LAB 1 : STUDY OF NETWORK CABLES AND COLOUR CODES

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1. Console Cable

- **Purpose**: Console cables are used to connect a computer or terminal to the console port of network devices like routers and switches for configuration and management.
- **Color Code**: Typically, console cables are not standardised by colour codes in the same way as Ethernet cables. They often use a distinctive blue or grey plastic sheath.
- **Connector Types**: Usually RS-232 serial connectors (DB9 or DB25) or RJ45 connectors, depending on the device. The RJ45 console cable might use a rollover configuration (pin 1 to pin 8, pin 2 to pin 7, etc.).

2. Copper Straight-Through Cable

- **Purpose**: Used to connect different types of devices, such as a computer to a switch or a router to a switch. It follows the T568A or T568B standard for wiring.
- **Colour Codes**:
    - **T568A**:
        1. White/Green
        2. Green
        3. White/Orange
        4. Blue

5. White/Blue
6. Orange
7. White/Brown
8. Brown ○ **T568B**:
    1. White/Orange
    2. Orange
    3. White/Green
    4. Blue
    5. White/Blue
    6. Green
    7. White/Brown
    8. Brown
- **Use**: Commonly used in Ethernet networks for connecting devices to network switches or routers.

3. Copper Crossover Cable

- **Purpose**: Used to connect similar devices directly, such as connecting two computers or two switches without a router. The wiring is cross-wired to enable direct communication.
- **Colour Codes**:
    - **T568A on one end**:
        1. White/Green
        2. Green
        3. White/Orange
        4. Blue
        5. White/Blue
        6. Orange
        7. White/Brown
        8. Brown
    - **T568B on the other end**:

        1. White/Orange
        2. Orange
        3. White/Green
        4. Blue
        5. White/Blue
        6. Green
        7. White/Brown
        8. Brown
- **Use**: Typically used for direct connections between devices of the same type that require communication without an intermediary device.

4. Fiber Optic Cable

- **Purpose**: Provides high-speed data transmission over long distances using light signals. It's used in backbone networks, high-speed internet connections, and data centres.
- **Colour Codes**:
    - **Single-mode Fibre**: Yellow jacket.
    - **Multi-mode Fibre**: Orange (OM1), Aqua (OM3/OM4).
- **Use**: For high-speed and long-distance data transmission, including telecommunications and internet services.

5. Phone Cable (RJ11)

- **Purpose**: Used for connecting telephone lines to telephone devices.
- **Colour Codes**: Generally not standardised, but often follows:
    - **Standard**:
        1. White/Red
        2. Red

3. White/Green
4. Green

- **Use**: For landline telephone connections, fax machines, and some older networking setups.

6. Coaxial Cable

- **Purpose**: Used for transmitting cable television signals and broadband internet. It has a central conductor surrounded by insulation, a metallic shield, and an outer jacket.
- **Colour Codes**: Coaxial cables typically do not have standardised internal colour codes. The outer jacket might be black, white, or other colours depending on the manufacturer.
  - **Use**: For TV, satellite, and cable internet connections.

7. Serial DCE (Data Communications Equipment) Cable

- **Purpose**: Connects a data terminal equipment (DTE) device to a data communications equipment (DCE) device, often used in serial communication.
- **Colour Codes**: Typically follows RS-232 standards and doesn't have standardised colour codes for wiring. The pinouts are more critical.
- **Use**: For serial communication between devices such as a computer and a modem.

8. Serial DTE (Data Terminal Equipment) Cable

- **Purpose**: Connects a DTE device (like a computer) to a DCE device (like a modem or a router) for serial communication.

- **Colour Codes**: Similar to DCE cables, following RS-232 standards. Pinouts are crucial rather than colour codes.
- **Use**: For connecting computers to modems or other serial communication devices.

9. Octal Cable

- **Purpose**: Octal cables are less common and generally used in specific scenarios like connecting older telecommunication equipment or in specialised industrial applications.
- **Colour Codes**: The colour codes can vary significantly depending on the application and manufacturer.
- **Use**: For specialised or legacy equipment where eight separate conductors are needed.

10. IoT Custom Cable

- **Purpose**: Used for connecting Internet of Things (IoT) devices to sensors, controllers, or networks. The design and wiring can be highly specialised based on the IoT device requirements.
- **Colour Codes**: Custom and can vary widely. Usually, the wiring colours are defined by the specific requirements of the devices being connected.
- **Use**: For connecting various IoT devices in smart homes, industrial IoT setups, and other specialised applications.

11. USB Cable

- **Purpose**: Universal Serial Bus (USB) cables are used to connect peripherals such as keyboards, mice, printers, and storage devices to computers.

- **Colour Codes**:
  - **USB 2.0**: Typically has a black or white connector.
  - **USB 3.0/3.1/3.2**: Often has a blue or teal connector to differentiate from USB 2.0.
- **Use**: For connecting a wide range of devices for data transfer, power supply, and device communication.

Each type of cable and connector serves a specific role in networking and communication, providing the necessary links for various technologies and applications.