A project report

On

Clinic App

Submitted in partial fulfillment of the requirement of Project - VI

(BIT379C0)

Of

Bachelor of Information Technology

Submitted to

Purbanchal University

Biratnagar, Nepal

Submitted By

Milan Manandhar (363536)

Pukar Shrestha (363539)

Raman Koju (363540)

Kantipur City College

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Project Supervisor

Mr. Ashim KC

Kantipur City College

Putalisadak, Kathmandu

August 13, 2021

Topic Approval Sheet

It is hereby informed that the topic selected by Milan Manandhar, Raman Koju and Pukar Shrestha of BIT VI semester for their semester project has been found suitable and as per the credit assigned by Purbanchal University (PU), Biratnagar, Nepal.

The project Committee has approved the following topic for the above-mentioned students.

Topic Approved: Clinic App

_____	_____
Ashim KC	Bikash Neupane
Coordinator BCA, BIT	Project Coordinator

Certificate from supervisor

This is to certify that the project entitled “Clinic App” submitted by Milan Manandhar, Pukar Shrestha and Raman Koju to the department of Information Technology, School of Science and Technology at Kantipur City College, Kathmandu, Nepal towards the requirement for BIT379C0 of is an original work carried out by them under my supervision and guidance.

Signature:

_____

Ashim KC

Project Supervisor

Kantipur City College, Putalisadak, Kathmandu

July 19, 2021

Acknowledgement

We would like to express our deepest appreciation to all those who provided us the possibility to complete this report. We would like to acknowledge with much appreciation the crucial role of the staff of Kantipur City College, who gave us the permission to use all required equipment and the necessary materials to complete the task.

Furthermore, special thanks to our project supervisor, Mr. Ashim KC, whose contribution in stimulating suggestions and encouragement, helped us to coordinate our project especially in writing this report also suggesting us about the task and guiding us during the completion of this project. Finally, many thanks to the lab in-charge for providing the facilities of the lab during our project. We must appreciate the guidance given by other supervisors as well as the panels especially in our project presentation that has improved our presentation skills, thanks to their comment and advice.

Abstract

This project is the basic example of how the application for clinics works. It helps users to find the appropriate clinics at distant places. This kind of system reduces problems for health workers as well as patients. The best thing about this system is that it allows users to provide feedback about their experience with clinics which helps other users and also forces clinic owners to provide better services to customers/patients.

This system is beneficial for both health workers and patients. Patients can find clinics as per their requirements using appropriate search filters. Clinic owners can also benefit from this system as their reach increases to distant parts of the country.

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Abbreviations

Abbreviation	Meaning
DFD	Data Flow Diagram
ERD	Entity Relationship Diagram
GUI	Graphical User Interface

Chapter 1: Introduction

1.1 Project introduction

Clinic app is an android application which allows patients to book an appointment online through online registration. Since old age, it is difficult to get appointments by standing in a queue for a long time and sometimes being unable to get an appointment. The main concept of the project is to create the platform to get easy appointments online which resolves the problem of the patient. With this application the effort of the patient will be reduced which contains the details of the clinic, their operating time and provided services, thus saving the time of the patient.

1.2 Problem statement

In today's world with the increase in human civilization, the numbers of people wanting to seek medical attention is increasing tremendously. Our project mainly focuses in giving knowledge about different clinics available based on their services. Many people find it hard to accommodate required clinics at required time. This is the reason we present our project "Clinic App" which helps in choosing the best clinics available.

1.3 Objective of the project

- To provide better space for getting to know about various clinics and their services.
- To make booking appointments in different clinics easier.
- To provide easier access to the application as android is one of the most popular devices nowadays.

1.4 Significance of the project

- This application is useful for both health workers as well as patients.
- People can easily decide whether the treatment quality of a clinic is good or bad.
- Multiple clinics can be operated through this application.
- Since the system ranks the feedback based on the weight age of the keywords in the database, the result is appropriate.
- Users can decide which clinic to accommodate before having a check-up.

1.5 Features of the project

- New users can register easily providing username and password.
- Administrative authorization to create and modify different services that can be offered by different clinics.
- Administrative authorization to view and delete different users logged in.
- Multiple clinics can use this app.
- Clinic name, location, contact numbers manageable by employee user.
- Google map location for each clinic.
- Clinic working hours.
- Services provided by various clinics.
- Patients are able to book appointments.

1.6 Assignment of roles

Team member	**Symbol number**	**Task Done**
Milan Manandhar	363536	Coding, layout design, documentation, Firebase
Pukar Shrestha	363539	Layout design, coding, documentation, ER diagram, DFD
Raman Koju	363540	Layout design, coding, documentation, ER diagram, DFD

1.7 Documentation Organization

Chapters	**Heading**	**Contains (Topics)**
Chapter 1	Introduction	1.1 Project introduction 1.2 Problem statement 1.3 Objectives 1.4 Significance 1.5 Features 1.6 Assignment of roles 1.7 Documentation organization
Chapter 2	Literature Review	2 1 Overview of existing system

		2 2 Limitations of existing system
Chapter 3	System Analysis	3.1 Requirement Specification 3.1.1 Functional 3.1.2 Non-Functional 3.2 Feasibility 3.2.1 Technical Feasibility 3.2.2 Schedule Feasibility 3.2.3 Economical Feasibility 3.3 Gantt chart
Chapter 4	System Design	4.1 Context Level Diagram 4.2 Level 0 DFD 4.3 Level 1 DFD 4.2. ER-Diagram

Chapter 2: Existing System's Overview

2.1 Overview of existing system

We have overviewd two different systems other than our system.

2.2 System 1 (Klinika - Clinic and Patient Management App)

Klinika is an easy to use medical clinic management system app for doctors. It is a medical clinic management system that enables doctors to access patient information from different platforms and locations. Klinika is designed for both Single Practice and Multi-Doctors clinics. It works well on phones or tablets. It also has a new design for easy navigation and use.

2.2.1 System 1 pros

- Manage patient profiles that include not only their personal information but also their medical history, lab records, medical images, treatment documents and diagnosis.
- Hassle-free patient queue management for your doctors using an organized clinic scheduler.
- Generate different income and expense reports for your clinic and doctors to monitor revenue.

2.2.2 System 1 cons

- Operable only for doctors and clinics.
- Patients cannot be benefitted through the system.

2.3 System 2 (mClinic - Clinic Management App)

mClinic a Clinic Management App with Saas as software for the Hospital / Clinic Management system, which helps in digitizing your Clinic & Hospital Process.

2.3.1 System 2 pros

- Inbuilt appointment management and payment management.
- View and book appointments with the doctor.
- Reschedule appointment.
- Operable for clinics, doctors as well as patients.

