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Portable Kashaya Making Machine

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Abstract:- In today's business world, it's all about streamlining processes to save time, effort, and money. Combining software and machines makes this simple. This project entails the design and installation of decoction vending machines that may vend Kashaya via a mobile application. Ayurvedic decoctions are often produced by hand, which is a time-consuming process. This project aids in the effective and portable preparation of kashaya. Why not make controlling your Kashaya as simple as controlling your smart devices? To make your mornings easier, the Smart Kashaya Machine (SKM) combines these features.

Keywords:- *IoT, KASHAYA, ARDUINO UNO, HX711, HC-05, Heating coil.*

I. INTRODUCTION

The emerging "Internet of Things" movement is connecting an increasing number of home devices to the Internet. Smart light bulbs, smart thermostats, and smart door locks are just a few examples. With just a few taps on a smartphone, users may check their status and manage their settings. Furthermore, the introduction of sophisticated personal voice assistants like Amazon Alexa changed the way people interact with smart equipment. Users can now operate these smart devices just by-passing voice instructions. In recent years, vending machines have grown in popularity, and consumers are gradually accepting them. These machines are more dependable, accessible, and convenient than traditional methods of buying.The goal of this project is to create a vending machine for herbal decoctions (Kashaya) that can be controlled by a mobile application. This project's contribution aims to create a portable Kashaya machine that brews kashaya with a selected plant and delivers it. This project's purpose is to develop a portable Kashaya machine that can be usedand carried anywhere while also keeping the user informed about the temperature and amount level.

II. LITERATURE SURVEY

SuthagarS,K.S.Tamilselvan, et, all[1]

In this Paper the author provided a RFID tag to each Farmer, which has a unique code. The code is shown on the RFID card reader LCD when the RFID tag is punched. The milk is dumped in the tank, which determines its quality and quantity. A pH sensor was used to assess the quality of the milk, and an ultrasonic sensor was used to calculate its quantity. According to its quality, milk is divided into three categories: first quality, second quality, and rejection. To separate the components, three solenoid valves are used. Based on its quality, milk is segregated into different tanks. PC receives data about the price, quality, and quantity of milk.The cash note is deposited by the consumer.They employed a web camera to record the image of the money note, which was then compared to a database on the computer. For quality selection based on client preference, they employed a switch. Milk is sold based on the amount of rupees placed and the quality chosen by the buyer. A 4°C refrigeration temperature is maintained throughout the system.

P.Pradeepa,et, all [2]

When a coin is inserted, vending machines dispense little amounts of various things. Microcontroller and FPGA boards can be used to implement these machines in a variety of ways. In this research, we present an efficient technique for vending machine implementation using an FPGA board. FPGA-based vending machines respond quickly and consume less power than microcontroller-based vending machines. Four goods and three coins are supported by the FPGA-based vending machine. The vending machine accepts coins in any order as inputs and provides products when the required amount is placed. If the entered amount is larger than the price of the product, the change is returned.It also has a cancellation feature, which allows the user to cancel the request at any time and have the money refunded to them without any merchandise. The proposed algorithm is written in Verilog HDL and tested with the Xilinx ISE simulator. On the Xilinx Spartan-3A FPGA development board, the design is implemented.

Kwangsoo Kim, et, all [3]

In this paper the author mainly focuses on how technologies contribute to make our daily life more convenient. Many individuals buy coffee from vending machines without understanding whether or not they are clean. They created a sensor and actuator network and installed it inside a vending machine to track their cleaning state. The network keeps track of the machine's indoor environment and adapts the coffee's flavour to the customer's preferences. A consumer uses a smartphone to view environmental data and regulate the amount of coffee, sugar, and powdered coffee creamer added to a cup of coffee. The phone and the machine communicate via Bluetooth. Better tailored service is supported by the established system.

Aditya Parulekar, et, all [4]

The goal of this project is to meet the specific needs of the consumer, particularly in the small-scale sector, by giving them the option of selecting the types of tea/coffee they want, as well as a suitable reservoir of water, such as a 1 litre mineral water bottle, thereby going one step beyond the machines currently available in the market for small scale organizations/industries/offices.

Ana Monga, Balwinder Singh [5]

A new technique to designing an FSM-based vending machine [3] with auto-billing functionalities is proposed in this study. The machine also has a cancel feature, which allows the user to cancel the request and have the money returned to them. The user will receive a bill detailing the total quantity of products delivered as well as the overall cost. This equipment is suitable for usage in hotels, restaurants, and food markets. This saves time and money.

