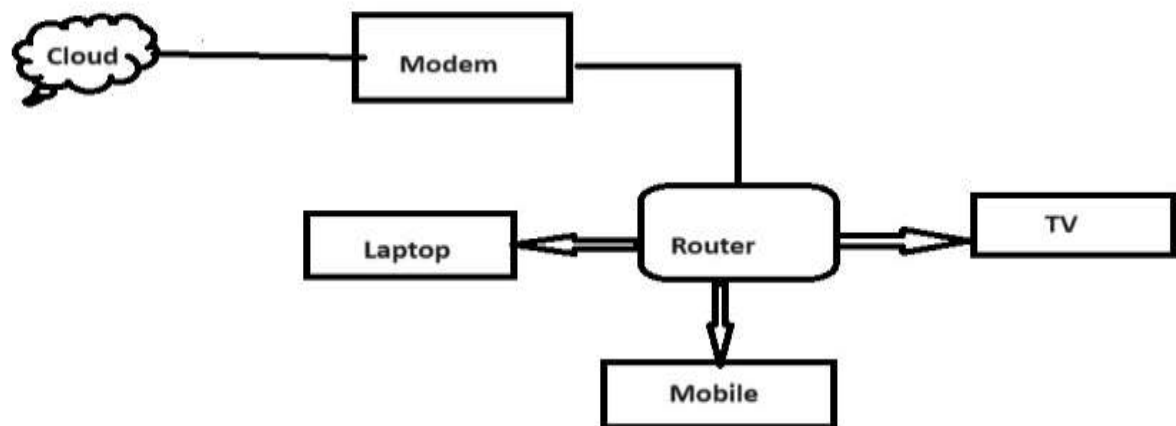


Assignment 1:

Q.1

Draw your Home Network Topology and explain how you are accessing the Any(College lab , office lab) Lab environment.



*** Home Network Topology ***

Remote Desktop Protocol (RDP):

- If the lab environment allows remote desktop access, users can use RDP to connect to lab computers from their own devices.
- With RDP, users can control a lab computer remotely, interact with the desktop interface, run software applications, perform experiments, and access files and data stored on the lab computer.

Reference:-> Google.com

Assignment 2:

Q1.

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

Parallel computing plays a crucial role in weather forecasting, where vast amounts of data need to be processed quickly to generate accurate predictions. Weather prediction models rely on complex mathematical algorithms that simulate atmospheric conditions based on various factors such as temperature, humidity, pressure, wind speed, and geographic terrain.

In a parallel computing environment, these models are broken down into smaller tasks or computations that can be executed simultaneously across multiple processors or computing nodes. Each processor works on a subset of the data, and the results are combined to produce the final forecast. This parallelization greatly reduces the time required to run simulations and improves the accuracy of weather predictions.

Parallel computing is essential in weather forecasting because:

Speed: Weather prediction models require massive computational power to process large datasets and perform complex calculations. Parallel computing allows these tasks to be divided among multiple processors, significantly reducing the time required to generate forecasts.

Scalability: As the demand for more accurate and detailed weather forecasts grows, parallel computing provides scalability by allowing additional processors or computing nodes to be added to the system. This ensures that computational resources can be scaled up to meet the increasing demands of weather forecasting.

Accuracy: Parallel computing enables weather forecasting models to incorporate more data and run higher-resolution simulations, resulting in more accurate predictions. By parallelizing computations, meteorologists can analyze multiple scenarios and generate probabilistic forecasts that account for uncertainties in atmospheric conditions.

Operational Efficiency: Timely and accurate weather forecasts are critical for various industries, including agriculture, transportation, energy, and emergency management. Parallel computing helps meteorological agencies deliver timely forecasts, enabling businesses and government agencies to make informed decisions and mitigate the impact of severe weather events.

Overall, parallel computing enhances the speed, scalability, accuracy, and operational efficiency of weather forecasting systems, making it an indispensable technology in the field of meteorology.

Real-World Application for Networked Systems: Online Marketplace

An online marketplace, such as Amazon, eBay, or Alibaba, relies heavily on networked systems to facilitate transactions between buyers and sellers. Networked systems enable users to access the marketplace platform, browse products, make purchases, and communicate with sellers from anywhere with internet connectivity.

In an online marketplace, networked systems are used for:

Platform Accessibility: Users access the marketplace platform via the internet using various devices, including smartphones, tablets, laptops, and desktop computers. Networked systems ensure seamless connectivity and accessibility, allowing users to browse products and make purchases at any time and from any location.

Transaction Processing: When a user makes a purchase on the marketplace platform, networked systems handle transaction processing, including payment authorization, order fulfillment, and inventory management. These systems communicate with payment gateways, shipping carriers, and seller databases to complete transactions efficiently and securely.

Communication and Collaboration: Networked systems enable communication and collaboration between buyers and sellers on the marketplace platform. Users can exchange messages, ask questions, negotiate prices, and provide feedback, fostering trust and transparency in online transactions.

Scalability and Reliability: Online marketplaces must be able to handle a large volume of traffic and transactions, especially during peak periods such as holidays or promotional events. Networked systems provide scalability and reliability by distributing workload across multiple servers, load balancing incoming requests, and ensuring high availability of services.

Security and Privacy: Networked systems implement security measures such as encryption, authentication, and access control to protect users' sensitive information, including personal data and payment details. These measures help prevent unauthorized access, fraud, and data breaches, ensuring a safe and secure shopping **experience** for users.