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Lab Practical #02:

Study of different types of network cables & connectors and crimping a LAN.

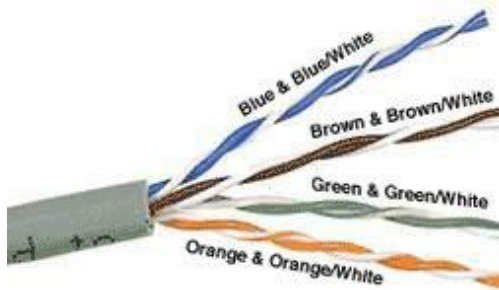
Practical Assignment #02:

1. List various networks cable. Also, write short description.
2. Difference between guided and unguided media.
3. Give cross-wired cable and straight through cable diagram (Color Code wise).

1. List various networks cable and connectors. Also, write short description.

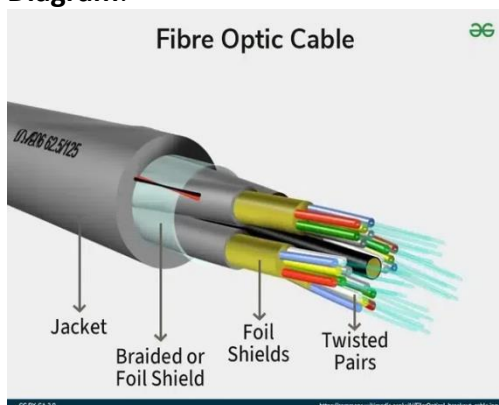
a) Network Cable Name: Ethernet Cables

- **Description:** An **Ethernet cable** is a type of network cable used to connect devices within a local area network (LAN), such as computers, routers, and switches. It enables wired internet and network connections, offering reliable and high-speed data transmission. Ethernet cables come in various categories (Cat5e, Cat6, Cat7, etc.), each supporting different speeds and frequencies to meet specific networking requirements.
- **Diagram:**



b) Network Cable Name: Fiber Optic Cables

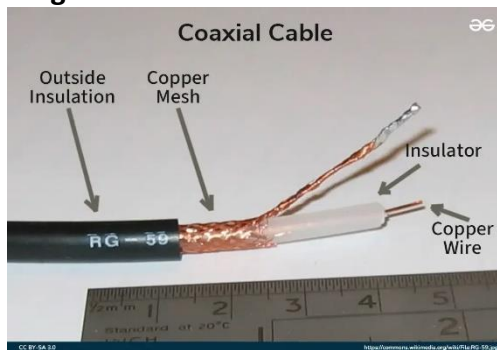
- **Description:** **Fiber optic cables** are high-speed data transmission cables that use light to transmit information over long distances. They consist of thin strands of glass or plastic fibers encased in protective layers. Fiber optic cables are categorized into single-mode (for long-distance communication) and multi-mode (for shorter distances). They are commonly used in telecommunications, internet, and network infrastructure due to their high bandwidth, low signal loss, and resistance to electromagnetic interference.
- **Diagram:**



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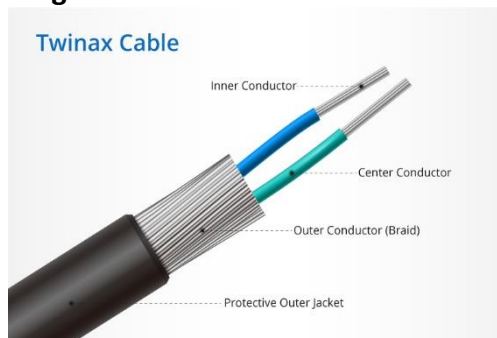
c) Network Cable Name: Coaxial Cables

- **Description:** **Coaxial cables** are types of electrical cables used to transmit high-frequency signals. They consist of a central conductor surrounded by an insulating layer, a metallic shield, and an outer insulating layer. Coaxial cables are commonly used for cable television, broadband internet, and other data communication applications due to their ability to reduce electromagnetic interference and carry signals over long distances with minimal loss.
- **Diagram:**



d) Network Cable Name: Twinaxial Cables (Twinax)

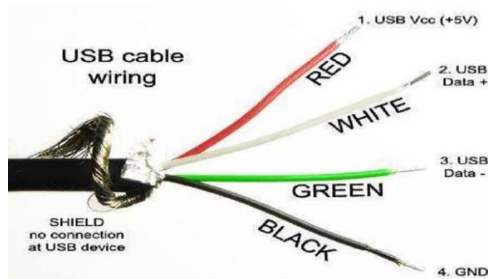
- **Description:** **Twinaxial cables (Twinax)** are types of high-speed, short-distance cables with two inner conductors enclosed in a single shielded cable. They are commonly used in data centers for connecting servers, storage systems, and network switches, particularly for 10 Gigabit Ethernet, InfiniBand, and other high-speed networking applications. Twinax cables provide high performance with low latency and minimal signal degradation.
- **Diagram:**



e) Network Cable Name: USB Cables

- **Description:** **USB cables** are types of cables used to connect, power, and transfer data between computers and peripheral devices such as keyboards, mice, printers, external drives, and smartphones. They come in various types, including USB 2.0, USB 3.0, and USB-C. USB-C is the latest standard, featuring a reversible connector and supporting faster data transfer rates and higher power delivery compared to earlier versions.
- **Diagram:**

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Network Connectors:

1. Network Connector Name: RJ45 Connectors

- **Description:** Commonly used with Ethernet cables (Cat5e, Cat6, etc.). The standard connector for wired networking. It has eight pins and is used for both networking and telecommunications
- **Diagram:**



