Lei Liu

LL28379

Jacob Perlmutter

JAP4843

Lab 4 Report

1. **Objectives**

Learn how to implement a system that connects to the internet using an IEEE 802.11 wifi module, CC3100. Learn how to implement and debug a CC3100. Use DNS to convert name to an IP address. Another objective is to configure a smart object that can retrieve data from a weather server using TCP. Design an object that can store data onto an internet server using TCP. Learn how a TCP load works and how to send and receive data using it. Learn how to connect the micro controller onto wifi using the CC3100 board. Learn how to parse data that is received from a server. Continue interfacing an ADC and reading data from it. Learn how to debug packet transfer, example determining if the packet was lost or not.

1. **Measurements**

**Packet Loss**

Throughout the tests, I received 0% packet loss, all data was received.

**Weather**

Average time = 488 ms

Minimum time = 391 ms

Maximum time = 637 ms

**EE445L Server**

Average time = 446 ms

Minimum time = 356 ms

Maximum time = 562 ms

1. **Analysis and Discussion**
   1. The client first sends a request to the serve with a random port number that requests a socket. Then server then creates a socket and sends a reply to the client. The client then sends data to the server socket and the data is then saved in the proper location.
   2. The DNS server lets the user to request an IP address of a server if the URL for the website is known that they are trying to visit.
   3. The main difference between a UDP and TCP connection is that TCP is a connection that guarantees the receiver will receive the packet but takes longer to finish than UDP while UDP sends a packet immediately without a guarantee that the receiver will receive the packet. Tradeoffs for TCP and UDP is reliability vs speed where TCP has the edge in reliability and UDP has the edge on speed. TCP examples can be websites or databases where information in packets can be critical if any packet is lost, and UDP examples are streaming or games where if a frame is missed every so often, it will not ruin how the software functions.