ATMIYA UNIVERSITY

For the award of the degree of

Bachelor of Science in Information Technology

Semester – VI (2021-2022)

Project Report on

Covid-19 Web App

Submitted by

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Submitted to

Department of Computer Science & Information Technology

One Stop for all Covid Patients

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1. PREFACE

Hospitals are important to treat minor and serious diseases, illnesses and disorders of the body function of varying types and severity. They are an essential part of an effective response to the Covid-19 pandemic. But due to increasing cases of Covid-19 back in the day, they couldn't handle multiple patients trying to get appointed at the same time.

This project is useful for those patients who wanted to get Covid-19 tested, get vaccinated, or get appointed to hospital. By registering on this Web App, hospitals not only can provide their services to patient, but also expand themselves. This Web App facilitates both hospitals as well as Covid-19 patients.

The reason for me choosing this project is:

1) Help with Pandemic situation of Covid-19.
2) Apart from IT, my second field of interest has always been Medical/Paramedical.

2. DECLARATION

I am a student of B.Sc. (IT), of Third Year, hereby declare that the project report entitled 'COVID-19 WEB APP' submitted by me to Atmiya University, in partial requirement of fulfilment of the award of degree of B.Sc. (IT) in Department of Computer Science and Information Technology is a record of a bonifide project work carried out by me under the guidance of Dr. Jasmin Parmar and Dr. Ripal Ranpara. I further declare that the work reported in this project has been submitted, for the award of my degree in this university.

Place: Rajkot
Date: 14th March, 2022

Thanking You,
Popat Bhavya Balkrishnabhai

3. ACKNOWLEDGEMENT

I am a Third Year student of B.Sc. (IT) studying in Atmiya University, Rajkot. I hereby acknowledge and thank all the people who helped me in any way and landed their support in making of this project.

I thank Dr. Jasmin Parmar and Dr. Ripal Ranpara for giving me full guidance and cooperating with me for not just understanding the system, but also giving me unconditional help while I was building it. I also thank them for their giving suggestions for this project.

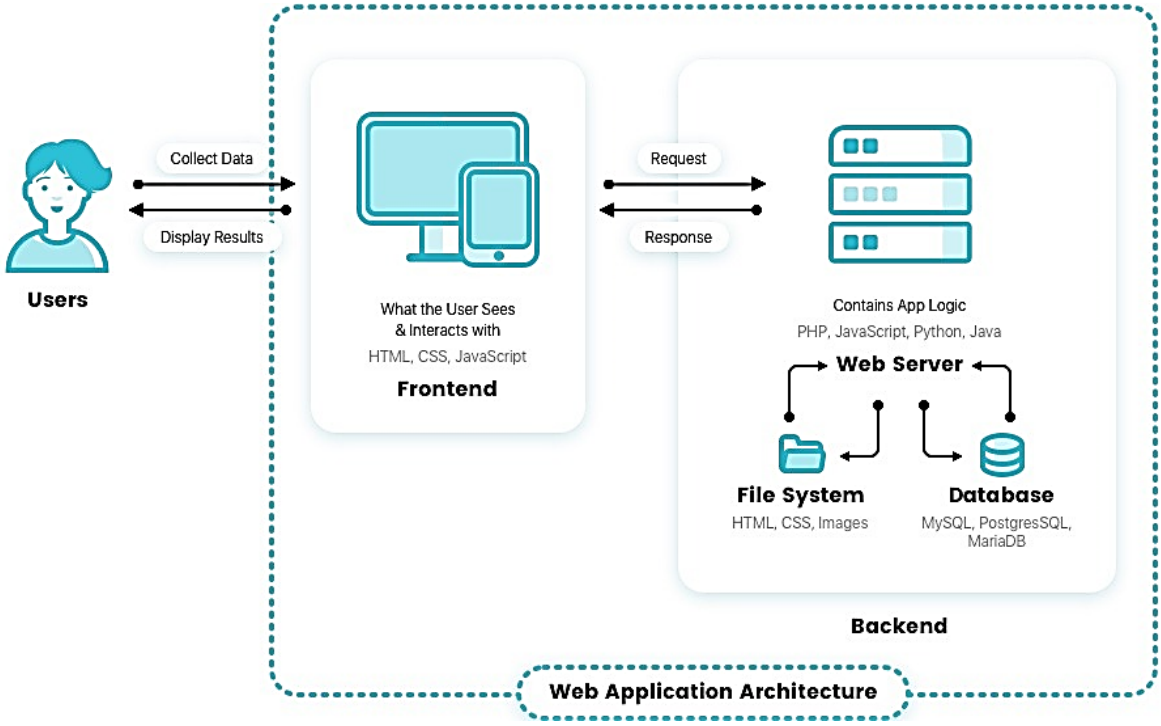
I would also like to thank Mr. Panneer Selvam, who has work experience of PHP of 8 years in Banglore to help me with minute things and bugs.

Special Thanks: All those people who provided sample source code of something I wanted to implement on Stack Overflow.

4. PROJECT PROFILES

Developed at	:	Atmiya University, Rajkot
Developed by	:	Popat Bhavya Balkrishnabhai
Main Page	:	Entry Page (index.html)
Operating Systems	:	Windows 7 / 8.1 / 10
Web Server	:	XAMPP (Apache)
Web Browser	:	Mozilla Firefox, Google Chrome
Editors	:	Adobe Dreamweaver
		Sublime Text 4
		MS Visual Studio Code
Hardware Requirement	:	Intel Core i3 5005U or higher processor
for Internet Access		100 MB of free Storage
		4 GB of DDR3 RAM
		3 Mbps Router
		Modern Web Browser
Guided by	:	Dr. Jasmin Parmar
		Dr. Ripal Ranpara
Submission at	:	Department of CS & IT

5. INTRODUCTION TO WEB ARCHITECTURE



Every Web application consists of both a front-end and a back-end.

The front-end, also known as the client-side, is everything that the user sees and interacts within inside their browser. The main purpose of the client-side is to collect data from users. It is written in variants of HTML, CSS, and JavaScript.

Next, we have the back-end, also known as the server-side of the app. It is the part, which is not accessible by users; it stores and manipulates data. The backend processes HTTP requests which essentially "fetch" the data (text, images, files, etc.) called for by the user. Unlike the frontend, many languages like PHP, Java, Python, JavaScript, and others can be used to write the backend of a Web Application.

5.1. OUR PROJECT WEB ARCHITECTURE DETAILS:

Front End : HTML5, CSS3, Bootstrap
Back End : PHP, MySQL
Control End : Angular JavaScript

6. INTRODUCTION TO WEB PAGES

Web page is a document available on World Wide Web (WWW). Web Pages are stored on web server and can be viewed using a web browser. A web page can contain huge information including text, graphics, audio, video and hyperlinks. These hyperlinks are the link to other web pages.

There are two types of web pages:

- Static Web Pages
- Dynamic Web Pages

6.1. STATIC WEB PAGES

Static web pages are also known as flat or stationary web page. They are loaded on the client's browser as exactly they are stored on the web server. Such web pages contain only static information. User can only read the information but can't do any modification or interact with the information.

Static web pages are created using only HTML and CSS. Static web pages are only used when the information is no more required to be modified.

6.2. DYNAMIC WEB PAGES

Dynamic web pages shows different information at different point of time. It is possible to change a portion of a web page without loading the entire web page. It has been made possible using Ajax technology.

Dynamic web pages can be further divided into: Server-side and Client-side Dynamic web pages.

Server-side Dynamic web page: It is created by using server-side scripting. There are server-side scripting parameters that determine how to assemble a new web page which also include setting up of more client-side processing.

Client-side Dynamic web page: It is processed using client side scripting such as JavaScript. And then passed in to Document Object Model (DOM).

7. INTRODUCTION TO HTML

- HTML stands for Hyper Text Markup Language.
- HTML is used to create web pages and web applications.
- HTML is widely used language on the web.
- We can create a static website by HTML only.
- Technically, HTML is a Markup language rather than a programming language.
- HTML was originated by Tim Berners-Lee.
- HTML developed a few years ago as a subset of SGML (Standard Generalized Mark-up Language), which is a higher-lever mark-up language.
- It means, any HTML document is also valid for SGML.
- The HTML document Consist of special Tags that are embedded in an ASCII document.
- Web Browsers like Internet Explorer, Mozilla Firefox, Opera, Microsoft Edge, Google Chrome, Apple Safari etc. interprets these Tags.
- Whenever we use Dynamic Web Sites that have programming languages as back-end (examples: Python, Java, PHP etc.), the output is always converted to HTML before viewing it to Client/User in his/her browser.

8. INTRODUCTION TO CSS

- **Definition**: CSS stands for Cascading Style Sheet. CSS are a series of instructions that specify how elements should appear on web pages. We can use CSS to set styles for text, font, border, list and background and so on.

- **Advantages of using CSS**:

    - CSS saves time as we don't have to specify for elements each time. We just have to define it once for element and/or elements with attributes like class and id.
    - Pages load faster as number of lines of code decrease
    - Easier Maintenance of styling, just changing it in CSS can help us change whole theme at once.

- **Types of CSS**:

    - Internal CSS
        - It is CSS applied to one page. We have to use <style /> in head portion of the HTML document to define properties for elements.
        - Priority: Middle
    - External CSS
        - It is a .css file that has the style properties and is linked to HTML pages using <link /> and "href" attribute.
        - Priority: Low
    - Inline CSS
        - This type of CSS is defined for individual elements inside an HTML document, by using "style" attribute.
        - Priority: High

9. INTRODUCTION TO JAVASCRIPT

- **Definition**: JavaScript is a lightweight, cross-platform, and interpreted scripting language. It is well-known for the development of web pages. JavaScript can be used for Client-side development.
- JavaScript has several frameworks like ReactJS, AngularJS, VueJS and Node.JS.
- We will be using AngularJS for our Project's control end.
- It was created in 1995 by Brendan Eich.
- **Ways to add JavaScript in HTML**:
    - *Internal JS*: By using <script> </script>, we can add JavaScript into a particular HTML web page
    - *External JS*: It is an external .js file that contains the script and it is later attached to one or more HTML pages using <link /> in head portion using "href" attribute.
- **Advantages of using JavaScript**:
    - JavaScript gives HTML designers programming tools.
    - JavaScript can put dynamic text into HTML pages.
    - It can react to events.
    - It can read and write HTML elements.
    - It can be used to validate data.
    - It can be used to create cookies.
    - It can be used to detect the visitor's browser.

