PROJECT 4: "ADDING FUNCTIONALITY"

WORKING WITH DYNAMIC TASK QUEUES FOR TIME-VARYING TASKS, REMOTE SYSTEM COMMUNICATION, EEPROM MEMORY MANAGEMENT, AND SOC CALCULATION TO IMPLEMENT THE THIRD PHASE OF A BATTERY MANAGEMENT SYSTEM

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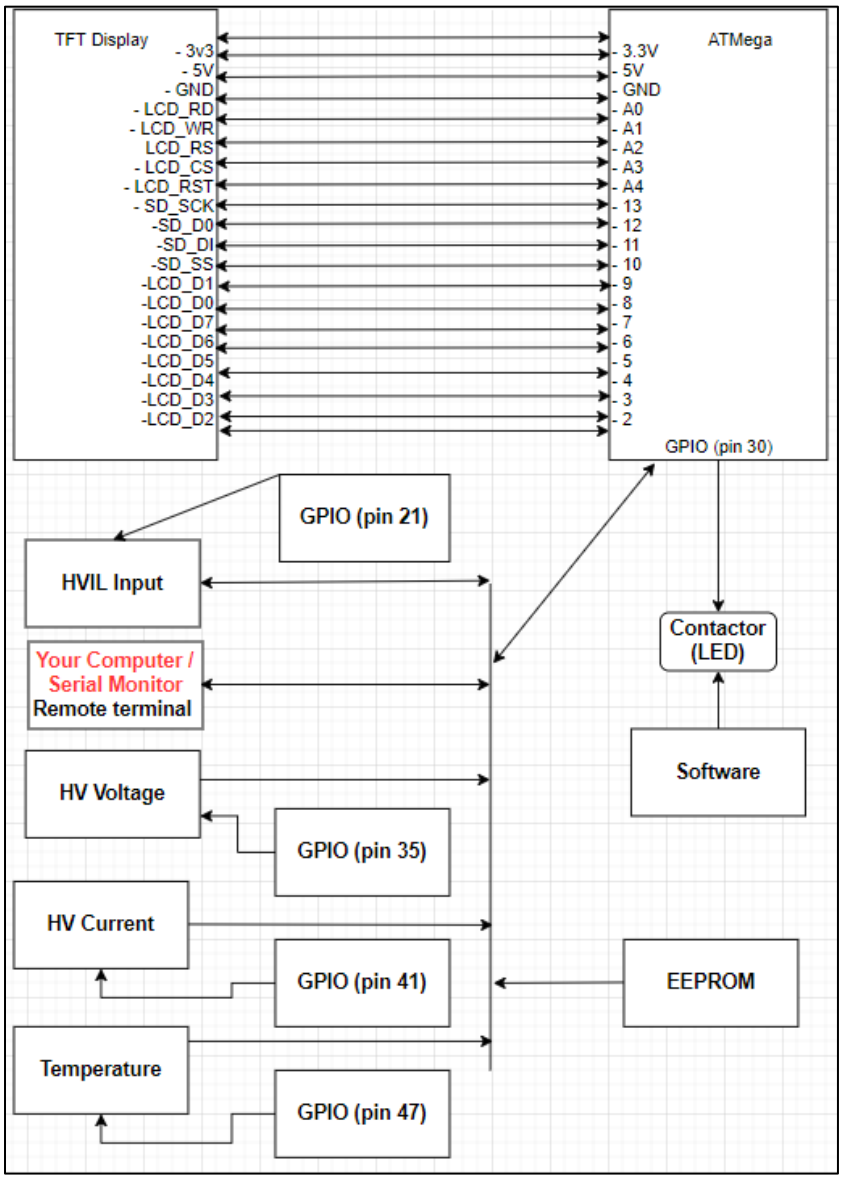

