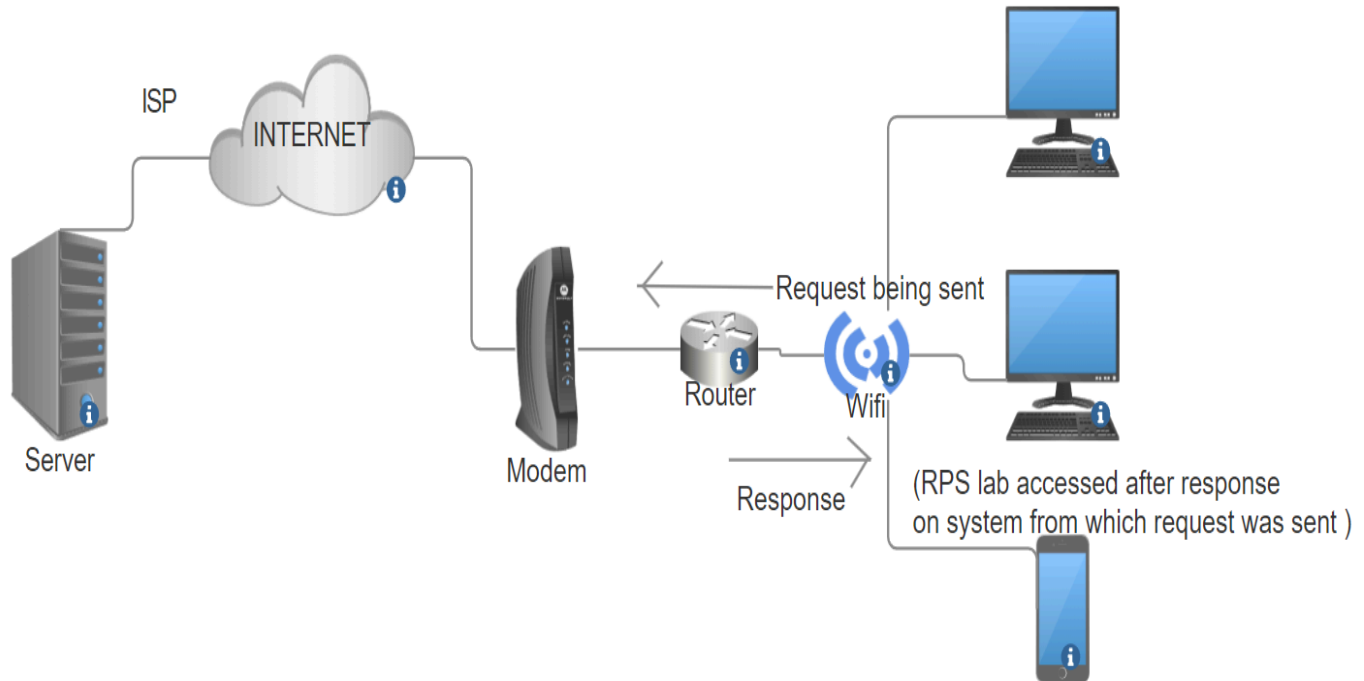# ASSIGNMENT – COMPUTER ARCHITECTURE

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

HOME NETWORK TOPOLOGY

The diagram above shows :
- "Website Server" which runs the RPS Lab environment. The "ISP" here refers to the Internet Service Provider which gives us the house's internet.
- When you see "Modem," it means that device that changes information from within our house networking system to the outside world through an ISP network.
- A device called "Router" is responsible for moving information from different gadgets within our house to the internet.
- Wireless devices such as computers or phones use "Wi-Fi Access Point" housed in our house to stay linked without need for physical connections.

How does it work?

To access the RPS Lab environment, we open a web browser either from our PC or any other appliance that is connected to our home network and then type the URL or IP address provided.Each device then sends the request.This request is then sent from the router to the modem.The modem then sends this request to the ISP's network.The network of the ISP then directs this request to the server of RPS Lab.The server of RPS Lab processes the request it sends back response following the reverse path.

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.

Online gaming is one such real-world application that makes use of both parallel computing and networked systems extensively especially in the context of massively multiplayer online games like **Fortnite**.

Massive online multiplayer games must simulate a virtual world in real time in which thousands or even millions interact simultaneously with each other.To share the computing load, parallel computation methods are applied across many server nodes, each of which simulates a certain area of this gaming universe.These server nodes need networked systems for communication among them and synchronisation, which makes sure that everything done by one player is immediately seen by others.

IMPORTANCE:

- Engaging Game Experience: **Parallel computing** and **Networked systems** are important in the delivery of engaging immersive experiences during game playing. For example, they help in instant communication between players, modification of the environment within the game among other roles such as enhancing large scale war scenes that lead to one's feeling as though he/she is part community existing inside this virtual world.

- Scalability:Through parallel computing and networked systems, massive data systems in games can be expanded to accommodate increasing number of users and also allow for seamless connectivity to different players globally irrespective of their current location or how many other people are playing at the same time.

- Community Building:Communication and collaboration among players in online games are facilitated by parallel processing and networking systems as they have a lot of features like in-game chats, voice communications etc which are important when it comes to beginning and maintaining highly active surfer communities.