2.3.2 System 2 cons

- Doctor/Clinic registration process takes a longer time.
- Users management can be hectic as admin authorization is not provided.

Chapter 3: System Analysis

System analysis is the process of studying a procedure in order to identify its goals and purposes and create systems and procedures that will achieve them in an efficient way. It is phase of software development where a system requirement, initial investigation, requirement analysis and feasibility study are performed.

3.1 System development model

The development of project “Clinic App” follows the waterfall model which is because of the small size of the project and also with the requirement which is less in amount and can be gathered at once.

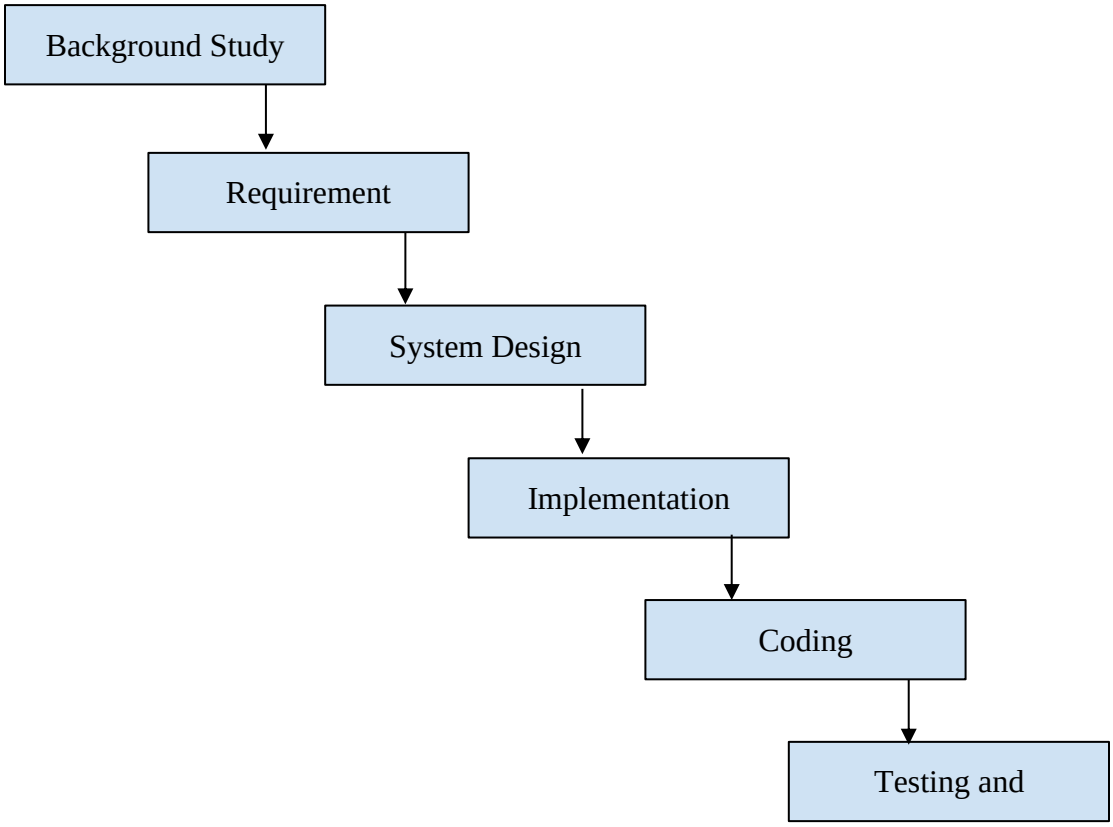


FIG 3.1 Waterfall model for developing the project

3.2 Requirement analysis

Requirement analysis is the process of determining user expectations for a new or modified product. In this process the requirements related to the system

development is collected.

3.2.1 Functional requirement

The functional requirements of the application are as follows:

- Login: In order to login to the system users must enter their username and password.
- Manage users: In this application, admin users can disable/enable certain users as well as delete the users permanently.
- Manage services: The entire services in the application are managed by admin where admin can add, remove and update services.
- Add and update clinics: This application allows employee users to modify their clinic profile and clinic hours.
- Add services to clinics: Adding services to certain clinics is done by employee users of their respective clinics.
- Clinic details: This application provides clinic details for patients in order to choose the required clinic.
- Book appointments: This application allows patient users to book appointments to a required clinic.
- Cancel appointments: Patient users can cancel their upcoming appointments as per requirement.
- Provide clinic rating: This application allows patient users to rate a clinic after booking their appointments.

3.2.2 Non-Functional requirement

Non-functionality requirement includes the following:

1. Usability: This application is usable for the patients and health workers, clinic owners.
2. Reliability: Since the application is managed and authenticated by admin, we can ensure the reliability of an application.
3. Security: This application is password protected to any users.

4. Performance: This application takes a minimal amount of time to respond to a given piece of task.

3.3 Feasibility study

Feasibility study is the process of feasibility analysis of the current as well as the proposed system. A feasibility study is done to identify the deficiencies in the current system and find the objectives of the proposed system. There are many types of feasibility study that needs to be considered but following are the major studies that were performed during the development of the project.

3.3.1 Technical feasibility

Clinicapp is an android based application. The main technology tools needed for the project are Java, firebase and android studio which are freely available and technical skills are manageable. While in the development phase the application will be hosted and tested. Thus, it's clear that the project is technically feasible.

