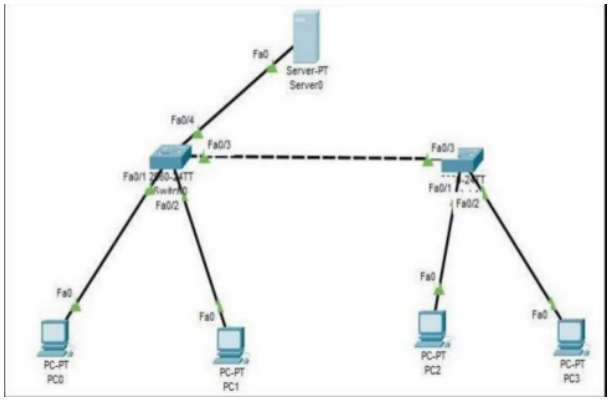
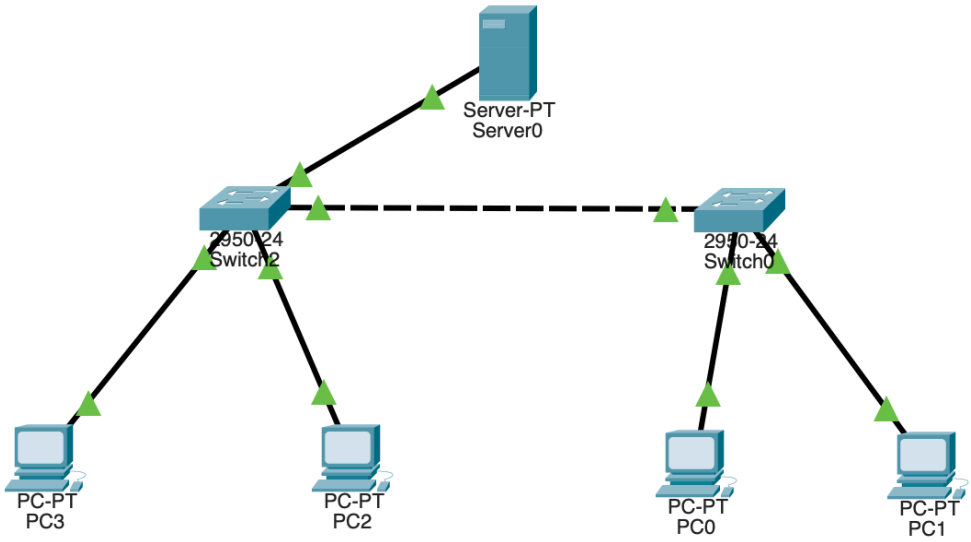
Lab Tasks

1) Design and configure the network given in figure given below and check the connectivity by PING command. Also describe the functionality of devices in given scenario. Show the packet header format of ARP in Cisco Packet Tracer.



SOLUTION:



Server acts as a central resource provider, like DHCP, DNS, or file sharing.

Switch connects several devices in a LAN and forwards the data based on the MAC address.

PCs are End-devices that initiate requests and use or consume network resources.

PC0

Physical Config Desktop P

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 192.168.1.10: bytes=32 time<1ms TTL=128
Reply from 192.168.1.10: bytes=32 time=19ms TTL=128
Reply from 192.168.1.10: bytes=32 time=19ms TTL=128
Reply from 192.168.1.10: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 19ms, Average = 9ms
```

PC1

Physical Config Desktop P

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time=30ms TTL=128
Reply from 192.168.1.11: bytes=32 time=19ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time=8ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 30ms, Average = 14ms
```

PC2

Physical Config Desktop

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.12

Pinging 192.168.1.12 with 32 bytes of data:

Reply from 192.168.1.12: bytes=32 time=23ms TTL=128
Reply from 192.168.1.12: bytes=32 time=2ms TTL=128
Reply from 192.168.1.12: bytes=32 time=6ms TTL=128
Reply from 192.168.1.12: bytes=32 time=13ms TTL=128

