OSI Model

Learned:

- Data flows through layers from physical cables up to the application layer, allowing devices to communicate through the network and access websites using protocols like HTTP/HTTPS.

- The data link and network layers ensures that packets reach the correct devices, allowing TCP packets to be delivered reliably or UDP packets to be delivered quickly.

1. Physical - Transmits electrical signals to transfer data between each other in a binary numbering system (1s and 0's).

- **Cables, hubs, electrical signals**

2. Data Link - Takes a packet from the Network layer and adds the MAC address so it can reach the right device on the local network.

- **MAC Addresses, switches, frames**

3. Network - Handles routing by deciding the best path and organizes data into packets with IP addressees so it can reach the right device across networks.

- **IP, routers, determines path for packets**

4. Transport - Transmits data across a network using TCP and UDP. TCP makes sure that data is received and reliable but slower, while UDP is faster but doesn't guarantee delivery.

- **TCP, UDP**

5. Session - Creates and manages connections between computers. It starts a session when data is sent, closes it if inactive, and can use checkpoints so only lost data needs to be resent.

- **Login Tokens, APIs**

6. Presentation - Translates data between the application and network so different systems can understand it. It also handles encryption and formatting, like HTTPS or converting file types.

- **Encryption, formatting, HTTPS, file conversion**

7. Application - The layer you interact with directly; provides interfaces for programs like browsers, email, or file transfer. Handles protocols like HTTP, FTP, DNS.

- **User interface, HTTP, FTP, DNS, email, browser**