

GUJARAT TECHNOLOGICAL UNIVERSITY

Chandkheda, Ahmedabad

Affiliated



GOVERNMENT ENGINEERING COLLEGE BHAVNAGAR

, BHAVNAGAR

A PROJECT REPORT

ON

AUTOMATIC DRUG DISPENSER

Under Subject of

DESIGN ENGINEERING –II B

B.E. III, Semester VI

(Electronics & Communication ENGINEERING)

Submitted by:

Sr.	Name of Student	Enrollment No.
1.	Pandey Rajroshan	220210111030
2.	Aditya Kumar	220210111001
3.	Bhojani Kazim	220210111008

Submitted to:

Prof.Brijesh R.Solanki

(Faculty Guide)

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ABSTRACT

We live in a world in which technology embraces us, makes our lives easier and more enjoyable. Although we all benefit from this emerging technology, certain groups of people need more help and support than others: Patient and Remote Areas. For them technology means a way of having an almost normal life. So, we focused our attention on an age-old concept: the smart Medication Technology, more precisely Automated Drug Dispenser is a part of the smart paradigm. This Machine is mainly designed for the pharmacy in the hospitals. And ending the queue in the front of pharmacy.

This report discusses ways in which new technology could be harnessed to create an intelligent solution in pharmaceutical with a focus on user-based information. The Automatic Drug Dispenser with prescription QR code integration presents a cutting-edge solution for accurate and precise medication dispensing. This system employs QR code technology linked individual Prescriptions, ensuring the accurate and secure delivery of the prescribed medication in the right dosage. By seamlessly integrating with healthcare databases, the dispenser guarantees real-time verification, reducing the risk of errors and enhancing patient safety. This innovation not only streamlines the medication process but also promotes adherence by providing a full proof method for administering the correct amount of medicine. The Automatic Drug Dispenser reduces the queue in the front of the hospital's pharmacy and human error prevents patient from mentally and physically from long queue in the pharmacy. The Automatic Drug Dispenser with QR code functionality represents a significant step towards improving medication management and fostering a safer healthcare environment.

A,E,I,O,U: FRAMEWORK

- A - Activity
- E - Environment
- I - Interactions
- O - Objects
- U - Users

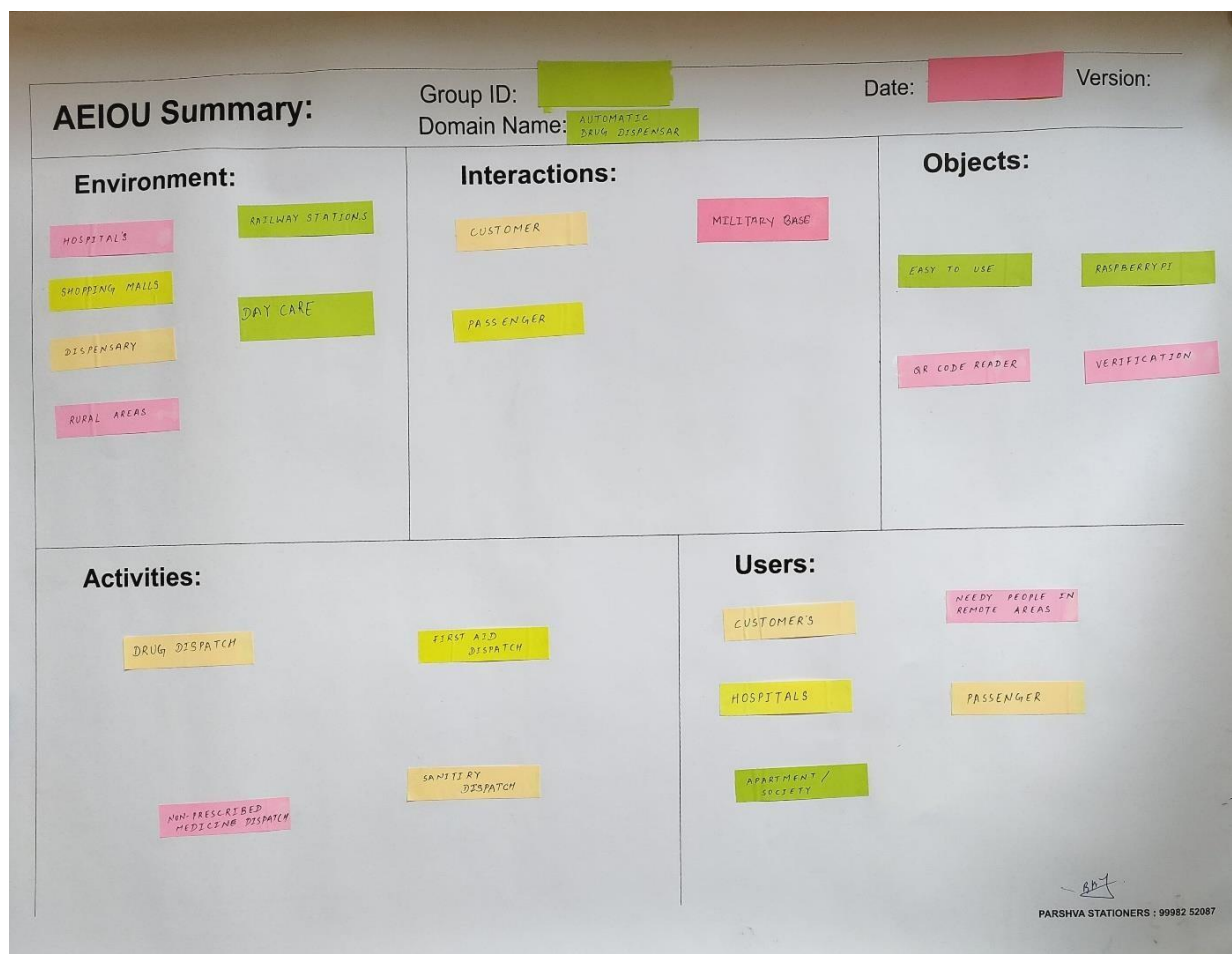


Fig. 1: AEIOU Framework

1.) ACTIVITY: -

- Drug Dispatch
- Sanitary Dispatch
- First Aid Dispatch
- Non-Prescribed medicine

