

DR. PILL

Automatic Pill Dispenser

TEAM & ROLES



Jonathan
Cerniaz

- Power Supply
& Regulation



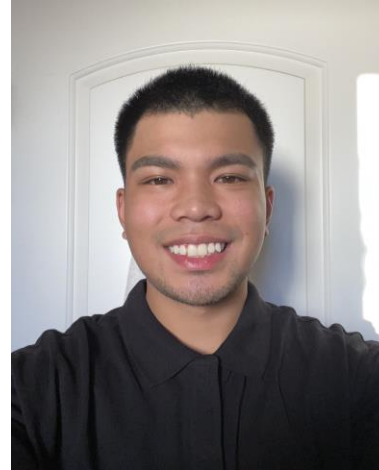
Jehmel
Espiritu

- Software
Development
of Interface



Jeremy
Espiritu

- Software
Development
of Interface



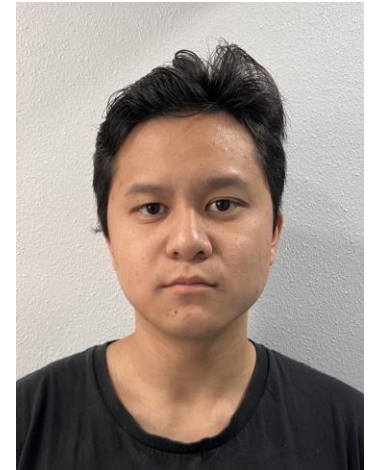
Joseph
Guzman

- 3D Designing
and Motor
Testing for
dispense
mechanism



Afzal
Hakim

- Log tracking
and Security



Lee Roger
Ordinario

- Pill Storage
System and
Organization



EXECUTIVE SUMMARY

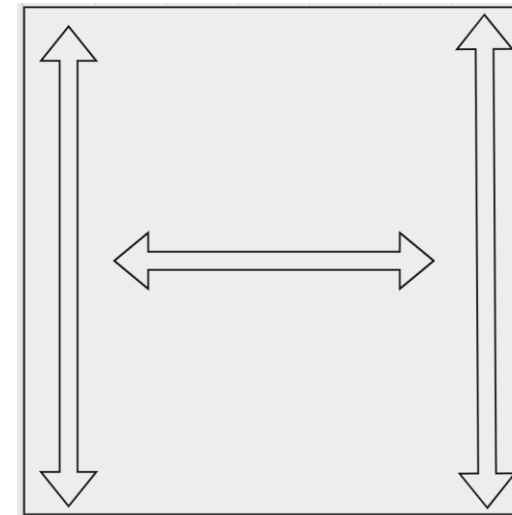
Dr. Pill is an automatic pill dispenser that simplifies medication management. Our device aims to facilitate the process by freeing up more time for doctors and allowing patients to take their medication accurately by eliminating the common issue of medication errors and missed dosages. Designated for pharmacies, nursing homes, personal households.



