HW #1, Chapter 1

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September 22, 2024

Problem 5. Chapter 1 P25

What are the five layers in the Internet protocol stack? What are the principal responsibilities of each of these layers?

Solutions:

1. **Application Layer:** The application layer is the topmost layer of the Internet protocol stack. It provides a user interface and support for services such as email, file transfer, and the World Wide Web. The application layer is responsible for providing network services directly to end-users.

2. **Transport Layer:** The transport layer is responsible for end-to-end communication between the source and destination hosts. It provides reliable data transfer, flow control, and error recovery. The transport layer is also responsible for multiplexing and demultiplexing data streams.

3. **Network Layer:** The network layer is responsible for routing packets from the source to the destination host. It provides logical addressing, routing, and packet forwarding. The network layer is also responsible for congestion control and quality of service (QoS).

4. **Data Link Layer:** The data link layer is responsible for reliable data transfer between adjacent nodes on the same network. It provides error detection and correction, framing, and flow control. The data link layer is also responsible for addressing and access control.

5. **Physical Layer:** The physical layer is responsible for transmitting raw data bits over a physical medium. It provides the electrical, mechanical, and functional specifications for the physical connection between devices. The physical layer is also responsible for signal encoding and modulation.