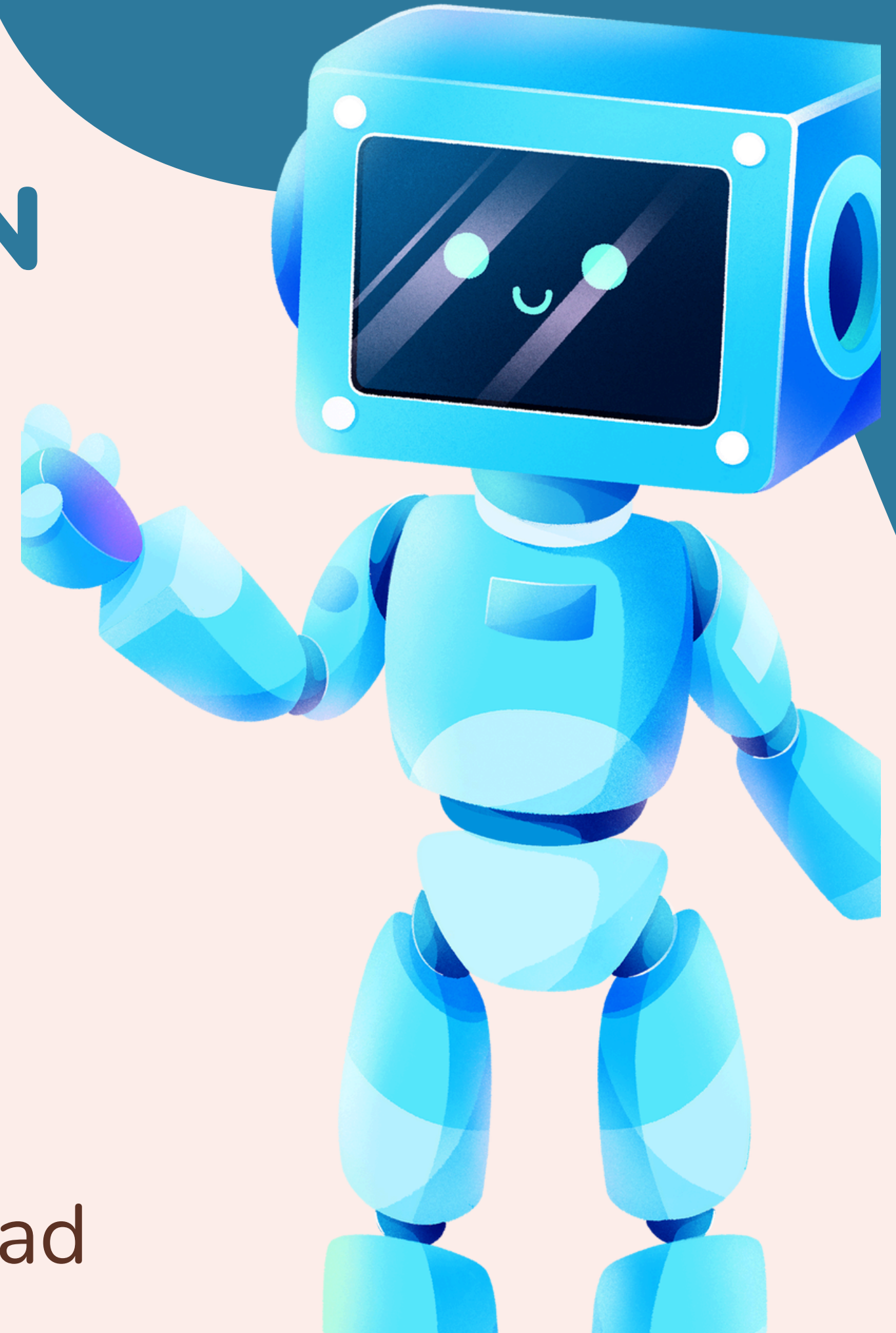


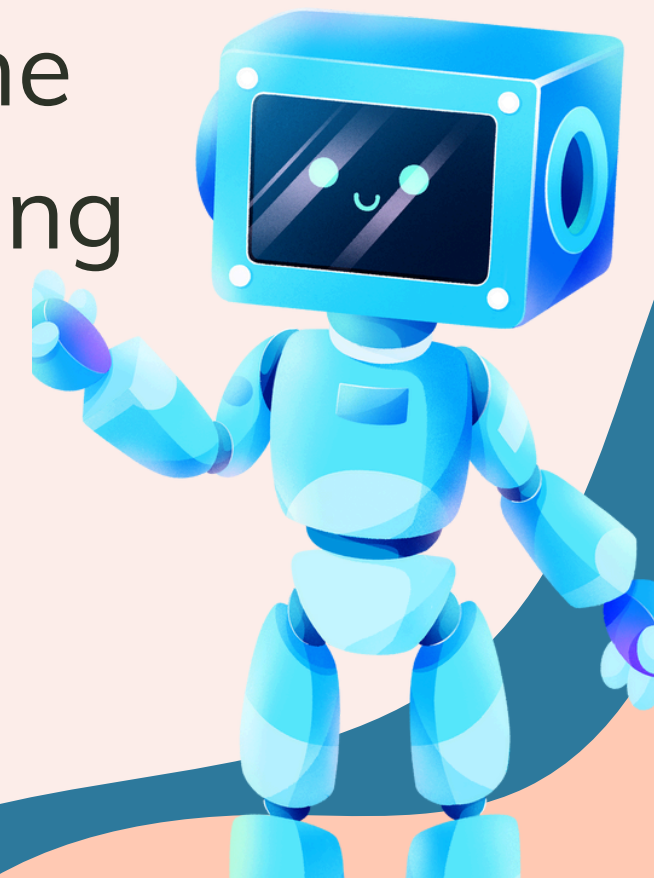
SMART MEDICATION DISPENSER ROBOT



Created by: Lujain Darwazeh & Aya Awaad

WHAT IS THE PROBLEM?

We noticed a problem in Palestinian hospitals where some nurses give patients their medications at incorrect times, which can impact the patient and result in complications. Additionally, errors can occur during the medication distribution process, or the nurse might forget to administer the medication to the patient. Our robot solves this problem by distributing medication based on the RTC (Real-Time Clock) time entered by the nurse. The robot starts moving and ensures the correct medication is delivered to the correct patient at the correct time.



PROJECT STEPS

STEP 1

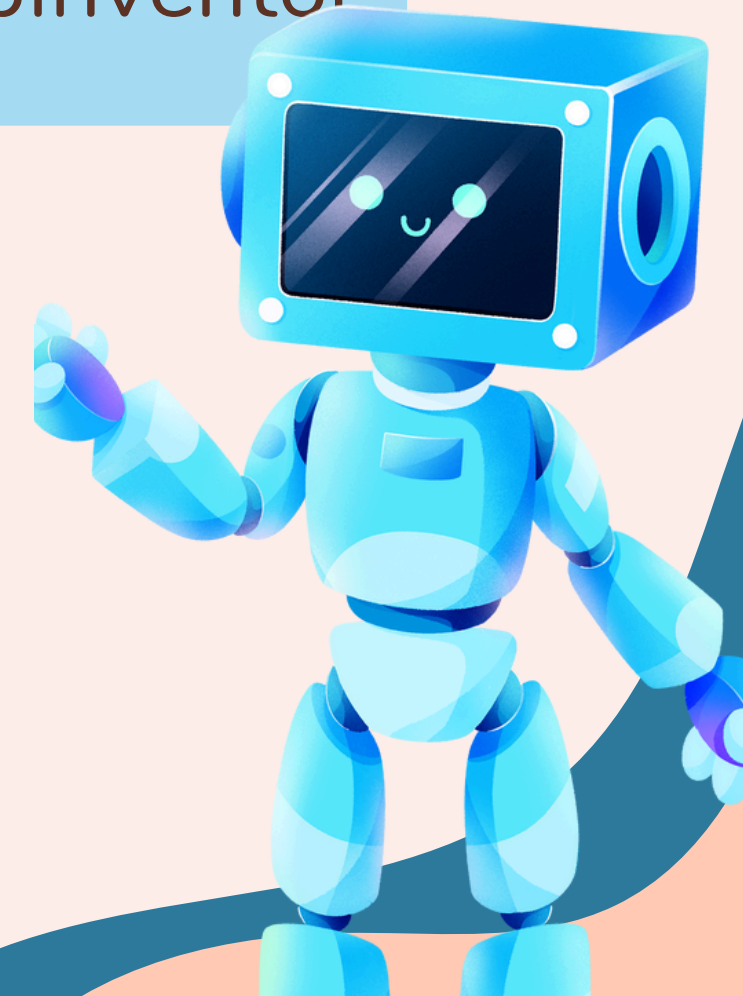
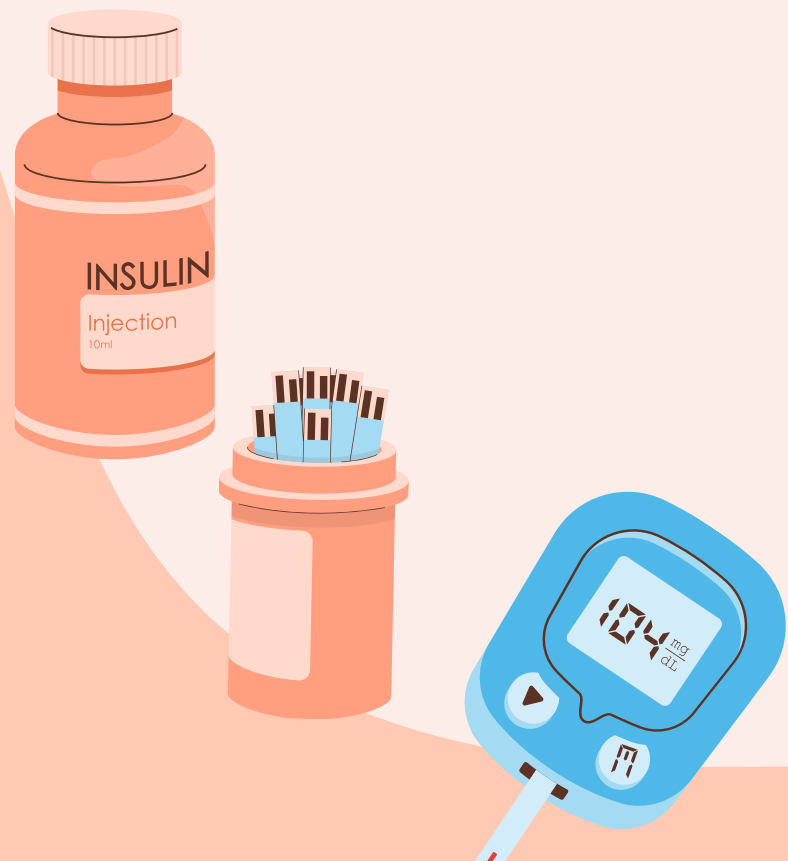
robot movement to
patient location