2.) ENVIRONMENT: -

- Apartment/Flats
- Rural Areas
- Dispensary
- Shopping Malls
- Railway / Metro Station
- Hospitals

3.) INTERACTIONS: -

- Hospital Staff
- Customer
- Passengers

4.) OBJECTS: -

- Easy to Use
- Raspberry pi
- QR Code Reader
- Verification

5.) USERS: -

- Customers
- Hospitals
- Apartment/Society
- Customer's
- Passenger's
- Needy People In Remote Areas

EMPATHY CANVAS

Design For Date		Design By Version	
USER METRO AREAS DISPENSARY REMOTE AREAS		STAKEHOLDERS HOSPITAL AUTHORITY RAILWAYS GOVERNMENT PHARMACEUTICAL COMPANIES	
ACTIVITIES DRUG DISPATCH SANITARY DISPATCH FIRST AID DISPATCH NON-PRESCRIBED MEDICINE DISPATCH			
STORY BOARDING HAPPY One day when I was in my village. In my neighbourhood there was a young child around 8 years old. In the middle of the night at 11:30 AM, the child in our neighbourhood which were suffering from illness got high fever and his body was at very high temperature. The medicine which were required was not available in our neighbourhood. So, at that time we and neighbours went on searching medicine but no clinic or pharmacy was opened in our village at that moment we found Automatic Drug Dispenser from which we got the medicine and child was saved.			
HAPPY Few months ago, when we and my friends were going on a trip on our bikes. suddenly, one of our friend got into accident and got injured. we admitted him in the nearby available city Hospital. At that time we got to know that there was a Automatic Drug Dispenser in that Hospital and we saved time in buying medicine from Automatic Drug Dispenser and saved our friend's life.			
SAD Sometime ago on late one evening the lady need to our flat accidentally injured herself with a kitchen knife while preparing dinner. the deep cut resulted in heavy blood loss and in a panic, she realised there was no first aid kit in her apartment. frantically knocking on my door she pleaded for help but even we don't have first aid kit, somehow we managed to stop blood loss by tying cloth on her hand. we realised if there was any such Automatic Dispensary we would have been used first aid to cure her cut.			
SAD When I was at the bustling railway station, I witnessed a chaotic scene as passengers hurriedly deboarded. In the midst of the rush, a mishap occurred - one passenger stumbled and got injured, highlighting the risks of disembarking while the train was still in motion. The platform was buzzed with concern as bystanders and station staff rushed to assist. If there was any emergency dispensary available then such accidents or injuries will be cured easily, at the bustling Railway station.			

Fig. 2: Empathy Canvas

1.) USERS: -

- Hospitals
- Metro Areas
- Dispensary
- Remote Areas

2.) STAKEHOLDERS: -

- Hospital Authority
- Pharmaceuticals Companies
- Malls and Shop Owner
- Railway and Metro Authority
- Government Authority

3.) ACTIVITY: -

- Drug Dispatch
- Sanitary Dispatch
- First Aid Dispatch
- Non-Prescribed Medicine

