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EXPERIMENT 3A

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Aim:

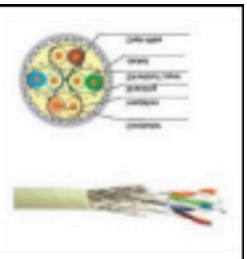
Study of different types of Network cables.

a) Understand different types of network cable.

Different type of cables used in networking 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	Image
UTP	Category 3	10 bps	**Advantages** · Cheaper in cost Easy to install as they have a smaller overall diameter **Disadvantages** · More prone to Electromagnetic interference and noise	10Base-T Ethernet Fast Ethernet, Gigabit Ethernet Fast Ethernet, Gigabit Ethernet	
	Category 5	Up to 100 Mbps			
	Category 5e	1Gbps			
STP	Category6, 6a	10Gbps	**Advantages** · Shielded. · Faster than UTP. Less susceptible to noise and interference **Disadvantages** · Expensive	Gigabit Ethernet, 10G Etherne t (55m) Widely used in data centres	

SSTP	Category 7	10Gbps	· Great installation effort	Gigabit Ethernet, 10G Ethernet (100m)	

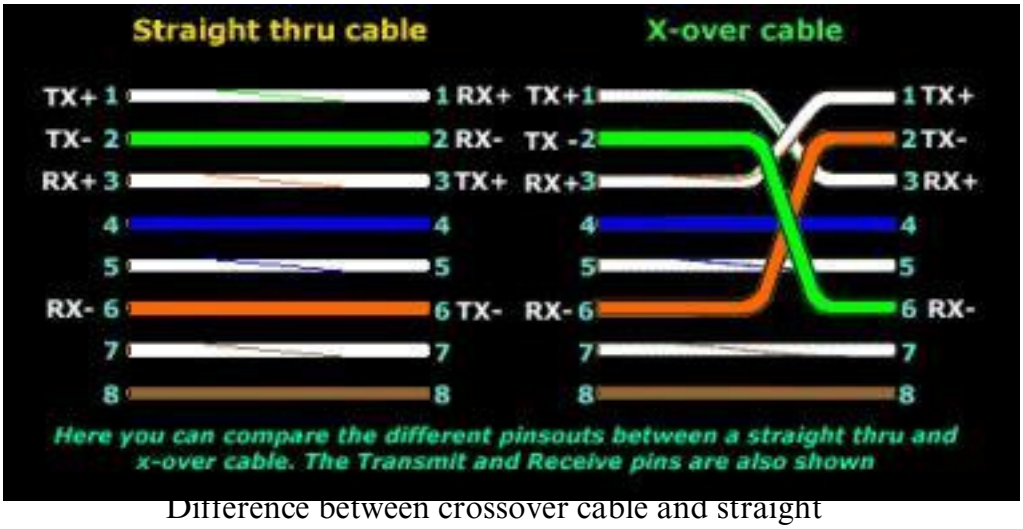
Coaxial cable	RG-6 RG-59 RG-11	10-100Mbps	· High bandwidth · Immune to interference · Low loss bandwidth · Versatile · **Disadvantages** · Limited distance · Cost · Size is bulky	Speed of signal is 500m Television network High speed internet connections	
fibre optics cable	Single mode Multi mode	100Gbps	**Advantages** · High speed · High bandwidth · High security · Long distance **Disadvantages** · Expensive · Requires skilled installers	· Maximum distance of fibre optics cable is around 100meters	

b) Make Your Own Ethernet Cross-Over Cable/ Straight cable

Tools and parts needed:

