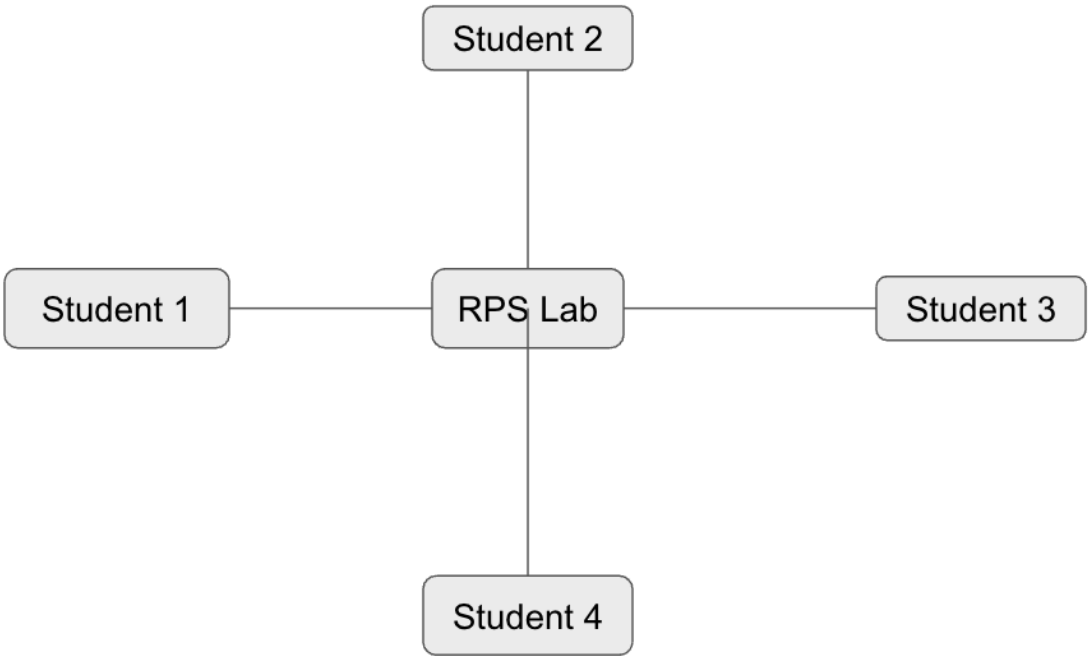
Assignment 1

Q1. Draw your Home Network Topology and explain how you are accessing the RPS Lab environment.

Ans:



It is similar to Star Topology or Client-Server Topology, each student (as a client's device) typically connects to a central RPS Lab server. This happens in a star topology, where the central server acts as the central hub that all students connect to. Each student communicates directly with the RPS Lab server, which manages and provides access to the resources or services needed by the students.

When we access the lab, data packets travel through our home router, then through the public internet, passing through various routers and switches.Upon reaching the lab's network perimeter, a firewall inspects the packets before routing them to the lab's internal network. The internal network infrastructure, including switches and routers, directs the packets to the lab environment.

To interact with the lab resources, you use remote access tools such as SSH or RDP. These tools establish a secure connection between our home device and the lab environment, allowing us to control and access the lab resources remotely.

Q2. 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.
Ans:

1. Real-world Application for parallel computing : Weather Forecasting, Weather prediction models involve complex simulations that require massive amounts of calculations. Parallel computing allows these calculations to be divided among multiple processors

   Importance of parallel computing in weather forecasting:

- Parallel computing allows weather models to be run much faster than on a single processor, enabling meteorologists to generate timely forecasts.
- The ability to run more complex simulations in parallel improves the accuracy of weather forecasts, leading to better predictions of future weather patterns.
- Parallel computing allows weather forecasting systems to scale up to handle increasing amounts of data and more complex models as computing power increases.

2. Real-world Application for networked systems : Online Banking System , this system heavily depends on networks for operations like transaction, reliability, read from database and writing back to it securely , all depends networked systems

   Importance of networked systems in online banking:

- Networked systems enable customers to access their bank accounts from anywhere with an internet connection, providing convenience and flexibility.
- Networked systems use encryption and other security measures to protect sensitive financial information from unauthorised access.
- Networked systems ensure that online banking services are available to customers 24/7, allowing them to perform transactions and manage their accounts at any time.