EX NO: 02.
DATE : 23.07.24

STUDY OF NETWORK CABLES

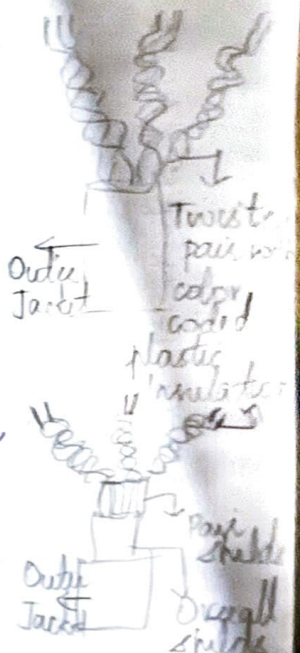
AIM:

Study Of Different Types Of Network Cables

a) Understanding Different types of Network Cable

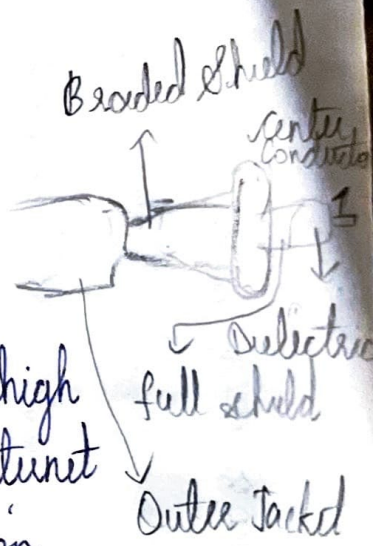
Different types of cables used in networking

1. Unshilded Twisted Pair
2. Shillded Twisted Pair
3. Coaxial Cable
4. Fible Optical Cable.

CABLE TYPE	CATEGORY	MAX. DATA TRANSMISSION	ADV/DISD	APPLICATION/ USE	IMAGE
UTP	Category 3	10bps	Adv - Cheaper - Easy to Install Disadv - More prone to EMI & noise	10 Base-T Ethernet	
	Category 5	Upto 100 mbps		Fast Ethernet / Gigabit Ethernet	
	Category 5e	1Gbps			
STP	Category 6, 6a	10Gbps	- Shielded - Less susceptible to noise & interference - Faster than UTP	Gigabit Ethernet, 10G Ethernet Widely used in Data Centers	
	~~Category 7~~	~~10Gbps~~			
SSTP	Category 7	10Gbps	- Expensive - Greater Installation Effort	Gigabit Ethernet, 10G Ethernet (100 m)	

Coaxial cable	RG 6 RG 59 RG 11	10 - 100 Mbps	- High Bandwidth - Immune to Interference - Low loss Bandwidth - Versatile - Limited Distance - Cost - Size is Bulky

Speed Of Signal is 500m.
Television network high speed Internet connection



Fibre Optics Cable	~~Singl~~ Single mode Multi Mode	100Gbps	- High speed - high bandwidth - high Security - Long Distance - Expensive - Requires Skilled Installers

Maximum Distance of fibre Optics Cable is around 100 metres

b) Make your own Ethernet cross-over cable / straight cable

Tools and parts needed:

→ Ethernet cabling: CAT5e is certified for gigabit support, but CAT5 cabling usually works as well just over shorter distabance

→ 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 cables
- Optional two plug shields

Steps to be followed

1. To start construction of device, begin by threading shields onto the cable
2. Next, strip app 1.5 cm of cable shielding from both ends. The crimping tool has round area to complete this task
3. After you will need to untangle the wires, there should be four "twisted pair". Referencing back to the sheet, arrange them from top to bottom. One end should be in arrangement A and other in B.

4. Once the order is correct, bunch them together in a line & 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 RJ45 plug without messing up the order To do so, hold the plug with the clip side facing away from you & have the gold pins facing toward you

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

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

7. Lastly, repeat for the other end using diagram B (to make a crossover cables) / using diagram A (to make straight through cable)

Q & A

1. What is the difference between cross cable & straight cable

Cross cable : connect different types of device (PC to switch, router)

Straight cable : connect similar Device (PC to PC, Switch to switch)

2. Which type of cable used to connect two PC ?

Cross cable

3. Which type of cable used to connect router/ switch to your PC ?

Straight cable

4. Find out the category of twisted pair cable used in use your lab.

Star - 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

5. Challenges faced & Output received while making a straight cable

It involves carefully arranging wire pairs in the correct order, with challenges including ~~maintaining~~ maintaining proper wire alignment & avoiding signal interference. The O/P should be a functional network cable that establishes a ~~prop~~ stable connection

Result:

Thus the Different types of Network cables are studied and verified

23/1/24