Digital Kitchen Timer

Project Summary
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The digital egg timer project provides a simple means of cooking an egg for a specific duration of time. This particular design focuses on ease of use and reliability. Starting a timer is as simple as turning the device on, turning a knob to select a time duration, and pressing a bright red "start" button. A user-replaceable rechargeable battery and a rugged enclosure ensure that the egg timer lasts significantly longer than most modern consumer electronics.

As a person who enjoys pushing personal boundaries, this project was a difficult exercise in exploring new technologies while simultaneously adhering to a time schedule. The project presented several expected challenges, which I intentionally undertook by choosing certain design decisions. For example, choosing Rust as the programming language meant that I had to learn an entirely new language and work with unfinished hardware access libraries. In return for the extra work, I have gained valuable understanding of a language which may be the future of embedded development. I also faced unexpected challenges, such as the PCB design error which I solved by cutting and rerouting traces. These enabled me to learn the relevant skills, but they also gave me an opportunity to improve my handling of unexpected situations.

I also learned a variety of more specific lessons. The most important of these was the idea that I should always attach as much microcontroller I/O as I can to various parts of the device. This is simple and inexpensive, and potentially allows turning a hardware problem into a software problem further down the line.

Timer Project Gantt Chart

Task Name	Phases									
	Design					Assembly	Testing	Finalizing		
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
Circuit Design		▮	↓							
PCB Design			▮	↓						
Waiting for PCB				▮		↓				
Assembly						▮	↓			
Verification						↑	▮	↓		
Troubleshooting						│		▮		
Programming				▮	▮	↑				
Case Design						↑				
Case Manufacture						↑				
Reordering PCB if something goes wrong						▮	▮	▮		
Report Writing									▮	▮