap

Zenmap is the official graphical user interface (GUI) for the Nmap Security Scanner. It is a multi-platform, free and open-source application designed to make Nmap easy for beginners to use while providing advanced features for experienced Nmap users. Frequently used scans can be saved as profiles to make them easy to run repeatedly. A command creator allows interactive creation of Nmap command lines. Scan results can be saved and viewed later. Saved scans can be compared with one another to see how they differ. The results of recent scans are stored in a searchable database. A typical Zenmap screen shot is shown in Figure 2.1
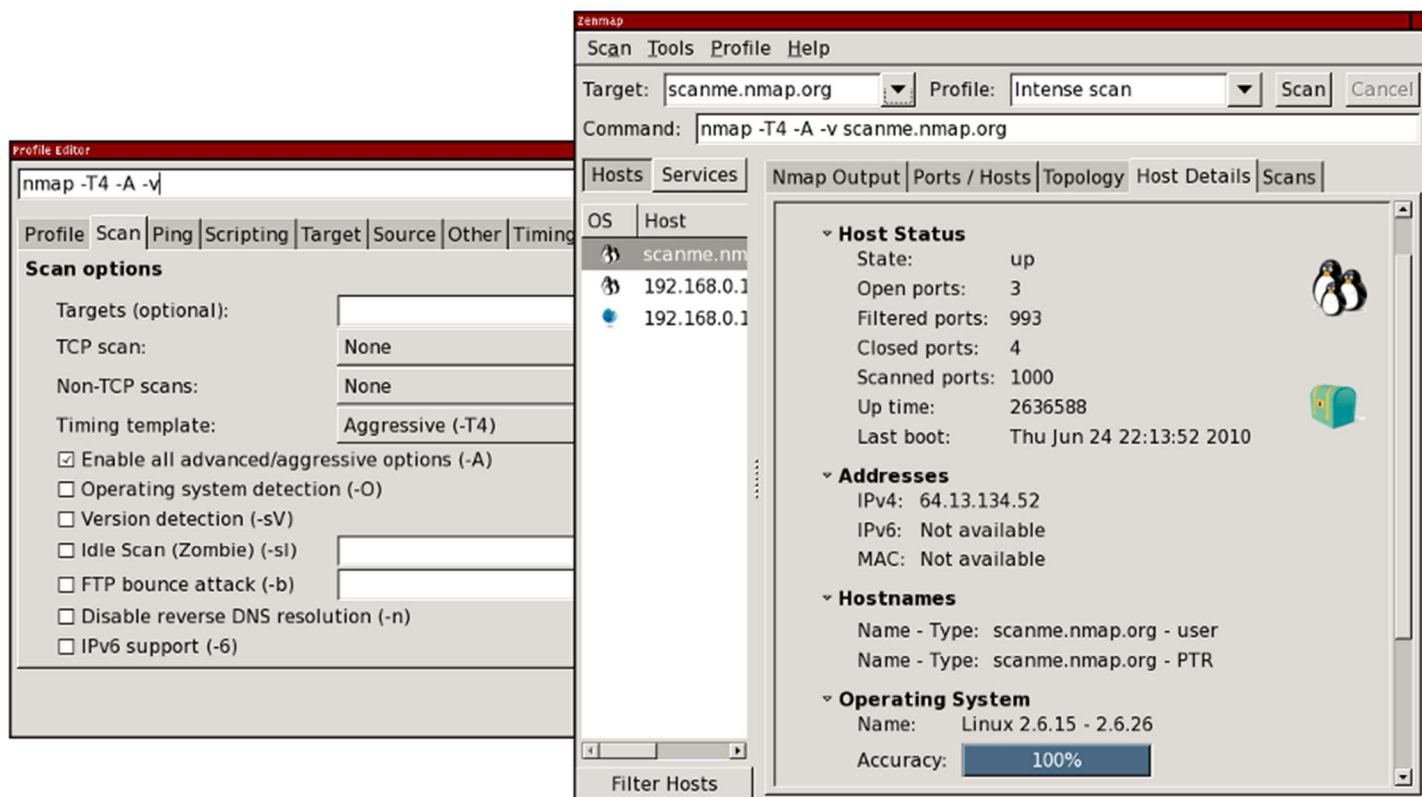
Fig 2: Zen Map interface