DISPENSE MECHANISM

Features

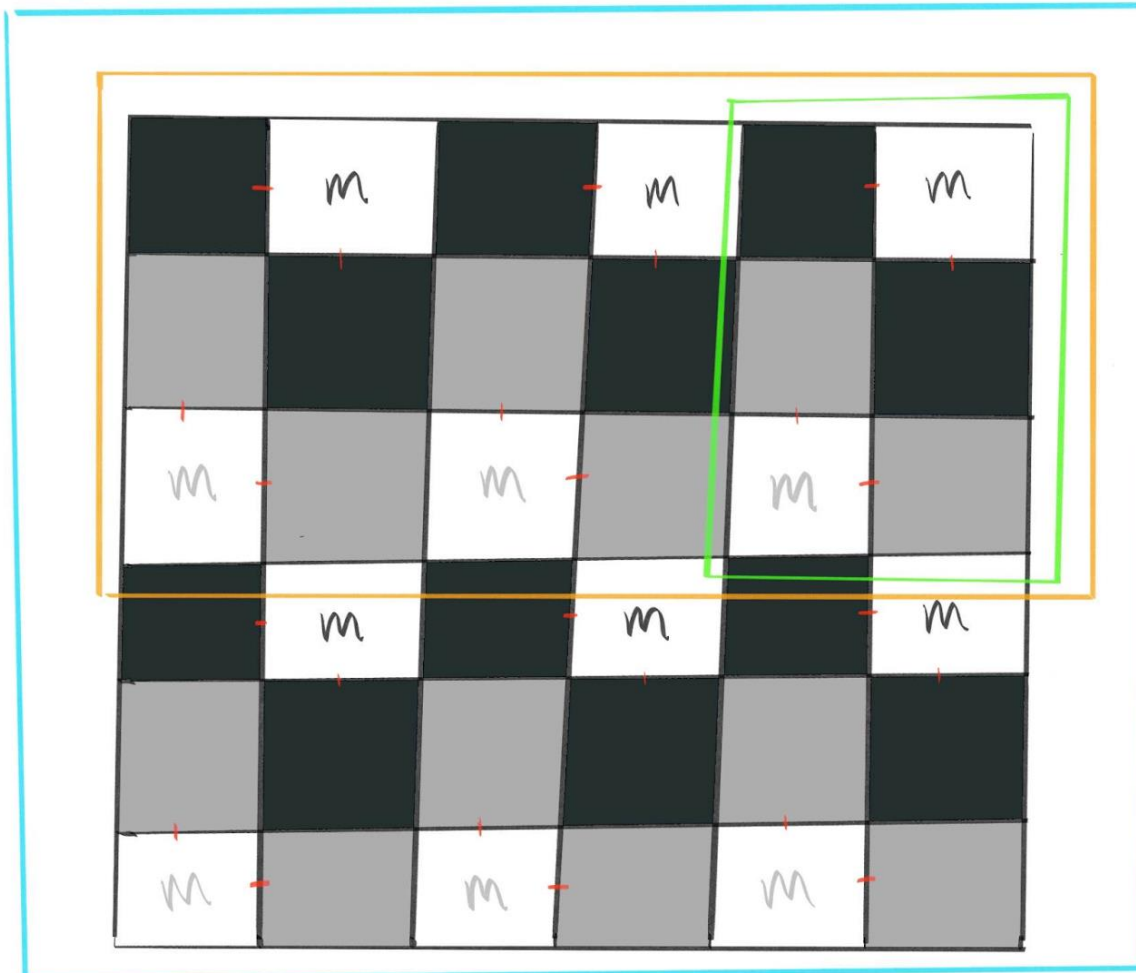
- Two Modes: Refill and On-demand
 - Refill: continuous dispensing of multiple pills of the same type
 - On-demand: Needed number of dosage dispensed at scheduled time
- Object Recognition
 - To verify pill characteristics (color, size, pill shape, markings)
- Loading Mechanism for Grid
 - Use of Clear Prescription Bottles for visibility
 - Cross-contamination Prevention



GRID SYSTEM

Storage Pattern

- In order to conserve space, we will be organizing the storage compartments and motors into a grid.
- Under the storage, we will be using a set of motors to move a cup to the compartment of the pill being dispensed.
- This shape allows us to scale the up the design easier.



