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ASSIGNMENT 6

Write a short summary on common protocols: HTTP/S, FTP, TCP, UDP.

**1. HTTP / HTTPS (Hyper Text Transfer Protocol / Secure)**

* **Purpose:** These are the protocols used by web browsers to communicate with websites.
* **HTTP** is the basic protocol that transfers data like HTML, images, and videos between your browser and a web server.
* **HTTPS** adds encryption using SSL/TLS, protecting the data from being read or modified by attackers during transmission.
* **Example:** When you visit a website like https://www.google.com, your browser uses HTTPS to securely fetch the webpage.
* **Ports:** HTTP (80), HTTPS (443)

**2. FTP (File Transfer Protocol)**

* **Purpose:** FTP is used for transferring files between computers over a network. It's often used for uploading files to a website or downloading large files from a server.
* **Security Note:** FTP by itself is not secure (data is sent in plain text), but FTPS (FTP Secure) and SFTP (SSH File Transfer Protocol) are secure alternatives.
* **Example:** A web developer uploads images to a website using an FTP client.
* **Port:** 21 (FTP), varies for SFTP and FTPS

**3. TCP (Transmission Control Protocol)**

* **Purpose:** TCP ensures that data sent between devices arrives complete, in order, and without errors.
* **It is connection-oriented**, meaning a connection is established before data is transferred, and the data is acknowledged on both ends.
* **Best for:** Applications where accuracy and completeness are critical.
* **Example:** When you load a webpage, TCP ensures every piece of data (text, images, scripts) gets to your browser correctly.

**4. UDP (User Datagram Protocol)**

* **Purpose:** UDP is faster than TCP but doesn't guarantee delivery, order, or error-checking. It's a "send and forget" protocol.
* **Great for:** Real-time applications where speed is more important than reliability.
* **Example:** In video calls or online games, a few lost data packets won’t ruin the experience, but delays might — so UDP is preferred.
* **Port:** Varies depending on the service.

**Understanding each protocol in a easier way:**

* **HTTP:** Like sending a postcard—anyone in between can read it.
* **HTTPS:** Like sending a sealed envelope—only the recipient can read it.
* **FTP:** Like using a delivery truck to move files—efficient but not locked unless you add security.
* **TCP:** Like a phone call—each part of the message is confirmed and acknowledged.
* **UDP:** Like yelling across a room—quick and simple, but might miss a few words.