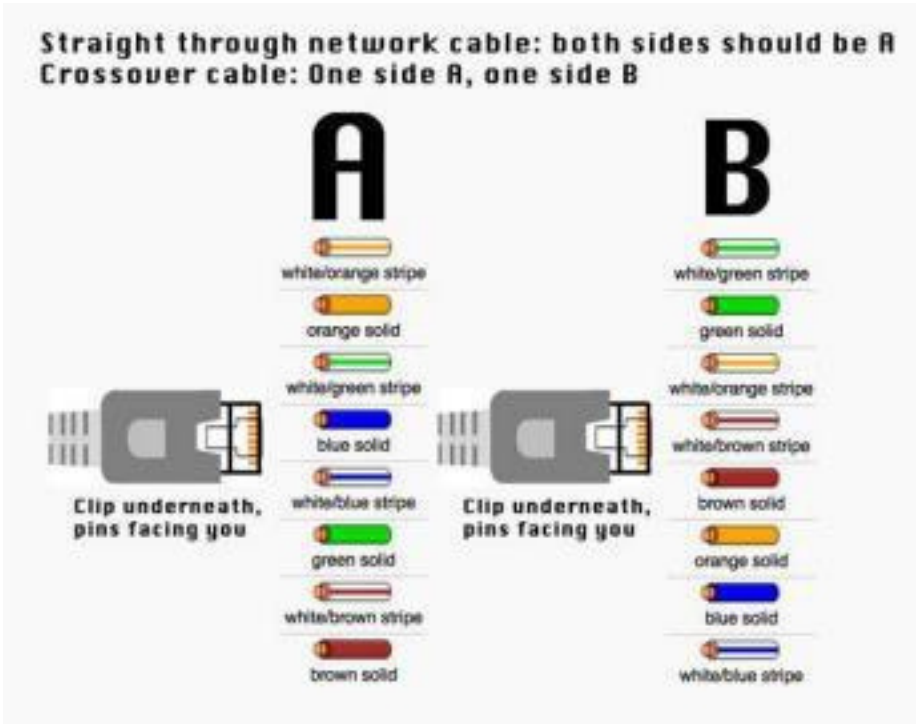
· Ethernet cabling. CAT5e is certified for gigabit support, but CAT5 cabling works as

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 cable.
· Two RJ-45 plugs. ·
Optional two plug shields.

