

International Journal of Computer Science and Mobile Computing



A Monthly Journal of Computer Science and Information Technology

ISSN 2320-088X

IMPACT FACTOR: 6.199

IJCSMC, Vol. 8, Issue. 9, September 2019, pg.61 – 80

SMART PATIENT INFORMATION SYSTEM

Dhanya Sethu¹; A.Ganesan²; Dr. N.Revathy³; S.Anushya⁴

^{1,4}Final MCA, ²Associate Professor, ³Professor

^{1,2,3,4} PG and Research Department of Computer Applications (MCA),
Hindusthan College of Arts and Science, Coimbatore, India

Abstract: *It is a centralized system for patient medical report sharing. Basic concept of this project is sharing information among multiple hospitals. In existing System we can't share patient information from one hospital to another. This application solves these all drawbacks of existing system.*

Keywords - *QR-code, Cardiology*

Introduction

To make these transactions even secured, a mechanism of QR-Code is provided for the patient. The data registered are stored in the database. At the time of registration, the user name, password (auto generated) is sent to the patient's e-mail.

When the patient books a doctor (say if cardiology) the doctor can view only the respected detail's history. i.e. the patient's previous cardiac prescriptions and details. Rest of the details on other consultations of the patient are hidden. Thus keeping the details secured.

To the labs too only the tests prescribed and the doctor name is viewed, other prescriptions are hidden. The QR-Code of the patients is scanned by the doctor or concerned lab to get only the respective details in their device. They can update the results which will be automatically saved to patient's profile. This is how patient's profile is shared securely.

Module Description:

Our Proposed system have mainly 6 modules:

1. CENTRALIZED ADMIN
2. PATIENT
3. HOSPITAL
4. HOSPITAL RECEPTION
5. DOCTOR
6. LAB

CENTRALIZED ADMIN

- Add hospital
- View hospital details
- Remove hospital details

HOSPITAL

- View Patient
- Generate unique admission card

- Add doctors
- Add receptionist
- Add new test name
- Approve doctors leave
- Add lab technicians

HOSPITAL RECEPTION

- Register and Add patient details
- View and approve booking
- Check doctors leave
- View Patient

PATIENT

- View medical information
- View Prescriptions
- View Test Results
- View hospital details
- Update Profile
- Book Doctor
- View Booking Details

DOCTOR

- View Bookings
- View Patient Medical profile and Summary
- View Patient Test Results
- View Patient Prescriptions
- Approve Consulting Time
- Apply For leave
- Prescribe Lab test

LAB

- View Tests
- Update Results

STUDY ABOUT THE SYSTEM

EXISTING SYSTEM:

Today there exists many of such system but most of them are not effective as per the assumption. Many of such systems indicate the trouble in the main objective of the system which is to book a doctor. Apart from this the doctor cannot view patient's previous medical history. Patient needs to carry manual prescriptions which may be lost.

Another drawback possible to be quoted is that the existing system can't inform the patient about doctor's leave on the booked day (if so)

PROPOSED SYSTEM:

The proposed system is expected to overcome all these drawbacks. It is more concerned about sharing patient's medical history among multiple hospitals.

Only the registered and verified authorities can use the system. The Admin registers and approves the hospitals. The Admin has the only power to remove a hospital from the system along with which all the associated entities with that hospital will be removed.

It is the hospital which adds Doctors, Receptionist, Lab technicians and new Lab tests. It can view the registered patient's basic information. It is prime authority which approves doctor's leave. (It is designed so, as to mention a digitalized record about doctor and his activities – how many patients have registered under him, his working time, sign-in and sign-out time, leaves applied, etc.). It can also view the lab test available in the concerned hospital.

The reception is the one who registers patient for the first time in the hospital. It is designed so for improved security. The reception can view the patient booked on a particular day, check for concerned doctor's leave and inform the patient (e-mail) about the leave of the doctor.

The patient is the user. He/she can book the doctor, they can view their own profile, update it, view prescription and lab test given by the doctor and view the hospitals register. They can also cancel the booking. A token number will be provided to them at the time of booking which is auto generated.

The lab technician can view the tests prescribed by the doctor and can only updates the results of test. He can also view the list of test available in the concerned hospital. The labs which functions in association with the hospital can be registered by the hospital. External labs can register themselves through the app but it needs to

be verified by the respected hospital authorities and approved. Only after approval can it function with the system.

To make these transactions even secured, a mechanism of QR-Code is provided for the patient. The data registered are stored in the database. At the time of registration, the user name, password (auto generated) is sent to the patient's e-mail.

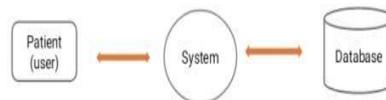
When the patient books a doctor (say if cardiology) the doctor can view only the respected detail's history. i.e. the patient's previous cardiac prescriptions and details. Rest of the details on other consultations of the patient are hidden. Thus keeping the details secured.

To the labs too only the tests prescribed and the doctor name is viewed, other prescriptions are hidden. The QR-Code of the patients is scanned by the doctor or concerned lab to get only the respective details in their device. They can update the results which will be automatically saved to patient's profile. This is how patient's profile is shared securely.

