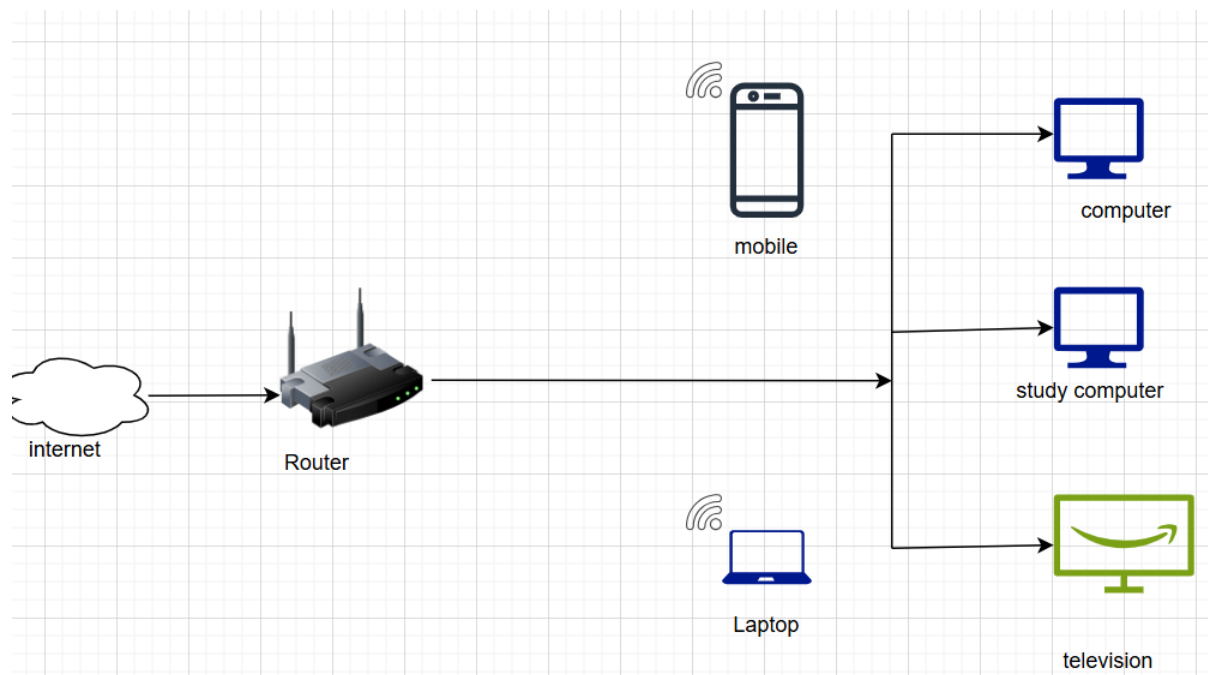


Assessment 1: Draw a simple your home network topology and explain how you are accessing the RPS Lab environment.



Components of Home network:

→ Internet: your home network is connected to the internet through an internet service provider (ISP)

→ Router: This device connects your home network to the internet. It typically includes a modem for internet connectivity and a router for local network management. It assigns IP addresses to devices on the network and manages the traffic between your home network and the internet.

→ Mobile, Laptops, Computer, Television : These are devices connected to your home network either wired or wirelessly. They can access the internet and communicate with each other within the local network.

Accessing the RPS lab environment :

To access the RPS(Remote Programming Support) lab Environment from your home network, you would typically use a remote access protocol such as SSH(Secure Shell) or VPN(Virtual Private Network)

→ SSH Access:

If the RPS lab provides SSH access, you would use an SSH client installed on your PC or laptop to connect securely to the lab environment. You would need to know the IP address or domain name of the lab server and your login credentials.

→VPN Access:

Alternatively, if the RPS lab provides VPN access, you would configure a VPN client on your PC or laptop to establish a secure connection to the lab network. Once connected, your device would appear as if it were directly connected to the lab network, allowing you to access resources and services within the lab environment.

→Firewall Configuration:

Depending on the security settings of the RPS lab environment, you may need to configure port forwarding on your home router/firewall to allow inbound connections to the lab server or VPN gateway. This ensures that your requests from the internet reach the appropriate destination within the lab network.

→By setting up remote access using SSH or VPN, you can securely access the RPS lab environment from your home network, allowing you to perform programming tasks, access resources, and collaborate with colleagues remotely.

Task 2: Identify 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:

Real-World Application: Weather Forecasting

→How it's Used: Weather forecasting involves complex mathematical simulations to predict future weather patterns. Parallel computing allows these simulations to be divided into smaller tasks that can be processed simultaneously across multiple CPU cores or even distributed across a network of computers.

→Importance: Parallel computing significantly accelerates the computational speed of weather forecasting models, enabling meteorologists to produce more accurate and timely forecasts. By leveraging parallelism, weather forecasting agencies can provide critical information for disaster preparedness, agriculture, transportation, and various industries affected by weather conditions.

Networked Systems:

Real-World Application: Online Banking

→How it's Used: Online banking systems rely on networked systems to facilitate secure communication between users (customers), banking servers, and financial institutions. Users access their accounts and perform transactions via web or mobile applications, which communicate with backend servers over the internet.

→Importance: Networked systems ensure the secure and reliable transfer of sensitive financial data, such as account balances, transaction records, and personal information. By leveraging encryption, authentication, and secure protocols, online banking systems protect against unauthorized access, fraud, and data breaches, instilling trust and confidence among users. Additionally, networked systems enable real-time transactions, account management, and access to banking services from anywhere, providing convenience and accessibility to customers.

→parallel computing and networked systems are foundational technologies that power critical applications across various domains, improving efficiency, scalability, and accessibility while driving innovation and advancement in modern society.