3.4 Gantt chart

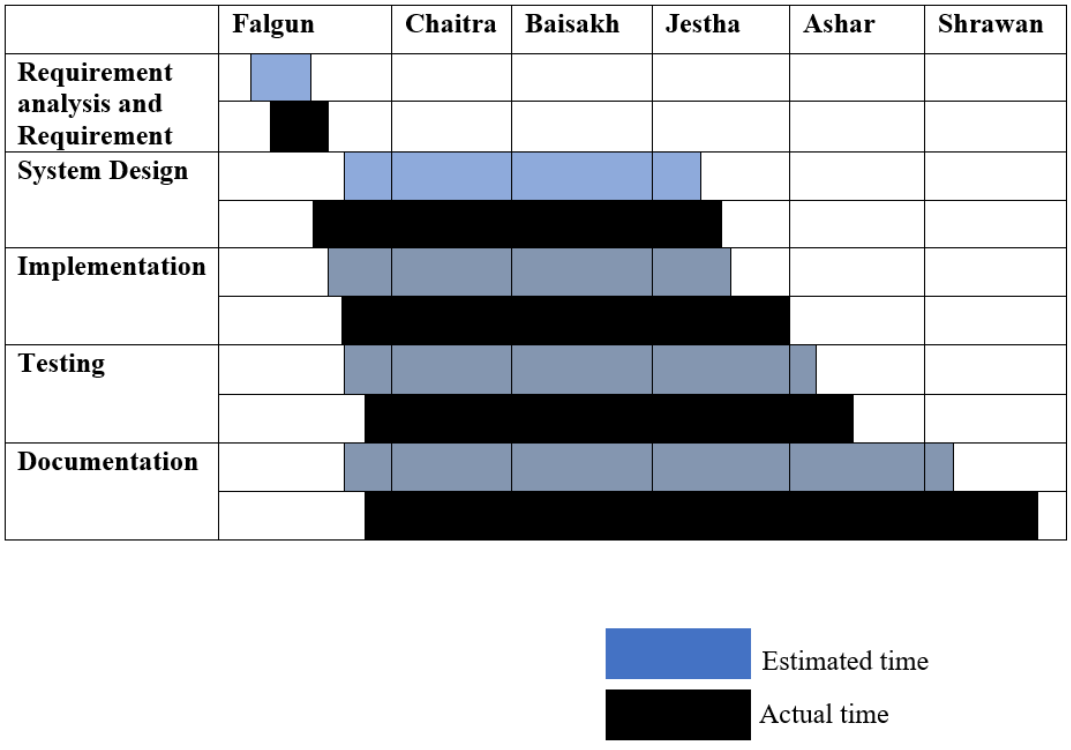


FIG 3.2 Gantt chart

Chapter 4: System Design

4.1 Context level diagram

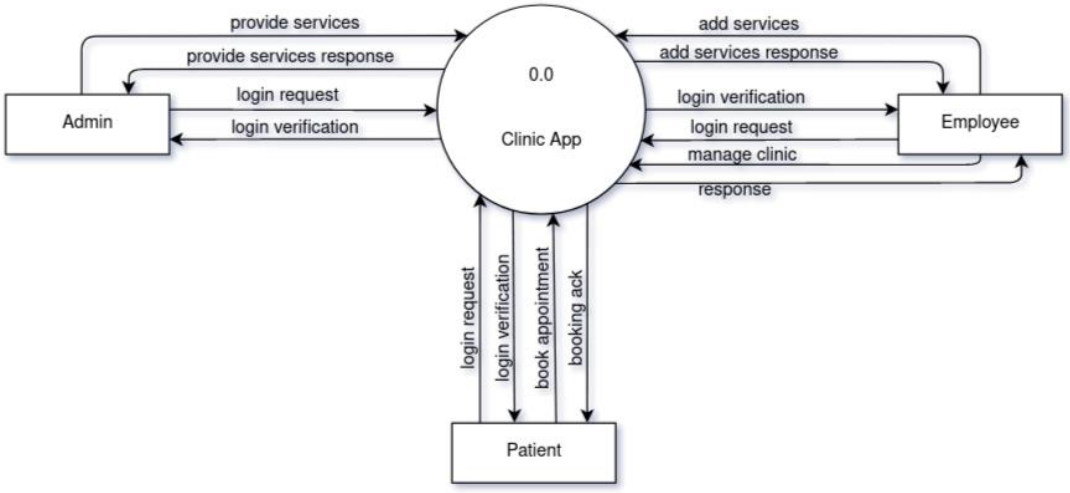


FIG 4.1 Context level diagram

4.2 Level 1 Data Flow Diagram

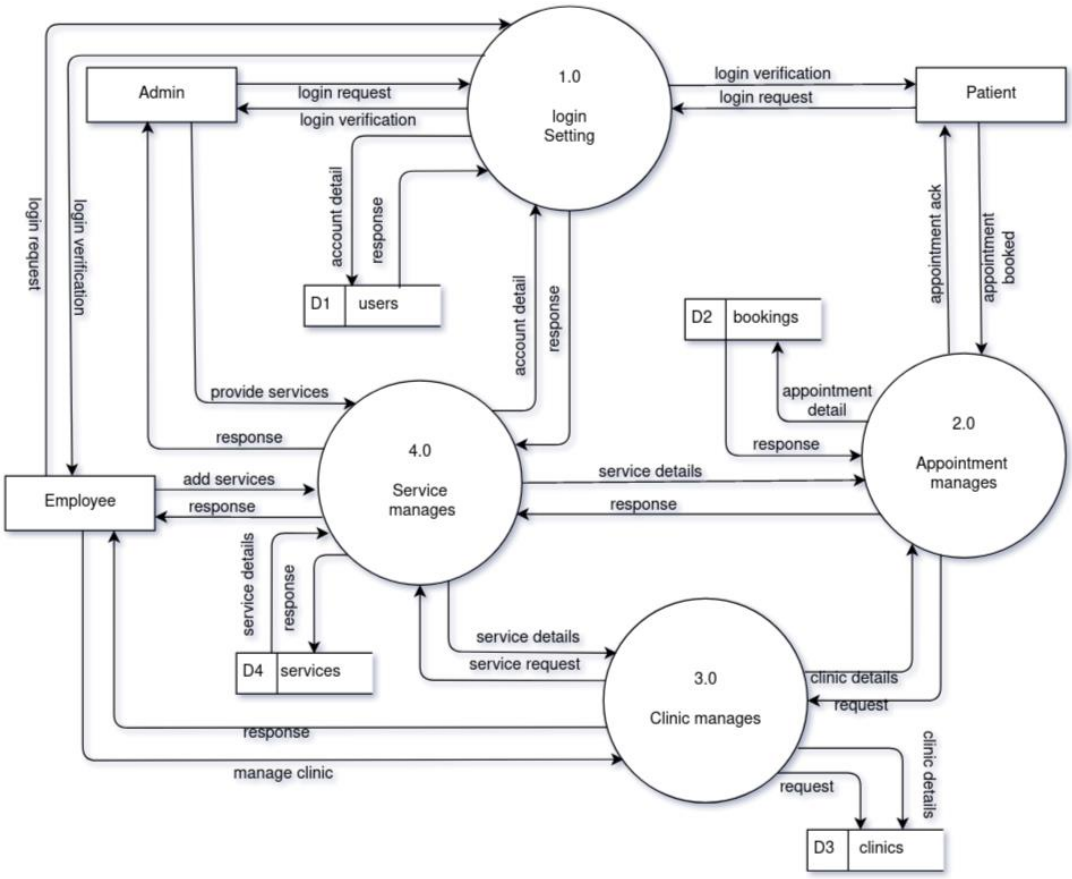


FIG 4.2 Level 1 Data Flow Diagram

4.3 Use Case Diagram

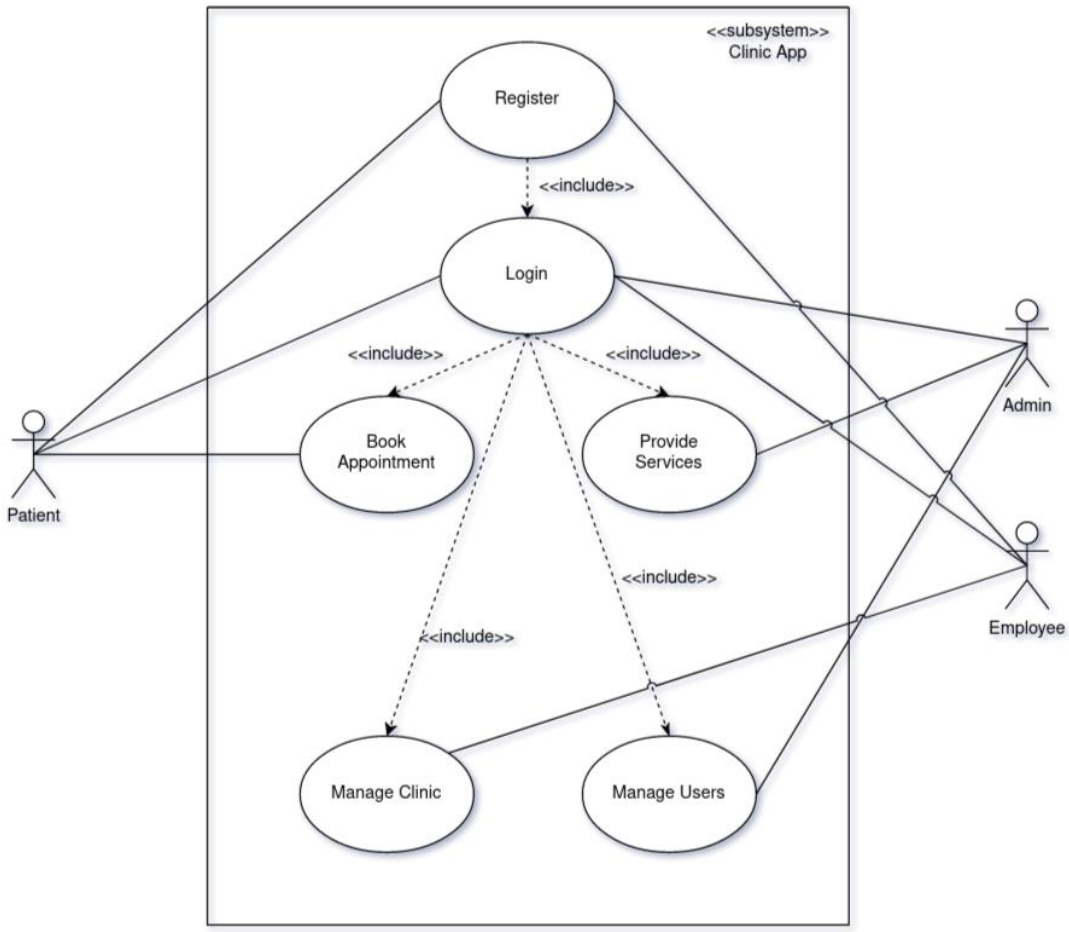


FIG 4.3 Use Case Diagram

4.4 Entity Relationship Diagram