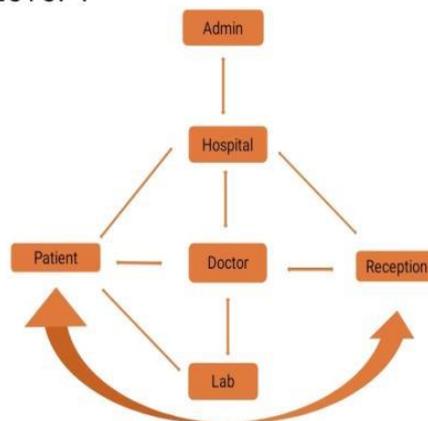
SYSTEM DESIGN

DATA FLOW DIAGRAM (DFD) - Smart Patient Info

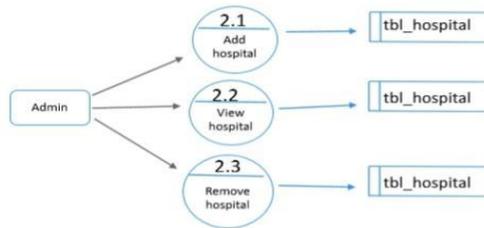
Level 0



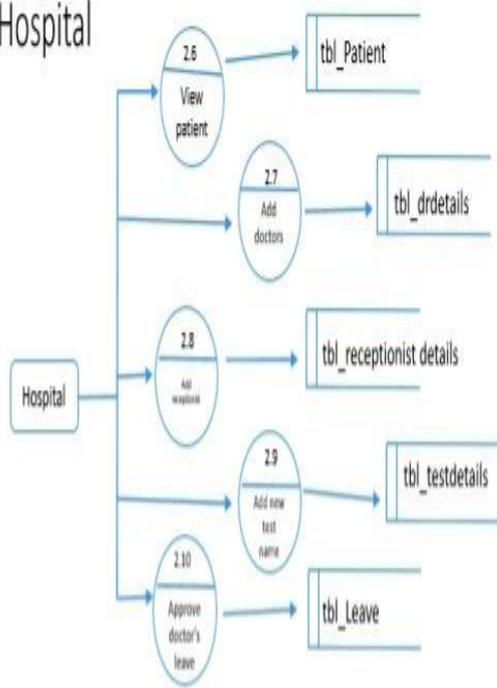
Level 1



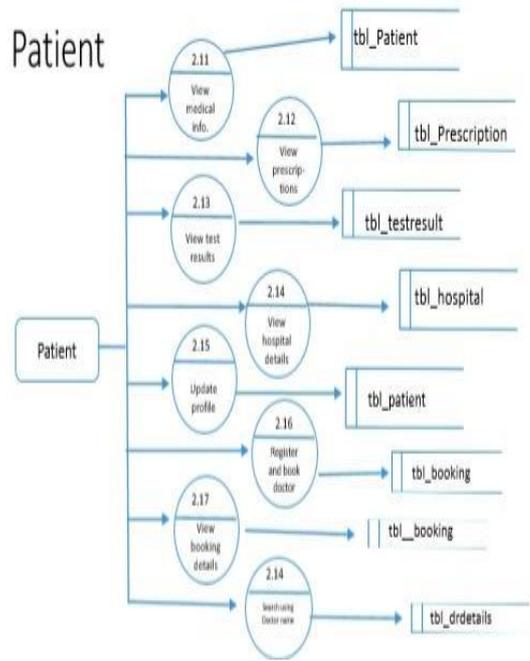
Level 2 - Admin



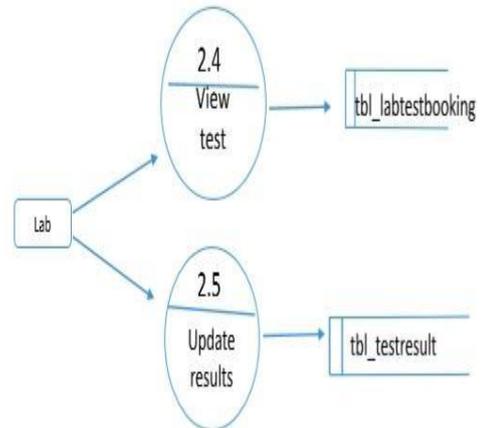
Hospital

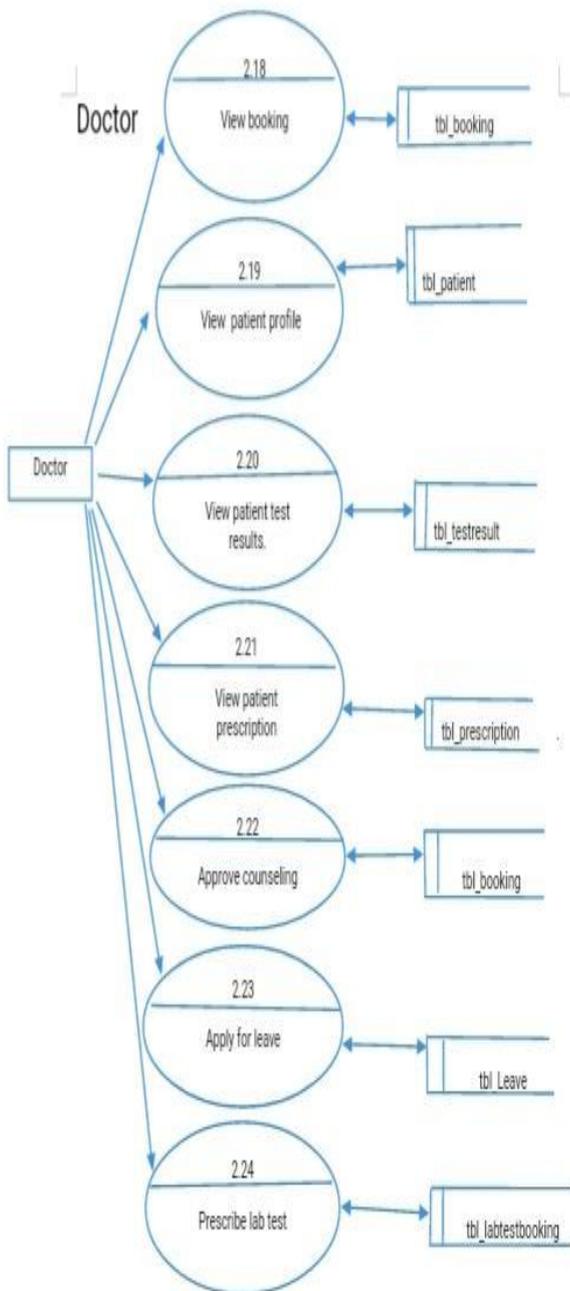


Patient

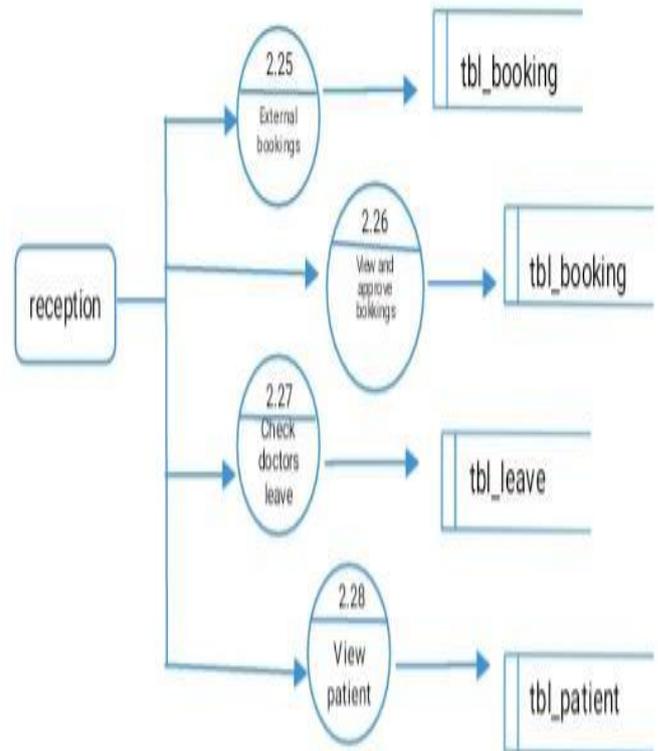


Lab





Reception :



SYSTEM IMPLEMENTATION

Implementation is the stage in the project where the theoretical design is turned into a working system and is giving confidence on the new system for the users that it will work efficiently. It involves careful planning, investigation of the current and its constraints on implementation, design of methods to achieve the change over, an evaluation, of change over methods. Apart from planning major task of preparing the implementation is education are training of users. The more complex system being implemented, the more involved will be the system analysis and the design effort required just for implementation. An implementation coordinating committee based on policies of individual organization as being appointed.

The implementation process begins with preparing a plan for the implementation of the system. According to this plan, the activities are to be carried out, the discussions made regarding the equipment and resources and the additional equipment has to be acquired to implement the new system. The implementation is the final and important phase. The most critical stage in achieving a successful new system and in giving the users confidence that the new system will work and be effective. The system can be implemented only after through testing is done and if it found to working according to the specification. This method also offers the greatest security since the old system can take over if the errors are found or inability to handle certain type of transactions while using the new system. At the beginning of the development phase a preliminary implementation plan is created to schedule and manage the many different activities that must be integrated in to plan. The implementation plan is updated throughout the development phase, culminating in a changeover plan for the operation phase. The major elements of implementation plan are test plan training plan, equipment installation plan and a conversion plan.

Experimental Results

Main Form Design:

