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Thermostat Project Report

The peripherals used in the thermostat project were I2C, UART2, GPIO, and a timer. Each of these peripherals manages different types of inputs or outputs used to make the thermostat work properly. The I2C peripheral is implemented to receive temperature data from the temperature sensor on the board. This data is utilized by the microprocessor to create output. UART2 is used to output data such as temperature, set point, heat value, and elapsed time to the terminal. This function simulates cloud connection. GPIO is used to recognize button presses as inputs and output signals to the LEDs on the board. In this project, each either incremented or decremented the set point value. This would be used by the microcontroller to output a light indicating the heat was on if the set point value was greater than the current temperature observed by the temperature sensor. The timer peripheral is used to keep the program timed correctly. The timer allows the system to recognize and respond to all inputs in the schedule presented by the scenario.

The board used in this project was the TI CC3220SF-LaunchXL. This board features WiFi connectivity. This can allow for cloud access and the creation of a cloud based smart thermostat. Wi-Fi connectivity is accomplished through TI’s SimpleLink technology. This technology allows for Bluetooth access to Wi-Fi networks. This board also contains enough flash memory and RAM to run the code for this project. The CC3220 has 256KB of RAM with 1 MB of executable flash memory. These aspects allow for a board with plenty of memory to run a thermostat and even a smart thermostat connected to the cloud.