STEP 2

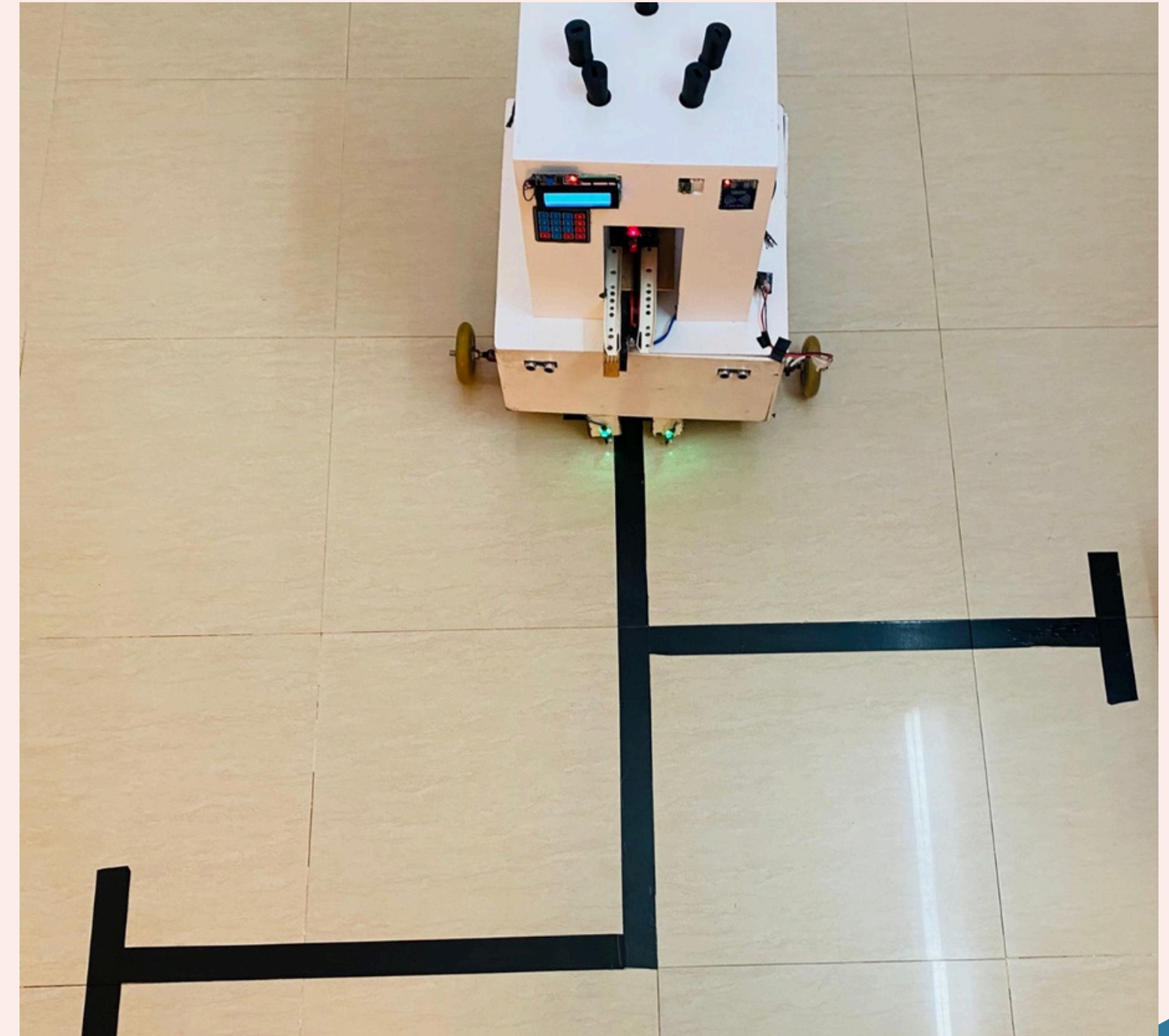
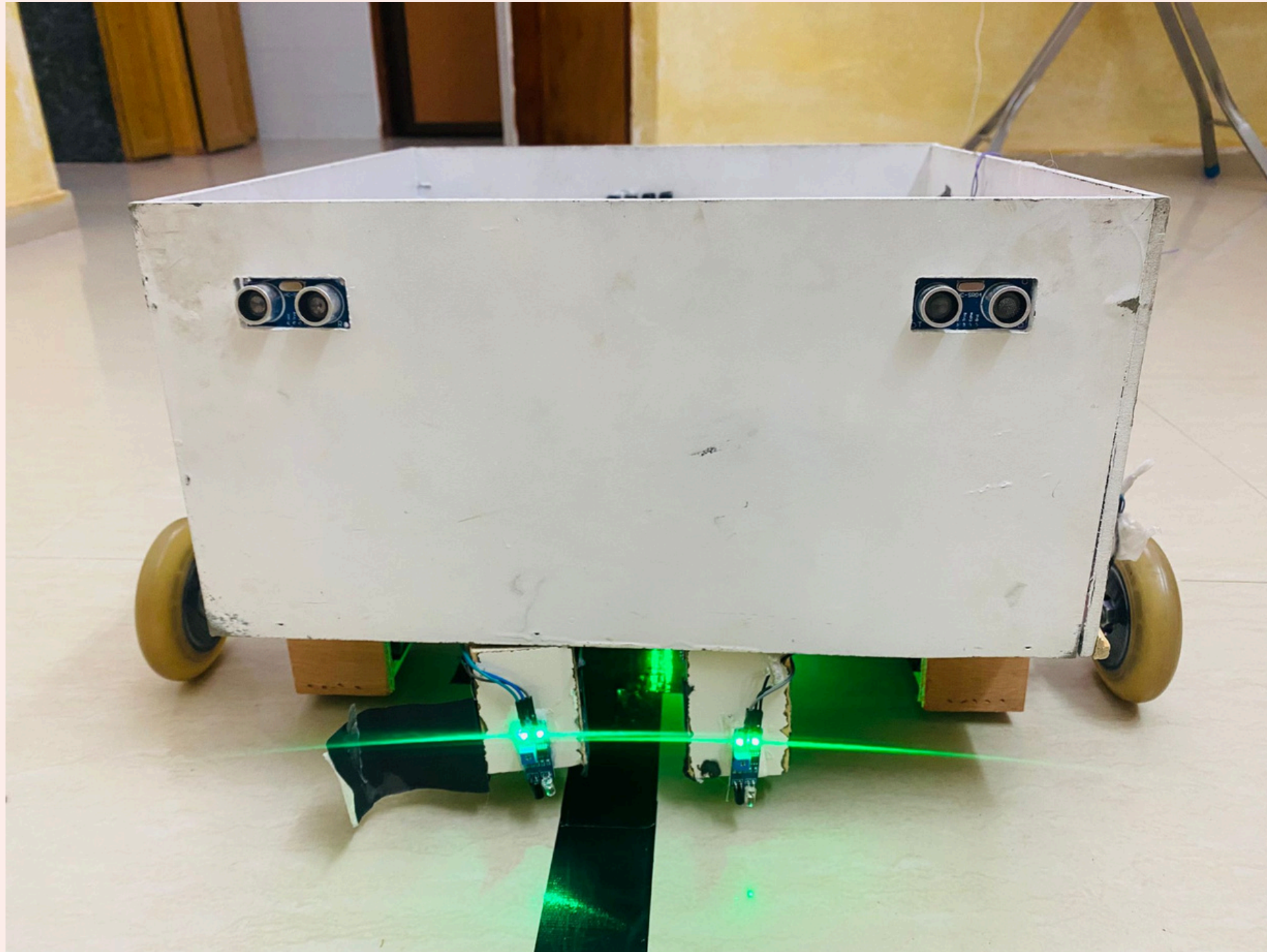
dispensing
medicines with
correct amount

STEP 3

mobile application
using AppInventor



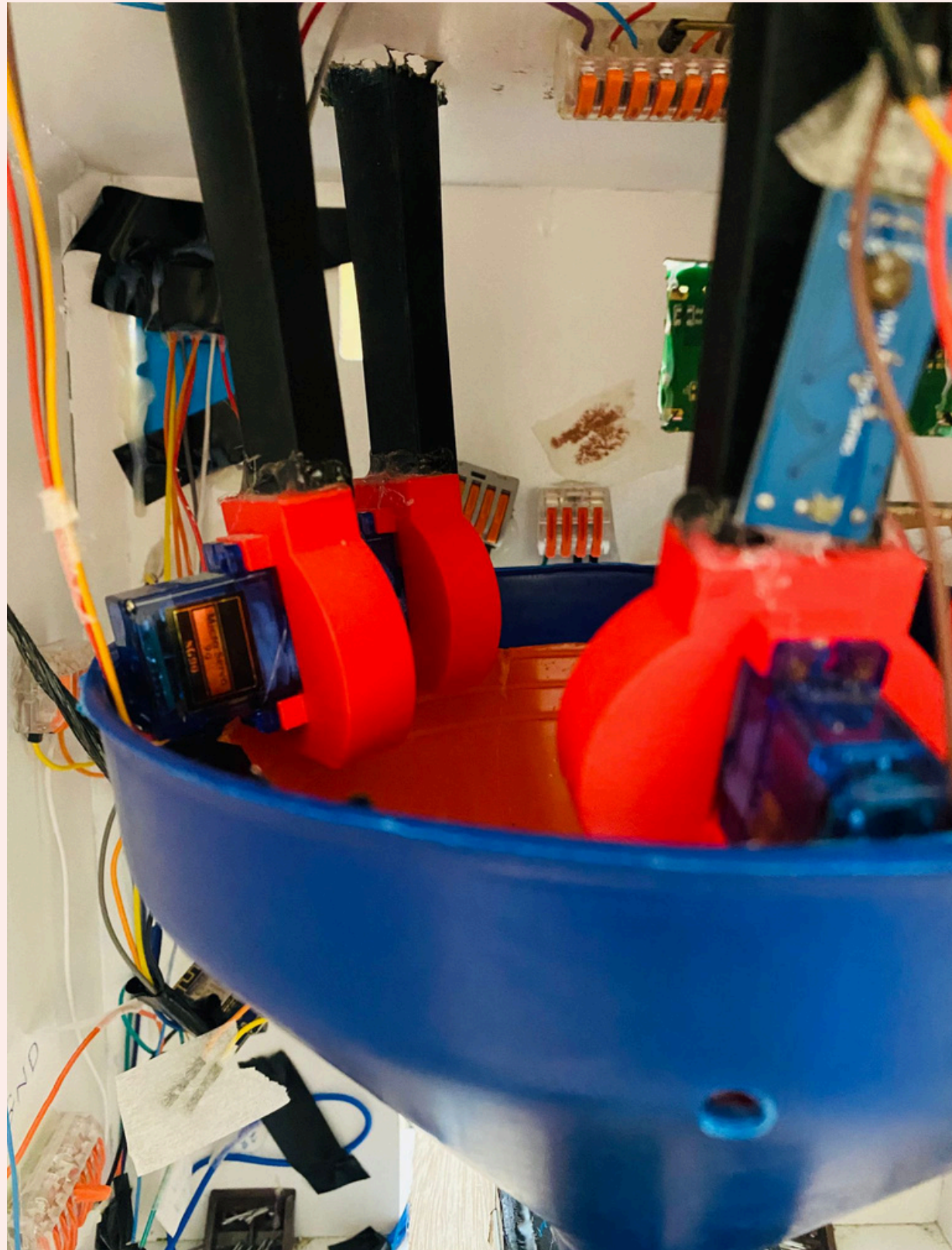
ROBOT MOVEMENT TO PATIENT LOCATION



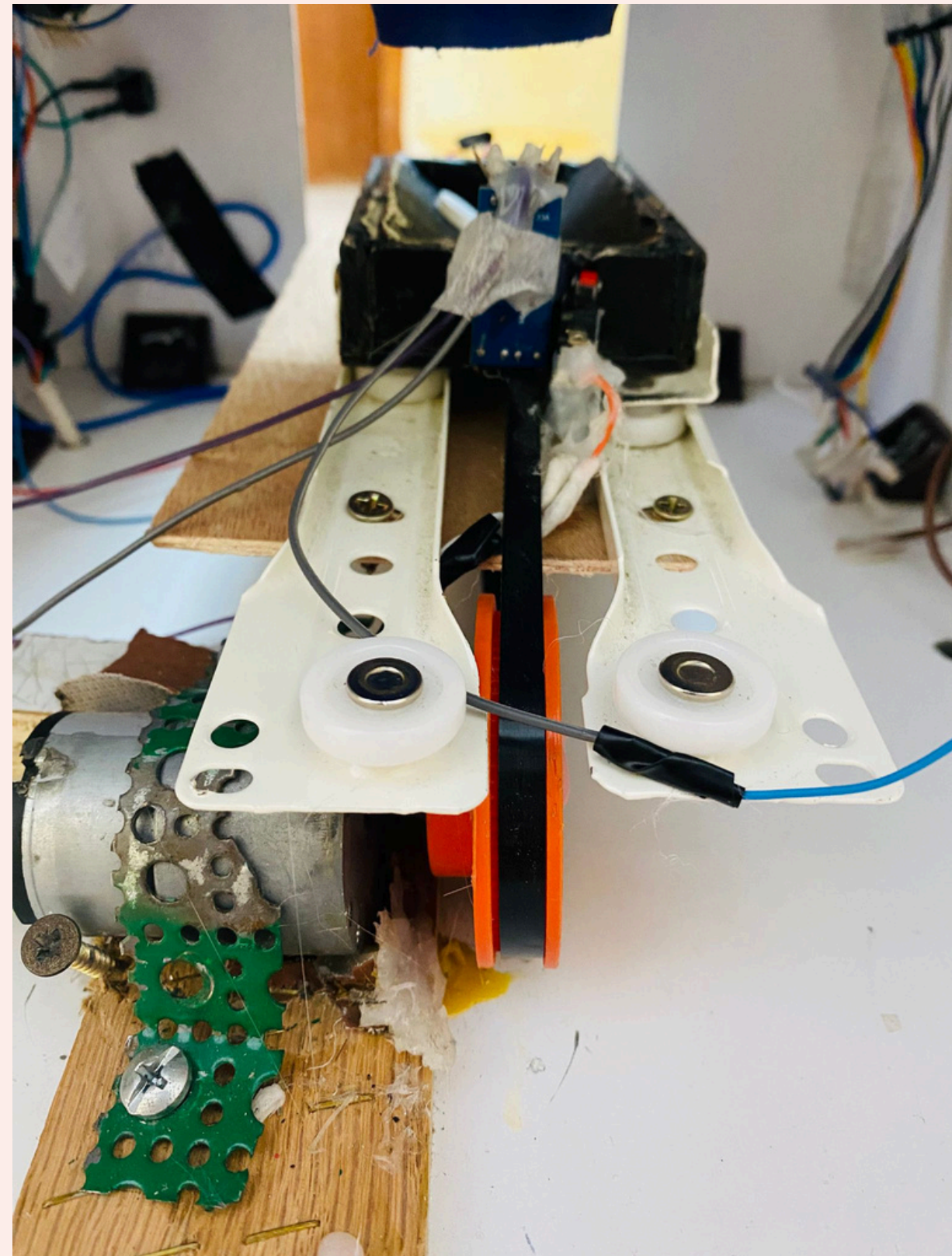
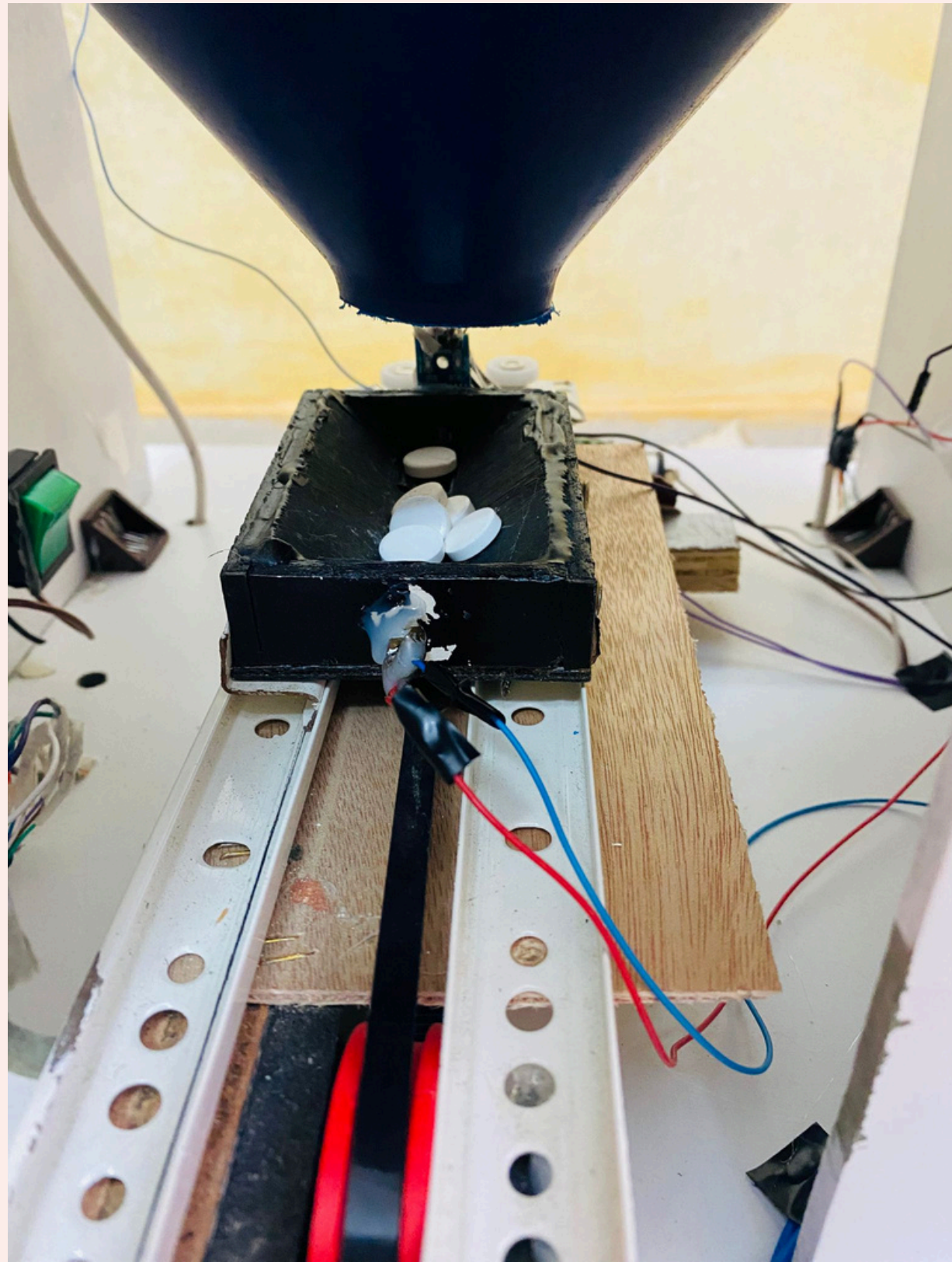
DISPENSING MEDICINES WITH CORRECT AMOUNT



