

## **Experiment no :- 03**

**Aim: Implement Star based Hub topology through cisco packet tracer.**

**Theory:**

### **Star topology**

A **star topology** is a network that is designed to look very similar to a star with a central core and many systems connected directly to that

core. The systems in a star topology do not connect to each other, but instead pass messages to the central core that, in turn, passes the message to either all other systems or the specific destination system depending on the network design. This topology works well for many smaller networks and works around many of the detriments associated with bus or ring topologies.

In a star topology, computers aren't connected to one another but are all connected to a central hub or switch. When a computer sends data to other computers on the network, it is sent along the cable to a central hub or switch, which then determines which port it needs to send the data through for it to reach the proper destination. **Characteristics** of a star topology are as follows:

- All cables run to a central connection point.
- If one cable breaks or fails, only the computer that is connected to that cable is unable to use the network.
- A star topology is scalable.
- As the network grows or changes, computers are simply added or removed from the central connection point, which is usually a hub or a switch.
- Because there is so much cabling used to connect individual computers to a central point, this may increase the cost of expanding and maintaining the network.

### **Advantages Of Star Topology**

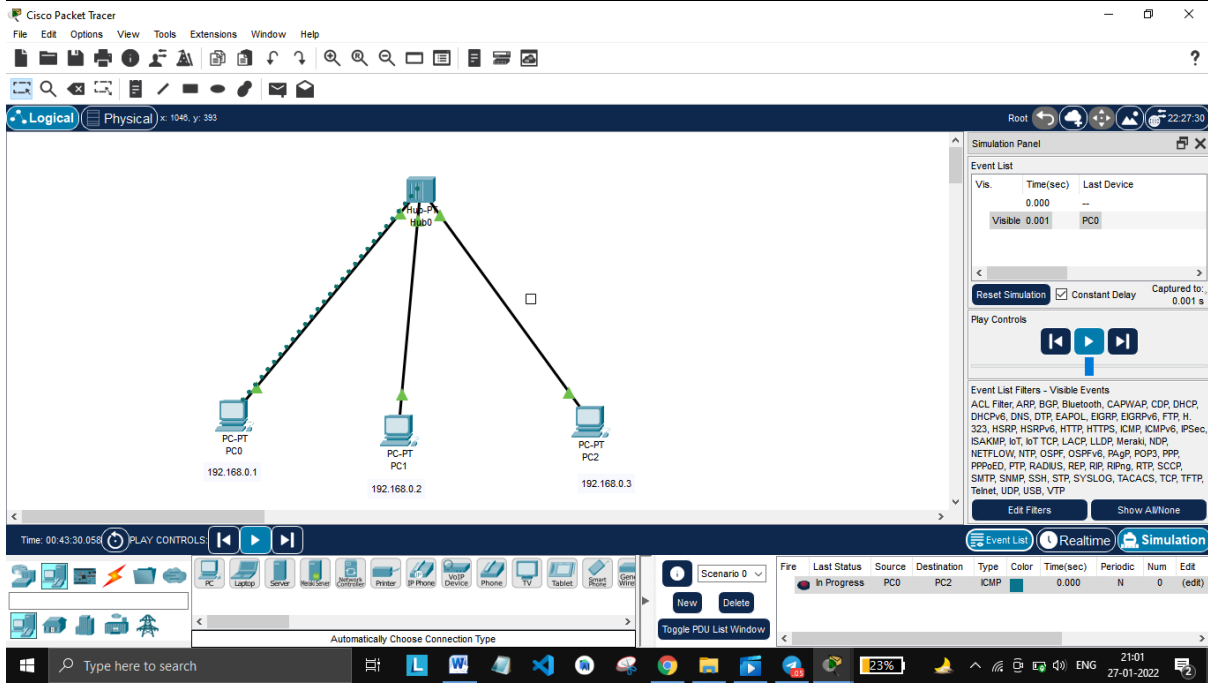
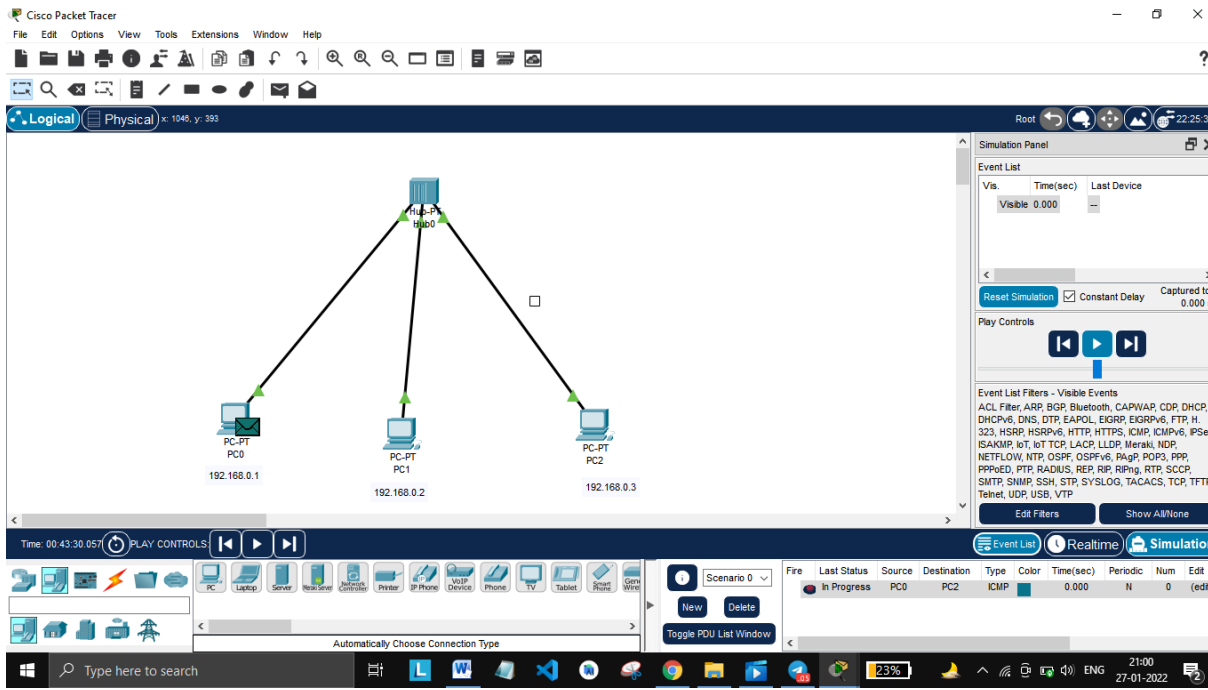
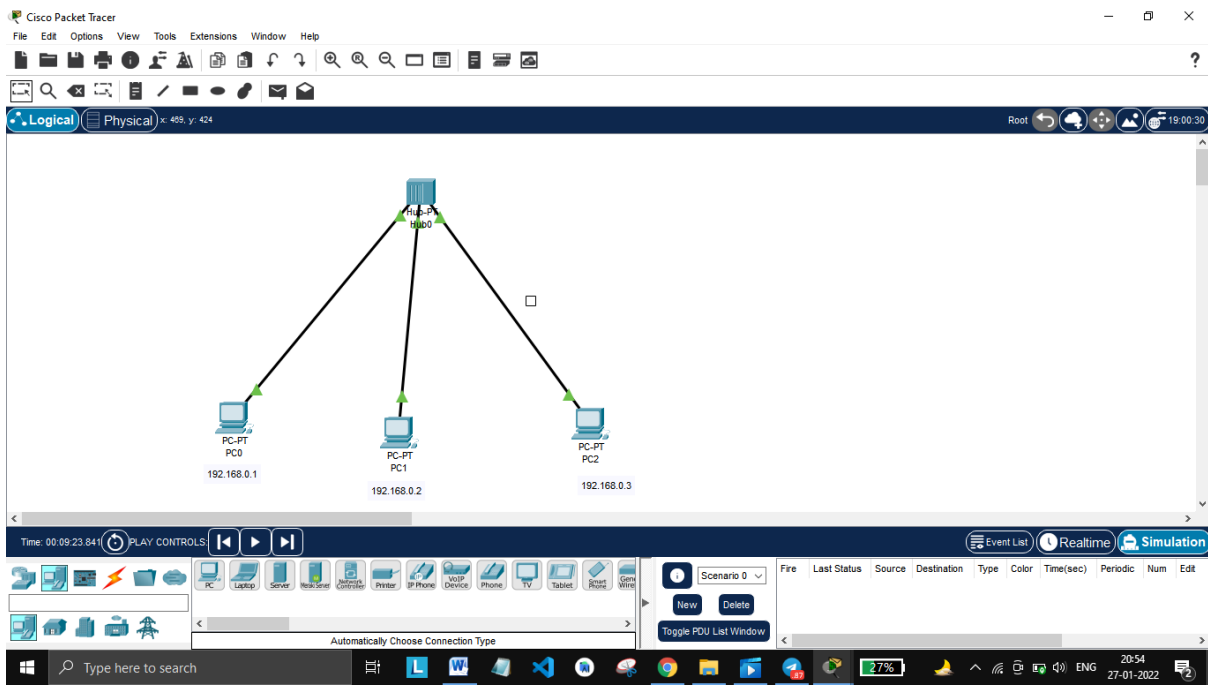
- 1) **Reliable:** It is a reliable topology because if one cable fails then all the other cables will be working fine.
- 2) **Easy to maintain:** If  $x$  is the number of the devices connected to the network the  $x$  cables will be required.
- 3) There is no collision of data because the switch manages the flow of the data and prioritizes the data.
- 4) New users can be added to the network without disturbing the existing users.
- 5) Devices can also be removed easily which is no longer required with the network.

