**CS 350 Final Project**

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CS-350: Emerging Sys Arch & Tech

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A thermostat has several hardware and software components that are used to be able to gather data, and display and control an air conditioning unit. The hardware needed to run the thermostat consists of a I2C like a temperature and humidity sensor for reading the environment, GPIO for controlling LEDs, buttons, and screens, and a UART which handles sending the thermostat data to the server. Not to forget the microcontroller itself. In this case we have prototyped with a raspberry Pi.

The thermostat prototype I have supports all the necessary required hardware, as well as having a WiFi adapter so that it can be controlled remotely through the web or cloud service, and enough RAM for an embedded software system. Looking at the Microchip microcontroller, I found that it is already set up with the necessary hardware, and can definitely support the software to run the thermostat. Unfortunately the freescale micro computer is no longer available, and looking at prior documentation the freescale might not have met all the requirements for our thermostat design.

With cloud service in mind, the Raspberry Pi and the Microchip computers are both capable of connecting to the internet through a home WiFi network and thus bing able to connect to the could. It is imperative that the software is kept encrypted and secure so that it does not lead to a leak in security for the end user. Using TCP/IP would be a great way to connect to the internet via the network and also allow the user to connect to the thermostat from wherever they are.

Resources

WFI32E01PC. (n.d.). https://www.microchip.com/en-us/product/wfi32e01pc