Master of Science (IT) Sem – 05

Lj School Of Computer Applications

Healthcare Management system

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1. Introduction

- In the current era, everyone is not able to visit the clinic or a hospital for each primary healthcare services.
- The system is built to connect and provide a medium in which users can take appointments for service and staff can manage their profiles by using the system on their palm.
- A healthcare management system is a software solution designed to optimize various aspects of healthcare delivery and administration. It encompasses tools and processes for managing patient records, scheduling appointments, manage staff tasks…
- This system is instrumental in improving healthcare efficiency, reducing errors, and enhancing the overall quality of patient care.

1.1 Existing System

- Sometimes it is boring to deal with paperwork in the healthcare industry which also don't have that much efficiency and consume more time.
- The existing systems have not featured like generate reports through the system quickly, store medical history of patients by having medical reports, etc.
- Old fashioned and offline systems aren't capable of taking more work load at a time while working with the healthcare industry and also not easy to manage patient records as well as staff tasks.
- It also can't take more and reliable feedback, concerns or experiences from the users.

1.2 Need for New System

- The need for the new system is to provide the primary healthcare services to every user of the system at their home

- The new system provides the enhanced platform that patient can take appointment as their wish and staff can manage their tasks easily.

- Healthcare management system is needed for data security, patient participation, appointment scheduling and managing patient reports.

- System will provide the report generating, manage tasks for staff, store medical history and analysis and many more functionalities.

1.3 Objectives for New System

- **Accessibility:** The system will allow to connect the patients from anywhere by using system and provide a reliable platform
- **Privacy:** Implements the secure user authentication and verification for the security of the healthcare data
- **Scheduling:** The system will help to manage the appointment of the patients and task scheduling of the staff
- **Reports:** It will store the important information and medical history of the users so that they can get proper services
- **Satisfaction:** The system will provide a section for the surveys and feedback to enhance the system.
- **Blogs:** As a further improvement of the system, it'll have a blog section so that patient and staff can interact with each other and can share the thoughts

1.4 Problem Definition

- A healthcare management system aims to enhance patient care, increase efficiency, and ensure data security and privacy. Providing prompt access to correct patient information, administrative processes can improve diagnosis, treatment, and follow-up care. Implementing strong security measures. Patients should be empowered to take part actively.

1.5 Core components

Admin	User	Staff
• Login • Staff management • Dashboard • Generate reports & insights • Home visit scheduling • Blog posts • Manage FAQs section • Staff records • Staff profile management • Manage medical tests	• Login • Signup • Reset password • Feedback & reviews • Profile management • Appointment remainder • Health records • Medical report download • Search staff • Manage visit • Delete account • Book tests • Request home visit	• Login • Patient reports • Scheduling tasks/appointments • Patient history • Blog posts • Reset password • Task remainder • Manage test result

1.6 Project Profile

Project Name	Healthcare System
Front-end	HTML5, CSS3, Bootstrap4
Back-end	Django
Database	MongoDB
Tools	MS-OFFICE, DIA Builder, creatly
IDE	Visual Studio Code

1.7 Assumptions & Constraints

- **Assumptions:**
  - User must need to understand the system to use the system
  - We also assume that sources follow regulations & protection laws on website
  - We assume that sources or patients provide reliable and trustable health information.

- **Constraints:**
  - Lack of Backup services
  - Supported English language only
  - less payment methods

1.8 Advantages & Limitations

Advantages	• Anytime anywhere • Paperless work • Health monitoring by anywhere
Limitations	• Cost of implementation • Security concern • Low maintance

2.1 Requirement Determination

- Requirement determination for healthcare project involves gathering, analyzing, and documenting the needs and expectations of stakeholders.

- This phase is consisting of:
  - Surveys & sampling
  - Client's requirements
  - Identifying the non-functional requirements
  - Review existing system if available
  - References

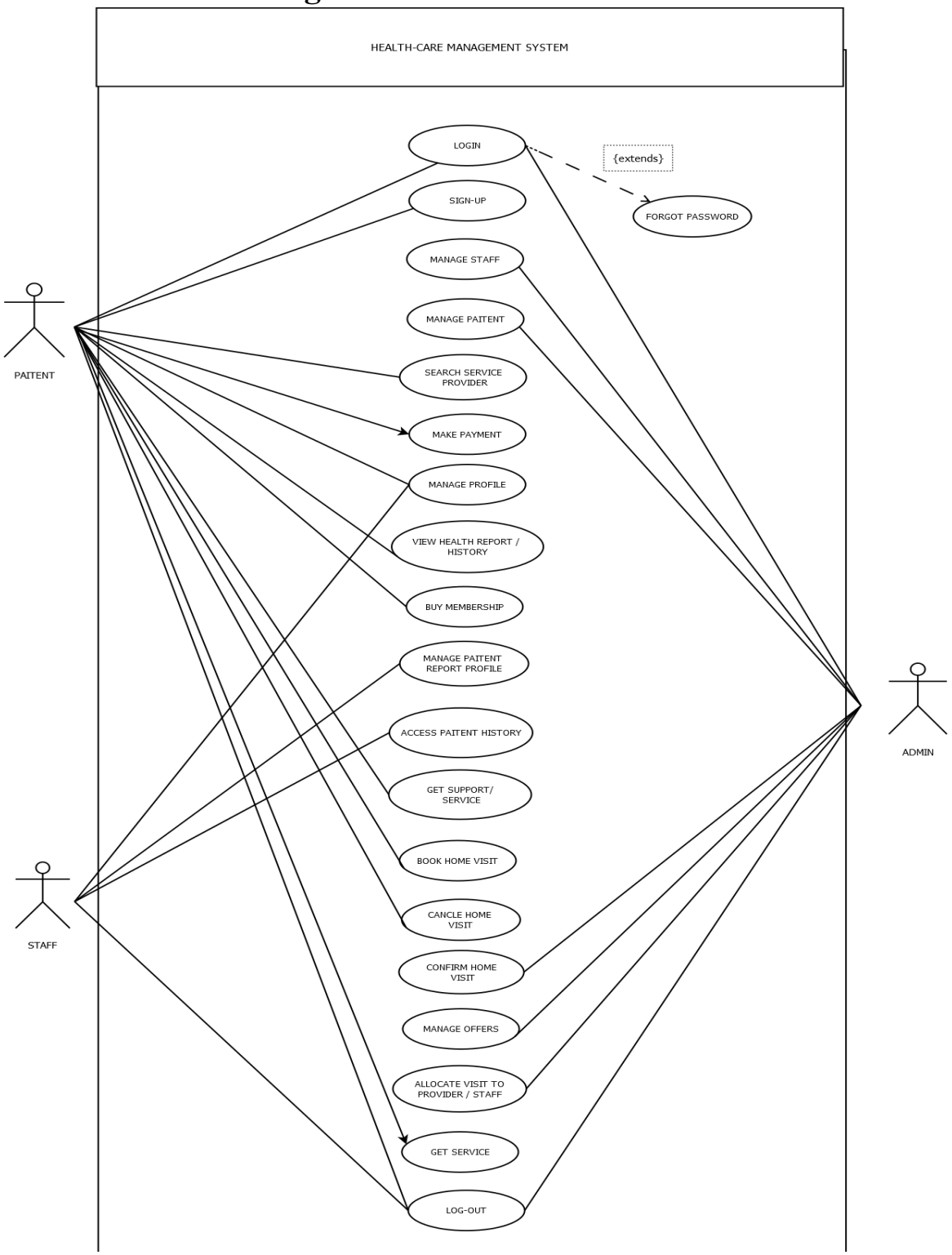
    - https://www.indimac.in/
    - https://www.advinohealthcare.com/

