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Lab Practical #03:

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

Practical Assignment #03:

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.

- **Coaxial Cable:**
 - Coaxial cable is a type of electrical cable consisting of a central **core conductor** (usually copper), surrounded by an **insulating layer**, a **metallic shield** (to block interference), and an **outer protective jacket**.

Key Features:

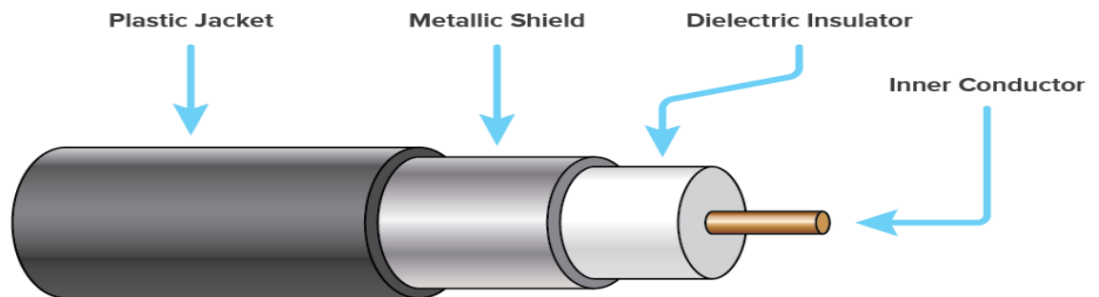
- **Shielded design:** Reduces signal interference.
- **Durable:** Suitable for outdoor and long-distance use.
- **High bandwidth:** Can carry large amounts of data.

Uses:

- Cable TV connections
- Internet services (broadband)
- Early Ethernet (10BASE2, 10BASE5)
- CCTV and security systems

Examples:

- **RG-6:** Common for cable TV and internet.
- **RG-59:** Used for CCTV and short-distance video.



- **Unshielded Twisted Pair (UTP):**
 - A cable with pairs of wires twisted together to reduce interference. Lacks additional shielding

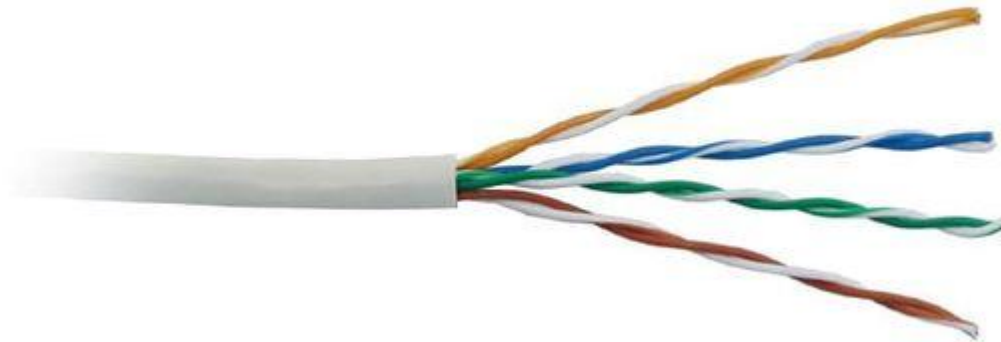
Used in:

LAN (Ethernet), telephone lines, modern networking.

Example:

- Cat5 – up to 100 Mbps
- Cat5e – up to 1 Gbps
- Cat6 – up to 10 Gbps over short distances
- Cat6a/Cat7 – better shielding and higher speeds

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- **Shielded Twisted Pair (STP):**

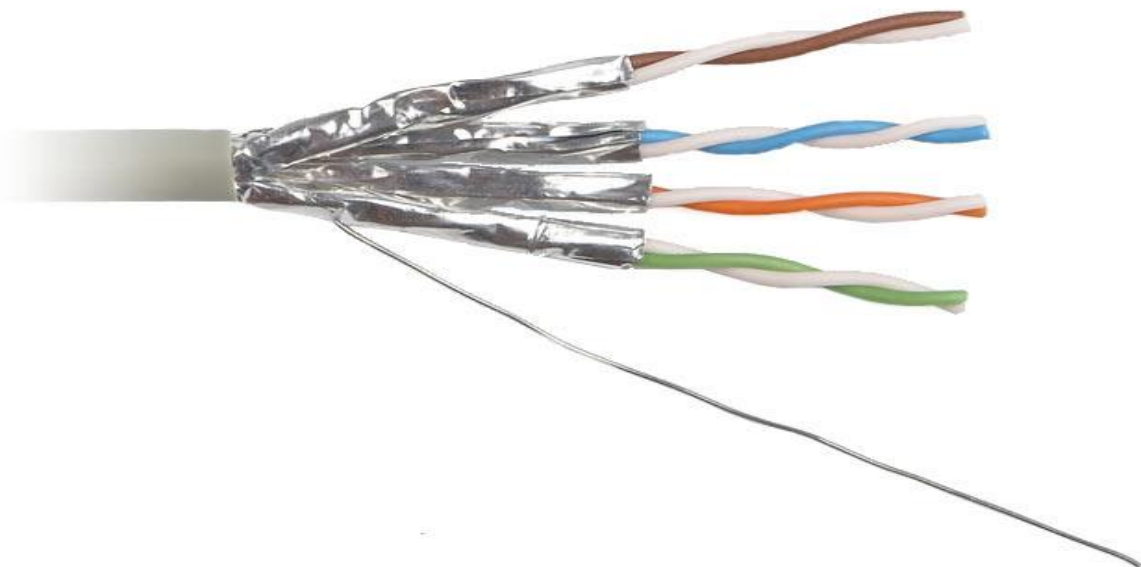
- A cable Similar to UTP but includes foil or braided shielding to reduce electromagnetic interference.

