1. Layer 4

|  |  |  |
| --- | --- | --- |
|  | **TCP** | **UDP** |
| **Connection** | Connection-oriented | Connection-less |
| **Reliability** | Reliable | Unreliable |
| **Flow Control** | Includes flow control | No flow control |
| **Ordering** | Ordered | Not ordered |
| **Speed** | Slower | Faster |

1. Layer 1 – Physical Layer

* EX: Ethernet cable connectors

Layer 2 – Data-link Layer

* EX: MAC address (ex: 3C-95-09-9C-21-G1)

Layer 3 – Network Layer

* EX: Routers

Layer 4 – Transport Layer

* EX: TCP

Layer 5 – Session Layer

* USAGE: Helps keep data safe and ensure that data will never get completely lost

Layer 6 – Presentation Layer

* USAGE: Data compression

Layer 7 – Application Layer

* EX: HTTP

1. HTTP lacks the security to encrypt data and instead transfers data through plain text. HTTPS, on the other hand, transfers data through encrypted text. SSL and TLS actively secure data when using HTTPS.

Encryption is the process that scrambles data and protects data from outside observers. Using encryption, the privacy of users is secured, and their information is less likely to be stolen.

1. A socket is an interface for sending and receiving data on a specific port. A port is a number assigned to a process or application in a device. The default port for email is Port 25.
2. Public Wi-Fi makes it easier for a connected device to have its data seen or stolen. As public wifi links many devices together at once, connecting to one puts your device at risk of attacks or eavesdropping. If you use an unsecured website (HTTP) over such a network, your traffic could be visible to anyone else on the network. Websites that use HTTPS give you an extra layer of encryption that helps protect your device.
3. 192.168.56.1

Text

Description automatically generated

7. A ping command sends out a signal to a computer across a network and receives the response that is “pinged” back from the computer. It returns how long it took to receive a response from the computer (a.k.a. how long it took to ping back).

Text

Description automatically generated

8 1. 192.168.86.1

2a. 5 GHz

2b. 149

2c. 390/260 (Mbps)

2d. Yes, you can change the Wi-Fi password.

2e. No, you cannot change your email password.

9. 1. Status code 200 means “success.”

2. Status code 404 means that a requested page is “not found.”

3. Text

Description automatically generated

4. Text

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