2.2 Targeted Users

- Admin
- User
- Staff

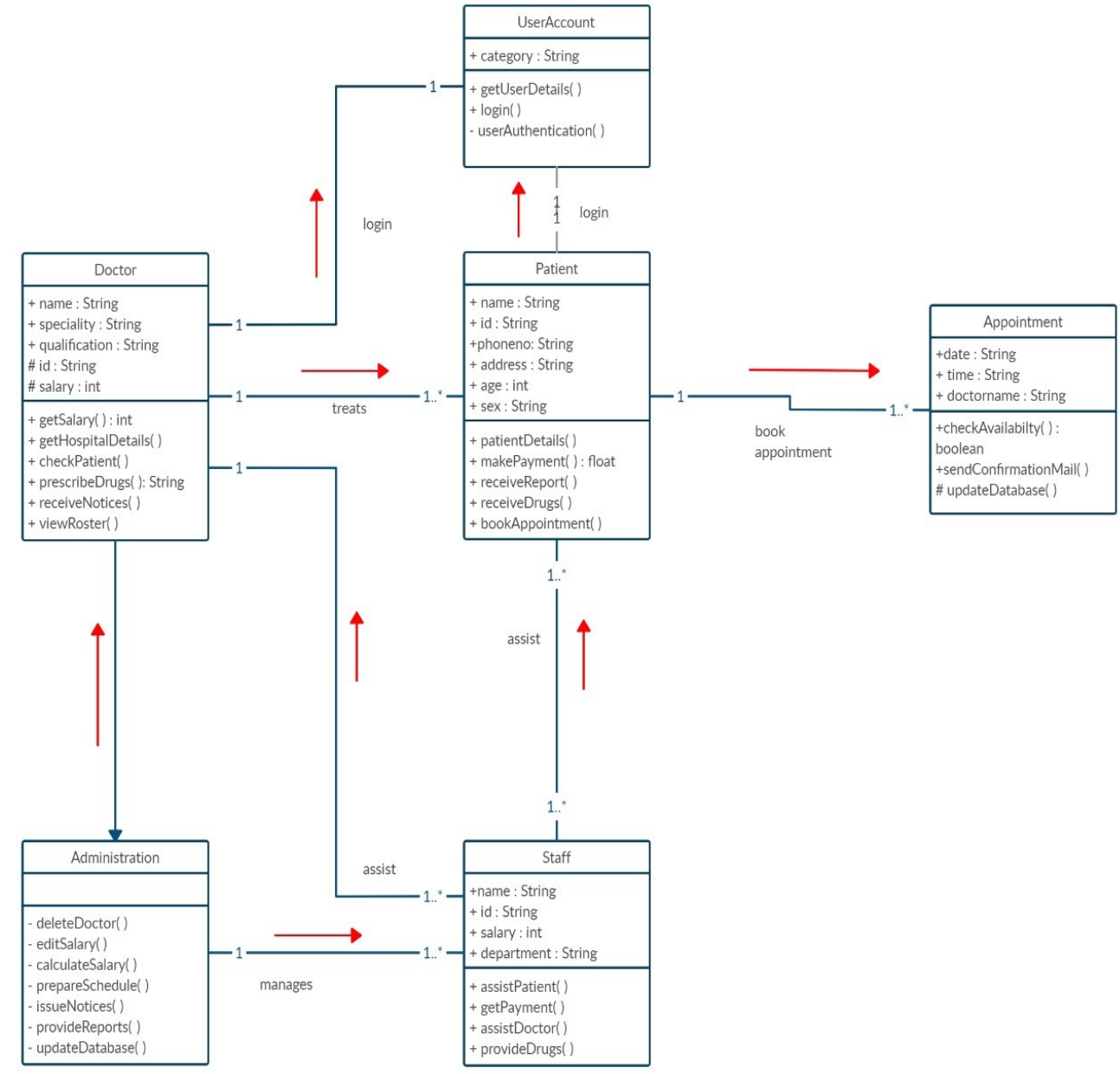
3. System Design

3.1 Use case diagram

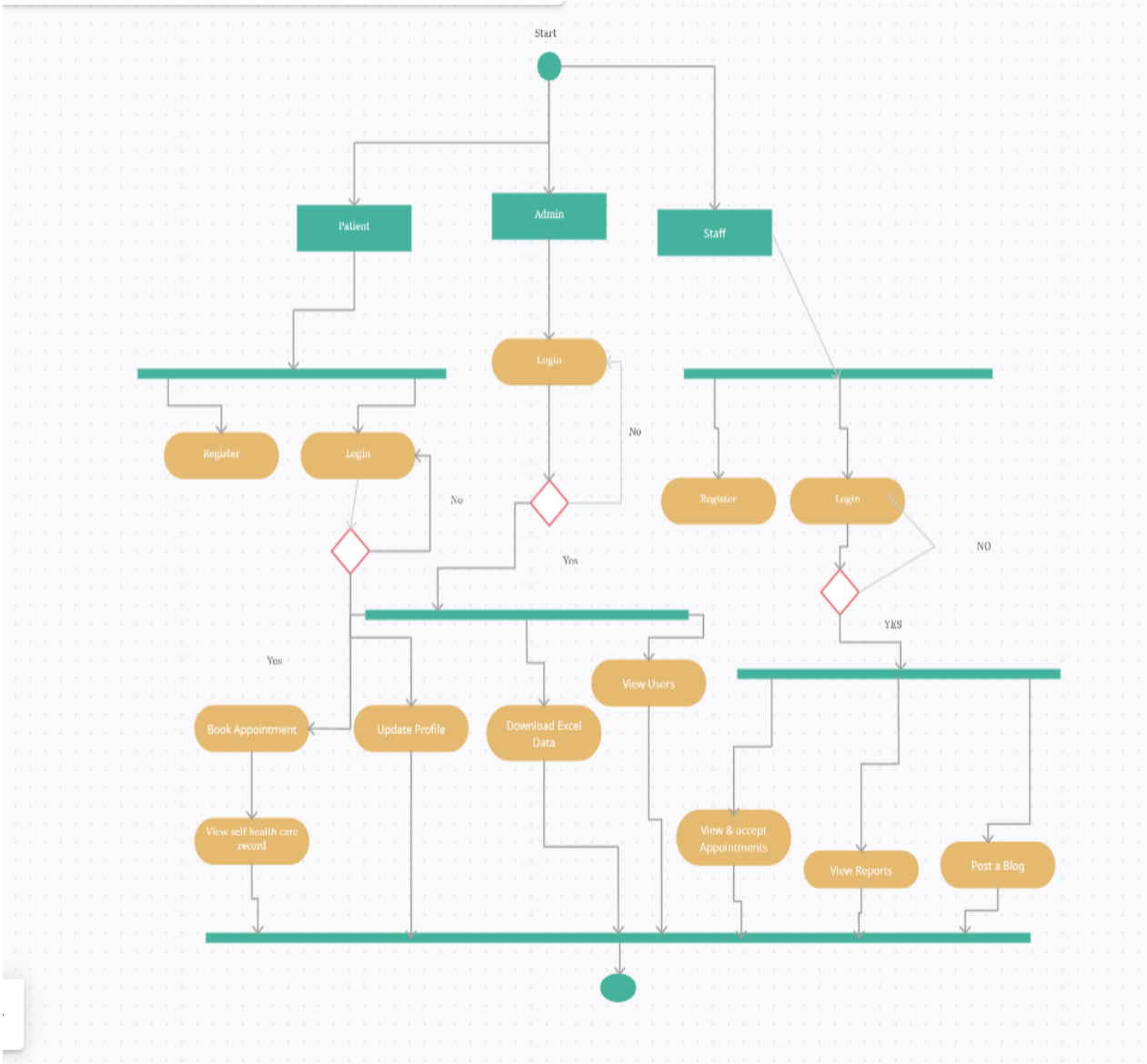


3.2 Class Diagram

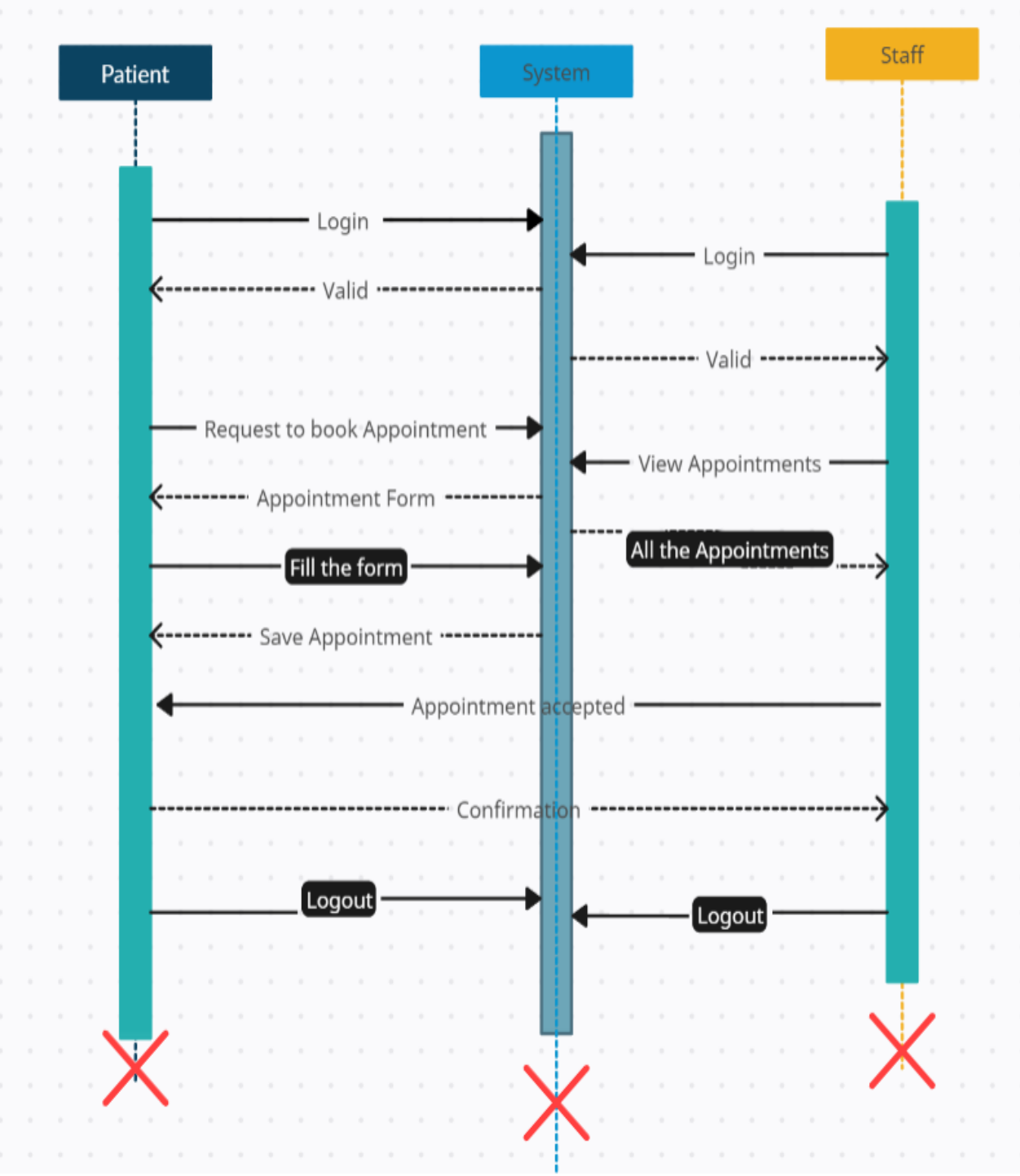
Healthcare management system- CLASS DIAGRAM



