**Lab Practical #02:**

Study of different network devices in detail.

**Practical Assignment #02:**

1. Give difference between below network devices.

* Hub and Switch
* Switch and Router
* Router and Gateway

1. Working of below network devices:
   * Repeater
   * Modem
   * (DSL and ADSL)
   * Hub
   * Bridge
   * Switch
   * Router
   * Gateway

# Hub and Switch

|  |  |  |
| --- | --- | --- |
| No. | Hub | Switch |
| 1 | Sends data to all devices. | Sends data to the specific device. |
| 2 | Works at layer 1(physical). | Works at layer 2(Data Link). |
| 3 | Less secure. | More secure. |
| 4 | Slower network performance. | Faster than Hub. |
| 5 | No filtering data. | Filters and manages data. |

# Switch and Router

|  |  |  |
| --- | --- | --- |
| No. | Switch | Router |
| 1 | Connect devices within a same network. | Connect difference networks together. |
| 2 | Sends data within LAN. | Sends data between LANs or to internet. |
| 3 | No Ip address needed. | Uses Ip address to router data. |
| 4 | Works at Data Link Layer (Layer 2). | Works at network layer (Layer 3). |
| 5 | Example: connects pc in home. | Example: connects home to the internet. |

# Router and Gateway

|  |  |  |
| --- | --- | --- |
| No. | Router | Gateway |
| 1 | Connect one network to other networks. | Connects different type of networks. |
| 2 | Works at network layer | Can work on all OSI layers |
| 3 | Smarter than switch | Smarter than router |
| 4 | Mainly used in Ip-based networks | Converts data between different protocols |
| 5 | Example: connects home to internet | Example: connects Ip networks to VoIp |

# Working of below network devices:

* Switch

1. A switch connects devices in a network.
2. It receives data from one device.
3. It checks the MAC address of the device.
4. It remembers which device is on which port.
5. It send data only to the correct device, not all.
6. This makes the network fast, safe and efficient.

* Router

1. A router connects different networks.
2. It receives data from one network.
3. It checks the Ip address of the destination.
4. It decides the best path to send the data.
5. Then it forwards the data to the correct network or device.

* Gateway

1. A gateway connects two different networks.
2. It converts data formats so both networks can understand.
3. It checks and forwards data between networks.
4. Works as a translator between different systems.

* Repeater

1. A repeater boosts weak signals in a network.
2. It receives a weak signal.
3. Amplifies it.
4. And sends it forward without changing the data.

* Modem

1. A modem connects your network to the internet.
2. It converts digital signals to analog and vice versa.
3. This lets your devices communicate with the internet.
4. Without a modem, you cannot access the internet through phone lines.

* Hub

1. A hub connects multiple devices in a network.
2. It receives data from one device.
3. It sends the data to all devices, not just the target.
4. Only the right device uses the data, others ignore it.

* Bridge

1. A bridge connects two LANs.
2. It receives data from one side.
3. It checks the MAC address to know where to send.
4. If forwards data only if needed to the other LAN.
5. It connects two networks and sends only needed data.

* DSL/ADSL

1. DSL/ADSL uses a phone line for internet.
2. You can use phone and internet together.
3. A modem is used to connect.
4. It sends and receives data.
5. ADSL is faster for downloading.