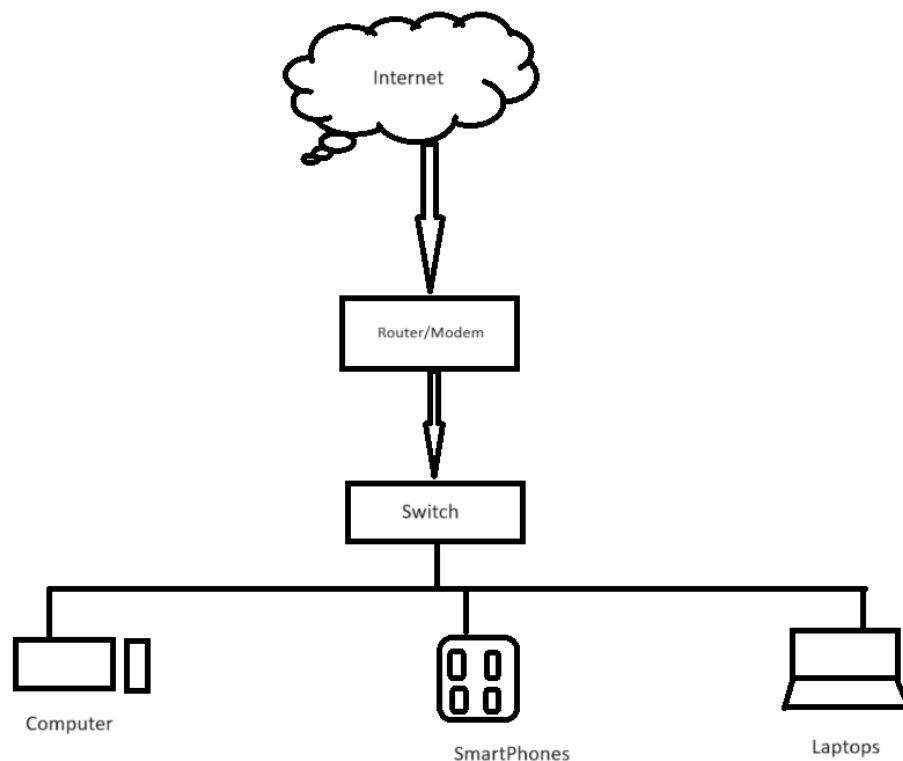


**Assignment 1:** Draw your Home Network Topology and explain how you are accessing the Any(College lab , office lab) Lab environment.



In this diagram:

- \* **ISP Modem/Router:** This is our internet service provider's modem/router device, which connects our home network to the internet.
- \* **Switch:** This is a networking device that allows multiple devices to connect to the network. It provides additional Ethernet ports for wire connections.
- \* When we attempt to access the cloud lab, our device sends a request to our router, which then goes out to the internet through our modem. The request

travels across the internet to the cloud provider's data center and reaches the specific server hosting our lab. The server processes the request and sends the response back through the same path to our device.

**Assignment 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.

- **Parallel Computing:** Weather Forecasting Weather forecasting requires vast amounts of data processing to accurately predict future weather patterns. Parallel computing plays a crucial role in this domain by enabling meteorologists to run complex mathematical models and simulations simultaneously across multiple processors or nodes. In parallel computing, tasks are divided into smaller sub-tasks that can be executed concurrently, significantly reducing the time required for computation. Weather forecasting models can be parallelized to run on clusters of high-performance computers or supercomputers, allowing meteorologists to process large datasets and perform complex calculations more quickly. Parallel computing is important in weather forecasting because it allows meteorologists to produce more accurate and timely forecasts, which are essential for various industries such as agriculture, transportation, and emergency management. By leveraging parallel computing, weather forecasting agencies can provide valuable information to help people prepare for and mitigate the impact of severe weather events.

**Networked Systems:** Online Social Networks Online social networks like Facebook, Twitter, and LinkedIn are prime examples of networked systems. These platforms connect millions of users worldwide and facilitate communication, information sharing, and social interaction over the internet. Networked systems rely on a combination of hardware and software components, including servers, databases,

and communication protocols, to enable seamless connectivity and data exchange between users. These systems use distributed computing techniques to handle the massive scale of user interactions and data processing requirements. In online social networks, networked systems play a crucial role in providing reliable and scalable infrastructure to support user engagement and content dissemination. These systems use algorithms to analyze user behavior, recommend relevant content, and maintain the integrity and security of user data. Networked systems are important in online social networks because they enable users to connect with friends and colleagues, share information and media, and participate in online communities. By leveraging networked systems, social networking platforms can offer personalized experiences, facilitate social interactions, and drive user engagement, contributing to their widespread adoption and success