IDEATION CANVAS

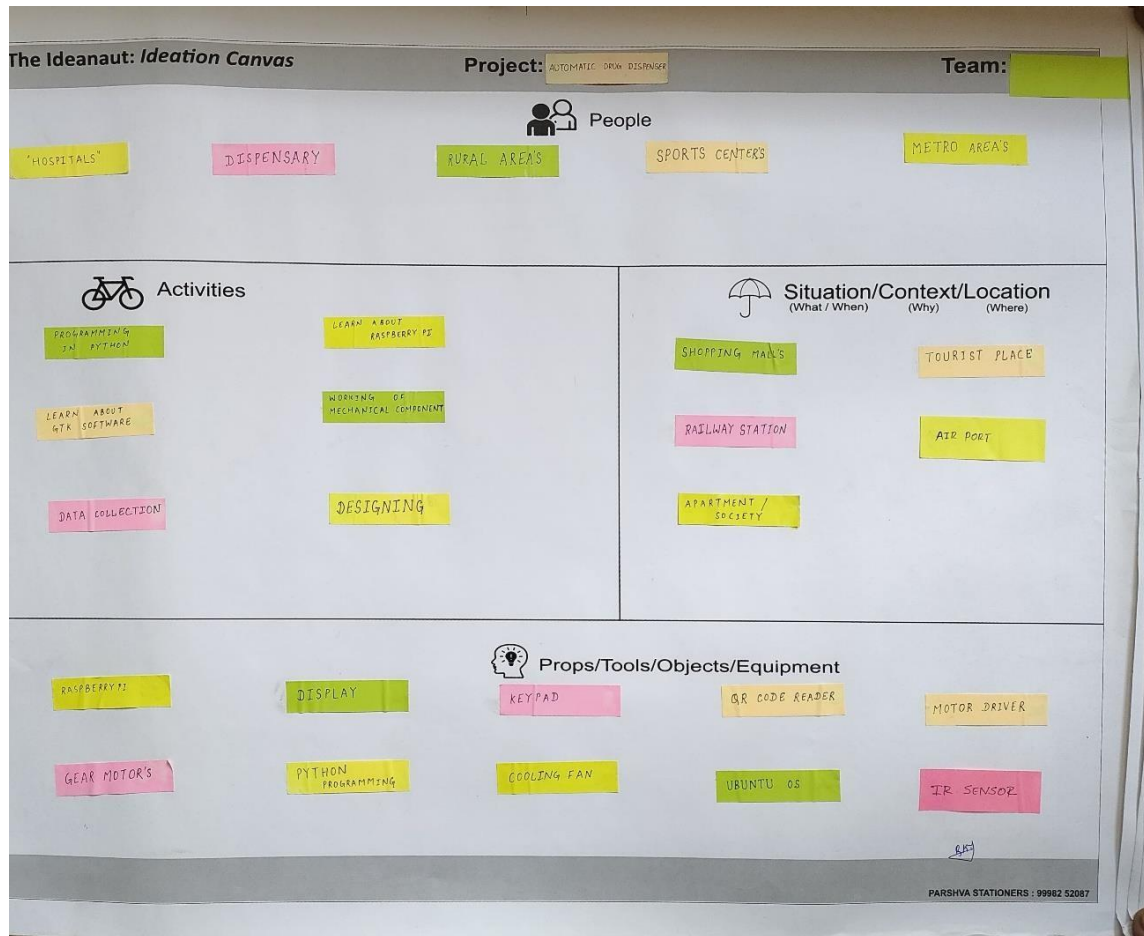


Fig. 3: Ideation Canvas

1.) PEOPLE: -

- Hospitals
- Pharmaceuticals Company
- Rural Areas
- Sports Center
- Metro Areas
- Passenger
- Mall Authority
- Customer's

2.) ACTIVITIES: -

- Programming in Python
- Learn About Raspberry pi
- Learn About GTK Software
- Soldering Component's
- Data collection
- Designing

3.) SITUATION/CONTEXT/LOCATION: -

- Shopping Malls
- Tourist Palace
- Apartment / Society
- Railway / Metro Station

4.) PROPS/TOOLS/OBJECTS/EQUIPMENT: -

- Raspberry pi
- Display
- Keypad
- QR Code Reader
- Motor Driver
- Gear Motors
- Cooling Fan
- Spring Coil

PRODUCT DEVELOPMENT CANVAS

Product Development Canvas		Team/Date/Version	ID:	DATE:	202
Purpose What is the purpose of this concept you're developing? Does it solve a problem, or it enhances a certain experience? Is it serving a need or it is trying to create a new need or tap an untapped need?	Product Experience Define what your customer should feel like when he uses your product/service? What emotions, feelings would define his experience? Feeling of comfort, convenience, or feeling of buying more with less (cost conscious) or feeling of greater security/safety etc.		Customer Revalidation Once you're finished with your feature set, test with the customer/user if the features, functions are useful. Speak to the customer/user.		
	Product Functions Functions are a products answer to user problems/need. They do something that user wants. They are often verbs in nature. Every function is powered by many features. Multitasking is a function. Browser tabs is a feature that powers the multitasking function. A function can have one or more features powering it. Functions are very generic in nature, features are often more specific. Functions can be similar to product experience. Safety (product function) provides a feeling of safety (product experience).				
	Product Features Product features are specific. One or more features will power a function. Airbrake Brakes, Airbags are features that power the safety function. Browser tabs, Apple's home button to multitask between apps are features powering the multitasking function. Each feature will have many components/sub components powering it. Sometimes a very popular component becomes a feature in itself. Like car stereo is a major components and a feature at the same time powering the in car entertainment function powering entertainment as a product experience.				
People Who is the key customer segment who will use this product/service or the end product of the concept you're pursuing? Write here about them, describe them a little.	Components Components build up the features. For an airbag it will comprise a list of component like bags, triggers etc. that go into making it. For a tabbed browser it will comprise of various chunks of code that will make the tabs work. In cases where the feature is a major component, you could list here the auxiliary components that are required to make the major component work. You can also list new adjustments and innovations you're planning here at the component level.		Reject, Redesign, Retain Post customer validation, reject, those functions or features that the customers didn't find useful. Redesign those that were partially useful and retain those that met the bar. Iterate with this until all functions/features are accepted.		
TIME EFFICIENT BENEFICIAL IN EMERGENCY EASY TO USE	HUMAN INTERPRETATION QR CODE TO MACHINE MACHINE TO MEDICINE MOTOR DRIVER TO MEDICINE COLLECTOR				
HOSPITALS DISPENSARYS RURAL AREAS RAILWAY STATION	TIME EFFICIENT FRIENDLY USER-INTERFACE 24x7 AVAILABILITY RELIABLE		TROUBLE IN UPGRADATION HIGH MAKING COST HIGH MAINTENANCE COST		
	RASPBERRY PI KEYPAD GEAR MOTOR DISPLAY QR CODE READER MOTOR DRIVER SOME IC's, SOCKET, PLUG, PINS WIRE, LED, DIODE, RESISTOR, SWITCH COOLING FANS		B.K.V.		

