Georgia Southwestern State University

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Lee_Brunovsky_HW2.pdf

Q1. User Datagram Protocol (UDP) would likely be the faster option for facilitating a transaction from a remote client to a server since its a more lightweight protocol compared to Transmission Control Protocol (TCP); more specifically, while TCP provides a higher level of reliability through error-checking, acknowledgments, and re-transmissions, these capabilities are expensive in terms of speed. Conversely, UDP sacrifices some of these features for speed, which makes it ideal for certain types of transmissions such as streaming or gaming where speed is often more critical than a few dropped packets.

Q2. HTTP, FTP, SMTP, and POP3 run on top of TCP because these protocols require reliable data delivery and sequencing, which TCP offers via features like error-checking, acknowledgment, and re-transmission of lost packets. Comparatively, UDP is a more lightweight protocol that sacrifices some of these features for speed.

Q3. E-commerce sites use cookies to store relevant information pertaining to customer behaviors such as past purchases and associate them with a unique identifier (UID), which can then be used to create a user session layer in subsequent sessions to retrieve the transaction history associated with the customers historic activity and tailor display output accordingly (Kurose & Ross, 2013).

Q4(a). The URL requested by the browser is "/cs453/index.html".

Q4(b). The browser is running HTTP version 1.1.

Q4(c). The browser is requesting a persistent connection, as indicated by the "Connection: keep-alive" header.

Q4(d). The browser that initiated the message is Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.7.2) Gecko/20040804 Netscape/7.2.

Q5. The transport layer (layer 4 in the OSI model) is responsible for end-to-end communication between devices across a network and help to ensure that data is delivered reliably and accurately. Protocols like TCP and UDP operate at this layer. The Network Layer (layer 3 in the OSI model) has the function of routing and forwarding data packets between various networks via addressing, routing table implementation and sub-netting: Internet Protocol (IP) operates at this layer.

Q6. Content Delivery Network (CDN) is a distributed network of servers located across disparate geographic regions designed to assist in delivering web traffic more efficiently: Its main function is to reduce latency and loading times by storing cached copies of content on localized servers closer to the end-user, which not only results in faster loading times, but also reduced bandwidth on the origin server that houses the source content (Kurose & Ross, 2013).

References

Kurose, J. F., & Ross, K. W. (2013). *Computer networking: A top-down approach* (6th ed.). Pearson.