

Practical - 2

(7)

Aim: Study of different types of Network cables.

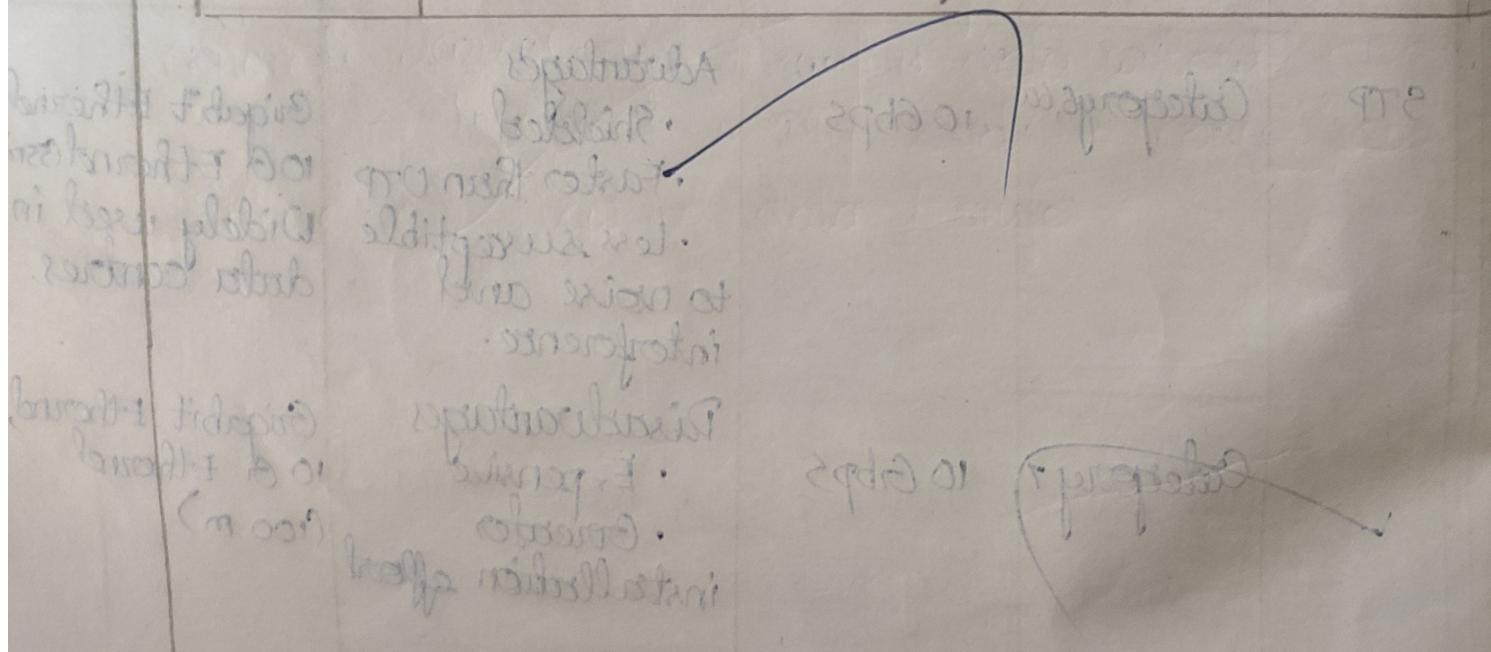
a) Understand different types of network cable.

Different types of cables used in networking are:

- i) Unshielded Twisted Pair (UTP) Cable.
- ii) Shielded Twisted Pair (STP) Cable
- iii) Coaxial Cable.
- iv) Fibre Optic Cable.

Cable type	Category	Maximum Data Transmission	Advantages / Disadvantages	Application / Use
UTP	Category 3	10 bps	Advantages <ul style="list-style-type: none"> • Cheaper in cost • Easy to install as they have a smaller overall diameter. Disadvantages <ul style="list-style-type: none"> • More prone to (EMI) Electromagnetic interference & noise 	10 Base-T Ethernet
	Category 5	Up to 100 Mbps		Fast Ethernet, Gigabit Ethernet.
	Category 5e	1G bps		Fast Ethernet, Gigabit Ethernet.
STP	Category 6, 6a	10 Gbps	Advantages <ul style="list-style-type: none"> • Shielded • Faster than UTP • Less susceptible to noise and interference. Disadvantages <ul style="list-style-type: none"> • Expensive • Greater installation effort 	Gigabit Ethernet, 10G Ethernet (Ssm) Widely used in data centres.
	Category 7	10 Gbps		Gigabit Ethernet, 10 G Ethernet (100 m)

Coaxial cable	RG-6	10 - 100 Mbps	<ul style="list-style-type: none"> High bandwidth Immune to interference Low loss bandwidth versatile. <p>Disadvantages</p> <ul style="list-style-type: none"> Limited Distance Cost Size is bulky. 	Speed of signal is 500 m Television network High speed internet connections.
	RG-59			
	RG-11			
Fibre optics cable	Single mode	100 Gbps	<ul style="list-style-type: none"> High speed High bandwidth High security Long distance <p>Advantages</p>	Maximum distance of fibre optics cable is around 100 meters.
	Multimode			
			<ul style="list-style-type: none"> Expensive Requires skilled installers. <p>Disadvantages</p>	



Student Observation

1. What is the difference between cross cable and straight cable?
 - Straight Cable: The wiring on both ends follows the same pin arrangement (usually T568 A or T568B standard). It is used to connect different types of devices (e.g. PC to switch / router).
 - Cross Cable: The wiring on one end is reversed compared to the other end (transmit and receive pairs are crossed). It is used to connect similar devices directly (e.g., PC to PC, switch to switch)
2. Which type of cable is used to connect two PCs?
 - Cross cable is used to connect two PCs directly without any intermediary device like switch.
3. Which type cable is used to connect a router / switch to your PC?
 - Straight cable is used to connect a PC to a router or switch.
4. Find out the category of twisted pair cable used in your LAN to connect the PC to the network socket.
 - Most LANs use Category 5e (Cat5e) or Category 6 (Cat6) twisted pair cables. These categories support speeds up to 1 Gbps or higher.

5. Write down your understanding, challenges faced, and output received while making a twisted pair cross/straight cable.

- Understanding:

Making a twisted pair cable involves correctly arranging the wires inside the cable according to specific standards (T568A or T588B). For straight cables, both ends use the same standard, while for cross cables, the transmit and receive pairs are swapped on one end.

- Challenges faced:

Ensuring the wires are in the correct order and fully inserted into the connector.

- Properly stripping the cable without damaging the wires.

- Gimping the RJ45 connectors securely to avoid loose connections.

- Output received:

- When made correctly, the cable successfully connects devices and transfers data without errors.

- Incorrect wiring leads to connection failure or slow/no data transfer.

- Output received is as follows:
 - Addressing between (IP) is prepared
 - Port number 2200 is assigned to port 2.

To complete the study, go to Intel's official website and click on Network Overview page which will show you the attachment of a real packet tracer to your simple network.

After it is completed, we have successfully installed the latest version of the program. Packet Tracer is an exciting feature design, interface and requires tool.

It allows you to model complex systems without the need for elaborate equipment.

It also helps you to practice your network configuration and troubleshooting skills via computer simulation instead of its real machine.

3. If it is available for both the User and Windows desktop environments.

4. Packets & hosts Tracer are coded to work and behave in the same way as they would on real hardware.

Installing Packet Tracer:

To download Packet Tracer, click on Packet Tracer website and download package for your OS.

Result:

Thus, the study of different types of Network cables has been executed successfully.