Figure 1: Block Diagram

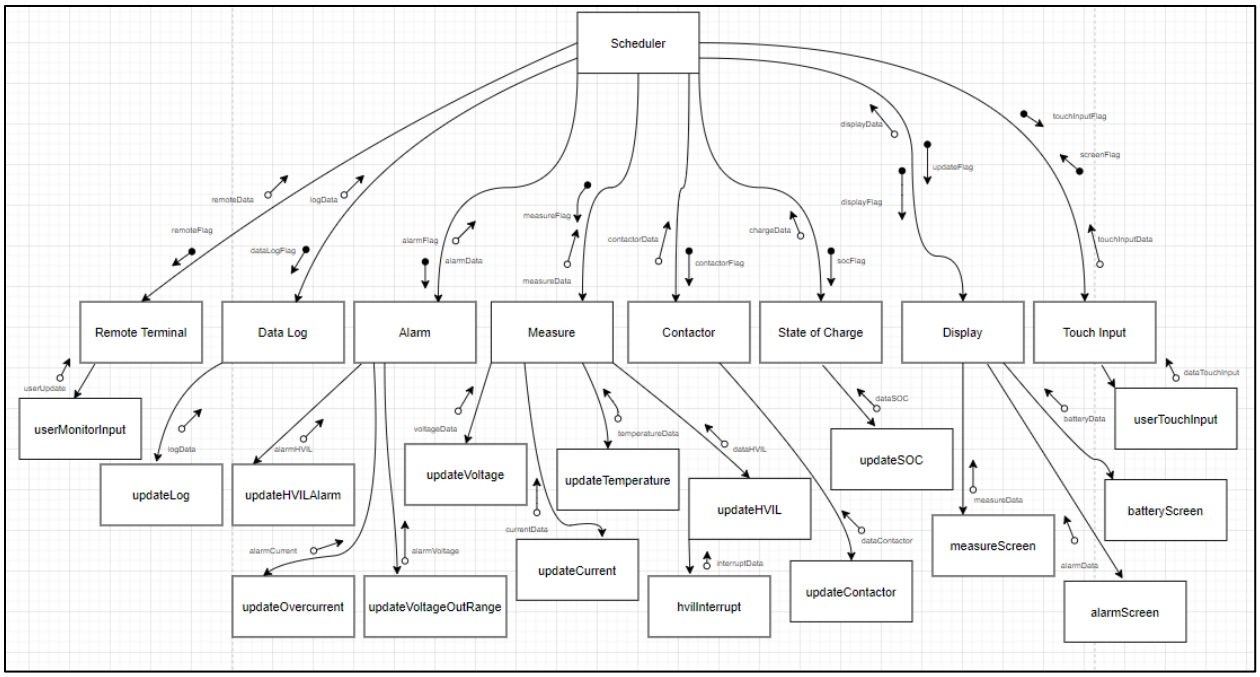

Figure 2: Structure Diagram

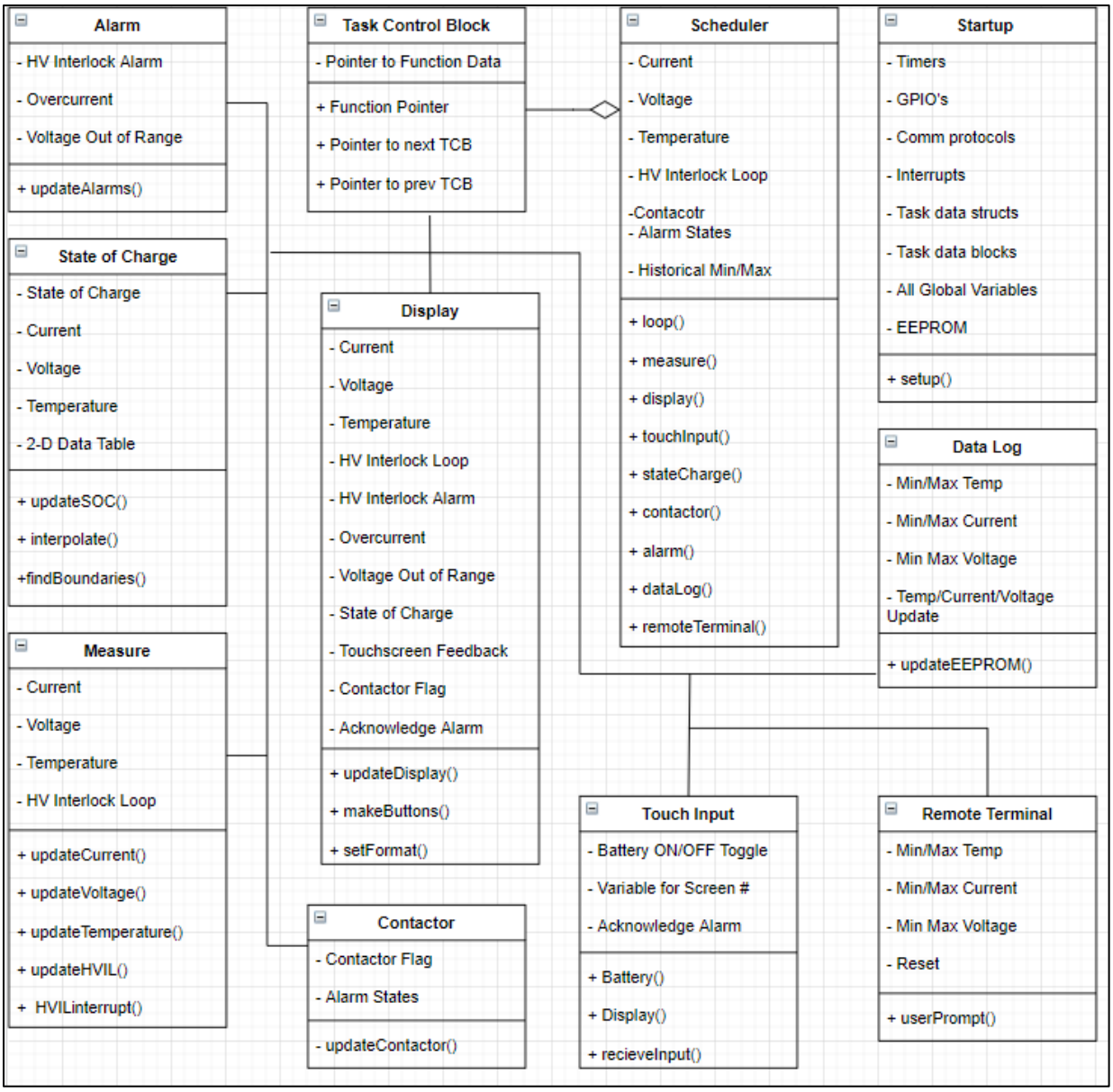

Figure 3: Class Diagram

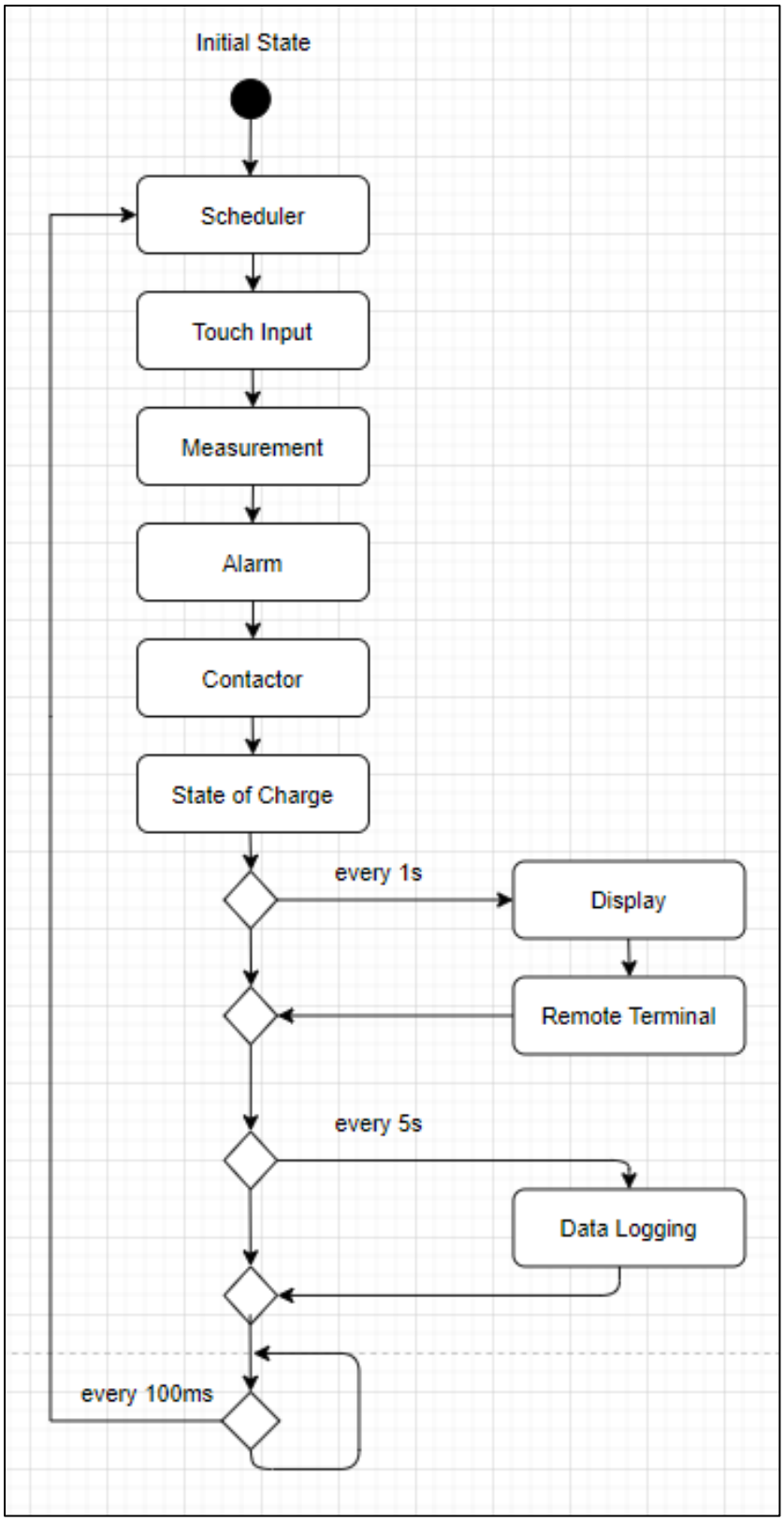

Figure 4: Activity Diagram

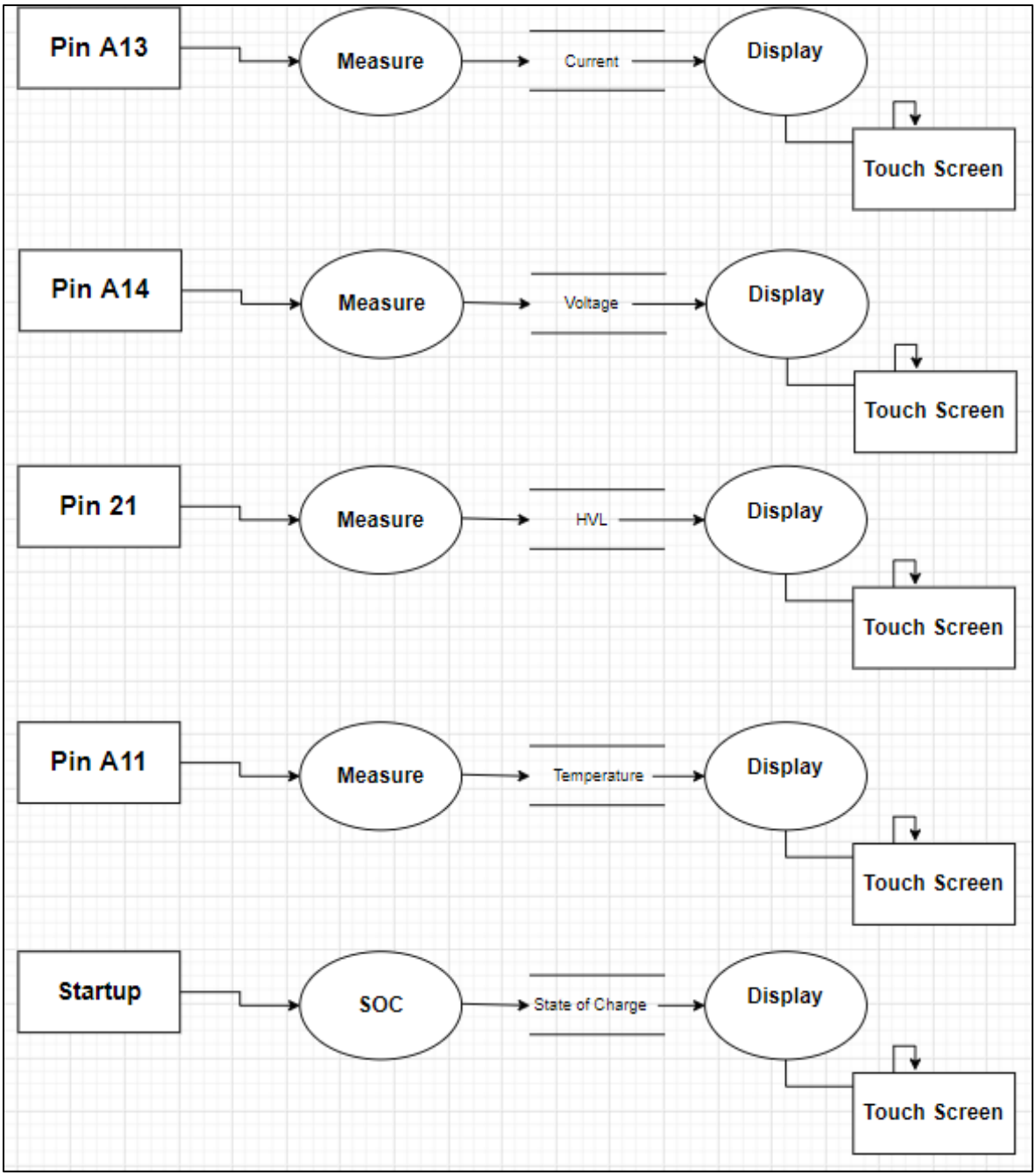

Figure 5: Data Flow Diagram

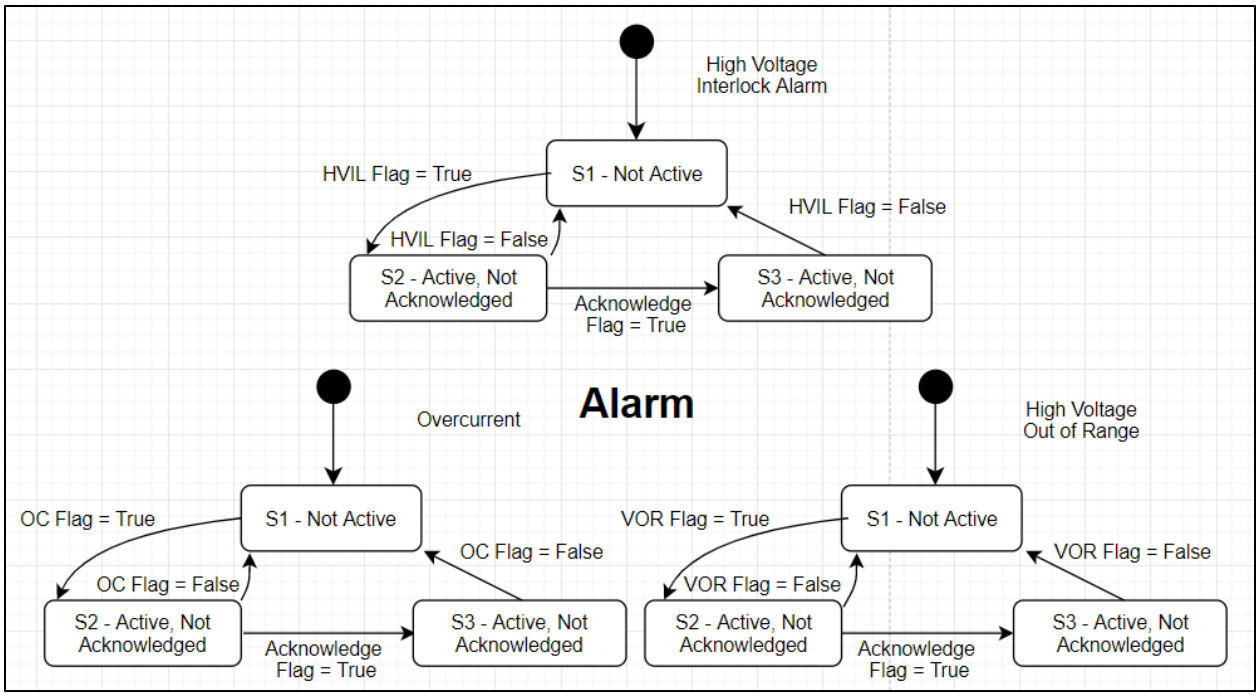

Figure 6: Alarm State Diagram

