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Lab task :3

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**LAB TASK:**

Use CAT 6 Twisted pair cable to connect two devices physically and make Straight-Through Ethernet Network Cable.

**Objective:** The objective of this lab is to enable students to gain practical experience in various aspects of computer networking, including transmission media, cable construction, cable testing, and network device configuration. Through the use of CISCO Packet Tracer, students will gain practical knowledge of different transmission media.

**Tools Required**: The tools required to do this lab are:

• CAT 6 network cable

• RJ-45 Connectors

• Cable Cutter

• Crimping tool

• Cable tester.

Procedure:

Well, the wire has two sides. Let’s call one side … Side A and the other side … Side B. Do the following steps with Side A of the wire.

1. Remove the plastic cover from the cable up to two inches. You will see 4 twisted pairs (total 8 wires). In each twisted pair, one wire will be colored and the other will be white. For example, one will be Green and the other will be White having Green marks. The latter is called Green-White. Similarly there will be Brown wire twisted with BrownWhite, Blue wire twisted with Blue-White, Orange twisted with Orange-White.

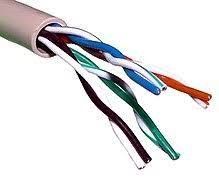


Figure 1.1 Twisted pair cable

1. Untwist the wires and make them smooth (don’t remove the plastic covers from the metal wires).

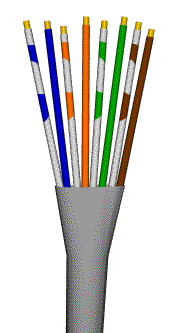
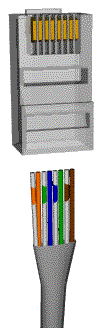


Figure 1.2 untwisted Cable

3. Arrange the wires in the order: Orange-White, Orange, Green-White, Blue, Blue-White, Green, Brown-White, and Brown. The order is important since there is a wiring standard defined by the Telecommunications Industry Association (TIA) [http://www.tiaonline.org].

4. It's called the EIA/TIA-568 Commercial Building Telecommunications Wiring Standard, and you can find more information on it here: <http://www.digitaldelivery.com/Standards.htm#s>

5. Cut the wires in straight fashion and insert in the RJ-45 Jack.

6. Using the Crimping tool, punch it properly. Perform Step 1-5 for Side B.

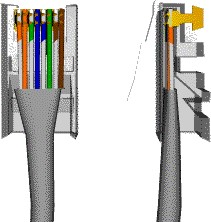


Figure 1.3

**Figure 1.4**

7.Your cable looks like this



Figure 1.5 Punched cable

8.Finally cable looks like this



Figure 1.6 Connected cable

**Testing result:**

All the cable is perfectly matched and connection is established successfully but after some seconds pin 6 is not connected and it skips pin 6 and move towards 7 pin and then flow is continuous over all its good experiment and physically implemented connections.

Experiment 2: Building a Category 6 (CAT 6) Cross-Over Ethernet Network Cable

**Tools Needed:**

1. CAT 6 Ethernet cable
2. RJ45 connectors
3. Crimping tool
4. Cable stripper
5. Cable tester

**Steps:**

1.Determine the desired length for your crossover Ethernet cable and add a few extra inches for flexibility. Using a cable stripper or scissors, carefully cut the CAT 6 cable to the desired length.

2.After cutting, you will see four twisted pairs of wires inside the CAT 6 cable. Carefully untwist about 1.5 inches (4-5 cm) of the cable's outer insulation, exposing the twisted pairs. Be cautious not to damage the internal wires.

3. Inside each twisted pair, you'll find four color-coded wires. For a crossover cable, use the following wiring scheme on one end (Pinout for T568B) and its corresponding counterpart on the other end (Pinout for T568A):

On one end (Pinout for T568B):

Pair 1 (White/Orange and Orange)

Pair 2 (White/Green and Blue)

Pair 3 (White/Blue and Green)

Pair 4 (White/Brown and Brown)

On the other end (Pinout for T568A):

Pair 1 (White/Green and Green)

Pair 2 (White/Orange and Blue)

Pair 3 (White/Blue and Orange)

Pair 4 (White/Brown and Brown)

Make sure to align and straighten the wires according to the color code.

4. Trim the excess wires so that they are all the same length and neatly aligned in the same order. It's essential to have the wires in the correct order and fully inserted into the RJ45 connector.

5.Carefully insert the wires into the RJ45 connector, ensuring that they reach the end of the connector and make proper contact with the metal pins. Double-check that the color coding matches the desired pinout (T568B on one end and T568A on the other).

6.Place the connector into the crimping tool and squeeze it firmly to secure the wires in place. Ensure the connector is crimped evenly and securely on all sides.

7. Repeat steps 3-6 to create an identical connector on the other end of the cable.

8. If you have a cable tester, use it to check the connectivity and ensure that all wires are correctly connected. If not, you can test the cable by connecting it to two similar devices (e.g., two computers) and verifying that they can communicate directly without the need for a hub or switch.

9.If desired, use cable ties or Velcro straps to bundle and secure the cable. Label both ends of the cable to identify its purpose as a crossover cable.

Difference:

In a straight-through cable, the transmit (TX) pins at one end are connected to the receive (RX) pins at the other end. This configuration allows data to flow from the transmitting device to the receiving device, making it suitable for connecting different types of devices.

And

In a crossover cable, the transmit (TX) pins at one end are connected to the receive (RX) pins at the other end and vice versa. This configuration allows two similar devices to communicate directly by exchanging data on their TX and RX lines.

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