Jared Strand
CptS 466
Project 5
Bluetooth Temp Sensor

Report

A. System Design

In this project we were able to implement an interrupt driven temperature sensor reading system that transmits the data from the Analog to Digital converter through Bluetooth to a CoolTerm serial output monitor. I was able to observe the different input values from the ADC before processing and converting those into Celsius temperature measurements. Some of the challenges of this assignment included; translating the input data into temperatures, formatting and sending the data over Bluetooth correctly, and plotting the data from the experiments. We used a 3.3V system and a 12-bit ADC to process the temperature sensor data that allowed us to calculate factors such as precision, range, and resolution when processing the inputs and generating data for the Bluetooth output conversions.

A. Experiment

For the experiments I had to set the sensor along with my computer outside in the cold for a couple minutes to adjust the sensor then begin the 1-minute reading time. For the next experiment I did the same process except inside my bedroom by setting my computer and board on my computer desk and read the sensor readings. In the third experiment I set the system up in my living room on the dining table. It would have made the experimentation much easier if I only had to bring the sensor and press one button to start and stop recording data. If the microcontroller had a way to save the data in individual files to and SD card or storage medium for later access the experiments would have been much easier, also having an external power supply would have been very beneficial so I didn't have to lug my computer around as a power source. Also, it would have been nice to have the microcontroller save the files in CSV file format for easy integration with excel for the graphing process.

B. Results

For a closer look at the data and charts checkout "data.xlsx" which contains all the collected data in csv format.

Bedroom

Living Room

Outside