Project Writeup

CS 350

Justin Farquhar

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**Thermostat supports peripherals used in the projects:**

This thermostat project was the buildup of individually using each peripheral previously in other milestones. Using each of GPIO, UART, Timers, and I2C we were able to have each communicate with each other, ultimately leading to the final product. GPIO was used to handle the button presses and the LED actions. I2C allowed for the reading of the ambient temperature through the temperature sensor on the device. UART handled the reading and writing of information, in this case mostly writing the timers throughout the process. The timers allowed for a paced sequence of events, keeping track of time as the individual process were running.

**Thermostat connects to the cloud via Wi-Fi:**

This device does have built in Wi-Fi capabilities, so if a connection is established, cloud coverage could be enabled. This would allow the user to adjust settings from their phone wherever they are, either before they get home or before they leave their bed. This allows for an enhanced user experience as most thermostats require the user to physically adjust the temperature on the device. This experience is most improved in the case of scheduling. While mostly a one off thing a user sets and forgets about, being able to create more events to schedule a temperature change at a specific time can help with the user’s comfortability as well as allow them the ability to save money through energy savings.

**Architecture’s Flash and RAM:**

This device only has up to 256kb of ram, meanwhile a comparable wifi enabled device in the Google Nest has 256mb for the simpler version, or 512 for the learning model. Based off of this, additional RAM would need to be accounted for to ensure there are no bottlenecks and the user experience is not impacted.