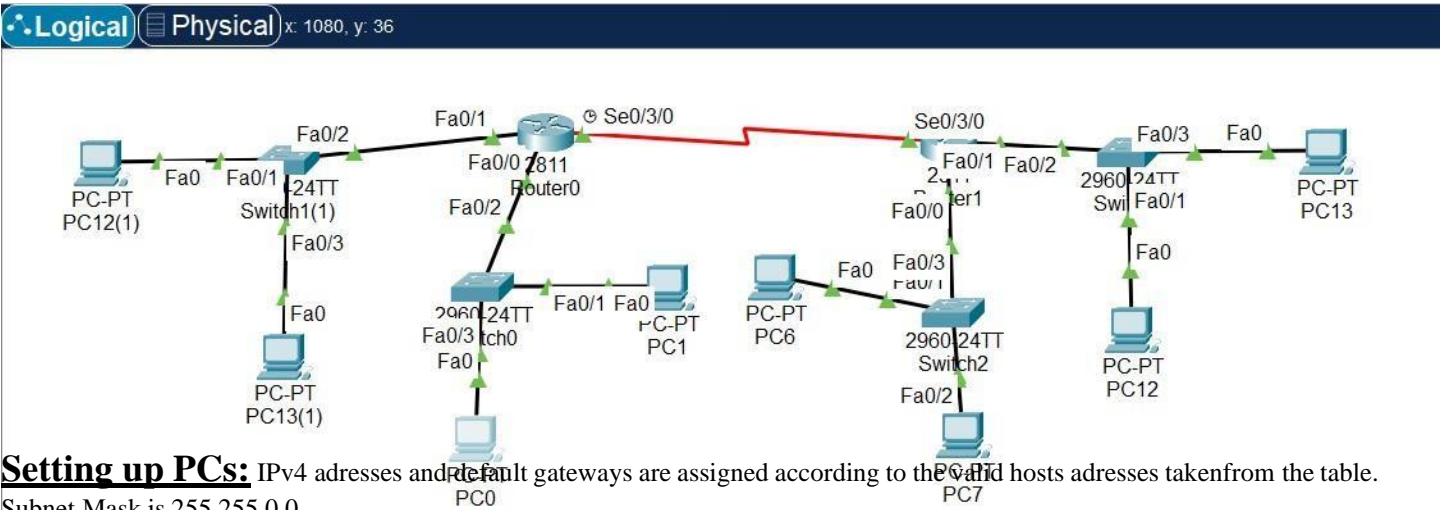


Task 4:

Calculate total number of subnets, total number of hosts per subnet, total number of valid hosts per subnet, subnet mask for each subnet, first valid host for each subnet, last valid host for each subnet, broadcast ip address of each subnet, subnetwork IP address for each subnet, block size for each family of IPs in each subnet. Generate a table as shown in the classroom exercise for enlisting range of IP address in each of subnet families. & finally design the same on packet tracer.

Designing the Topology: As there are 256 possible Subnets for demonstration purpose only 5 were made There were 4 switches attached to the router to differentiate the broadcast domains and assigned 2 PCs to each domain. The routers itself are in a separate domain.



Setting up PCs: IPv4 addresses and default gateways are assigned according to the valid hosts addresses taken from the table. Subnet Mask is 255.255.0.0

PC0

Physical

Config

Desktop

Programming

Attributes

IP Configuration

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

10.0.0.2

Subnet Mask

255.255.0.0

Default Gateway

10.0.0.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local Address

FE80:2D0:58FF:FEB5:B43E

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

Top

PC1

Physical

Config

Desktop

Programming

Attributes

IP Configuration

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

10.0.0.3

Subnet Mask

255.255.0.0

Default Gateway

10.0.0.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local Address

FE80:260:5CFF:FE46:1564

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

Top

PC12(1)

Physical

Config

Desktop

Programming

Attributes

IP Configuration

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

10.3.0.3

Subnet Mask

255.255.0.0

Default Gateway

10.3.0.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local Address

FE80:2D0:D3FF:FE9B:2BBE

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

Top

PC13(1)