Ping statistics for 192.168.1.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 23ms, Average = 11ms
```

PC3

Physical Config Desktop

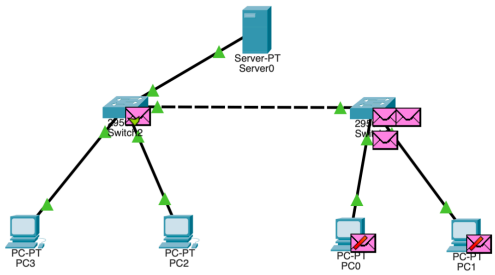
Command Prompt

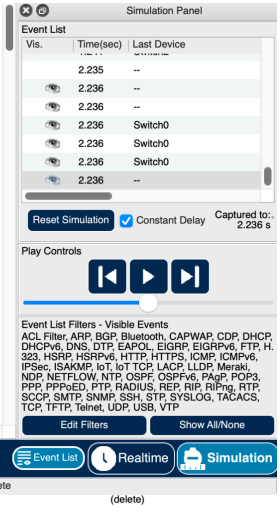
```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.13

Pinging 192.168.1.13 with 32 bytes of data:

Reply from 192.168.1.13: bytes=32 time=2ms TTL=128
Reply from 192.168.1.13: bytes=32 time=3ms TTL=128
Reply from 192.168.1.13: bytes=32 time=12ms TTL=128
Reply from 192.168.1.13: bytes=32 time=14ms TTL=128

