Project Name: Digital Health Eco-System
PG-DAC SEP-2022

Documentation On

"Digital Health Eco-System"
PG-DAC SEP-2022

UNDER THE GUIDANCE OF
: Mr.Vinu Josy

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The project "Digital Health Eco-System" was a great learning experience for us and we are
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We would like to express our sincere gratitude towards Ms. Shanur and Mr. Akash Auti , our project guide, who were always there for us. Their guidance and support helped us overcome various obstacles and intricacies during the course of our project work. Without their tremendous support, guidance, and efforts, this project would not have been possible.

From:

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1. Introduction:

1.1 Document Purpose:

This document communicates the business requirements and scope for developing Digital Health Eco-System. The scope of this document is to define the functional and non functional requirements, business rules and other constraints requirements.

1.2 Project Background:

Medical Emergency, especially in this pandemic has become an issue that almost all of the families of patients had to face. But by using the latest technologies this problem can be solved. The main reason for this problem is, hospitals do not have proper portal for managing bed availability, required medicines, and other emergency facilities. So it is always difficult for the patient to reach appropriate hospital. Therefore we have tried to address this problem with the help of our project where the focus is to make sure that every patient gets a bed and related required emergency facilities.

1.3 Aim & Objectives:

The main objective of our application is to provide an efficient and user-friendly bed availability system and related required emergency services and facilities. A community in which all people achieve their full potential for health and well-being across the lifespan. We work to be trusted by patients and creators of positive change. This system will provide easy information of all available hospitals, its facilities and external services like ambulance booking etc. This system will help any citizen in his/her in all panic situations.

2. Business Requirements Overview:

- Digital Health Ecosystem is the public web application.
- Digital Health Ecosystem will be opened to the global, but in the phase 1, the main target is in the India.
- There are mainly two types of user. One is the Patient and other is Hospital.
- Patient can search for the available beds of hospitals on the emergency basis and even the information about the hospital and its staff.
- Patient can search for the external service provider like ambulance, blood bank, equipment providers on emergency.
- Digital Health Ecosystem provides the functions which connect the patient and the hospital efficiently and quickly.
- Digital Health Ecosystem could be maintained by Administrator.

3. Functional Requirements Overview:

Digital Health Ecosystem consists of four modules described as below.

1. Administrator Module
2. Patients / Needy people Module
3. Hospital Module
4. External service provider Module (Ambulance, Blood Bank, Equipment providers)

3.1 Administrator Module

- Digital Health Ecosystem should provide all function to admin how to handle the System.

- He will edit changes according to the patient's request.

- He is responsible to edit patient's details, doctor details etc.

3.2 Patients / Needy people Module

- Patients who seeking for any emergency services can visit site and accordingly selects what they are exactly looking for .e.g. any appointment, specialist doctor visit, lab test etc.

3.3 Hospital Module

- Hospitals can register their specialized services or equipment on our platform for better exposure through which they can reach out more and more audiences/patients.

3.4 External service provider Module

- Medical service provider from outside world can give / register their specialized services or equipment on our platform for better exposure through which they can reach out more and more audiences/patients.

- Some of the the external services are Ambulance service, Bloodbank service etc.

4. Non-Functional Requirement:

- The website should use professional design, look and feel and color scheme.
- Users will have no limitations for accessing the application through Internet. The portal being an internet application, it is difficult specify exact number of visitor or users. Hence we will target the system to support between 5 and 10 million users on launch of phase 1.
- Being a public website, the site must follow general usability guidelines for menus, navigation, colors, links and other actions provided on the screens.
- The system should be designed in such a manner that user will be able to complete tasks in minimum number of steps.
  .