- 6) It is easy to detect daily with the network because the broken link is easily identified.
- 7) Easy to set up.
- 8) It is cost-effective because each device requires only a cable and one I/O port to connect to the network.

### **Disadvantages Of Star Topology**

- 1) Requires more cables than a bus topology.
- 2) Complete dependency over the central devices.
- 3) If the central hub/switch fails, all the nodes connected in a network will no longer be able to communicate together.
- 4) More expensive than a bus topology because of the value of the networking devices like hubs and switches used within the network.
- 5) The switch requires more resources and regular maintenance because it is the center of data sharing.
- 6) Performance is completed based on the switches and hubs used within the network.

**Output:**



Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical x 1048, y: 393

Root 22:32:30

Simulation Panel

Event List

Vis.	Time(sec)	Last Device
	0.000	--
	0.001	PC0
Visible	0.002	Hub0
Visible	0.002	Hub0

Reset Simulation Constant Delay Captured to: 0.002 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H, 323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IOT, IOT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPv2, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show AllNone

Time: 00:43:30.058 PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit

In Progress		PC0	PC2	ICMP		0.000	N	0	(edit)
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Automatically Choose Connection Type

Type here to search

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Cisco Packet Tracer

File Edit Options View Tools Extensions Window Help

Logical Physical x 1048, y: 393

Root 22:33:30

Simulation Panel

Event List

Vis.	Time(sec)	Last Device
	0.000	--
	0.001	PC0
Visible	0.002	Hub0
Visible	0.002	Hub0

Reset Simulation Constant Delay Captured to: 0.002 s

Play Controls

Event List Filters - Visible Events

ACL Filter, ARP, BGP, Bluetooth, CAPWAP, CDP, DHCP, DHCPv6, DNS, DTP, EAPOL, EIGRP, EIGRPv6, FTP, H, 323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, IOT, IOT TCP, LACP, LLDP, Meraki, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, PPP, PPPoE, PTP, RADIUS, REP, RIP, RIPv2, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, USB, VTP