III. HARDWARE COMPONENTS

A. Arduino UNO

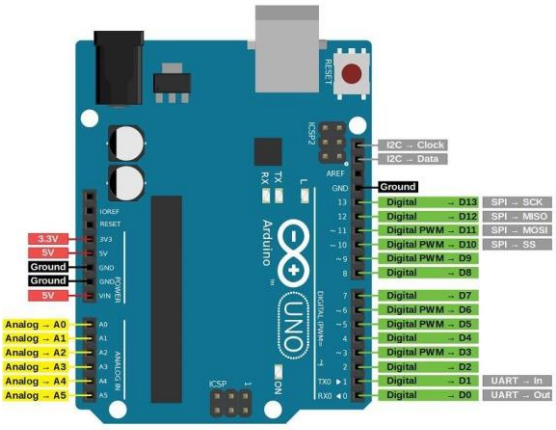

Fig. 1: Arduino UNO

Arduino is a free and open-source prototyping tool using simple software and hardware. It consists of a programmable circuit board and ready-to-use software known as the Arduino IDE, this is used to write and upload computer code to the physical board.

B. Bluetooth

Fig. 2: Bluetooth

The HC-05 module is a straightforward Bluetooth SPP (Serial Port Protocol) module for establishing a wireless serial connection.Bluetooth V2.0+EDR (3Mbps Modulation) serial port Bluetooth module with 2.4GHz radio transceiver and baseband. It only contains one chip. External Bluetooth system with CMOS and AFH technology from CSR Bluecore 04. Its footprint is 12.7mmx27mm, which is quite small.

C. Ultrasonic Sensor

Fig. 3: Ultrasonic Sensor

An ultrasonic sensor is a device that uses ultrasonic sound waves to determine the distance to an item. A transducer is used in an ultrasonic sensor to emit and receive ultrasonic pulses that relay information about the proximity of an item. High-frequency sound waves bounce off walls and create different echo patterns.

D. DHT 11 Sensor

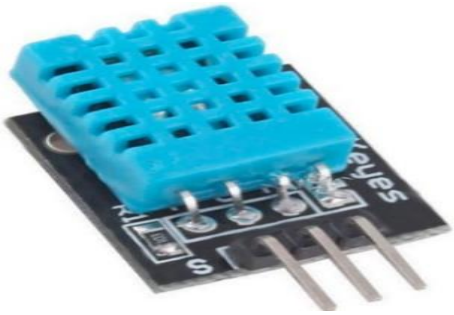

Fig. 4: DHT 11 Sensor

The DHT11 sensor is offered as a standalone sensor as well as a module. In either case, the sensor's performance is the same. The sensor will be packaged in a 4-pin package with only three pins, while the module will have three pins as shown above. The module includes a filtering capacitor and a pull-up resistor, whereas the sensor requires these to be purchased separately.

E. WiFi Module

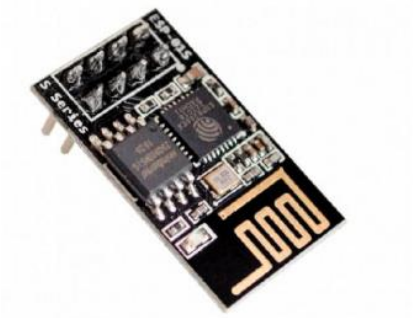

Fig. 5: WiFi Module

WiFi (wireless fidelity) modules, also known as WLAN (wireless local area network) modules, are electronic components that enable a wireless internet connection in a variety of goods. WiFi modules for IoT fall into two categories: A "single" approach in which the MCU serves as

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both the WiFi stack and the host application. A "host processor Plus WiFi module" solution, in which the WiFi stack is contained in the wireless connectivity solution, while the host application is executed by a separate processor.

F. Relay

Fig. 6: Relay

A relay is a device that controls the operation of other devices in an electric circuit by changing its electrical or physical state. A protective relay is a relay with the primary purpose of protecting service from interruption or preventing or limiting damage to apparatus. A protective relay is an electrical device that is meant to trip a circuit breaker when a malfunction is detected.

G. Connecting Wires

Fig. 7: Connecting Wires

A wire is a metal strand that is flexible and cylindrical in shape. Electrical conductivity is established between two devices in an electrical circuit using wires.