5. Use-Case Diagrams:-

5.1 Admin:
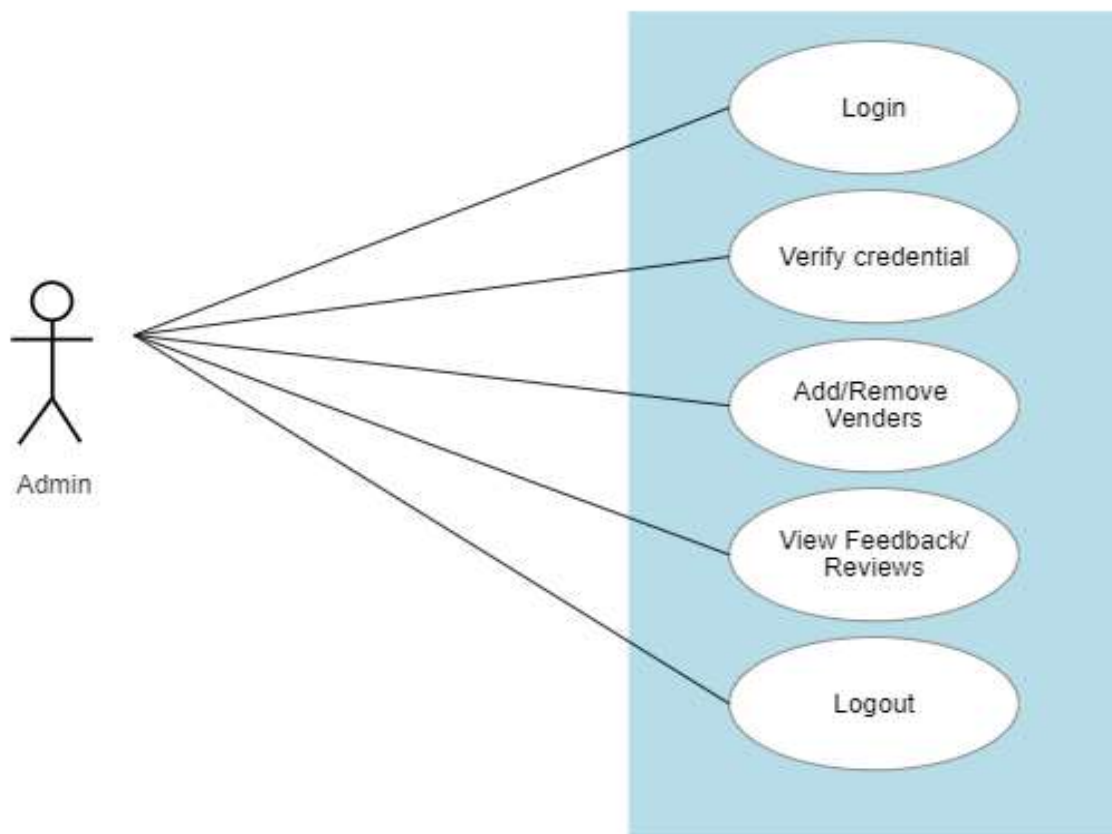

Fig. Use-Case Diagram for Admin
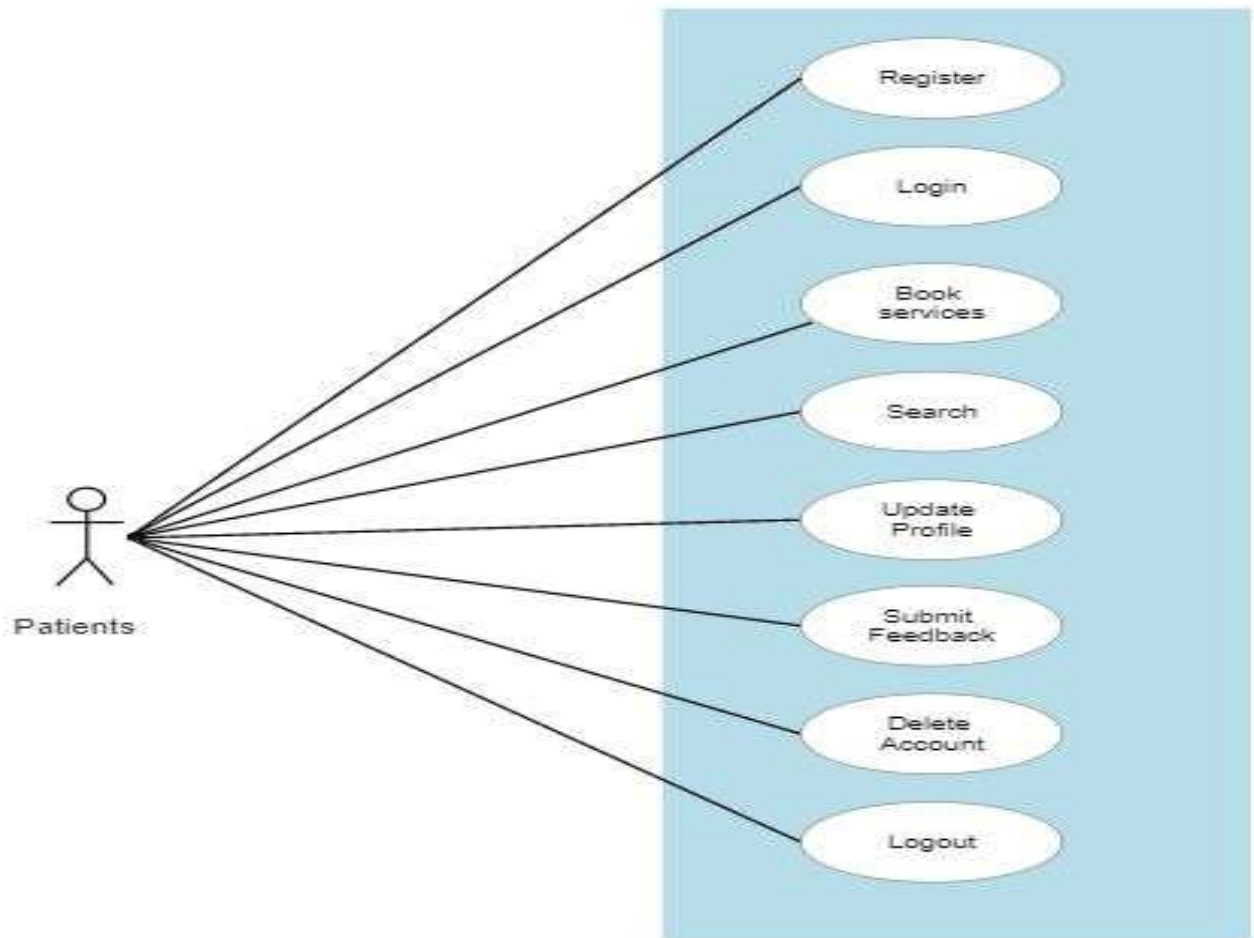
5.2: Patient