Edit Filters Show AllNone

Time: 00:43:30.058 PLAY CONTROLS

Scenario 0

New Delete

Toggle PDU List Window

Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit

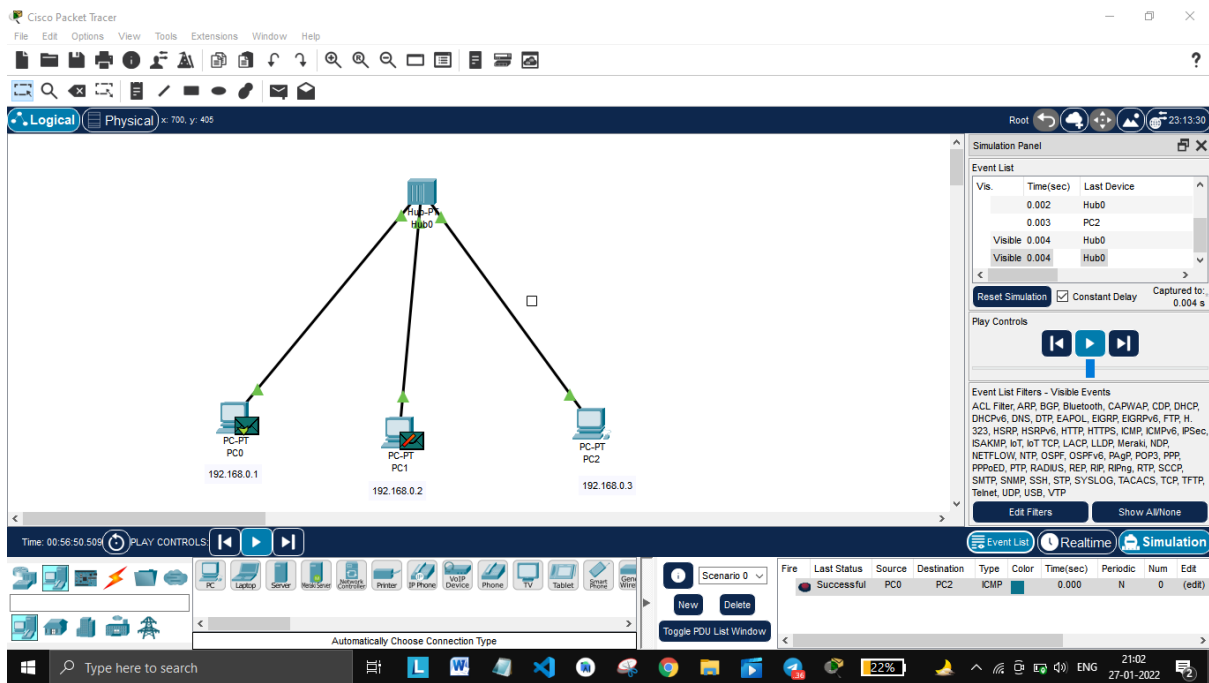
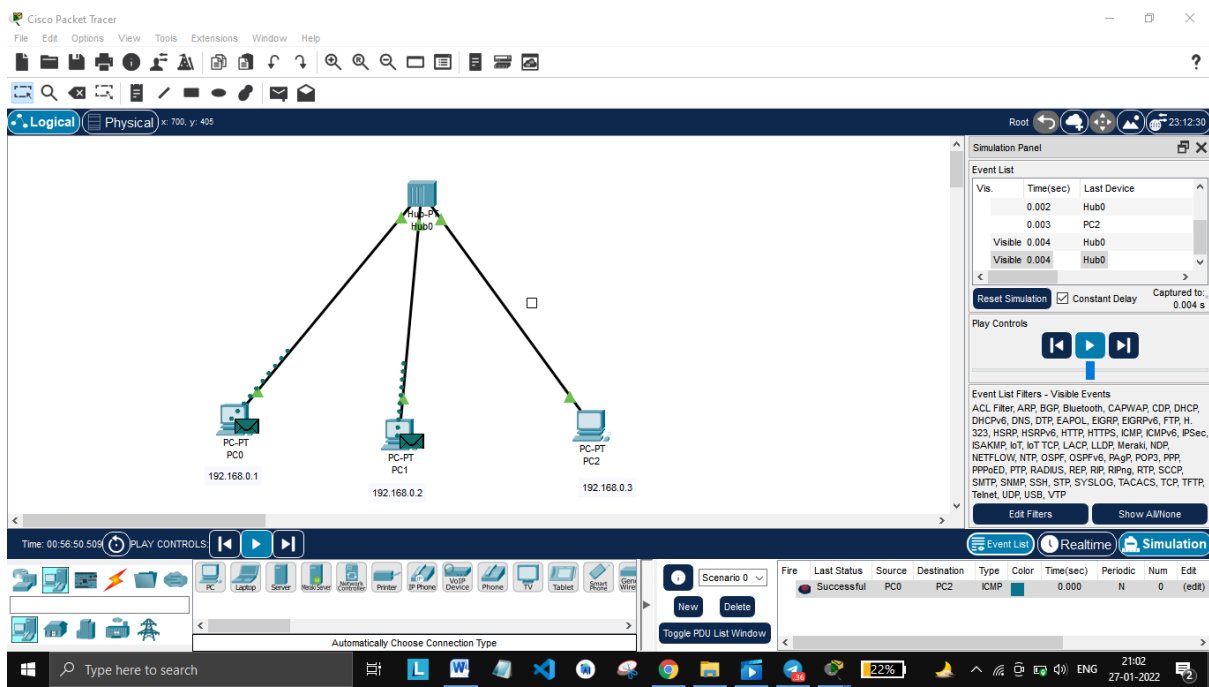
In Progress		PC0	PC2	ICMP		0.000	N	0	(edit)
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Automatically Choose Connection Type