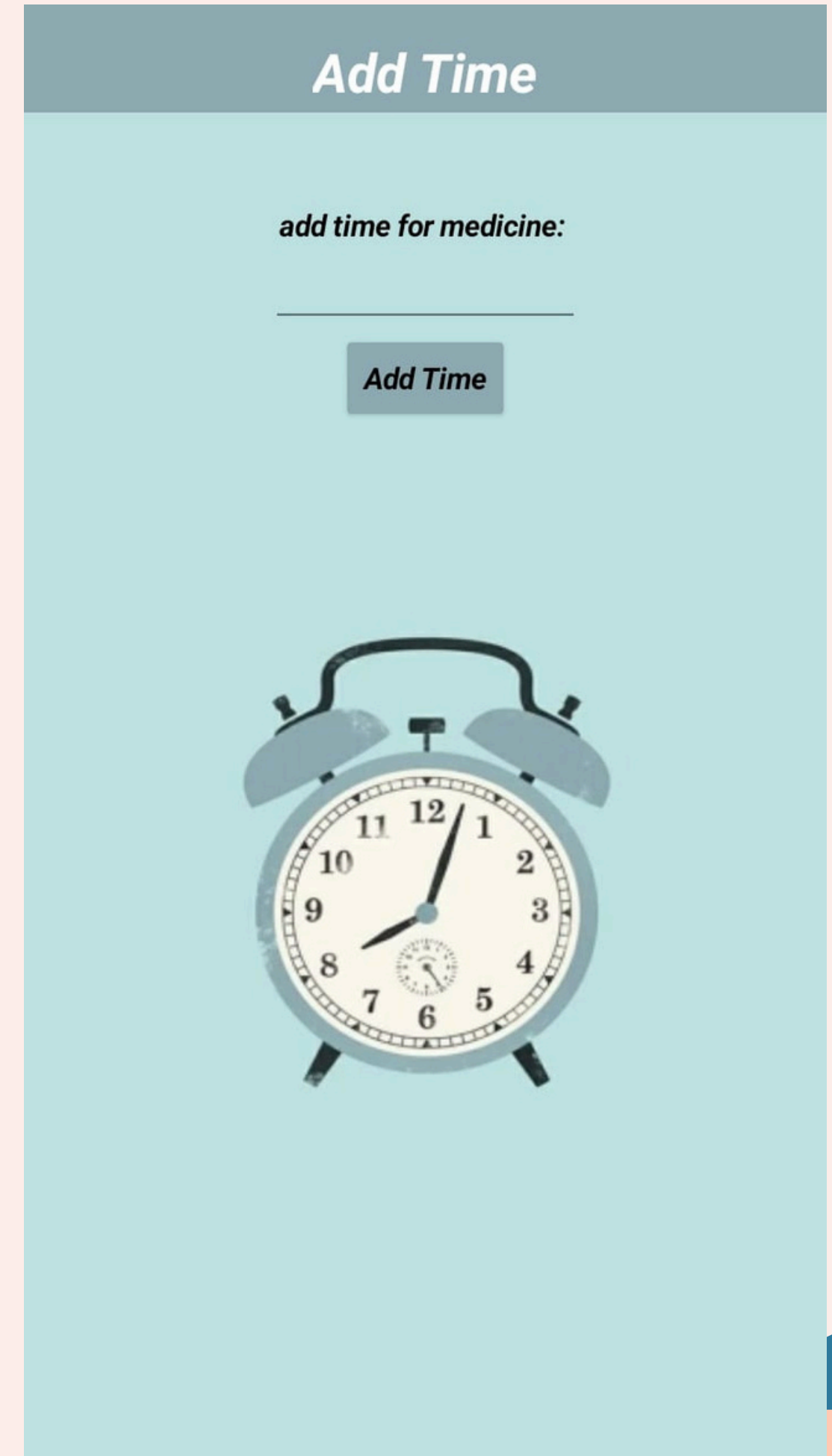
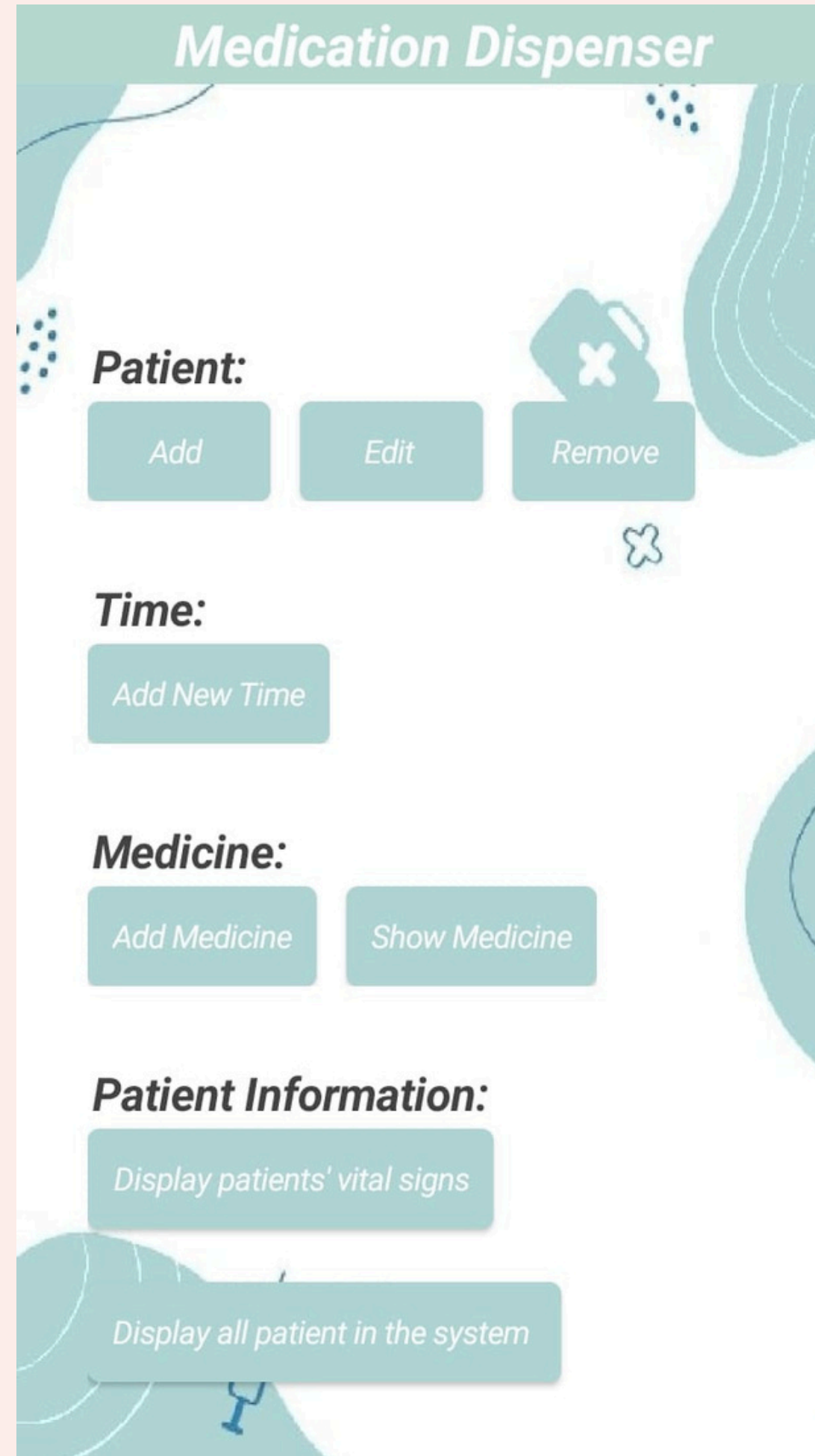
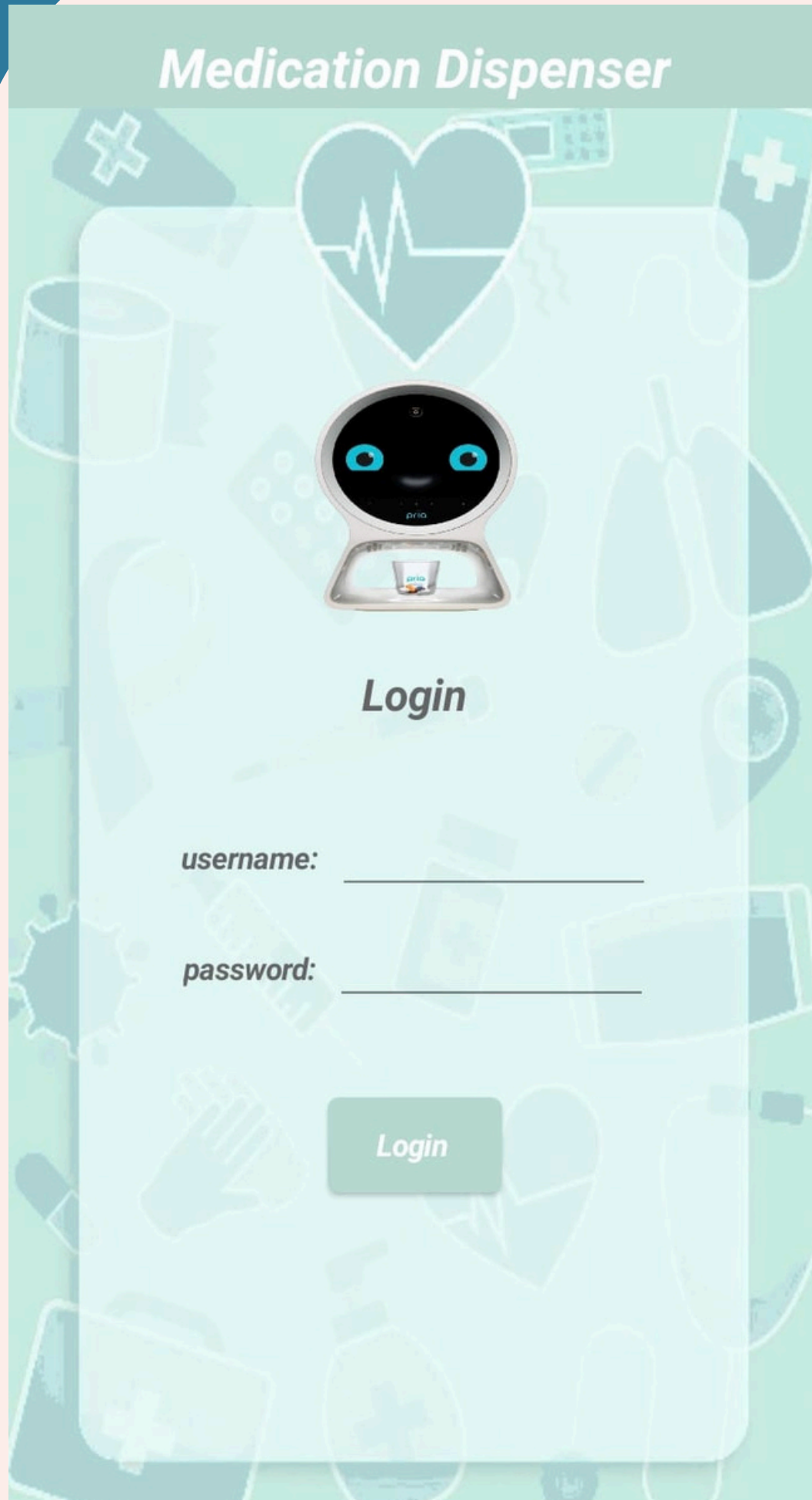
DISPENSING MEDICINES WITH CORRECT AMOUNT



DISPENSING MEDICINES WITH CORRECT AMOUNT



MOBILE APPLICATION



MOBILE APPLICATION

Add Patient

Enter Patient information:

ID patient:

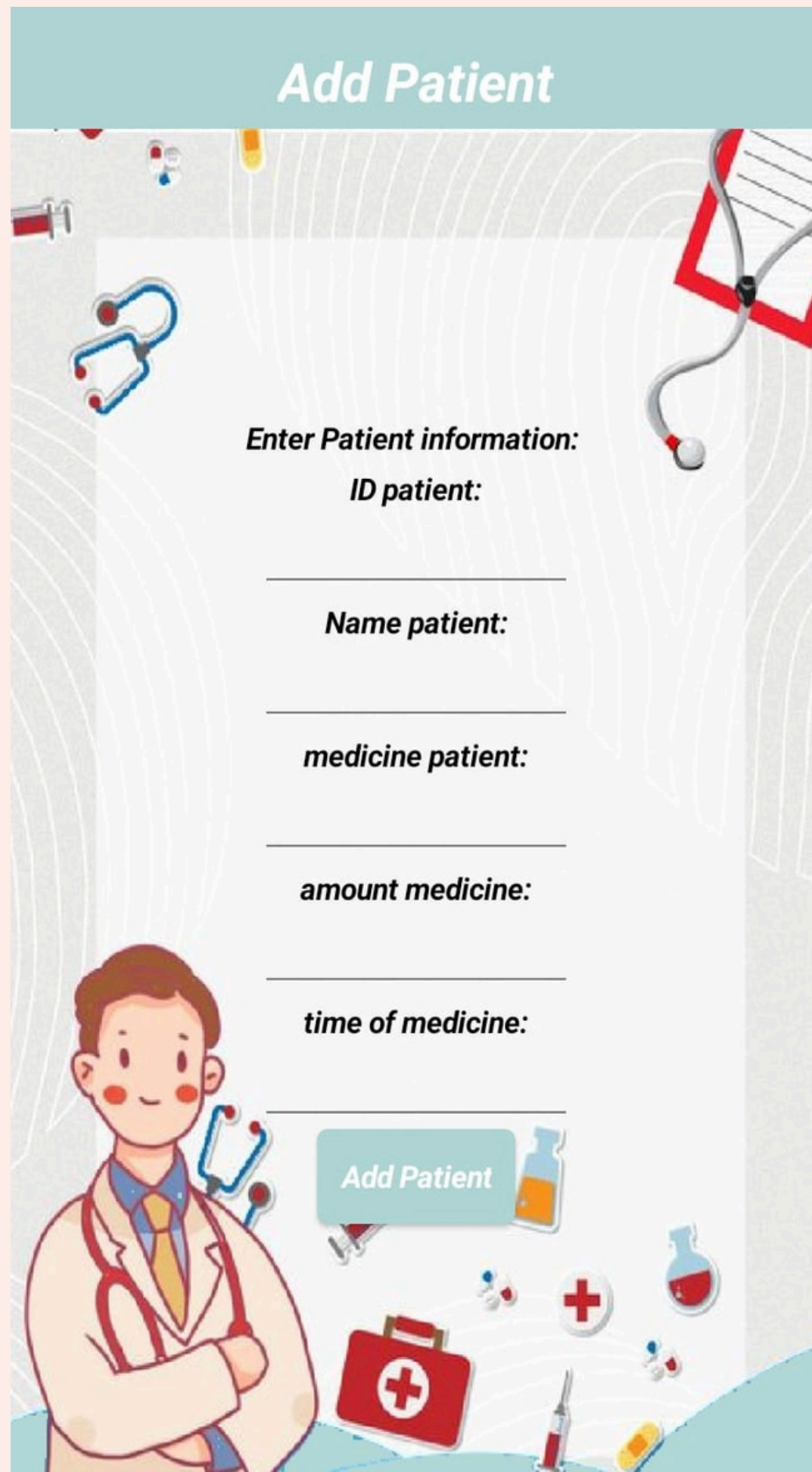
Name patient:

medicine patient:

amount medicine:

time of medicine:

Add Patient



Edit Patient Information

Enter Patient information to edit :

ID patient:

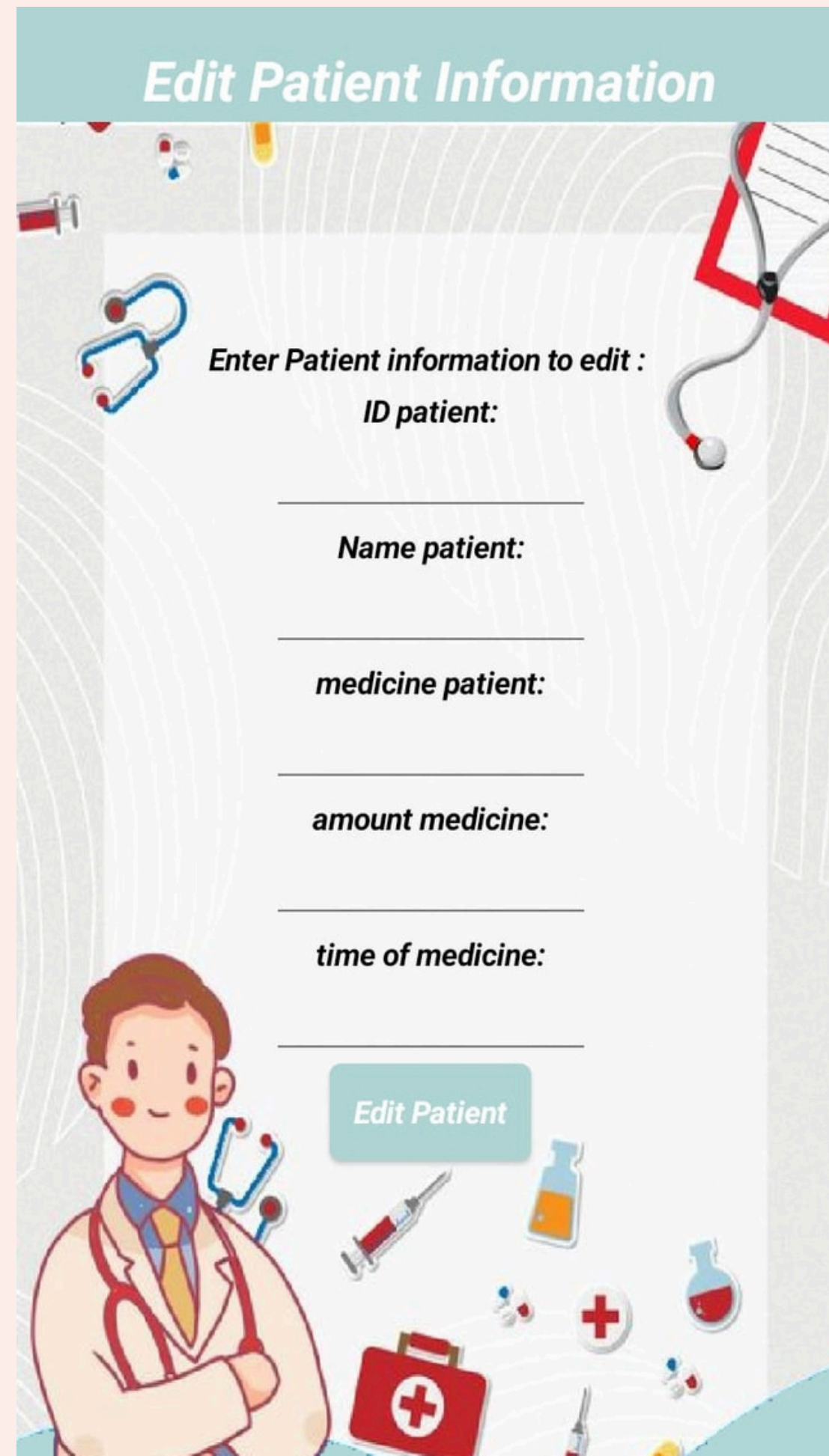
Name patient:

medicine patient:

amount medicine:

time of medicine:

Edit Patient

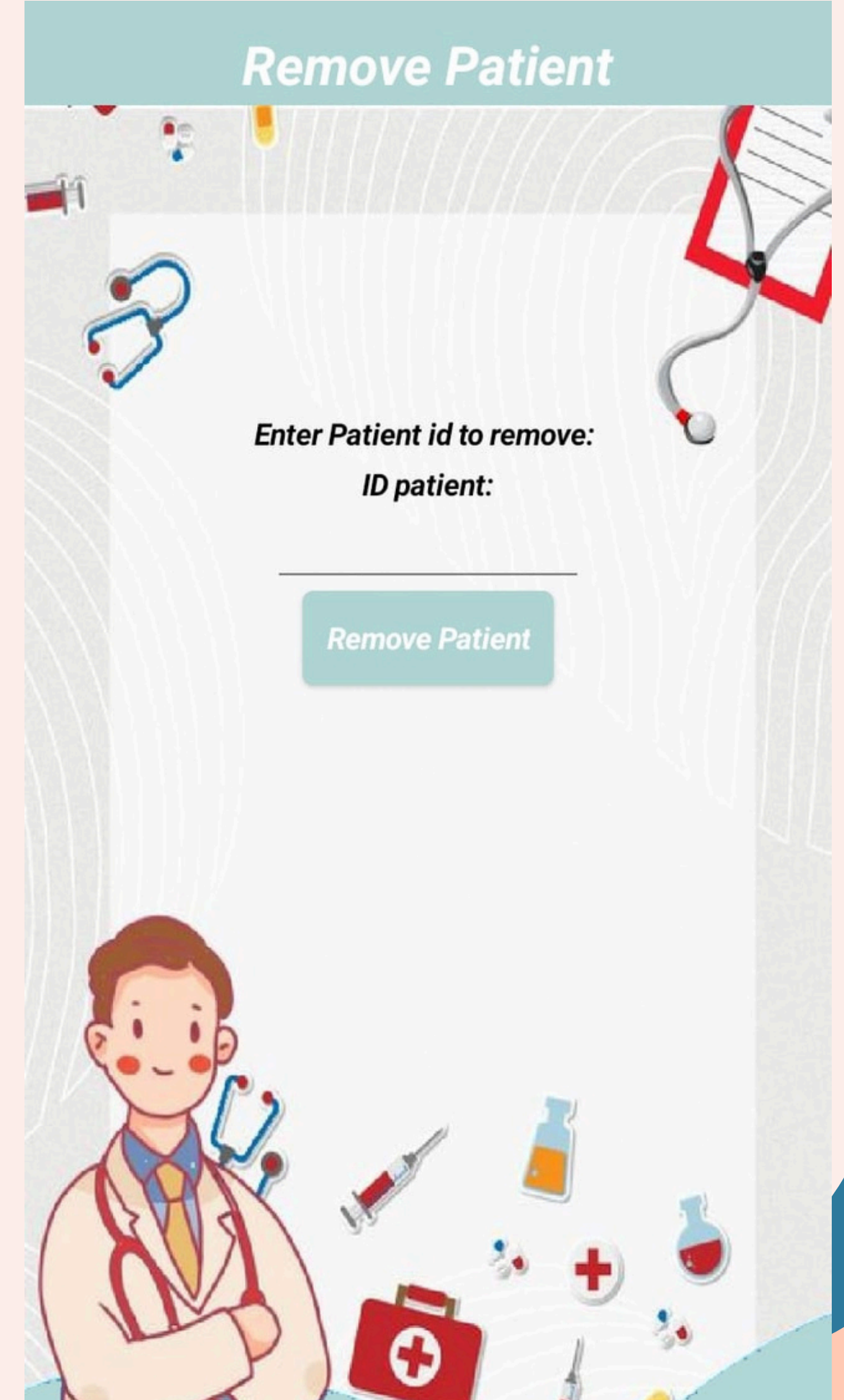


Remove Patient

Enter Patient id to remove:


ID patient:

Remove Patient



MOBILE APPLICATION


Add Medicine



Medicine Name:

Medicine Amount:

Add Medicine



Medicine



Acamol: 60  

Aspirin: 20  


Nurofen: 30  

Amoxicillin: 15  

Cetrizine: 25  

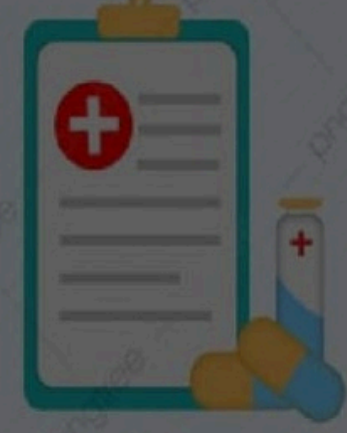


Medicine



Edit Amount
Enter new amount:

إلغاء **OK**



MOBILE APPLICATION

Patient Data

Patient ID	Name	Medicine
1	sali	Ibuprofen Vitamin C
23388325	mohmed	Amoxicillin Cough Syrup
233B8325	basma	Paracetamol Cough Syrup



Patient Data

Medicine	Amount	Take Medicin
Ibuprofen Vitamin C	1 2	false
Amoxicillin Cough Syrup	1 1	true
Paracetamol Cough Syrup	2 2	false



MOBILE APPLICATION

Patient Data

Time	HR	SPO2
09:00, 21:00	85	97
09:00, 21:00	91	96
09:00, 21:00	88	98



Patient Data

SPO2	Temperature	Status
97	37.2	normal
96	36.6	normal
98	37.4	normal



MOBILE APPLICATION

إشعارات صامتة

Project ⓘ

Remove Medication

Patient did not take their scheduled dose. Please remo..

