

# Assignment for today at 6 pm

Aromal S Kunnel – 22BAI10288

## Q1 - Explain different Lan standards like 802.3 etc.

LAN standards define how devices on a local area network communicate with each other. There are two main categories: wired LAN standards and wireless LAN standards.

### Wired LAN Standards:

- **IEEE 802.3 (Ethernet):** This is the most widely used wired LAN standard. It defines different versions with varying speeds, cable types, and maximum cable lengths. Common versions include:
  - **10BASE-T:** Uses UTP cables for a maximum speed of 10 Mbps.
  - **Fast Ethernet (100BASE-TX):** Also uses UTP cables but offers a 10 times faster speed of 100 Mbps.
  - **Gigabit Ethernet:** Utilizes various cable types (UTP, fiber optic) for speeds of 1 Gbps.
  - **10 Gigabit Ethernet:** Supports even higher speeds of 10 Gbps.

### Wireless LAN Standards (Wi-Fi):

These standards define how devices communicate over radio waves. They are identified by the letter "a" followed by a number or letter (e.g., Wi-Fi 6). Here's a breakdown of some common ones:

- **IEEE 802.11a:** Offers high speeds (up to 54 Mbps) in the 5 GHz frequency band but has limited range.
- **IEEE 802.11b:** Lower speed (up to 11 Mbps) but wider range using the 2.4 GHz frequency band (more prone to interference).
- **IEEE 802.11g:** Improved version of 802.11b with faster speeds (up to 54 Mbps) in the 2.4 GHz band.
- **IEEE 802.11n (Wi-Fi 4):** Significant speed increase (up to 600 Mbps) using both 2.4 GHz and 5 GHz bands.
- **IEEE 802.11ac (Wi-Fi 5):** Offers even faster speeds (up to 1 Gbps) on the 5 GHz band.
- **IEEE 802.11ax (Wi-Fi 6):** Latest standard with improved efficiency and speeds of up to 10 Gbps, better suited for handling multiple devices.