10. INTRODUCTION TO PHP

- The full form of PHP is “Hypertext Pre-processor”. It’s Original name was “Personal Home Page”
- Rasmus Lerdorf, software engineer, Apache team Member is the creator and original driving force Behind PHP. The first part of PHP was developed for his personal use in late 1994.
- By the mid-1997, PHP was being used on Approximately 50,000 sites worldwide.
- PHP is Server–side scripting language, which can be Embedded in HTML or used as a Standalone.
- PHP doesn’t do anything about what a page looks and Sounds like. In fact, most of what PHP does is Invisible to the end users.
- Someone looking at a PHP page will not necessarily be able to tell that it was not written purely in HTML, because usually the result of PHP is in form of HTML.
- PHP is an official module of the Apache HTTP server.
- PHP is fully cross-platform, meaning it runs native on several flavours of UNIX, as well as on windows and MacOS.
- It is used for creating dynamic web pages that interact with the user offering customized information.
- **Advantages of using PHP**:
    - *Operating System*: PHP can be used on all major operating systems, including Linux, Microsoft Windows, MacOS, Android, iOS etc.
    - *Web servers*: PHP has also support for most of the web servers today. This includes Apache, Microsoft Internet Information Server, Personal Web Server, Netscape and iPlanet servers, Orally Website Pro server, Caudium, Xitami, OmniHTTPd, and many others.
    - *Programming way*: Developer also has the choice of using procedural programming or object oriented programming, or a mixture of them.
    - *Database Connection*: One of the strongest and most significant features in PHP is its support for a wide range of databases. The following databases are currently supported:
        - Adabas D
        - InterBase
        - PostgreSQL
        - Dbase
        - FrontBase
        - SQLite
        - Hyperwave
        - MySQL
        - Velocis
        - IBM DB2
        - ODBC
        - UNIX DBm

- *Synchronization with HTML*: PHP code is inserted directly into the HTML that makes up a website. When a visitor comes to the website, the code is executed. Because PHP is a server side technology, the user does not need any special browser or plug-ins to see the PHP in action.
- *Simplicity*: The beauty of PHP lies in its simplicity. It is easy to understand and learn, especially for those with backgrounds in programming such as C, JavaScript and HTML.
- *Security*: PHP offers many levels of security to prevent malicious attacks. These security levels can be adjusted in the .ini file.
- *Community Support*: A huge advantage that PHP offers is its community. Since PHP is an open source project, the PHP community is willing to share. If anyone is looking for a particular script, chances are another user has already created something similar.

11. INTRODUCTION TO MYSQL

- **What is MySQL?**
    - MySQL is an open source Relational DataBase Management System (RDBMS) that uses Structured Query Language (SQL), the most popular language for adding, accessing, and processing data in a database.
- **Features**:
    - *Portability*: MySQL runs on almost every flavour of UNIX, as well as Windows and MacOS X. User can obtain binaries or source code for the MySQL server as well as the tools that access it. More ports of the software become available every day. In short, MySQL will run on any OS.
    - *Speed*: Using techniques such as efficient indexing mechanisms, in memory temporary tables, and highly optimized join algorithms, MySQL executes most queries much faster than most other database systems.
    - *Scalability*: Because of its modularity and its flexibility in configuration, MySQL can run in systems varying in size from embedded systems to large multiprocessor UNIX servers hosting databases with billions of records.
    - *Flexibility*: MySQL lets user to choose the table types that they need to meet their Software's requirements, ranging from in-memory heap tables, fast on-disk MyISAM tables, merge tables that group together other sets of tables to form larger "virtual" tables, and transaction-safe tables.
    - *Ease of use*: MySQL is easy to install and administer. While other database systems require special knowledge and training, not to mention special operating system configurations, MySQL can be installed in less than 10 minutes if user has done it before MySQL requires little maintenance and administration other than adding or changing user permissions and creating or removing databases
- **Limitations**:
    - In using MyISAM tables, MySQL is not able to execute hot backups, which are backups during operation without blocking the tables with locks. Here again, the solution is InnoDB, though here the hot backup function is available only in the form of a commercial supplement.
    - Many database systems offer the possibility of defining custom data types. MySQL does not support such functionality, nor is any currently planned.

12. SYSTEM REQUIREMENTS

It specified minimum requirement of any project. It contains hardware and software requirements of project. The detail about minimum system requirement in this project is as given below.

12.1. SOFTWARE REQUIREMENTS

- **Platform**:
  - Windows 7 / 8.1 / 10
- **Tools**:
  - Front-End Tools:
    - HTML
    - CSS
    - PHP
  - Control-End Tools:
    - Angular JavaScript
  - Back-End Tools:
    - Apache Web Server (XAMPP)
    - MySQL (XAMPP)

12.2. HARDWARE REQUIREMENTS

- Intel Core i3 5005U 2 GHz Processor
- 4 GB DDR3 RAM
- HDD/SSD with minimum 100 MB of free storage
- LCD/LED Monitor (Resolution 1280 X 720 or 1980 X 1080) [16:9 Aspect Ratio]
- Compatible printer for printing Report

13. COST & BENEFIT ANALYSIS

We use feasibility study which provides us information about the cost of our project. It works on three features viz. technical, economical and operational feasibility study.

- *Technical*: Technical feasibility check the project is technically possible or not. Technical feasibility can work for the project to be done with current equipment, existing software technology & available personnel.
- *Economical*: Economical Feasibility check, there are sufficient benefits to creating the system. It determines costs and expected of each of the alternative.
- *Operational*: Will the system be used if it is developed & implemented? Will there be resistance from user that will undermine the possible application the possible application benefits?

14. FACT FINDING TECHNIQUES

The analysis doesn't know the working process of the user for which, he is going to develop information system. The analyst use specific methods for collecting data about requirement, which is called fact-finding technique.

It includes the interview, questionnaire and record review. Analyst employees more than one of these techniques to help an accurate and comprehensive investigation. Analyst requires progressive lower level of detail for logical design. Hence it is also true that two project are never same in an information system. It means that analyst must use information-gathering tool.

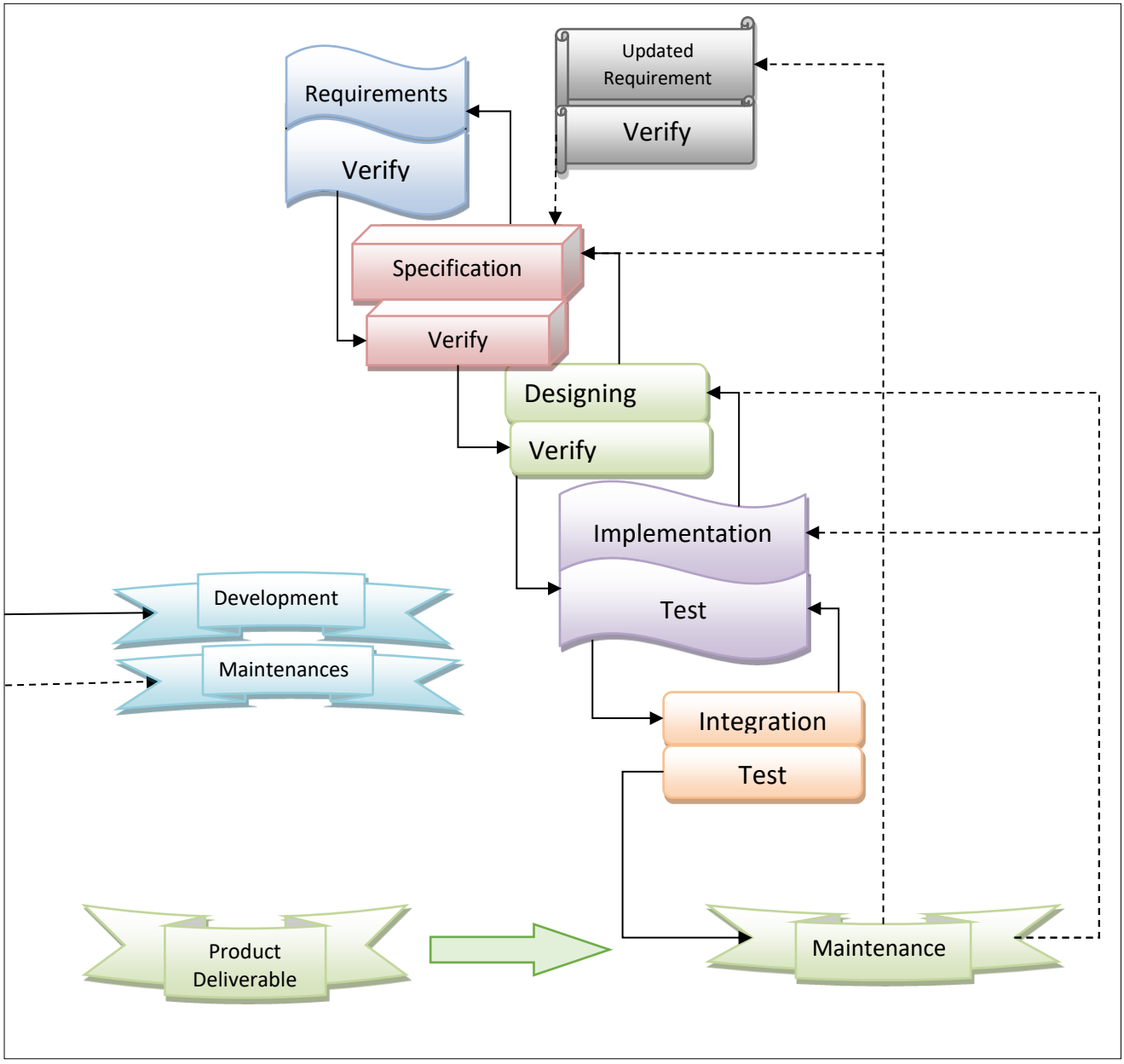
- **Interview:** This is technique is used to collect information from individual or from groups. It is an art better learned from practice than books. It is an individual technique to gather qualitative information, opinions, policies, suggestion, underlying problem etc.
- **Questionnaires:** This technique is used to collect information from large number of people. Questionnaires give to every person and they fill Questionnaires. According to their answer decision are taken.
- **Record Review:** A good analyst gets facts from documentation. An existing system can be better understood by examining existing documents, forms and files. This record review can take place at beginning of the system study or letter in the study for comparing actual operation with what the records indicates.
- **Observation:** Observation can bring in missed facts, new ways to improve the existing procedures, duplicate work done inadvertently etc. Observation provides close view of working of real system. This task is delicate because people do not like to be observer when they work.

15. SYSTEM DEVELOPMENT LIFE CYCLE (SDLC)

Definition: The Software Development Life Cycle (SDLC) is a structured process that enables the production of high-quality, low-cost software, in the shortest possible production time. The goal of the SDLC is to produce superior software that meets and exceeds all customer expectations and demands.