Fig. Use-Case Diagram for Patient

5.3 Hospital:

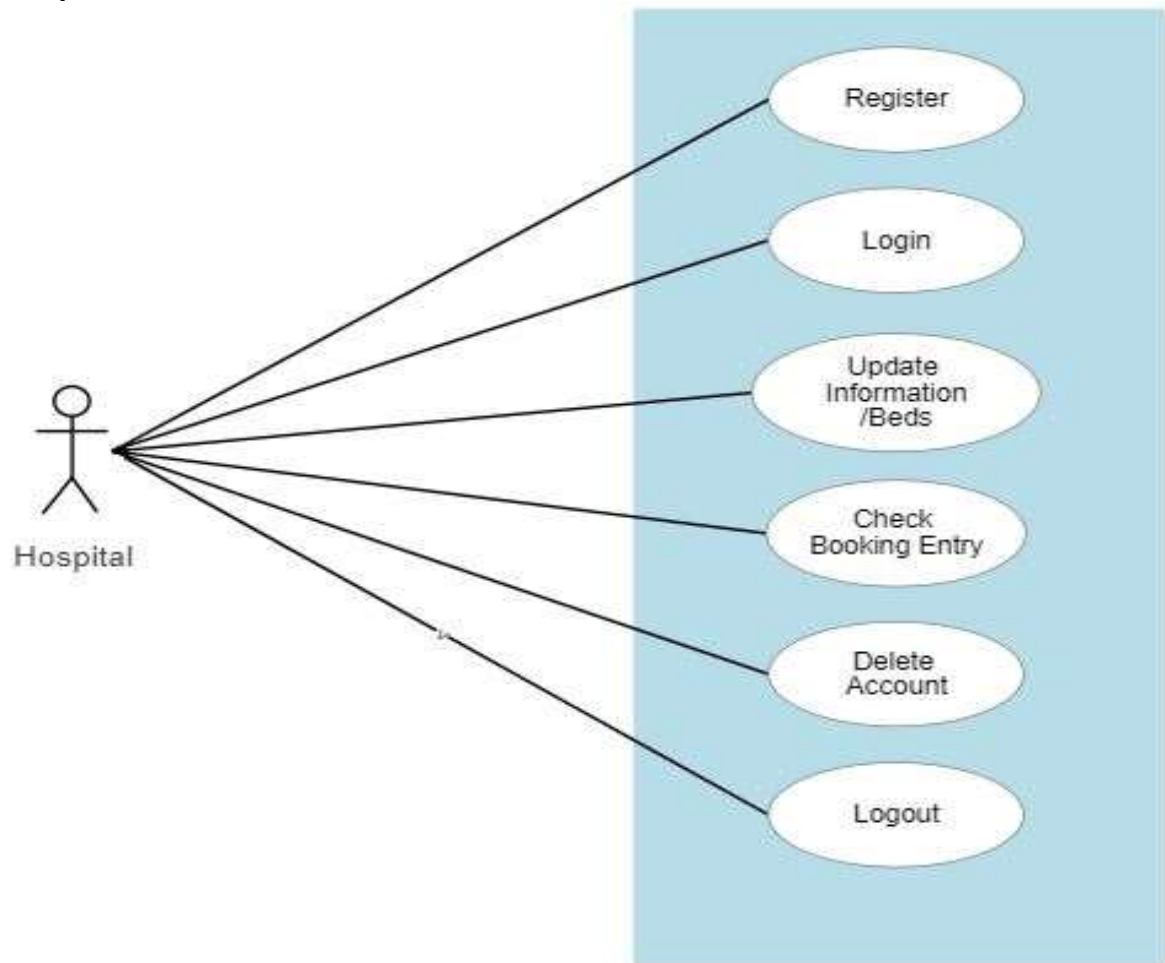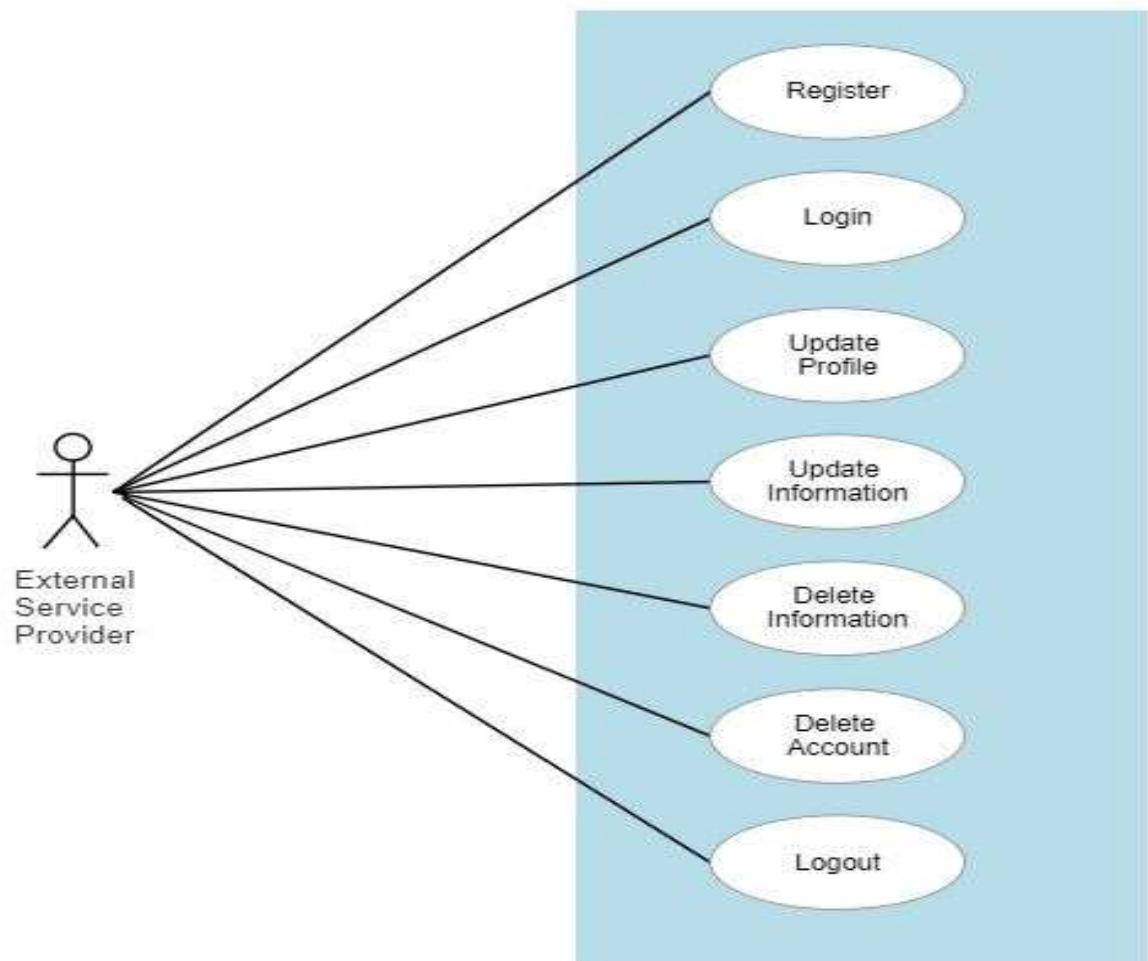Fig. Use-Case Diagram for Hospital

5.4 External Service Providers:

Fig. Use-Case Diagram for External Service
Providers.

6. Database Design:

1) Patient:

Field	Type	Null	Key	Default	Extra	Description
pid	int	NO	PRI		auto_increment	Patient id
fname	varchar(50)	NO				First Name
lname	varchar(50)	NO				Last Name
mono	varchar(50)	NO	UNI			Mobile No of Patient
email	varchar(50)	YES				Email
adharno	bigint	YES	UNI			Adhar No of Patient
dob	varchar(50)	NO				Date Of Birth
gender	varchar(20)	NO				Gender Information
age	int	NO				Age of Patient
bloodgrp	varchar(20)	NO				Blood GRP Of Patient
ac_status	int	NO				Account is in Use or Not (soft delete)
pic	blob	YES				Profile pic of Patient
state	varchar(50)	NO				State of Patient
city	varchar(50)	NO				City of Patient
Lid	int	NO	FK			LogiID
pincode	int	NO				Pincode of Patient
landmark	varchar(50)	NO				Landmark of Patient

2) Hospital:

Field	Type	Null	Key	Default	Extra	Description
hid	int	NO	PRI		auto_increment	Hospital ID
hname	varchar(50)	NO				Hospital name
hregno	varchar(50)	NO	UNI			Hospital Reg No
hinfo	varchar(500)	NO				Hospital Information
genralbed	int	NO				No. Of General Beds
icubed	int	NO				No. Of ICU Beds
email	varchar(50)	NO				Email of Hospital
mono	varchar(50)	NO	UNI			Mobile No. Of Hospital
state	varchar(50)	NO				State of Hospital
city	varchar(50)	NO				City of Hospital
pincode	int	YES				Pincode of Hospital

Field	Type	Null	Key	Default	Extra	Description
landmark	varchar(50)	NO				Landmark of Hospital
website	varchar(50)	YES				Website of Hospital
himg	blob	YES				Profile Img of Hospital
genbedlastupdate	varchar(45)	NO				General bed Available/NotAv(0/1)
icubedlastupdate	varchar(45)	NO				ICU Bed Availbale/NotAv(0/1)
sc_status	varchar(45)	NO				Account is in Use or Not (soft delete)

3) Ambulance:

Field	Type	Null	Key	Default	Extra	Description
aid	int	NO	PRI		auto increment	Ambulance ID
drivername	varchar(50)	NO				Driver name of Ambulance
aregno	varchar(50)	NO	UNI			Ambulance Reg No
avehicalno	varchar(50)	NO	UNI			Ambulance RTO No.
email	varchar(50)	YES				Email of Ambulance
mono	varchar(50)	NO	UNI			Mobile No. of Ambulance
website	varchar(50)	YES				Website of Ambulance
state	varchar(50)	NO				State of Ambulance
city	varchar(50)	NO				City of Ambulance
pincode	int	NO				Pincode of Ambulance
landmark	varchar(50)	NO				Landmark of Ambulance
ac_status	varchar(45)	NO				Account is in Use or Not (soft delete)
availablestatus	varchar(45)	NO				Ambulance is Free or Not

4) Ambulance Order:

Field	Type	Null	Key	Default	Extra	Description
aoid	int	NO	PRI		auto increment	Ambulance Order Id
bookingid	int	YES	MUL			References to bid(Booking table)
ambulanceid	int	YES	MUL			Reference to aid(Ambulance table)
source	varchar(45)	NO				Source of Ambulance
destination	varchar(45)	NO				Destination of Ambulance
charges	varchar(45)	NO				Approximate charges of service
date	varchar(45)	NO				Date of Ordering

5) Login/User:

Field	Type	Null	Key	Default	Extra	Description
lid	int	NO	PRI		auto_increment	LoginID
uname	varchar(50)	NO	UNI			User Names
password	varchar(50)	NO				Passwords
role	varchar(50)	YES				Roles (patient , ambulance etc)

7. ER Diagram:

patient
- 🔑 pid INT
- ◇ fname VARCHAR(50)
- ◇ lname VARCHAR(50)
- ◇ mono VARCHAR(50)
- ◇ email VARCHAR(50)
- ◇ adharno BIGINT
- ◇ dob VARCHAR(50)
- ◇ gender VARCHAR(20)
- ◇ bloodgrp VARCHAR(20)
- ◇ ac_status INT
- ◇ pic BLOB
- ◇ state VARCHAR(50)
- ◇ city VARCHAR(50)
- ◇ pincode INT
- ◇ landmark VARCHAR(50)
- ◇ lid INT
- Indexes

hospital
- 🔑 hid INT
- ◇ hname VARCHAR(50)
- ◇ hregno VARCHAR(50)
- ◇ hinfo VARCHAR(500)
- ◇ genralbed INT
- ◇ icubed INT
- ◇ email VARCHAR(50)
- ◇ mono VARCHAR(50)
- ◇ state VARCHAR(50)
- ◇ city VARCHAR(50)
- ◇ pincode INT
- ◇ landmark VARCHAR(50)
- ◇ website VARCHAR(50)
- ◇ himg BLOB
- ◇ genbedlastupdate INT
- ◇ icubedlastupdate INT
- ◇ ac_status VARCHAR(45)
- ◇ lid INT
- Indexes

ambulance
- 🔑 aid INT
- ◇ drivername VARCHAR(50)
- ◇ aregno VARCHAR(50)
- ◇ avehicalno VARCHAR(50)
- ◇ email VARCHAR(50)
- ◇ mono VARCHAR(50)
- ◇ website VARCHAR(50)
- ◇ state VARCHAR(50)
- ◇ city VARCHAR(50)
- ◇ pincode INT
- ◇ landmark VARCHAR(50)
- ◇ availablestatus INT
- ◇ ac_status INT
- ◇ lid INT
- Indexes

ambulanceorder
- 🔑 aoid INT
- ◇ source VARCHAR(45)
- ◇ destination VARCHAR(45)
- ◇ date VARCHAR(45)
- ◇ order_status INT
- ◇ aprove_status INT
- ◇ pid INT
- ◇ aid INT
- Indexes

loginall
- 🔑 lid INT
- ◇ uname VARCHAR(50)
- ◇ password VARCHAR(50)
- ◇ role VARCHAR(50)
- Indexes