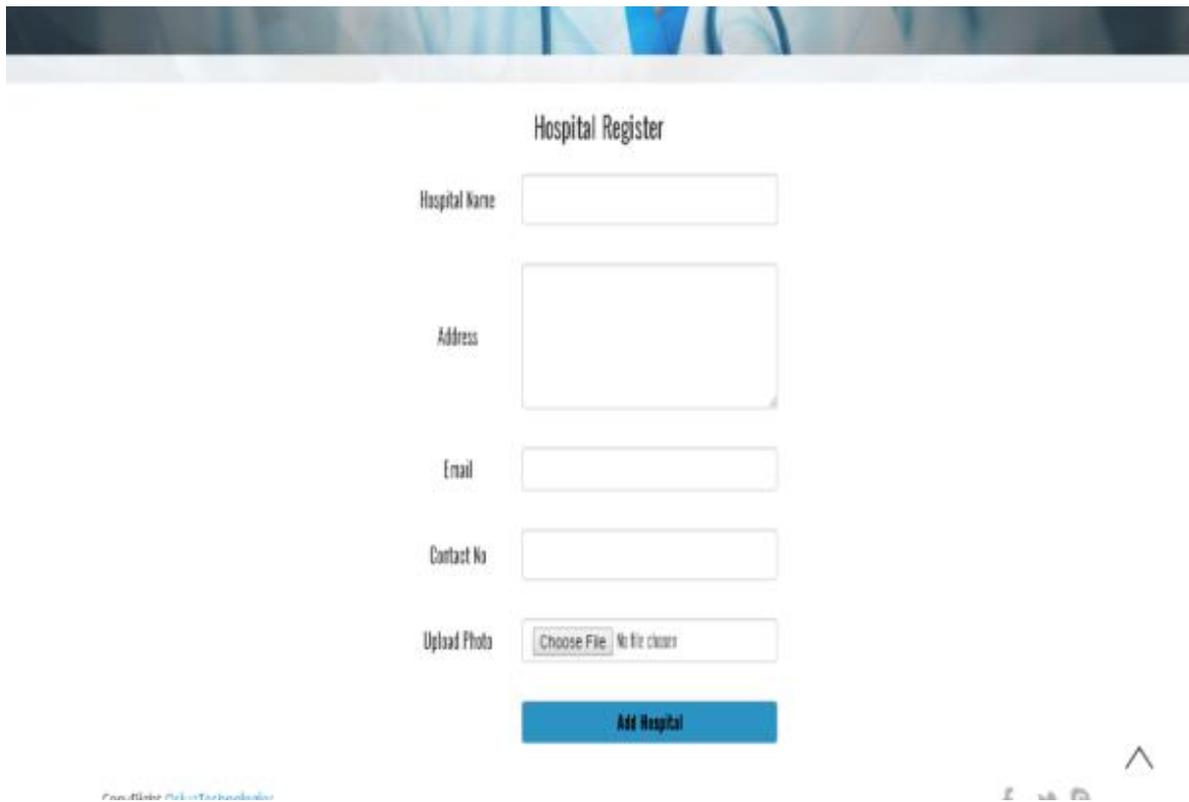
Registered Hospitals Viewed



View Hospital List

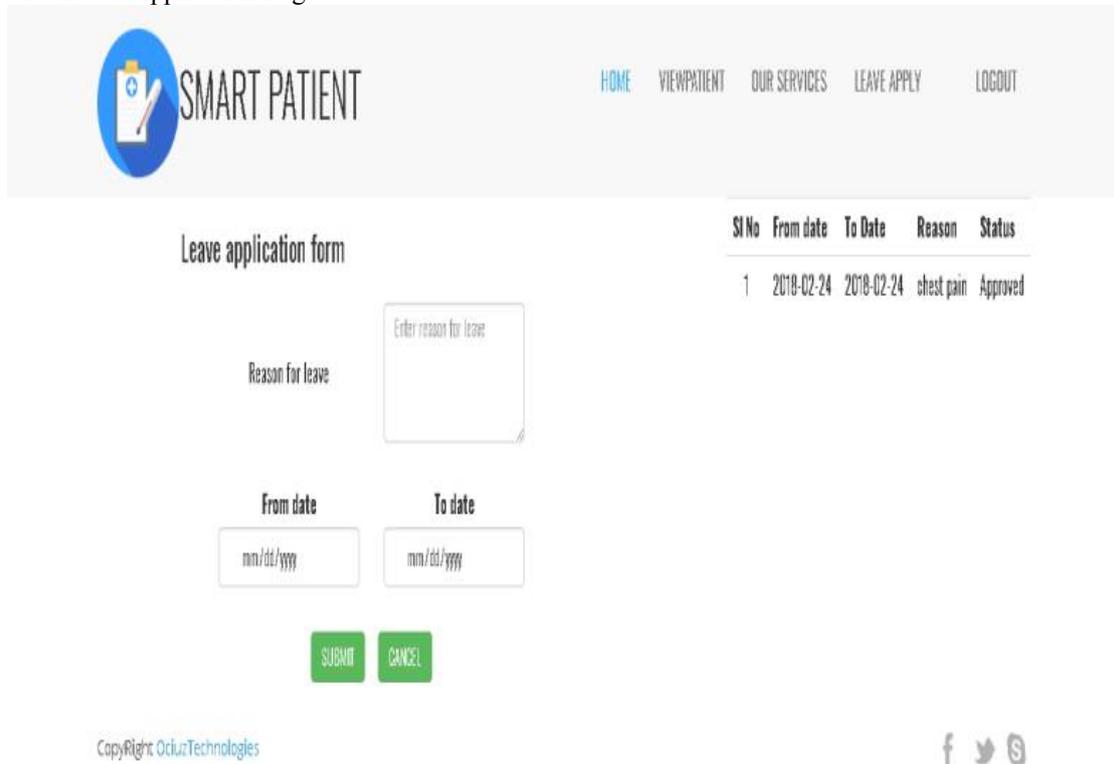
Hosid	Name	Address	Contact Number	Status
HOS001	San	throssar	9685741859	Remove
HOS002	ASWINI	KOITAYAN	8975461235	Remove
HOS003	Mather	Throssar	8585434634	Remove
HOS004	west fort	west fort jn, throssar	2343456565	Remove

Hospital Registration Page



The screenshot shows a web form titled "Hospital Register". It contains the following fields: "Hospital Name" (text input), "Address" (text area), "Email" (text input), "Contact No" (text input), and "Upload Photo" (file upload button labeled "Choose File" and "No file chosen"). A blue "Add Hospital" button is at the bottom. The page has a header image of a doctor and footer text "Copyright OccluzTechnologies" and social media icons.

Doctor's Leave Application Page

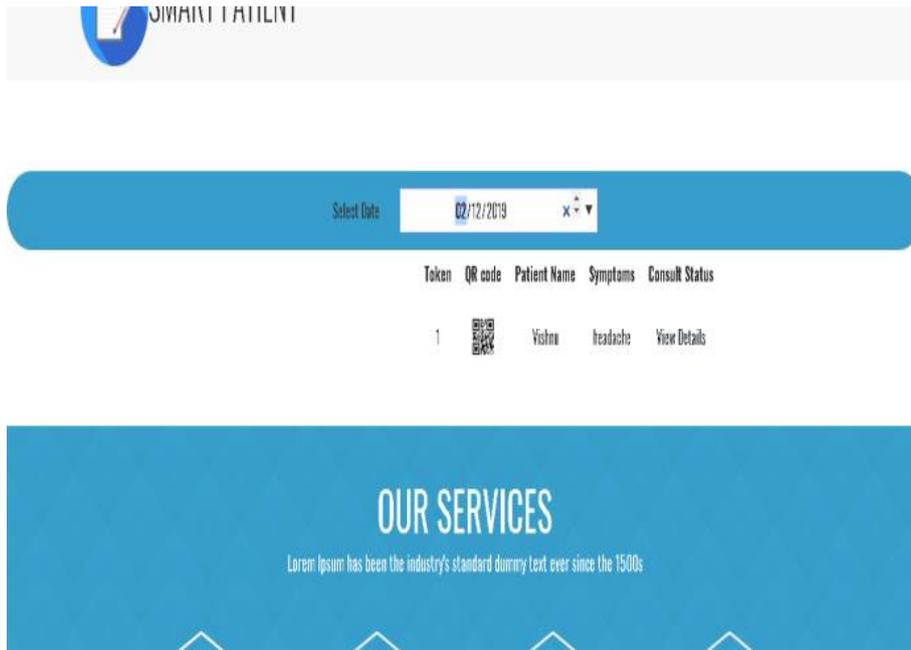


The screenshot shows a web page for "SMART PATIENT". The header includes a logo and navigation links: HOME, VIEWPATIENT, OUR SERVICES, LEAVE APPLY, and LOGOUT. The main content area is titled "Leave application form" and contains a "Reason for leave" text area, "From date" and "To date" date pickers, and "SUBMIT" and "CANCEL" buttons. A table on the right shows a list of leave applications:

Sl No	From date	To Date	Reason	Status
1	2018-02-24	2018-02-24	chest pain	Approved

The page footer includes "Copyright OccluzTechnologies" and social media icons.

