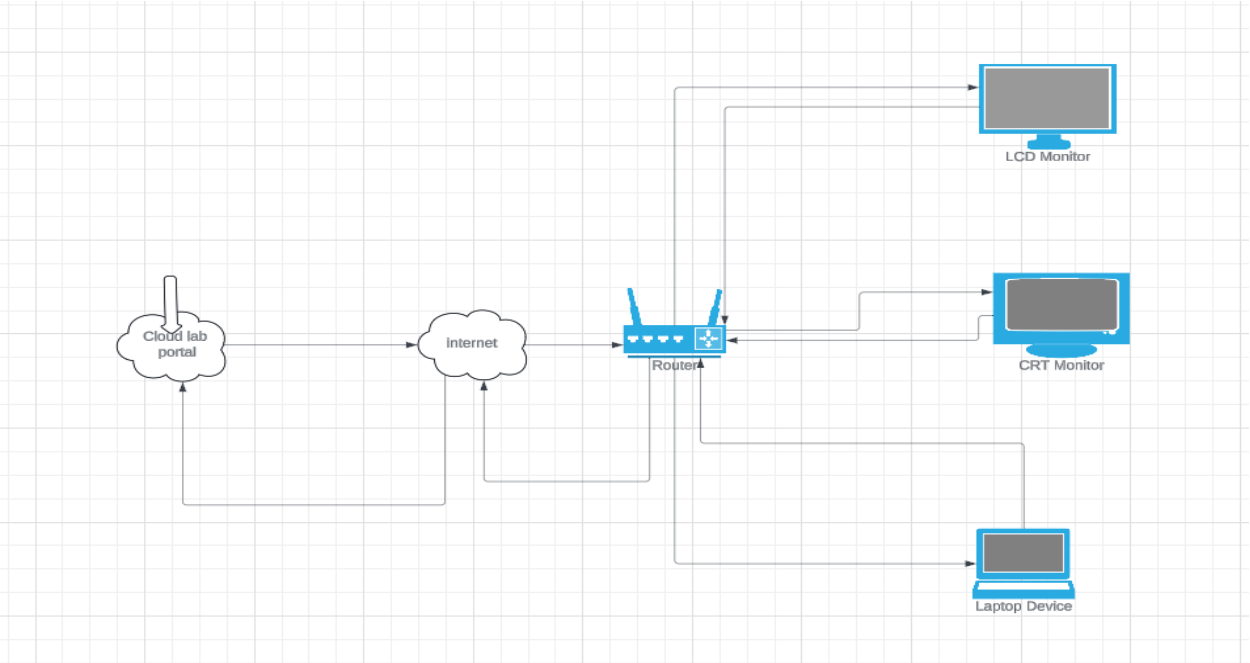
Assignment 1:

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

Accessing the RPS lab environment:



Components:

1)Computers/laptop

2)Router

3)Internet

4)Data fetched/Cloud lab

Procedure:

At first the computer/laptop are connected to the internet by connecting to the router.

Where the router id connected to the internet via cloud.

In the second stage our browser internet and search the link are the

Source which is what we are required i.e. the RPS cloud lab.

The internet fetch for the query and display the required or the related solution.

By click in the suitable link we can see the required destination

All the above process are two ways directional.

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:

Real-world Application: Weather Forecasting

How it's used: Weather forecasting involves complex mathematical models that simulate the behaviour of the Earth's atmosphere. These models require massive amounts of data processing and computation. Parallel computing is used to break down these complex simulations into smaller, more manageable tasks that can be processed simultaneously across multiple processors or computing nodes. Each processor works on a different part of the simulation, and their results are combined to generate accurate weather forecasts.

Why it's important: Parallel computing significantly reduces the time required to run weather simulations. By distributing the computational workload across multiple processors, weather forecasters can generate forecasts more quickly, allowing for timely warnings of severe weather events like hurricanes, tornadoes, and storms. This, in turn, helps in disaster preparedness, resource allocation, and risk mitigation, ultimately saving lives and reducing economic losses.

Limitations Parallel Programming: Parallel programming faces challenges in achieving parallel architecture, particularly in clusters requiring advanced cooling technologies. Managed algorithms are necessary, often handled within the parallel mechanism, but multi-core architectures consume high power. Creating low coupling and high cohesion in parallel computing systems is complex. Additionally, coding for parallelism demands expertise, typically managed by highly skilled programmers.

Networked Systems:

A networked system connects devices via wired or wireless communication links, aiming to transfer information between them. It executes protocol stacks and switches data among nodes, which can be computers, printers, or other devices capable of sending and receiving data.

Real-world Application: Online Marketplace

How it's used: Online marketplaces like Amazon, eBay, and Alibaba operate on complex networked systems that connect buyers, sellers, and various backend services. These systems utilize networks to facilitate communication and data exchange between users, servers, databases, and third-party services. Network protocols such as HTTP, HTTPS, TCP/IP, and REST APIs are used to enable seamless interaction between different components of the marketplace platform.

Why it's important: Networked systems enable online marketplaces to offer a wide range of products and services to a global audience. Users can browse, search, purchase, and review products from anywhere with internet access. Additionally, networked systems allow for real-time inventory management, order processing, payment transactions, and customer support. The scalability and reliability of these systems ensure that millions of users can access the marketplace simultaneously without experiencing significant downtime or performance issues. Overall, networked systems play a

crucial role in facilitating e-commerce transactions, driving economic growth, and providing convenience to consumers worldwide.