8. Snapshots:

8.1 Home Page

Following snapshot shows the Home page for Digital Health Eco-System.
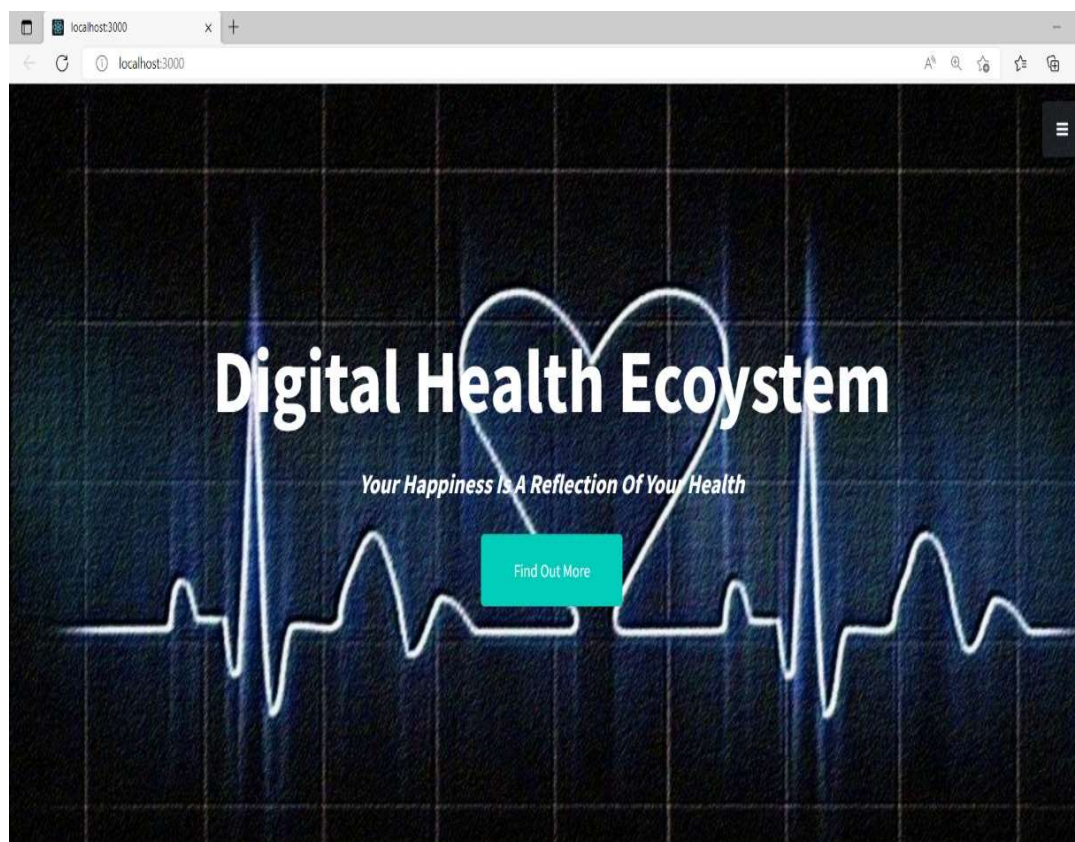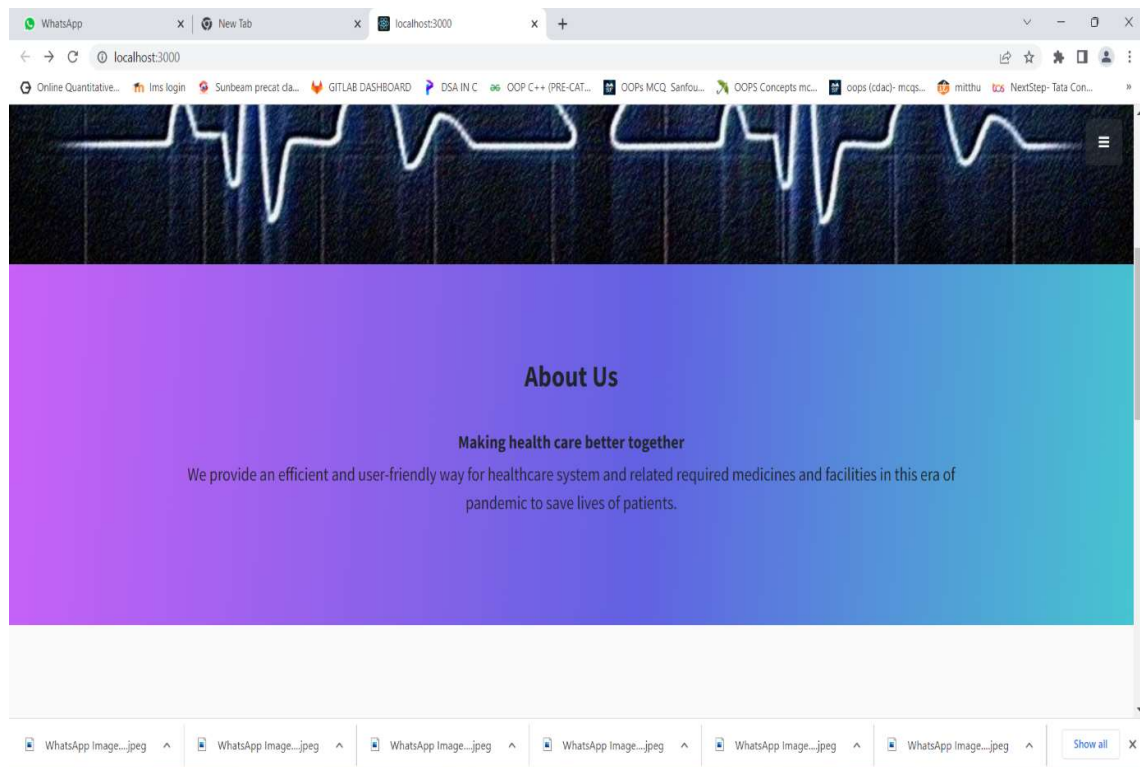

