Week 4: Configure different network topologies using packet tracer/Network Simulator tool.

DESIGNING OF TOPOLOGY

Apparatus (Software): CISCO Packet Tracer Tool

Procedure:

Step 1: Start Packet Tracer

Step 2: Choose Network Devices and Connections

Step 3: Build the Topology – Add Hosts, Switch and Routers

Step 4: Connect the Hosts to Switch and Routers

Step 5: Configure IP Addresses and Subnet Masks on the Hosts and Routers

Step 6: Connect Host to Switch and Switch To Router

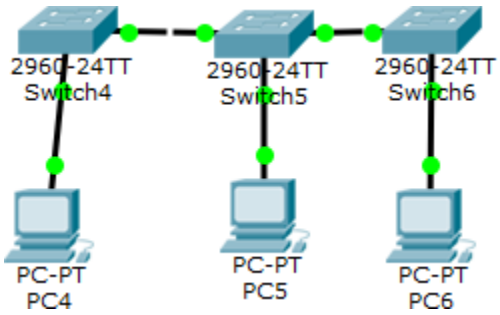
Step 7: Verify Connectivity in Real time Mode

Step 8 Verify Connectivity in Simulation Mode

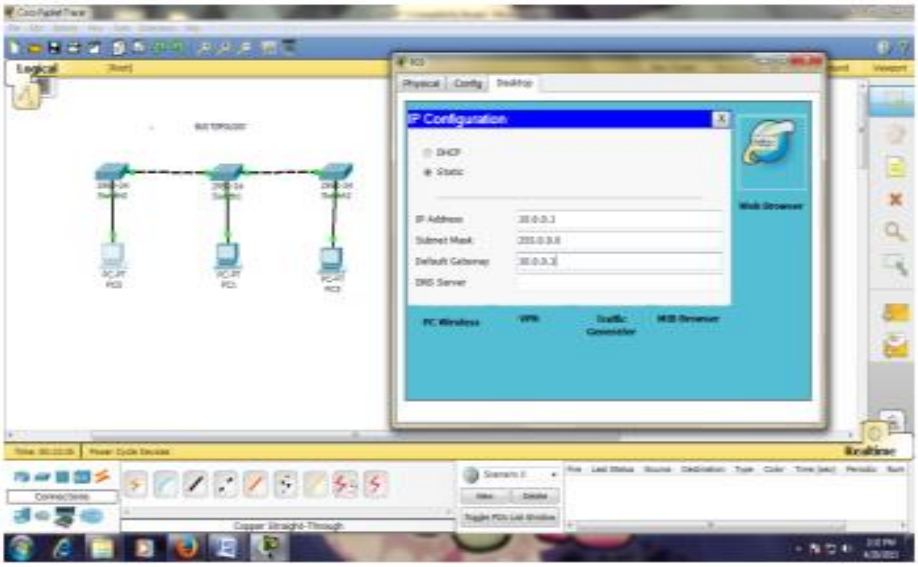
Step 9: Check the Results.

A) Bus Topology:

In local area network, it is a single network cable runs in the building or campus and all nodes are connected along with this communication line with two endpoints called the bus or backbone. In other words, it is a multipoint data communication circuit that is easily control data flow between the computers because this configuration allows all stations to receive every transmission over the network. For bus topology we build network using three generic pc which are serially connected with three switches using copper straight through cable and switches are interconnected using copper cross over cable.

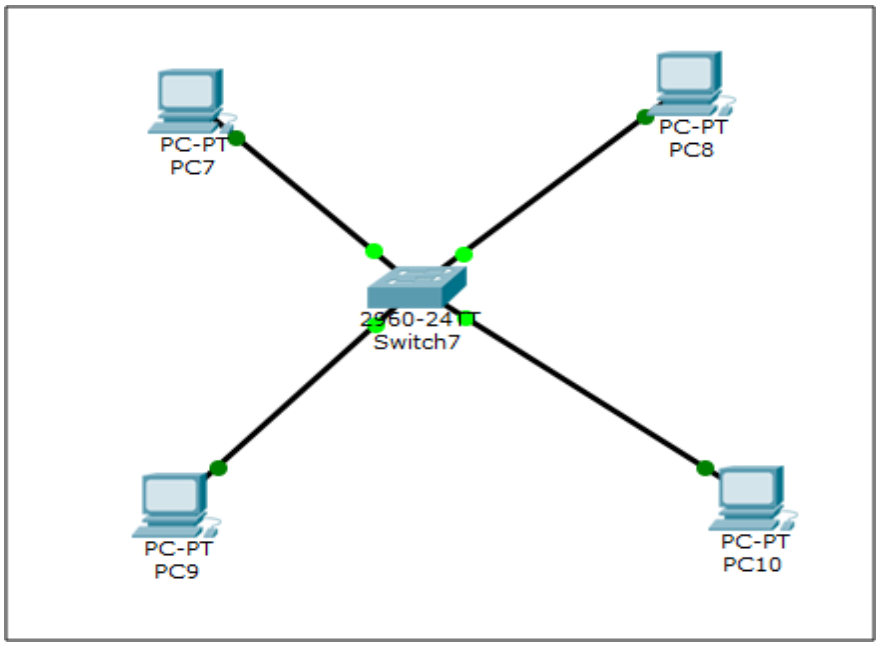


Bus Topology Output:



B) Star Topology:

In star topology, all the cables run from the computers to a central location where they are all connected by a device called a hub. It is a concentrated network, points are directly reachable from a central location when network is expanded. [4]. Ethernet 10 base T is a popular network based on the star topology. For star topology we build network using five generic pc which are centrally connected to single switch 2950-24 using copper straight through cable.



Star Topology Output:

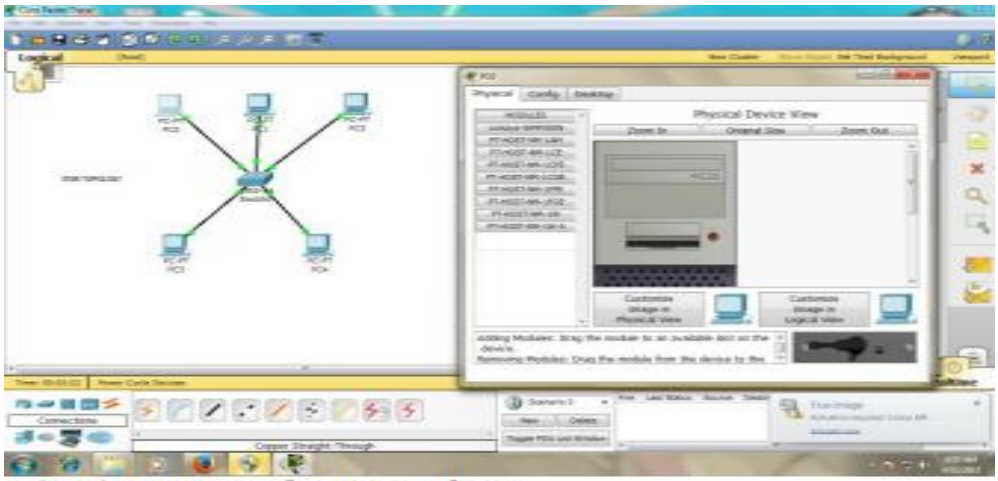
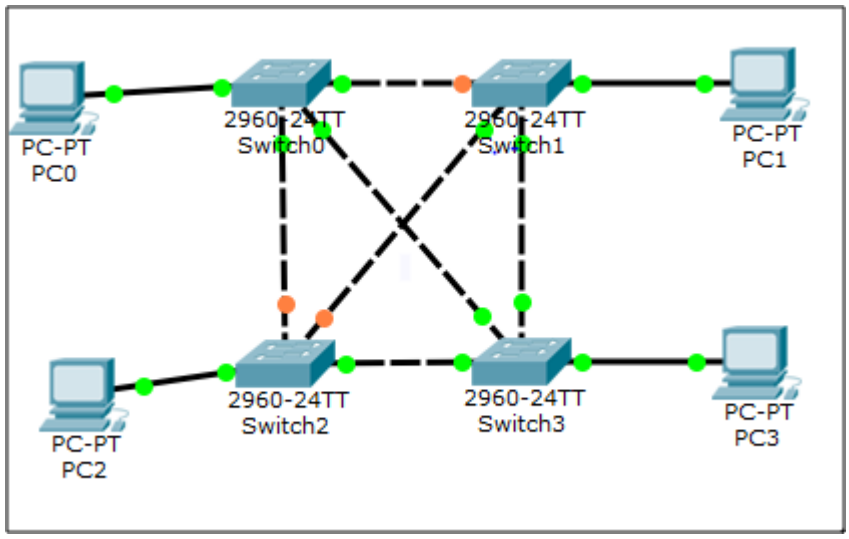


Fig -2: Design of star topology

C) Mesh Topology:

In mesh topology every device has a dedicated point to point link to every other device. The term dedicated stand for link carries traffic only between two devices it connects. It is a well-connected topology; in this every node has a connection to every other node in the network. The cable requirements are high and it can include multiple topologies. Failure in one of the computers does not cause the network to break down, as they have alternative paths to other computers star topology, all the cables run from the computers to a central location.



For mesh topology we build network using five 1841 router. To design four serial port router click on router- >turn off->drag the WIC2T module two times.->power on. To establish

connection between router to router using DCE cables.