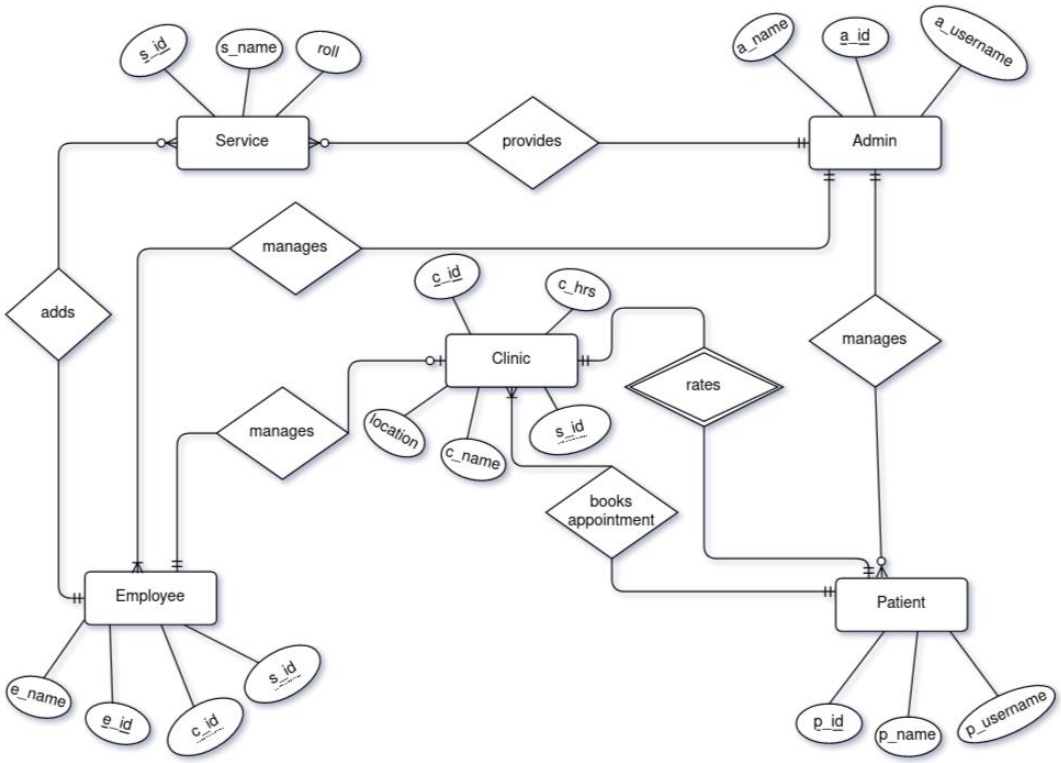


FIG 4.4 ER Diagram

Chapter 5: System Development and Implementation

5.1 Programming platform

Operating System:

- Linux/Windows Platform

IDE:

- Android Studio
- IntelliJ IDEA Community Edition

5.1.1 Frontend platform

- Material design (Android)
- Adobe XD

5.1.2 Backend platform

- JAVA
- Database: Firebase

5.2 Operating environment

The minimum requirement for the application to run are as follows:

5.2.1 Hardware details

- 1 GB or higher RAM

5.2.2 Software details

- Android

5.3 Testing and debugging

Test No.	Test Scenario	Test Description	Case ID	Case Description	Test Data	Post Conditions	Expected Result	Status
1	Test_ClinicApp_1	Verify the Functionality of the login section as a Patient	Patient_Login_case_1	Enter a valid Username and Password	username: ptest password: 12345	The user should be redirected to a patient layout	Logged In	PASS
			Patient_Login_case_2	Enter a valid username and Invalid Password	sername: ptest password: 11111	The user is shown incorrect password message	Incorrect Pasword!	PASS
			Patient_Login_case_3	Enter invalid username and invalid password	ername: Pskda password: 1345	The user is shown incorrect username message	Incorrect Username!	PASS
2	Test_clinicApp_2	Verify the Functionality of the login section as a Employee	Employee_Login_case_1	Enter a valid Username and Password	username: employee password: 12345	The user should be redirected to a employee layout	Logged In	PASS
			Employee_Login_case_2	Enter a valid username and Invalid Password	username: employee password: 65485	The user is shown incorect password message	Incorrect Pasword!	PASS
			Employee_Login_case_3	Enter invalid username and invalid password	username: emp password: 12353	The user is shown incorrect username message	Incorrect Username!	PASS
3	Test_clinicApp_3	Verify the Functionality of the login section as an ADMIN	Admin_Login_case_1	Enter a valid Username and Password	username: admin password: 12345	The user should be redirected to a admin layout	Logged In	PASS
			Admin_Login_case_2	Enter a valid username and Invalid Password	username: admin password: 24245	The user is shown incorrect password message	Incorrect Pasword!	PASS
			Admin_Login_case_3	Enter invalid username and invalid password	username: admin12 password: 14545	The user is shown incorrect username message	Incorrect Username!	PASS
4	Test_clinicApp_4	Verify the functionality of the admin user to manage users	Admin_disable_case_1	Disable the user account	click on edit button to disable account	User account cannot be used.	disabled	PASS
			Admin_enable_case_2	Enable the user account	click on edit button to disable account	User account can be used	enabled	PASS
5	Test_clinicApp_5	Verify the functionality of an admin s user to provide services	Admin_add_case_1	Add services on database	Provide service name, service role and click add button	service should be added to the database and shown in the employee section	service added sucessfully	PASS
			Admin_remove_case_2	Remove services from database	long click service and select remove button	service should be removed from database and not shown in the employee section	service removed sucessfully	PASS
6	Test_Clinic_App_6	Verify the functionality of book appointment as a patient	Patient_Book_Appointment_case_1	Add Appointment details to the Patient section	choose date, time and click book appointment button	Appointment details should be added and displyed to the patient sector	Appointment booked sucessfully	PASS
			Patient_Cancel_Appointment_case_2	Remove Appointment details from the Patient section	click ob upcoming appointment list and select cancel appointment	Appointment details should be removed from the patient section	Appointment has been cancelled	PASS
7	Test_clinicApp_7	Verify the functionality of clinic profile as a Employee	Employee_clinic_profile_case_1	create profile of clinic with the provided data	clinic name, location, phone no., clinic hours	clinic profile should be created and redirect user to employee layout	Profile updated	PASS
8	Test_clinicApp_8	Verify the functionality of serch as a Patient	Patient_Search_case_1	Enter the keyword	keyword:test clinic, click search button	Patient is displayed with different hospital related to the keyword	matching hospital is displayed	PASS

Chapter 6: Conclusion and Future Enhancement

6.1 Conclusion

This project has been great opportunity for us to learn about android programming. It was a great time for us while making this project with support of our friends and teachers who supported us.

6.2 Limitations

- Requires proper internet connection (Wi-FI).
- Doctor information is not provided in the application till date.