This home page contains the "Find Out More" Control.
It also contain a "Ham Burger Menu" which contains the following Controls:
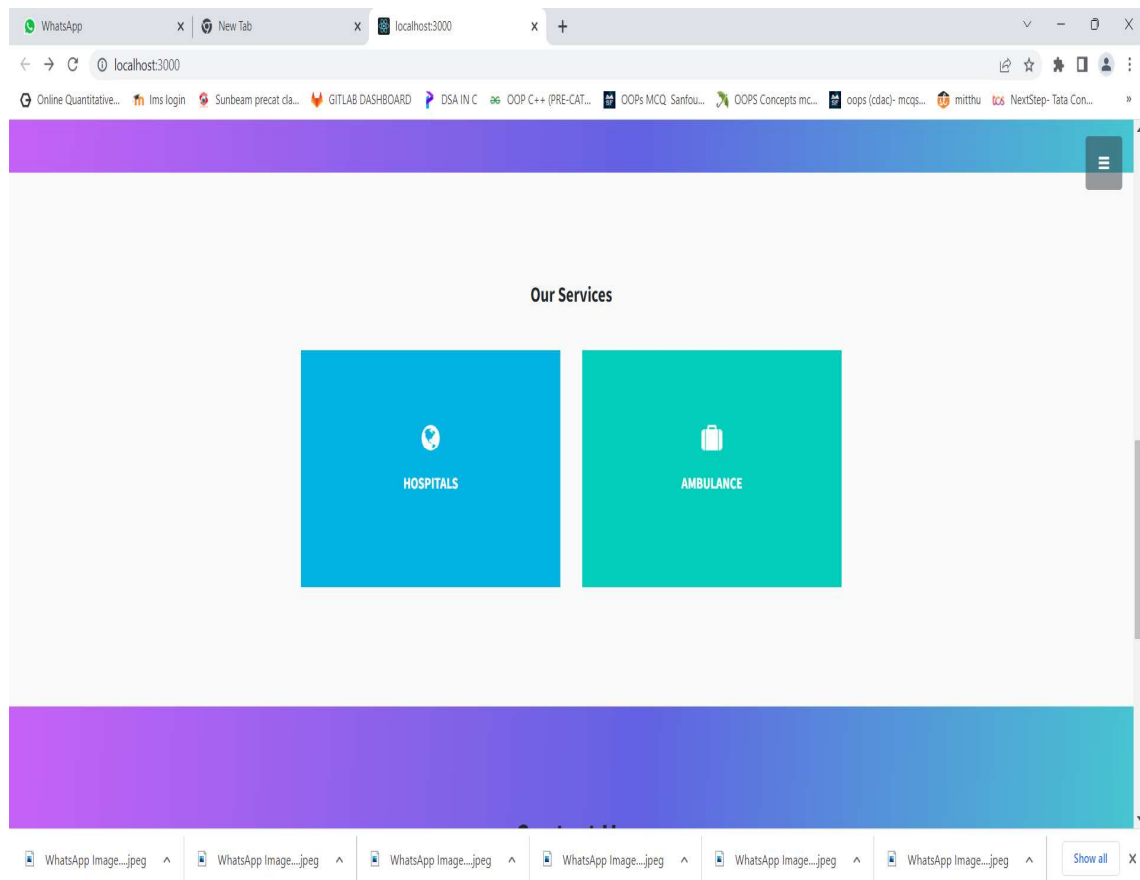→Login
→Signup
→About
→Services
→Contact

8.2 About Us Page

Following snapshot shows the About Us page for Digital Health Eco-System.
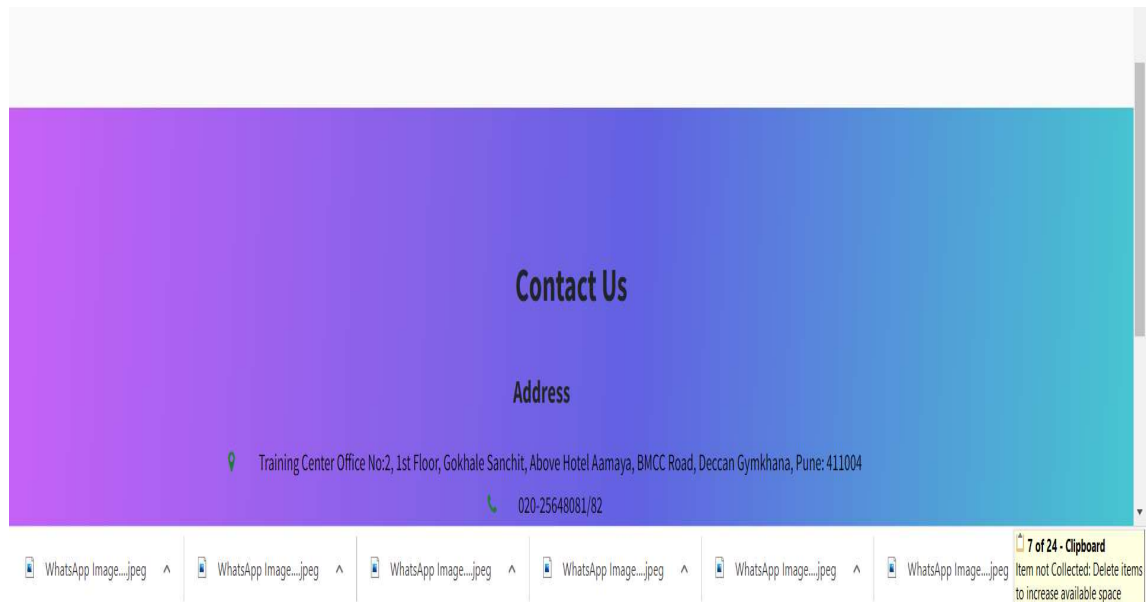
8.3 Services Page

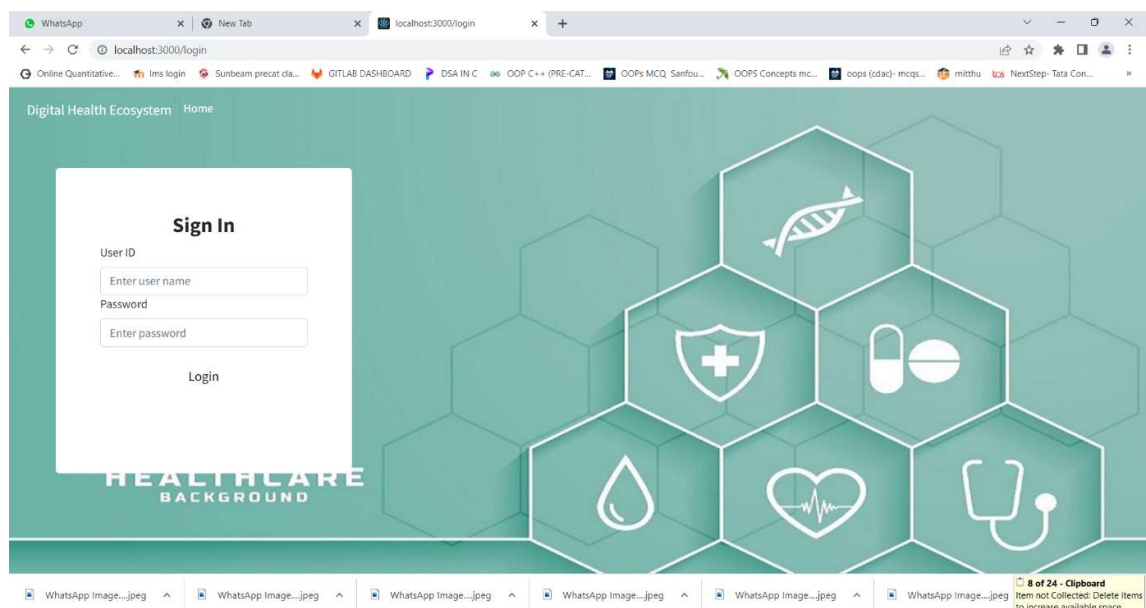Following snapshot shows the Services Page for Digital Health Eco-System.

