

## **Alexander Mote Pomodoro Timer**

### **Executive Project Summary**

This timer is designed to be used for study purposes; the timer detects a device, such as a phone, and counts down for 25 minutes as long as the device is detected. After this, it deactivates its detector and counts down for 5 minutes, allowing the user to use the device during this time. Using an object like a phone requires the user to “sacrifice” their phone to the timer and more easily focus on studying, only using the phone in 5-minute increments and studying for the remainder of the half-hour.

An Arduino Uno was chosen for this project due to prior experience with the device, as well as its built-in power management allowing for a simple 12V DC supply to power the entire circuit. Arduino devices also have a large library of tools that are designed for easy assimilation, such as the LED display and sonic ranger used in this design. Because the timer mode and LED brightness both had three selectable options, two three-position timers were used to allow the user to choose these options.

A “shield” design was chosen for the PCB to allow for easy connectivity between the Arduino and its circuit components. This also allowed for a rather simple introductory PCB design experience, since this was my first foray into doing any kind of CAD work. Similarly, a simple box design was used for the enclosure model, which allowed me to familiarize myself with 3D modeling tools. Unfortunately, both of these designs required more revising and troubleshooting than I was able to provide time for, and would still need one or two more tweaks before I could consider them completed.

One of the biggest lessons I learned on this project was to respect deadlines. Even if a prototype isn’t perfect, it needs to be passed onto the next phase of development so that there is no need to rush the final stages of the design process. A perfect prototype is useless if these final stages cannot be done in a timely manner, and the end result will be a proof of concept that is far less presentable. Another lesson from this project, especially in the age of COVID, is to allow time in the project timeline for manufacturing and shipping hang-ups. On top of my own previously mentioned time mis-management, shipping issues prevented me from testing and iterating on the design at several stages. Overall, this was an engaging project that helped me learn a lot of useful lessons to apply to future design work.