Doctor viewing Patient booked



Lab Test Registration page



Doctor Registration

SMART PATIENT | HOME | PATIENT | DOCTOR | RECEPTION | LAB TECHNICIAN | LEAVE | ADTEST | LOGOUT

Doctor Registration

Doctor Name:

DOB: Age:

Gender: Male Female

Address:

Land No: Mobile No:

Email ID: Specialization:

Qualification:

Hospital - Viewing Patients Registered There

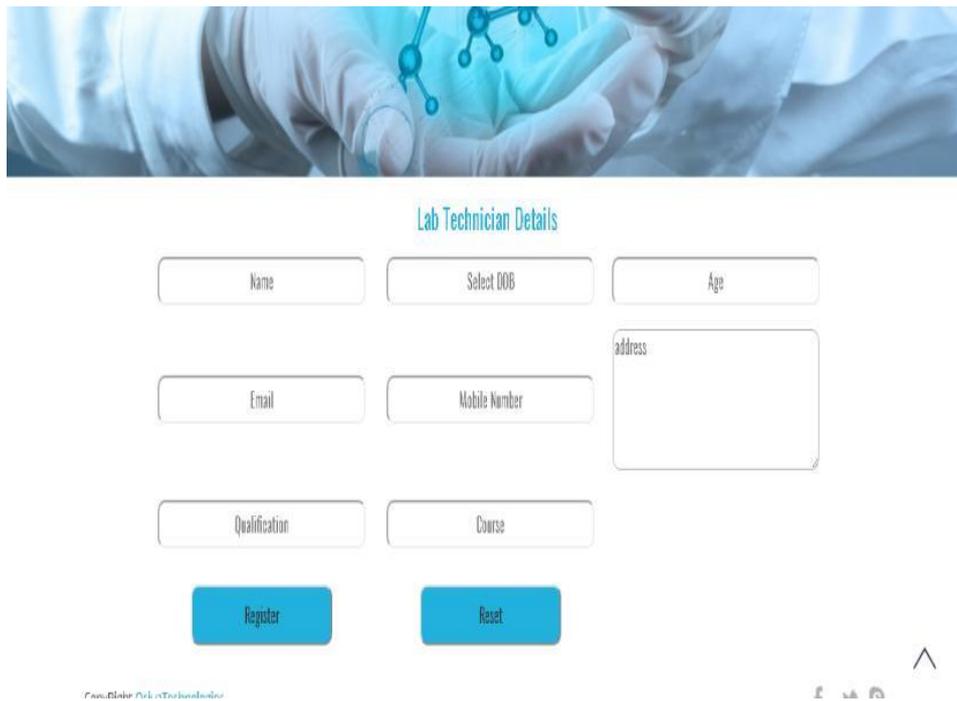
SMART PATIENT | HOME | PATIENT | DOCTOR | RECEPTION | LAB TECHNICIAN | LEAVE | ADTEST | LOGOUT

Select category:

Id	Patient Name	Age	Gender	Address	Email	Mobile	Doctor Name
1	Vishu	22	Male	thrisar	asurtest@gmail.com	9633832765	000001
1	Vishu	22	Male	thrisar	asurtest@gmail.com	9633832765	000001
1	Vishu	22	Male	thrisar	asurtest@gmail.com	9633832765	000001
1	Vishu	22	Male	thrisar	asurtest@gmail.com	9633832765	000001
1	Vishu	22	Male	thrisar	asurtest@gmail.com	9633832765	000001
3	prajy	20	Male	vaiyakath(H)	asurtest@gmail.com	9947599451	000001
3	prajy	20	Male	vaiyakath(H)	asurtest@gmail.com	9947599451	000002
1	Vishu	22	Male	thrisar	asurtest@gmail.com	9633832765	000001
3	prajy	20	Male	vaiyakath(H)	asurtest@gmail.com	9947599451	000001
1	Vishu	22	Male	thrisar	asurtest@gmail.com	9633832765	000002
4	isha	22	Female	Vallagpdy(H)	asurtest@gmail.com	8745627835	000002
1	Vishu	22	Male	thrisar	asurtest@gmail.com	9633832765	000001

