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CS 350 – Emerging Sys Arch & Tech

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Milestone 3: Input with Buttons Lab

Lab Questions:

1. Why does the loop that processes the LED blinking need to run in a separate thread?

The loops of input and output both need to be accounted for. The user input loop to determine whether the message needs to change, or the process needs terminated, then the LED blinking loop.

1. What is the purpose of returning to the off state after each completed state action?

With all states transitioning to off state instead of different states, it simplifies the model because most transitions are accounted for when the machine is in the off state. Additionally, it ensures the LEDs are off before any state transitions that would turn on the LEDs.

1. How could you integrate serial communications to facilitate changing the messages available to the program?

A possible solution would involve omitting the button processing and instead using a messaging system. The system would entail waiting for a message, changing that message into the active message, and then transmitting the message through the LEDs until there is new input. There would still be a third thread in addition to the blinking LED logic, to prevent interrupting the blinking until a new message is input and becomes the active message.

1. How could you use the 16x2 display to provide debugging information to the user when they don’t have access to the application console?

Using the defined updateScreen() function would be able to show the debugging info that is usually provided on the terminal.