إشعارات صامتة

Project ⓘ

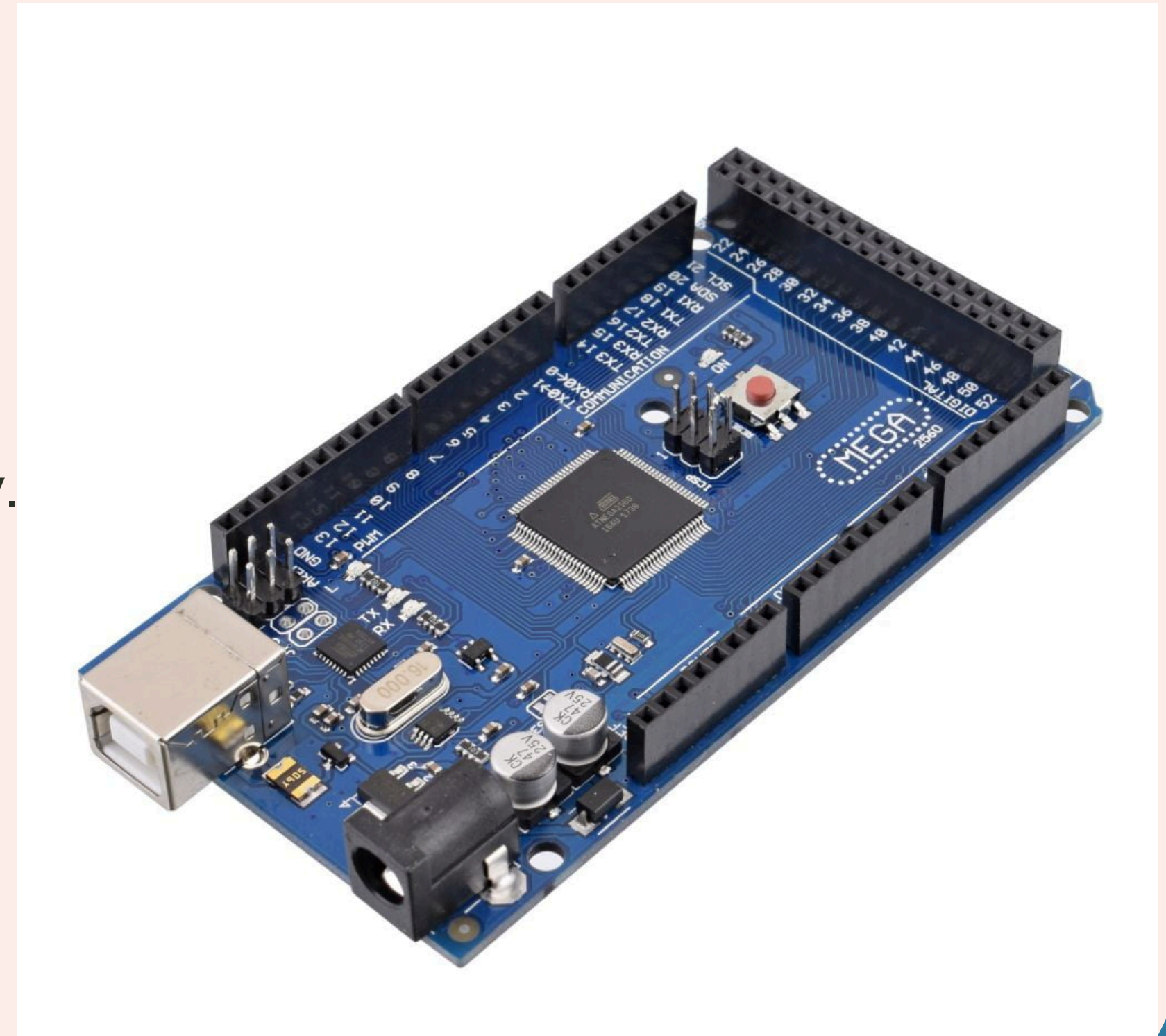
Dispenser Empty

Dispenser 5 that have Acamol was empty, please refill ..

HARDWARE COMPONENT

ARDUINO MEGA

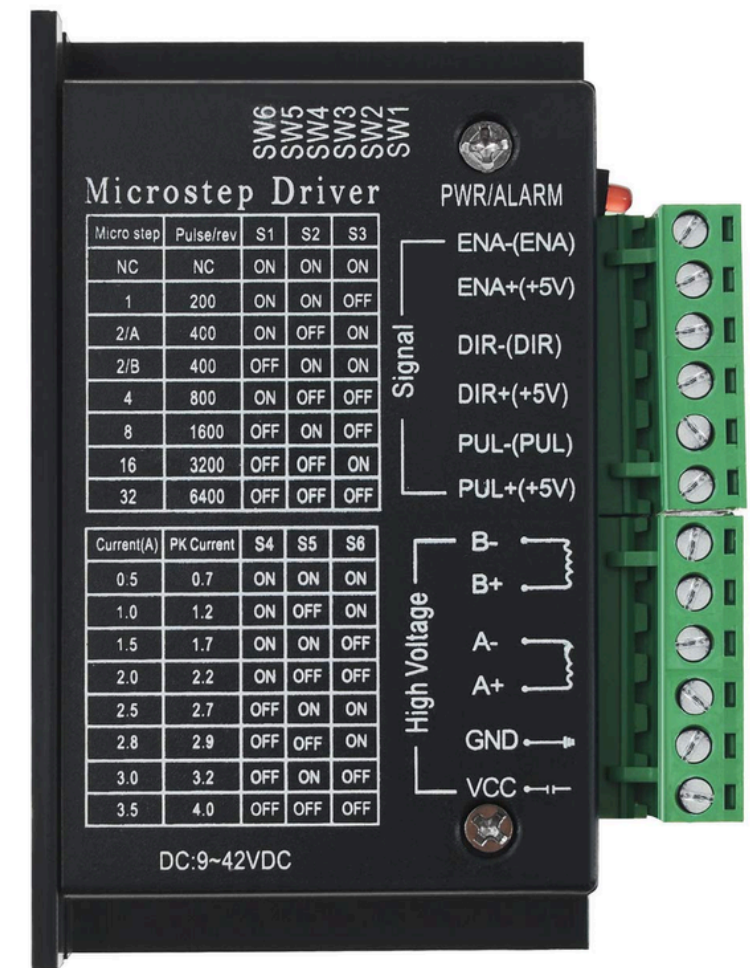
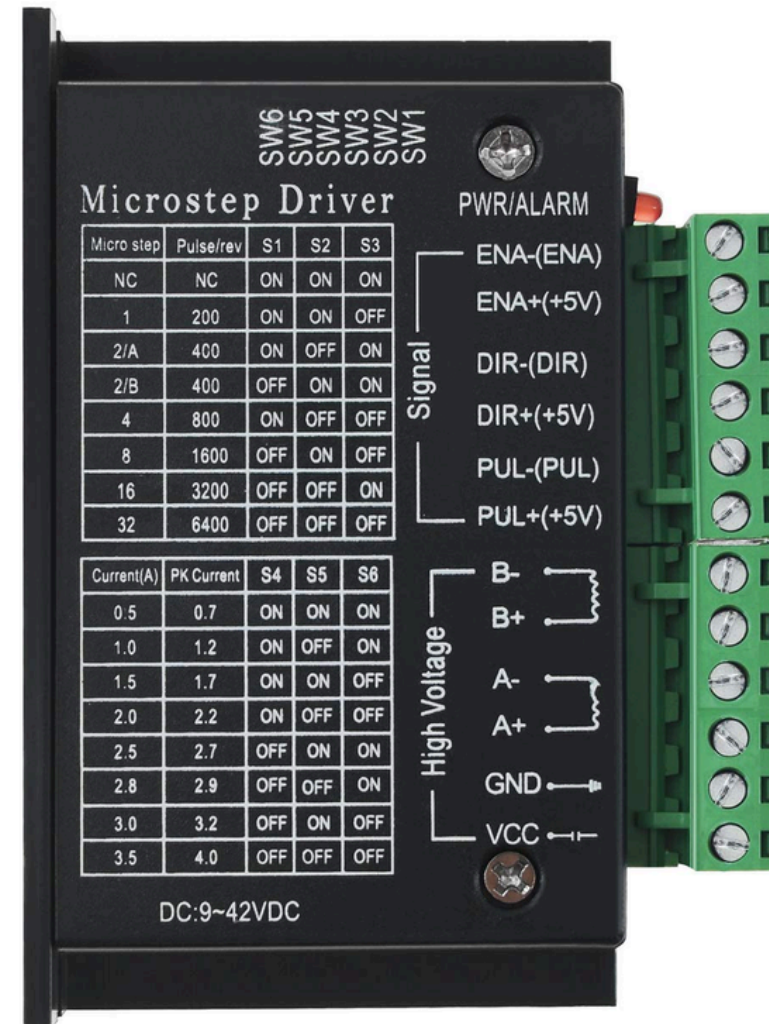
Main controller board for overall system functionality.



HARDWARE COMPONENT

DRIVER TB6600

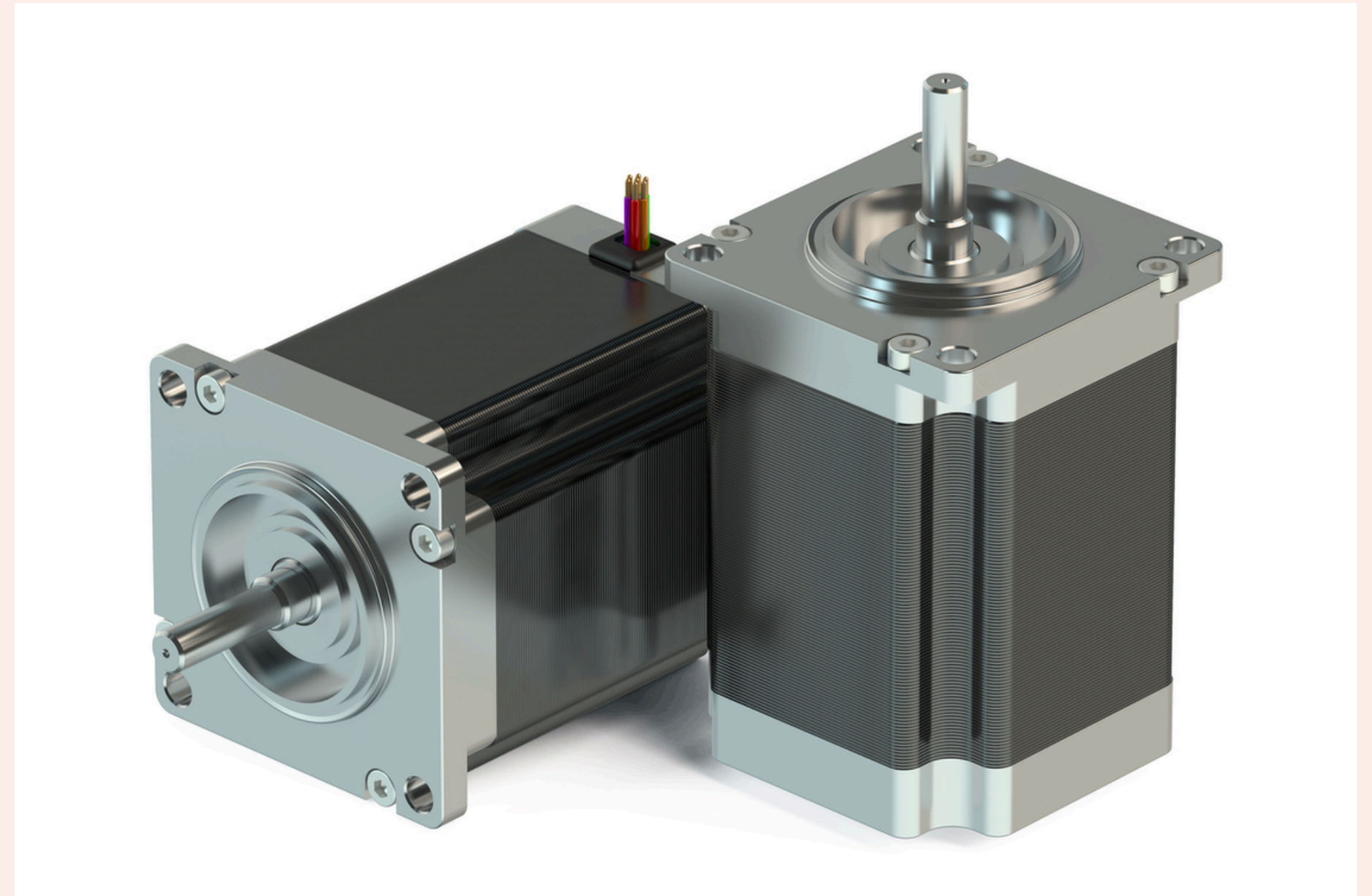
used to control the stepper motors, enabling precise movements.



HARDWARE COMPONENT

STEPPER MOTOR

NEMA 23 stepper motor is used for regular robot movement.



HARDWARE COMPONENT

WHEEL & WHEEL BALL METAL

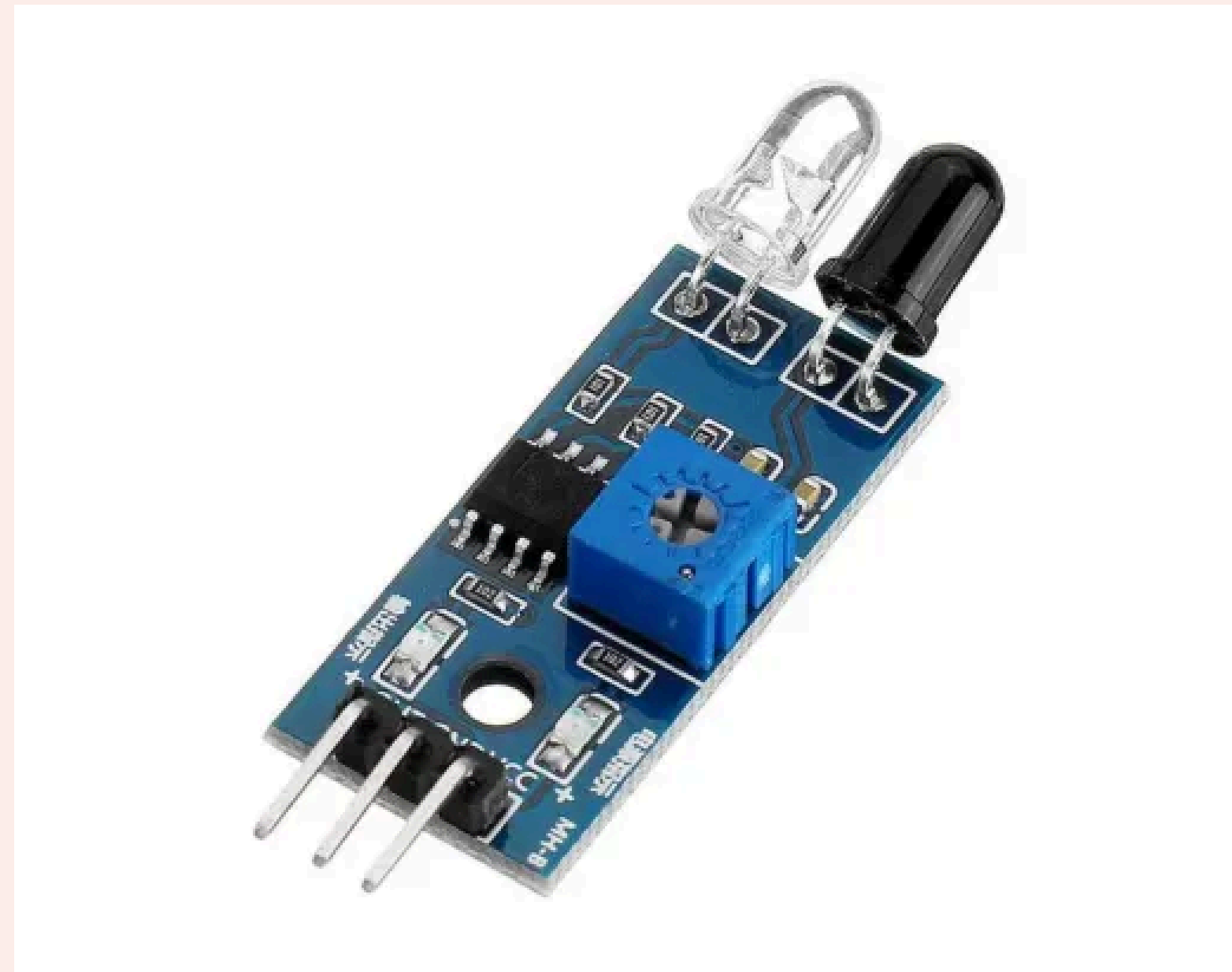
Wheel Ball metal :
omnidirectional support for the
robot, allowing smooth and
stable movement. It acts as a
free-rotating caster that
supports the robot's weight and
enables it to move in any
direction without resistance