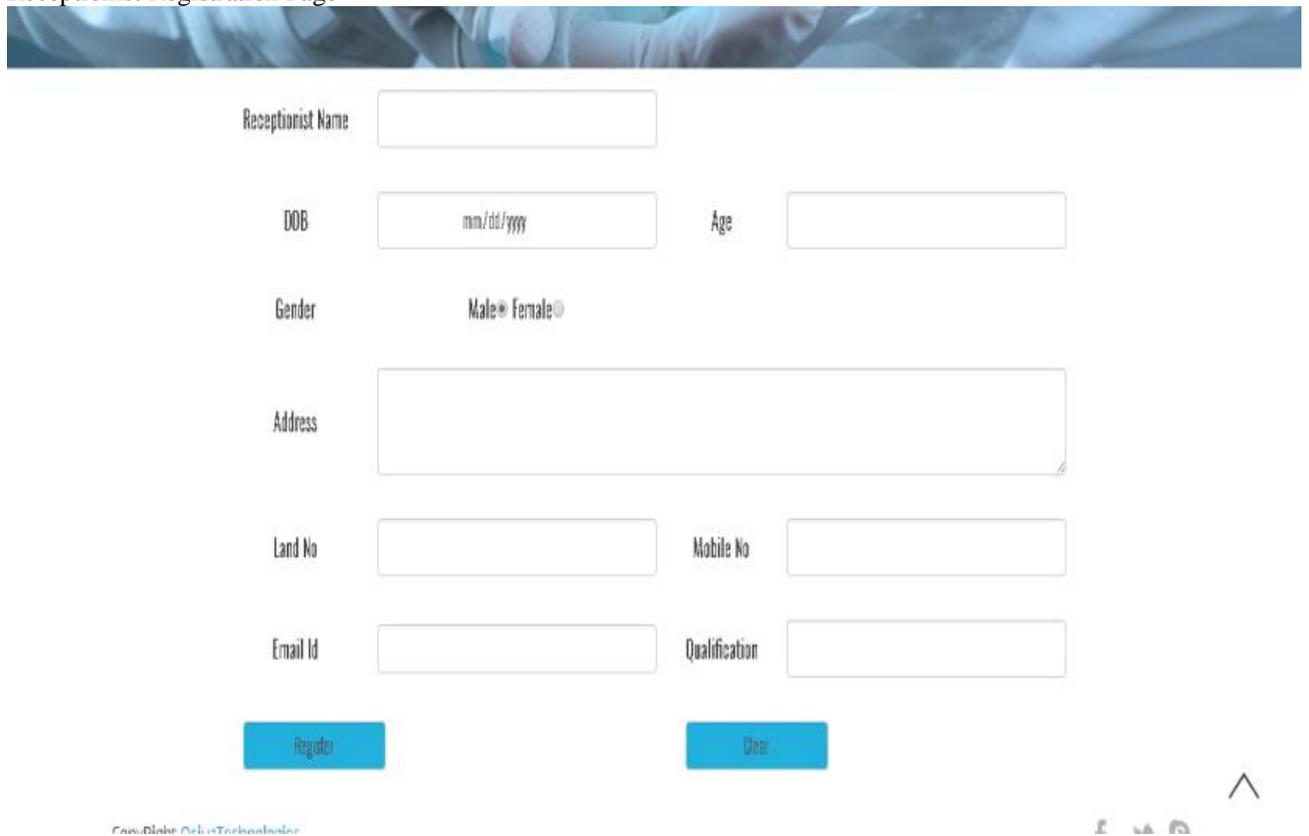
Copyright © iCactus Technologies

Lab Technician Registration Page



The registration form for a Lab Technician is titled "Lab Technician Details". It features a header image of a person in a white lab coat with a blue molecular structure overlay. The form contains the following fields: "Name", "Select DOB", "Age", "Email", "Mobile Number", "address" (a larger text area), "Qualification", and "Course". At the bottom, there are two buttons: "Register" and "Reset". A small copyright notice "© 2019 Dhanya Sethu et al." is visible at the bottom left, and a set of social media icons and an upward-pointing arrow are at the bottom right.

Receptionist Registration Page



The registration form for a Receptionist is titled "Receptionist Registration Page". It features a header image of a person in a white lab coat. The form contains the following fields: "Receptionist Name", "DOB" (with a date format "mm/dd/yyyy"), "Age", "Gender" (with radio buttons for "Male" and "Female"), "Address" (a larger text area), "Land No", "Mobile No", "Email Id", and "Qualification". At the bottom, there are two buttons: "Register" and "Clear". A small copyright notice "© 2019 Dhanya Sethu et al." is visible at the bottom left, and a set of social media icons and an upward-pointing arrow are at the bottom right.

Lab Viewing Patient Prescribed For Test

HOME VIEWPATIENT OUR SERVICES LOGOUT

Select Date

Patient Name	Date to consult Dr	Hospital Id	Doctor Id	Test Name
Vishnu	2019-02-12	HOS001	DOCC02	hemoglobin (hb) Add Test Results

CopyRight OcluzTechnologies f t s

Patient Booking A Doctor

