



# Vidyavardhini's College of Engineering & Technology

Department of Computer Engineering

Academic Year : 2023-24

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## Experiment No 1

**Aim: Study of RJ45 and CAT6 Cabling and connection using crimping tool.**

### Theory:

RJ45 and CAT6 cabling are commonly used in networking for transmitting data signals over Ethernet connections. Understanding their structure, cabling standards, and how to properly connect them using a crimping tool is essential for network installation and maintenance. Let's delve into these topics.

#### RJ45 Connector:

- RJ45 stands for Registered Jack 45 and refers to the modular connector commonly used for Ethernet connections.
- It has eight pins that transmit and receive data signals in a network.
- The connector has a plastic body with a latch to secure the connection.

#### CAT6 Cable:

- CAT6 (Category 6) is a standardized cable used for Ethernet networks.
- It supports higher data transmission rates and reduced crosstalk compared to previous categories like CAT5 or CAT5e.
- CAT6 cables consist of four pairs of twisted copper wires encased in an outer insulation.

#### Cabling Standards:

- When creating network connections, it's essential to adhere to certain cabling standards to ensure reliable performance.
- The TIA/EIA-568-B standard specifies the wiring schemes for Ethernet cables.
- The most commonly used scheme is the T568B, where the wire color order from left to right is: white/orange, orange, white/green, blue, white/blue, green, white/brown, brown.

#### Crimping Tool:

- A crimping tool is used to attach connectors to the ends of Ethernet cables.
- It has a built-in cutter for trimming excess wire and a mechanism for crimping the connector onto the cable, providing a secure connection.

#### Procedure for crimping RJ45 connectors on CAT6 cables:

- Strip the outer insulation of the CAT6 cable using a cable stripper, exposing the four pairs of twisted wires.



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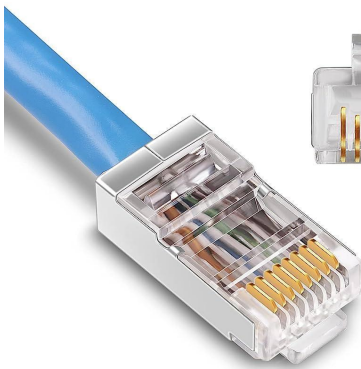
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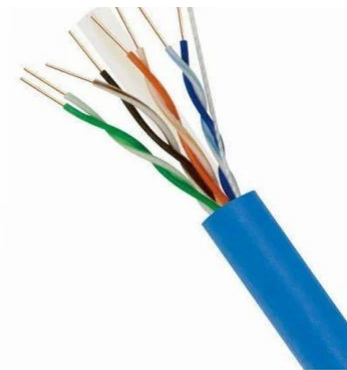
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- Untwist the wires and arrange them in the T568B wiring scheme mentioned earlier.
- Trim the wires to an even length, ensuring they are fully inserted into the connector.
- Insert the wires into the RJ45 connector in the correct order, verifying they reach the end of the connector.
- Place the connector into the crimping tool, ensuring the latch side is facing down.
- Squeeze the crimping tool firmly to crimp the connector onto the cable, ensuring the pins make contact with the wires.
- Repeat the process for the other end of the cable if you are creating a straight-through cable. If making a crossover cable, follow the T568A wiring scheme on the other end.
- Test the cable using a cable tester or by connecting devices to verify proper connectivity.

## **OUTPUT:**



RJ45 connector



CAT6

## **CONCLUSION:**

This study explores RJ45 and CAT6 cabling and connection using a crimping tool, emphasizing key points:

1. RJ45 connectors are vital for Ethernet connections in devices like computers, switches, and routers.
2. CAT6 cable supports high-speed Gigabit Ethernet.
3. Wiring standards, such as TIA/EIA 568-A and 568-B, define RJ45 pinout configurations.
4. A crimping tool is essential for secure RJ45 connector attachment.

The crimping procedure involves stripping the cable jacket, untwisting wires, trimming them to a length, arranging them correctly, inserting them into the RJ45 connector, using the crimping tool, and testing the cable. This study underscores the importance of proper cabling and crimping for reliable Ethernet connections.