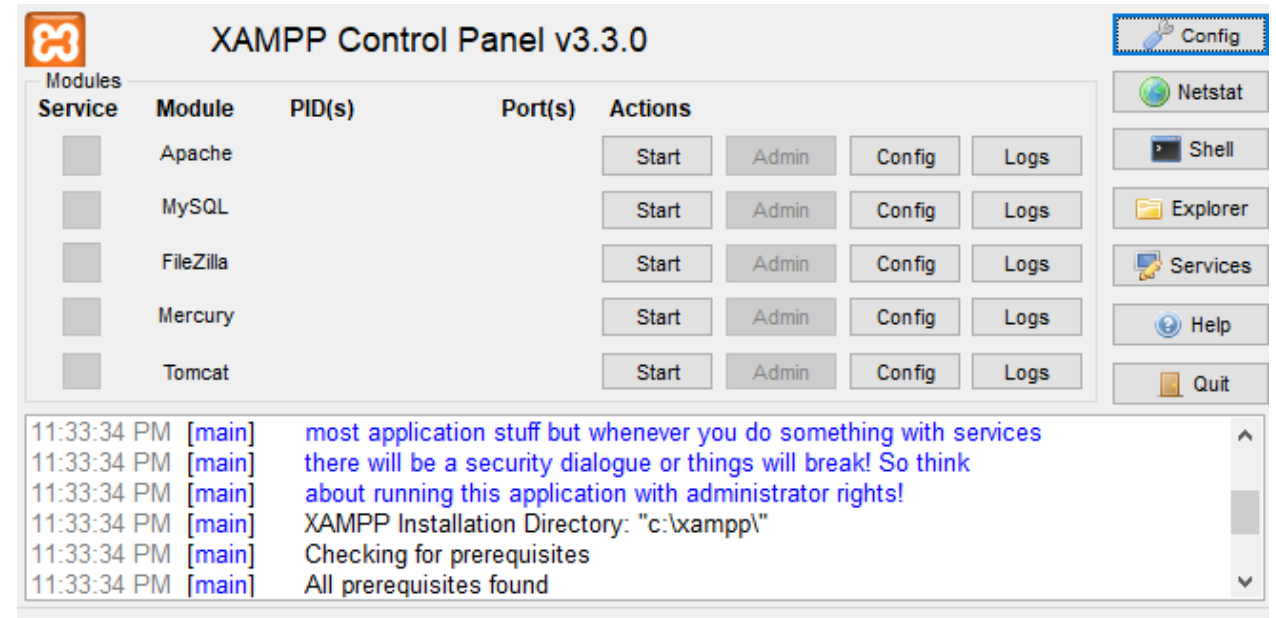
- 1st Milestone
 - 2 motors
 - 4 pills
- 2nd Milestone
 - 6 motors
 - 12 pills
- Last Milestone
 - 12 motors
 - 24 pills



XAMPP



- **MySQL Database:** We use this to store and manage logs such as user login activity and pill requests.
- **Apache Server:** This serves as the web server to handle user requests and process PHP scripts.





MYSQL DATABASE

```
1 • ⊖ CREATE TABLE UserActivityLog (  
2     ID INT PRIMARY KEY AUTO_INCREMENT,  
3     Name VARCHAR(255) NOT NULL,  
4     LoggedInTime TIME NOT NULL,  
5     LoggedInDate DATE NOT NULL,  
6     LoginMethod VARCHAR(100) NOT NULL,  
7     PillRequested VARCHAR(255),  
8     PillDeliveryStatus VARCHAR(50)  
9 );
```

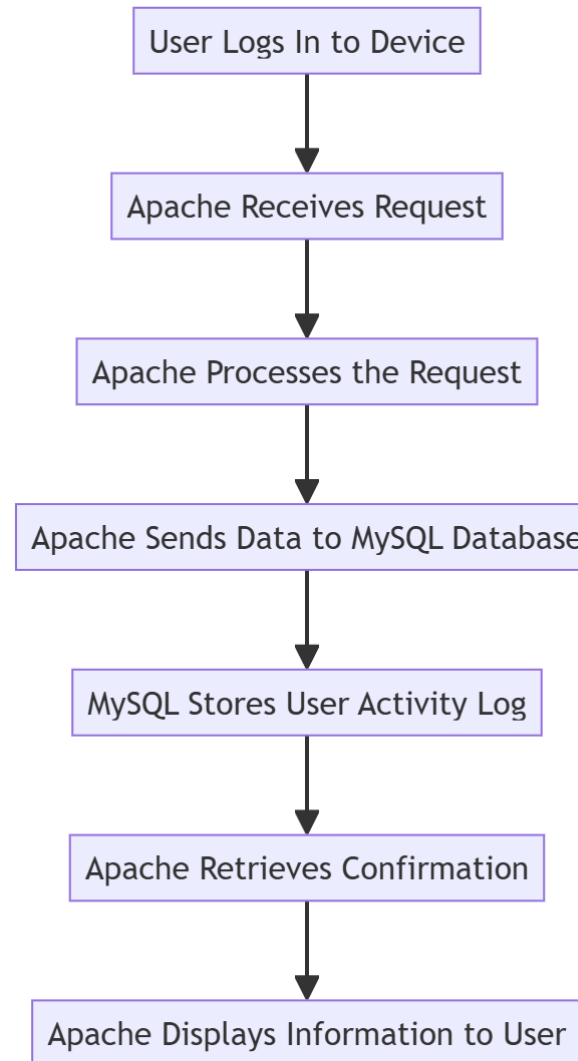
Example code showing how the table columns for storing the data will be structured.