IV. METHDOLOGY

This project produces a three-slot ayurveda decoction vending machine with three distinct therapeutic plants like ginger, tulasi, and mint. These herbs are placed in heaters 1, 2, and 3 in that order. The mobile application transmits a signal whenever the user selects the decoction for their needs, and the sensing unit passes the pulse fluctuation to the microcontroller. The heater and solenoid valve are actuated by the relays in response to the pulse input to the microcontroller. The status of the dispensed substance will be displayed on the LCD and via the App.

Process:

- Asks to select decoction.
- Indicate the type of decoction selected
  - Decoction 1 - Mint
  - Decoction 2 - Ginger
  - Decoction 3 - Tulasi
- Indicates increasing Temperature range in degree C.
- When the temperature is achieved, the decoction is dispensed.

V. ARCHITECTURE

A. Block Diagram

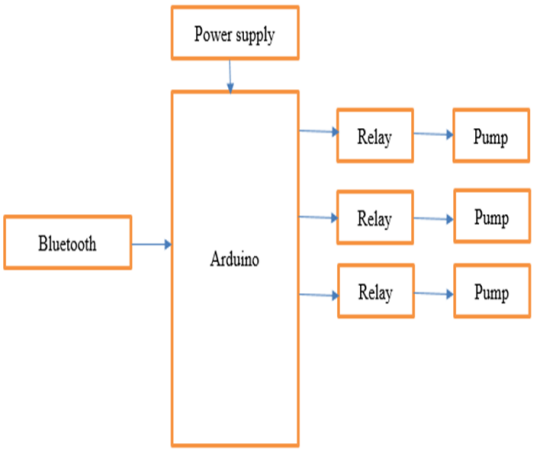

Fig. 8: Block diagram –I

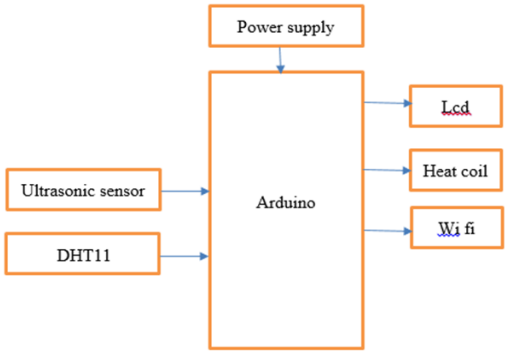

Fig. 9: Block Diagram – II

B. ActivityDiagram

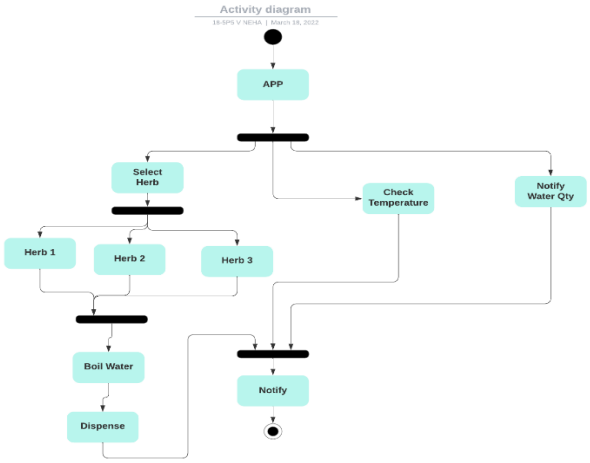

Fig. 10: Activity Diagram

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C. Overview of kit