3.4 Activity Diagram



3.5 Sequence diagram



3.5 Data Dictionary

User table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
First name	Varchar2(25)	Not null	Firstname of the user	Arnold
Last name	Varchar2(25)	Not null	Lastname of the user	Macwan
Email	Varchar2(25)	Unique	Email of the user	abc@gmail.com
Password	Varchar2(10)	Not null	Password	abc@123
DOB	Date	Not null	Date of birth	20-03-1969
Role	Varchar2(15)	Not null	Role of the user	Doctor
State	Varchar2(15)	Not null	State of user	Karnataka
City	Varchar2(15)	Not null	City of user	Pune
Pincode	Int(6)	Not null	Pincode of area	382440
Apartment	Varchar2(25)	Not null	Apartment no & name	B2 , harekrishna park
Userprofile	Varchar2(50)	Not null	Path of image of the user	pics/img.png

Staff Profile table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
resume	Varchar2(50)	Not null	Image path for Document of the qualification	doc/img.jpeg
Profilephoto	Varchar2(50)	Not null	Photo of the staff	pic/photo.png
Total_visit_done	Int(3)	Not null	No. of visit taken by staff	12
Experience	Int(3)	Not null	Experience of the staff	25 years
Joined_date	date	Not null	Date of joining	20-09-2002
About	Varchar2(100)	Not null	About the staff	A supportive caretaker
Availability	Varchar2(10)	Not null	Status for staff Availability	Not available

Staff table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
Firstname	Varchar2	Not null	First name of staff	John
Lastname	Varchar2	Not null	Last name of staff	Smith
Email	Varchar2	Unique	Email of staff	abc@gmail.com
DOB	Date	Not null	Date of birth	20-05-1996
Category	Varchar2	Not null	Category of staff	Care taker

Service table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
Staffid	Int(4)	Foreign key references staff table	Staff id	11
Name	Varchar2(25)	Not null	Title of the service	Lab test
Status	Varchar2(15)	Not null	Status of service	Pending
Cost	Decimal (4,2)	Not null	Cost of the service	499/-

Test table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
Category	Int(4)	Not null	Category of test	Full body
Cost	Decimal(4,2)	Not null	Cost for the service	699
Dur	Int(3)	Not null	Result duration in hours	36

Appointment table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
Userid	Int(4)	Foreign key references user table	Id of the user	2
Date	Date	Not null	Date of the visit	15-10-2023
Status	Varchar2(10)	Not null	Status of the visit	Pending
Staffid	Int(4)	Foreign key references staff table	Visit allocate to the staff	2
Reason	Varchar2(25)	Not null	Reason for visit	Blood report

Billing table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
Userid	Int(4)	Foreign key references user table	Id of the user	2
Date	Date	Not null	Date of the bill	20-04-2024
Discount	Decimal(6,2)	Not null	Discount price on bill	2500/-
Total_amount	Decimal(6,2)	Not null	Amount of the bill	9980/-
Payment_id	Int(10)	Foreign key references payment table	Payment id	15002693

Payment table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
Userid	Int(4)	Foreign key references user table	Id of the user	2
Date	Date	Not null	Date of the payment	20-04-2024
Status	Varchar2(15)	Not null	Status of the payment	Pending
Payment_method	Varchar2(10)	Not null	Method of the payment	Cash

Feedback table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
Userid	Int(4)	Foreign key references user table	Id of the user	2
Date	Date	Not null	Date of the feedback received	20-04-2024
Message	Varchar2(250)	Not null	Message for feedback	It was good

Blog table

Field	Datatype	Constraints	Description	Sample
Id	Int(4)	primary key	Table id	1
Userid	Int(4)	Foreign key references user table	Id of the user	2
Date	Date	Not null	Date of the feedback received	20-04-2024
Message	Varchar2(250)	Not null	Message description	It was good

4. Development

4.1. Coding standard

- **Project structure:**
  - Use clear and descriptive names for the whole directory of the project and also recommend the naming conventions rules for the variables and functions names.

- **Code-version management:**
  - Use a version control system (i.e., GitHub) for the project to collaborate effectively.

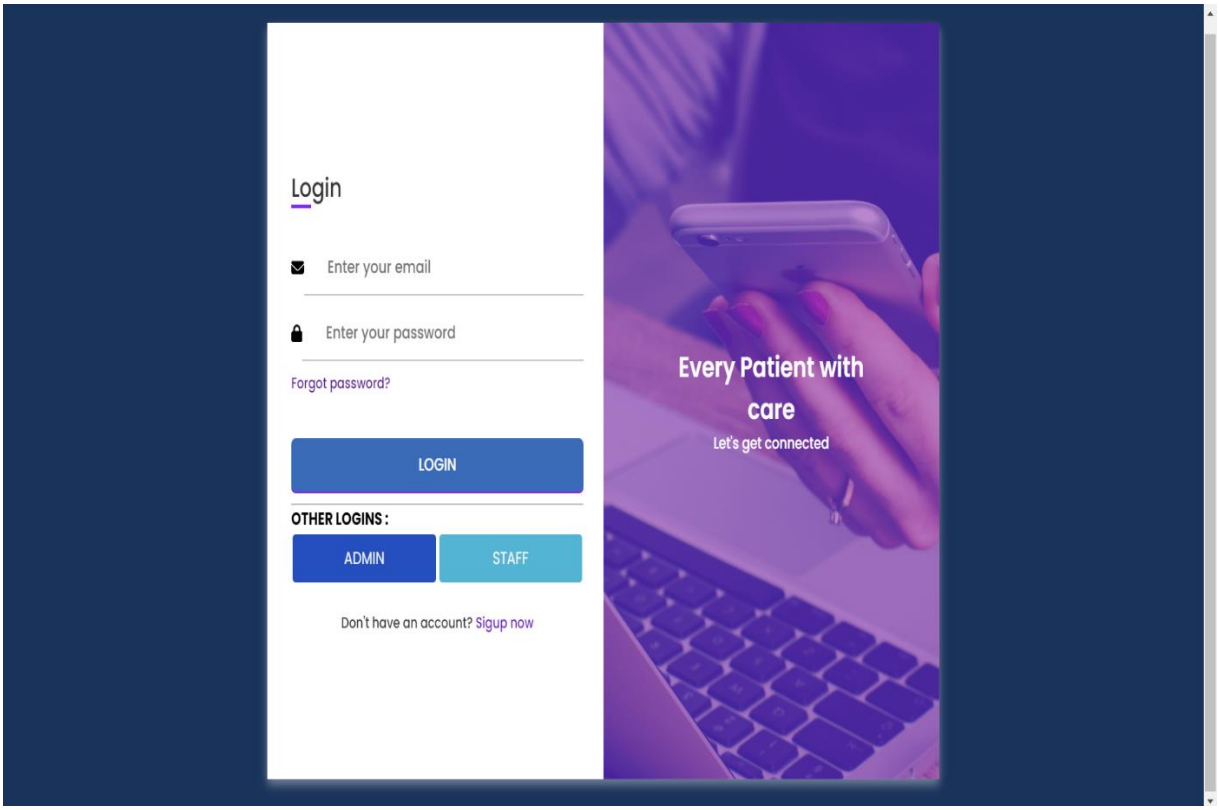
- **UI design:**
  - Design a user-friendly interface so that user can use the system and understand it easily.

- **Error handling:**
  - Implement an error free code and use error handling mechanism for user interactions.

