For this project, I developed a prototype smart thermostat using the TI CC3220x LaunchPad development board and Code Composer Studio. The thermostat reads room temperature using a TMP006 temperature sensor (via I2C), controls an LED to simulate heating output (via GPIO), and uses buttons to adjust the target temperature (via GPIO interrupt). Additionally, I used the UART interface to simulate data being sent to a server.

The key tools and components I worked with included the TI board, Code Composer Studio, and peripherals like the TMP006 sensor, buttons, and LEDs. I implemented functionality to initialize and manage peripherals such as timers, I2C, GPIO, and UART while adhering to best practices in formatting, commenting, and modularized code. The project also required creating a task scheduler and documenting it thoroughly with industry-standard technical documentation.

As part of the next phase, I analyzed three hardware architectures (TI, Microchip, and Freescale) for their ability to support cloud connectivity via Wi-Fi, peripheral integration, and sufficient Flash and RAM. This analysis guided recommendations for the future development of a fully functional thermostat that aligns with SysTec’s business needs.