Assignment - 1

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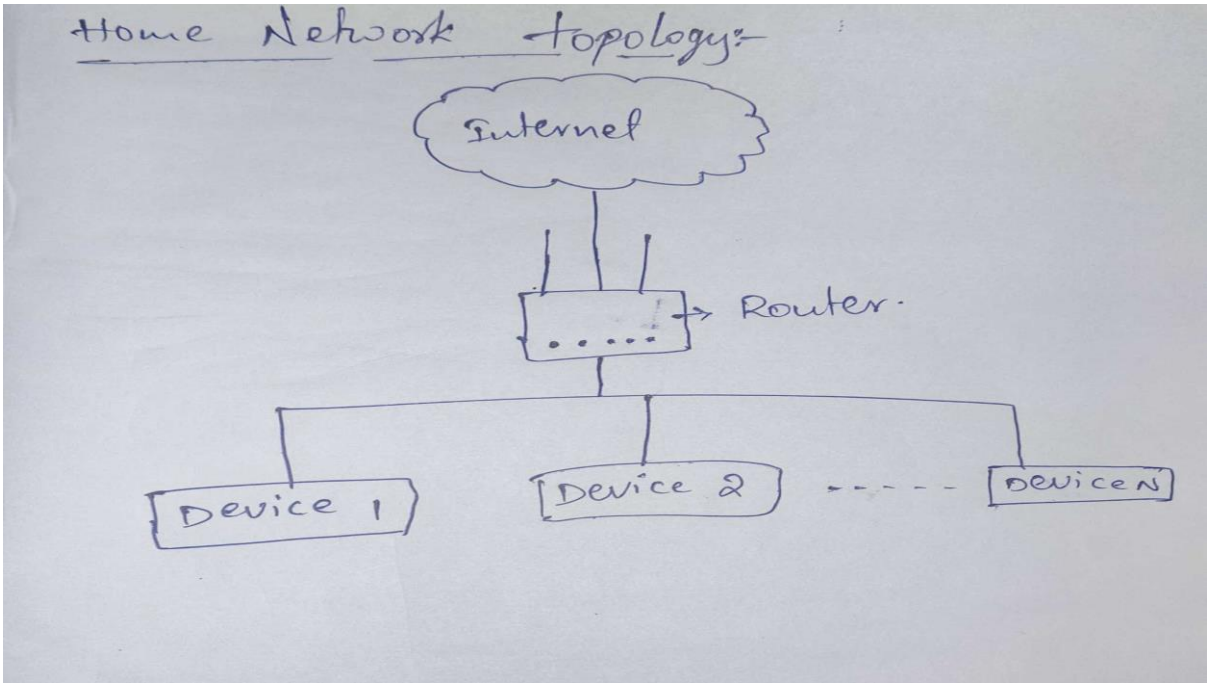
Assignment 1:

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



To access the RPS lab environment, I use a secure connection through the internet. This could be via VPN (Virtual Private Network) or through a secure remote desktop connection. The RPS lab environment might be set up with its own dedicated server (or) virtual machines that I can access remotely from any device connected to my home network.

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:

Explanation:

A real-world application for parallel computing is weather forecasting. Weather models require massive amounts of data processing and complex calculations to predict weather patterns accurately. Parallel computing allows these calculations to be broken down and processed simultaneously across multiple processors or computers, significantly reducing the time required for forecasts.

Importance:

Parallel computing allows for the efficient processing of large datasets by breaking them down into smaller tasks that can be executed simultaneously across multiple processing units or nodes. This significantly reduces the time required for data analysis, making it feasible to tackle complex scientific problems that would be impractical or impossible to solve with sequential processing.

Network systems:

Explanation:

As for networked systems, one real-world application is online banking. When you access your bank account online, your device communicates with the bank's servers over a network. These servers handle millions of transactions securely and efficiently, allowing customers to check balances, transfer funds, and perform other banking operations from anywhere with an internet connection. The networked systems ensure that these transactions are processed quickly and securely, providing a seamless banking experience for customers.

Importance:

Networked systems, researchers can share data, computational resources, and expertise across geographic locations. This collaboration enables access to diverse datasets and specialized computational resources, enhancing the quality and scope of research projects. For example, researchers can pool together genomic data from different populations to study genetic variations associated with diseases or share computational algorithms for analyzing astronomical data collected by telescopes around the world.