Steps of SDLC:

- Feasibility Study
- Requirements and Specification
- Designing
- Coding and Testing
- Implementation
- Documentation



This diagram gives information about day scheduling information in our project.

<table>
<tr><td>Feasibility Study</td><td></td><td rowspan="2"></td><td rowspan="3"></td><td rowspan="3"></td><td rowspan="4"></td></tr>
<tr><td rowspan="4"></td><td>Requirement Specification</td></tr>
<tr><td rowspan="3"></td><td>Design</td></tr>
<tr><td rowspan="3"></td><td>Coding and testing</td></tr>
<tr><td rowspan="2"></td><td rowspan="2">Implementation</td></tr>
<tr><td></td><td>Documentation</td></tr>
<tr><td>10 Days</td><td>10 Days</td><td>10 Days</td><td>40 Days</td><td>10 Days</td><td>5 Days</td></tr>
</table>

16. DATA DICTIONARY

Data dictionary is the centre of responsibility of information about system and organization. Data dictionary contain a list of tables and their meaning for all data items and data storages of the system.

16.1. TABLE STRUCTURES

★admin_login★

#	Name	Type	Collation	Attributes	Null	Default	Extra
1	**user_id**	int(100)			No	*None*	AUTO_INCREMENT
2	**name**	varchar(100)	utf8_bin		No	*None*	
3	**email**	varchar(100)	utf8_bin		No	*None*	
4	**password**	varchar(100)	utf8_bin		No	*None*	
5	**mobile**	varchar(100)	utf8_bin		No	*None*	
6	**created_date**	varchar(100)	utf8_bin		No	*None*	

This table stores the details about admin. It is used to authenticate whenever the admin logs in. Only admin can update his details and no one else has access to it.

★appointment★

#	Name	Type	Collation	Attributes	Null	Default	Extra
1	cus_id	int(255)			No	None	AUTO_INCREMENT
2	email	varchar(100)	utf8_bin		No	None	
3	time	varchar(100)	utf8_bin		No	None	
4	name	varchar(100)	utf8_bin		No	None	
5	aadhar	varchar(300)	utf8_bin		No	None	
6	hospital	varchar(300)	utf8_bin		No	None	
7	type	varchar(100)	utf8_bin		No	None	
8	contact	varchar(100)	utf8_bin		No	None	
9	date	varchar(100)	utf8_bin		No	None	
10	status	varchar(100)	utf8_bin		No	None	
11	created_date	date			No	None	

This table stores all the details of different patients booking appointments (covid test/vaccination) at different hospitals. Both the hospitals and the patients have access to this table.

★guide★

#	Name	Type	Collation	Attributes	Null	Default	Extra
1	g_id	int(255)			No	None	AUTO_INCREMENT
2	email	varchar(100)	utf8_bin		No	None	
3	symptom	varchar(100)	utf8_bin		No	None	
4	age	varchar(100)	utf8_bin		No	None	
5	remedies	varchar(300)	utf8_bin		No	None	
6	description	varchar(300)	utf8_bin		No	None	
7	hints	varchar(100)	utf8_bin		No	None	

This table contains the information about the different guidelines that hospitals put out for all the patients. Patients can only read, while Hospitals and Admin can manage guidelines.

★hospital★

#	Name	Type	Collation	Attributes	Null	Default	Extra
1	hosp_id	int(255)			No	None	AUTO_INCREMENT
2	email	varchar(100)	utf8_bin		No	None	
3	address	varchar(100)	utf8_bin		No	None	
4	created_date	date			No	None	

This table contains the information of the hospitals that are approved by the Admin and used whenever the patient wants to book an appointment.

★hosp_login★

#	Name	Type	Collation	Attributes	Null	Default	Extra
1	cus_id	int(100)			No	None	AUTO_INCREMENT
2	name	varchar(100)	utf8_bin		No	None	
3	email	varchar(100)	utf8_bin		No	None	
4	password	varchar(100)	utf8_bin		No	None	
5	mobile	varchar(100)	utf8_bin		No	None	
6	is_approved	tinyint(1)			No	None	
7	created_date	varchar(100)	utf8_bin		No	None	

This table contains information about all the hospitals that have registered – whether approved or not. Admin can approve them so that they become verified and go into hospital table and patients can appoint at that hospital as well as hospital can then login.

★login★

#	Name	Type	Collation	Attributes	Null	Default	Extra
1	user_id	int(100)			No	None	AUTO_INCREMENT
2	name	varchar(100)	utf8_bin		No	None	
3	email	varchar(100)	utf8_bin		No	None	
4	password	varchar(100)	utf8_bin		No	None	
5	mobile	varchar(100)	utf8_bin		No	None	
6	aadhar	varchar(100)	utf8_bin		No	None	
7	gender	varchar(100)	utf8_bin		No	None	
8	address	varchar(100)	utf8_bin		No	None	
9	otp	varchar(100)	utf8_bin		No	None	
10	success	varchar(100)	utf8_bin		No	None	
11	created_date	varchar(100)	utf8_bin		No	None	

This table contains the details of all the registered users. It is used not only for login/registration of patients, but also used to identify them when they book appointment, their vaccination status, covid positive/negative status etc.

★stock★

#	Name	Type	Collation	Attributes	Null	Default	Extra
1	cus_id	int(255)			No	None	AUTO_INCREMENT
2	is_available	varchar(100)	utf8_bin		No	None	
3	vaccine_name	varchar(100)	utf8_bin		No	None	

This table handles data of vaccine stock and whether it is available or not. Admin and Hospitals can access it.

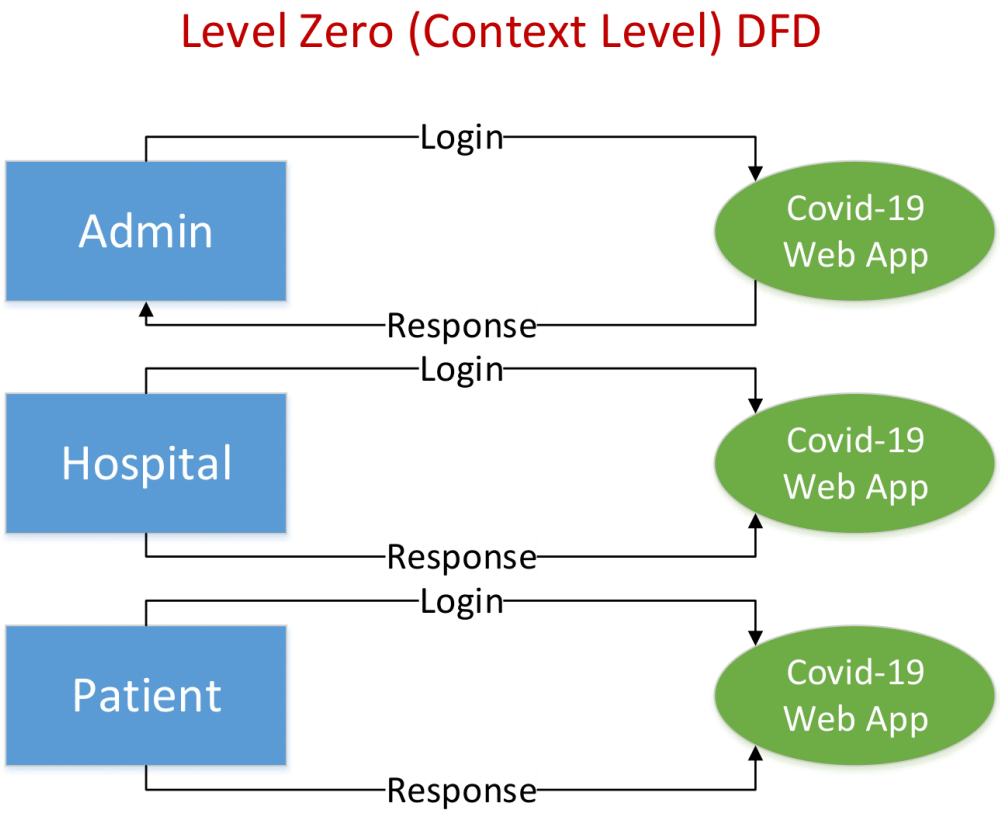
17. DFD DIAGRAMS

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination.

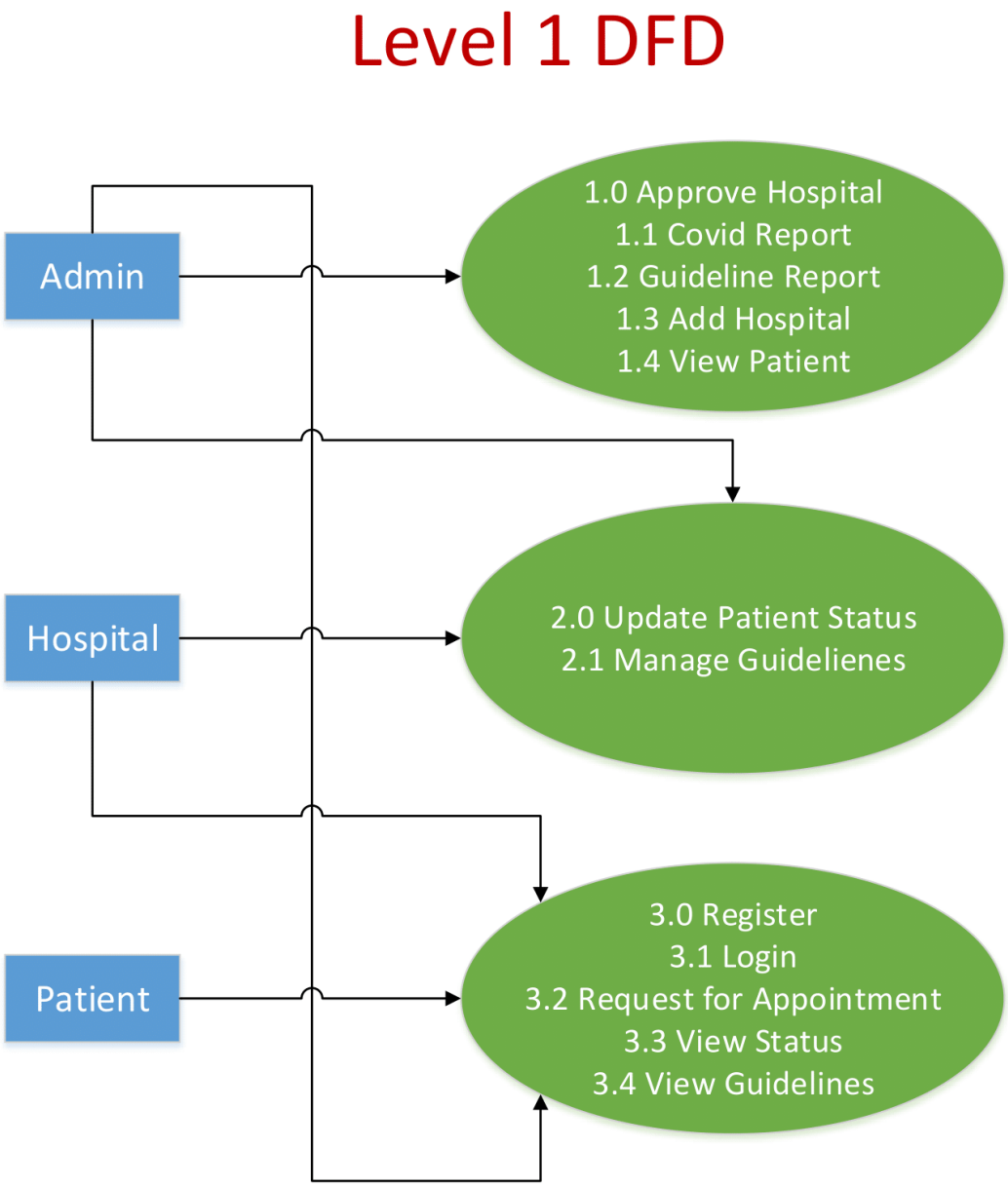
DFD has three levels:

- Context Level (Level Zero)
- First Level (Level 1)
- Second Level (Level 2+)

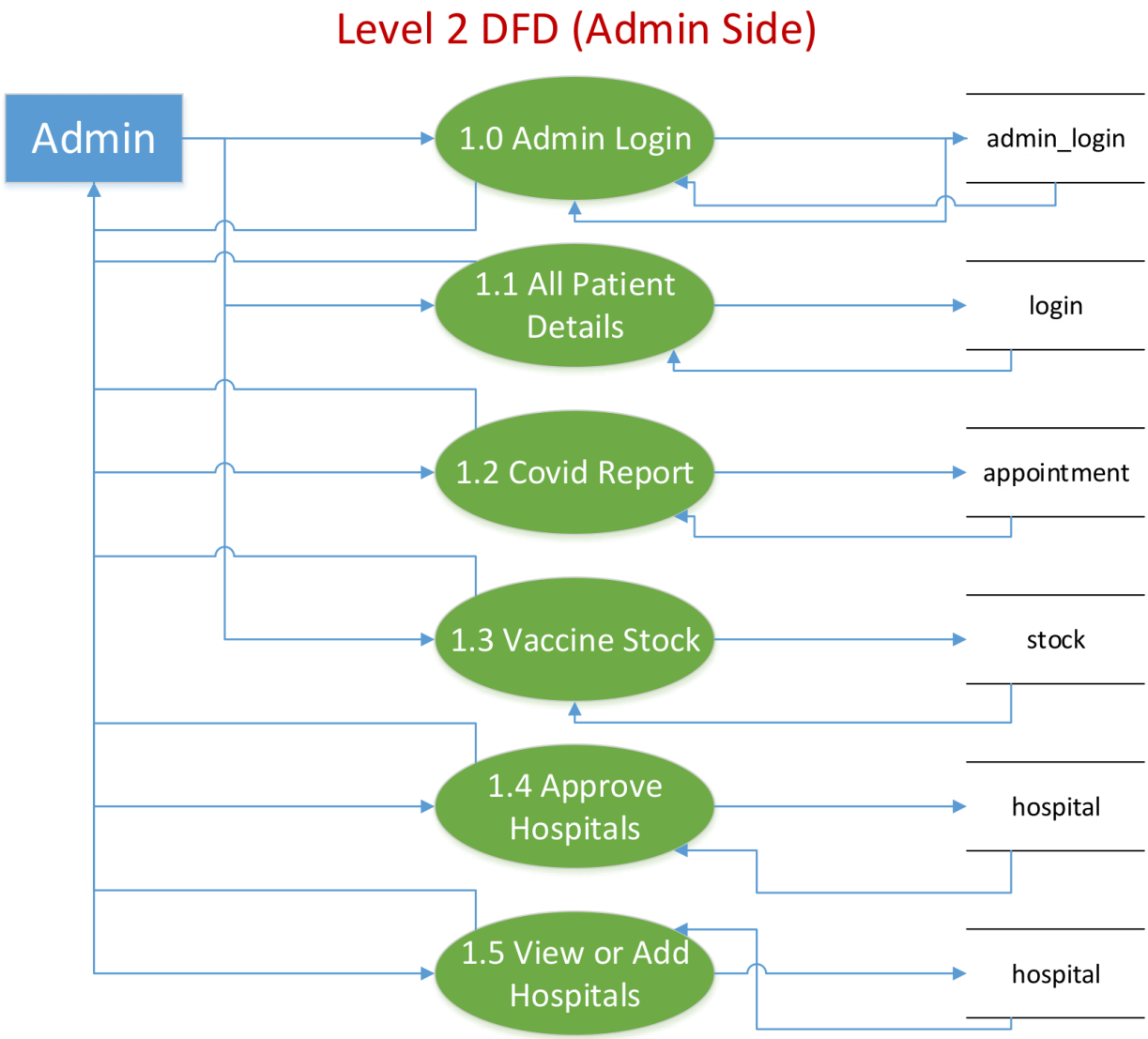
17.1. CONTEXT LEVEL DFD



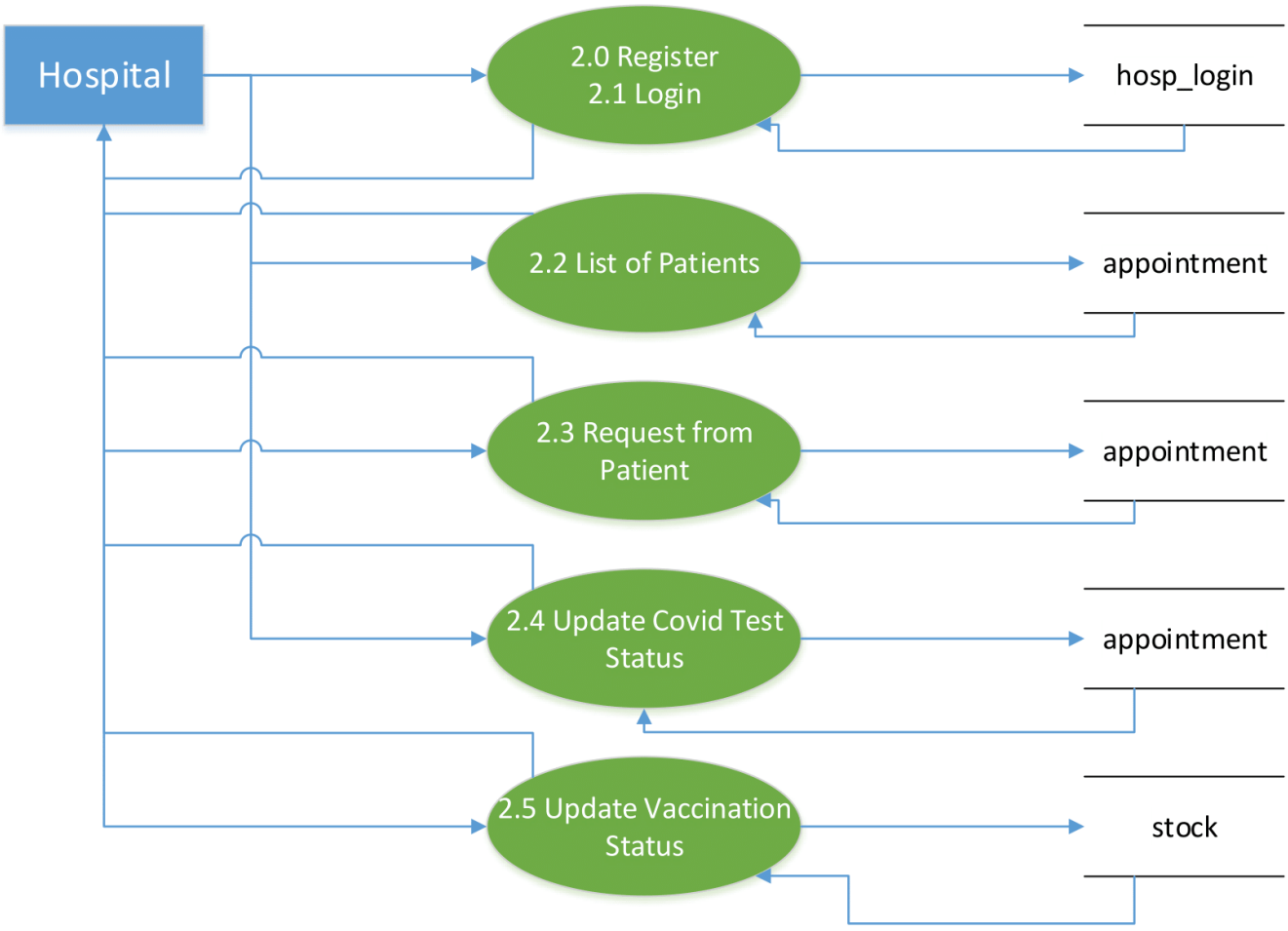
17.2. FIRST LEVEL DFD



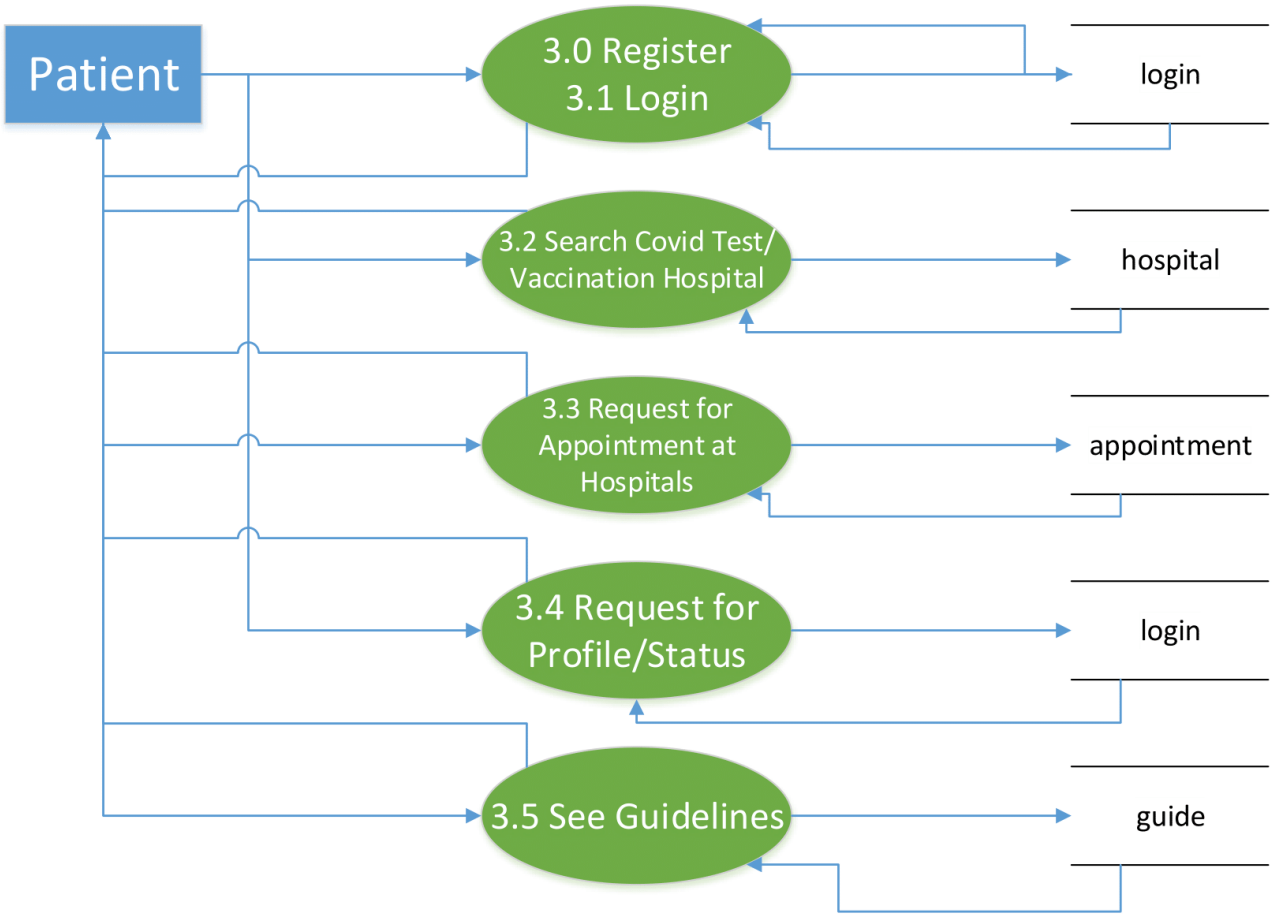
17.3. SECOND LEVEL DFD



Level 2 DFD (Hospital Side)

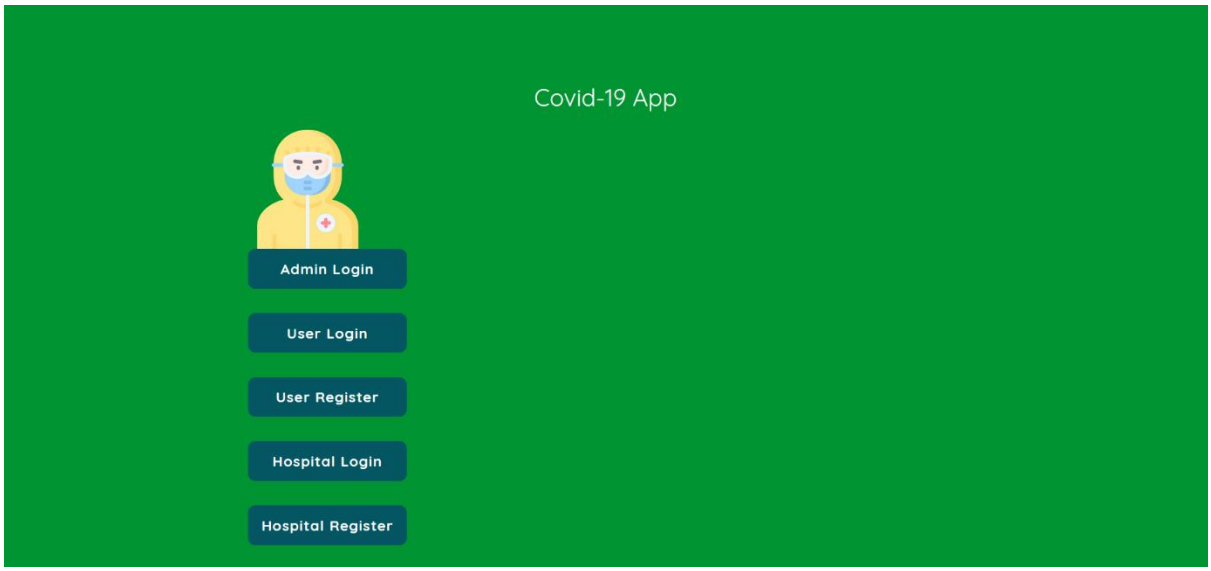


