Module 7 State Machine Documentation

States:

Init – Initialization state where UART, I2C, Timer, and GPIO are set up

CheckButtons – State to check for button presses to adjust the setpoint

ReadTemperature – State to read temp from sensor and control the “heater”

UpdateLEDandUART – State to update the LED status and UART output

Idle – Default state while waiting for the timer interrupt to the the timerflag

Transitions:

Init to Idle - After initialization is complete

Idle to CheckButtons – When the TimerFlag is set and tasks[0].timePassed >= tasks[0].period.

Idle to ReadTemperature- When the TimerFlag is set and tasks[1].timePassed >= tasks[1].period

Idle to UpdateLEDandUART- When the TimerFlag is set and tasks[2].timePassed >= tasks[2].period

CheckButtons to Idle- After checking the buttons

ReadTemperature to Idle- After reading the temperature and updating the heater status

UpdateLEDandUART to Idle- After updating the LED and UART

State Actions:

CheckButtons - Check the button flags and adjust setpoint

ReadTemperature - Reads temp from the sensor, updates the temp variable, and controls the ‘heater’

UpdateLEDandUART - Increment the seconds counter and send the updated status via UART