Fig. 4: Product Development Canvas

1.) PURPOSE: -

- Time Efficient
- Easy to Use
- Help to Everyone
- Beneficial in Emergency

2.) PEOPLE: -

- Passengers
- Hospitals
- Dispensary
- Rural Areas
- Railway Station

3.) PRODUCT FUNCTIONS: -

- Human interpretation
- QR Code Reader to Machine
- Machine to Medicine
- Motor Driver to Collector

4.) PRODUCT FEATURES: -

- Improved Customer's Experience
- Time Efficient
- 24 * 7 Availability
- Reliable
- Easy Working
- Friendly User Interface

5.) COMPONENTS: -

- Raspberry pi
- Keypad
- Gear Motor
- Display
- QR Code Reader
- Motor Driver
- LED, Wire, Diode, Resistor, Switch
- Some IC, Socket, Pins
- Cooling Fans

MIND MAPPING CANVAS

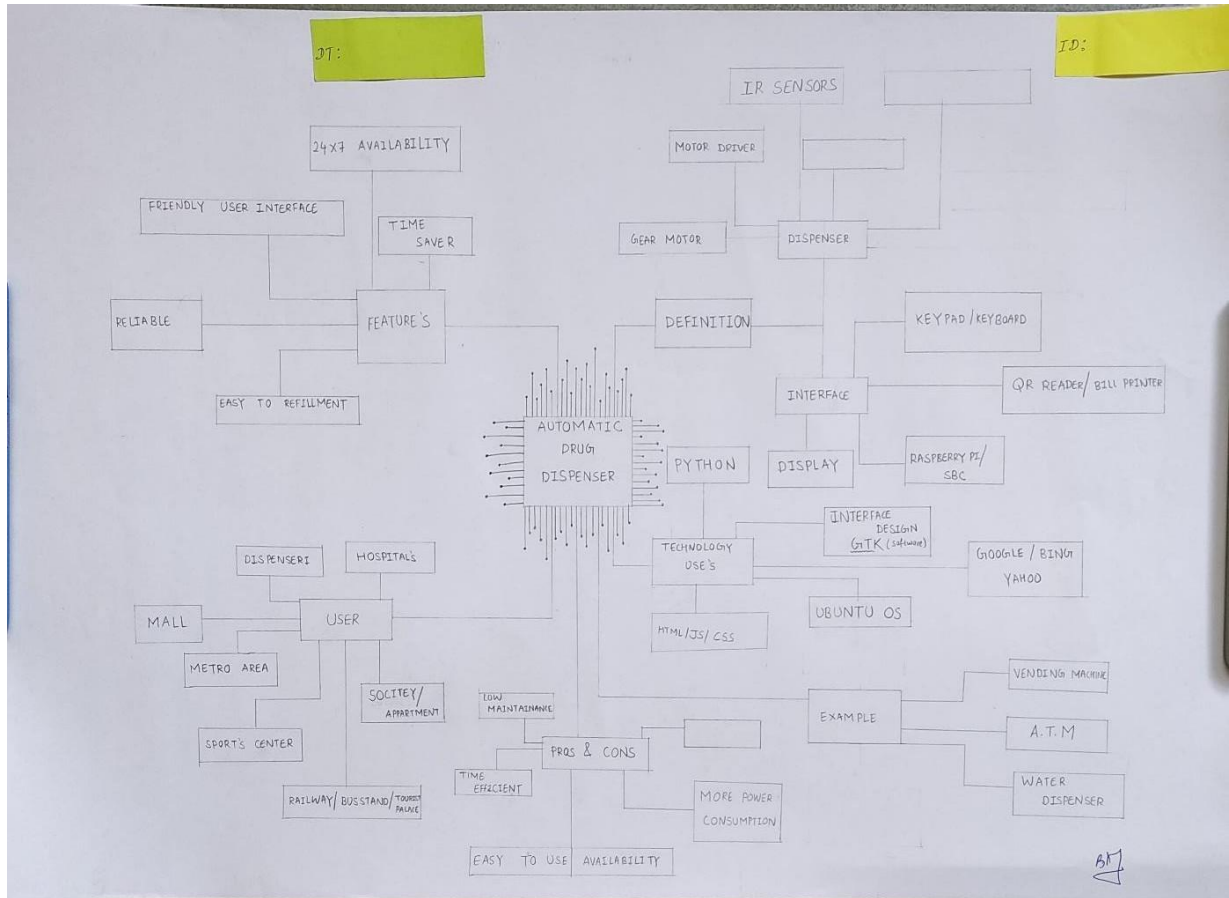


Fig. 5: Mind Mapping Canvas

LEARNINGS NEED MATRIX

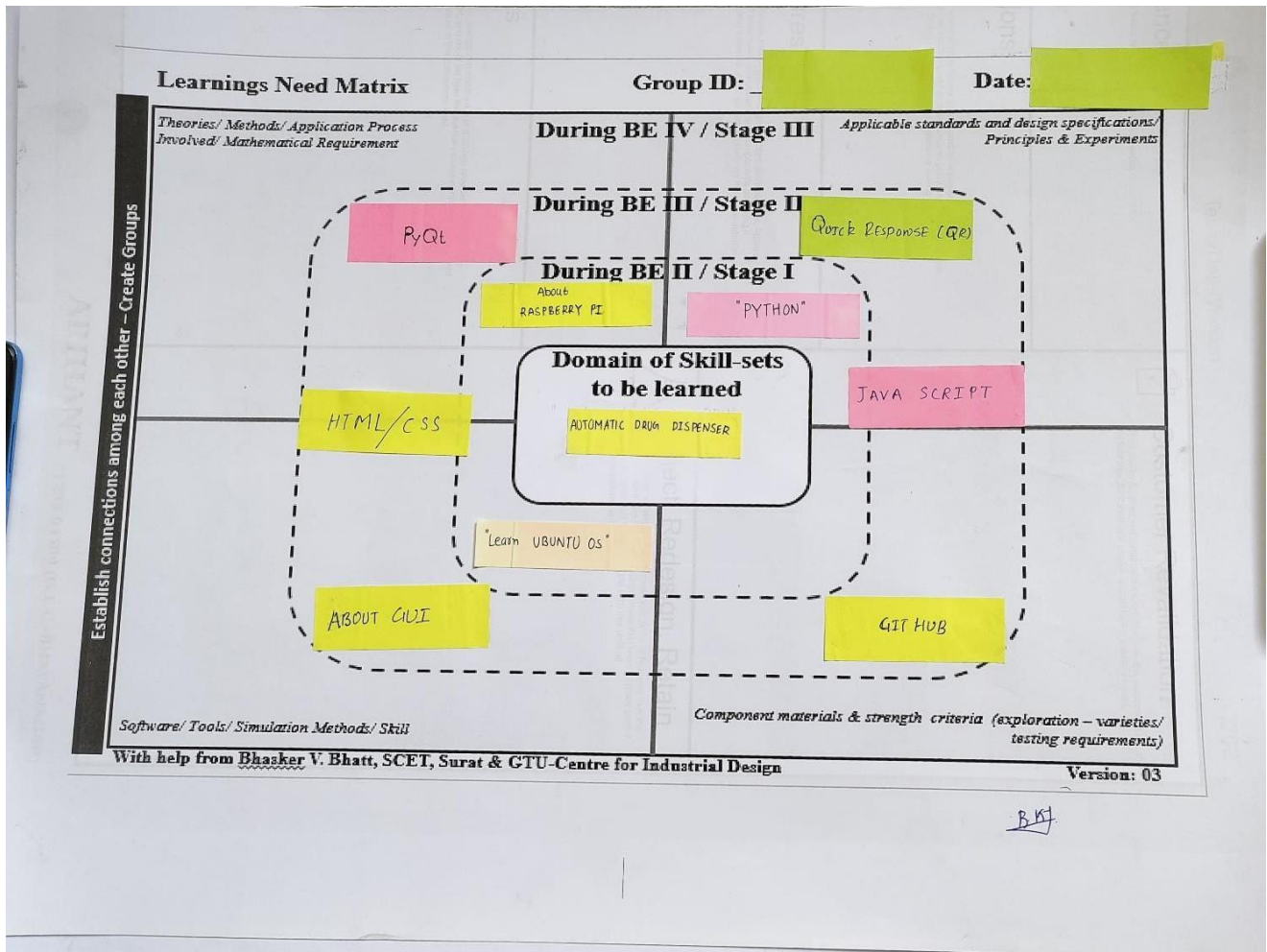
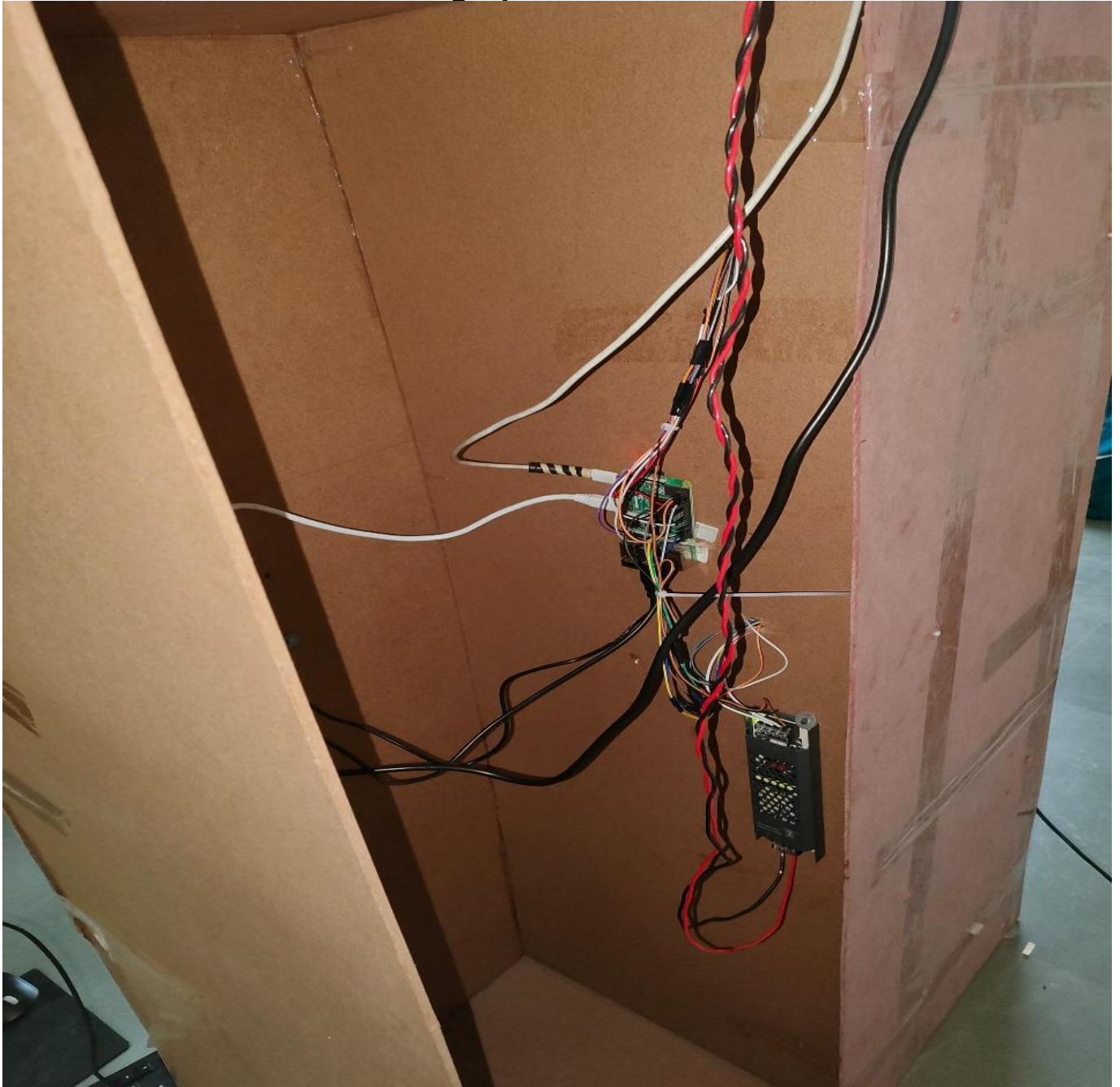


