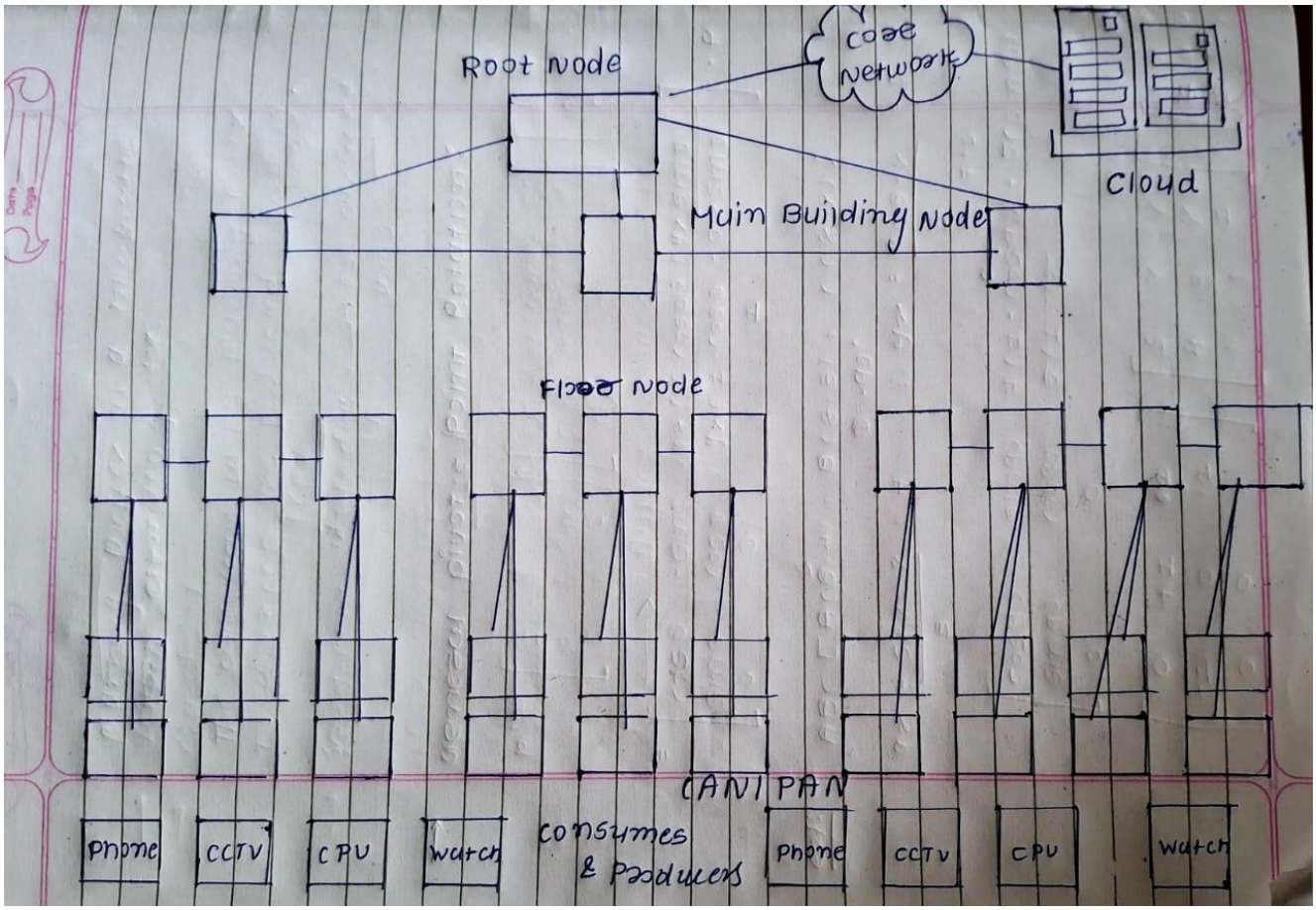
Date: 15/ 09/2024

Lab Practical #13:

Study & Survey of Institute organization network infrastructure.

Practical Assignment #13:

1. Identify type of network in your institute. Draw a design of network in your institute (Any Lab/Floor/Building).



2. List how many network devices and types of cable used and give its details.

Network Devices:

1. **Root Node:**
    1. Quantity: 1
    2. Function: Acts as the central point for connecting the core network and cloud services to the building network.
2. **Main Building Nodes:**

Date: 15/ 09/2024

1. Quantity: 3 (one for each building)
2. Function: These nodes connect the root node to the respective building networks.

3. **Floor Nodes:**
    1. Quantity: 10 (estimated from the visual representation)
    2. Function: These nodes distribute the network within each floor of the buildings, connecting to individual CAN/PAN (Controller Area Network/Personal Area Network) nodes.
4. **CAN/PAN Nodes:**
    1. Quantity: Approximately 36 (based on the visual count for each floor)
    2. Function: Connect end devices such as sensors, computers, and other consumer and producer devices.
5. **Consumer & Producer Devices:**
    1. Various devices like mobile phones, computers, and servers are connected to the CAN/PAN nodes.

Types of Cables:

1. **Core Network to Root Node**
    1. **Cable Type:** Fiber Optic Cable
    2. **Reason:** High-speed and long-distance communication between the core network/cloud and the building network.
2. **Root Node to Main Building Nodes:**
    1. **Cable Type:** Fiber Optic or High-Speed Ethernet Cable (e.g., Cat 6a or Cat 7)
    2. **Reason:** To maintain high bandwidth and minimal latency between the central root node and building nodes.
3. **Main Building Nodes to Floor Nodes:**
    1. **Cable Type:** Ethernet Cable (Cat 6a or Cat 7)
    2. **Reason:** To distribute network connectivity within the building with sufficient bandwidth for multiple floor nodes.
4. **Floor Nodes to CAN/PAN Nodes:**
    1. **Cable Type:** Ethernet Cable (Cat 5e or Cat 6)
    2. **Reason:** These cables are suitable for shorter distances within the same floor, providing adequate speed for the end devices.
5. **CAN/PAN Nodes to Consumer & Producer Devices:**
    1. **Cable Type:** Ethernet Cable (Cat 5e or Cat 6), Wireless connections (Wi-Fi, Bluetooth, etc.)

Date: 15/ 09/2024

2. **Reason:** Depending on the device and location, either wired or wireless connections may be used to connect end devices.

Summary:

- **Total Network Devices:**
  - Root Node: 1
  - Main Building Nodes: 3
  - Floor Nodes: ~10
  - CAN/PAN Nodes: ~36
- **Total Cable Types:**
  - Fiber Optic Cable
  - Ethernet Cables (Cat 5e, Cat 6, Cat 6a, Cat 7)
  - Wireless connections for end device