Ping statistics for 192.168.1.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 2ms, Maximum = 14ms, Average = 7ms
```





2) Identify the difference between Switch and Hub?

Switch:

Works at Layer 2 (Data Link Layer), and Forwards data based on MAC addresses.It creates separate collision domains for each port. It’s More efficient than a hub because it sends data only to the intended device.

Hub:

Works at Layer 1 (Physical Layer).It Broadcasts data to all devices and shares a single collision domain for all ports. It’s Less efficient than a switch because it sends data to all devices, causing unnecessary traffic

3) Differentiate between physical and logical mode?

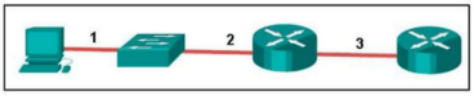
Physical Mode:

Refers to the physical layout of devices (such as routers, switches, and PCs).It Depicts the actual geographical placement of devices. Physical mode is mainly used to graphically represent real-world placement of network components.

Logical Mode:

Depicts logical connections between the devices.It Considers the Network Topology for example IP Addressing, routing, VLAN. It can be used for designing and implementing the functional portions of the network.

4) Consider the following figure. The PC is connected to the console port of the switch. All the other connections are made through Fast Ethernet links. Which types of UTP cables can be used with segment 1, 2 and 3?



SOLUTION:

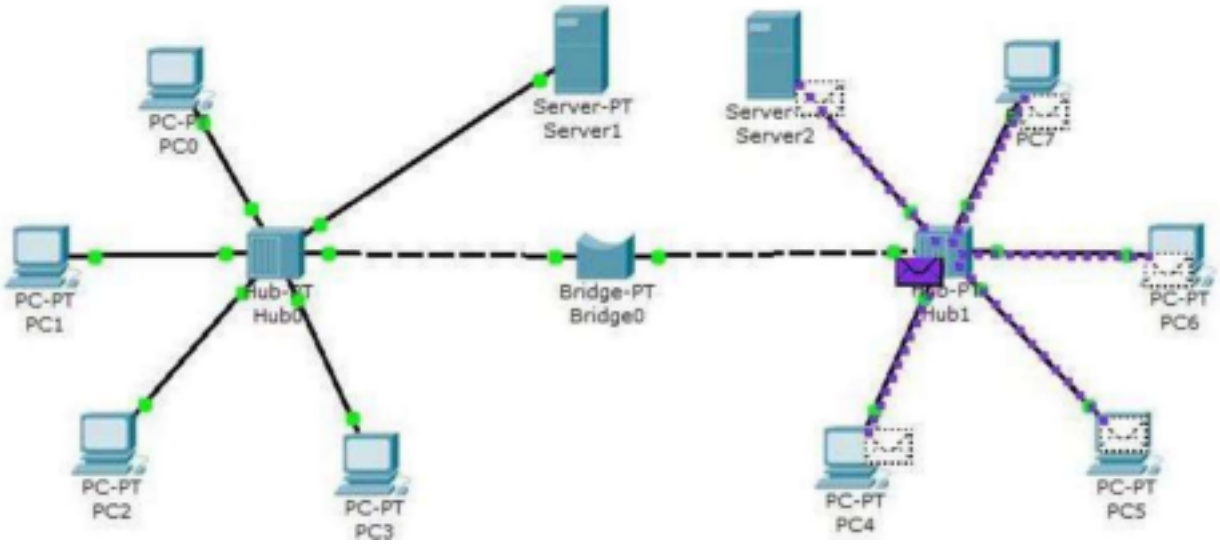
1- rollover

2- straight-through

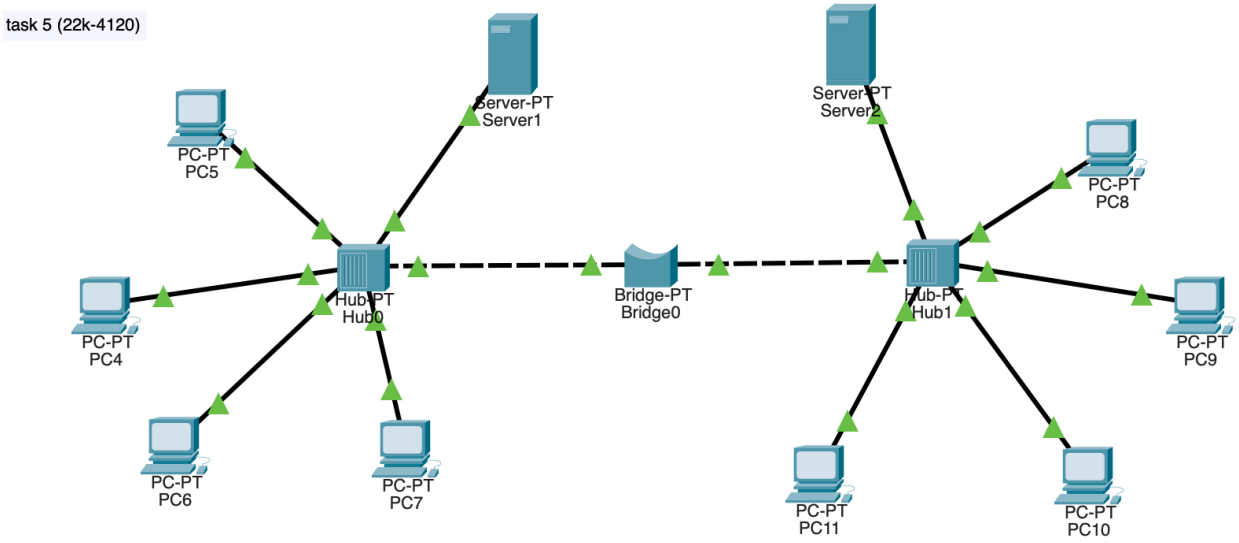
3- crossover

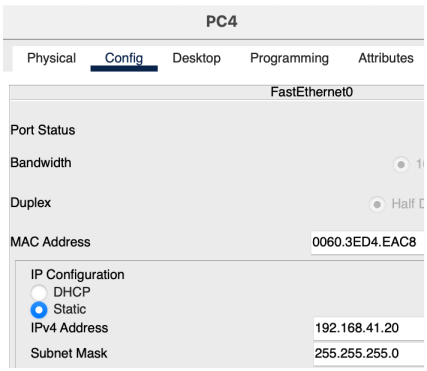
5) Create a network using Packet Tracer having eight PC with 4 of them in one broadcast domain and remaining 4 in other broadcast domain achieve this by using HUB and Bridge. Show steps in form of screen shots also explain the working of bridge.

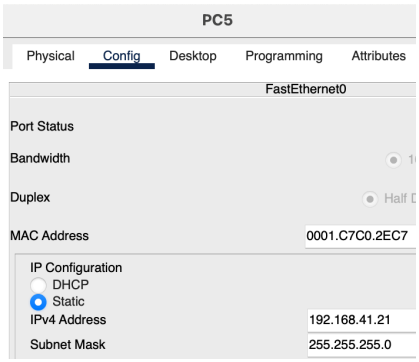
[HINT: HUB has single Broadcast and collision domain; broadcast domain mean all devices connected will receive data of every transaction, USE 2 HUB and 1 Bridge having 8 PCs in Network].

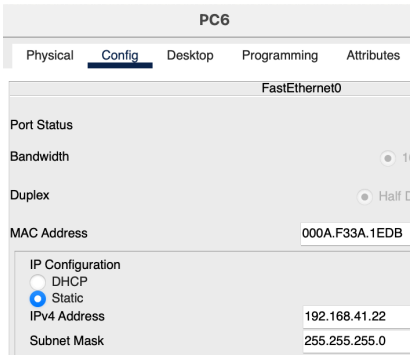


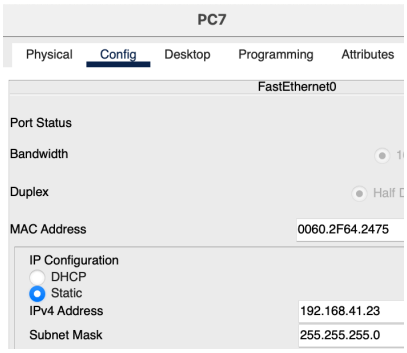
SOLUTION :

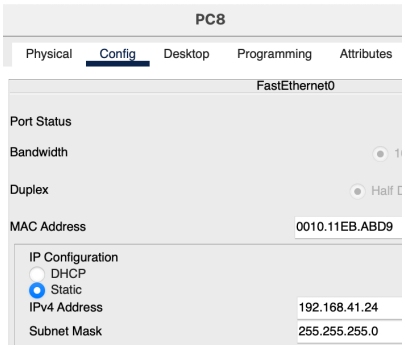


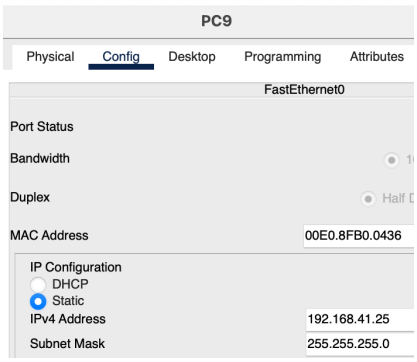

PC4
Physical
Config
Desktop
Programming
Attributes
FastEthernet0
Port Status
Bandwidth
Duplex
MAC Address
0060.3ED4.EAC8
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.20
Subnet Mask
255.255.255.0

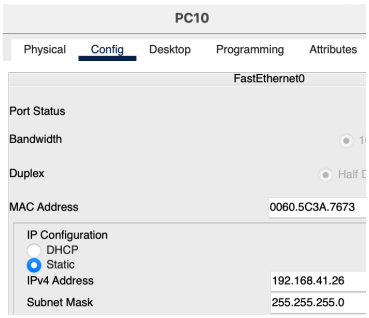

PC5
Physical
Config
Desktop
Programming
Attributes
FastEthernet0
Port Status
Bandwidth
Duplex
MAC Address
0001.C7C0.2EC7
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.21
Subnet Mask
255.255.255.0

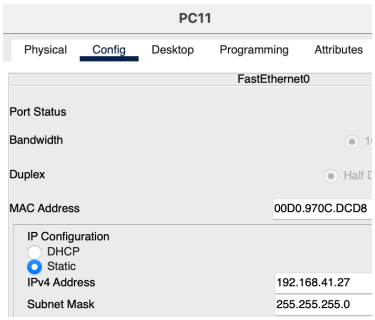

PC6
Physical
Config
Desktop
Programming
Attributes
FastEthernet0
Port Status
Bandwidth
Duplex
MAC Address
000A.F33A.1EDB