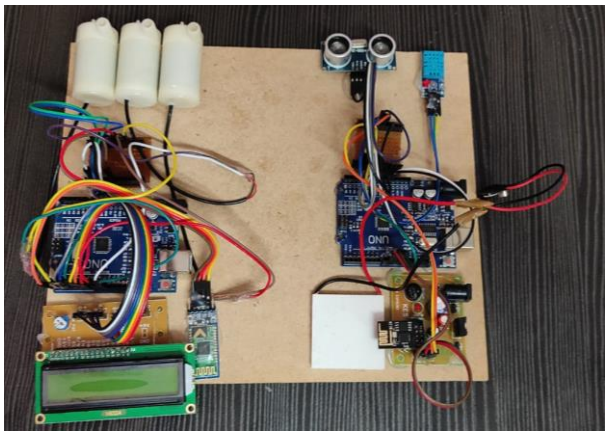

Fig. 11: Overview of kit

VI. TEST CASES

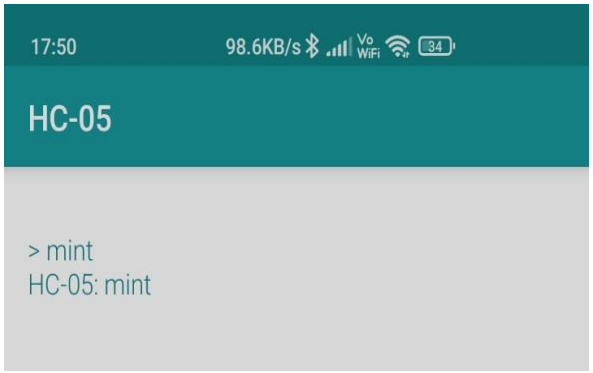

Fig. 12: User inputs Mint on the Bluetooth app

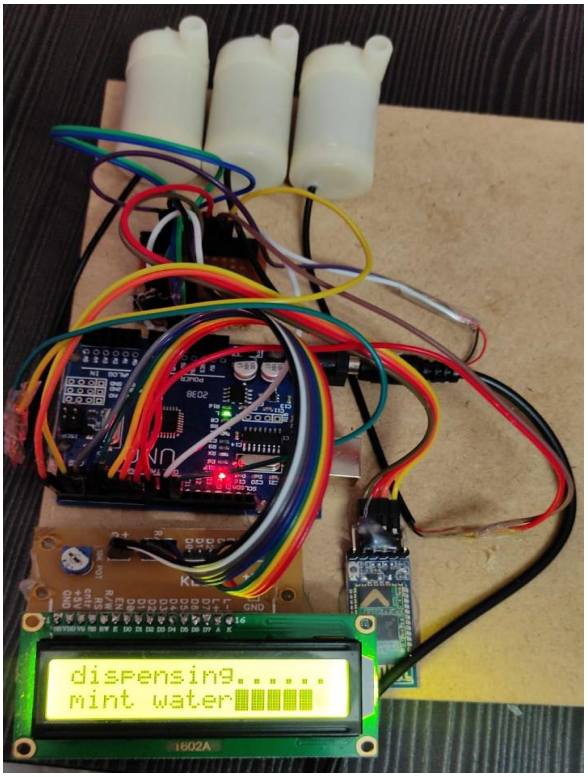

Fig. 13: User selects the Mint decoction

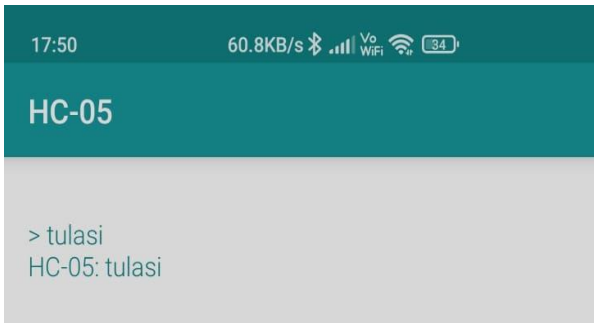

Fig. 14: User inputs Tulasion the Bluetooth app

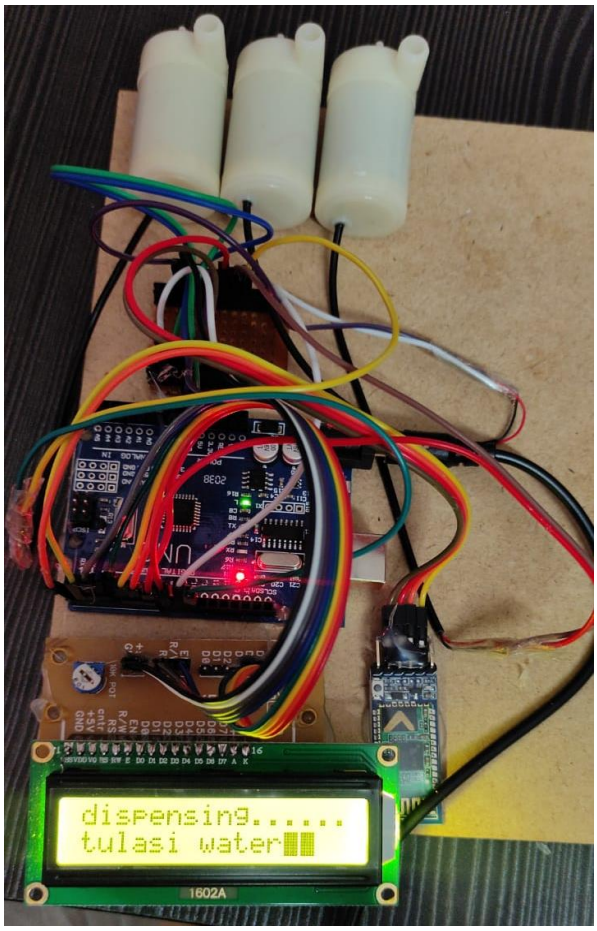

Fig. 15: User selects the Tulasi decoction

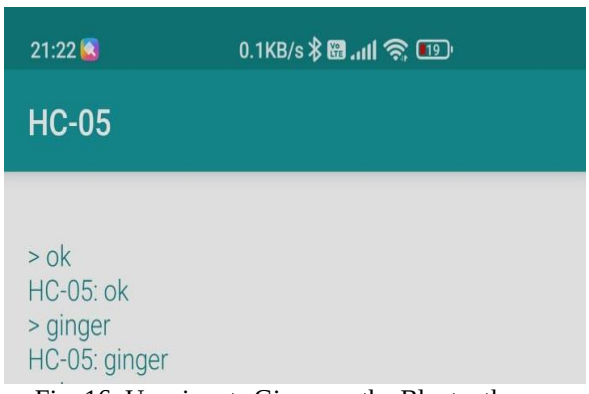

Fig. 16: User inputs Gingeron the Bluetooth app

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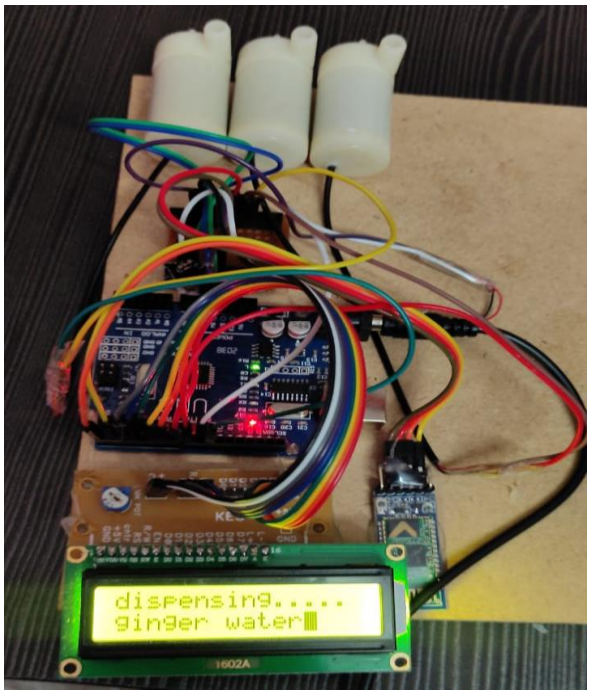