Our Service Page Shows two Services namely Hospital And Ambulance which are designed in the form of "Mouse over" and shows brief information about the services they provide.

8.4 Contact Us Page
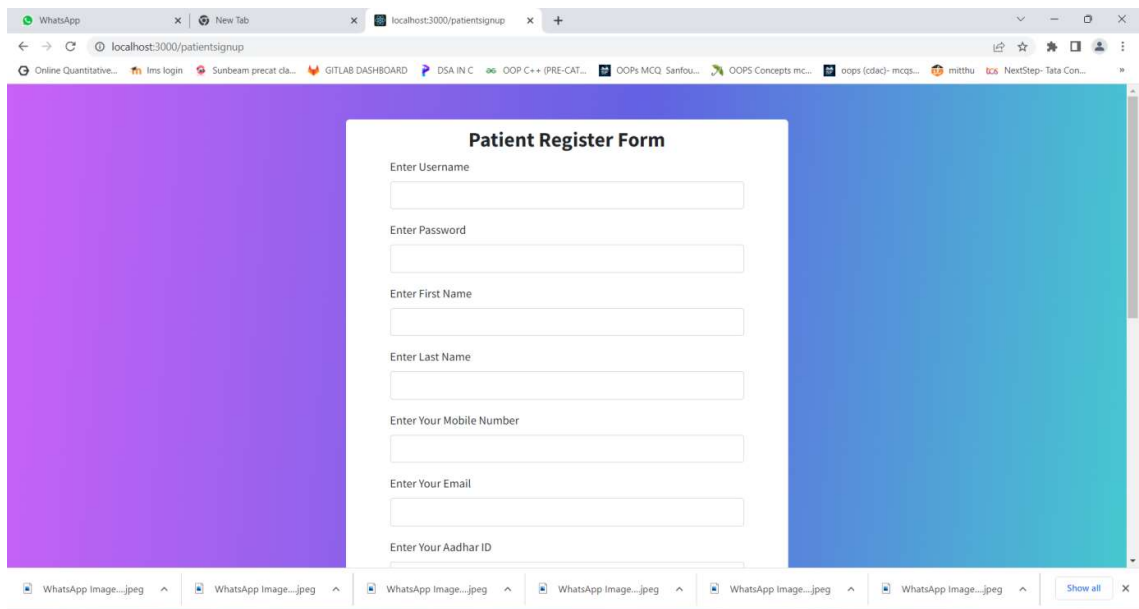
Following snapshot shows the Contact Us for Digital Health Eco-System

