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10/09/2025

1.

Internet streaming is a common transmission scenario where data, such as movies, music, or live broadcasts, is delivered over the internet to users in real-time. The process begins when a content server encodes multimedia files into smaller data packets. These packets are transmitted through wired or wireless networks using protocols like TCP/IP or UDP, depending on the application. For example, video streaming platforms often rely on adaptive bitrate streaming to adjust quality based on network speed. On the receiving end, the user's device—such as a smartphone, laptop, or smart TV—receives the packets, buffers them briefly, and then decodes them into playable audio or video. This ensures smooth playback even if there are minor network delays. The quality of streaming depends on several factors: bandwidth, latency, and packet loss. Overall, internet streaming demonstrates the importance of reliable transmission in supporting modern digital entertainment and communication services.

2.

An Analog-to-Digital Converter (ADC) is an essential component in IT and electronics that converts continuous analog signals into digital data. Since computers and digital devices only process binary information (0s and 1s), ADCs enable real-world inputs like sound, temperature, or light to be represented digitally. For example, in a microphone, the analog sound waves are captured and converted into digital signals for storage, processing, or transmission. ADCs play a key role in multimedia systems, sensors, and communication devices. Their accuracy, defined by resolution and sampling rate, directly impacts the quality and reliability of the digital output.

3.

Using Wireshark to analyze network packets provided valuable insight into how data travels across a network. By capturing live traffic, I observed different protocols such as TCP, UDP, and HTTP in action, along with details like source and destination IP addresses. This helped me understand how information is broken into packets and reassembled at the destination. The tool also revealed potential security risks, such as unencrypted traffic being visible. Overall, the exercise improved my awareness of network behavior, troubleshooting techniques, and the importance of monitoring tools in ensuring secure and efficient data communication in IT environments.

4.

The transmission flow diagram illustrates how information moves from a sender to a receiver across a communication system. The process begins with the sender device, which generates data. This data is then encoded into signals that can travel through a chosen medium, such as fiber optic cables, copper wires, or wireless networks. As the signal reaches the receiving end, it is decoded back into usable data. Finally, the receiver device processes and presents the information to the user. This model highlights the key stages of transmission and emphasizes the importance of encoding, mediums, and decoding in ensuring accurate communication.