Used in:

High-interference areas like factories or hospitals

Benefit:

Provides better noise immunity than UTP.



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- **Fiber Optic Cable:**

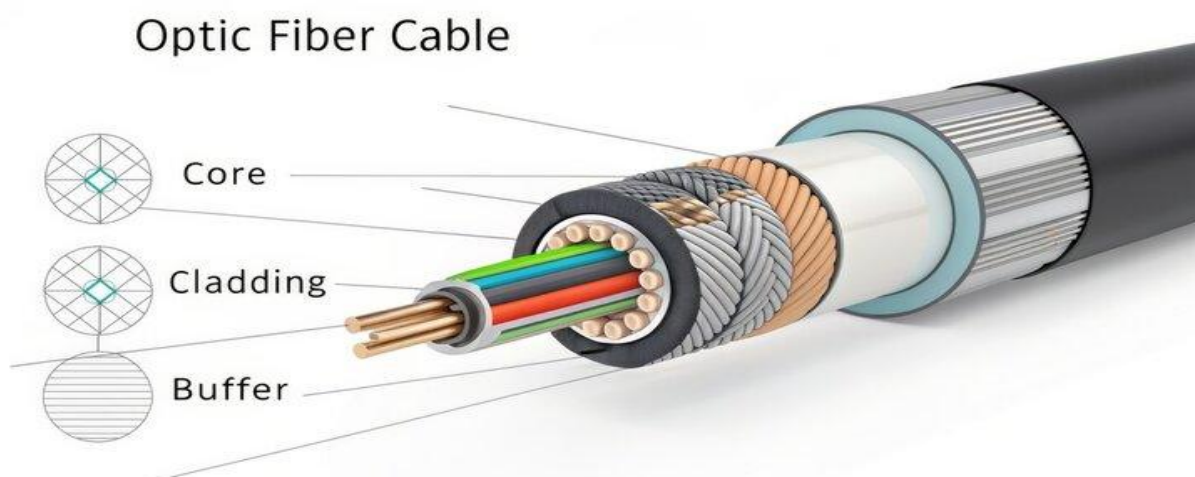
- A **Fiber Optic Cable** is a type of network cable that transmits data using **light signals** through **glass or plastic fibers**, instead of electrical signals over copper wires.

Key Features:

- **High Speed:** Supports very high data transfer rates (up to Tbps).
- **Long Distance:** Can transmit signals over **kilometers** without signal loss.
- **Immune to Electromagnetic Interference (EMI):** Ideal for environments with high interference.
- **Thin and Lightweight:** Fibers are thinner and more flexible than copper cables.

Applications:

- Internet backbone and broadband networks
- High-speed LAN connections
- Cable TV transmission
- Medical imaging and military communications





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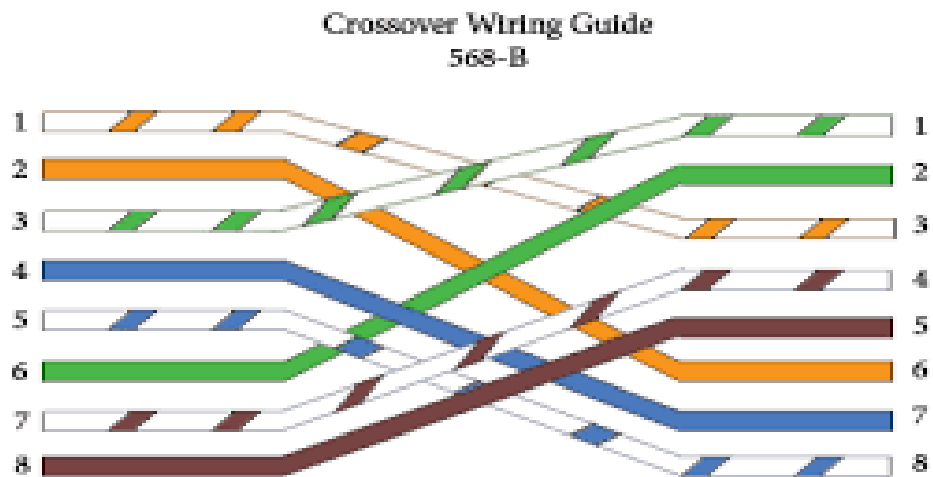
2. Difference between guided and unguided media.

Guided Media	Unguided Media
Uses physical cables (like wires)	Uses wireless signals (no cables)
Example: Twisted pair, fiber optic	Example: Radio waves, microwaves
Signal travels through a medium	Signal travels through air
More secure and less interference	More prone to interference

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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)

