Assignment 1: Draw your Home Network Topology and explain how you are accessing the RPS Lab environment.

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         │  PLAYSTATION │   │   SCANNER    │
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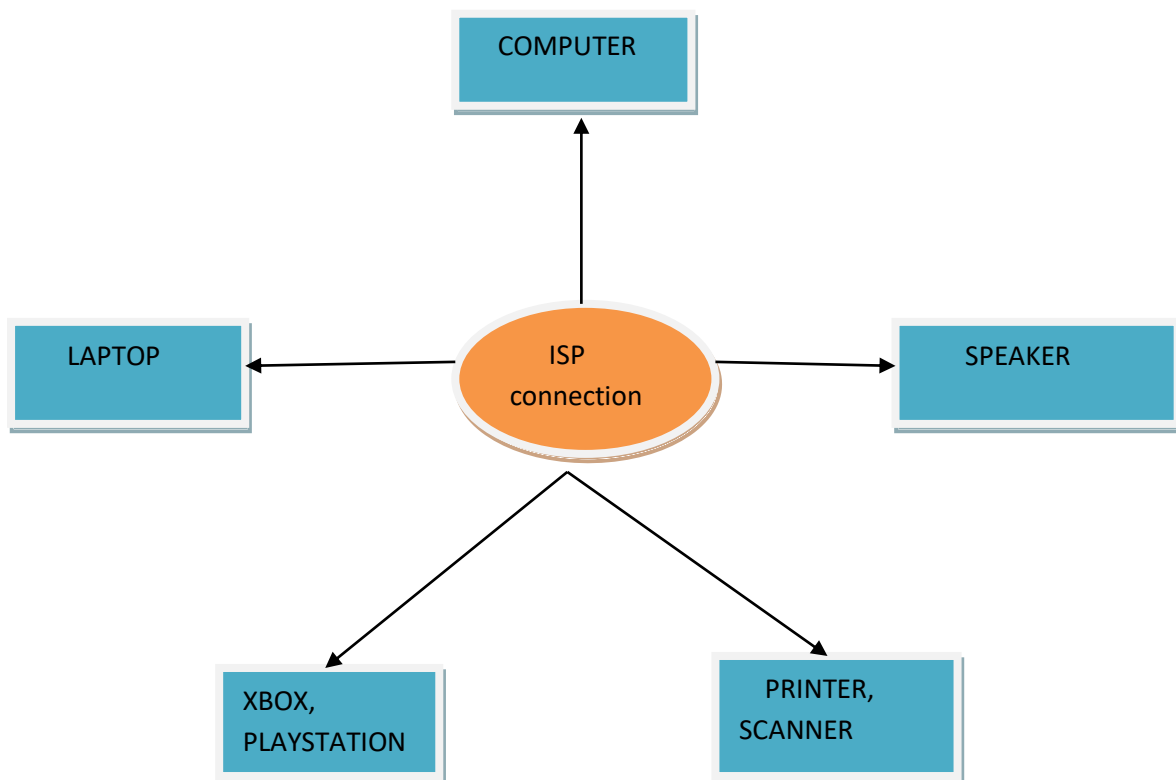
Steps to accessing the RPS Lab environment.

Step-1:- At the core of my home network is a router, which is typically linked to a modem for internet connectivity. This setup enables various devices to connect either wirelessly or through Ethernet cables. These devices encompass a range of electronics including laptops, smart phones, tablets, play station and Xbox household gadgets, and potentially a desktop computer or server.

Step-2:- Accessing the RPS Lab environment hinges on its configuration and the protocols it employs. Since it operates as a cloud-based service, reaching it parallels accessing any other online platform or website. This process involves the transmission of data packets back and forth through my router to the RPS servers.

Step-3:- Should the setup be localized on-premises, it may entail establishing a connection to a VPN (Virtual Private Network) to securely access the internal network where the RPS environment is situated. Once the VPN link is established, interaction with the RPS server becomes seamless as if it were a component of my home network.

Step-4:- Regardless of the scenario, robust security measures such as encryption and authentication mechanisms are likely implemented to safeguard the integrity and confidentiality of data transmitted between my devices and the 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.

Real-World Application for Parallel Computing: Weather Forecasting

How it's Used: Weather forecasting involves complex mathematical models that simulate atmospheric conditions. These models require enormous computational power to process vast amounts of data, including temperature, humidity, air pressure, wind speed, and more. Parallel computing enables weather forecasting systems to distribute these calculations across multiple processors or computing nodes simultaneously, significantly reducing the time required for weather predictions.

Why it's Important: Accurate and timely weather forecasts are crucial for various industries and activities, including agriculture, aviation, transportation, disaster preparedness, and energy management. By leveraging parallel computing, weather forecasting agencies can generate more detailed and precise forecasts faster, allowing stakeholders to make informed decisions and mitigate risks associated with weather-related events.

Real-World Application for Networked Systems: Online Shopping

How it's Used: Online shopping platforms connect customers with retailers, allowing them to browse, select, purchase, and receive goods or services over the internet. Networked systems facilitate communication and transactions between various components of the online shopping ecosystem, including websites, databases, payment gateways, inventory systems, and shipping providers. These systems ensure seamless interaction and coordination among different stakeholders throughout the purchasing process.

Why it's Important: Online shopping has revolutionized the retail industry, offering convenience, accessibility, and a wide variety of products to consumers worldwide. Networked systems play a critical role in enabling e-commerce platforms to operate efficiently, securely, and at scale. They support features such as real-time inventory updates, secure payment processing, personalized recommendations, order tracking, and customer support, enhancing the overall shopping experience for users.