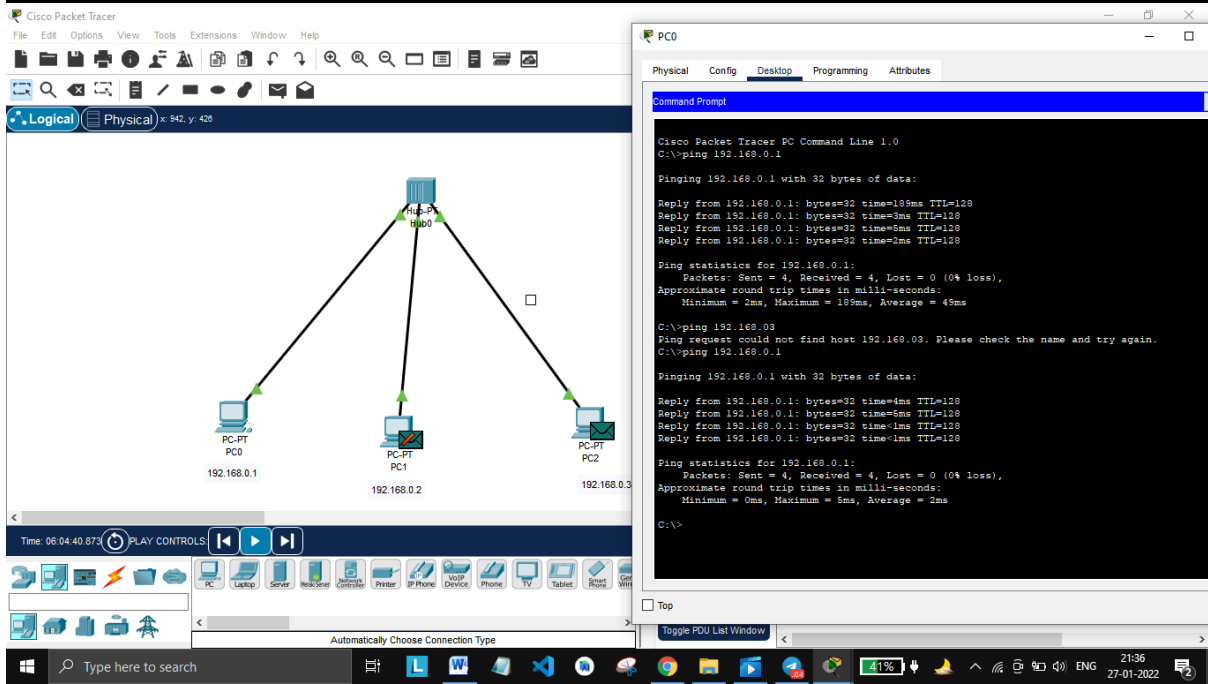
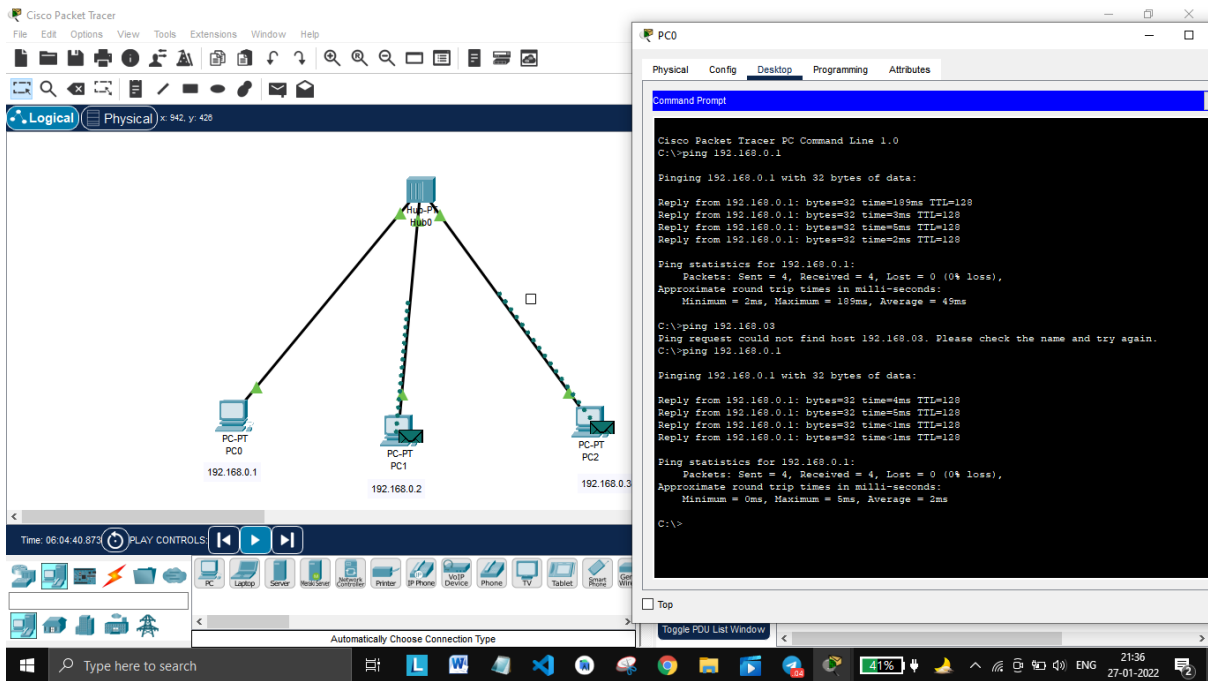
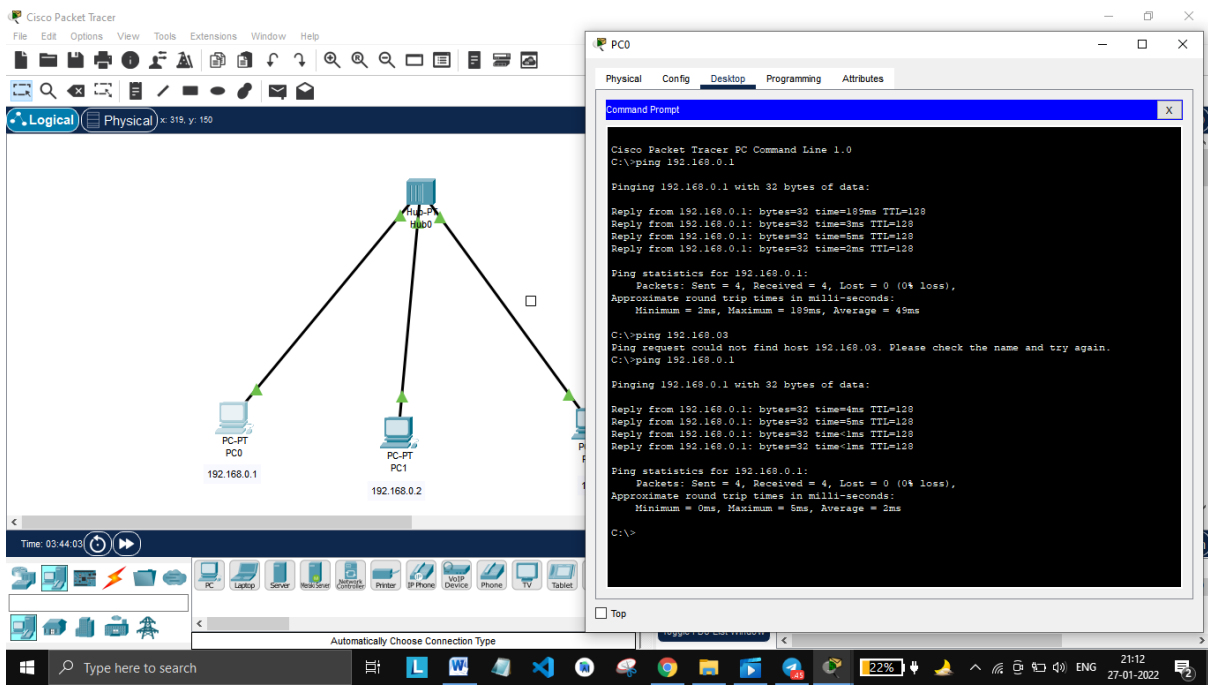