Level 2 DFD (Patient Side)



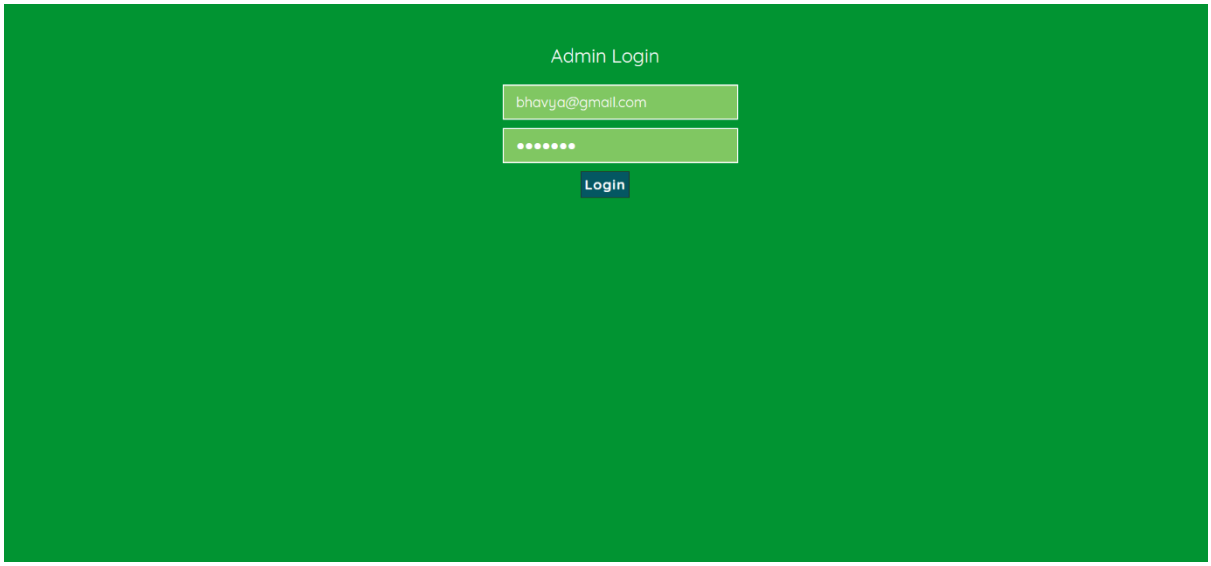
18. SCREENSHOTS

Here are the screenshots of the project's web pages. It can give us an idea of what the project after complete development looks like.

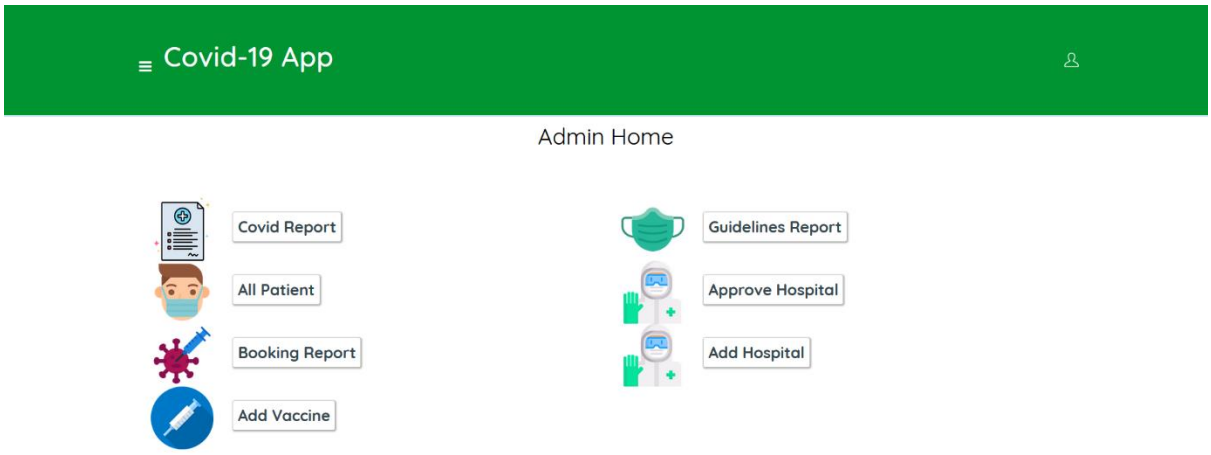


This is the Entry point of the Project. From here, one can navigate wherever he/she desires to start with.