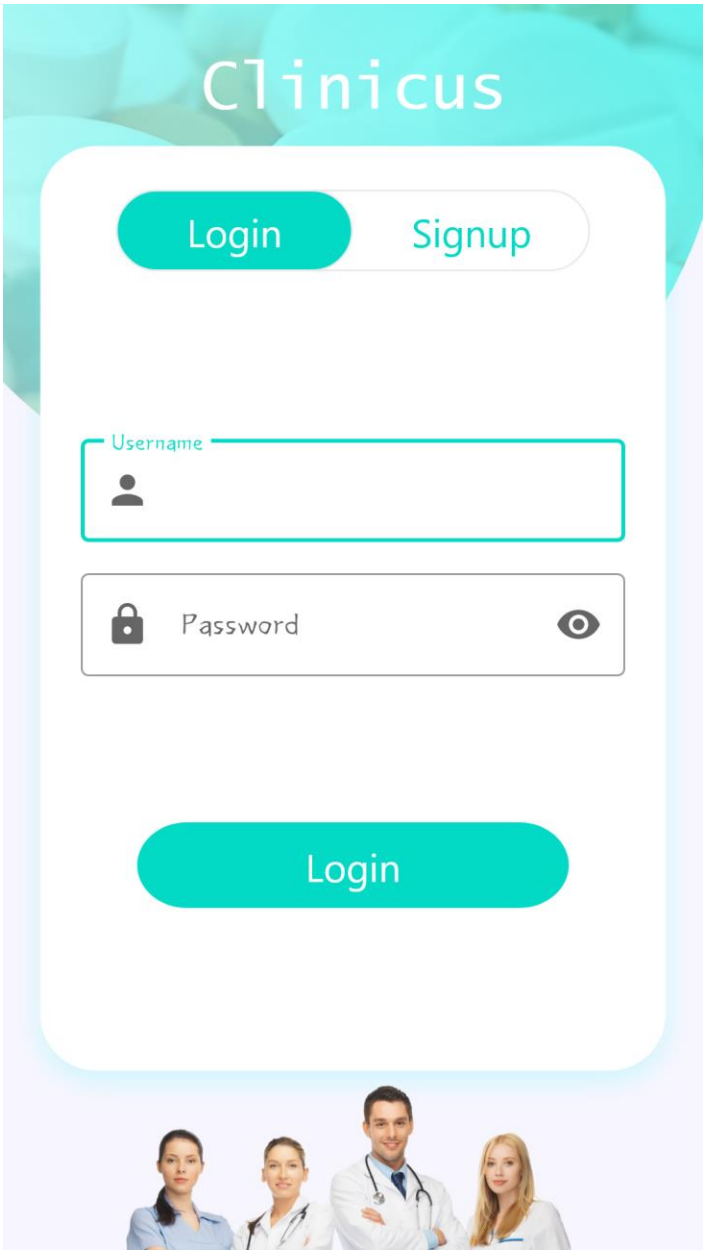
6.3 Future Enhancements

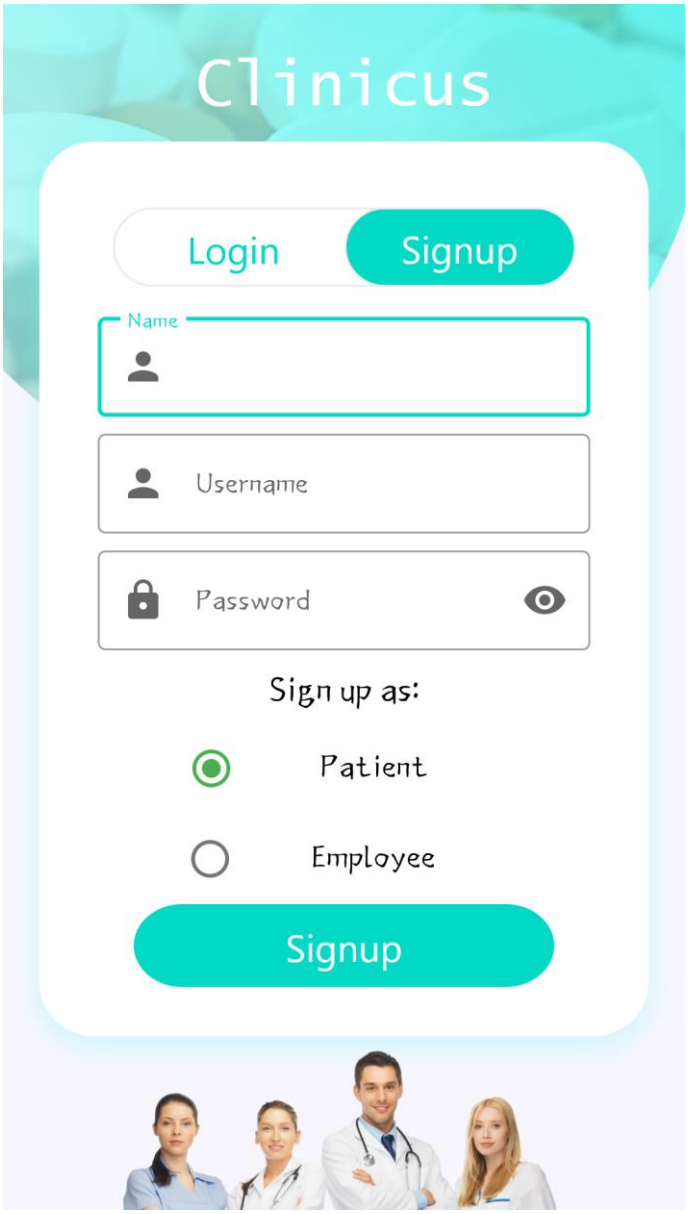
- Implementation of Better GUI.
- Deployment of application to Google PlayStore.
- Providing proper doctor's information in every clinic.

