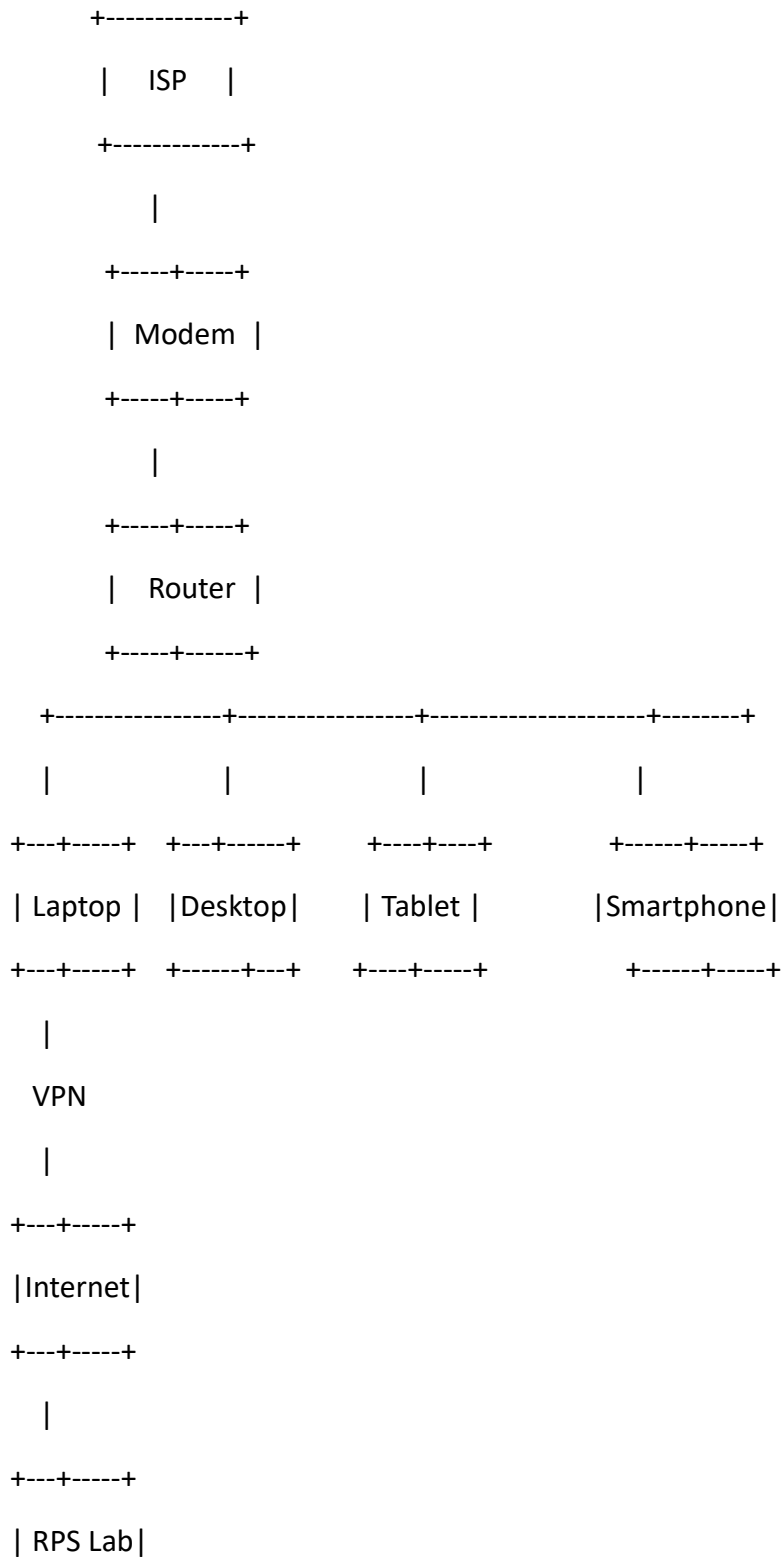
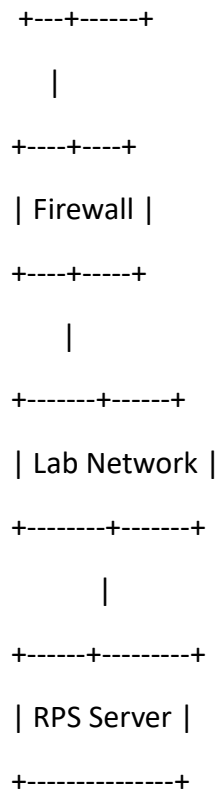


ASSIGNMENT-1.1

Given: Draw your Home Network Topology and explain how you are accessing the RPS Lab environment.





Explanation

1. ISP (Internet Service Provider): Provides the internet connection to your home.
2. Modem: Converts the ISP's signal into data that your router can use.
3. Router: Distributes the internet connection to various devices in your home, either through Wi-Fi or Ethernet cables.
4. Devices:
 - Laptop, Desktop, Tablet, Smartphone: Devices connected to your home network via the router.
 - Any of these devices can initiate a connection to the RPS Lab.

Accessing the RPS Lab Environment

1. Device: You use a device (e.g., laptop) connected to your home network.
2. VPN (Virtual Private Network):
 - Establish a VPN connection from your device to the RPS Lab.
 - The VPN encrypts your data, creating a secure tunnel through the internet.
3. Internet:
 - Data travels from your ISP through the internet to the RPS Lab's ISP.
 - The encrypted data is transmitted securely across the internet.
4. RPS Lab Network:
 - Firewall: The encrypted data passes through the RPS Lab firewall, which ensures security by allowing only authorized traffic.
 - Lab Network: Within the RPS Lab network, data is routed to the appropriate servers or resources.
5. RPS Server:

- Your request is processed by the specific RPS Server.
- The server handles tasks such as data retrieval, running simulations, or providing access to lab resources.
- The server responds, sending data back through the secure path.

ASSIGNMENT-1.2

Given: 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

How It's Used:

1. **Weather Models:** Simulates weather using math and physics equations.
2. **Task Splitting:** Divides large weather maps into smaller parts.
3. **Supercomputers:** Uses many processors to work on these parts at the same time.

Why It's Important:

1. **Speed:** Produces faster weather forecasts, which is crucial for timely warnings.
2. **Accuracy:** Allows more detailed and precise predictions.
3. **Scalability:** Can handle more data and complex models as computing power increases.

Networked Systems: Online Gaming

How It's Used:

1. **Game Servers:** Central computers host the game world and manage player actions.
2. **Real-Time Data:** Quickly sends data between players and the server.
3. **Synchronization:** Keeps all players seeing the same game state.

Why It's Important:

1. **Real-Time Play:** Ensures smooth and immediate interaction for players.
2. **Scalability:** Supports many players at once, even globally.
3. **Reliability:** Provides consistent performance with minimal disruptions.
4. **Security:** Protects against cheating and hacking to ensure fair play.