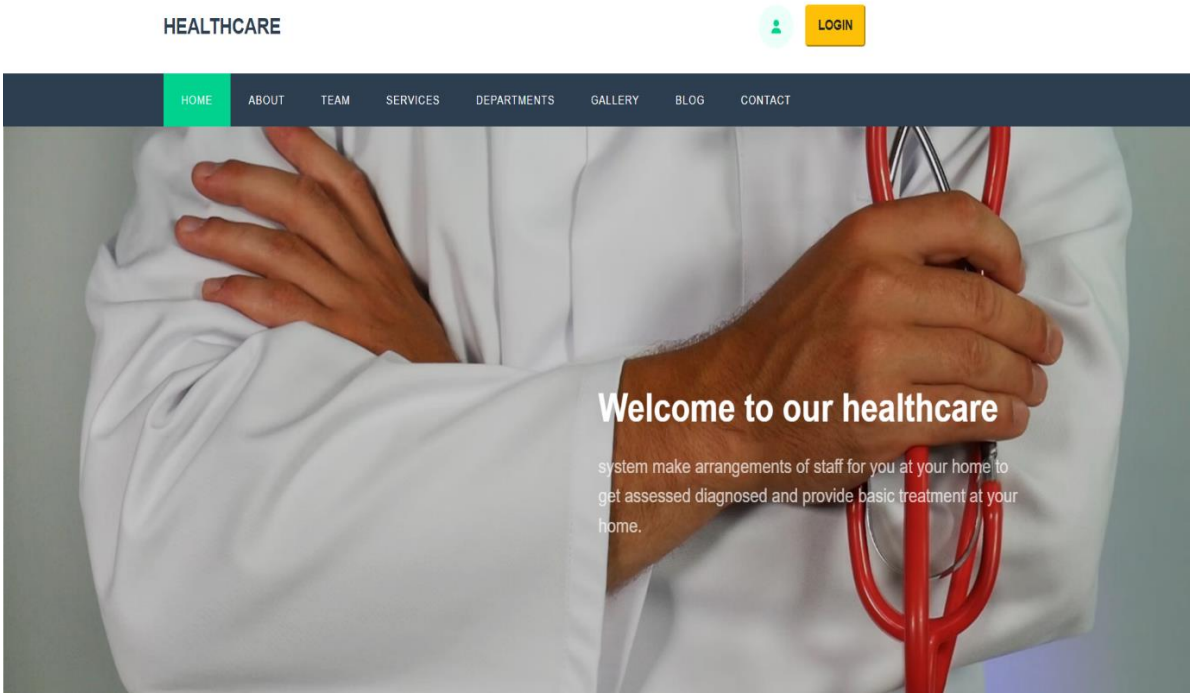
- **Further development:**
  - Maintain the system as well conduct regular reviews that genuine feedback for the system.
  - Always look for the further improvement of the system that can make the system work more accurate and reliable