Fig 6: Learnings need matrix

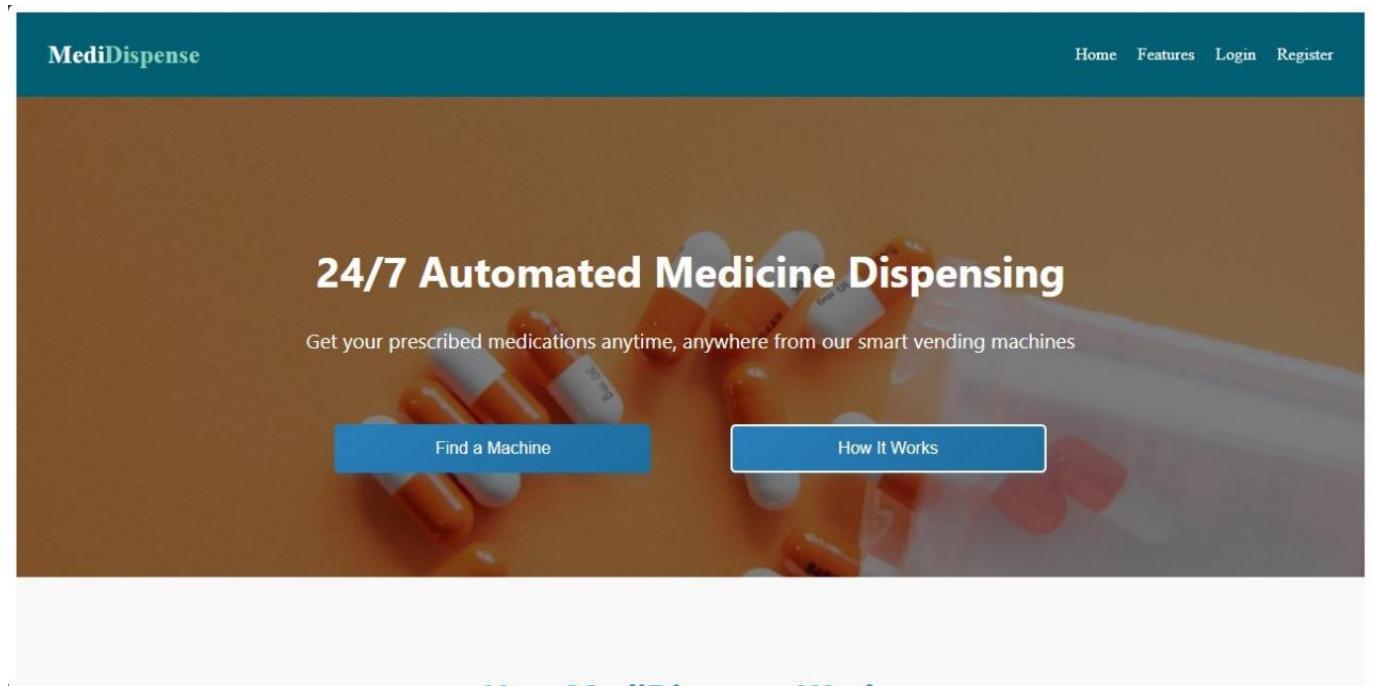
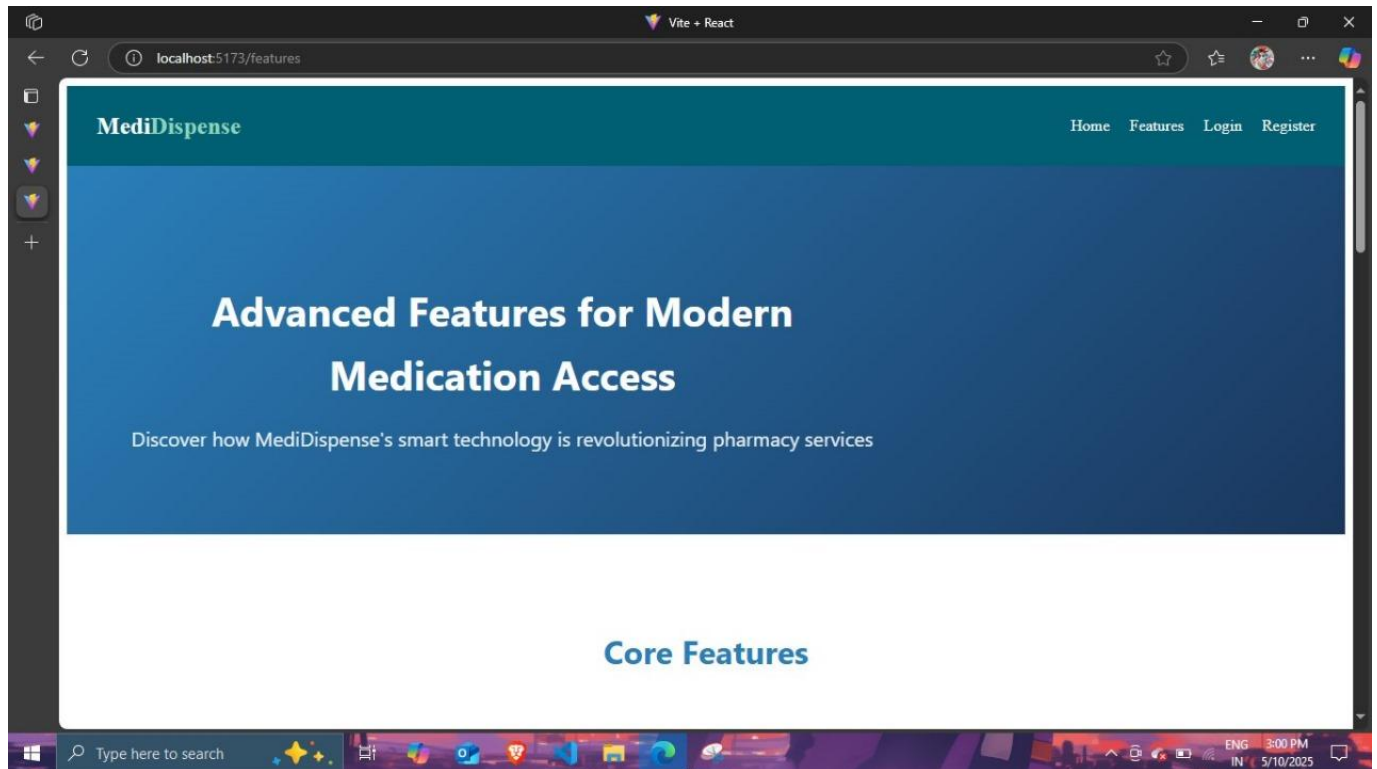
PROTOTYPE