3. Different host to domain

Our topic was in this project www.facebook.com for scanning by for different networks and find the routing. We scanned this website by three cellular networks and one broadband network. Now we are adding the photos.
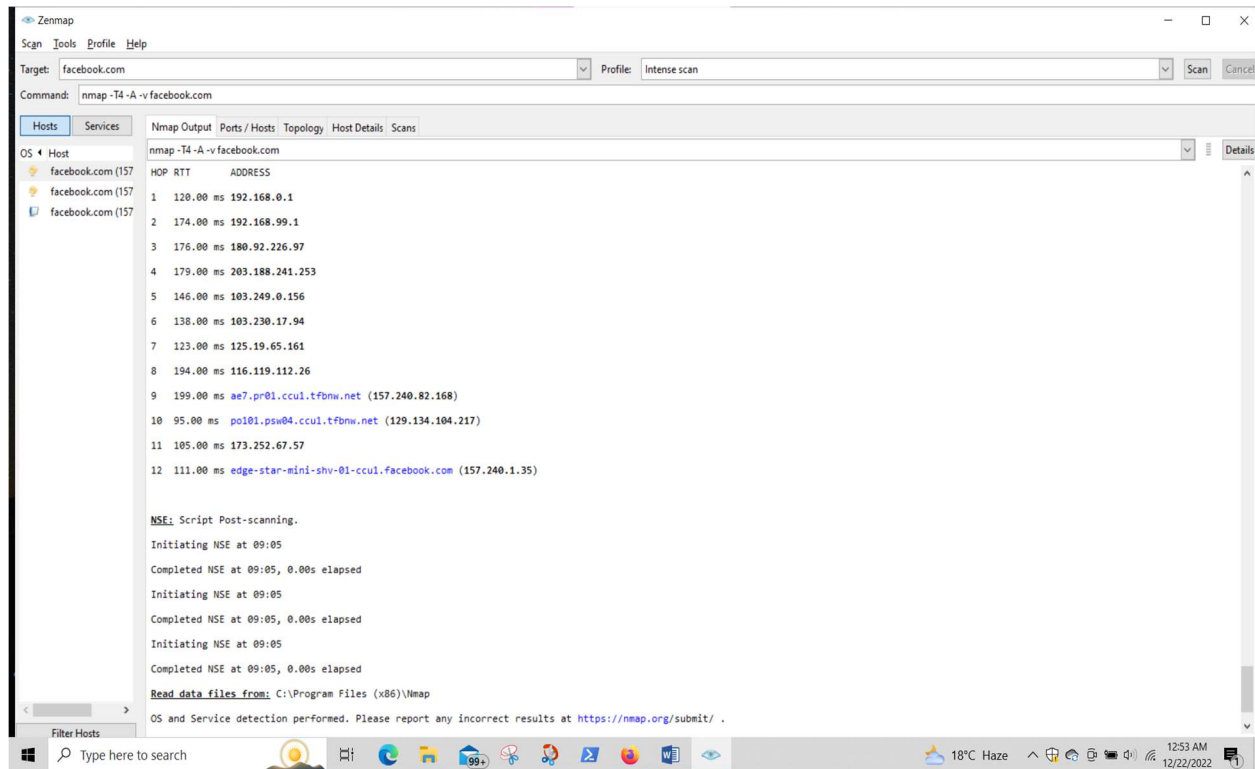