HOME BOOKING BOOKED DETAILS UPDATE PROFILE HOSPITALDETAILS LOGOUT

To Consult Doctor

Patient Name	<input type="text" value="Vishnu"/>	DOB	<input type="text" value="10/16/1996"/>
Age	<input type="text" value="22"/>	Gender	<input type="text" value="Male"/>
Address	<input type="text" value="thrissur"/>	Mobile No	<input type="text" value="9633832165"/>
Email Id	<input type="text" value="ocluztest@gmail.com"/>	Hospital	<input type="text" value="HOS001"/>
Select Date	<input type="text" value="mm/dd/yyyy"/>	Specialization	<input type="text" value="Select specialization"/>
Dr.Name	<input type="text" value="Select Doctor"/>	Booking No->	<input type="text"/>
Symptoms	<input type="text"/>		

CopyRight OcluzTechnologies f t s ^

Patient can edit their profile

SMART PATIENT HOME BOOKING BOOKED DETAILS UPDATE PROFILE HOSPITALDETAILS LOGOUT

Name: Address: Mobile No:

Email Id: Hospital:

Copyright OciuzTechnologies f t s

Receptionist Registering a Patient

SMART PATIENT HOME PATIENT VIEW PATIENT REGISTER CHECK/RELEASE LOGOUT

Patient Name: DOB:

Age: Gender:

Address: Mobile No:

Blood Group:

Email Id: Hospital:

Select Date: Specialization:

Dr Name:

Booking No:

Symptoms:

Copyright OciuzTechnologies f t s

Booked Details Viewed By a Patient

The screenshot shows the 'SMART PATIENT' web application interface. The header includes a logo and navigation links: HOME, BOOKING, BOOKED DETAILS, UPDATE PROFILE, HOSPITALDETAILS, and LOGOUT. The main content area displays the following information:

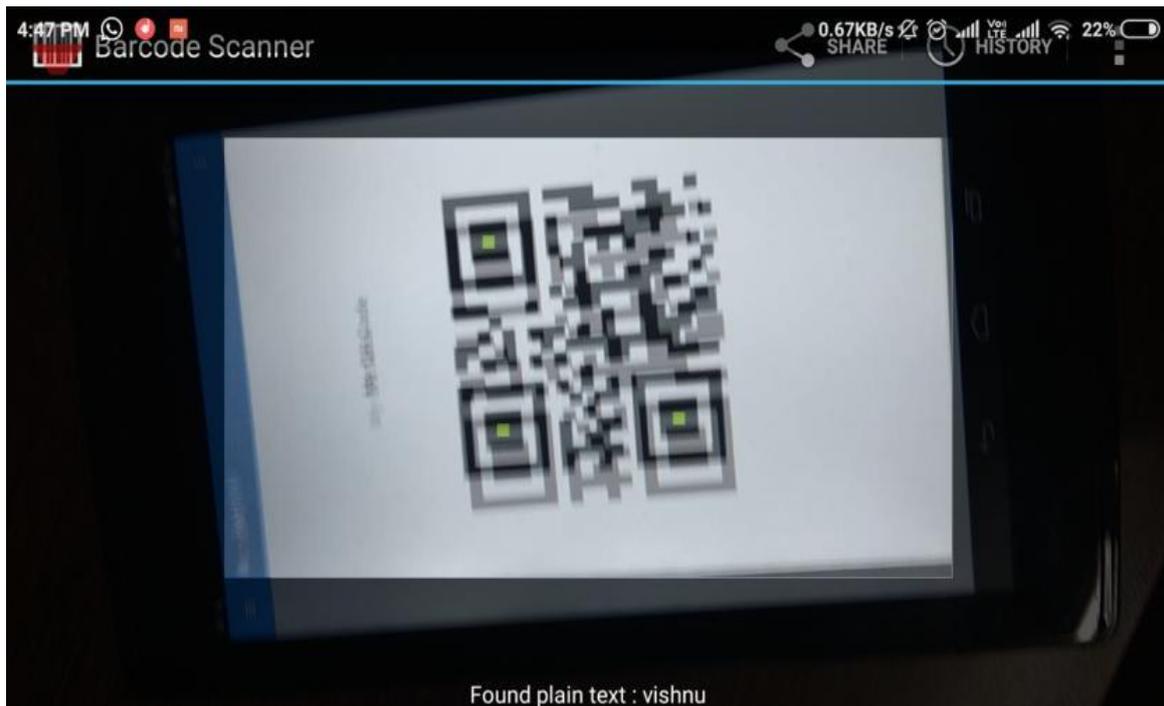
- NAME: vishnu
- DOCID: D00001
- DATE: 2019-02-12
- Booking No : 1