8.5 Login Page

8.6 Patient Signup Page
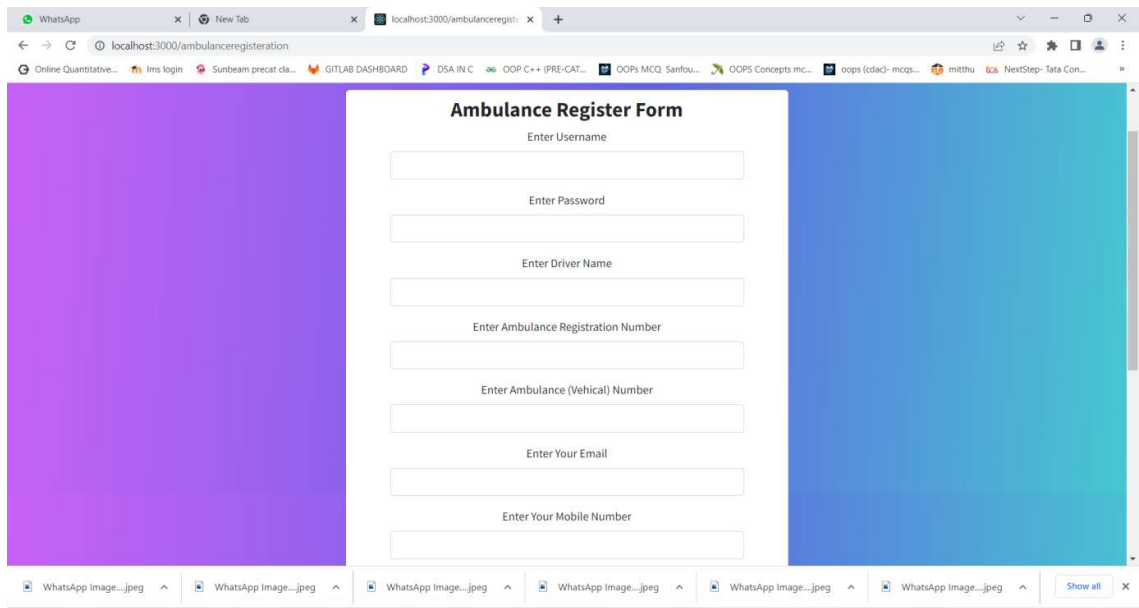
8.7 Ambulance Signup Page

8.8 Hospital Signup Page
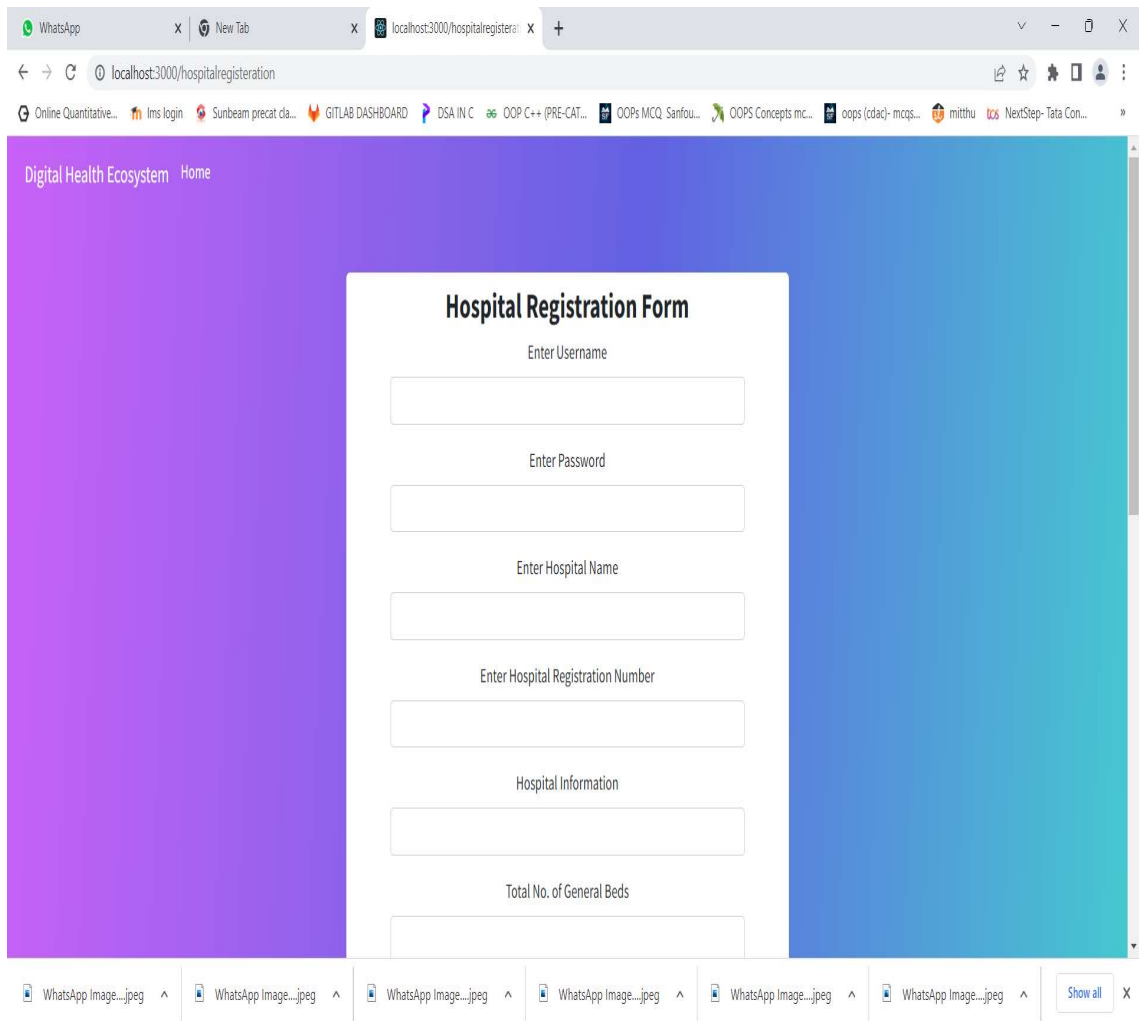
9. TESTING

One of the main purposes of testing is to validate and verify that the system works as intended. No program or system design is perfect. However, if we implement the system without proper testing, then it may cause problems and lead to a bad user experience.

Testing and checking outcomes of each test gives us the best chance to detect andcorrect errors before the system is implemented in a production environment.

In the course of our project, we made an effort to manually test each component. In all cases, we obtained the desired results as demonstrated below.

9.1   Test Case For Hospital

#	Description	Outcome	Result
1.	Signup as Hospital	Hospital having give valid Username and valid password and registration no allowed to register.	Passed
2.	Login as Hospital	UserID and Password of Hospital are fetched from database, otherwise login failure message will be printed accordingly.	Passed
3.	Welcome Page	Welcome Page shows data fetched from database.	Passed
4.	Update Information	User is able to update Information.	Passed
5.	Delete Account	Account Deleted Successfully and logged out.	Passed
6.	Log Out	Logs out from the account.	Passed

9.2 Test Cases for Ambulance

#	Description	Outcome	Result
1.	Signup as Ambulance Driver	Ambulance Driver having give valid Username, pin Code, valid password and Registration no allowed to register.	Passed
2.	Login as Ambulance Driver	UserID of Ambulance Driver are fetched from database, otherwise login failure message will be printed accordingly.	Passed
3.	Profile	Shows all the information of the Ambulance Driver.	Passed
4.	Profile>Update Information	1.Ambulance is booked on selected Date from source to Destination. 2.Date should not be before the present date.	Passed
5.	Change Working Status	Work status changed.	Passed
6.	Profile>Delete Account	Account Deleted Successfully and logged out.	Passed
7.	Order History	Shows all the information of the Order.	Passed
8.	Your Orders	User is able to accept the request.	Passed
9.	Log Out	Logs out from the account.	Passed

9.3 Test Cases for Patient

#	Description	Outcome	Result
1.	Signup as Patient	Patient having give valid Username and valid password allowed to register.	Passed
2.	Login as Patient	UserID of Patient are fetched from database, otherwise login failure message will be printed accordingly.	Passed
3.	Book Ambulances	Searched Ambulance are fetched from database.	Passed
4.	Attempt Book	1.Ambulance is booked on selected Date from source to Destination. 2.Date should not be before the present date.	Passed
5.	Book Ambulance	Thank You Message is Displayed.	Passed
6.	Your Orders	Profile shows selected ambulance with booking status pending until driver accepts the order.	Passed
7.	Profile Details	Shows all the information of the patient.	Passed
8.	Update Profile	User is able to update their profile.	Passed
9.	Delete Account	Account Deleted Successfully and logged out.	Passed
10.	Log Out	Logs out from the account.	Passed

10. Conclusion

Digital Health Eco System provides a better efficient and user-friendly bed availability system and related required emergency services like ambulance booking and required medicinal and Hospital facilities like bed availability . We help people in achieving their full potential for health and well-being across the lifespan which results in bringing a positive change into the lives of people medically and supporting them in panic or emergency situations.

11. Future Scope

Digital Health Eco System has the scope for future development. As it's been a whole eco system brought here altogether , it still has some volume left to contribute into a medical emergency sector of our health Eco-System. So, to keep the abstract of technical improvements and observing on-growing needs into this emergency sector The above written conclusion is just a initial conclusion and not yet concluded 100% because we are yet to update with some emergency requirements like Blood Bank Stock Availability and Bookings, Feedbacks etc.
 This enhancements will be done efficiently and according to the varying needs of the people/users and it'll be integrated with minimal modifications Thus our project is flexible and can be enhanced at any time with more advanced features in the future.

REFERENCES

Following is the list of websites we referred during the course of our project:

1. https://getbootstrap.com/docs/5.1/getting-started/introduction/

2. https://www.baeldung.com/

3. https://www.w3schools.com/
4. https://javaee.github.io/javaee-spec/javadocs/

5. https://javadoc.io/doc/org.springframework.data/spring-data-jpa/latest/index.html

6. https://docs.spring.io/springdata/jpa/docs/current/reference