

PILL PUSHER

PRESENTED BY ROBOTOMY

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Problem Statement

Given the numerous amount of things that one has to remember on a day-to-day basis, it can be extremely easy to forget to take daily medications, as well as whether or not you actually have taken them.

Problem Context

For decades, many individuals have relied on various forms of medication organization and preparation, such as the classic pill organizer capsules that can be found in grocery and drug stores. These work well to organize what needs to be taken on a certain day, but take a lot of time to setup and manually fill.

There is an additional level of care given to those working to care for the elderly, or otherwise at risk, since daily medication is critical to their well-being. Devices in this sector have the additional aspect of making sure to add in timing features, rather than giving direct access to medication, since hoarding, or overuse could easily occur [2].

With the implementation of household technologies, there are some different automatic dispensers of which have been made, including the Hero Health Dispenser which uses a steeply priced subscription model for its services [1]. While this isn't the only model, the others on the market have a much less user-friendly structure, and present various potential pain points which are not ideal.

Initial project Statement and Critical Features

To rectify the problems stated, our team will create The Pill Pusher. It will be an all-in-one security and dispensing unit to help you keep on top of your medication.

Feature 1: User Set Timer

The main feature to track when to dispense your pill will be a built-in timer with user input. There will be a way to set the timer to a specific hour and minute. As well as a separate button to initiate the pill countdown. This way the user can precisely set when they need to take their pill.

Feature 2: Liquid Crystal Display (LCD) Screen

The countdown will be displayed on an LCD screen so the user can clearly keep track of the timer.

Feature 3: Buzzer

When the timer is finished, a buzzer will sound to audibly alert the user that it is time to take their pill.

Feature 4: Radio Frequency Identification (RFID) Security & Timer Lock

To dispense their medication the user can scan the RFID tag. This RFID security step will be important to make sure that only the person who needs to take the pill will be able to access the medication. To ensure that people are not overtaking their medication there will be a timer lock so that while the timer is going the pill will not dispense.

Feature 5: Mechanical Dispensary

Finally, the system will mechanically output the pill to the user for them to take.

With The Pill Pusher users will be able to effortlessly keep track and manage their medication. Allowing for better recovery from surgeries or simply a more organized day to day.

Block Diagram

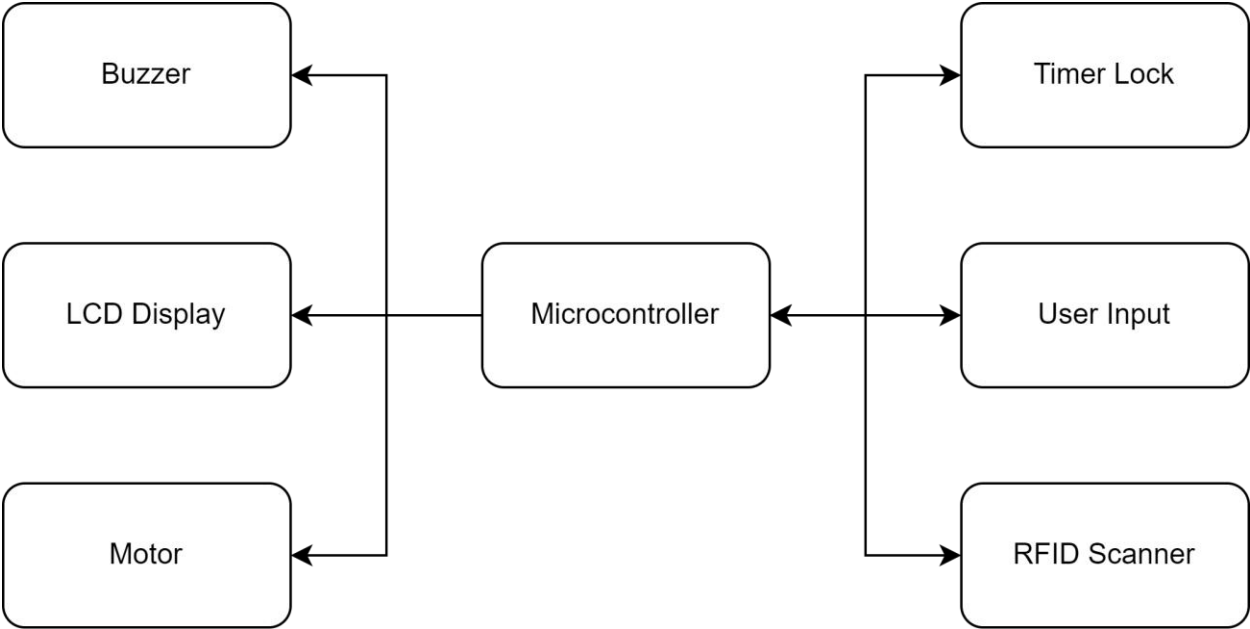


Fig. 1. Figure displaying our microcontroller interfacing with our components. There are two types of components: output components and input components. The Buzzer, LCD Display, and Motor do not pass information back to the microcontroller, so they are output components. User input and the RFID Scanner do pass information back to the microcontroller, so they are input components. The activity of these components is determined by the timer lock (which is why it is also considered an input component).

Bibliography

- [1] “Hero - A dose of calm for the whole family,” *Hero*, 2020. https://herohealth.com/our-product/?utm_source=shareasale&utm_medium=affiliate&sscid=41k9_b5phv&utm_campaign=1273286_1355762 (accessed Apr. 9, 2025).
- [2] “Medication Management Guide: 10 Tips for Seniors,” *www.aplaceformom.com*. <https://www.aplaceformom.com/caregiver-resources/articles/medication-management> (accessed Apr. 9, 2025).