Below the information is a green button labeled "If you want to cancel". At the bottom left, there is a copyright notice: "Copyright © CxizTechnologies". At the bottom right, there are social media icons for Facebook, Twitter, and LinkedIn.

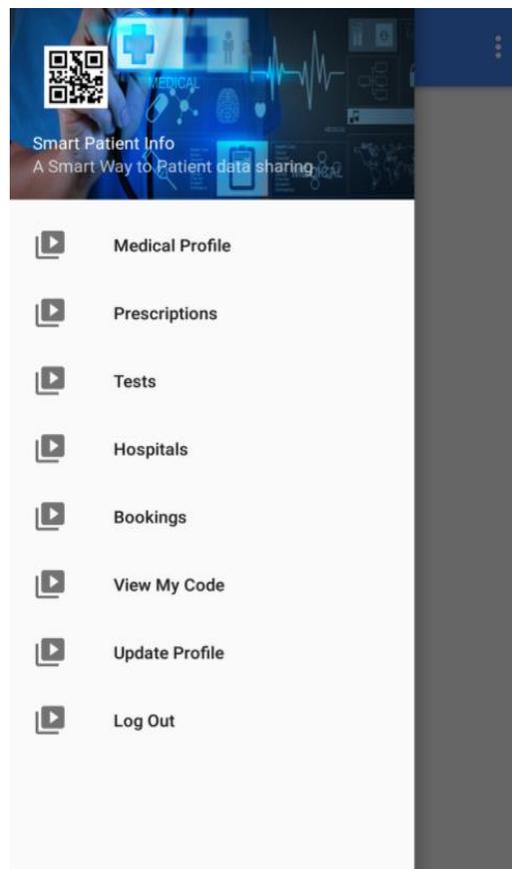
Doctor's leave viewed by Receptionist

The screenshot shows a medical-themed dashboard with a dark blue background. It features icons for a syringe, a clipboard, and a world map. The text "MEDICAL" is prominently displayed. Below the dashboard, the title "list of doctor on leave" is shown. A date selection dropdown is set to "02/12/2019". The main content area displays the message "No Records Found" in red text. A small upward-pointing arrow icon is visible at the bottom right of the content area.

Scanning QR Code of Patient



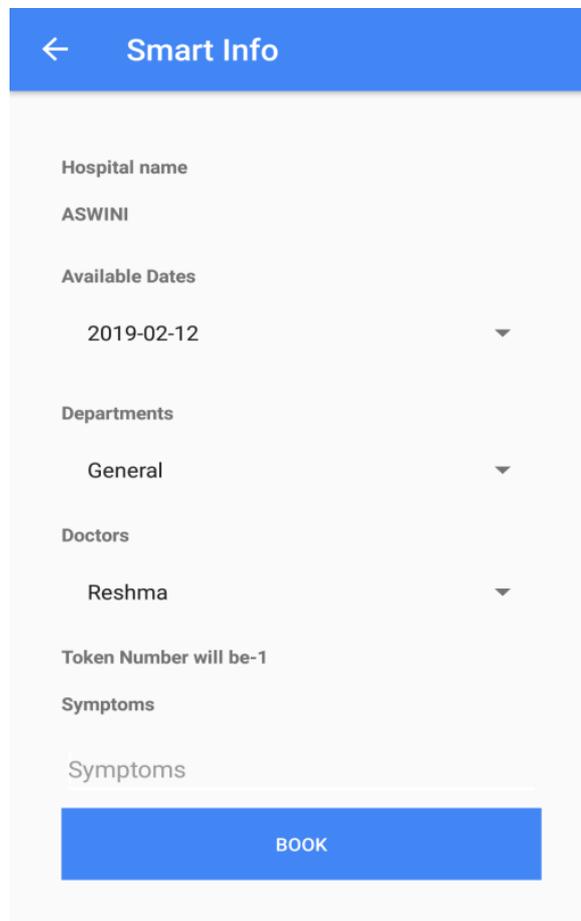
Patient Page: Patient's Home Page



Patient's QR Code



Booking Page



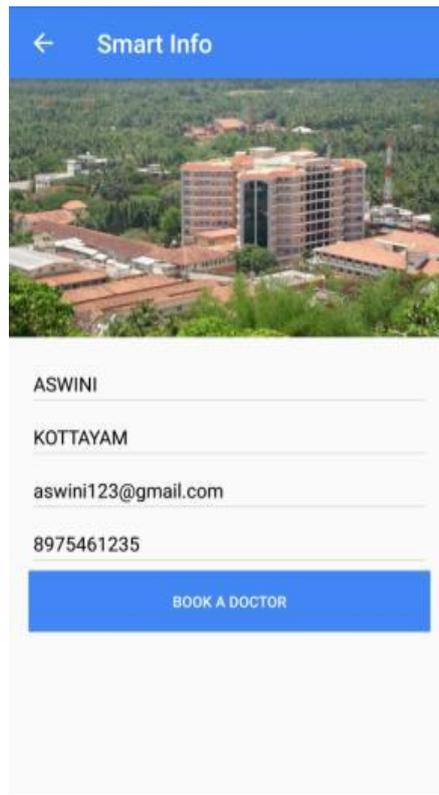
Booked Details

PATIENT	
Sun-Hospital	
Dr.Anju-Cardiology-Department	
2018-11-25	
Token -1	
Sun-Hospital	
Dr.Anju-Cardiology-Department	
2018-11-29	
Token -2	

