IMAGES OF PROJECT AND PROJECT TOOLS

DETAILS OF THE DESIGN

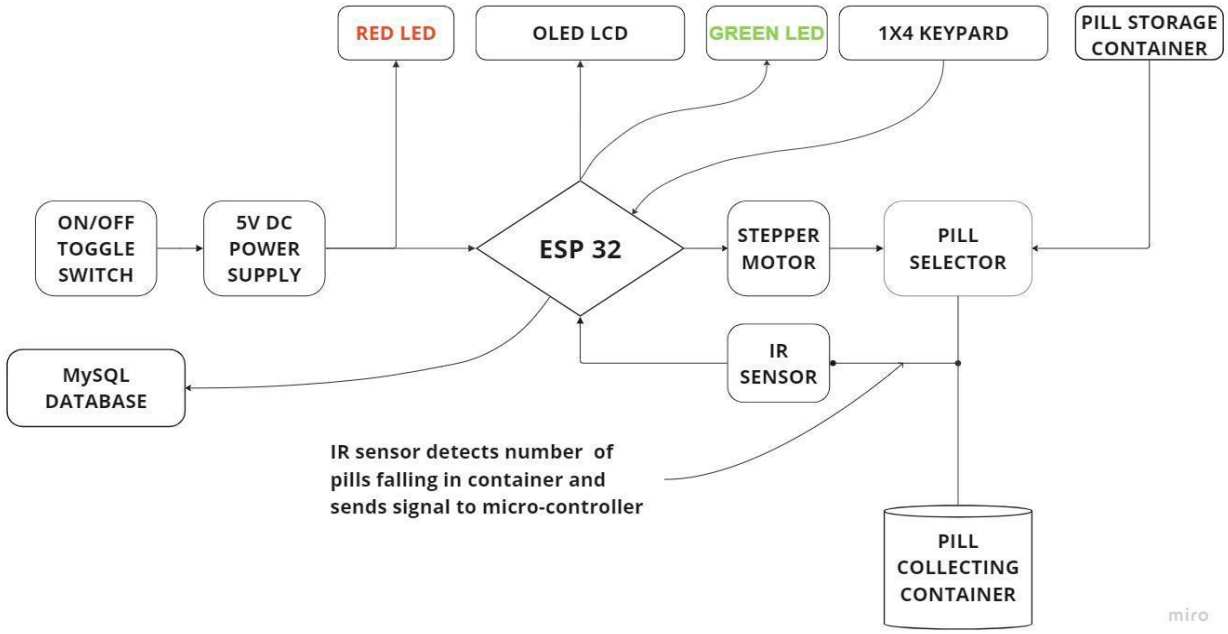

Figure 1: Systems Block Diagram

Figure 2: Pill Selector Cup

Figure 3: Rotatable Base

Figure 4: Two Compartments

Figure 5: Divider

Figure 6: Pill selector with Pills

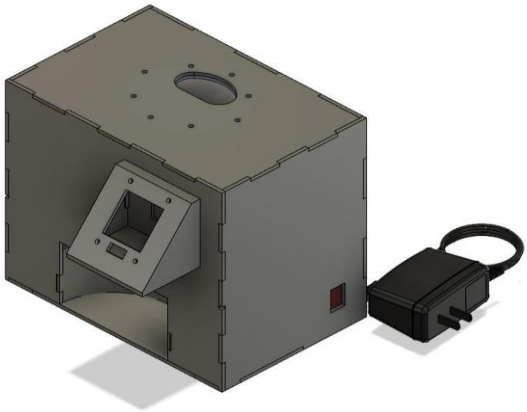

Figure 7:3D design

Figure 8: Final Design

DETAILS OF THE COMPONENTS USED

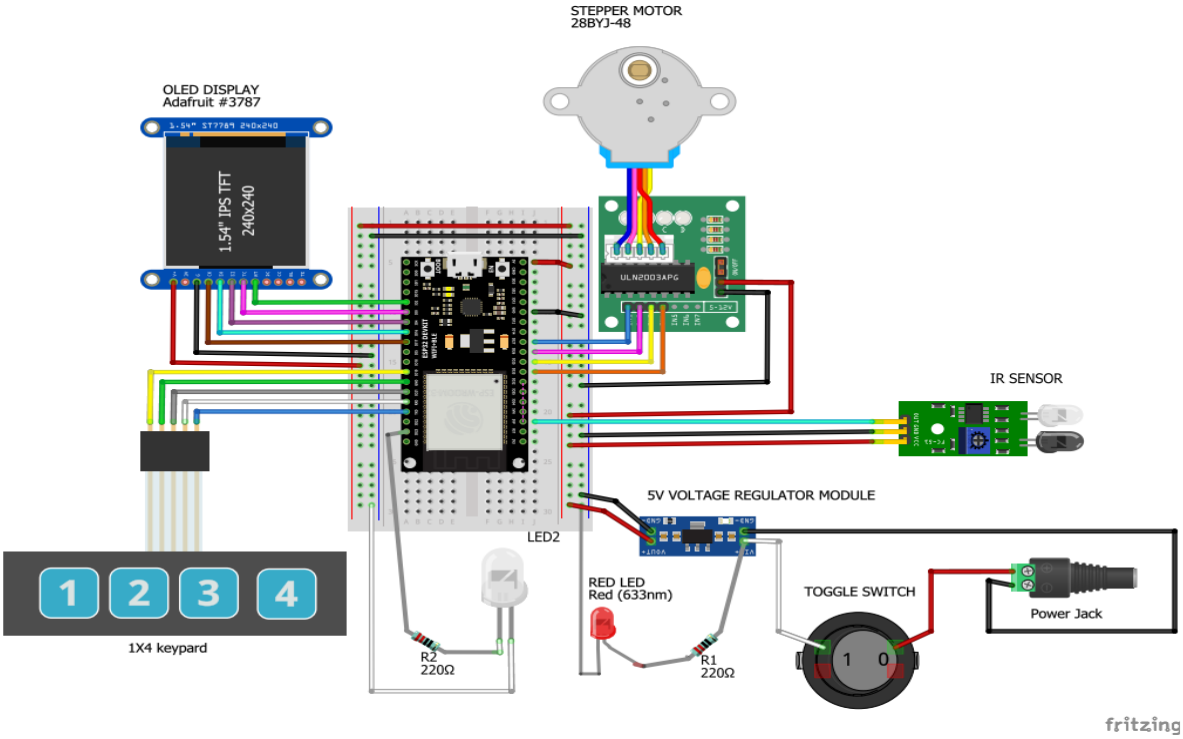

Figure 9: Circuit Diagram

ESP32

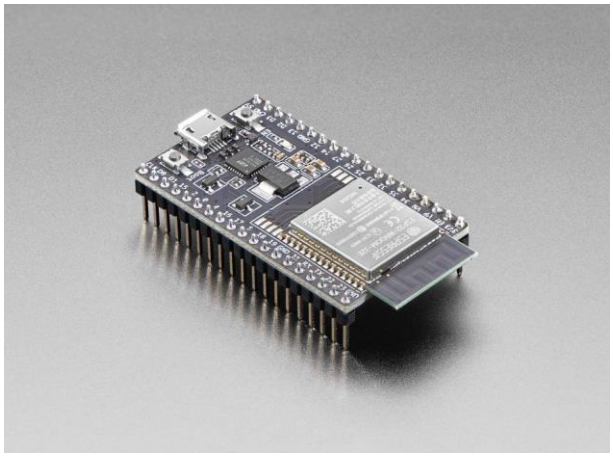

Figure 10: ESP32

The ESP32 was in charge of the screen, which allowed users to choose the name of the pills they wanted to count, the number of pills they wanted to count, and the number of pills counted. It then received data from the infrared sensor, which was in charge of counting the pills as they passed by. It is also connected to the database, allowing it to send the number of pills counted as well as the name of the pill counted to the database. Finally, the ESP32 controlled the motor, allowing for more precise pill dispensing when needed.

ULN200328BYJ 5V STEPPER MOTOR AND DRIVER

Figure 11: Stepper Motor and Driver

The stepper motor was used to rotate the pill selector disc, which was used to hook a pill, and as the disc rotates and aligns with the outlet, the pill drops. Where it goes to the IR to be counted. This motor is 15 revs/min, which is slow.

IR SENSOR

Figure 12:IR sensor

The IR sensor was the sensor that controlled the counting mechanism. The sensor has the capability to detect an obstruction passing in front of it using an infrared signal. It has a transmitter and a receiver. When the IR transmitter emits radiation, when it reaches the object in this case, which is the pill, some of the radiation reflects back to the IR receiver. Based on the intensity of the reception by the IR receiver, the output of the sensor is defined.