Fig 3: broadband network zenmap output

In fig 3, this is our only broadband network. We can see, there was 12 IP address in that network.
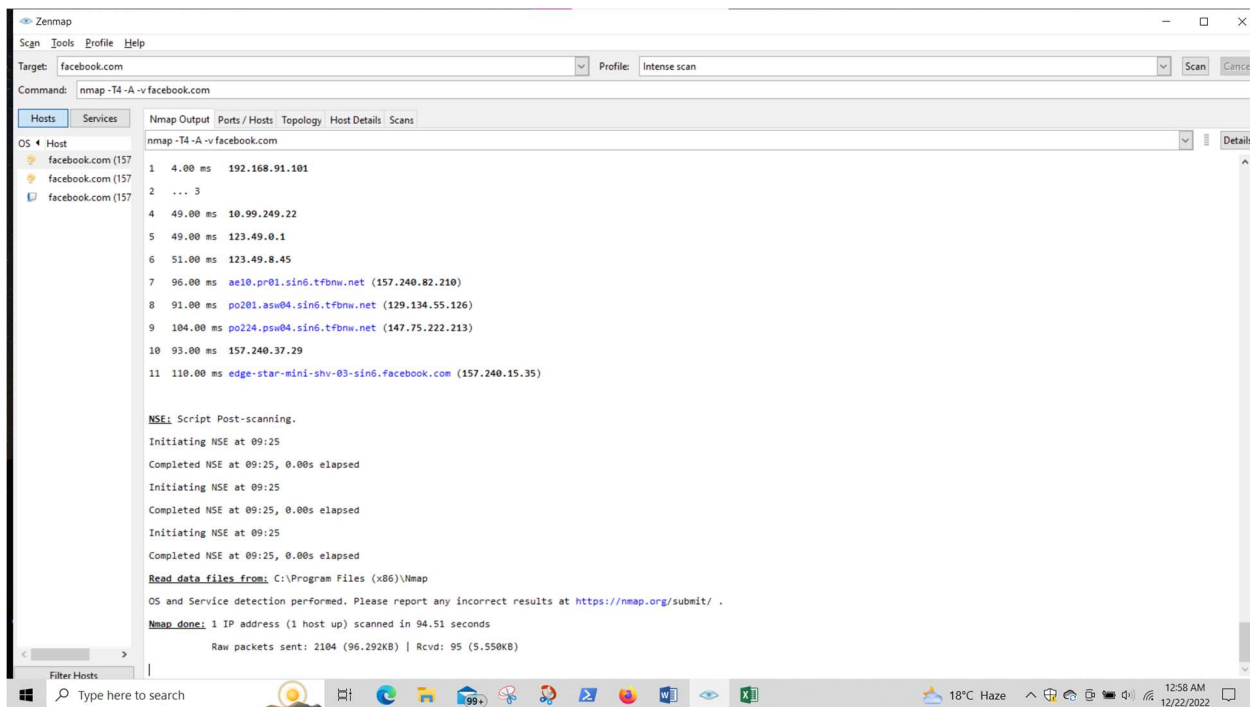
Fig 4: Teletalk network zenmap output

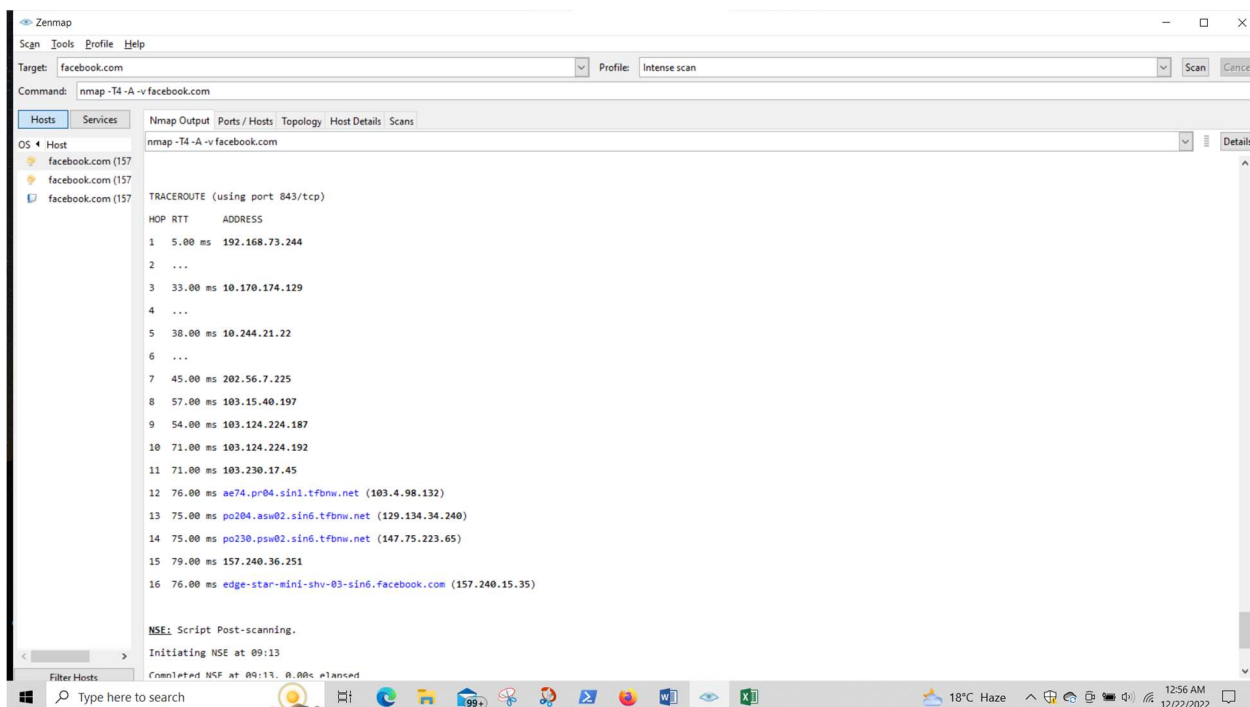In fig 4, this is TELETALK network. We can see, there was 11 IP address in that network.