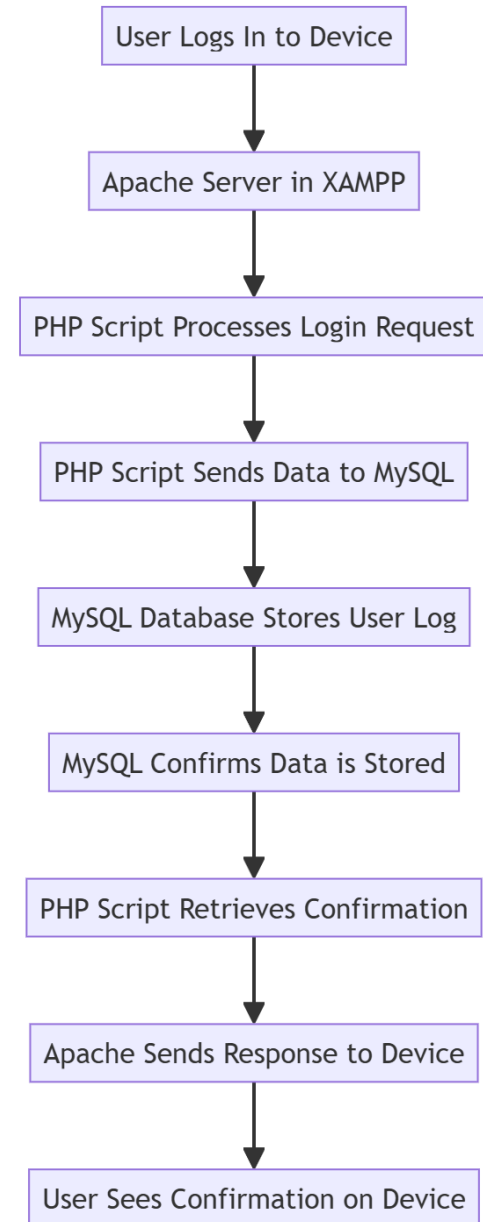
APACHE



- When a request is made for a PHP file, Apache processes the PHP code through the PHP interpreter in XAMPP and sends the output back to the device.



SIMPLE FLOWCHART OF LOG TRACKING



INTERFACE

Features

- User Authentication: uses MySQL database for secure login and credential storage
- MySQL Database Integration: Central for storing user data, patient records, staff actions and logs
- Permission checks: ensure secure, authorized actions
- Guidance Prompts: if patient is denied, directs them to seek assistance with logs recorded

Staff/Patient Input

- Staff Input
 - Storage Management: Check and update inventory
 - Patient Management: Add/remove patient records
 - Logs Management: View history data
 - Medication Retrieval: staff can retrieve medication, with actions logged onto the database
- Patient Input
 - Medication Retrieval: Permission-based access, logged onto the database
 - View History log: Patients access personal logs

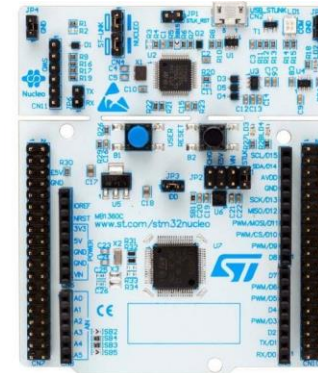
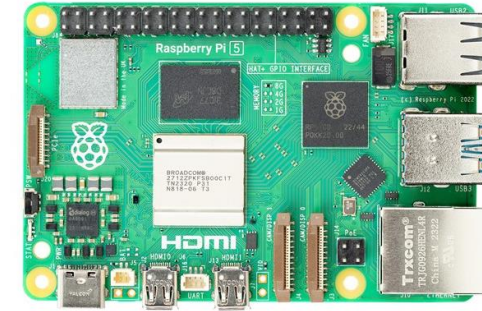


POWER

Main Components Power Consumption:

- Raspberry Pi 5: ~8W
- STM32 Microcontroller: ~0.1W
- Authentication Devices:
 - Fingerprint Scanner: ~0.2W
 - Facial Recognition: ~0.5W
 - PIN Entry System: ~0.05W
- 7" LCD Touchscreen Display: ~3W
- Motors: ~50W
- pixy2 smart vision sensor: ~1W

Total Estimate: ~62.85W



PROGRESS

What was planned but not accomplished?