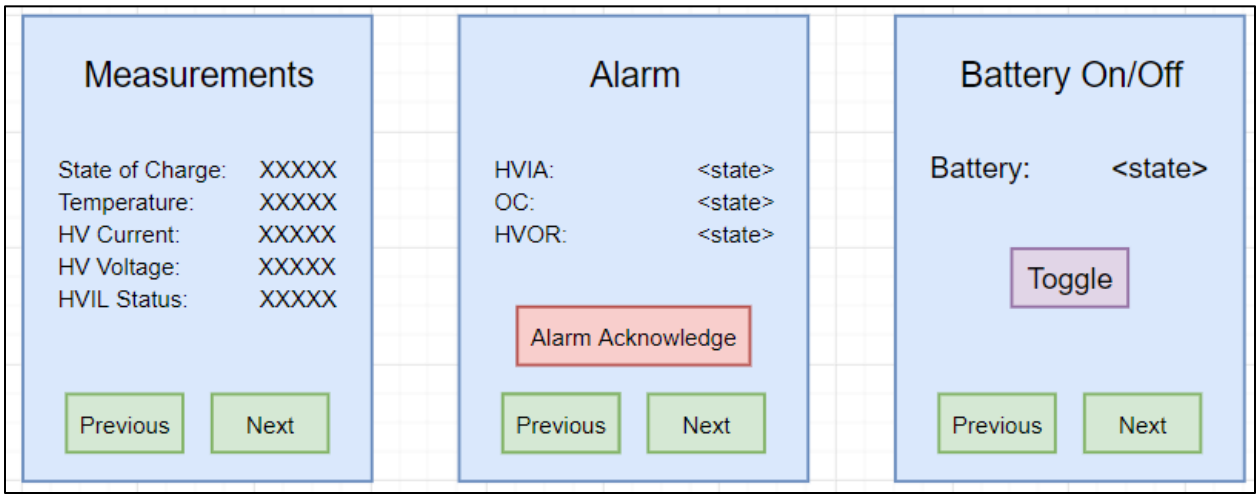

Figure 7: Front Panel Design

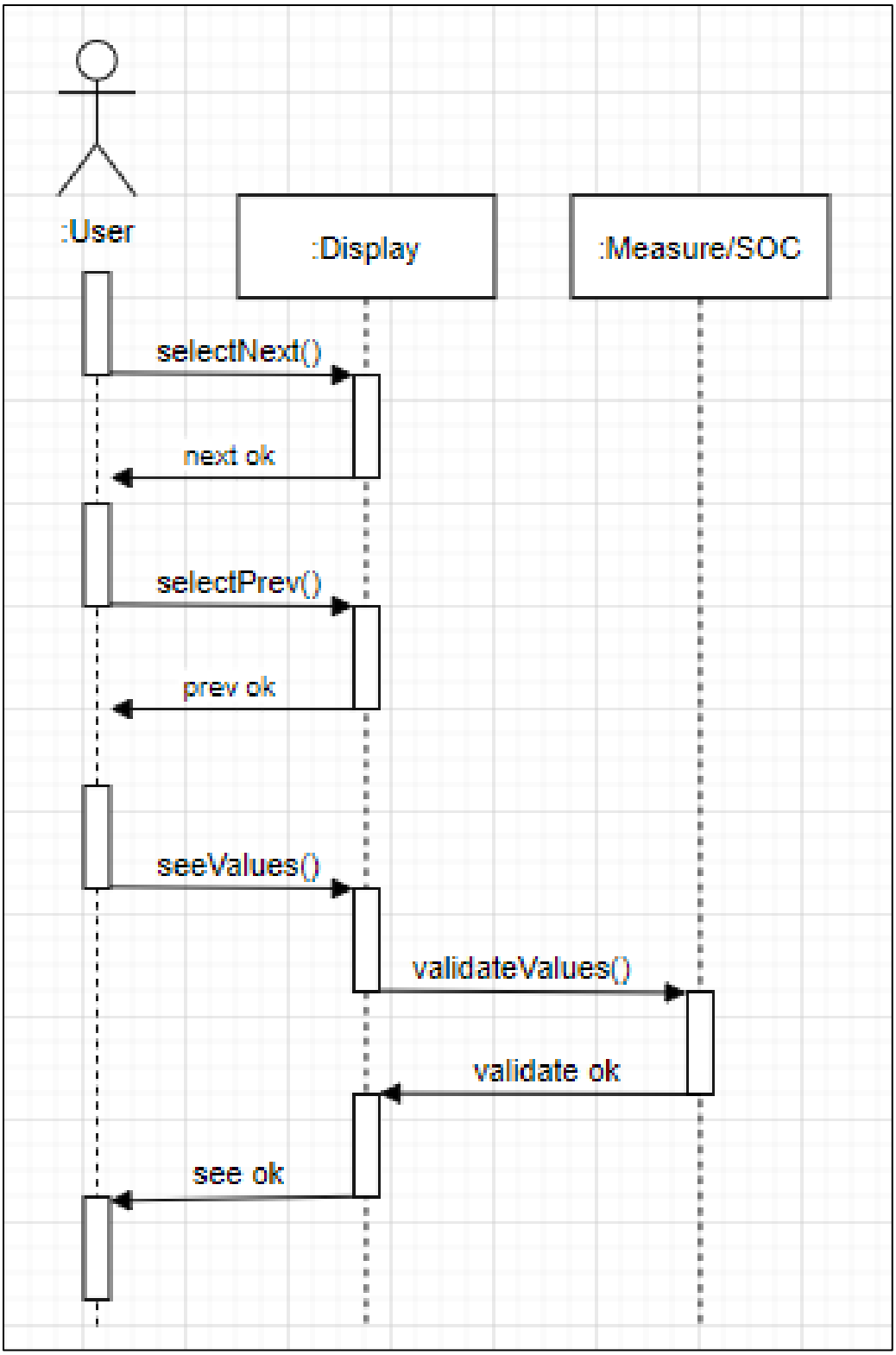

Figure 8: Sequence Diagram for Measurement Screen

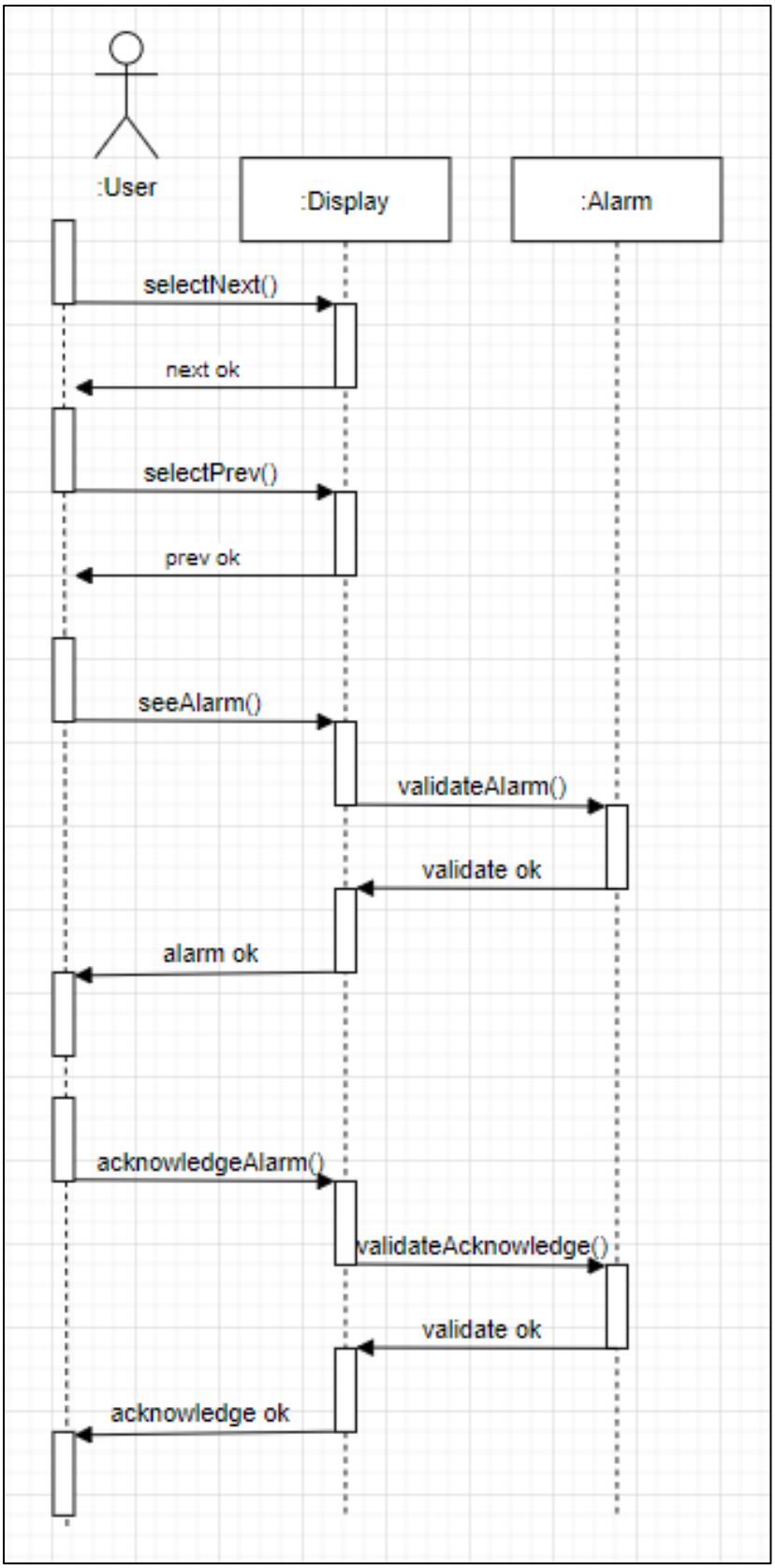

Figure 9: Sequence Diagram for Alarm Screen

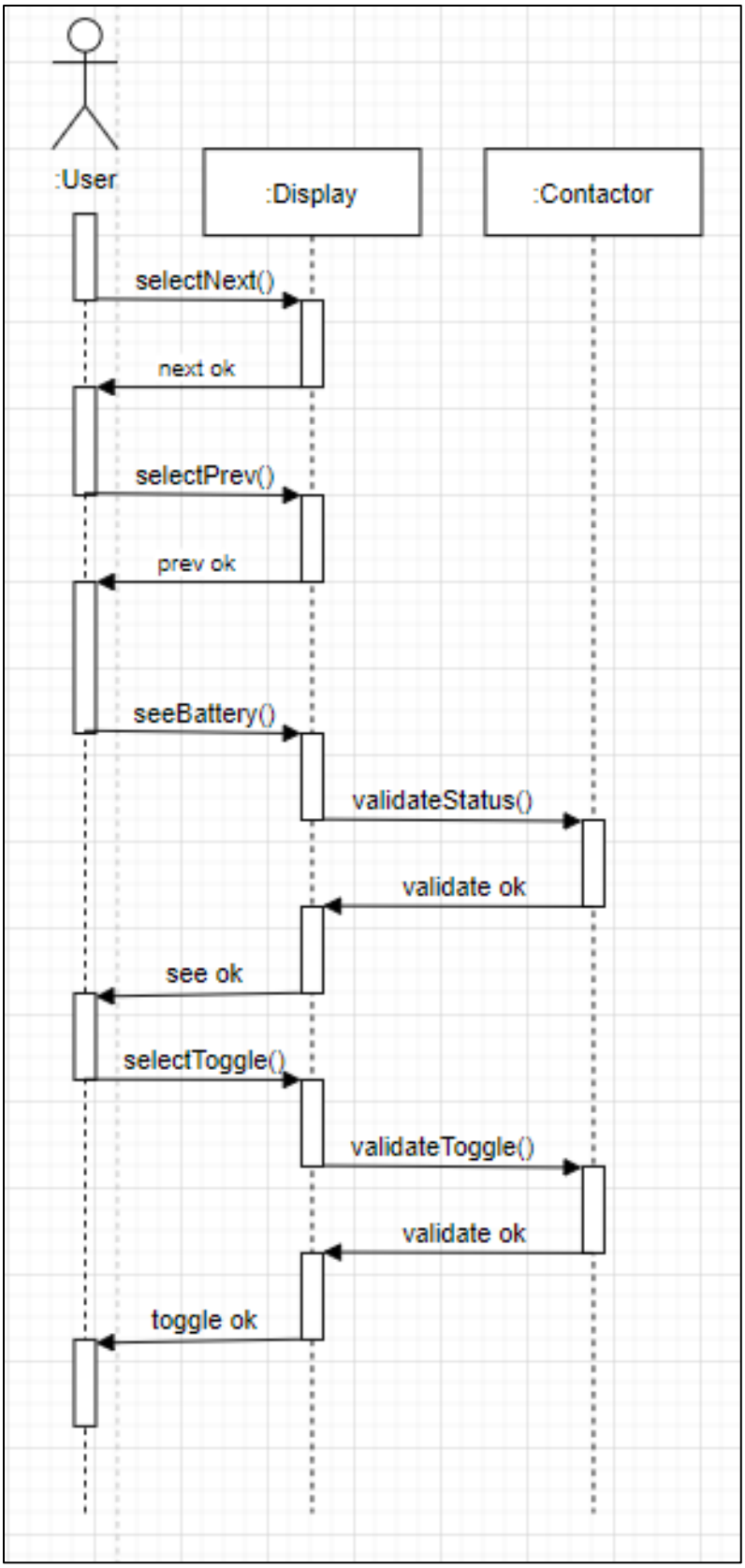

Figure 10: Sequence Diagram for Battery Screen

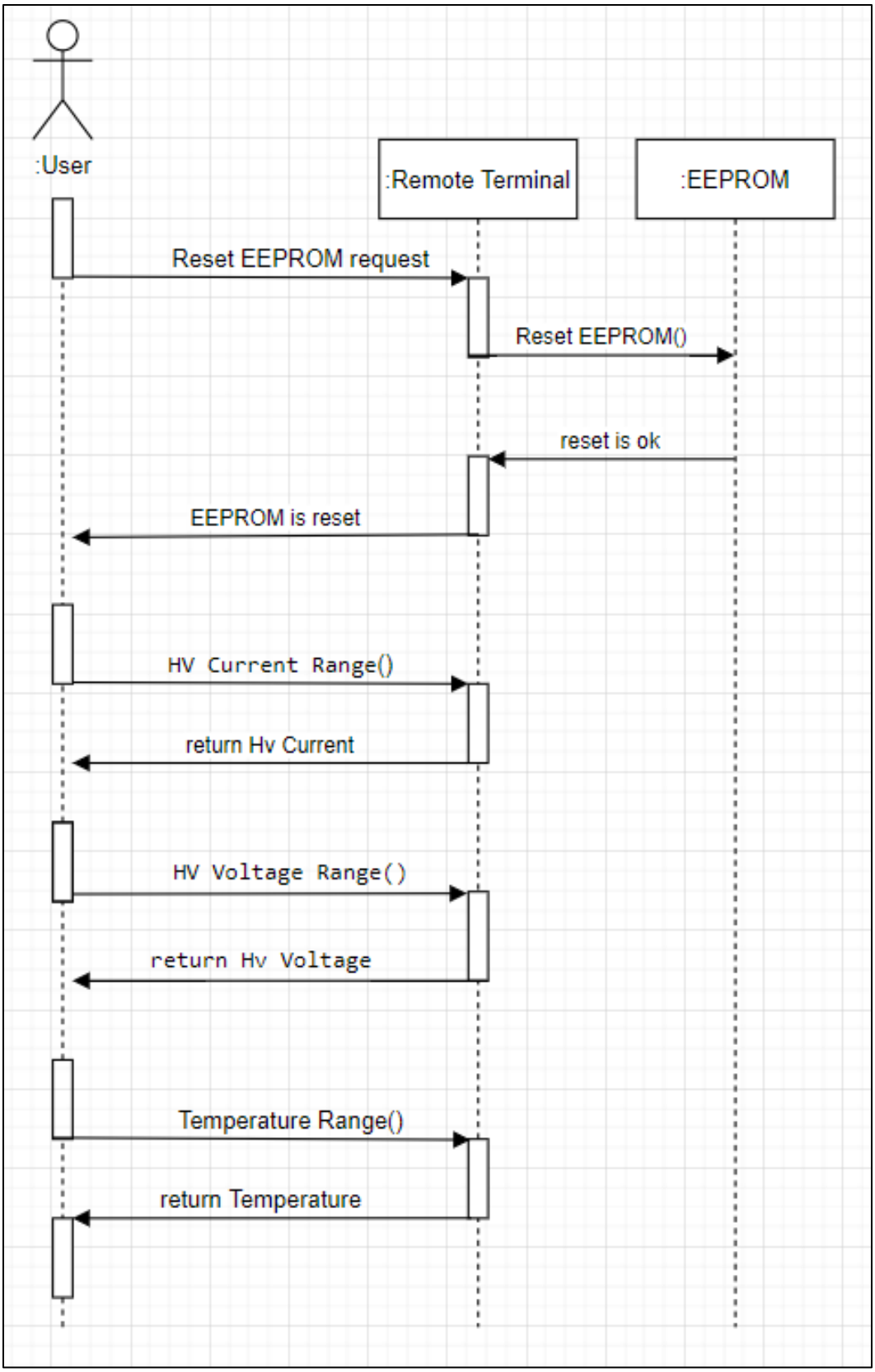