Fig. 17: User selects the Ginger decoction

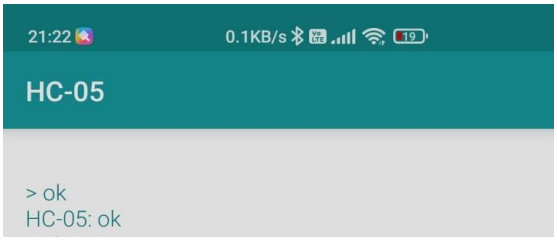

Fig. 18: User inputs Okon the Bluetooth app

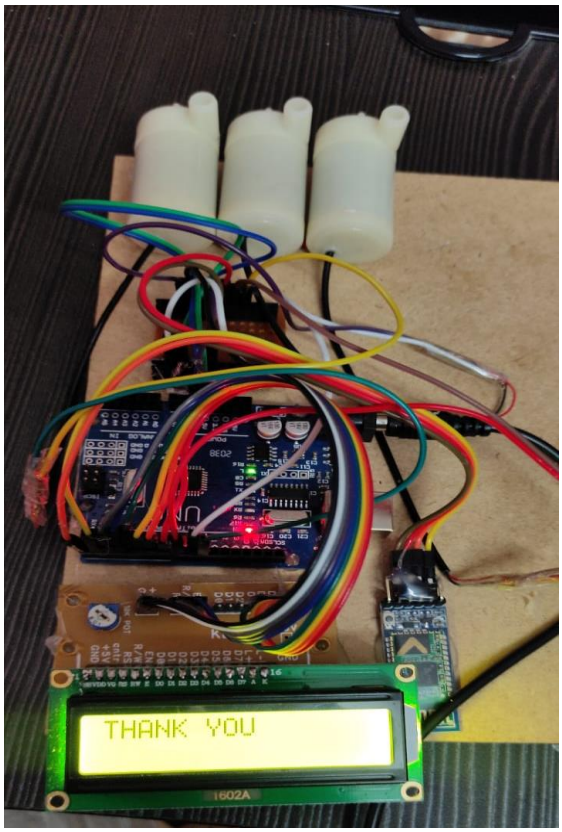

Fig. 19: User types Ok System responds

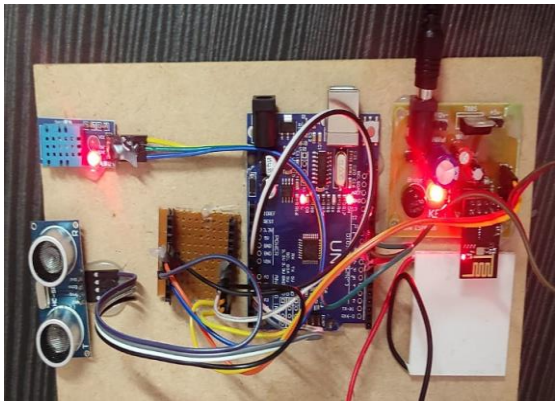
Fig. 20: User checks the temperature and decoction level

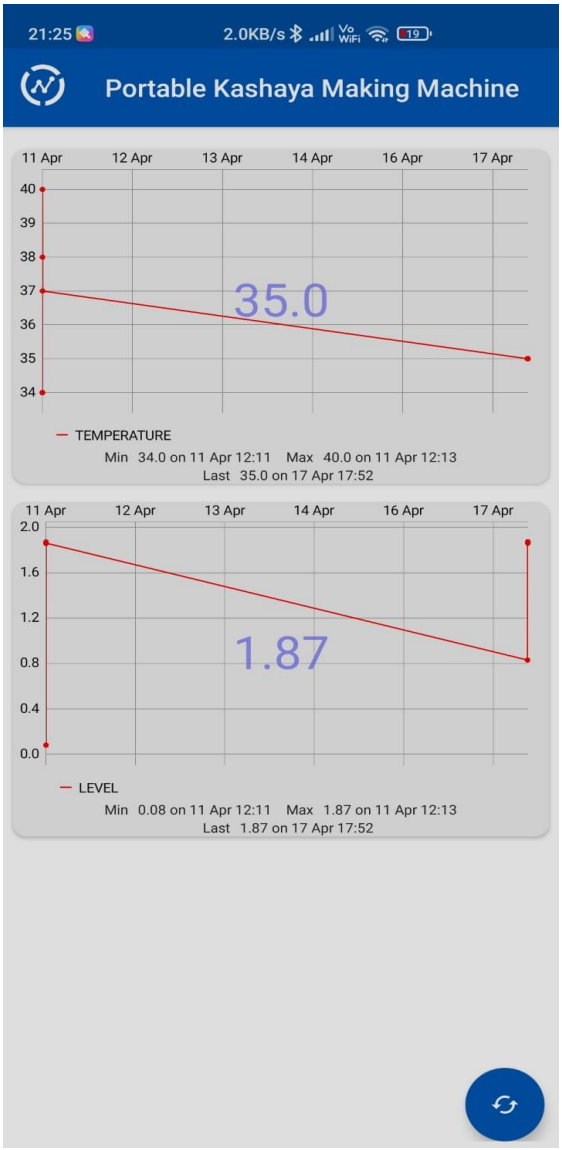

Fig. 21: Readings of temperature and decoction level

VII. CONCLUSION

The SKM was able to be operated via the Android smartphone application we designed after all of the debugging we did during the process of merging everything together. The Android smartphone application's notification system could alert the user when a kashaya was being brewed and when it was finished. To protect the circuitry from short circuits or inadvertent damage, the entire hardware of the project is housed in an enclosure. A few things would need to be done to turn this project into a viable product that could be sold. To begin, the SKM would need to be able to communicate from anyplace with an internet connection. This would require the SKM to be connected to a cloud service and capable of receiving a command from the Android app to make a cup of kashaya from anywhere there is an internet connection. The second approach would be to hide all of the wiring inside the computer to give it a more professional appearance.

VIII. FUTURE ENHANCEMENTS

The prototype could be refined and evolved into a practical system. The Portable Kashaya Making Machine can also help future societies save time, eliminate physical labour, and even live a healthier lifestyle. Future systems will have more slots and faster processing speeds.

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