Fig 5: Grameenphone network zenmap output

In fig 4, this is grameenphone network. We can see, there was 16 IP address in that network.
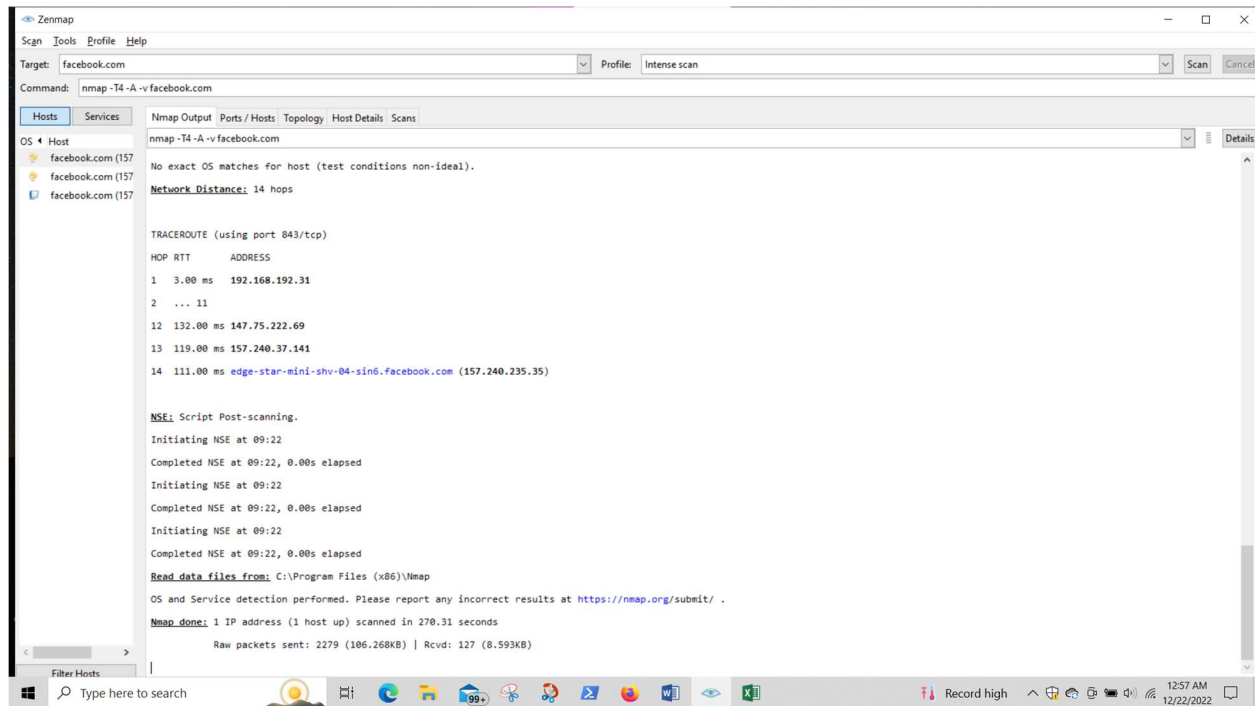
Fig 6: Banglalink network zenmap output

In fig 6, this is Banglalink network. We can see, there was 14 IP address in that network.