Physical

Config

Desktop

Programming

Attributes

IP Configuration

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

10.3.0.2

Subnet Mask

255.255.0.0

Default Gateway

10.3.0.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local Address

FE80:2E0:8FFF:FE7A:4896

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

Top

PC6

Physical

Config

Desktop

Programming

Attributes

IP Configuration

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

10.1.0.2

Subnet Mask

255.255.0.0

Default Gateway

10.1.0.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local Address

FE80:2E0:A3FF:FE90:B3D

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

Top

PC7

Physical

Config

Desktop

Programming

Attributes

IP Configuration

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

10.1.0.3

Subnet Mask

255.255.0.0

Default Gateway

10.1.0.1

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

Link Local Address

FE80:206:2AFF:FE97:6398

Default Gateway

DNS Server

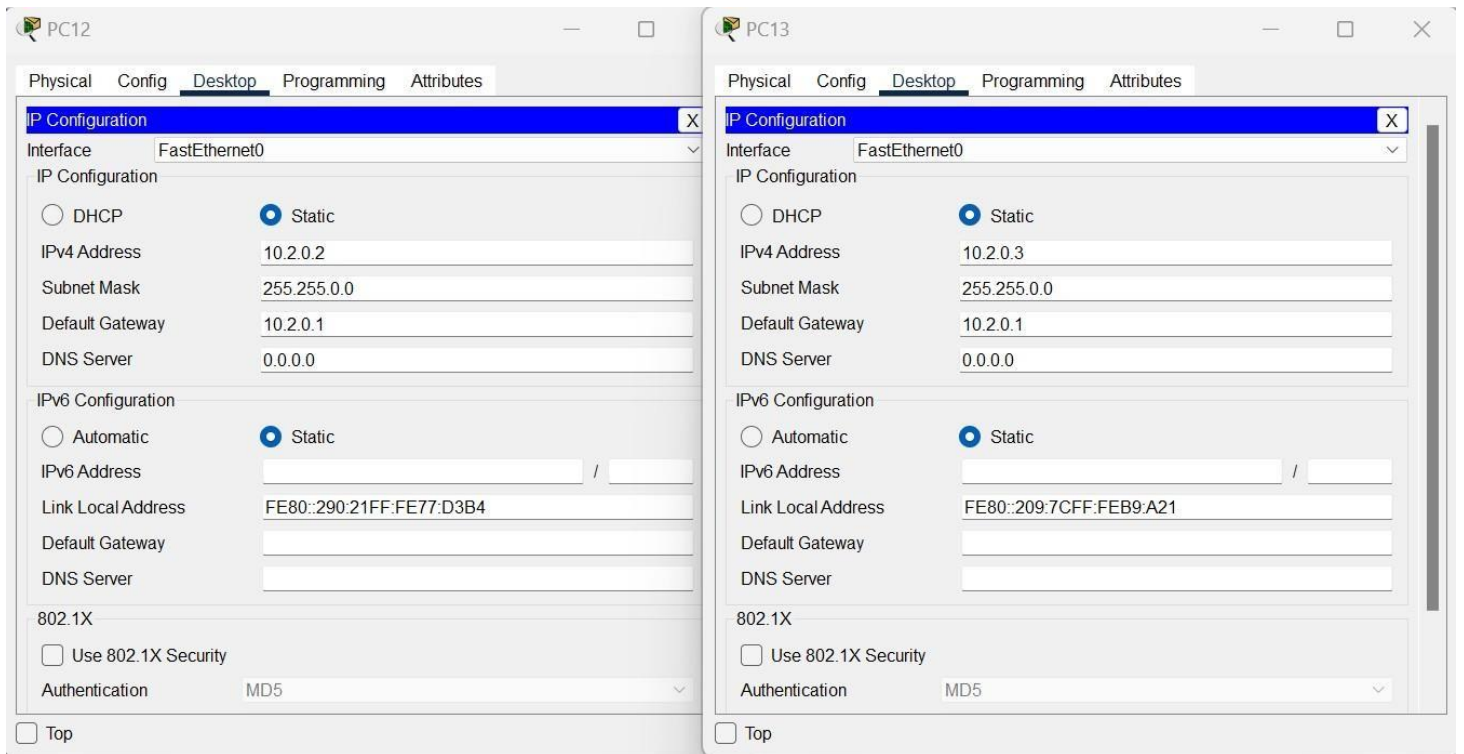
