

Q4107 | 24.

Practicle - 2

Aim: Study of different types of network cable.

Cable:

a). Understand different types of network cable.

Different type of cables used in network are.

1. Unshielded Twisted Pair (UTP) cable

2. Shielded Twisted Pair (STP) cable

3. Coaxial Cable

4. Fibre optic Cable.

Cable type	Category	Maximum Data Transmission	Advantages / Disadvantages	Application / Use
UTP.	Category 3. 10Mbps.		<u>Advantages.</u> → Cheaper in cost → Easy to install as they have a smaller overall diameter	10 Base - T Ethernet
	Category 5. Up to 100 Mbps.		<u>Disadvantages</u> → More prone to (EMI) Electromagnetic interference and noise.	Fast Ethernet, Gigabit Ethernet
	Category 6. 1 Gbps.			Fast Ethernet Gigabit Ethernet

STP.	Category 6, 6a.	10Gbps.	<u>Advantages</u> → Shielded → Faster than UTP → Less Susceptible to noise and interference	Gigabit Ethernet 10 G Ethernet (55m). Widely used in data centres
SFTP				
SSTP	Category 7.	10Gbps.		
			<u>Disadvantages</u> → Expensive → Greater installation effort	Gigabit Ethernet, 10G Ethernet (100m)
Coaxial cable	RA-6. RA-59. RA-11.	10-100Mbps bandwidth.	- High bandwidth. - Immune to television interference. - Low loss bandwidth. - versatile.	Speed of signal is 500m High speed internet connections
fibre optics cable	Single mode Multi mode	100Gbps	<u>Disadvantages</u> - Limited distance - Cost - Size is bulky.	Advantages - High speed - High bandwidth fibre - High security optics cable - Long distance. is around 100 meters.

disadvantages

- Expensive
- Requires skilled installers.

b). Make your own Ethernet - Cross-Over Cable / straight cable.

Tools and parts needed:

- Ethernet Cabling. CATse is certified for gigabit support, but CAT's cabling works as well, just over shorter distances.
- A crimping tool. This is an all in one networking tool shaped to push down the pins in the plug and strip and cut the shielding off the cables.
- Two RJ45 plugs.
- Optional two plug shields.

Step1: To start construction of the device, begin by threading shield onto the cable

Step2: Next, strip approximately 1.5cm of cable shielding from both ends. The crimping tool has a round area to complete this task.

Step 3: After you will need to untangle wires, there should be four "Twisted pairs". Referencing back to the sheet, arrange them from top to bottom. One end should be in arrangement A and the other in B.

Step 4: Once the order is correct, bunch them together in a line, and if there are any that stick out farther than others, snip them back to create an even level. The difficult aspect is placing these into the RJ45 plug without messing up the order. To do so, hold the plug with the clip side facing away from you and have the gold pins facing towards you; as shown.

Step 5: Next, push the cable right in. The notch at the end of the plug needs to be just over the cable shielding, and if it isn't, that means that you stripped off too much shielding. Simply snip the cables back a little more.

Step 6: After the wires are securely sitting inside the plug, insert it into the crimping tool and push down.

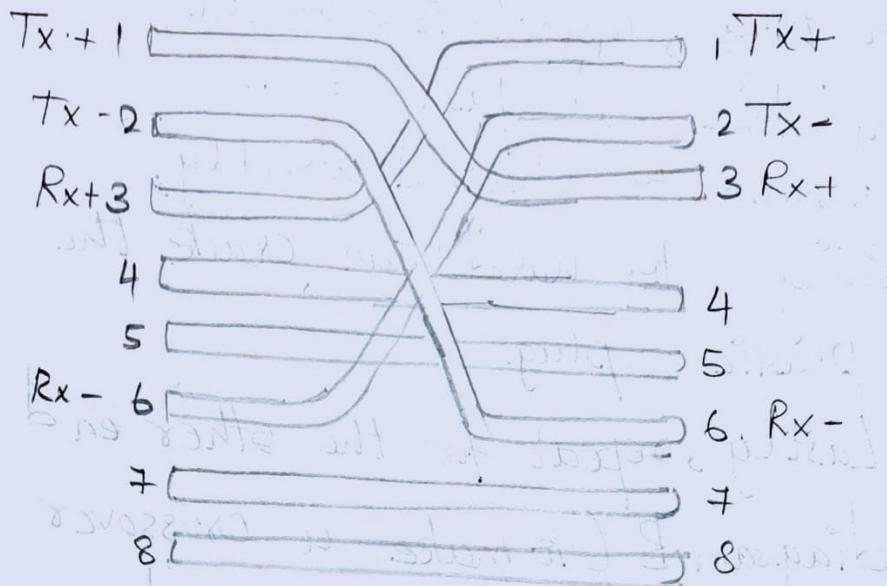
It should be shaped correctly, but pushing too hard can crack the fragile plastic plug.

Step 7: Lastly, repeat for the other end using diagram B (to make a crossover cables) / using diagram A (to make a straight through cable). To test it, plug it in and attempt to connect two devices directly.

Straight thru cable



X-over cable



Student observation:

1. What is the a/b cross cable & straight cable:
Cross cable: connects ^{same} different types of devices (pc to pc)
- 2). Type of cable used to connect two PCs
⇒ Cross cable
- 3). Types of cable used to route / switch to your PCs ⇒ straight cable

Result: Thus, the different type of Network cables are studied.

3/2/21