4. Design network Topology

Network topology is the topological structure of a network and may be depicted physically or logically. It is an application of graph theory wherein communicating devices are modeled as nodes and the connections between the devices are modeled as links or lines between the nodes. Physical topology is the placement of the various components of a network while logical topology illustrates how data flows within a network. Distances between nodes, physical interconnections, transmission rates, or signal types may differ between two different networks, yet their logical topologies may be identical. A network's physical topology is a particular concern of the physical layer of the OSI model.
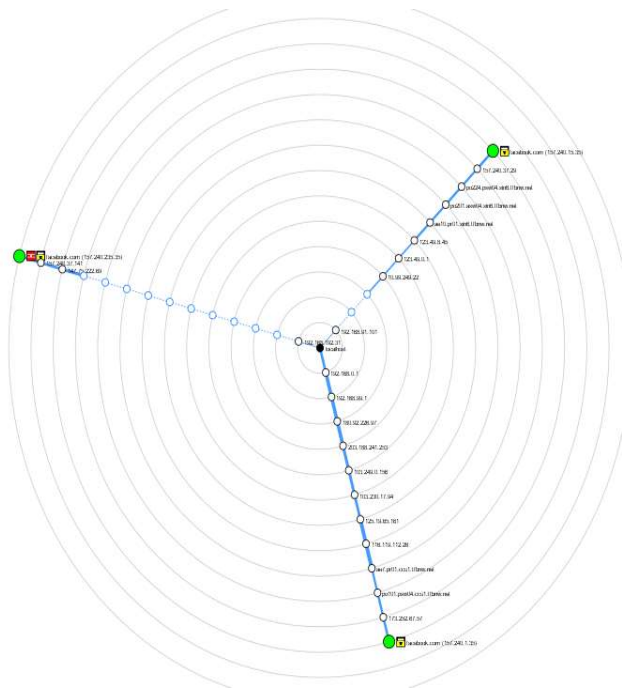

Fig 7: Network topology of Facebook

By scanning in zenmap we create this topology. This is our four network topology.
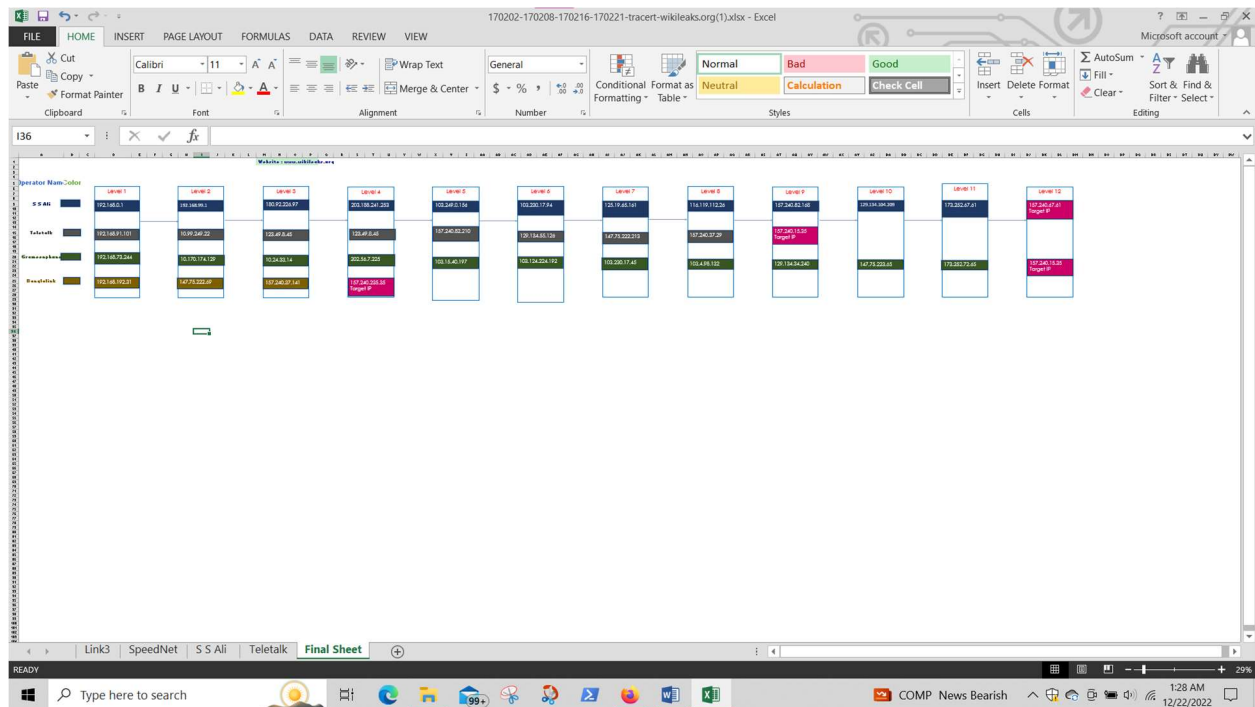
5. Excel sheet of network diagram

