Required Functionality:

Check Buttons / Control Set Point:
Increase or decrease set point if buttons are pressed.

Check Temperature / Control LED:
Keep track of ambient temp and turn LED on or off based on how ambient temp compares to set point.

Write to UART:
Output to UART the relevant data. Task also keeps track of seconds.

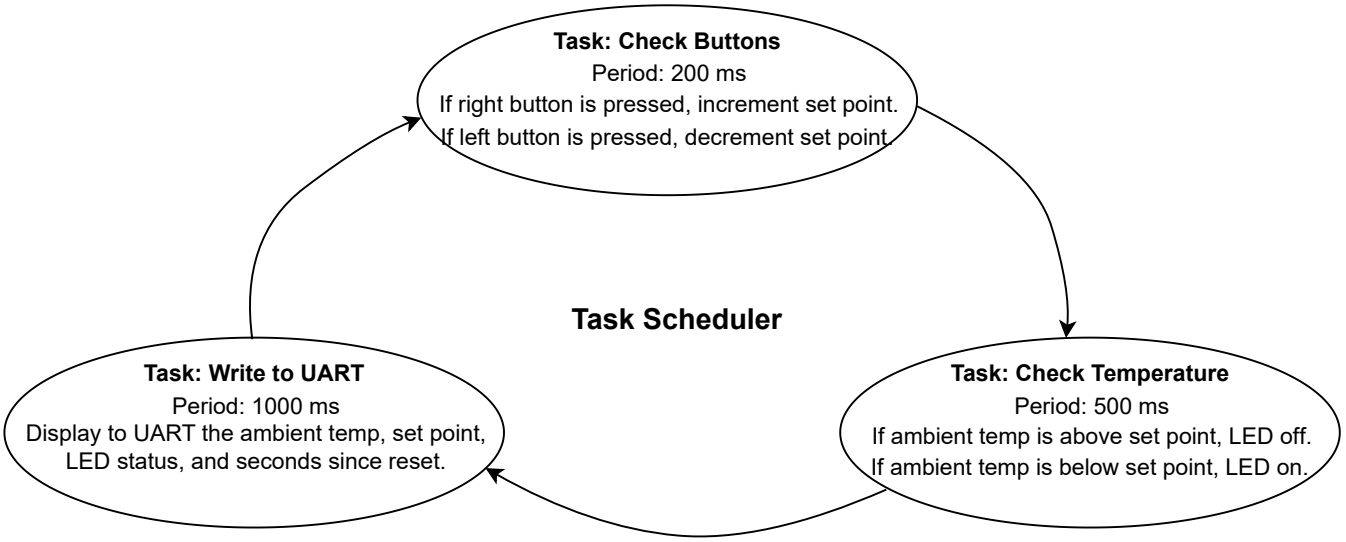
Algorithm Used:

A task struct contains all task information: current state, period, elapsed time, and tick function. Tasks are stored in an array, which is populated in main where info for each task is initialized. The task scheduler loops through this array and check if enough time has elapsed to match the task period. If so, the SM tick function is executed and state is updated.

Inputs and Outputs:

The only output from each task SM is the state that the task leaves the period in. The only inputs that each task receives is the state from the previous period.

However, each task controls one or more global variables. These are the button flags, the set point, ambient temp, LED status, and seconds since reset.



State Machines