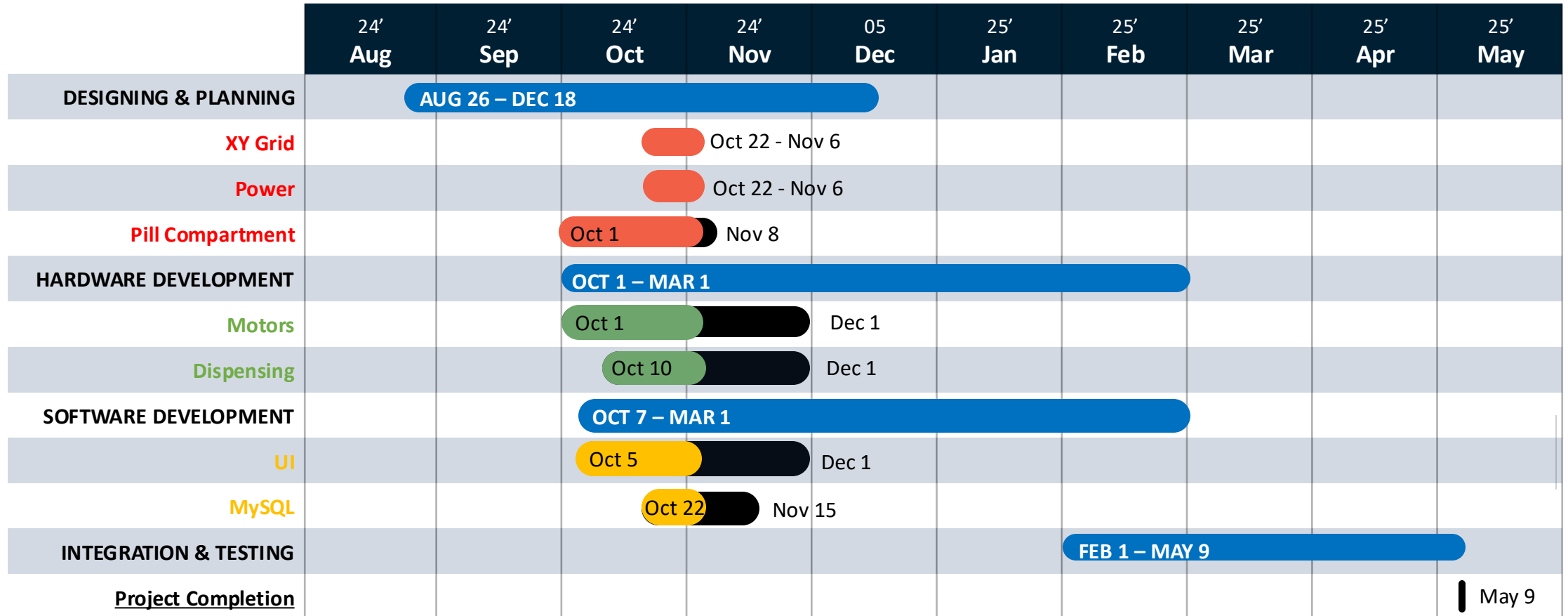
- Grid System for retrieving pills from storage
- MySQL Database for tracking logs
- Apache Server to handle user request and process PHP scripts
- Physical 3D print of our dispense mechanism

What was planned and accomplished?

- Object recognition for identification of pills as well as the placement for the device
- Circuit management and power consumption
- Software development for our dispensing mechanism
- Develop a user interface for patients and authorized personnel



TIMELINE



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THANK YOU