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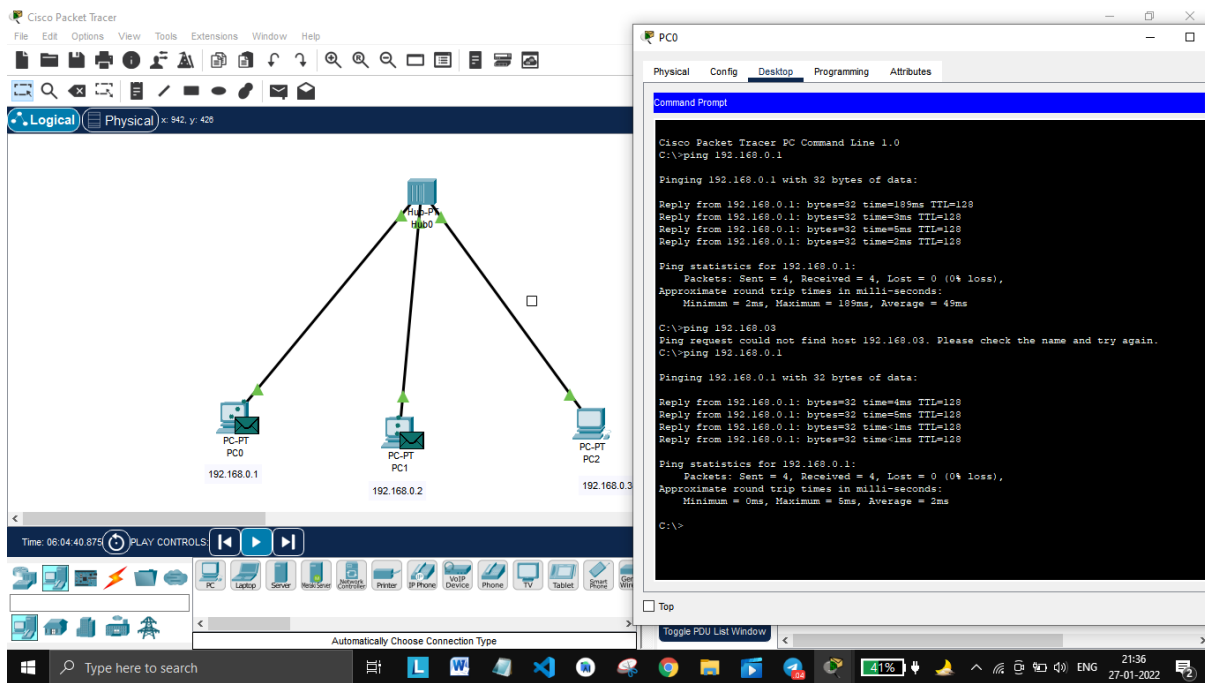