HARDWARE COMPONENT

IR SENSOR

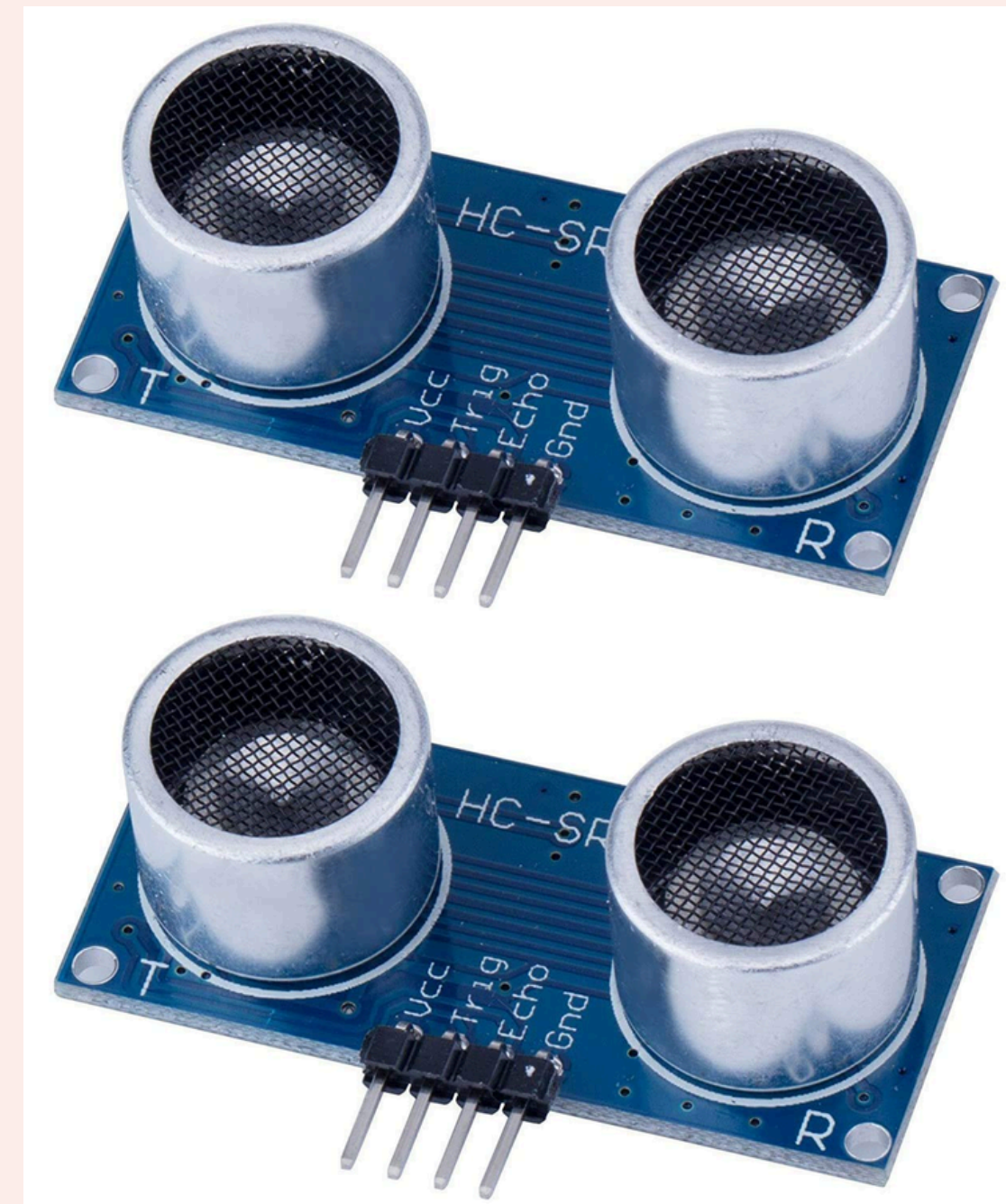
To track the black line and make the robot move in a specific way.



HARDWARE COMPONENT

ULTRASONIC

To discover obstacles and barriers.



HARDWARE COMPONENT

BATTERY 12V -9A

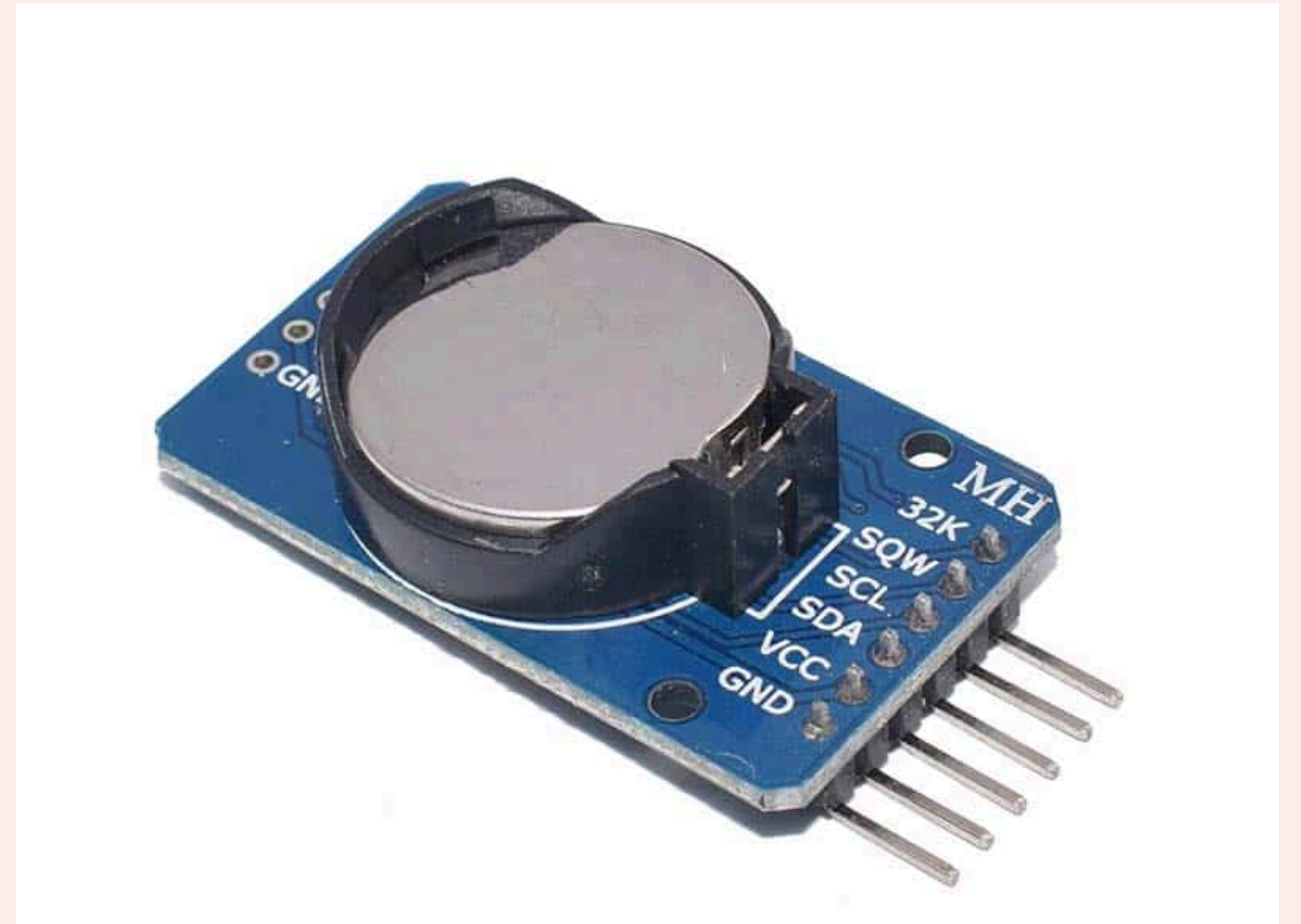
primary power source for the system. It provides the necessary energy to operate various components of the robot.



HARDWARE COMPONENT

RTC

used to ensure that medication is dispensed at the precise, pre-scheduled times specified in the patient's medication plan.



HARDWARE COMPONENT

RFID

RFID is used to identify each patient as each patient has his own unique key



HARDWARE COMPONENT

LCD

LCD is used to track some commands and display the results on the screen.



