Bob Johnson  
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Module 7 project

This thermostat was supported numerous ways in this project. Protocols like UART, I2C as well as GPIO were implemented in this project. The GPIO was used to interact and accept input from the two buttons that are on the side of the board. These were used to represent turning the thermostat up or down depending on which button was pushed. UART is available to enable WIFI and allow other devices to communicate through I2C.

Once the system is initialized, the temperature is compared to the user defined temperature. This is checked often and if a difference is detected, the system can adjust accordingly. If the temperature is lower than what was defined, the system will turn on the LED. If the temperature is higher, then the LED would be turned off. These are represented on the board by the buttons. If one button is pushed, the LED would turn off and if the other button is pushed, the LED would turn on.

The TI device is a good option as it has ways to show how the code can be used. By pushing the buttons it shows the response if the temperature was higher or lower than the set temperature. A microchip would work much in the same was as the TI device but requires the use of other peripherals. Utilizing I2C, a device could be connected to the microchip to sense the ambient temperature and a connected LCD screen could display information like the temperature. The UART function could be used to connect to WIFI and upload temperature information to the cloud. This information could then be stored for some amount of time to be used later as necessary.

The flash and RAM on the TI device are useful however it is limited. The amount of data that could be stored would eventually reach a limit. However the flash is useful as it can be rewritten. There is a lose of data when the power is cut, but the code can be sent to the device again. The microchip could hold more data, but size constraints come into play. When it comes to limits, the cloud would be the best option. Data could be sent to the cloud and stored there allowing a lot of data to be retained. A device could read the temperature and then sent it using WIFI if the device is connected. This information could also be transmitted to a smartphone to allow one to monitor the temperature while away from the device.

Flash and RAM are essential for the temperature to be read and interpreted. The amount of RAM can be small since only the temperature would be read. The TI device could use the RAM it has to store the code to read the temperature. A microchip would be sufficient as well, however a device would need to be connected to get any information. The cloud is ideal for extremely small devices. There is an enormous amount of storage that can used. This would allow a device to remain small as there is not a need for a large amount of memory on a device as long as it can connect to WIFI and upload to the cloud.

Considering everything the TI device has included, it would be a great option. It has WIFI capability so information can be uploaded to the cloud. The flash and RAM on the board allows it to store code and a limited amount of information and devices can be connected to the board.