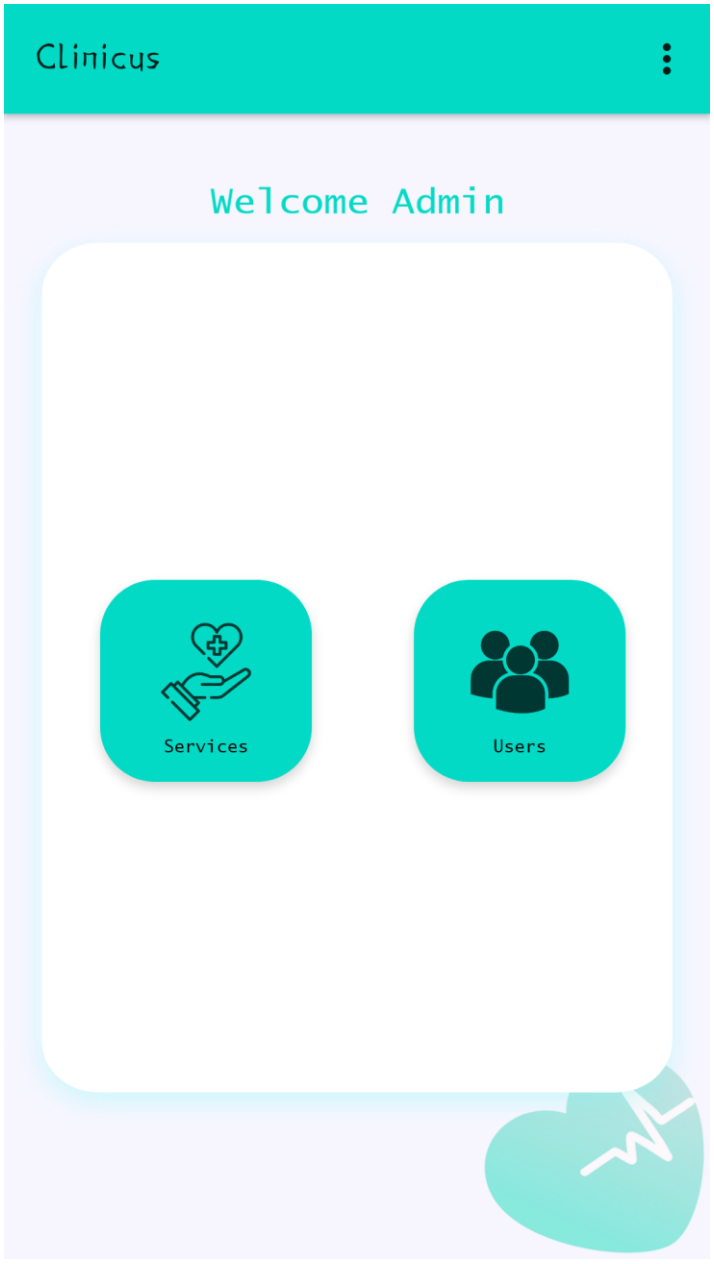
References

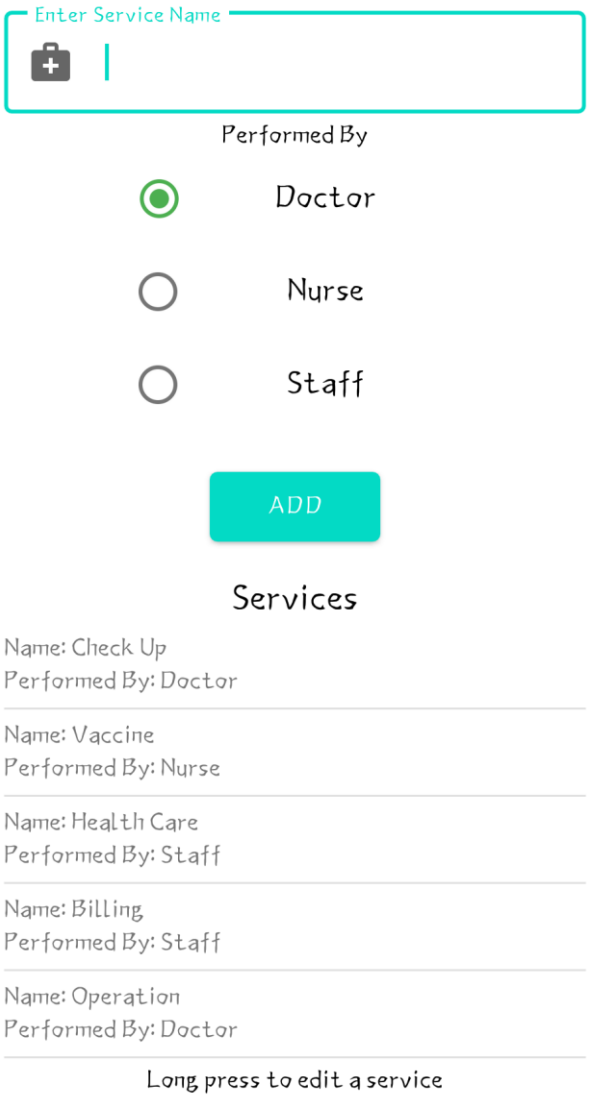
[1] “The Complete Reference Java”, Herbert Schildt, Seventh edition, TATA McGraw-Hill edition
[2] “https://github.com”
[3] “https://stackoverflow.com”

Appendix




Clinicus
Login
Signup
Name
Username
Password
Sign up as:
Patient
Employee
Signup


Clinicus
Welcome Admin
Services
Users


Enter Service Name
Performed By
Doctor
Nurse
Staff
ADD
Services
Name: Check Up
Performed By: Doctor
Name: Vaccine
Performed By: Nurse
Name: Health Care
Performed By: Staff
Name: Billing
Performed By: Staff
Name: Operation
Performed By: Doctor
Long press to edit a service

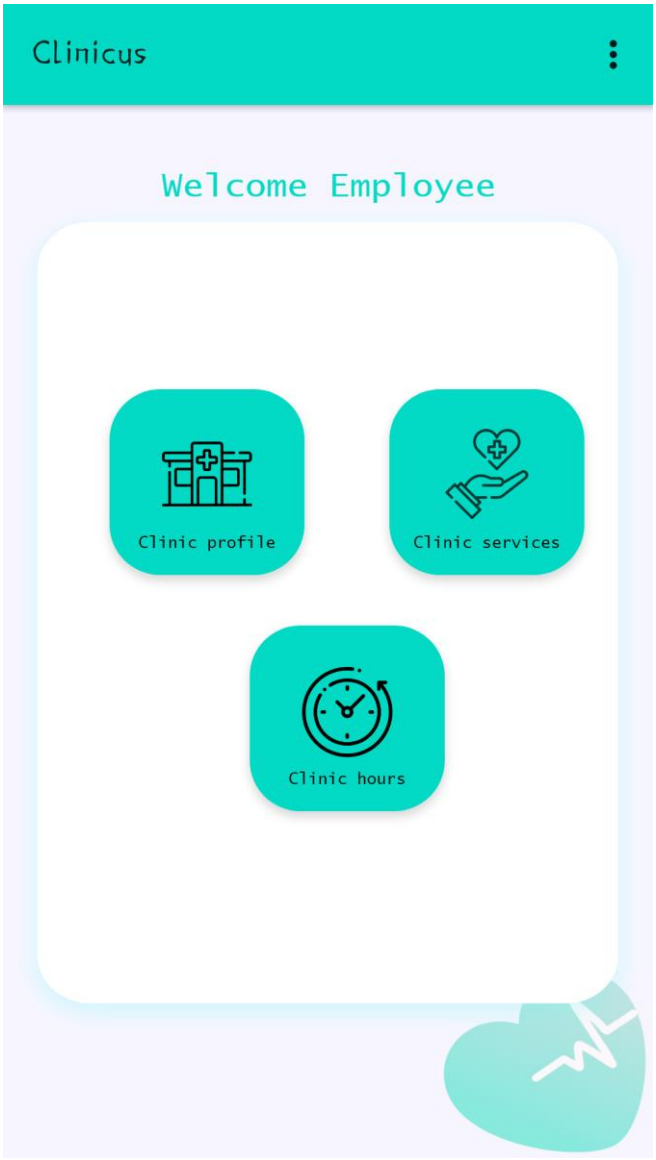
Name: Employee Test
Username: employee
Role: Employee
Status: enabled

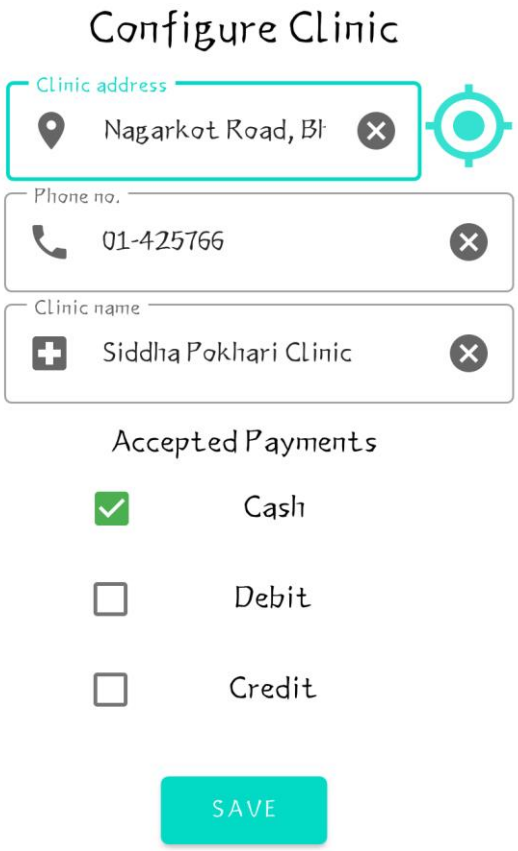

Name: test
Username: ptest
Role: Patient
Status: enabled


Name: test1
Username: testuser
Role: Patient
Status: enabled


Name: emptest
Username: emp
Role: Employee
Status: enabled


Name: empp
Username: empp
Role: Employee
Status: disabled


Clinicus
Welcome Employee
Clinic profile
Clinic services
Clinic hours


Configure Clinic
Clinic address
Nagarkot Road, Bh
Phone no.
01-425766
Clinic name
Siddha Pokhari Clinic
Accepted Payments
Cash
Debit
Credit
SAVE