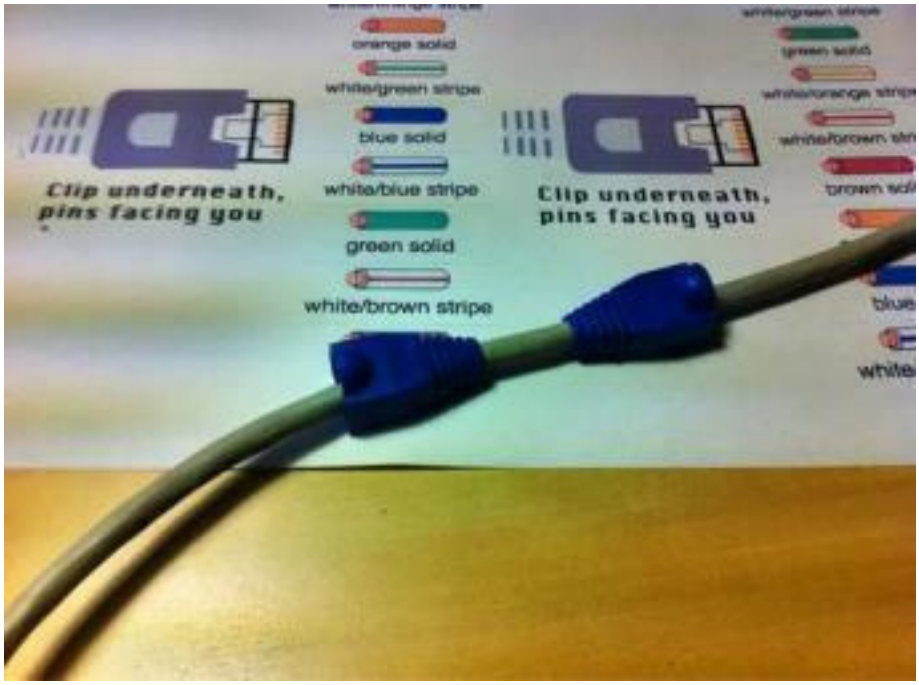


Difference between crossover cable and straight cable

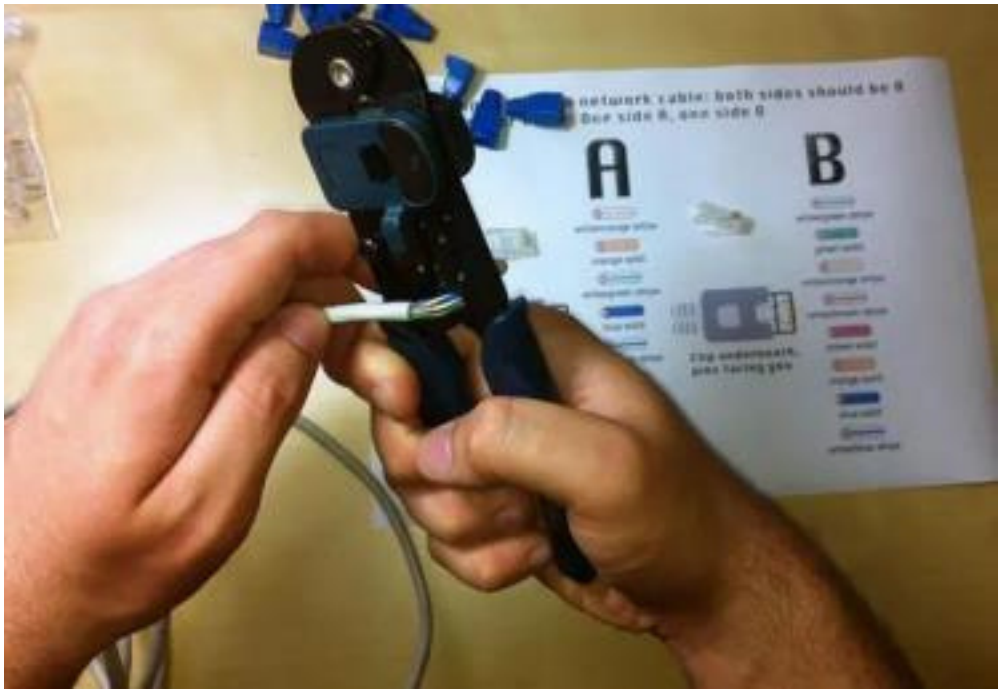
Take a print out the diagram below or have it handy as a reference



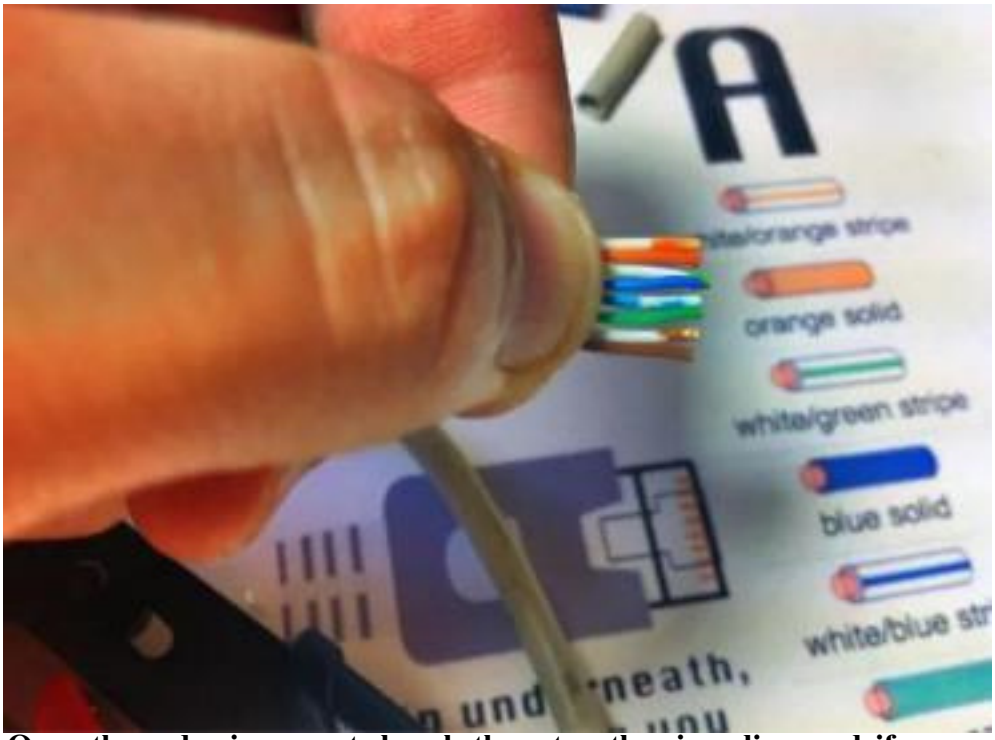
Step 1: To start construction of the device, begin by threading shields onto the cable.