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.22
Subnet Mask
255.255.255.0

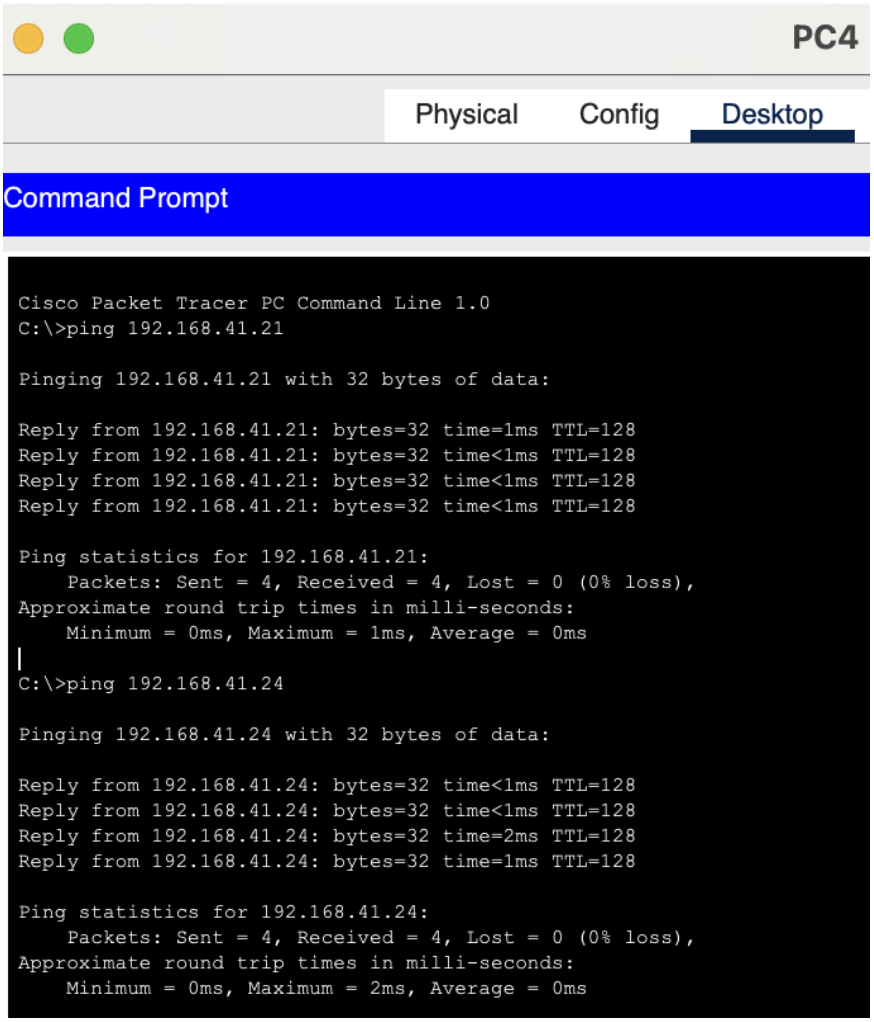

PC7
Physical
Config
Desktop
Programming
Attributes
FastEthernet0
Port Status
Bandwidth
Duplex
MAC Address
0060.2F64.2475
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.23
Subnet Mask
255.255.255.0


PC8
Physical
Config
Desktop
Programming
Attributes
FastEthernet0
Port Status
Bandwidth
Duplex
MAC Address
0010.11EB.ABD9
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.24
Subnet Mask
255.255.255.0


PC9
Physical
Config
Desktop
Programming
Attributes
FastEthernet0
Port Status
Bandwidth
Duplex
MAC Address
00E0.8FB0.0436
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.25
Subnet Mask
255.255.255.0


PC10
Physical
Config
Desktop
Programming
Attributes
FastEthernet0
Port Status
Bandwidth
Duplex
MAC Address
0060.5C3A.7673
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.26
Subnet Mask
255.255.255.0


PC11
Physical
Config
Desktop
Programming
Attributes
FastEthernet0
Port Status
Bandwidth
Duplex
MAC Address
00D0.970C.DCD8
IP Configuration
DHCP
Static
IPv4 Address
192.168.41.27
Subnet Mask
255.255.255.0



A Bridge would connect two network segments and filter traffic based on MAC addresses.
It reduces collision domains by separating traffic between the two segments.
For question 5, Hub1 and Hub2 are in different broadcast domains.
The Bridge prevents the broadcast traffic from Hub1 to flood Hub2, and vice versa.