Lecture 4 Notes:  
  
Web Sockets:  
  
WebSocket is bidirectional, a full-duplex protocol that is used in the same scenario of client-server communication. It is a stateful protocol, which means the connection between client and server will keep alive until it is terminated by either party (client or server). After closing the connection by either of the client and server, the connection is terminated from both ends.

**HTTP:**

A protocol standardizes communication over the internet. The Hypertext Transfer Protocol (HTTP) is used to transfer resources (e.g., HTML files, audio files, images, etc.) between a client and a server. A client is a machine that initiates the communication, and a server is a machine that needs to be contacted. HTTP runs over TCP.  
  
**HTTPS:**

HTTPS transfers the data in an encrypted format. This prevents potential hackers from reading and/or modifying the data over the connection. Even if hackers intercept the information, it will be useless since they will not be able to decrypt it. This security is provided by the SSL (Secure Socket Layer) protocol and, more recently, the TLS (Transport Layer Security) protocol.  
  
 **HTTPS long Polling:**

HTTP Long Polling is a technique used to push information to a client as soon as possible on the server. As a result, the server does not have to wait for the client to send a request.

In Long Polling, the server does not close the connection once it receives a request from the client. Instead, the server responds only if any new message is available or if a timeout threshold is reached.  
  
**Server Sent Events:**Under SSEs the client establishes a persistent and long-term connection with the server. The server uses this connection to send data to a client. If the client wants to send data to the server, it would require the use of another technology/protocol to do so.

1. Client requests data from a server using regular HTTP/HTTPS.

2. The requested webpage opens a connection to the server.

3. The server sends the data to the client whenever there’s new information available.

SSEs are best when we need real-time traffic from the server to the client or if the server is generating data in a loop and will be sending multiple events to the client.