“Circuit physical connection”



“Website for QR based prescription generation”

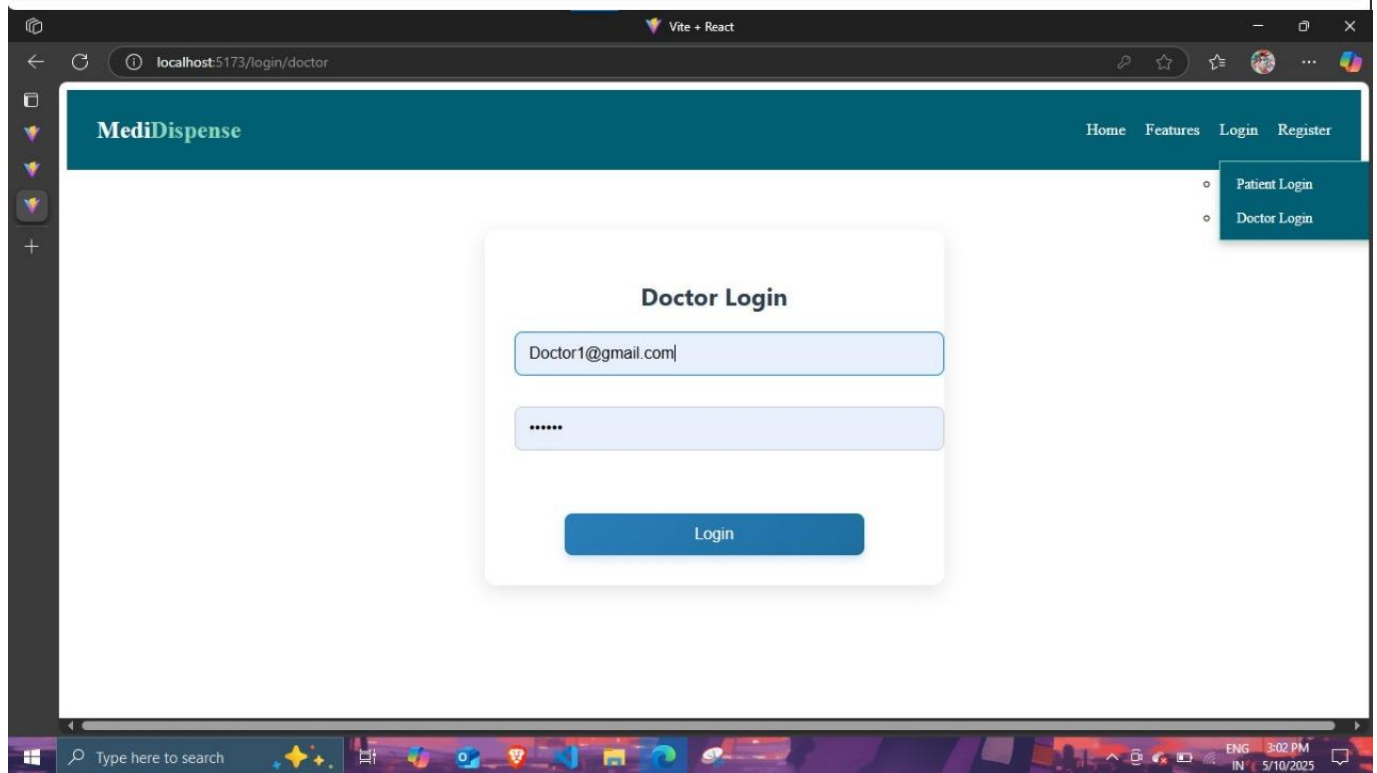


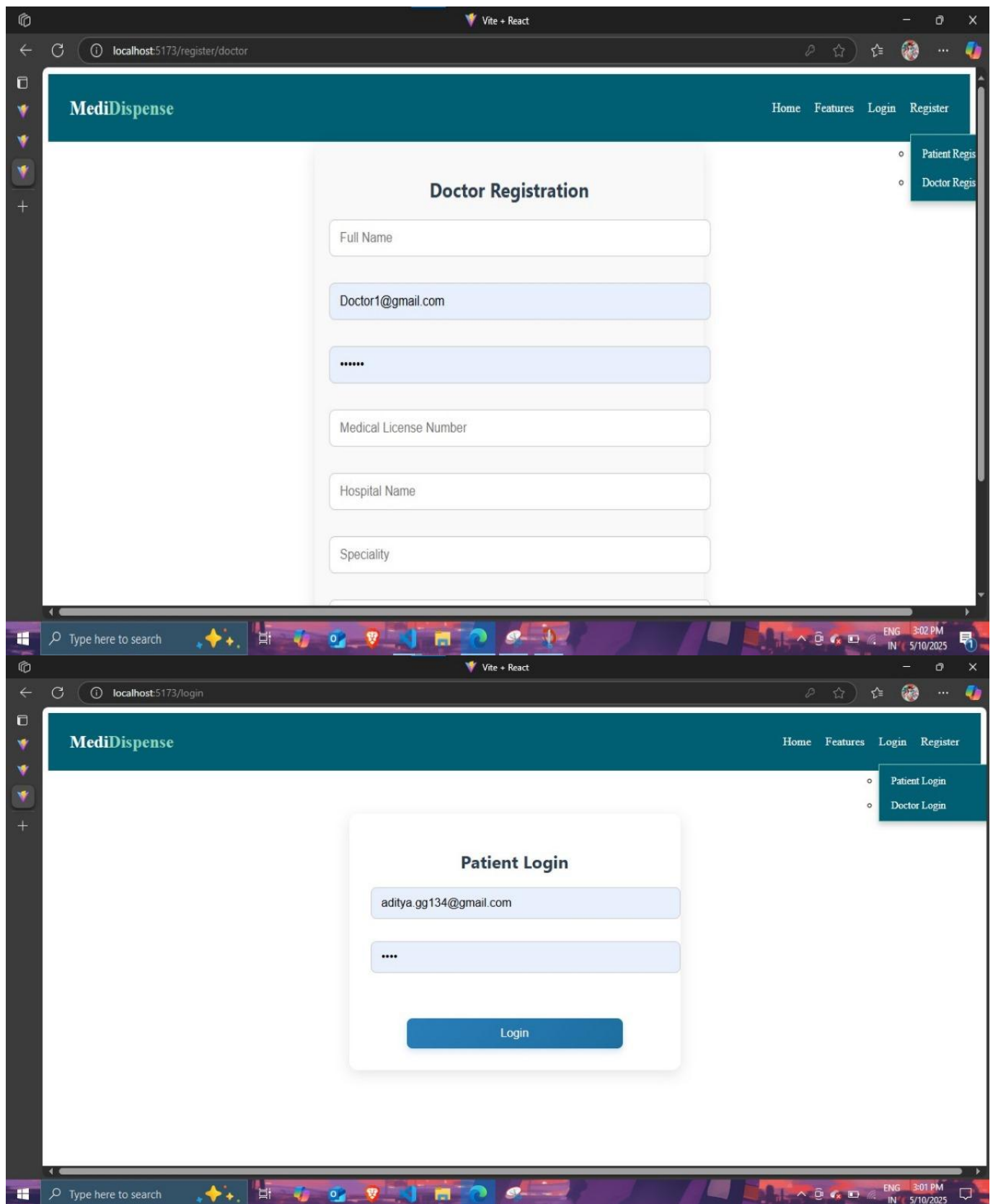
Find a MediDispense Machine Near You

Enter your location or zip code

Search

Interactive map would display here





How MediDispense Works

1

Find a Machine

Locate the nearest MediDispense vending machine using our map

2

Verify Prescription

Scan your e-prescription or enter your prescription code

3

Receive Medication

Collect your properly packaged medicine in seconds

Why Choose MediDispense?

- ✓ 24/7 access to medications
- ✓ No pharmacy wait times

CONCLUSION

The never-ending queue in hospitals is a nuisance that patients have to go through. Along with the problems being faced by patients due to suffering from diseases, standing and waiting in long queues adds on as a challenge for them to face. This leads to inconvenience to patients at physical as well as mental level. Although in this direction, some steps have been taken by the hospital management system which makes it convenient for patients to consult with doctors by registering and taking an appointment prior to the visit to hospital. But patients still face inconvenience at the mediciner
Developing a QR Code drug ATM may resolve the situation at hand, there Patients. A QR code in the prescription will be used to dish out the right drug from the ATM. The drug ATM should be able to dispense wide range of Ayush Medicines available in a hospital/pharmacy.