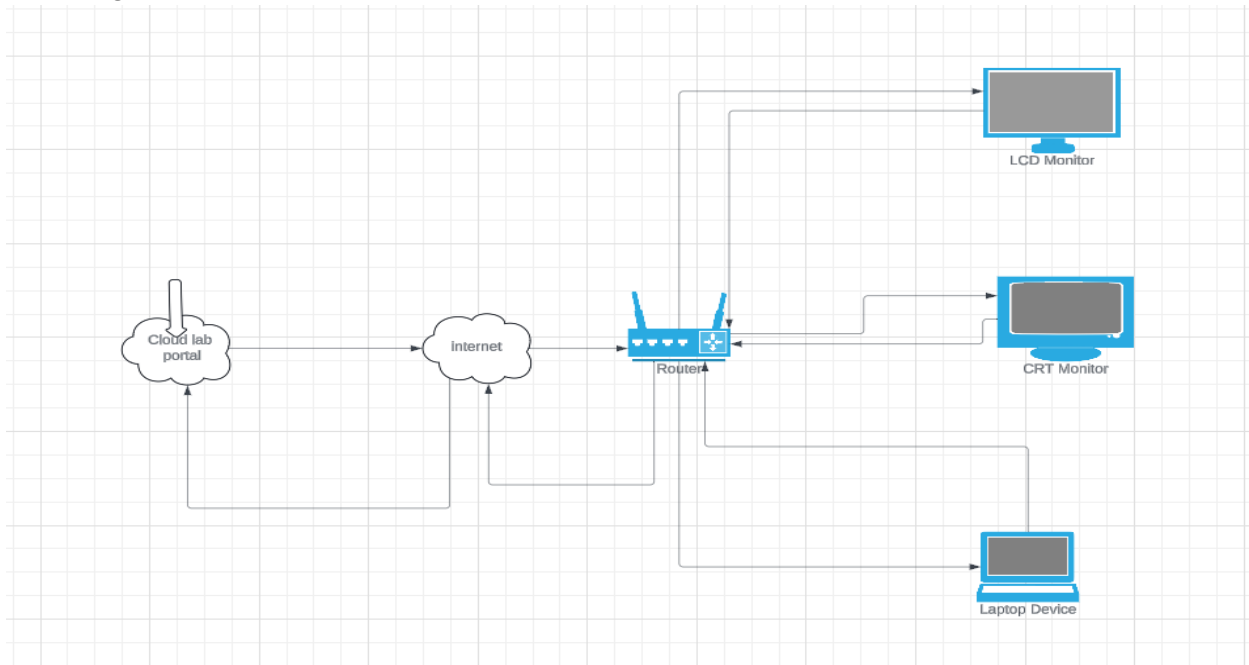


# Assignment 1:

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

Accessing the RPS lab environmnet:-



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 is 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.

### Solution:

- **Parallel Computing: -**

Parallel computing refers to a programming paradigm that enables a computer to leverage multiple resources simultaneously to tackle computational tasks. This approach enables computers to handle multiple problems concurrently, thereby enhancing efficiency and performance. Often, large problems can be decomposed into smaller sub-problems, which can then be solved simultaneously, leading to faster overall computation.

- **Benefits Parallel Programming: -**

Parallel computing offers the advantage of solving complex problems efficiently. By breaking down large tasks into smaller ones and processing them simultaneously, parallel programs achieve faster execution. Despite potentially requiring more hardware components, parallel systems are more efficient and produce results more quickly than serial processing. Additionally, they optimize resource utilization, leading to improved problem-solving capabilities

- **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.

- **Real-world application: -**

Multithreading is a parallel computing method commonly utilized in parallel computer systems. The multiprocessing module in Python facilitates parallel programming. Intel processors, **prevalent** in modern high-performance computers, also employ parallel processing.

- **Networked System: -**

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.

- **Networking Systems offers various benefits: -**

- 1)File sharing: Easily share data between users or access it remotely from connected devices.
- 2)Resource sharing: Share peripheral devices like printers and scanners, or software among multiple users, reducing costs.
- 3)Single internet connection: Cost-efficient and enhances system security when properly secured.
- 4)Increased storage capacity: Access files and multimedia stored remotely on network-attached devices.

- **Real-world application: -**

E-commerce enables online transactions for buying and selling goods. Communication networks support video calls, emails, and file transfers. Gaming networks facilitate interactive quiz games. Educational networks provide students access to information on the World Wide Web (WWW).