4.2. Screenshots

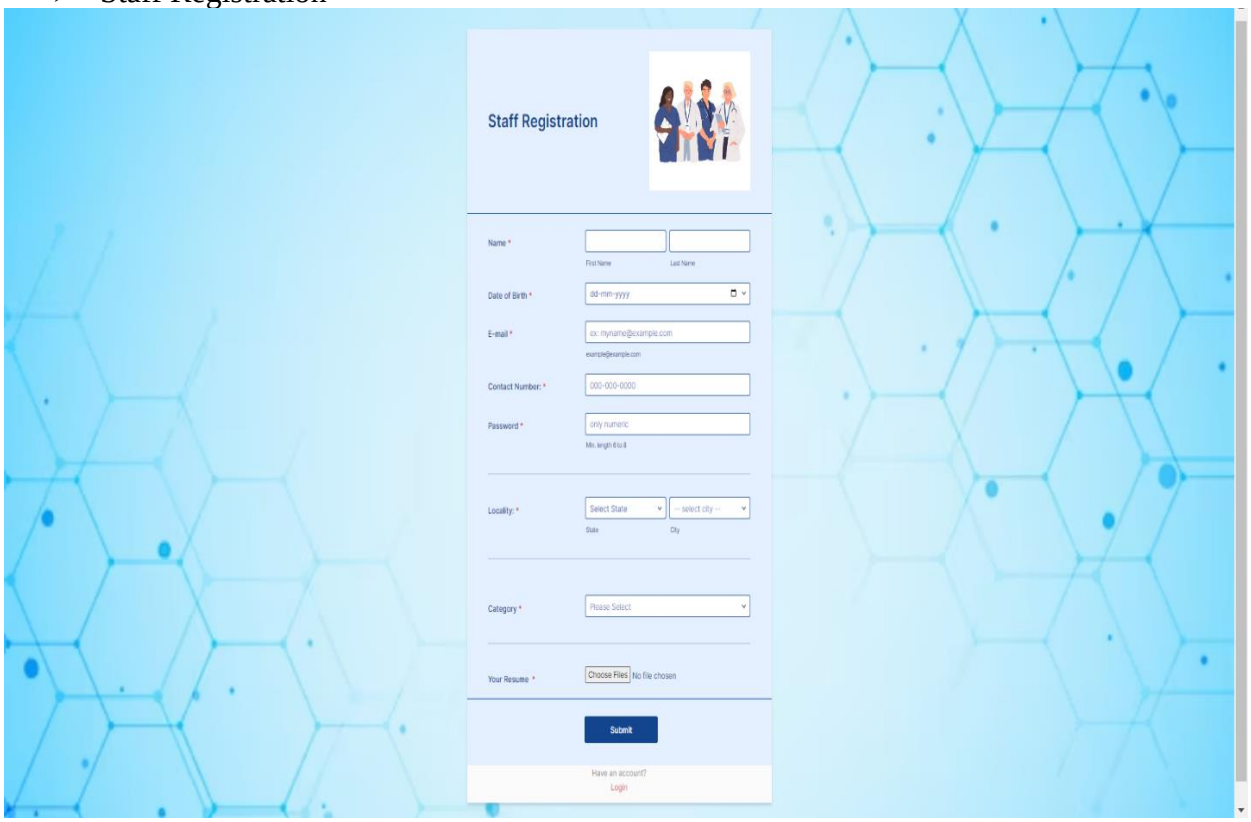
- Login screen



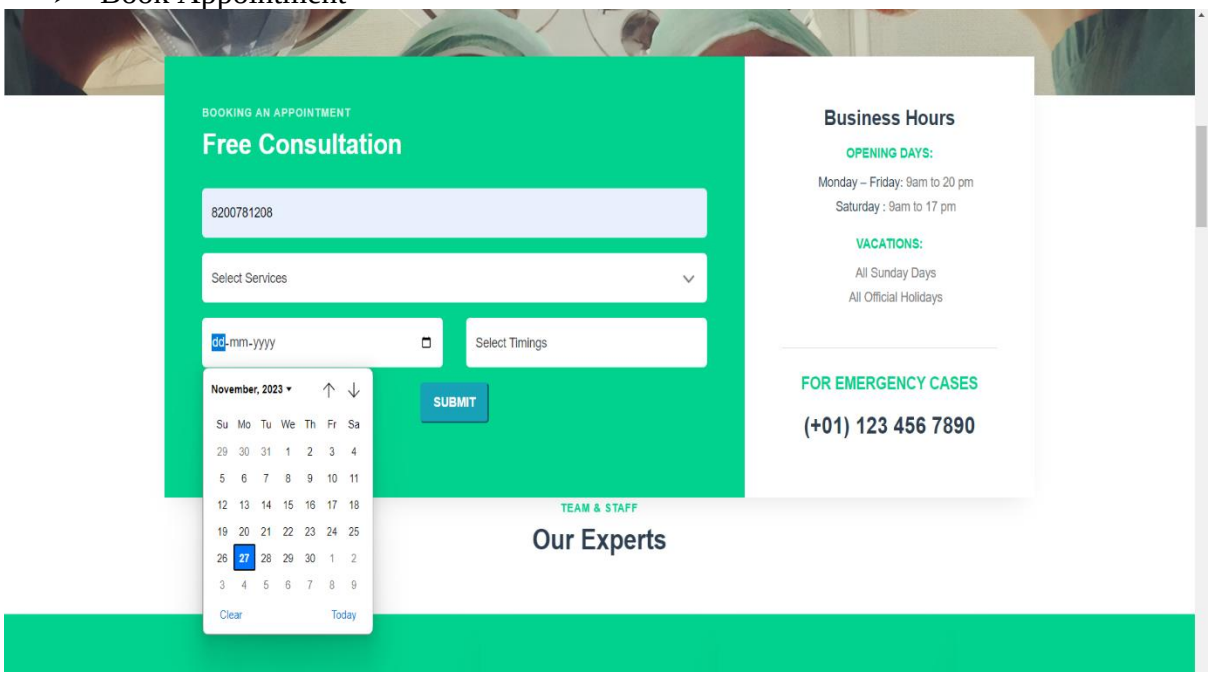
- Home screen



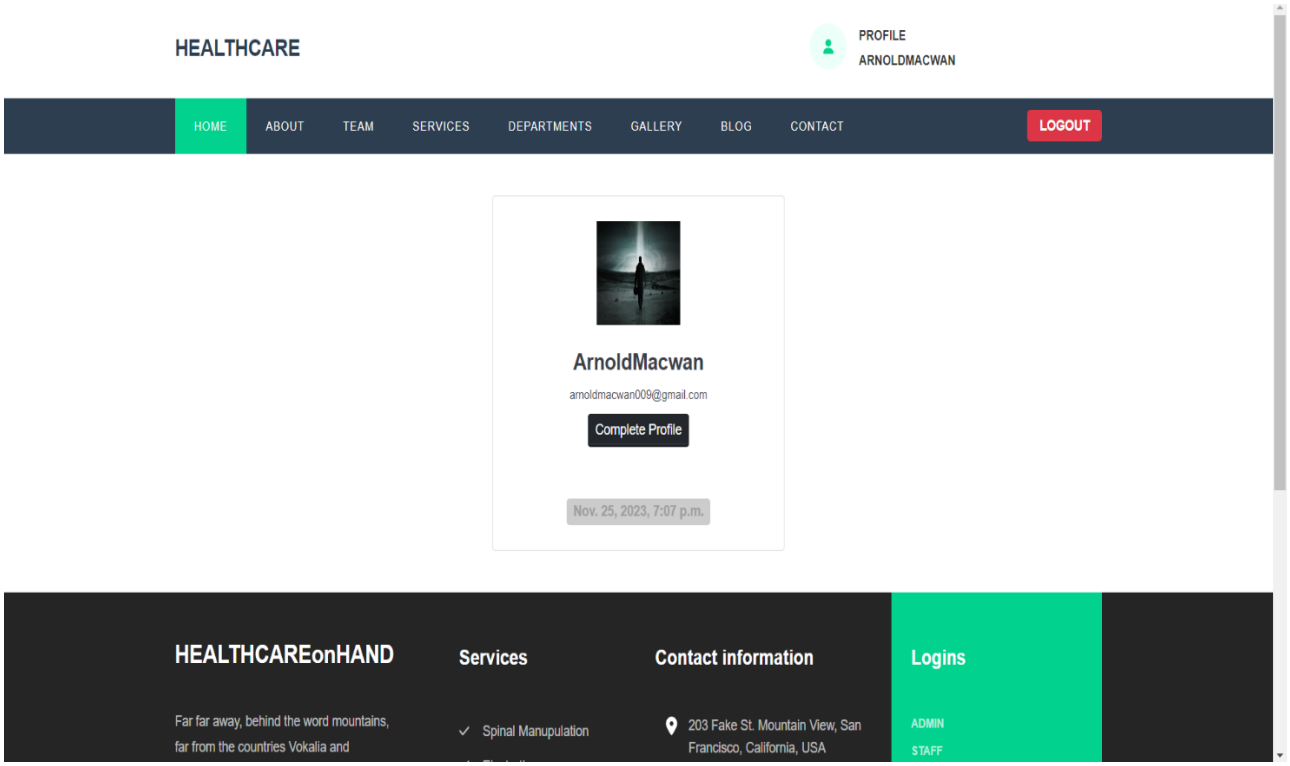
- Staff Registration

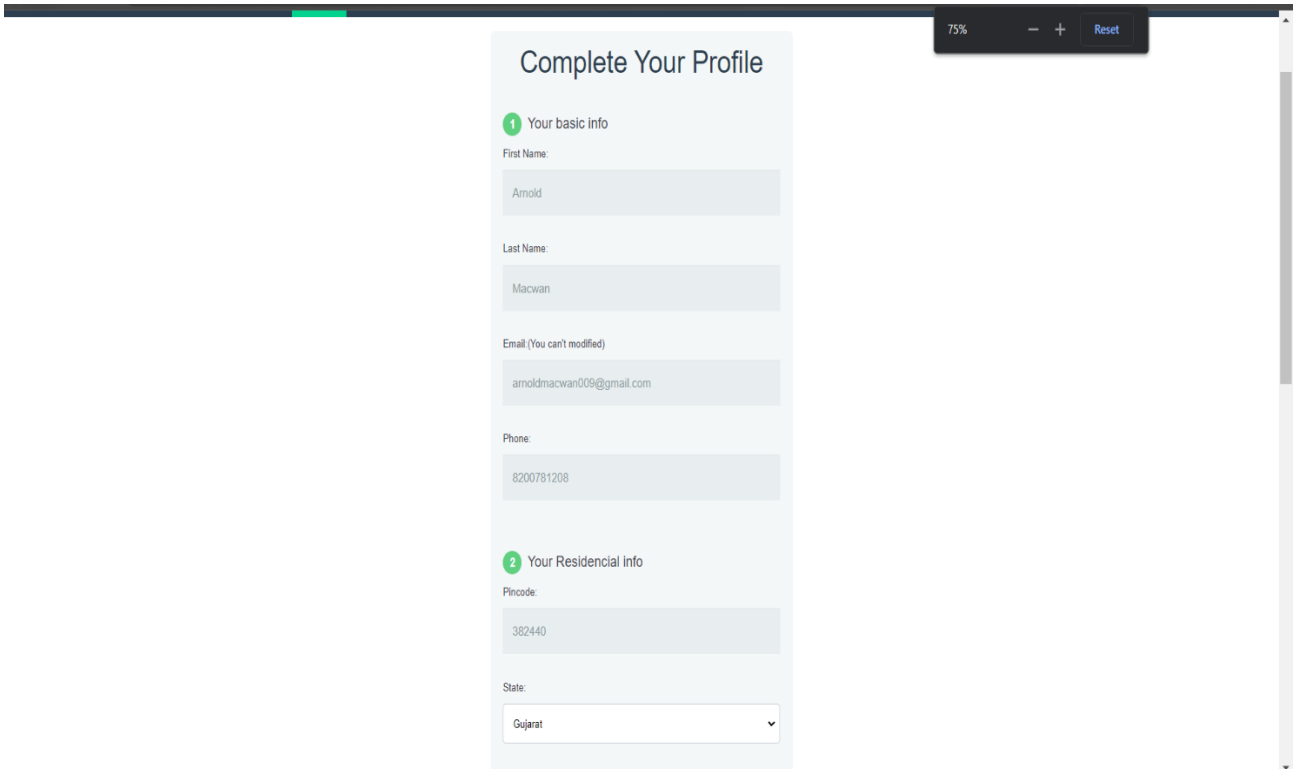


- Book Appointment

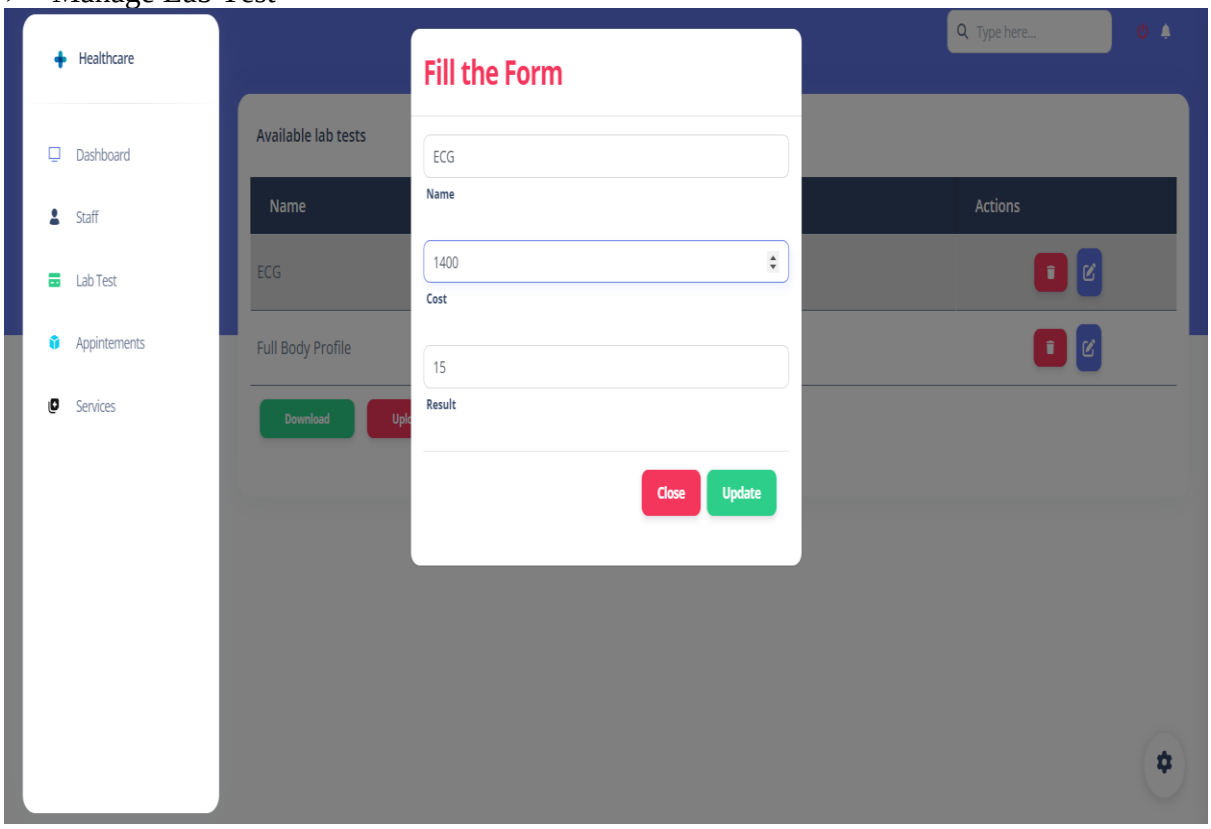


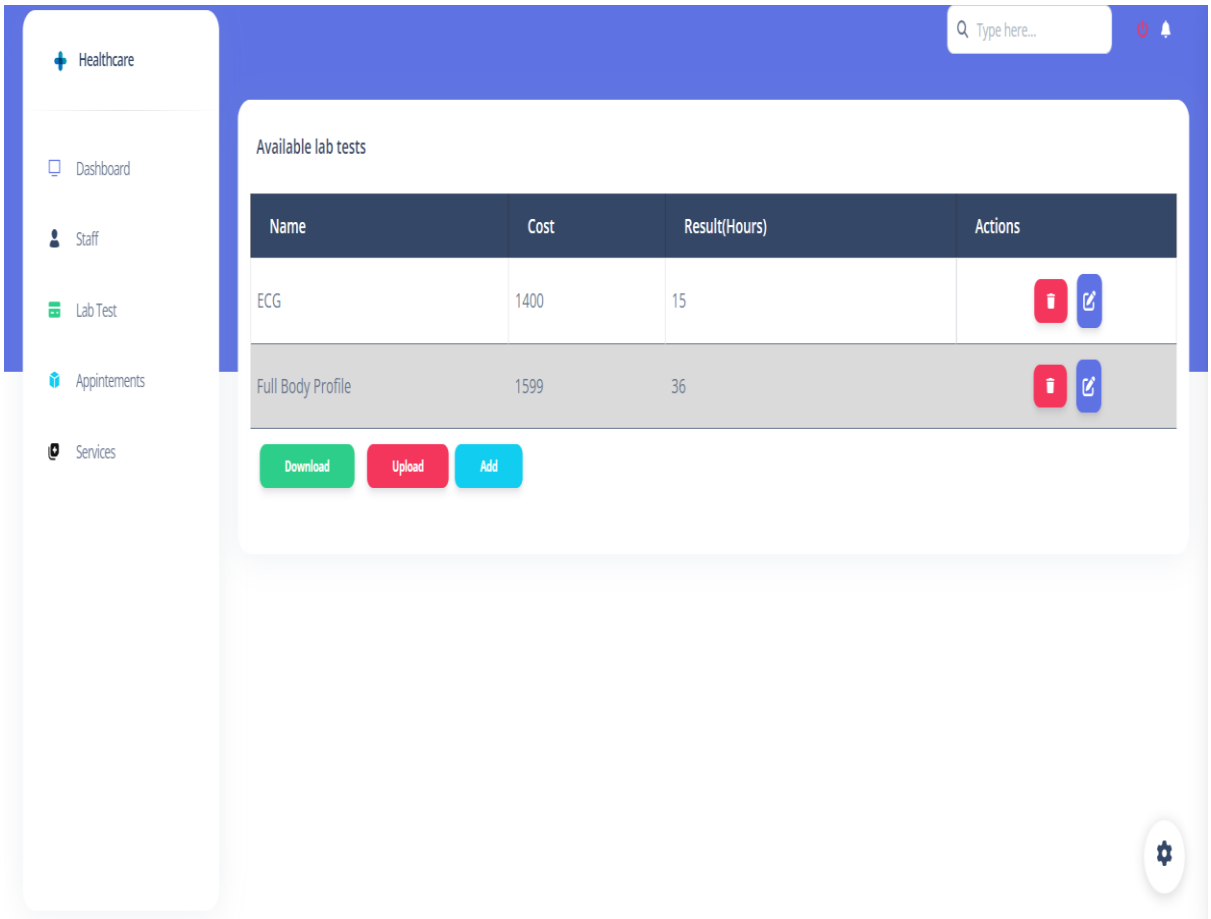
- User Profile



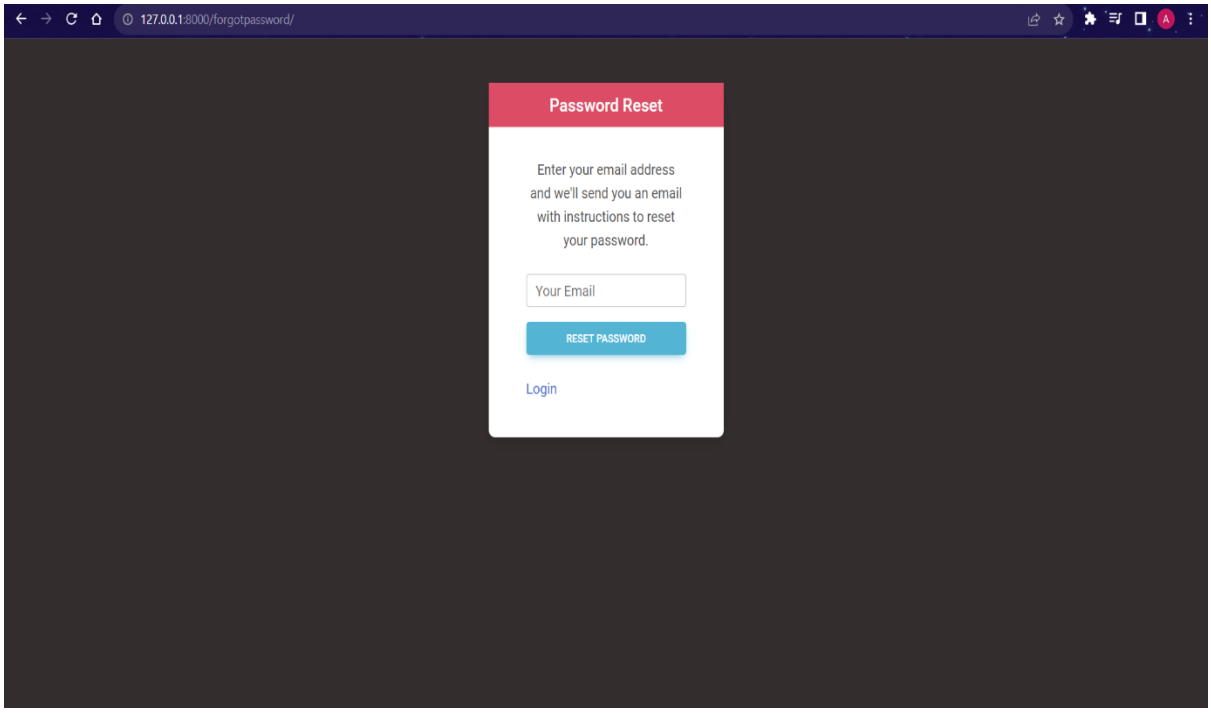


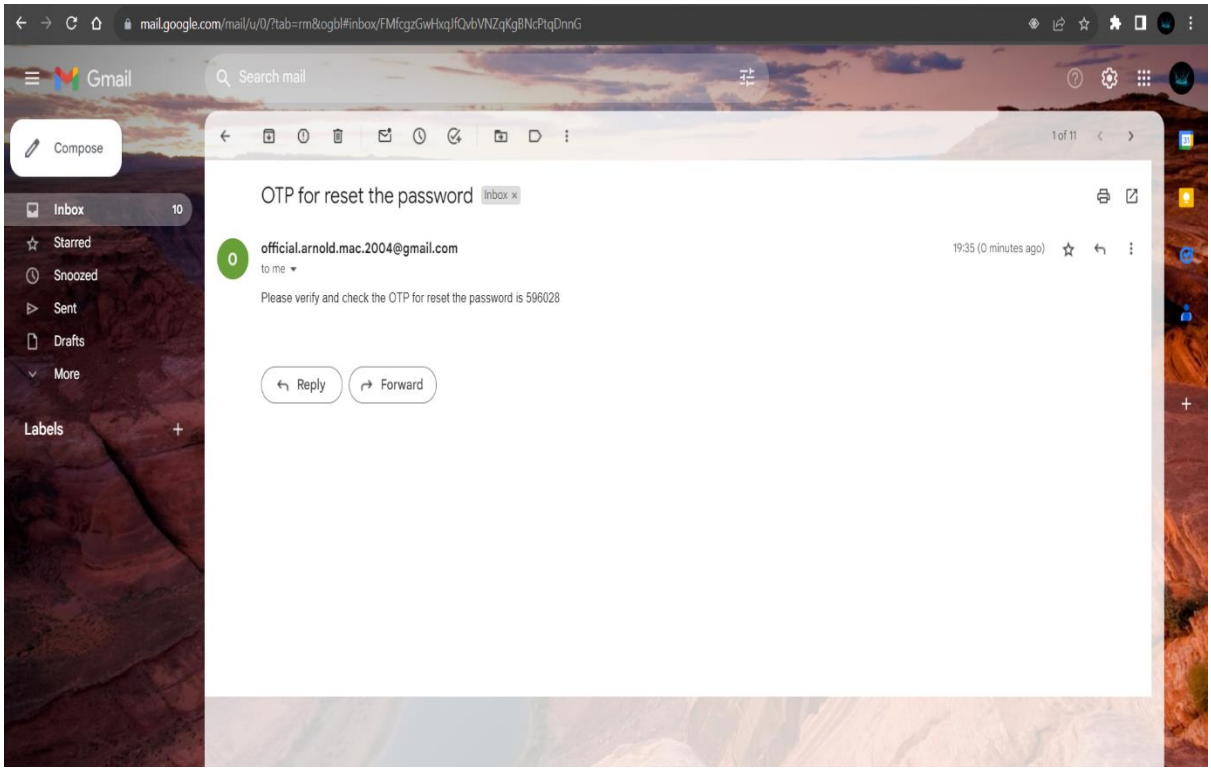
- Manage Lab Test