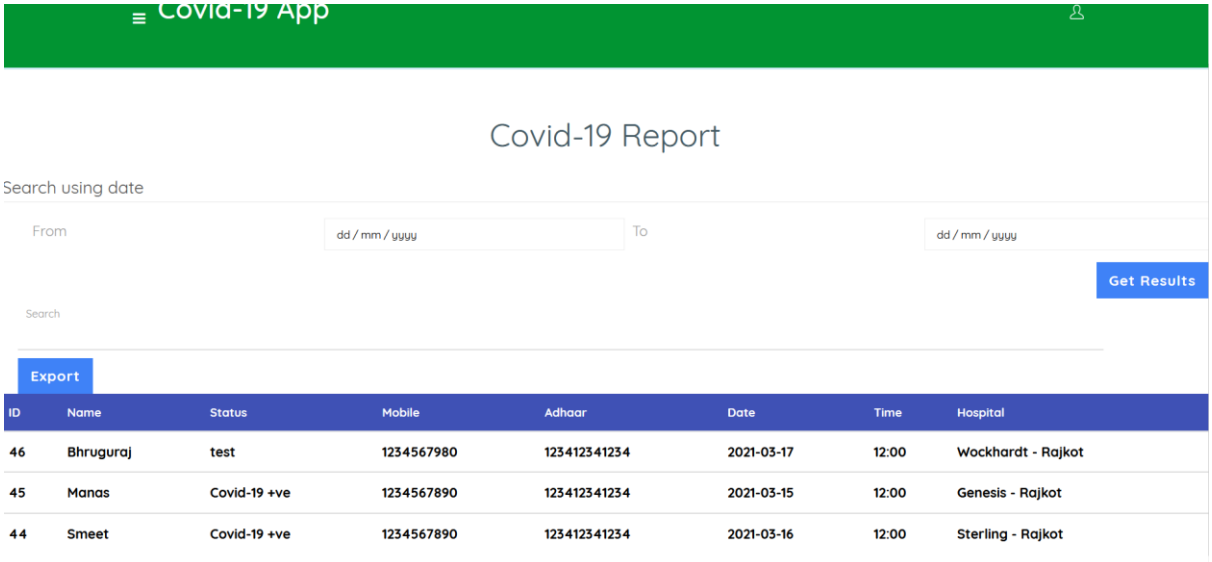
18.1. ADMIN SIDE WEB PAGES



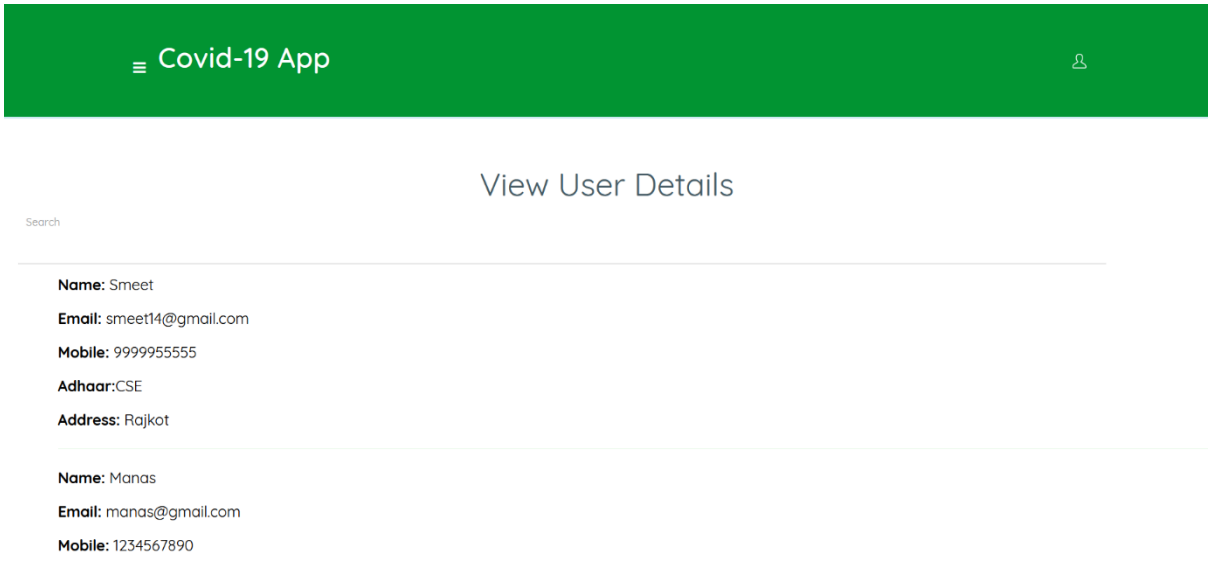
This is the Admin Side Login page. Here, the Login Credentials of the Admin will be authenticated and if entered correct, then one can access Admin Home page and all the Admin's Privileges.



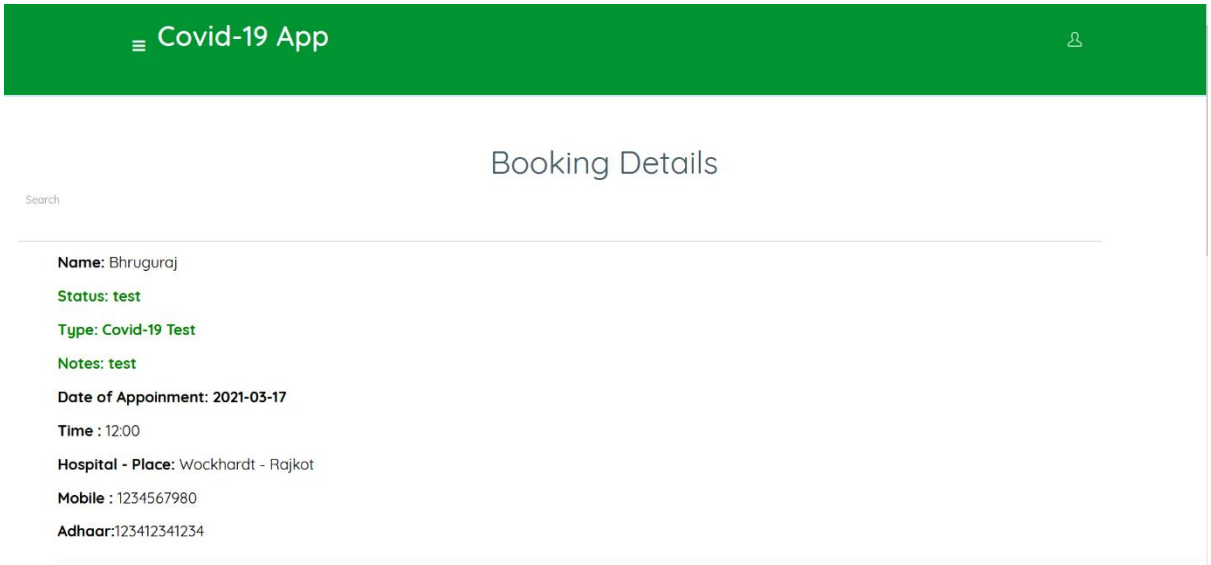
This is the Admin Home Page. Here as seen in the screenshot, Admin related Features are present and Admin can do all the stuff that's shown in the screenshot.



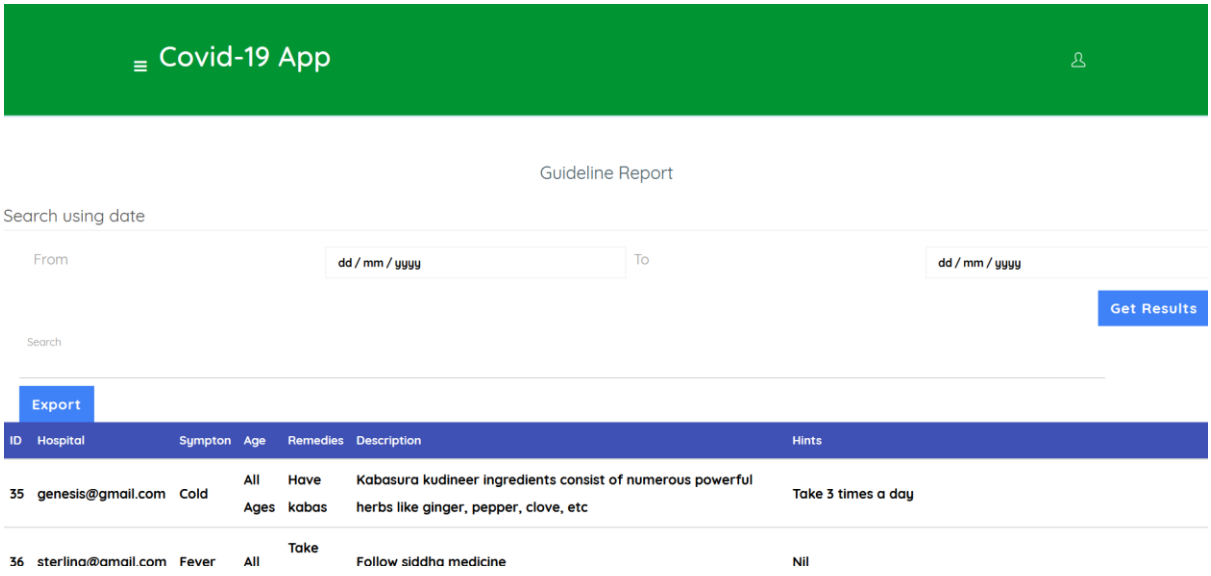
This is the Covid Report page. Here, we can view the details of all the patients that have applied for the Covid Test, and their status updated by Hospital side.



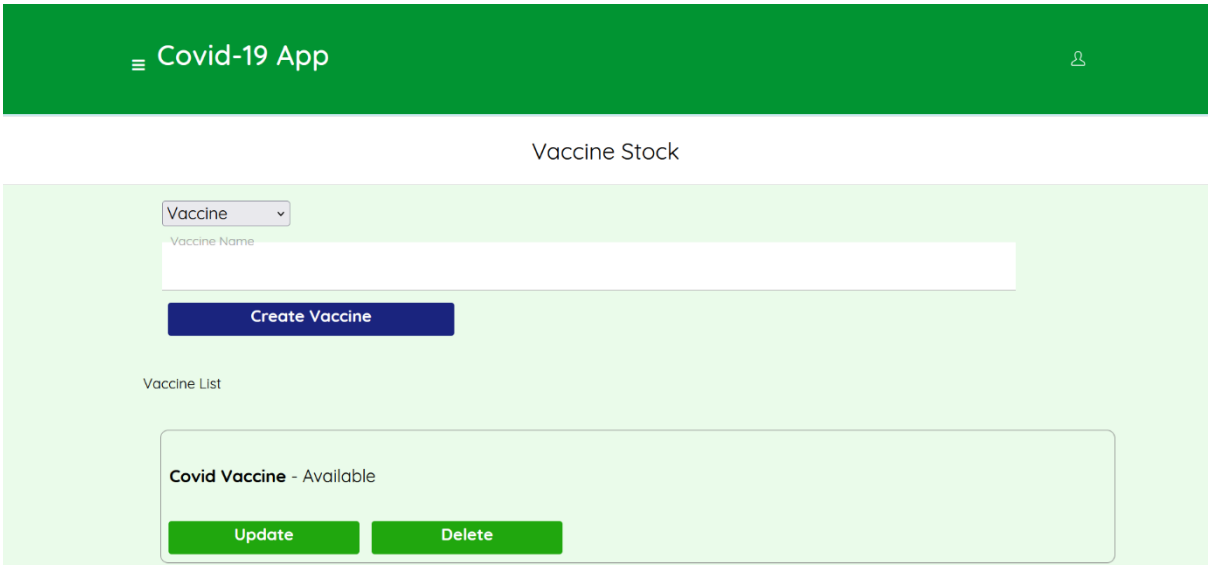
This is the All Patient Page. Here, Admin can view all the Patient details.