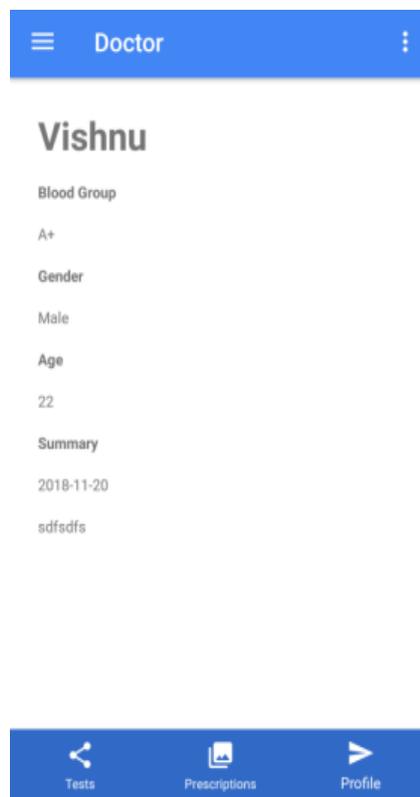
Viewing registered Hospitals



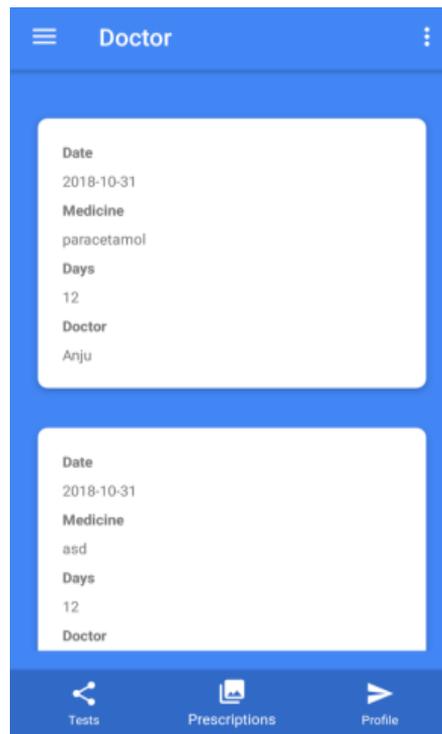
Viewing details of a Hospital



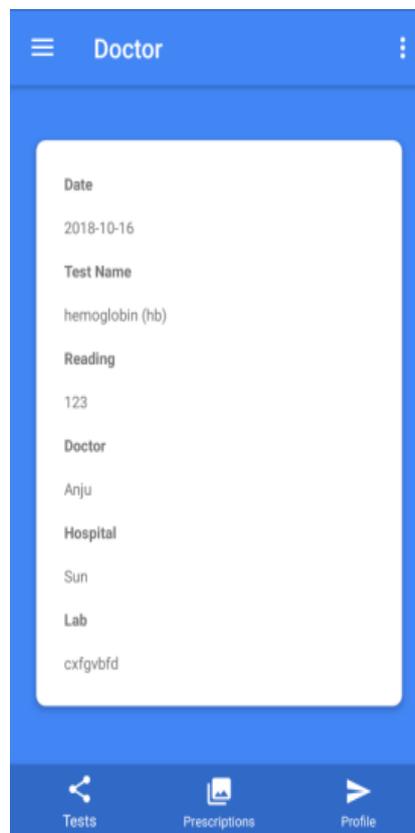
Doctor Page: Patient Details viewed by the Doctor



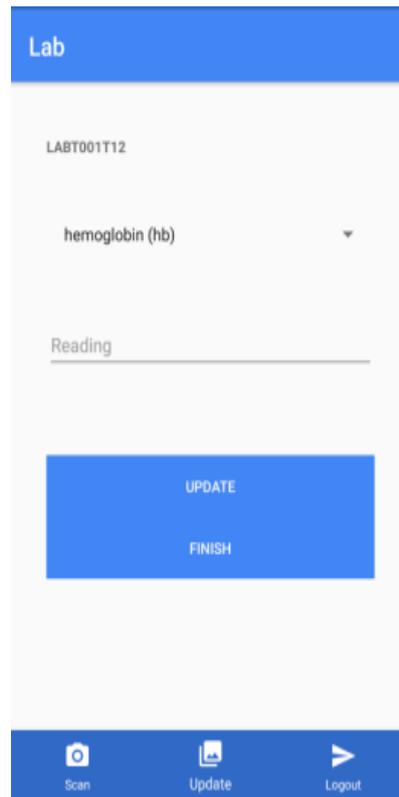
Prescriptions Viewed



Lab Test Page:



Lab test update page



CONCLUSION

The SMART PATIENT INFO is designed coherently to help the Patients and Doctors to view and edit the prescriptions and the medical history through Mobile and Website. The concept is to generalize Medical data recording in Digital form so that it can be accessed at ease from a mobile device. The system is equipped with high-level security using QR-Code scanning method to access the stored data.

The main advantage of recording and storing data in digital form is the flexibility and efficiency when accessing that data.

Also, data stored in the digital form can be shared among many entities, which helps in time as it is much faster. Both the website and the individual mobile application is very user-friendly to help easy communication with Admin or any other user, who is new to the Digital Environment.

SCOPE FOR FUTURE ENHANCEMENT

- Ambulance Booking from the Mobile app.
- Pharmacy trading
- Electronic- Payment(E-Payment)

BIBLIOGRAPHY

- Lynn Beighley, Head First SQL
- Roger Pressman, Software Engineering
- Michael Morrison, Head First Java Script Mark L.Murphy, Beginning Android 2
- Chris Haseman, Android Essential

Websites

- www.wikipedia.com
- www.sourceforge.net
- www.javaranch.com
- www.w3schools.com
- www.webreference.com