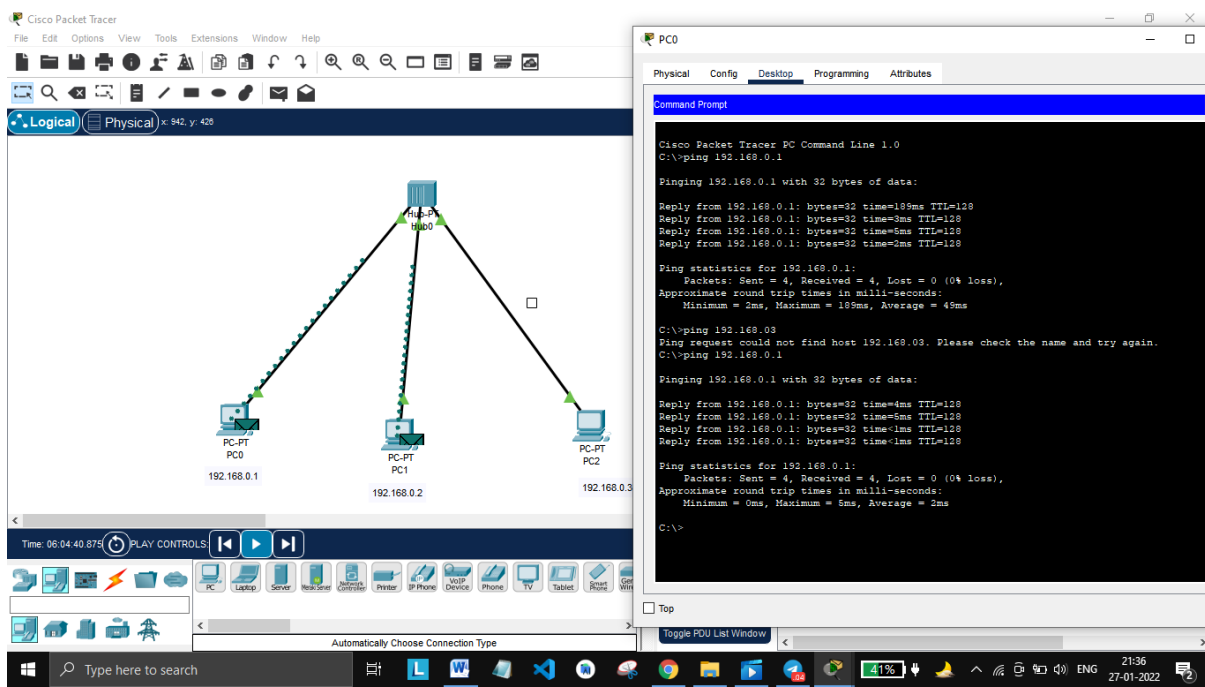
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**USING COMPT**





**Conclusion:** Thus we have successfully implemented Star based Hub topology through cisco packet tracer.