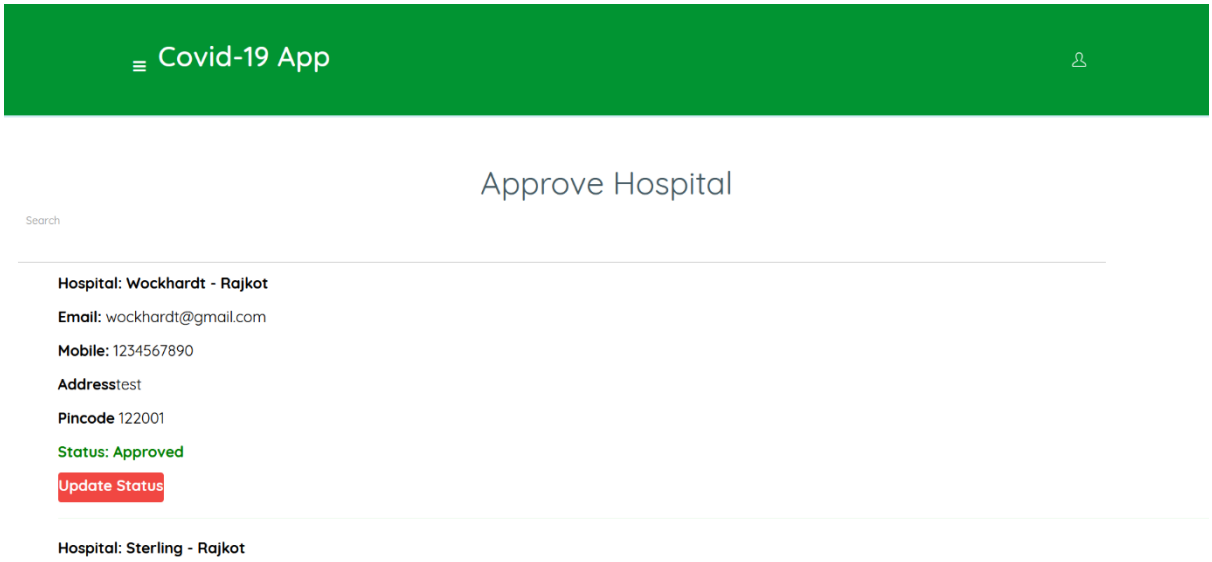
This is booking report page. Here, Admin can view which of the appointments that are made by the patients and to which hospital.



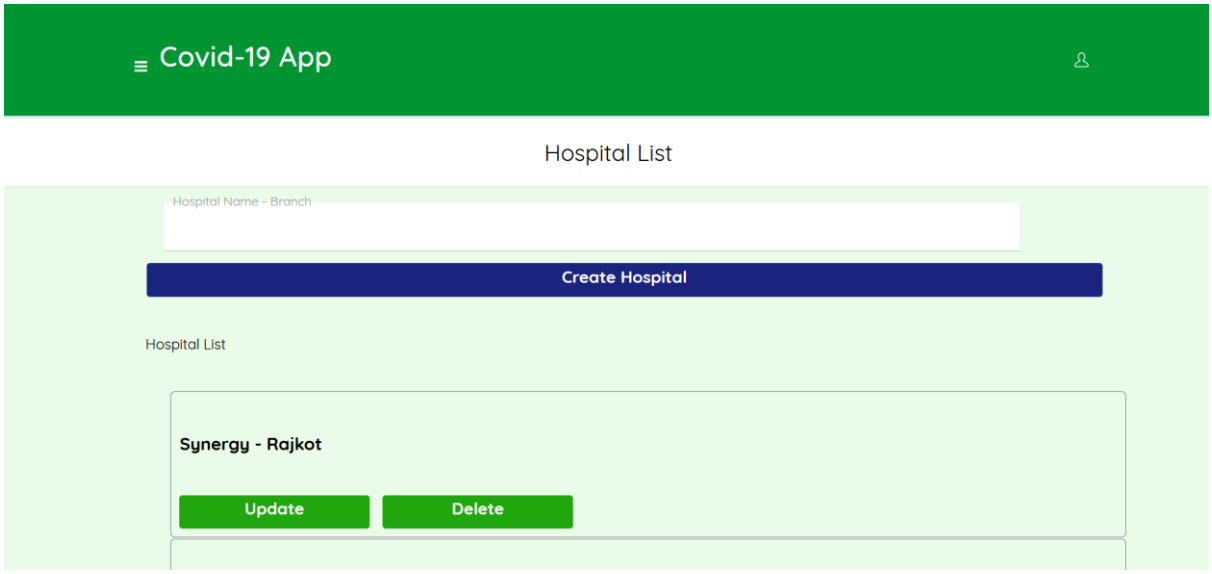
This is Guidelines Report Page. Here, Admin can view the Guidelines that are uploaded from Hospitals for the Patients.



This page is all about Vaccine Stock, here the Admin can view and manage vaccines.

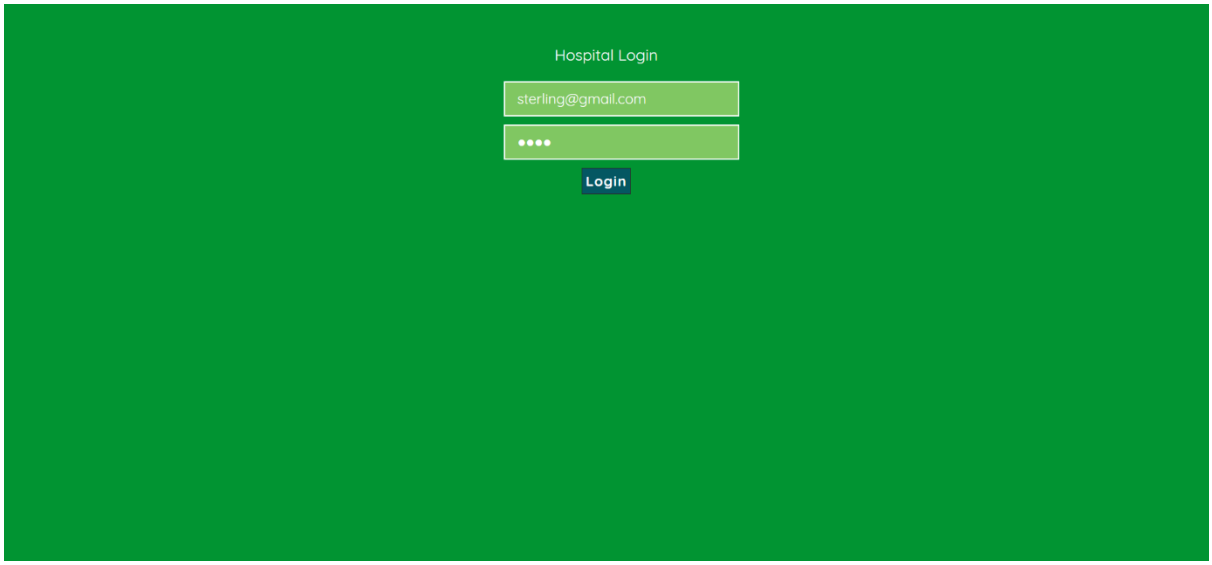


This is the Approve Hospital page. Here, all the registered Hospitals appear and admin can approve or reject them. Only approved hospitals get full access and considered as verified.

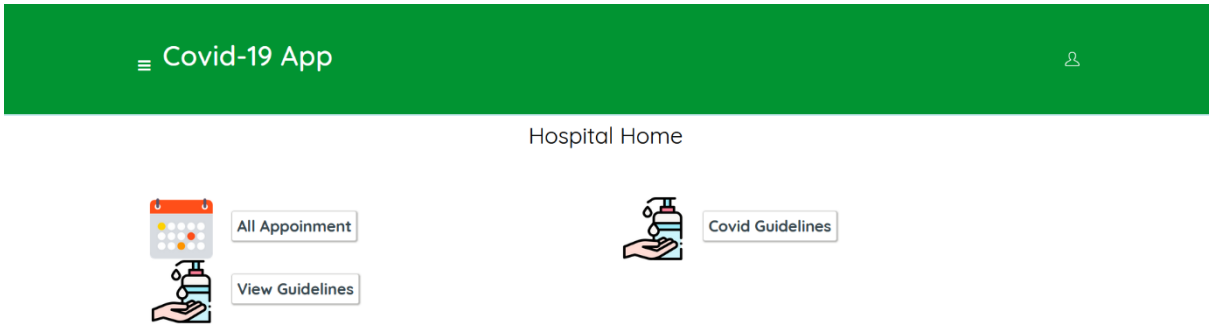


Here is the Hospital list. Here, Admin get to manage verified hospitals and also add a new hospital if needed.