2. Network Connector Name: RJ11 Connectors

- **Description** Smaller than RJ45 and typically used for telephone connections. It has four or six pins and is commonly used for landline telephones and DSL internet connections.
- **Diagram**



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3. Network Connector Name: SC Connectors (Subscriber Connector)

- **Description** Used with fiber optic cables. Push-pull design makes it easy to insert and remove. Common in data centers and network environments.
- **Diagram:**



4. Network Connector Name: LC Connectors (Lucent Connector)

- **Description** Small form factor connectors used with fiber optic cables. Often used in high-density network environments due to their compact size.
- **Diagram:**



5. Network Connector Name: ST Connectors (Straight Tip)

- **Description** Bayonet-style connectors used with fiber optic cables. Common in network environments that require quick and easy connections.
- **Diagram:**



6. Network Connector Name: FC Connectors (Ferrule Connector)

- **Description** Used with fiber optic cables. Threaded design ensures secure connections. Common in telecommunications.
- **Diagram:**

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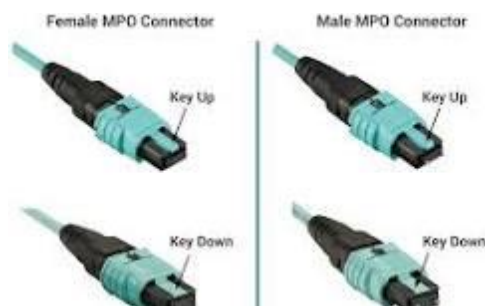
7. Network Connector Name: BNC Connectors (Bayonet Neill-Concelman)

- **Description** Used with coaxial cables. Quick connect/disconnect design. Commonly used in video, radio frequency, and data communication systems.
- **Diagram:**



8. Network Connector Name: MPO/MTP Connectors

- **Description** High-density fiber optic connectors used for multi-fiber connections. Common in data centers for high-speed data transfer and storage networks.
- **Diagram:**



9. Network Connector Name: SFP Connectors (Small Form-factor Pluggable)

- **Description** Used for connecting fiber optic cables to network equipment. Hot-swappable transceiver used in high-speed network applications such as Gigabit Ethernet and Fibre Channel.
- **Diagram:**

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2. Difference between guided and unguided media.

Guided Media:

- **Definition:** Transmission medium where data signals are directed along a specific path.
- **Examples:** Twisted pair cables, coaxial cables, fiber optic cables.
- **Transmission:** Signals are confined within the physical medium (cable).
- **Usage:** Commonly used for wired networks and telecommunications.
- **Interference:** Less susceptible to external interference.
- **Distance:** Can support both short and long distances depending on the type (e.g., fiber optics for long distances).
- **Bandwidth:** Generally higher bandwidth, especially in fiber optic cables.

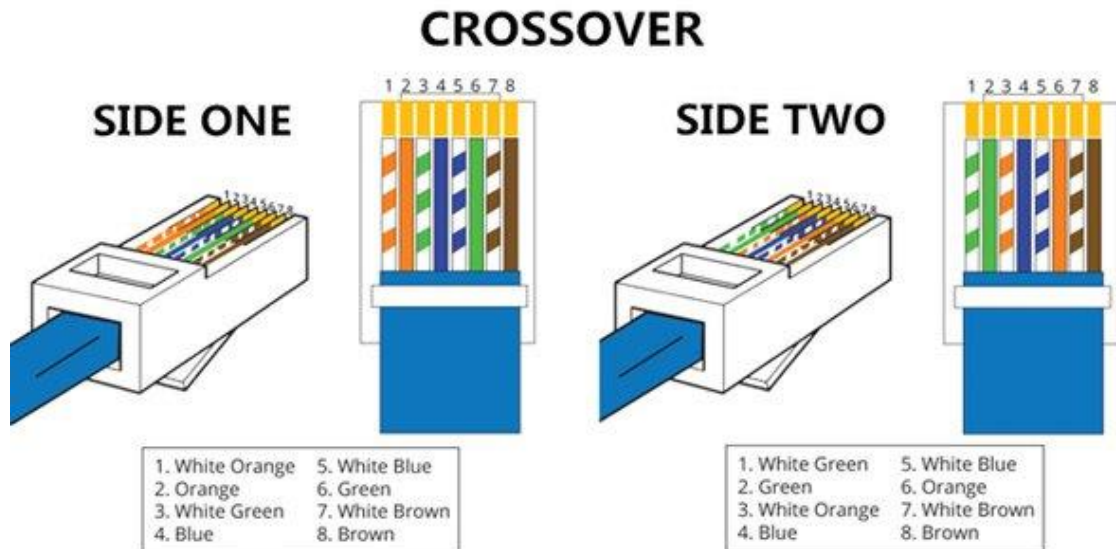
Unguided Media:

- **Definition:** Transmission medium where data signals are transmitted through the air or space without a specific path.
- **Examples:** Radio waves, microwaves, infrared signals.
- **Transmission:** Signals are transmitted freely through the air or space.
- **Usage:** Commonly used for wireless networks, satellite communication, and broadcasting.
- **Interference:** More susceptible to environmental interference (e.g., weather, physical obstructions).
- **Distance:** Can vary from short (Wi-Fi) to long distances (satellite communication).
- **Bandwidth:** Typically lower bandwidth compared to guided media, but advancements (like 5G) are closing the gap.

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3. Give cross-wired cable and straight through cable diagram (Color Code wise).

a) Cross-wired Cable Diagram (Color Code)



b) Straight Through Cable Diagram (Color Code)