HARDWARE COMPONENT

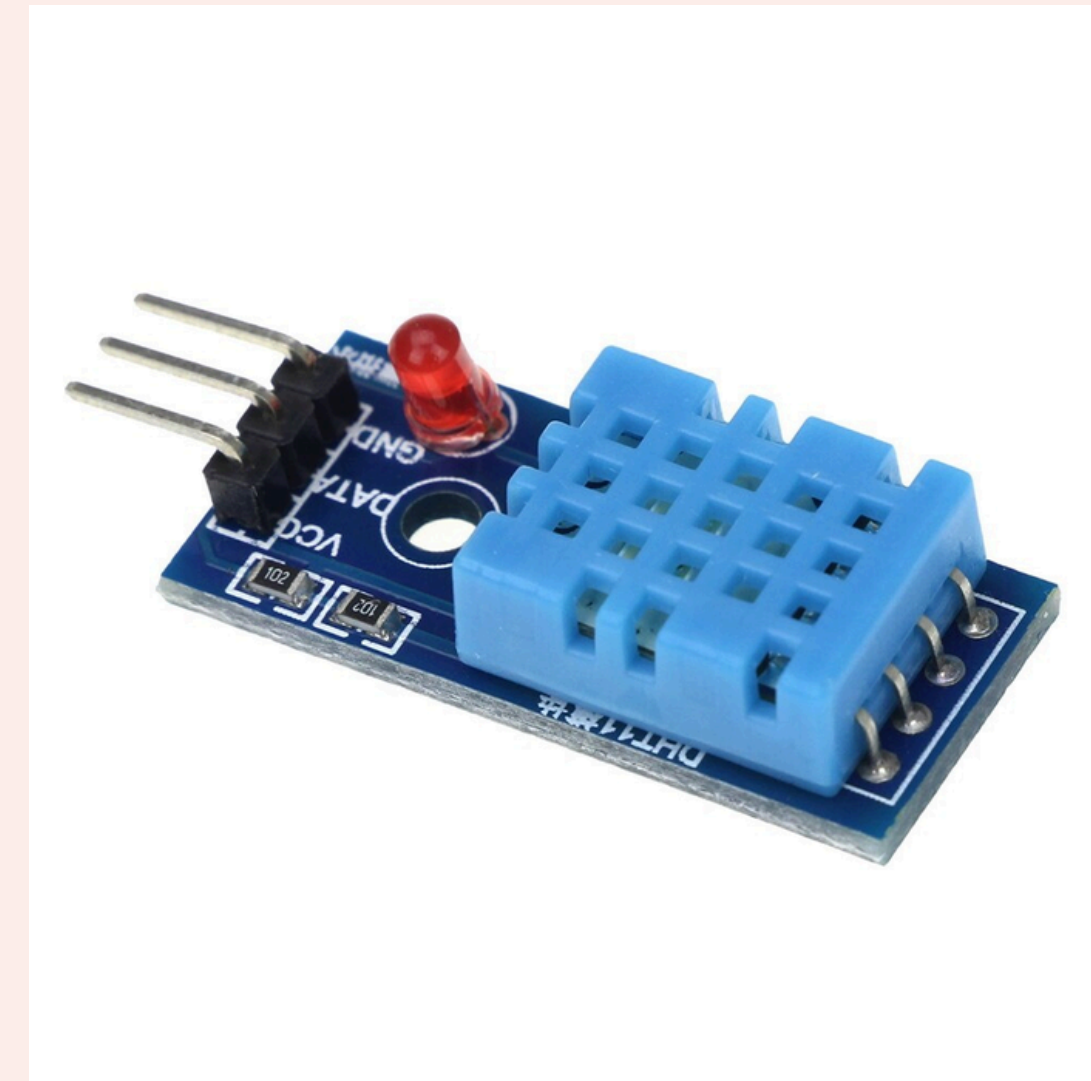
MAX30102 SENSOR

1. Used to measure oxygen level and heart rate.
2. Used for read the temperature.



1

TEMPERATURE SENSOR

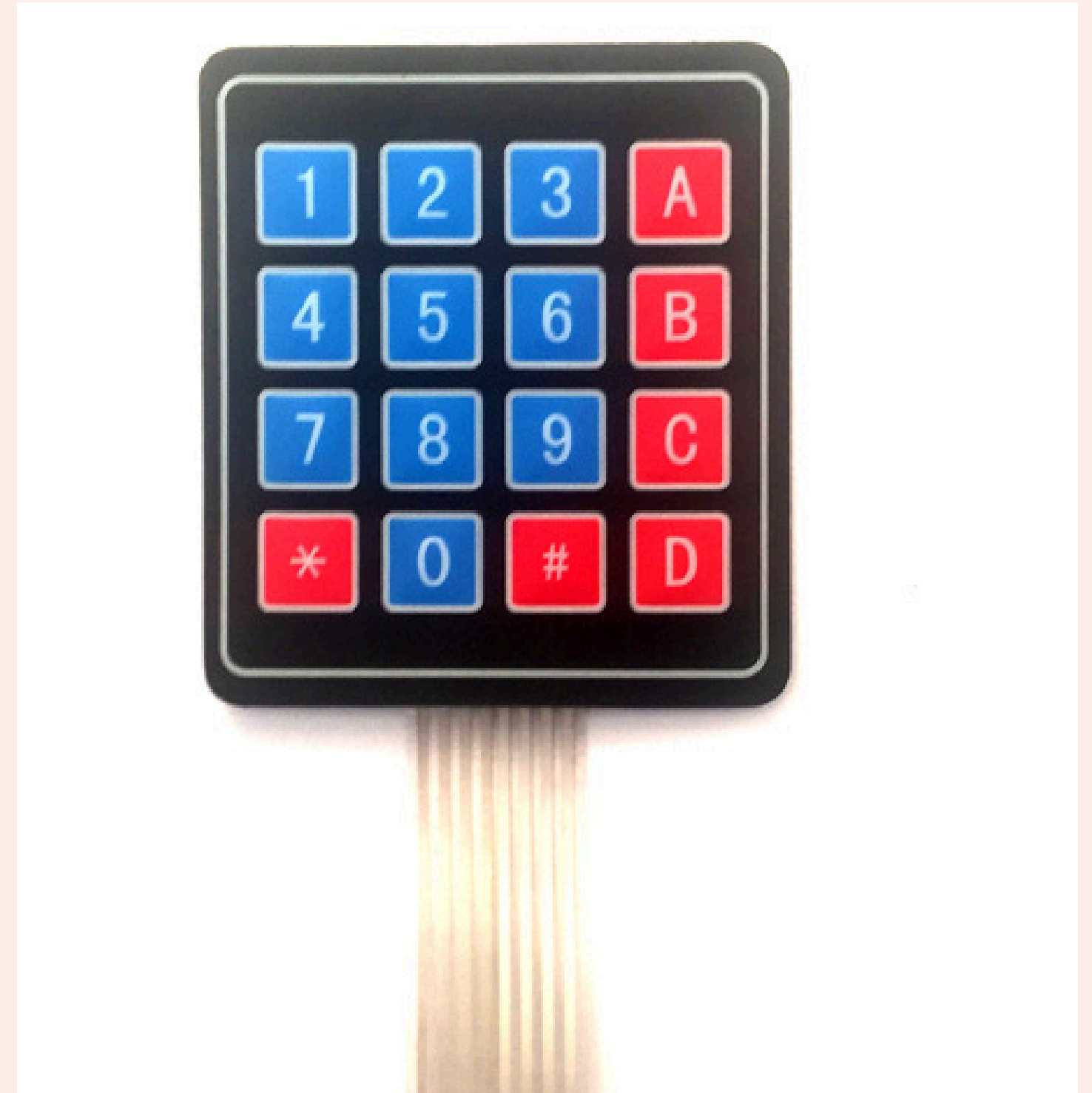


2

HARDWARE COMPONENT

KEYPAD

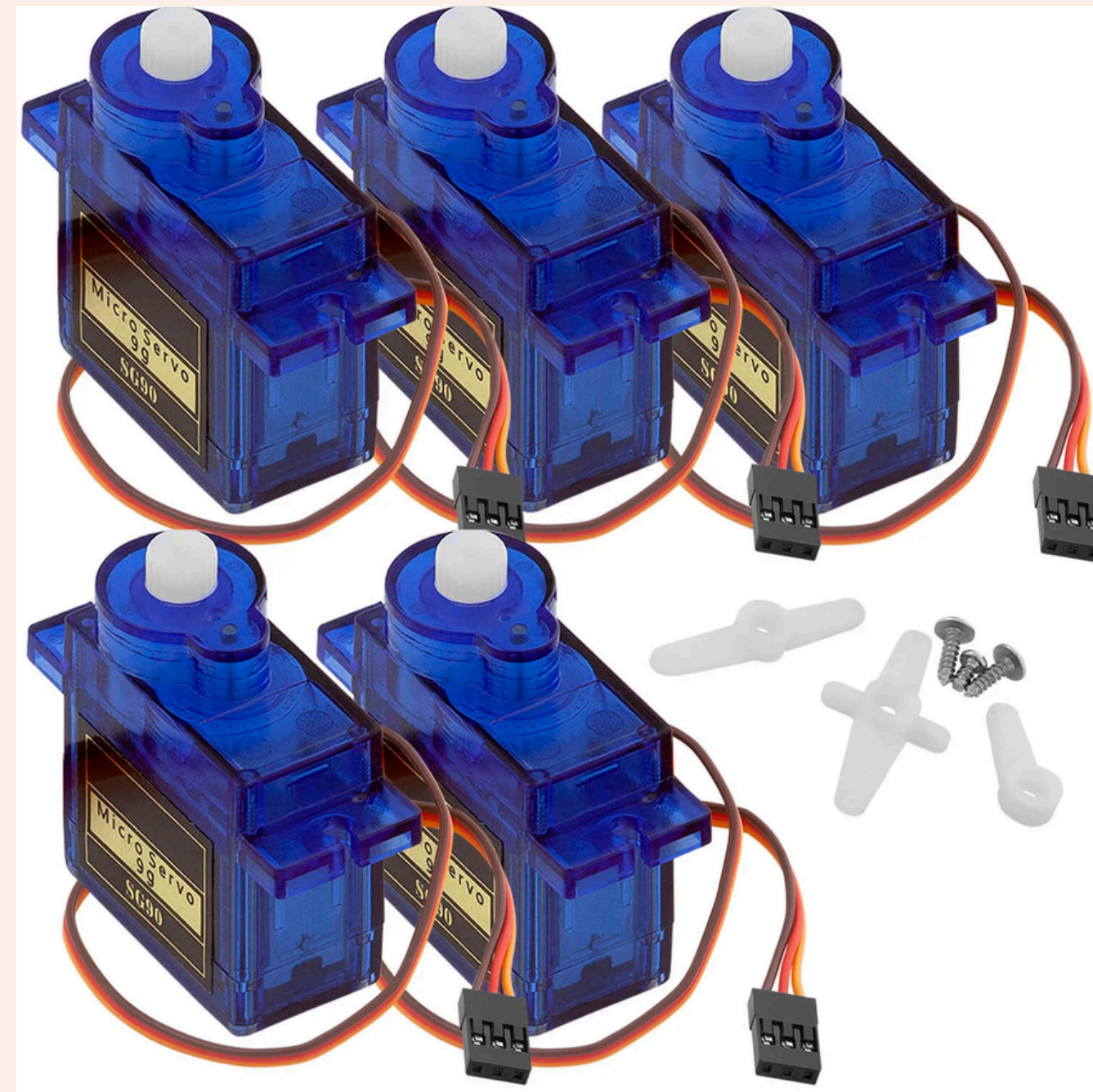
To enter some values and data.



HARDWARE COMPONENT

SERVO MOTOR

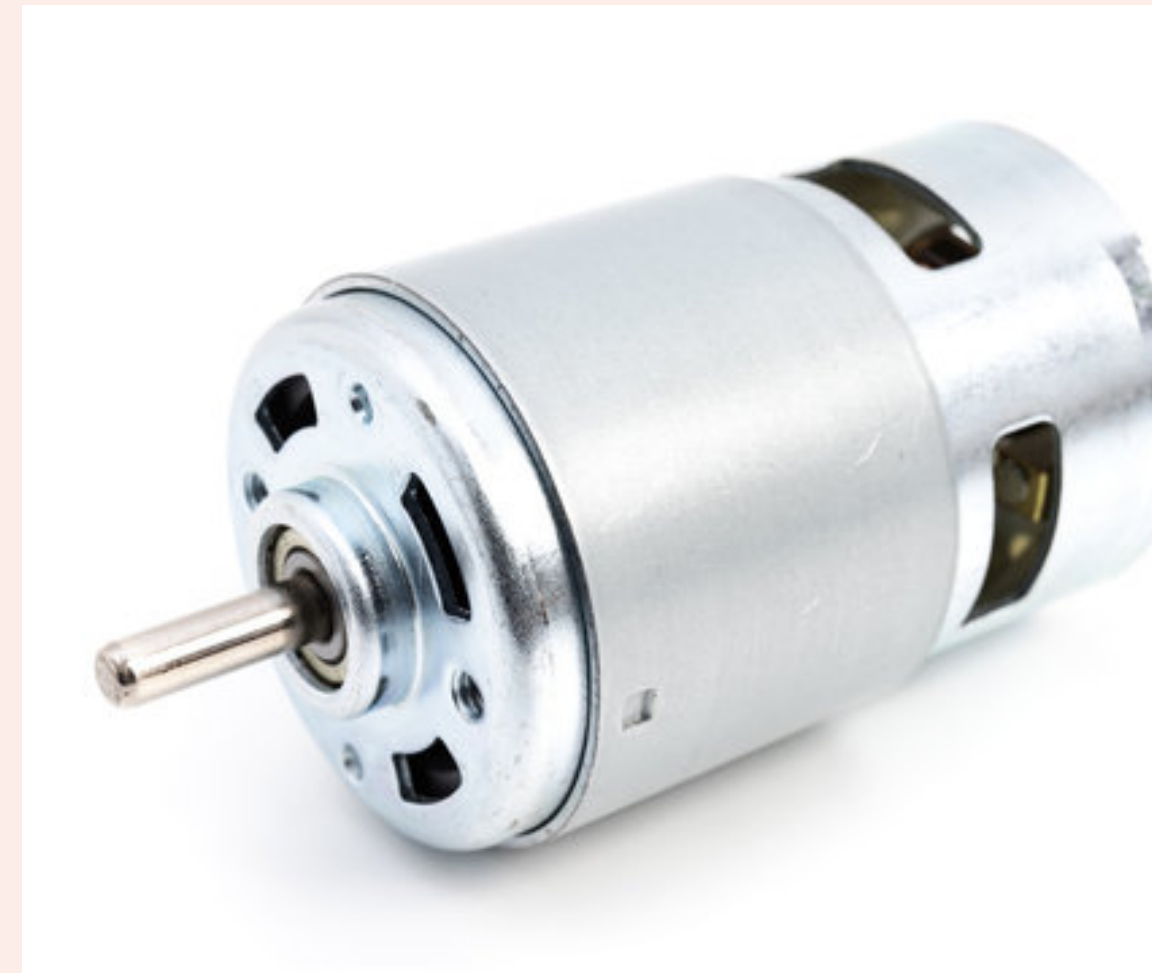
For control [open/close] pill dispenser.



HARDWARE COMPONENT

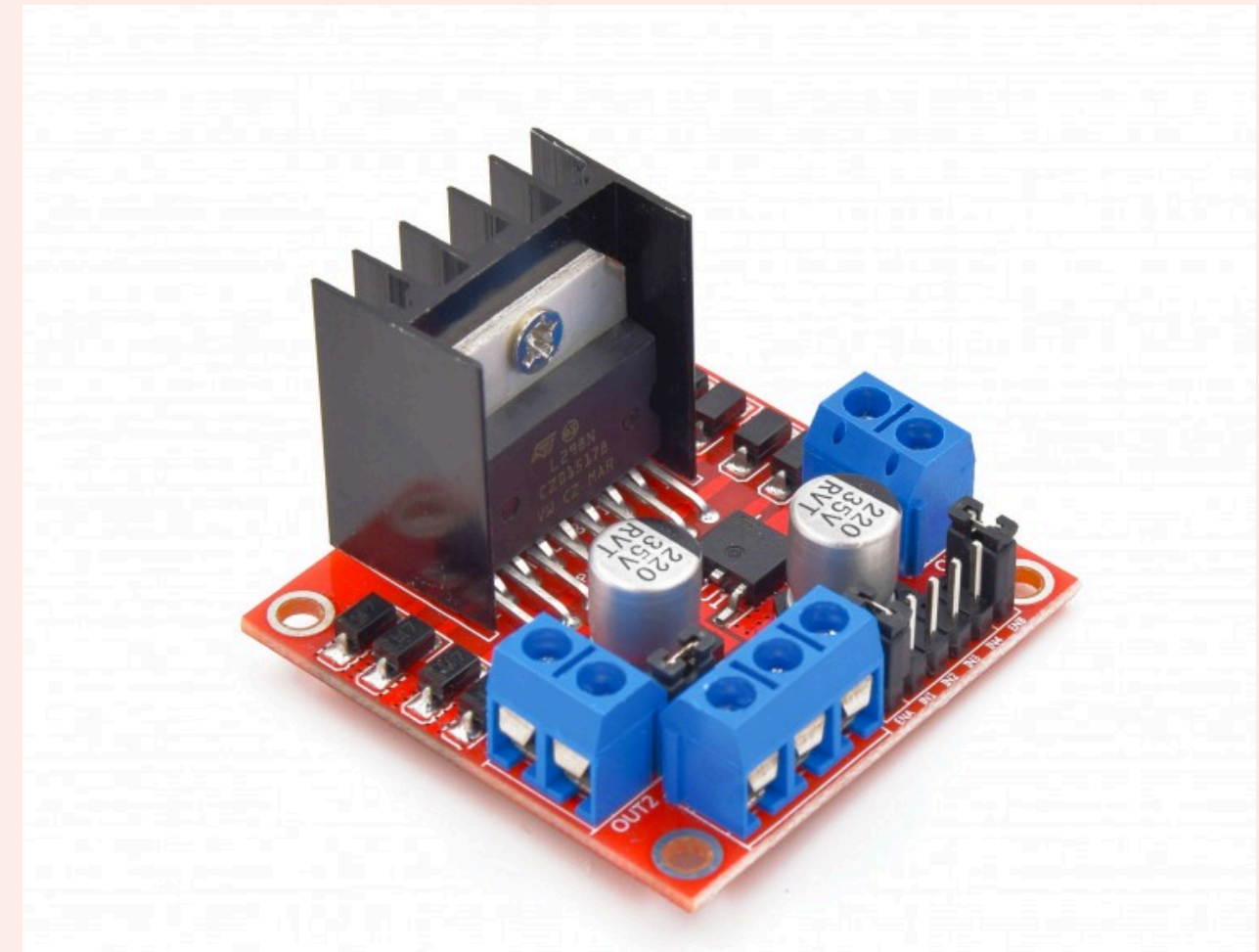
DC MOTOR

- 1. DC motor used to move the conveyor.
- 2. Used to control the Dc Motor.