Mesh Topology Output:

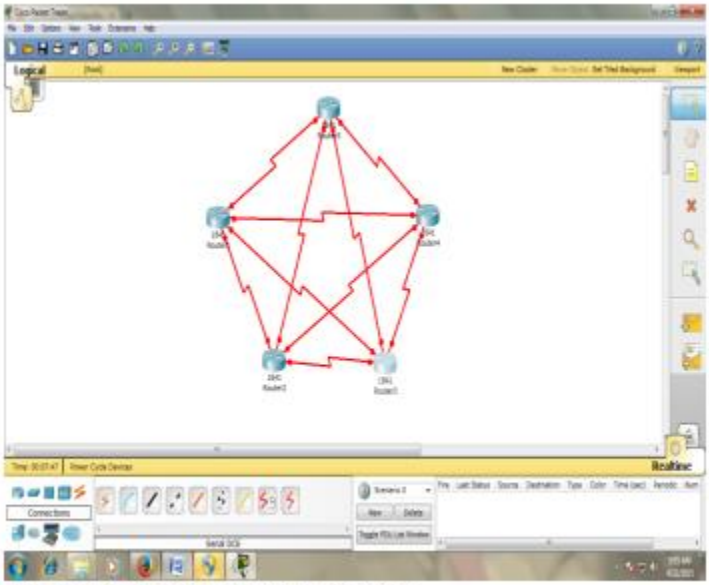
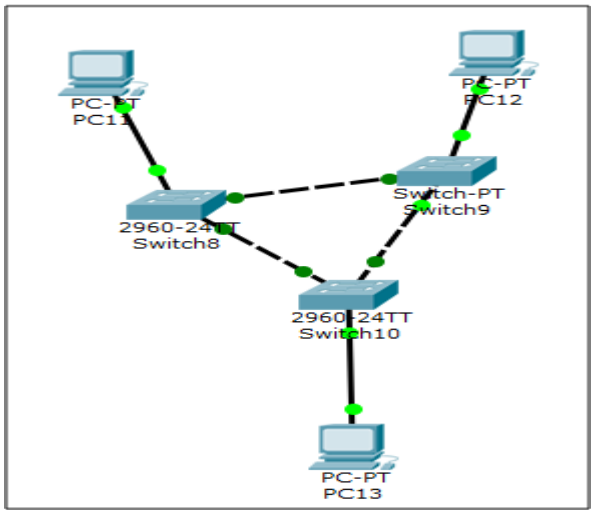


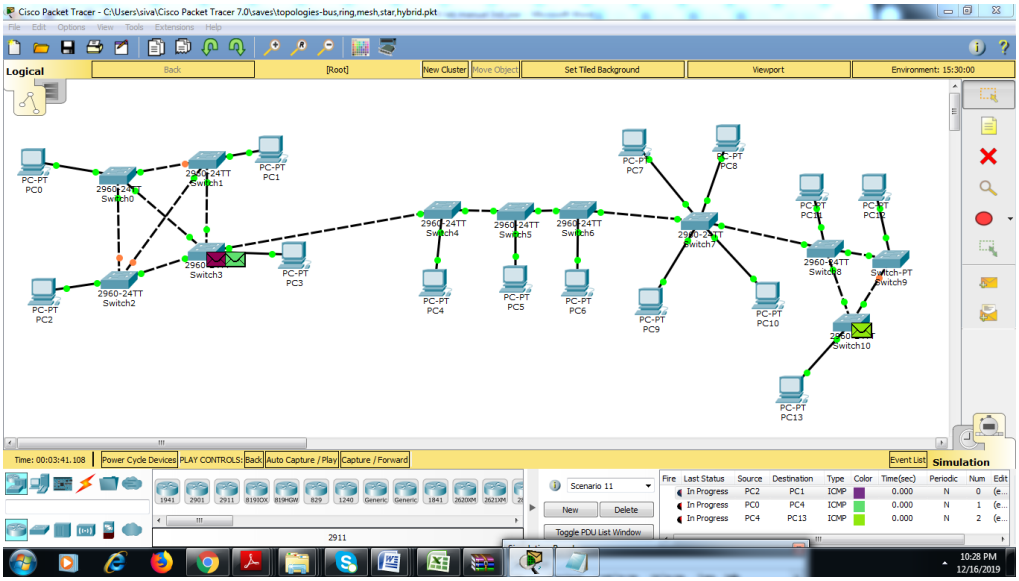
Fig -4: Connection of mesh topology

D) Ring Topology:



Ring Topology Output:

Output:



Discussion Topics:

1. What is Mesh Topology and Star topology?

2. Compare Half-duplex mode and Full Duplex mode?

Half-duplex mode
1.DefinitionThe sender can send as well as receive the data but does one task at a time.
2.Data FlowIn Half duplex data flow is two-directional but one at a time.

Full duplex mode
The sender can send as well as receive the data at the same time.
In Full Duplex data flow is two directional and is simultaneous.

3. What is Multi Point Connection?

4. What are Data Communication Characteristics?

thr process of exchanging the data or information from 1 locotion to another over the transsion media is called datacommunication.

characteristics:
1.delivery
2.accuracy
3.timeline
4.jitter

5. Define Computer Network.

computer network, two or more computers that are connected with one another for the purpose of communicating data electronically.