Practice Assignment

Module 1	
Sr. No.	**Questions**
1	Imagine you're setting up a small office network. Describe the components of a Local Area Network (LAN) and explain how they work together to facilitate communication among devices.
2	In the context of IP addressing, explain the difference between IPv4 and IPv6. How does IPv6 address the limitations of IPv4, and why is it considered essential for the future of networking?
3	You're tasked with explaining the concept of ports and sockets to a non-technical colleague. How would you describe these terms and their importance in the context of network communication?
4	Consider a scenario where a client application needs to communicate with a server application over a network. Describe the step-by-step process of how socket programming enables this communication, highlighting the roles of both client and server sockets.
5	In a case study involving a video streaming service, analyse how the transport layer protocols (TCP and UDP) come into play. Explain which protocol is more suitable for different aspects of the service, considering factors such as reliability

	and real-time streaming.
6	You're troubleshooting connectivity issues between two computers on a LAN. Explain how the ARP (Address Resolution Protocol) works to map IP addresses to MAC addresses and how it contributes to successful communication within the network.
7	A company needs to choose between a wired Ethernet connection and a wireless Wi-Fi connection for their office network. Compare the advantages and disadvantages of each option, taking into consideration factors such as speed, security, and mobility.
8	Imagine you're designing a peer-to-peer file sharing application. Describe how you would utilise socket programming concepts to enable users to share files directly between their devices. Discuss potential challenges and solutions for this application.
9	In the context of network security, discuss the significance of Network Address Translation (NAT) in protecting devices within a private network from external threats. Provide examples of how NAT operates in different scenarios.
10	Consider a real-world case study of an online multiplayer game. Explain how the game developers would use sockets to establish and manage connections between players, ensuring a seamless gaming experience with real-time updates.