Fig 8: Excel sheet of IP address

We created this excel sheet based on our scanned IP Addresses by using zenmap.

6. Introduction To NS2

Network Simulator (Version 2), widely known as NS2, is simply an event-driven simulation tool that has proved useful in studying the dynamic nature of communication networks. Simulation of wired as well as wireless network functions and protocols (routing algorithms, TCP, UDP) can be done using NS2. In general, NS2 provides users with a way of specifying such network protocols and simulating their corresponding behaviors.
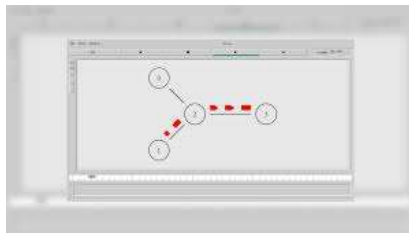
7. Source Code of NS2

```
Open ▼    🗗

#------------------------------------------------------------
# This ns script has been created by the nam editor.
# If you edit it manually, the nam editor might not
# be able to open it properly in the future.
#
# EDITING BY HAND IS AT YOUR OWN RISK!
#------------------------------------------------------------
# Create a new simulator object.
set ns [new Simulator]
# Create a nam trace datafile.
set namfile [open /home/ariana/f.nam w]
$ns namtrace-all $namfile

# Create wired nodes.
set node(34) [$ns node]
## node(34) at 475.905640,516.082764
$node(34) set X_ 475.905640
$node(34) set Y_ 516.082764
$node(34) set Z_ 0.0
$node(34) color "#6600ff"

set node(33) [$ns node]
## node(33) at 457.732880,516.958618
$node(33) set X_ 457.732880
$node(33) set Y_ 516.958618
$node(33) set Z_ 0.0
$node(33) color "black"

set node(32) [$ns node]
## node(32) at 439.122192,517.396484
$node(32) set X_ 439.122192
$node(32) set Y_ 517.396484
$node(32) set Z_ 0.0
$node(32) color "black"

set node(31) [$ns node]
## node(31) at 422.919922,518.491211
$node(31) set X_ 422.919922
$node(31) set Y_ 518.491211
$node(31) set Z_ 0.0
```

```tcl
$node(12) set Y_ 603.005554
$node(12) set Z_ 0.0
$node(12) color "#9900ff"

set node(11) [$ns node]
## node(11) at 599.173950,602.348755
$node(11) set X_ 599.173950
$node(11) set Y_ 602.348755
$node(11) set Z_ 0.0
$node(11) color "black"

set node(10) [$ns node]
## node(10) at 589.102295,602.348755
$node(10) set X_ 589.102295
$node(10) set Y_ 602.348755
$node(10) set Z_ 0.0
$node(10) color "black"

set node(9) [$ns node]
## node(9) at 574.432678,602.348755
$node(9) set X_ 574.432678
$node(9) set Y_ 602.348755
$node(9) set Z_ 0.0
$node(9) color "black"

set node(8) [$ns node]
## node(8) at 561.952576,602.567627
$node(8) set X_ 561.952576
$node(8) set Y_ 602.567627
$node(8) set Z_ 0.0
$node(8) color "black"

set node(7) [$ns node]
## node(7) at 540.276672,602.129761
$node(7) set X_ 540.276672
$node(7) set Y_ 602.129761
$node(7) set Z_ 0.0
$node(7) color "black"

set node(6) [$ns node]
## node(6) at 522.103882,602.567627
```

