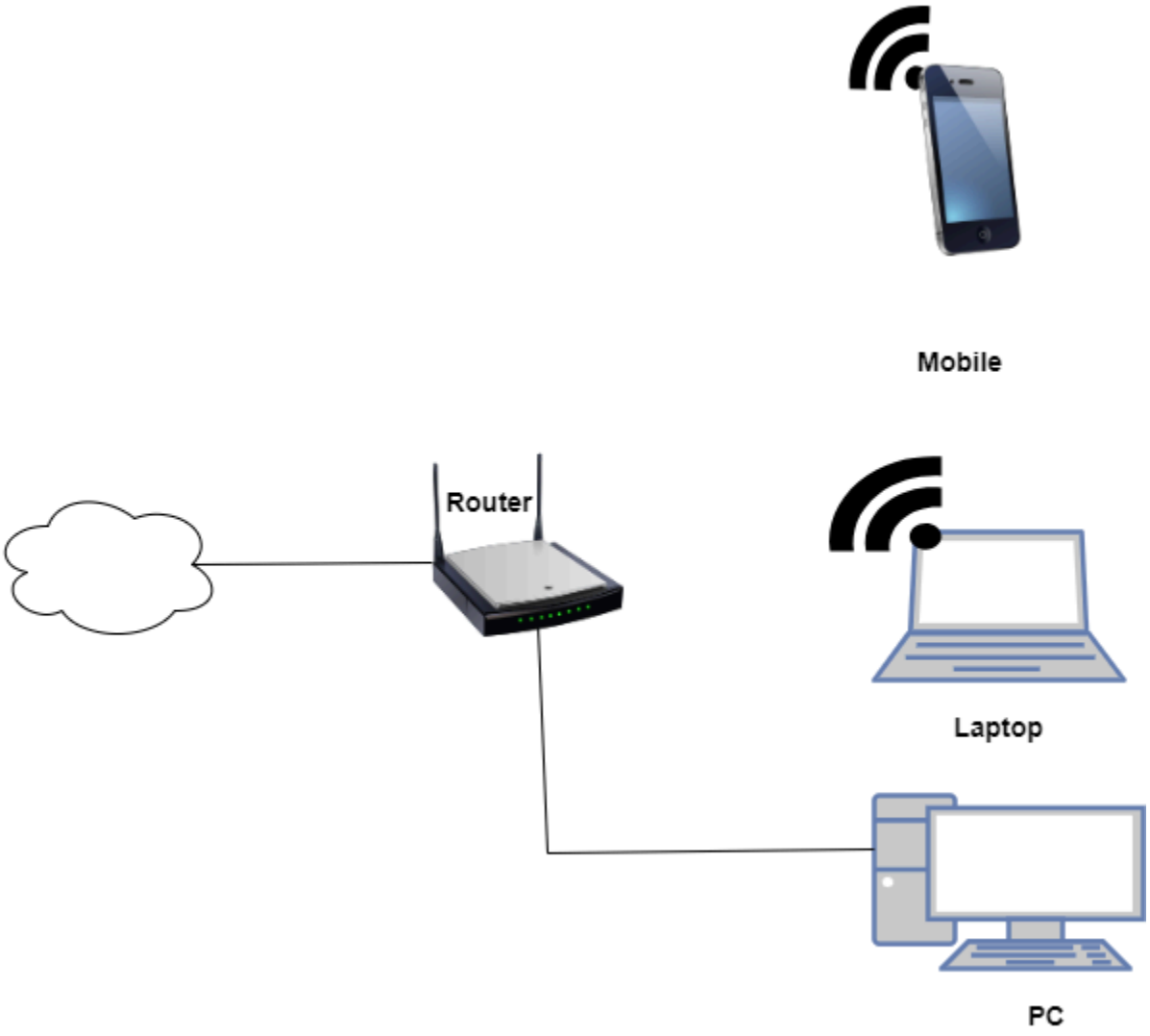
Assignment no.1

1] Draw your Home Network Topology and explain how you are accessing the Any(College lab , office lab) Lab environment.

Answer : -

HOME NETWORK



- In the college lab we used a bus topology to connect all machines.

- In a bus topology, all devices on the network are connected to a single cable, with each device using a connector to tap into the cable. When a device sends a signal, it is broadcast to all other devices on the network, and each device receives the signal and decides whether to act on it based on its own unique address.

2] Identify a real-world application for both parallel computing and networked systems. Explain how these technologies are used and why they are important in that context.

Answer:-

Parallel Computing: - Multiple computer cores are used in parallel computing to handle multiple tasks at once. Parallel architecture has the ability to break down a task into its component parts and multitask them, in contrast to serial computing. Computer systems operating in parallel are ideal for modeling and imitating real-world processes.

EXAMPLE:-

One real-world application that combines parallel computing and networked systems is distributed data processing in big data analytics.

In this scenario, parallel computing is employed to handle the vast amounts of data generated by various sources such as sensors, social media, transactions, and more. Parallel computing divides the data into smaller chunks and processes them simultaneously across multiple processors or computing nodes. This significantly speeds up the data processing and analysis tasks, allowing organizations to derive insights from large datasets in a reasonable amount of time.

Why It is Important:-

- In parallel computing, more resources are used to complete the task that led to decrease the time and cut possible costs.
- parallel computing can solve larger problems in a short time.

- One of the best advantages of parallel computing is that it allows you to do several things in a time by using multiple computing resources.

Why It is Used:-

- There are multiple problems that are very large and may impractical or impossible to solve them on a single computer; the concept of parallel computing helps to remove these kinds of issues.

Network System:-

A system that connects two or more computing devices for transmitting and sharing information. Computing devices include everything from a mobile phone to a server. These devices are connected using physical wires such as fiber optics, but they can also be wireless.

EXAMPLE:-

Networked systems play a crucial role in data processing in big data analytics by enabling communication and coordination among the distributed computing nodes. Through networks, data can be transferred between nodes efficiently, and tasks can be allocated dynamically based on the availability of resources. Networked systems also facilitate fault tolerance and scalability by allowing additional computing nodes to join or leave the system seamlessly.

Why It is Important:-

- Computer networks can facilitate faster communication and data exchange.
- With network backups and redundancies, networks enhance the reliability of systems. Data can be stored and recovered more easily.
- Networks allow multiple computers to access the same database, increasing the amount of data that can be stored and accessed.

Why It is Used:-

- Flexibility.

- Allowing information sharing.
- Supporting distributed processing.
- Security