**Assignment Day One** karthikavula76@gmail.com

**Understanding Computer Architecture**

1.Draw yours Home Network Topology and Explain how you are accessing the RPS Lab Environment?

Ans: In a standard home network topology, I would typically have:

Home Network Topology

Internet

Laptop

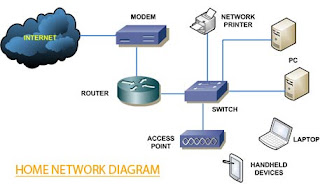
p

Computer

Smart Phone

CPU

Keypad



**1.Internet Service Provider (ISP) Connections:**

This is your gateway to the internet, usually provided through a modem or a modem a -router combo.

**2. Router**: The router connects to the modem and distributes the internet connection to various devices in your home via Ethernet cables or Wi-Fi

**3. Devices**: These includes computers smart phones tabs, smart home devices and other gadgets that connect to the internet either wirelessly or wire through the router

**4. Accessing point**: In larger homes, an access point might be added to extend a Wi fi coverage

**5. Firewall / security measures**: Most router includes basic firewall capabilities to protect your network for external theaters.

**6. Printer /Network attached storage (NAS)**: This devis might also be connected to the network for sharing resources.

Accessing the RPS lab environment from your home network would likely involve connecting to a virtual private network (VPN) Provided by your company or institute. Once connected to the VPN, you can access the RPS Lab environment as if you were physically connected to the network.

This allows for secure access to internal resources from outside networks perimeter. Typically, you could use VPN Client software to establish connections and then access the lab environment using remoter desktop or SSH, depending on the setup.

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 contexts?

**Ans:**

**1.Real-World Application**: Weather Forecasting Parallel Computing: Weather forecasting involves complex mathematical calculations and simulations to predict weather patterns accurately. Parallel computing is essential in this context because it allows for these calculations to be performed simultaneously across multiple processors or cores. Each processor can handle a portion of the data, breaking down the workload and significantly reducing the time required for the forecasting process. This parallelization enables meteorologists to generate forecasts more quickly, allowing for more timely and accurate predictions.

**2.Networked Systems**: Weather forecasting also relies heavily on networked systems for data collection and dissemination. Meteorological stations around the world collect vast amounts of data on temperature, humidity, air pressure, wind speed, and other variables. This data is transmitted over networked systems to central servers for processing. Additionally, weather models and simulations are run on supercomputers located in different geographic locations. These supercomputers are often connected through high-speed networks, allowing them to share data and collaborate on forecasting efforts. Networked systems enable meteorologists to access real-time data from remote locations and run simulations on distributed computing resources, improving the accuracy and reliability of weather forecasts.

**3.Importance**: Parallel computing and networked systems are crucial in weather forecasting because they enable meteorologists to process vast amounts of data and perform complex calculations efficiently. By leveraging parallel computing, forecasters can generate predictions faster, allowing them to issue timely warnings and help communities prepare for severe weather events. Networked systems facilitate data sharing and collaboration among meteorological agencies worldwide, leading to more accurate and reliable forecasts. Overall, these technologies play a vital role in improving our understanding of weather patterns and mitigating the impact of extreme weather events on society.

**4.Brief Explanation**: In a brief file, you would summarize the application of parallel computing and networked systems in weather forecasting, highlighting their importance in enabling faster and more accurate predictions. You might also mention how parallel computing allows for simultaneous data processing across multiple processors, while networked systems facilitate data collection, sharing, and collaboration among meteorological agencies. This concise summary would provide a high-level overview of the role of these technologies in a specific real-world application.