8. Output topology of NS2
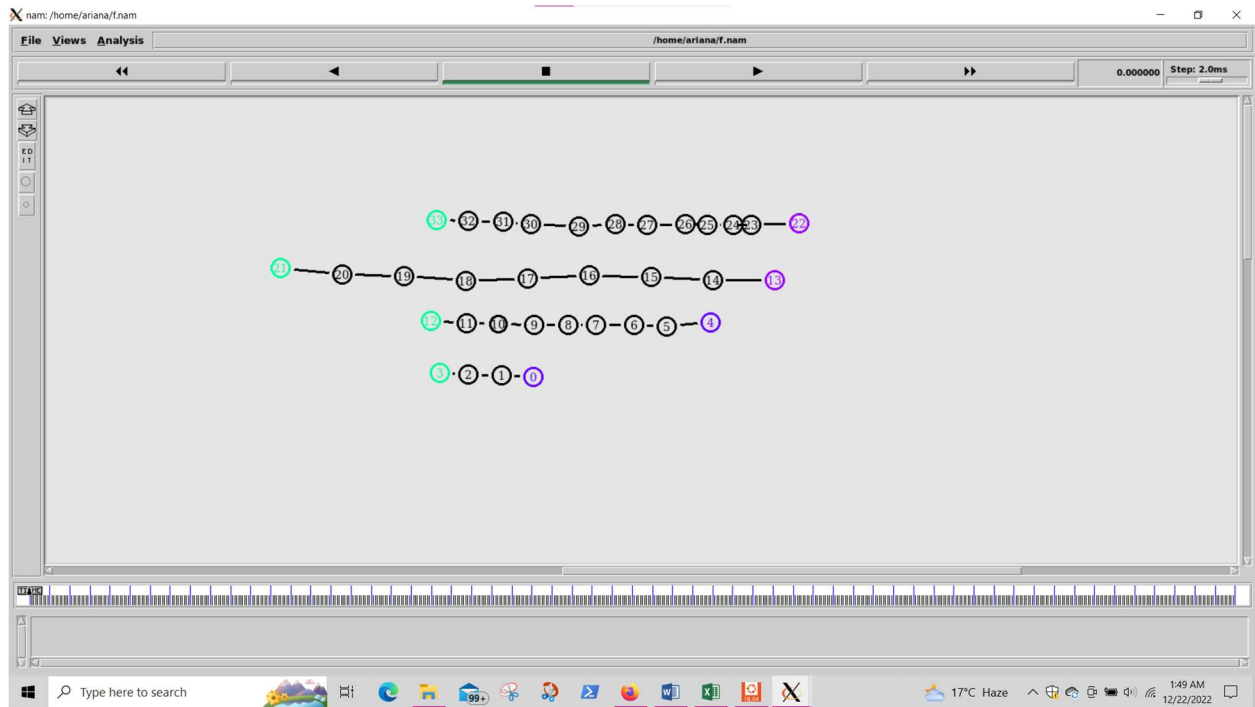

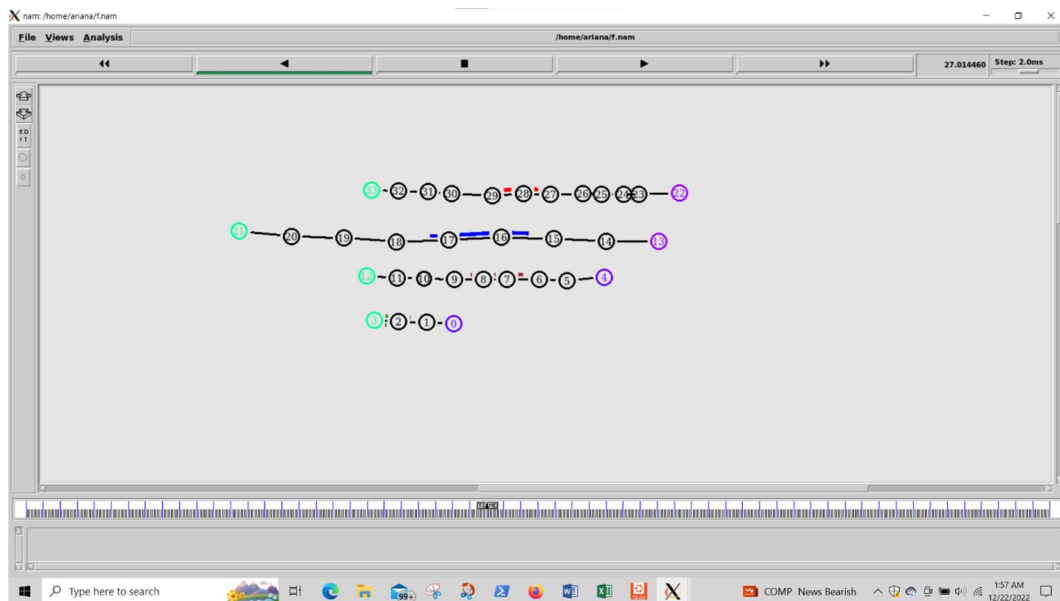Fig: Starting time output of the ns2
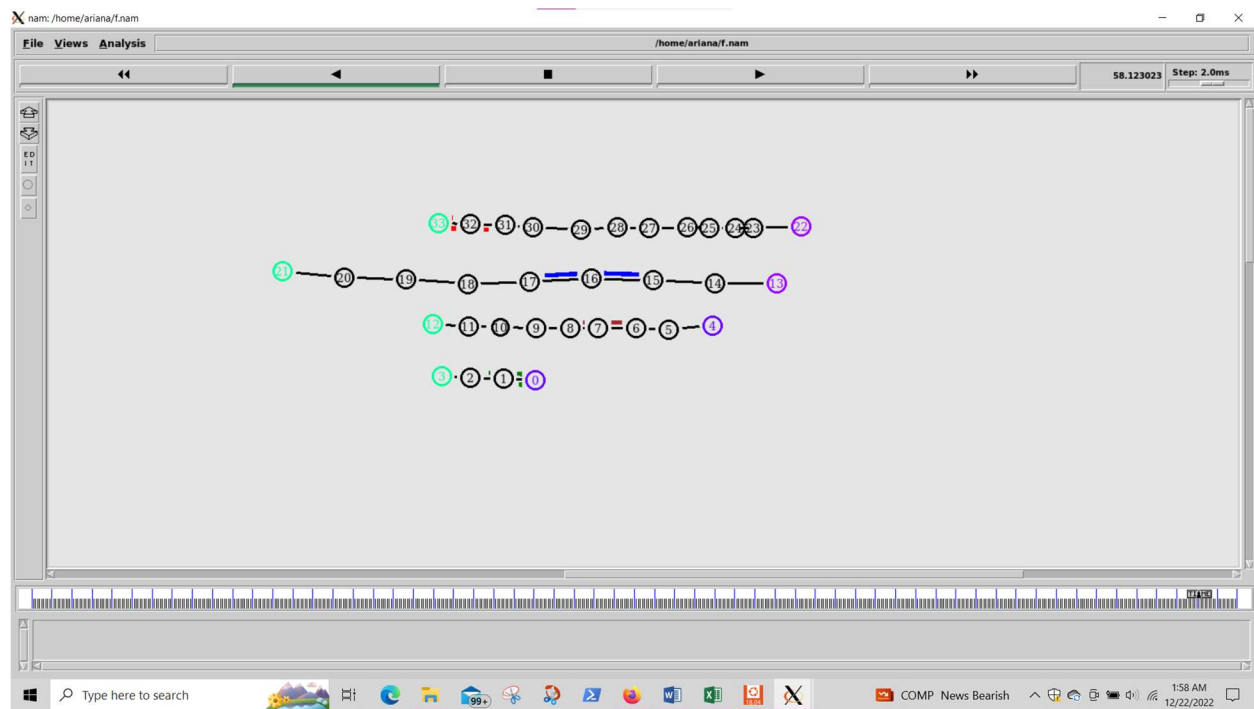

Fig: Middle time output of the ns2

Fig: Ending time output of ns2

9. Summarization of the design network

- Nenmap is used for auditing network systems as it can detect new servers.
- You can create here topology map of discovered networks
- After scanning from 4 domain host network (facebook.com) we find 4 different topology of it.
- Then we create an excel sheet from scanned IP address.
- Then we install Network simulator version 2 in Ubuntu 18.04.5LTS and xming for showing the network flow.

10. Conclusion

One of the drawbacks of the standard Nmap utility is that it does not come with a graphical user interface, unlike a number of other open-source alternatives such as Zenmap. It takes a bit of time to get familiar with the solution and its options.

11. References

1.
https://link.springer.com

2.
https://www.cs.ucf.edu

3.

https://www.tutorialsweb.com