03/12/2023

Project 4

# Task 1

Create Topology with 3 routers with 2 hosts per router/LAN.

## LAN A

### LAN A with 50 hosts.

### Network Address 20.10.172.128/26

### Subnet Mask 255.255.255.192

### Smallest IP Address 20.10.172.129/26

### Highest IP Address 20.10.172.190/26

### Broadcast IP Address 20.10.172.191/26

## LAN B

### LAN B with 75 hosts.

### Network Address 20.10.172.0/25

### Subnet Mask 255.255.255.128

### Smallest IP Address 20.10.172.1/25

### Highest IP Address 20.10.172.126/25

### Broadcast IP Address 20.10.172.127/25

## LAN C

### LAN C with 20

### Network Address 20.10.172.0/27

### Subnet Mask 255.255.255.224

### Smallest IP Address 20.10.172.193/27

### Highest IP Address 20.10.172.222/27

### Broadcast IP Address 20.10.172.223/27

# Note that the calculations for subnet were done from the biggest subnet requirement to the Smallest.

# TASK 2

## Creating Topology and configuring the Network Interface

## Diagram Description automatically generated

## Python code implementation of the Topology

Graphical user interface, application

Description automatically generated

## Mininet outputs proving the links, nodes and net

Text

Description automatically generated with medium confidence

Graphical user interface, text

Description automatically generated

Text

Description automatically generated

## Testing Local LAN ping

### LAN A

#### Text Description automatically generated

### LAN B

#### Text Description automatically generated

### LAN C

#### Text Description automatically generated

### Pingall Command would fail as there are no links between the routers themselves.

#### Text Description automatically generatedText Description automatically generated

# TASK 3

## Add routing rules on each host for destination

### Python Implementation for route add –

#### Text Description automatically generated

### Running pingall command to test the implementation of the route add –

#### A picture containing text Description automatically generated

### Running traceroute between LANs

#### A picture containing shape Description automatically generated

# Sources and tools used

## Mininet implementation of code referred from <https://github.com/mininet/mininet/blob/master/examples/linuxrouter.py>

## Creately used for pictorial representation of the Topology.

## Ubuntu OS running on UTM, a MAC application for stable Virtualization on M1 macs.