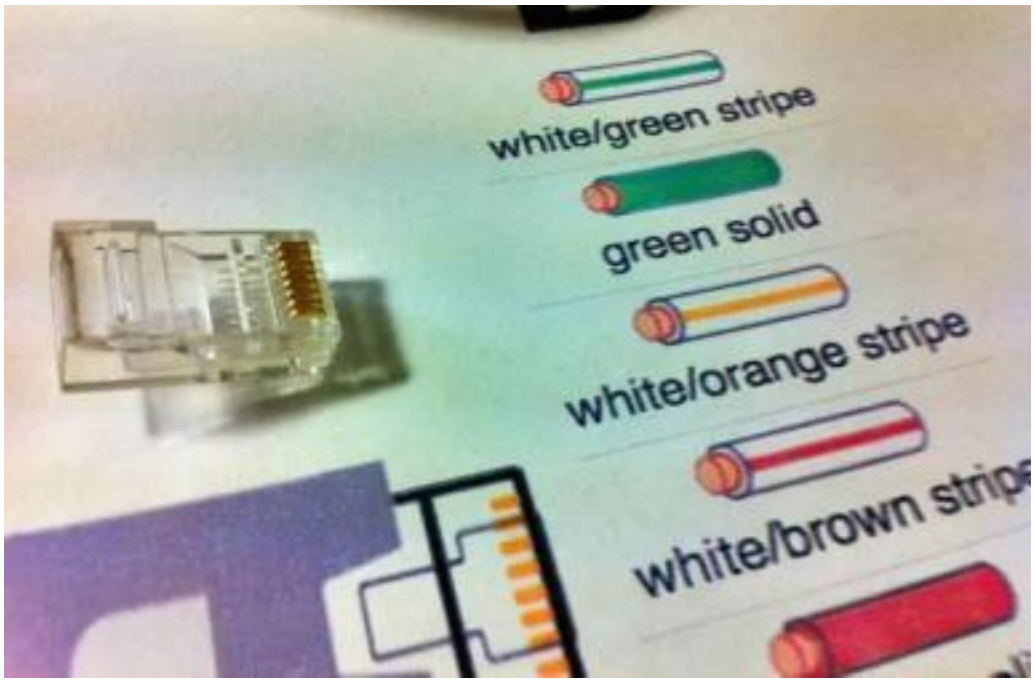
Step 2: Next, strip approximately 1.5 cm of cable shielding from both ends. The crimping tool has a round area to complete this task.



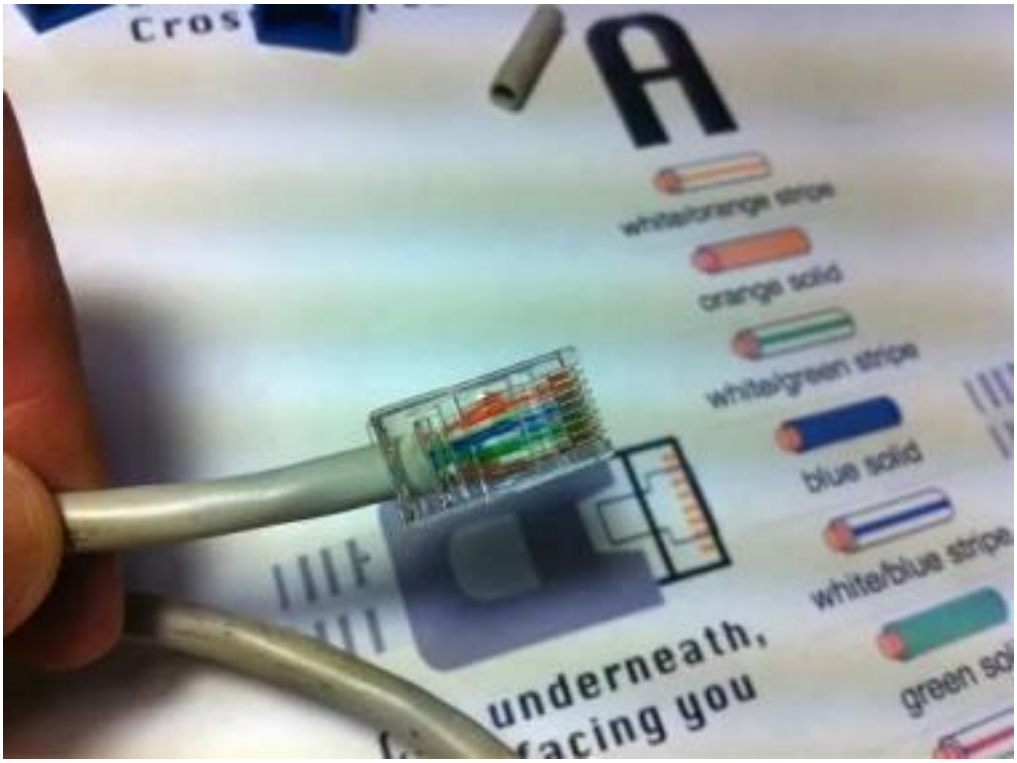
Step 3: After, you will need to untangle the wires; there should be four "twisted pairs." Referencing back to the sheet, arrange them from top to bottom. One end should be in arrangement A and the other in B.



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 toward 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.

Result :

Thus , different types of network cables are studied.