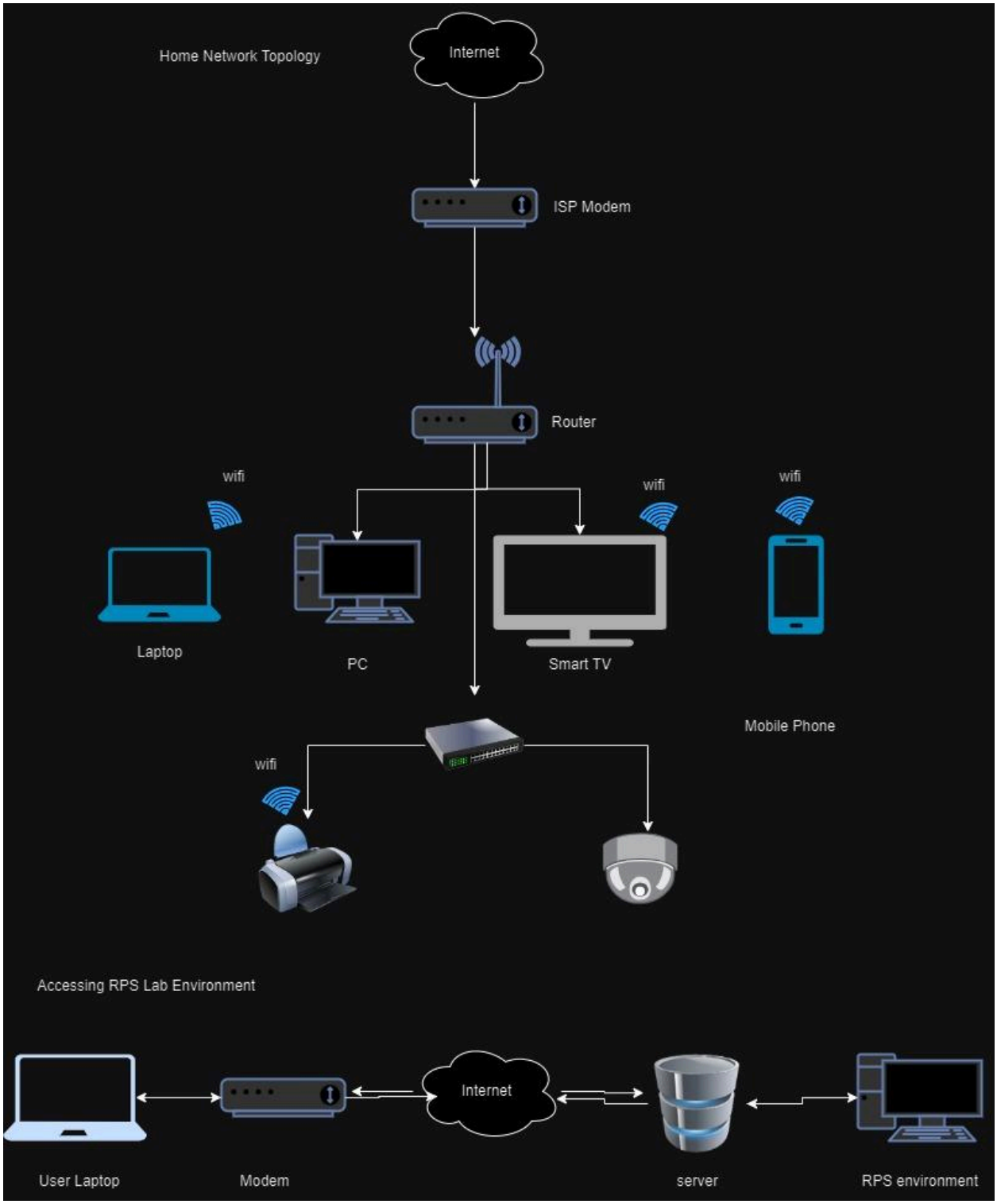
Home Network Topology
Internet
ISP Modem
Router
wifi
wifi
wifi
Laptop
PC
Smart TV
Mobile Phone
wifi
Accessing RPS Lab Environment
Internet
User Laptop
Modem
server
RPS environment

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:

The process of speeding up difficult tasks by dividing it into smaller jobs across multiple processors.

Example: Web Search Engines

Application: Internet Services

Usage: Search engines like Google need to index and search through billions of web pages quickly. This involves tasks such as more time to search, indexing, and querying, all of which can benefit from parallel computing.

How Parallel Computing is Used:

1. **Web Crawling**: Multiple web crawlers run in parallel to collect data from the internet.
2. **Indexing**: The collected data is divided and processed in parallel to create an index.
3. **Query Processing**: When a user performs a search, the query is processed across multiple servers in parallel to provide fast results.

Importance:

- **Speed**: Enables fast retrieval of information from large amounts of data.
- **Scalability**: Handles the ever-growing amount of data on the internet.

Example: When you search for a word on Google, the search query is processed by multiple servers simultaneously, each handling a portion of the indexed web. This parallel processing ensures you get your search results within milliseconds.

Networked Systems:

A network system is a system attached to two or more communication links, wired or wireless.

Application: Online File Sharing

Usage: Online file sharing platforms, like Dropbox or Google Drive, allow users to upload, store, and share files over the internet. These services depend on networked systems to manage file storage and access across multiple users and devices.

How Networked Systems are Used:

1. **Client-Server Architecture**: Files are uploaded from a user's device (client) to a central server.
2. **Data Transmission**: The files are transmitted over the internet using secure protocols.

3. **File Synchronization**: The server synchronizes files across all user devices, ensuring that the latest version of a file is available on all devices.
4. **Access Management**: The server manages user permissions and access controls, allowing users to share files with specific people or make them public.

Importance:

- **Accessibility**: Users can access their files from any device with an internet connection.
- **Collaboration**: Multiple users can share and collaborate on files in real-time.
- **Reliability**: Ensures data is backed up and available even if a user's device fails.

Example: Consider you have a document you need to share with your team. You upload the document to Google Drive. Each team member can then access, edit the document in real-time. Networked systems handle the synchronization of changes, so everyone sees the most up-to-date version, enabling seamless collaboration.