Clinic Services

Name: X-rays
Performed By: Doctor

Name: Vaccine
Performed By: Nurse

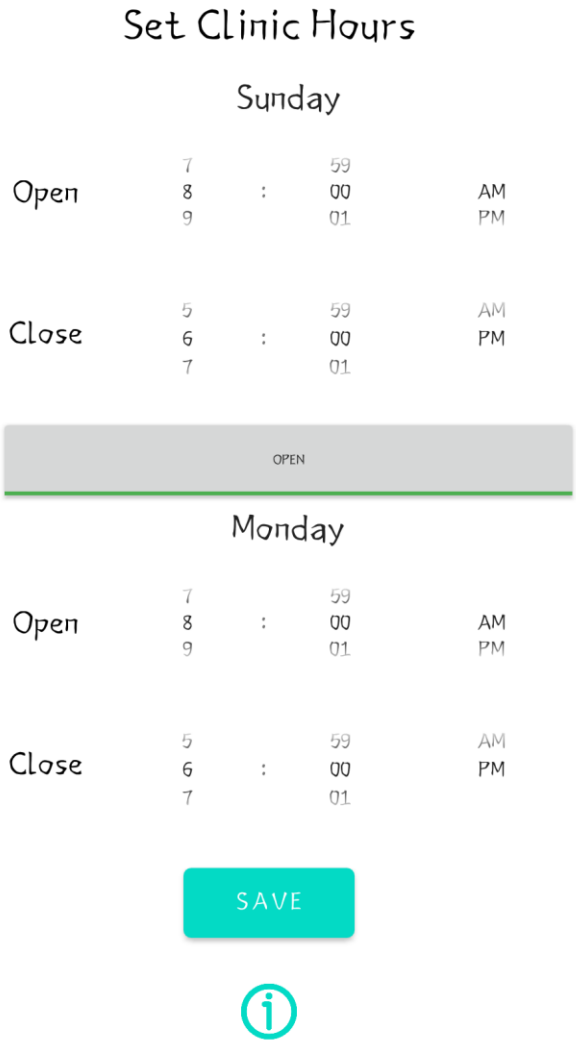
Name: Check Up
Performed By: Doctor

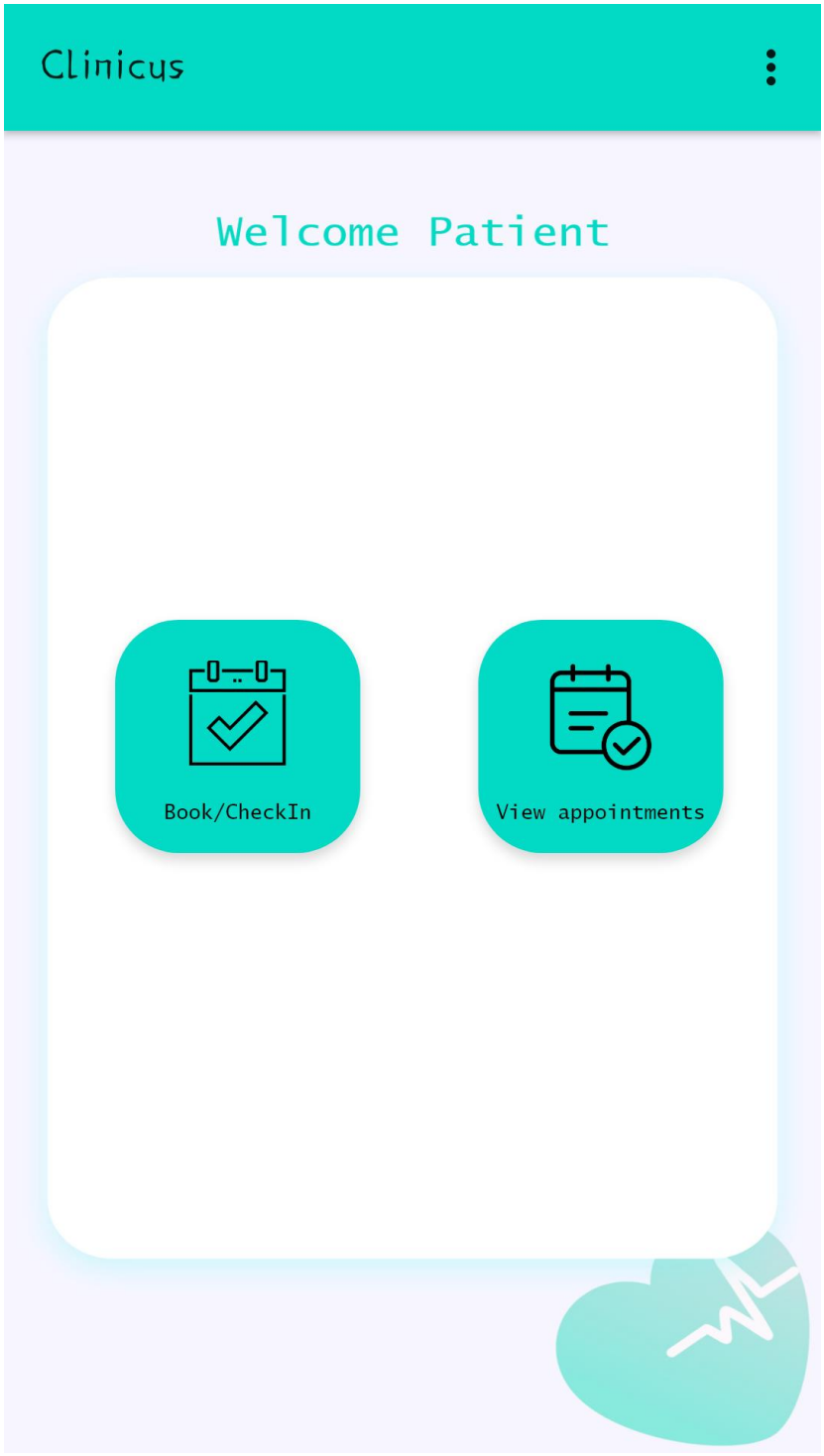
Name: Operation
Performed By: Doctor

Name: Drugs Prescription
Performed By: Doctor

Long Press to Delete a Service

ALL SERVICES


Set Clinic Hours
Sunday
Open
7
8
9
:
59
00
01
AM
PM
Close
5
6
7
:
59
00
01
AM
PM
OPEN
Monday
Open
7
8
9
:
59
00
01
AM
PM
Close
5
6
7
:
59
00
01
AM
PM
SAVE


Clinicus
Welcome Patient
Book/CheckIn
View appointments

Filters

Clinic name

Clinic address

Days of Operation

Sun Mon Tues Wed

Thu Fri Sat

SEARCH

Results:

Siddha Pokhari Clinic
Nagarkot Road, Bhaktapur
44800

test
Kathmandu

Please click to select a clinic

Appointments

Past Appointments

Siddha Pokhari Clinic
2021-08-04 08:00
X-rays

RATED
: 5

Upcoming Appointments