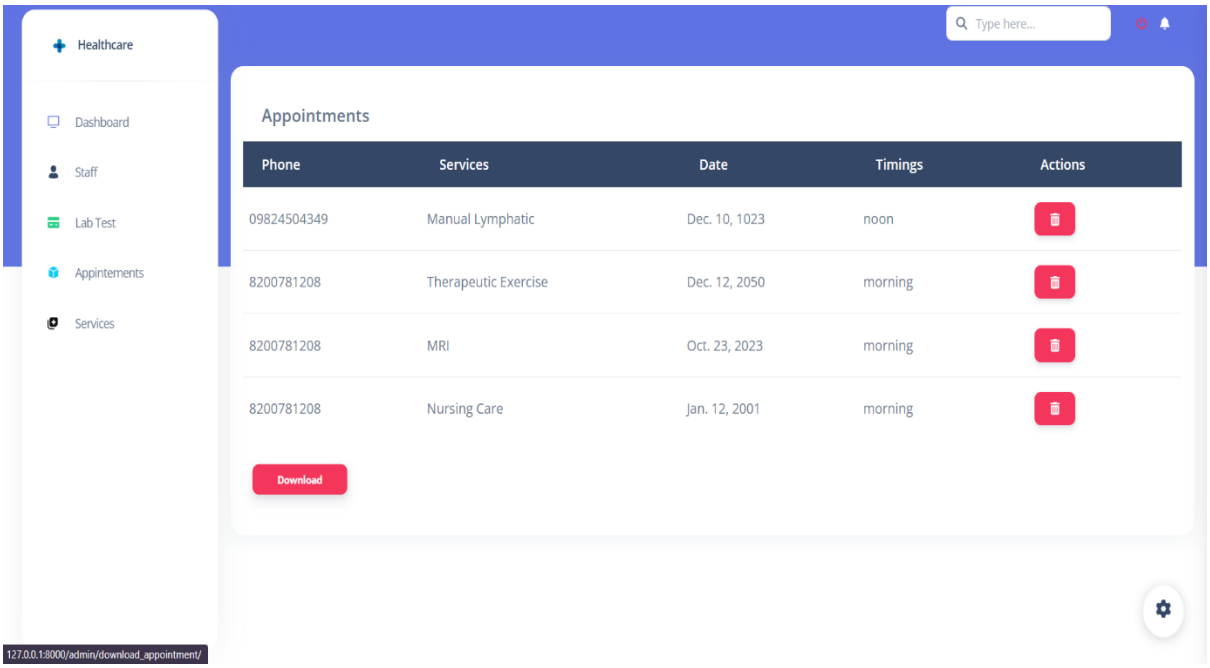


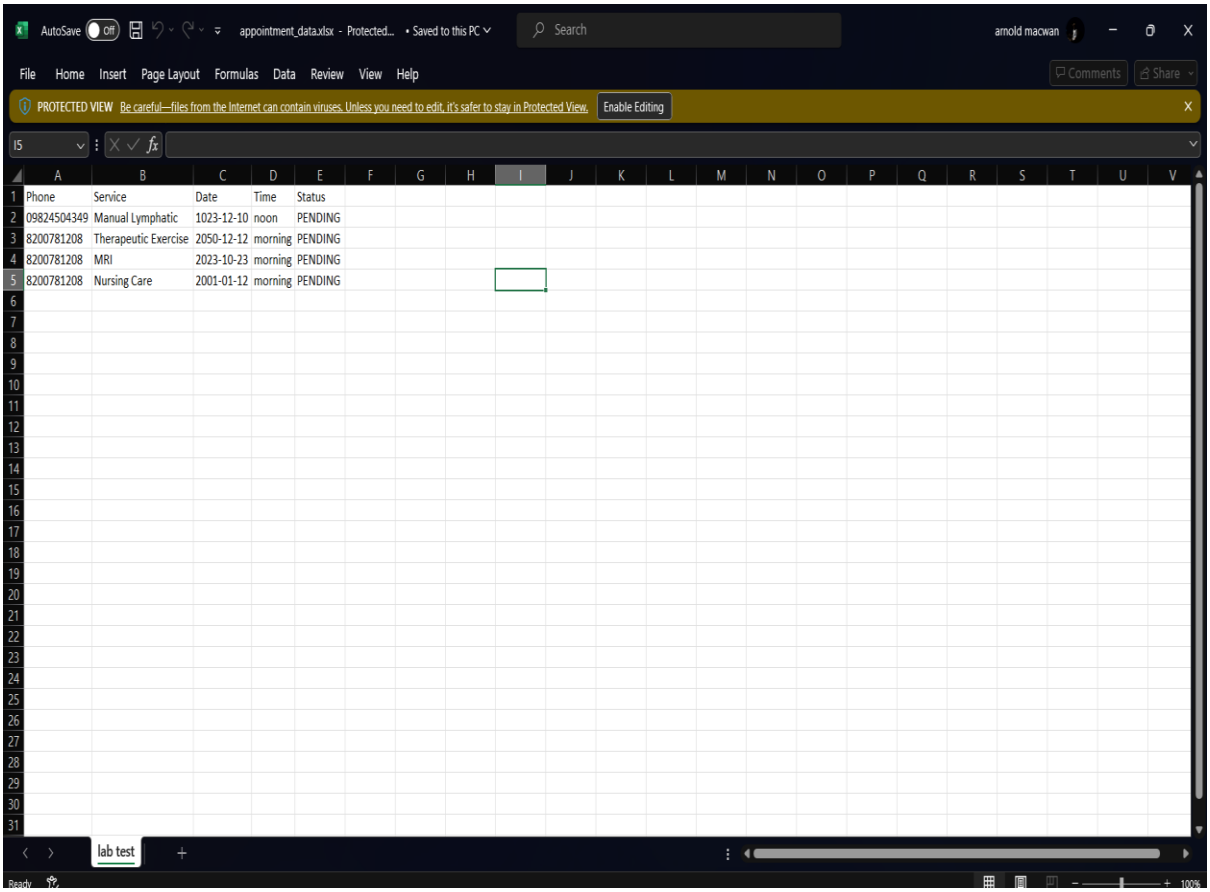
- Password reset via email verification





- Download Excel file



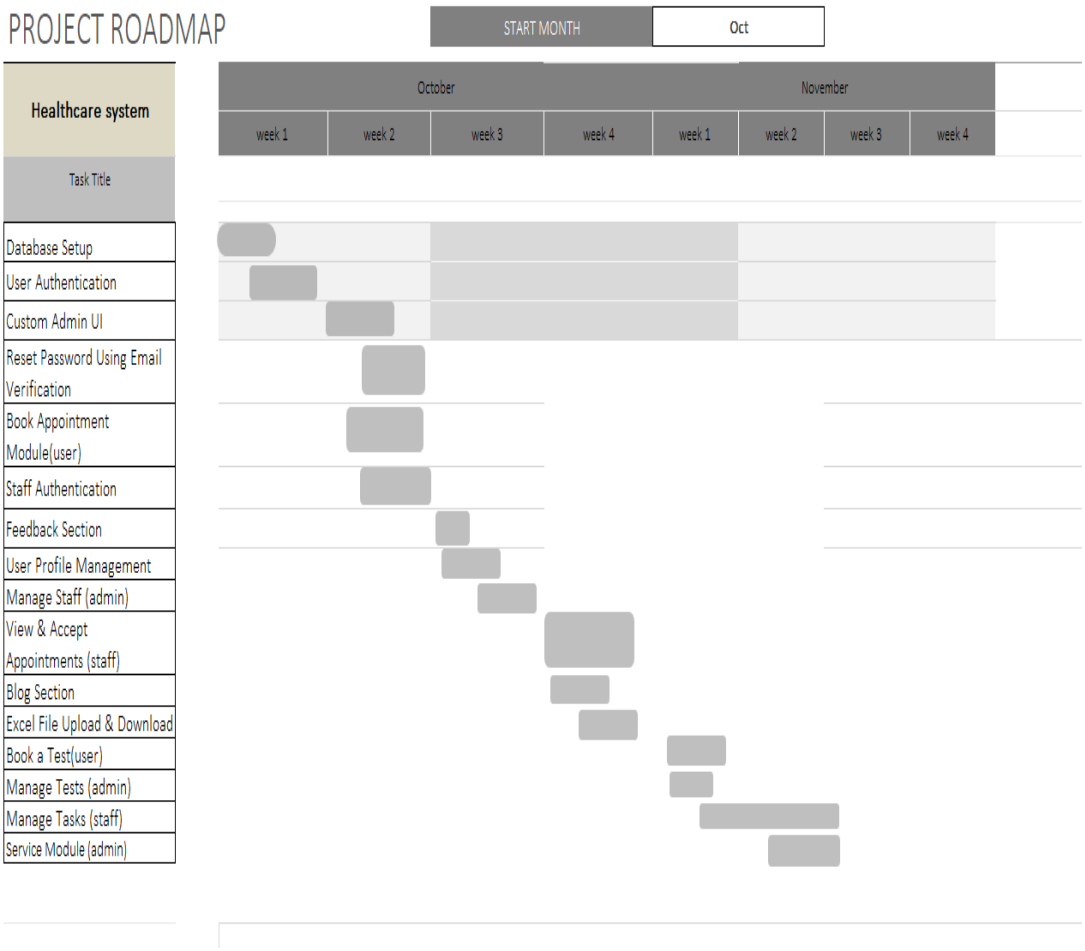


AGILE DOCUMENTATION

1. Project charter

Project name	Healthcare web Application
Guide	Dr Jignesh Doshi
Project expected start date	14-08-2023
Project expected end date	30-11-2023
Project Scope	• Integration of Booking health service • Custom Admin UI deployment • Report and documentation download • Safe & secure storing patient information and medical history
Project mission	Our mission is to provide such a platform so that every customer using the system will get the enhanced online service for their health accordingly their customization.
Project vision	Our vision is to reach every person who is not able to take even primary healthcare services and provide them services at doorstep by using their phones.