1

H-BRIDGE L298N

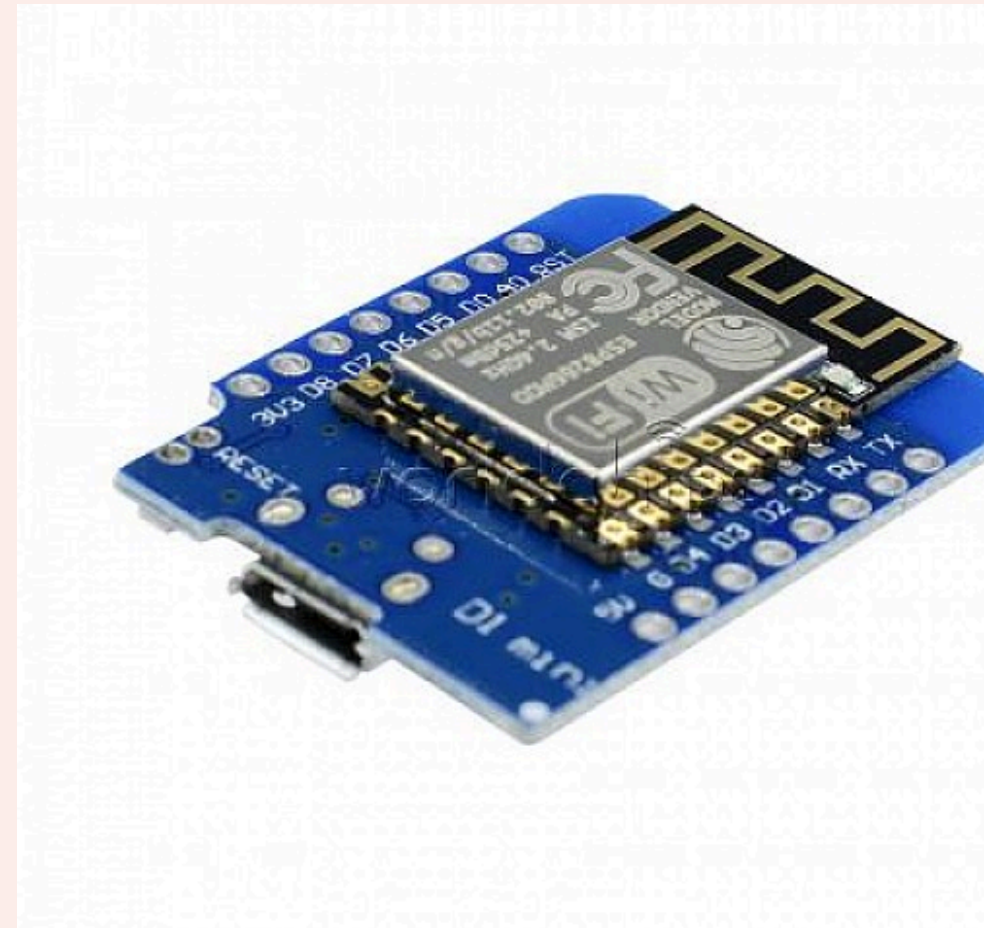


2

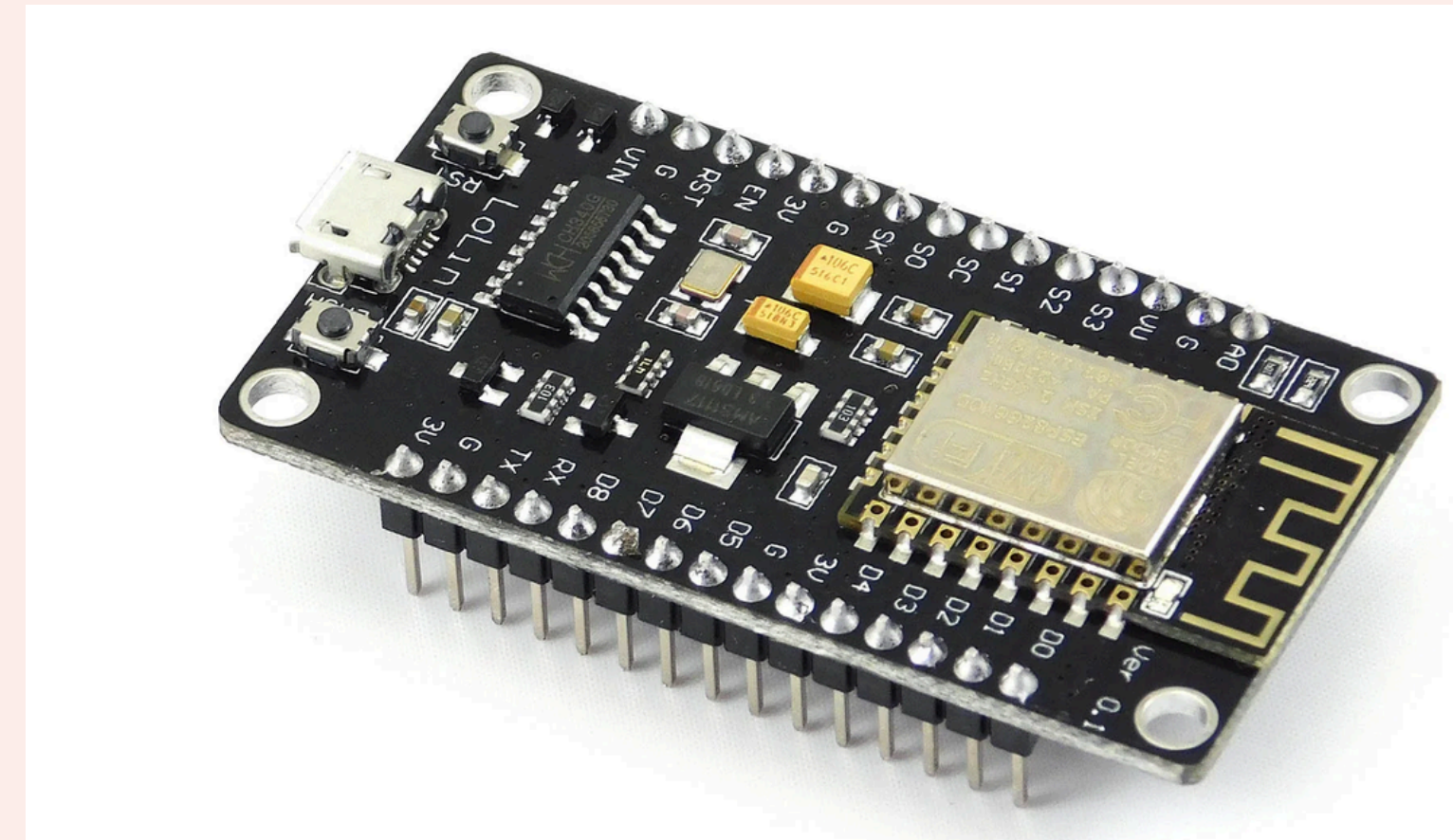
HARDWARE COMPONENT

ESP8266

1. It is used to connect via Wi-Fi with the database to store and retrieve data from the database.
2. Also another piece is used for the mobile application.



1

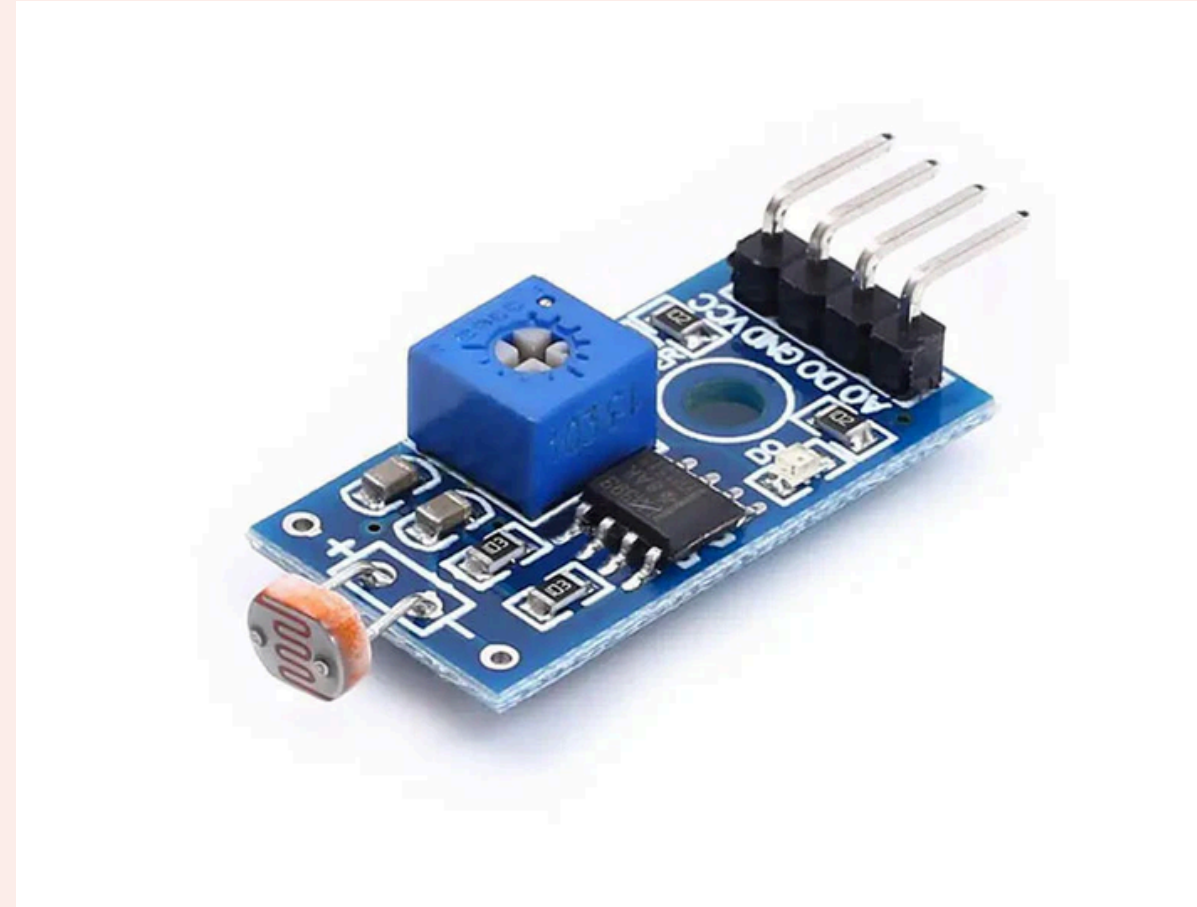


2

HARDWARE COMPONENT

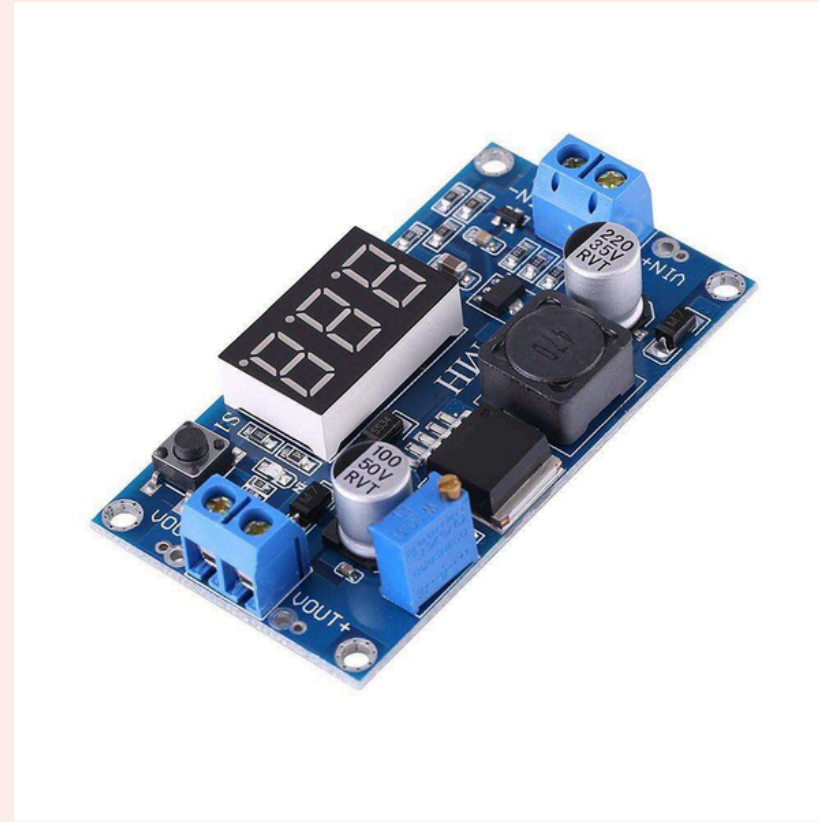
LDR & LASER

1. It is used to check the pill dispenser if it is empty, to refill it.
2. Check the conveyor if it contains medicine to move it out.
3. Check if the patient took the medicine or not.



HARDWARE COMPONENT

SECONDARY COMPONENTS



FUTURE WORK

1

Motion system: To enhance the robot's movement in complex surroundings



2

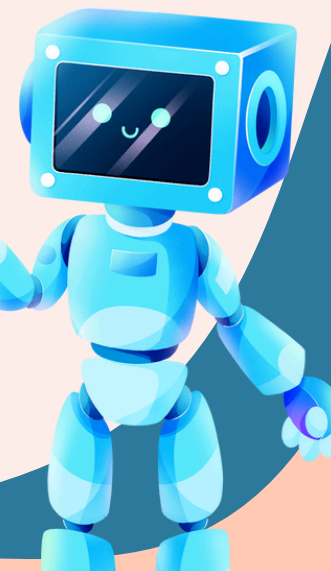
Automated tube filling: Install a pharmacy that will automatically restock the tubes when they run out.

3

Integration with the hospital system: To improve database efficiency and update patient records

4

Patient touchscreen interface: To give patients a user-friendly interface.





THANK YOU!