OLED DISPLAY

Figure 13: OLED Display

The display has three pages; the first page allows the user to choose the name of the pill, the second

page allows the user to input the number of pills the users would like to count and the third page displays the total number of pills counted.

1X4 MEMBRANE KEYPAD

Figure 14:1X4 Membrane Keypad

The keypad was used to support the screen for input from the user. Key number 1 was incrementing the number of pills to count and was an up button for selecting pills, and key 2 was decreasing the number of pills and was a down button for selecting pills. Key 3 was used as an enter button. Key 4 was used as a reset button.

12V POWER SUPPLY ADAPTER

The power supply was supplying 12V DC voltage from 240V AC voltage. This is the voltage that was fed to the voltage regulator module to step down to 5V for powering the components. This was done in order to reduce excessive heat emitted from dropping 240V to 5V DC directly.

VOLTAGE REGULATOR MODULE

Figure 15: Voltage Regulator Module

The 12V power adapter was feeding 12V to the voltage regulator module, which steps down the voltage to 5V and the current to 1A. This is used to power the ESP32.

4.2.8 TOGGLE SWITCH, RED LED, GREEN LED

The toggle switch is used to switch on or off the circuit, and the feedback is shown by the red LED: if the system is powered, then the red LED is on, and if switched off, the red LED also switches off. The green LED gives feedback to the user that the counting process is complete.