802.1X

Use 802.1X Security

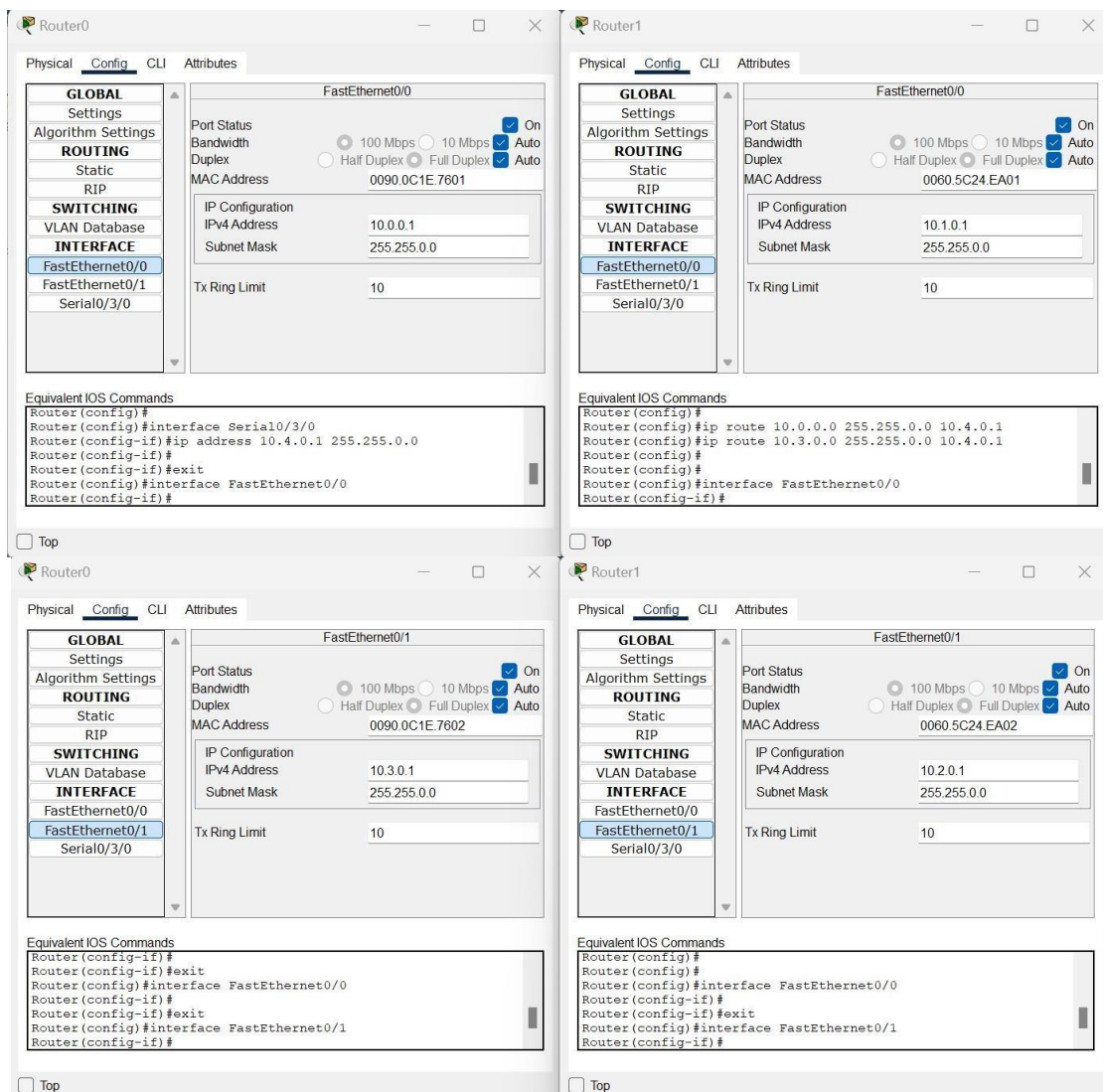
Authentication

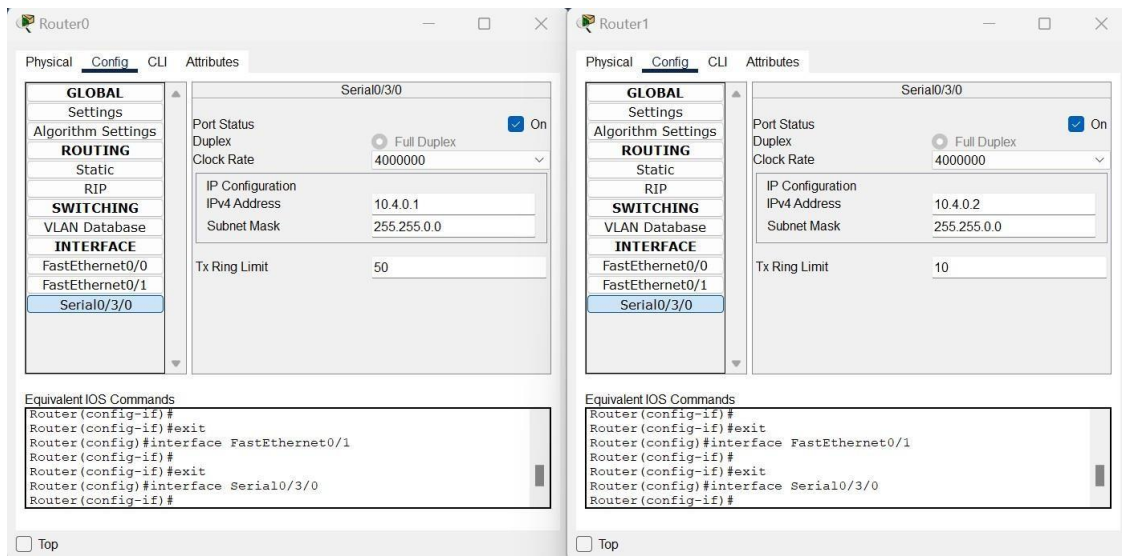
MD5

Top

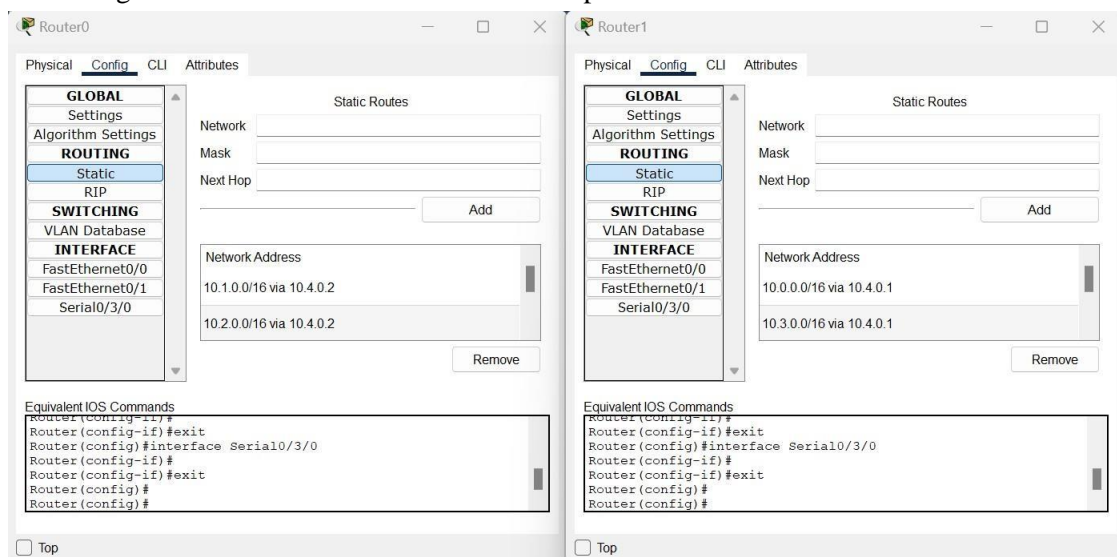


Setting up Router: Connecting the switches to router and adding the default IPv4 of each subnet and also making the routers a separate subnet.





Configuring Static routing so routers can communicate via serial port.



Pinging: Verifying connections by pinging PC0 (IPv4= 10.0.0.2) to PC13 (IPv4= 10.2.0.3) which is successful.