Figure 11: Sequence Diagram for Remote Terminal

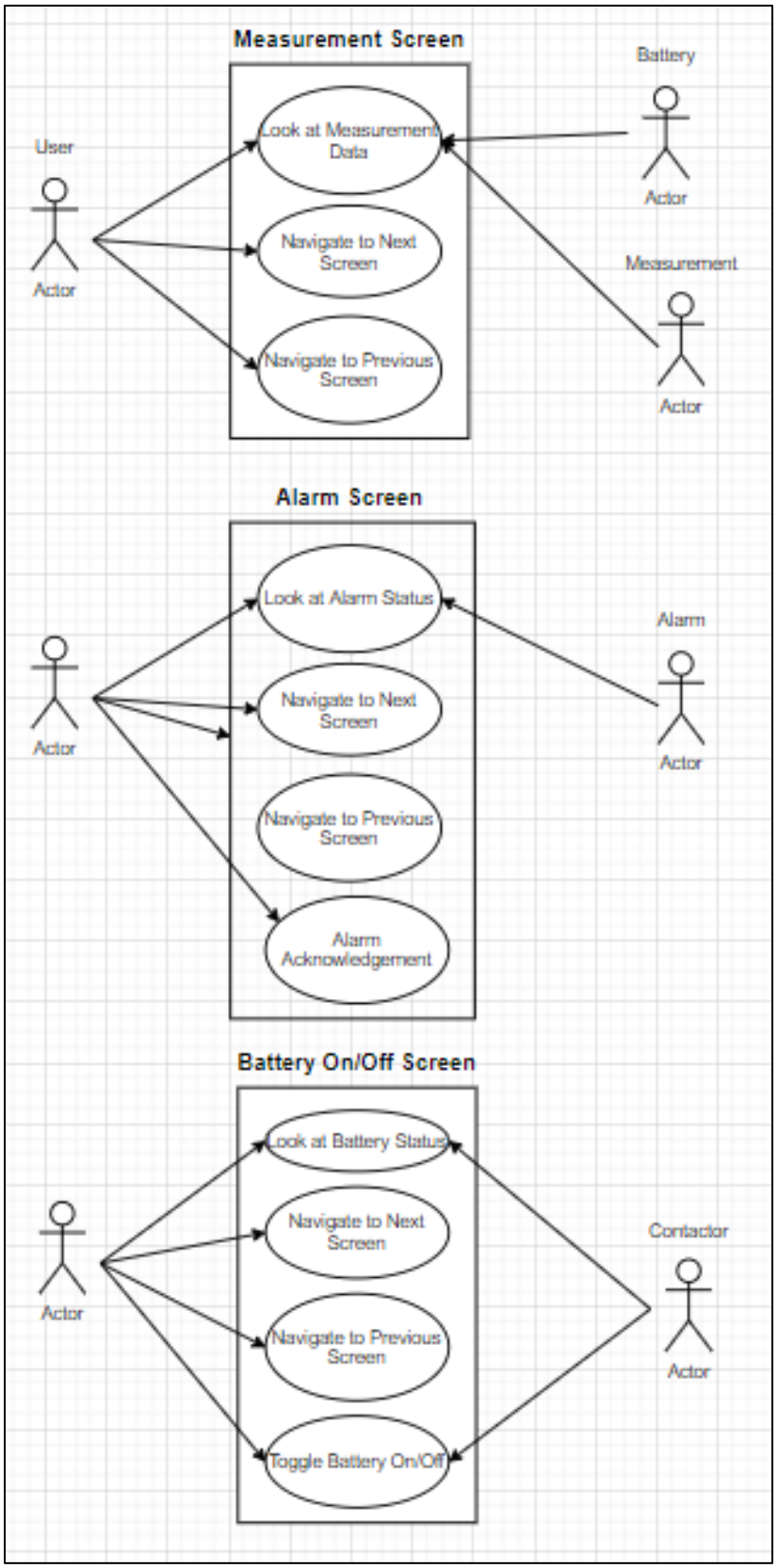

Figure 12: Use Case Diagram for Display

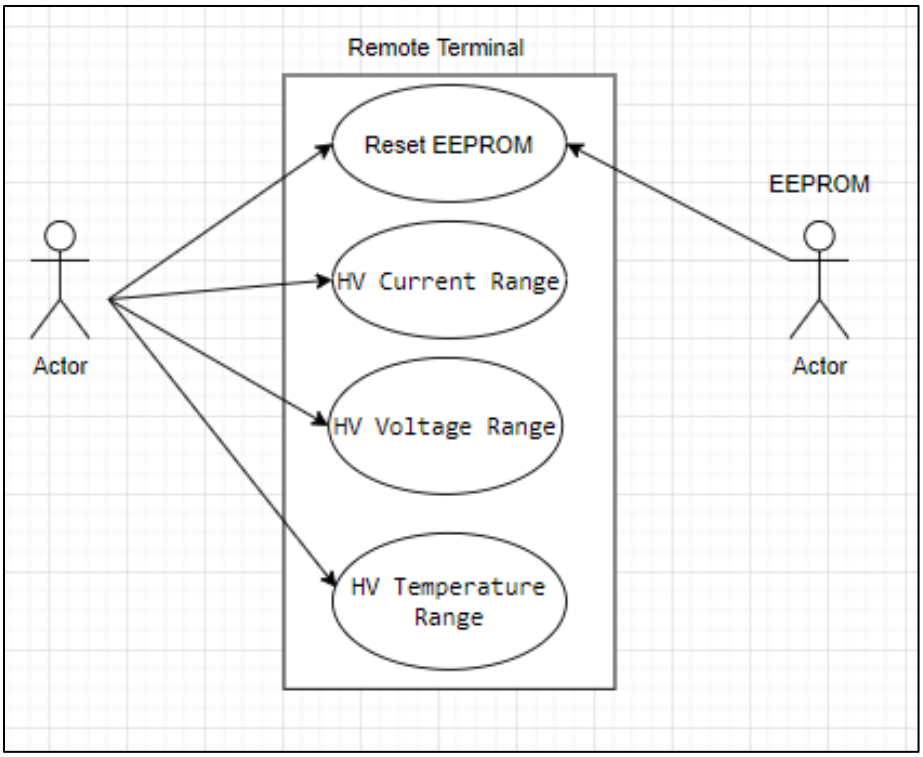

Figure 13: Use Case Diagram for Remote Terminal

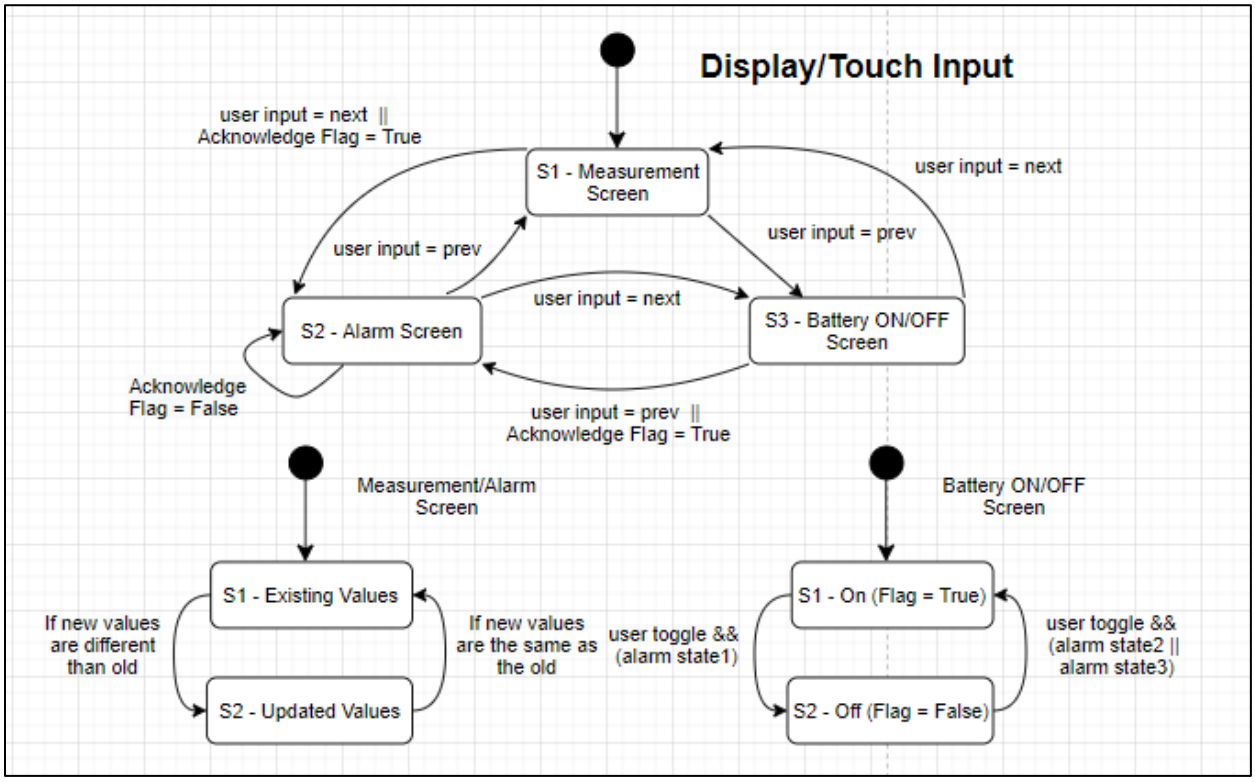

Figure 14: Display and Touch Input State Diagram

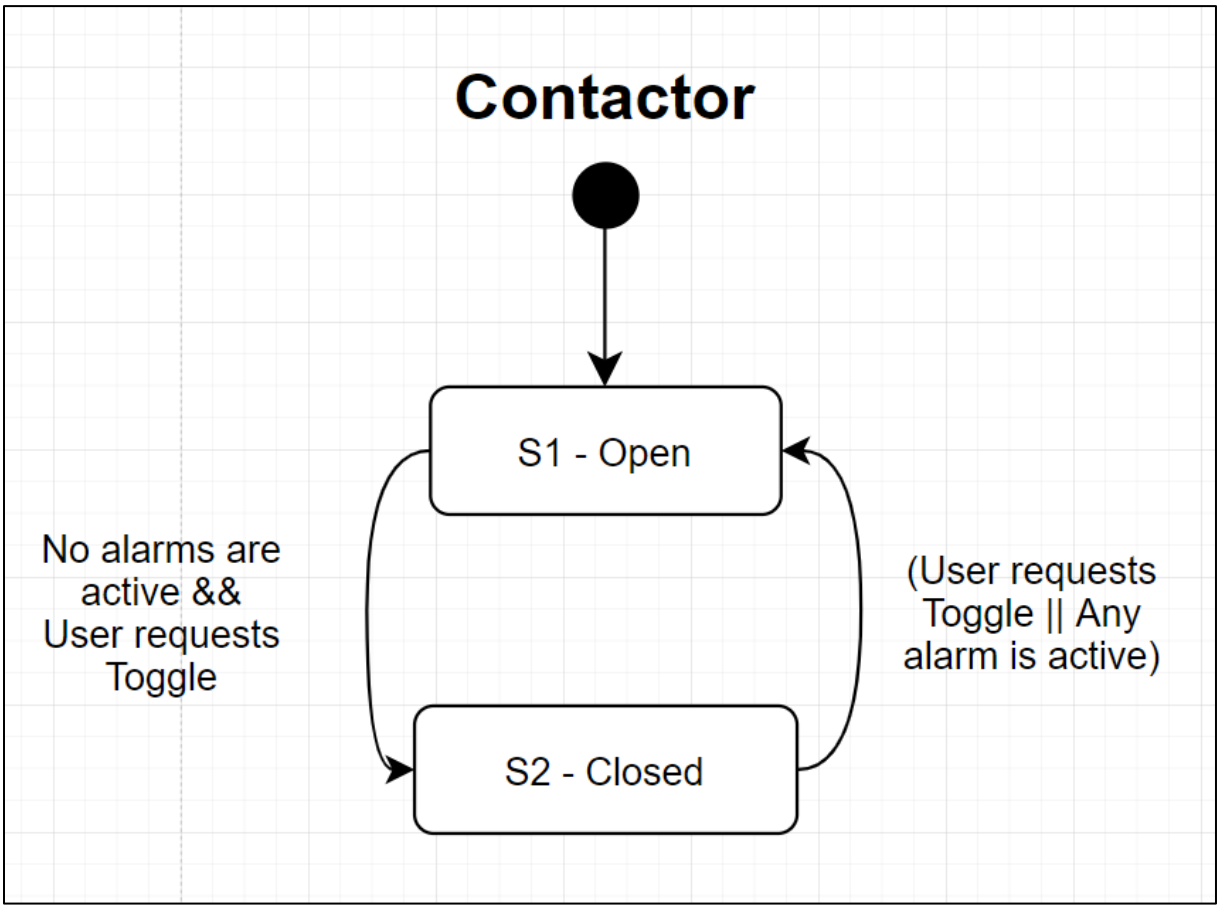