2. Project Roadmap



3. Sprint table

Id #	Task / Module	Assigned to	Status	Estimated time(hours)	Story points
1	Authentication	Arnold	Completed	3	6
2	Password Reset & verification	Arnold	Completed	2	4
3	Appointment Module	Dharmik	Completed	8	10
4	Service Module	Dharmik	Completed	6	8
5	Test Module	Arnold	Completed	2	4
6	Profile management	Tirth	Completed	4	8
7	Download Data Files	Tirth	Completed	4	8
8	Book Home Visit	Arnold	Completed	2	4
9	Manage Tasks (staff)	Arnold	Completed	8	10
10	Blog Section	Tirth	Completed	3	6
11	Feedback Section	Dharmik	Completed	3	6

4. User Story

Sr.	As a <user>	Want to <task>	So that <goal>
1	Admin	Login	I can manage flow and activities as administrator
2	Admin	Manage users / patient	I can control user activities & account related issues
3	Admin	Manage staff	I can control & review staff activities
4	Admin	Confirm home-visit request	I can verify & accept user's request for home visit
5	Admin	Allocate service to staff	Staff can handle service for patient
6	Admin	Manage lab test	Let the Lab tester know about it & patients can use
7	Admin	Manage services	User can request for service provider accordingly
8	Admin	Post a blog	Article & blogs can be read
9	Admin	Logout	No one can access system except me
10	Patient	Login	I can use the system as existing user
11	Patient	Sign up	I can use the system as new user
12	Patient	Manage profile	I can edit or delete my profile account & review profile
13	Patient	Buy premium	I can use extra benefits of system
14	Patient	Browse services	I can search & view services accordingly

Sr.	As a <user>	I Want to <task>	So that <goal>
15	Patient	Give feedback	I can give feedback of system & enhancement can be done
16	Patient	Request home visit	I can book a home visit
17	Patient	View medical history	I can review health report & history
18	Patient	Get service	I can book service according to need
19	Patient	Cancel home visit	I can remove appointment for home visit If it isn't needed
20	Patient	Subscribe newsletter	I can quickly get update of new news & events
21	Patient	Logout	No one can access my data
22	Staff	Sign up	I can join system as service provider
23	Staff	Login	I can use system as existing user
24	Staff	Manage profile	I can edit or remove personal profile from system
25	Staff	Access patient medical history	I can provide service accordingly
26	Staff	Update Availability	I can take leave accordingly
27	Staff	Manage tasks/appointments	I can review or update all pending tasks allocated
28	Staff	Delete account	I can remove myself as a service provider from system
29	Staff	Logout	No one can access my data

5. Release plan

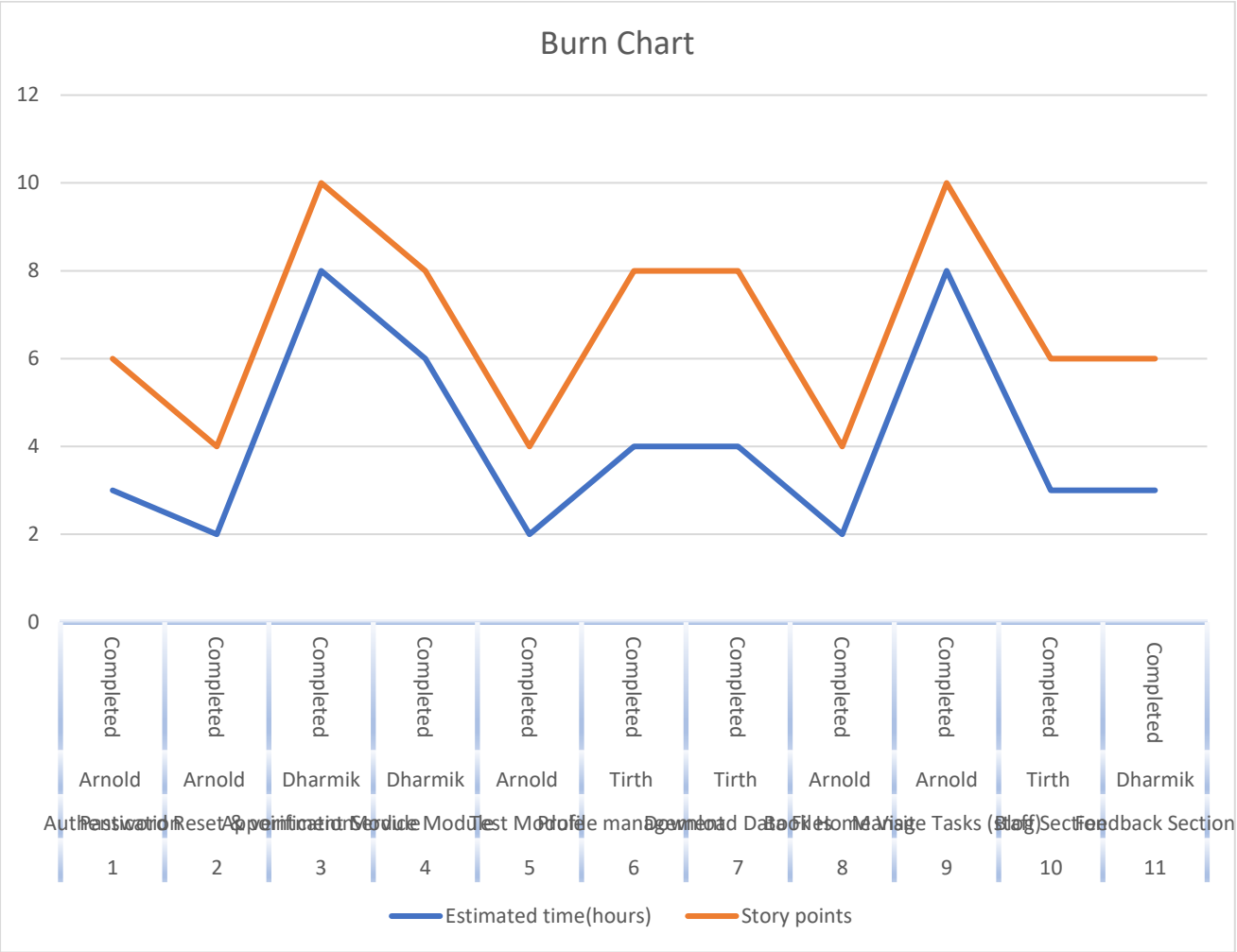
Task	Start date	End date	Status	Release date
Database connection & setup	02-10-2023	03-10-2023	Released	04-10-2023
User authentication	04-10-2023	06-10-2023	Released	06-10-2023
Custom Admin UI	08-10-2023	10-10-2023	Released	11-10-2023
Reset password with email	11-10-2023	12-10-2023	Released	13-10-2023
Book Appointment module (user)	12-10-2023	13-10-2023	Released	13-10-2023
Staff Authentication	15-10-2023	17-10-2023	Released	19-10-2023
Feedback section	16-10-2023	17-10-2023	Released	17-10-2023
User Profile Management	16-10-2023	18-10-2023	Released	19-10-2023
Book Home Visit	23-10-2023	26-10-2023	Released	26-10-2023
Manage Tasks (staff)	03-11-2023	08-11-2023	Released	08-11-2023
Manage Tests	05-11-2023	08-11-2023	Released	09-11-2023
Service Module	06-11-2023	09-11-2023	Released	10-11-2023

6. Test Plan

Project Name	Healthcare System	Browser:	Chrome
Tested on:	30-11-2023	Device:	Ryzen 5 Laptop

Test#	Action	Expected Result	Actual Result	Status
1	User Authentication	Redirect to home screen	Redirect to home screen	Pass
2	Staff Authentication	Redirect to staff home screen	Redirect to staff home screen	Pass
3	Admin Authentication	Redirect to admin screen	Redirect to admin screen	Pass
4	Reset password using Email	Password reset by sending email	Password reset by sending email	Pass
5	Feedback section	Feedbacks should be displayed on user screen	Feedbacks is displayed on user screen	Pass
6	Book Appointment	Appointment should be booked	Appointment is booked	Pass
7	View and accept Appointment (staff)	Appointment should be view and manage by staff	Appointment is viewed and getting manage	PASS
8	Edit Profile (user)	Profile should be Update	Profile is being updated	Pass
9	Blog Section	Blogs Should be posted and displayed	Blogs are being posted but not getting read	FAIL
10	Service Module	Service can be booked and viewed	It's working Good	PASS
11	Manage Tasks	Tasks can be managed by staff	Tasks are getting managed	PASS

7. Sprint Burn Chart



Proposed Enhancements

- System is focusing on resolving current issues and enhancing functionality.
- Improvements include data security, efficient analytics using machine learning, and integrating telemedicine.
- Access control and advanced encryption techniques can protect patient data.
- System is also looking for mobile applications which can help monitor patients remotely and communicate with them in real time.

Conclusion

- A healthcare management system is essential for improving patient care, operational effectiveness, data security, and regulatory compliance. It promotes the implementation of cutting-edge technologies, facilitates the seamless sharing of patient data, and helps with cost management.

Bibliography

- https://www.indimac.in/
- https://www.advinohealthcare.com/