Name: \_\_Replace with your name(s)\_\_\_\_

EID: \_\_Replace with your EID(s)\_\_\_\_\_

Semester: Spring 2024

Course: ECE445L

1. ***Requirements Document:***
2. I have completed the Project Requirements Document at the end of this lab document (Check box if true). ☐

B) ***Objectives*:**

1. In a few sentences, describe the purpose of the lab and the features of your alarm clock.

C) ***Hardware Design Deliverables:***

1. Deliverable 1: Using KiCad, create a schematic or figure showing all external components connected to the TM4C123 board. You do not need to show hardware components on the TM4C123 LaunchPad board.

D) ***Software Design Deliverables:***

1. I have pushed my code to GitHub for grading (Check box if true).
2. Briefly describe the system design. Include a data flow and call graph if your system is different than Figure 3.1 and 3.2.

E) ***Measurement Data:***

1. Deliverable 2: LCD graphic update latency
2. Deliverable 3: 3V3 RMS noise
3. Deliverable 4: Speaker measurements without dampening
4. Deliverable 5: Speaker measurements with dampening
5. Deliverable 6: System current measurement

F) ***Analysis and Discussion Questions:***

1. Give two ways to remove a critical section.
2. What would be the disadvantage of updating the LCD in the background ISR?
3. Did you redraw the entire clock for each output? If so, how could you have redesigned the LCD update to run much faster, and create a lot less flicker? If not, how did you decide which parts to redraw?
4. Assuming the system was battery powered, list three ways you could have saved power.

G) ***Project Requirements Document:***

1. You may copy over the full requirements document from the lab document here if desired. If you choose to copy over text from the starter PRD, you must highlight any changes or additions. At minimum, you must add text for sections II.I and II.V (AKA 2.1 and 2.5).
2. Overview
   1. Objectives: Why are we doing this project? What is the purpose?
   2. Process: How will the project be developed?
   3. Roles and Responsibilities: Who will do what? Who are the clients?
   4. Interactions with Existing Systems: How will it fit in?
   5. Terminology: Define terms used in the document.
   6. Security: How will intellectual property be managed?
3. Function Description
   1. Functionality: What will the system do precisely?
   2. Scope: List the phases and what will be delivered in each phase.
   3. Prototypes: How will intermediate progress be demonstrated?
   4. Performance: Define the measures and describe how they will be determined.
   5. Usability: Describe the interfaces. Be quantitative if possible.
   6. Safety: Explain any safety requirements and how they will be measured.
4. Deliverables
   1. Reports: How will the system be described?
   2. Audits: How will the clients evaluate progress?
   3. Outcomes: What are the deliverables? How do we know when it is done?