Figure 15: Contactor State Diagram

3.0 APPENDICES

Purpose of each file

Lab4.ino – The main file for the setup and code execution

Alarm.c = Alarm task for updating alarm states and respective flags

Alarm.h – Defines alarm struct and function prototypes

Contactor.c = Toggles contactor state depending on response to touch input and measured variables

Contactor.h Defines the contractor structs and defines the states.

Display.cpp – Displays all the tasks on the screen with appropriate updates

Display.h - Defines the colors, display struct, and the states. Also function prototypes

Measurement.c – Measurement task for receiving inputs from potentiometer and test circuits

Measurement.h – Defines measurement struct and function prototypes

Scheduler.cpp – Inters and deletes from the double linked list holding the TCB tasks.

Scheduler.h – Defines function prototypes

StateOfCharge.c – State of Charge task for updating SOC via 2-D interpolation
StateOfCharge.h – Defines soc struct and function prototypes
TaskControlBlock.h – definitions for TCB struct
TouchInput.cpp – Touch Input task for receiving user input from Elegoo LCD display
TouchInput.h – Defines touch input struct and function prototypes
Terminal. cpp – Receives user input to update/display EEPROM values
Terminal.h – Defines terminal struct and function prototypes
DataLogging.cpp – Updates EEPROM given terminal and measurement flags
DataLogging.h – Defines data log struct and function prototypes