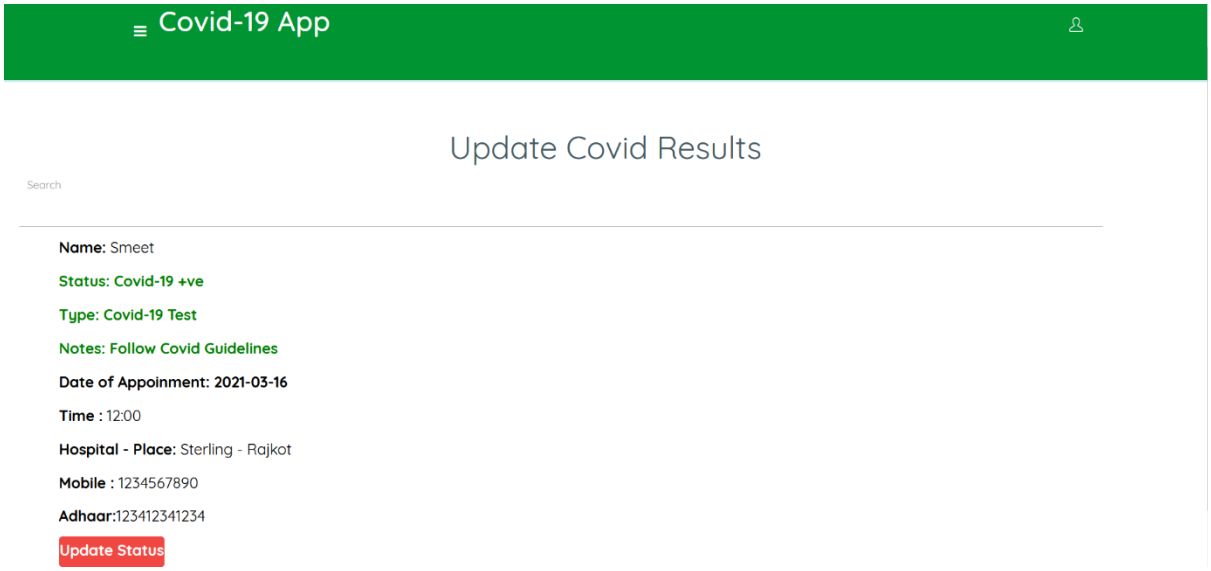
18.1. HOSPITAL SIDE WEB PAGES



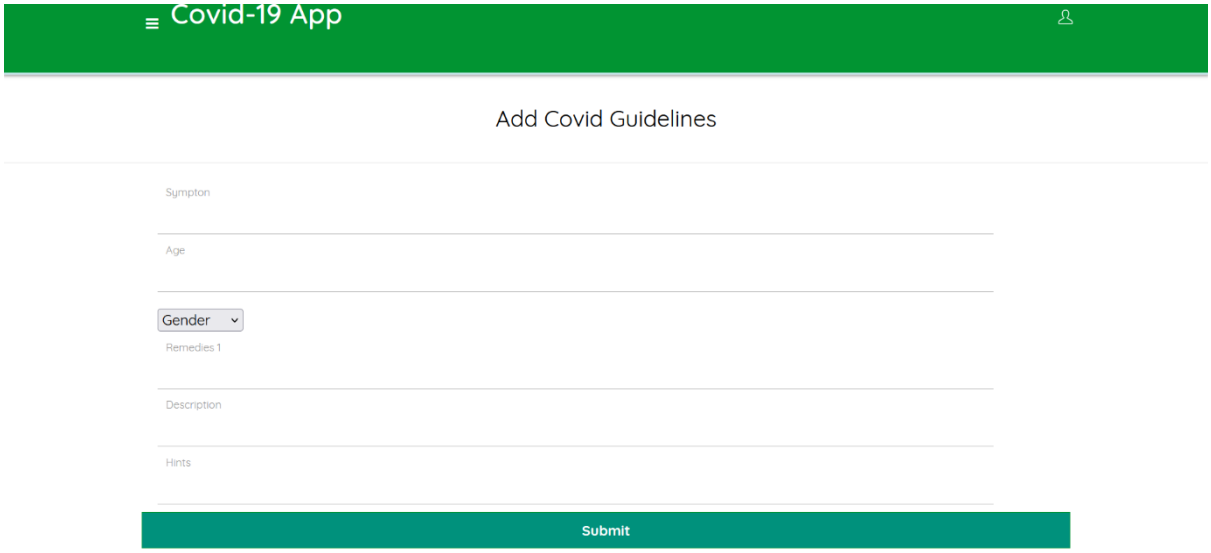
This is the login screen of Hospital Side. Here, only those hospitals which were approved by Admin can login.



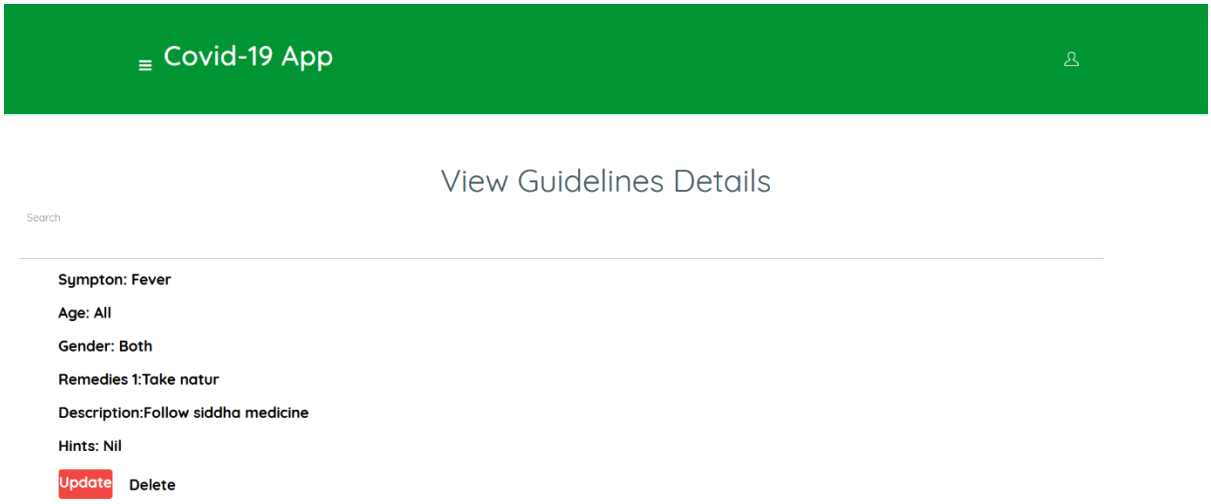
This is the Hospital Home Page. All the Hospital related stuff can be found here.



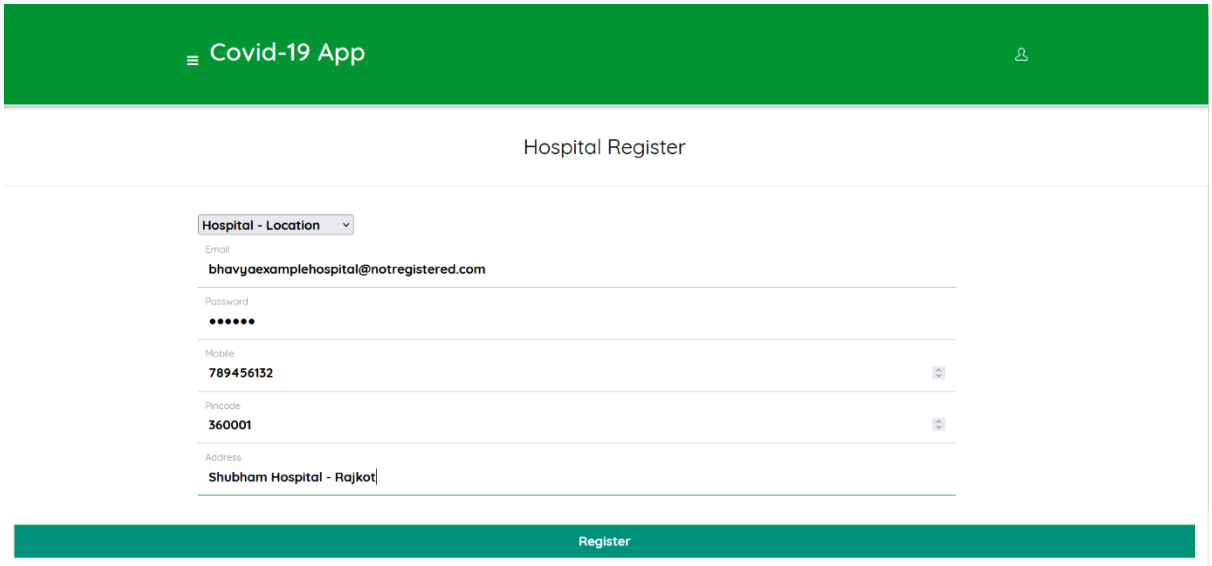
This is Covid Results page. Here, when the patients' Covid test is done, Hospital staff can update it so that patient can come to know their Covid Positive/Negative Status.



This is Add Guidelines page. Here, the hospitals can add new guidelines for patients to follow in order to prevent Covid and/or get better if they are already Covid Positive.

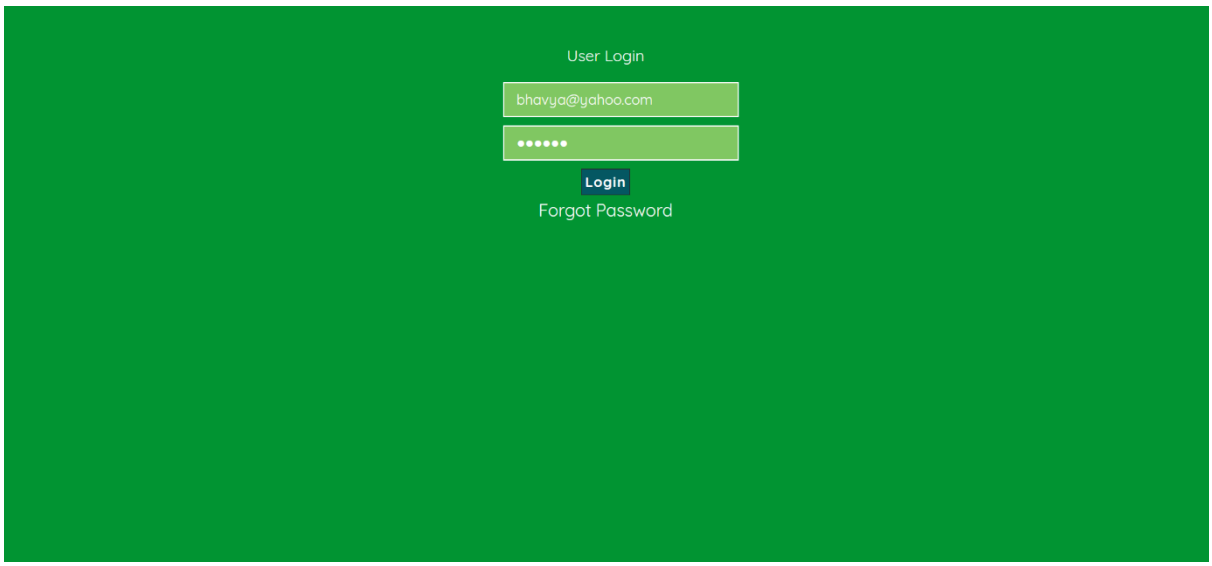


This is View/Manage Guidelines Page. Here, Hospitals can update or delete old/obsolete Covid Guidelines if that doesn't remain effective anymore.

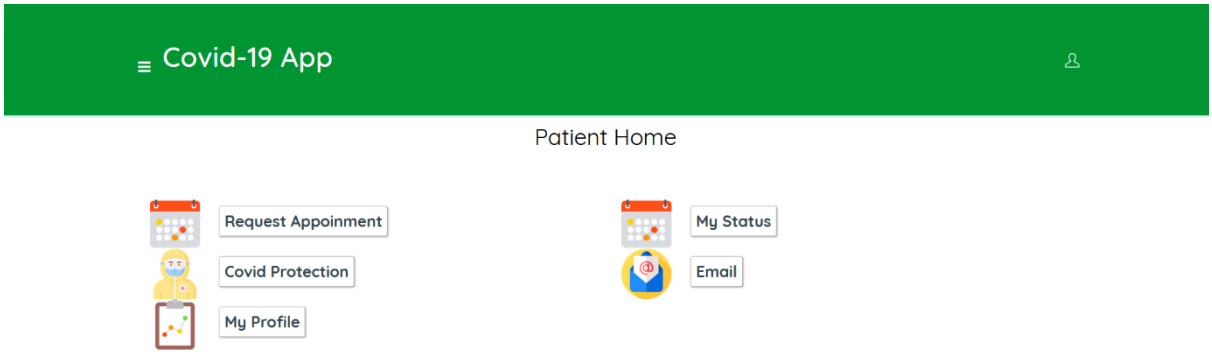


Finally, this is the Hospital Register Page, here, new Hospitals can register themselves. And, when Admin approves them, they get full access to the Web App.

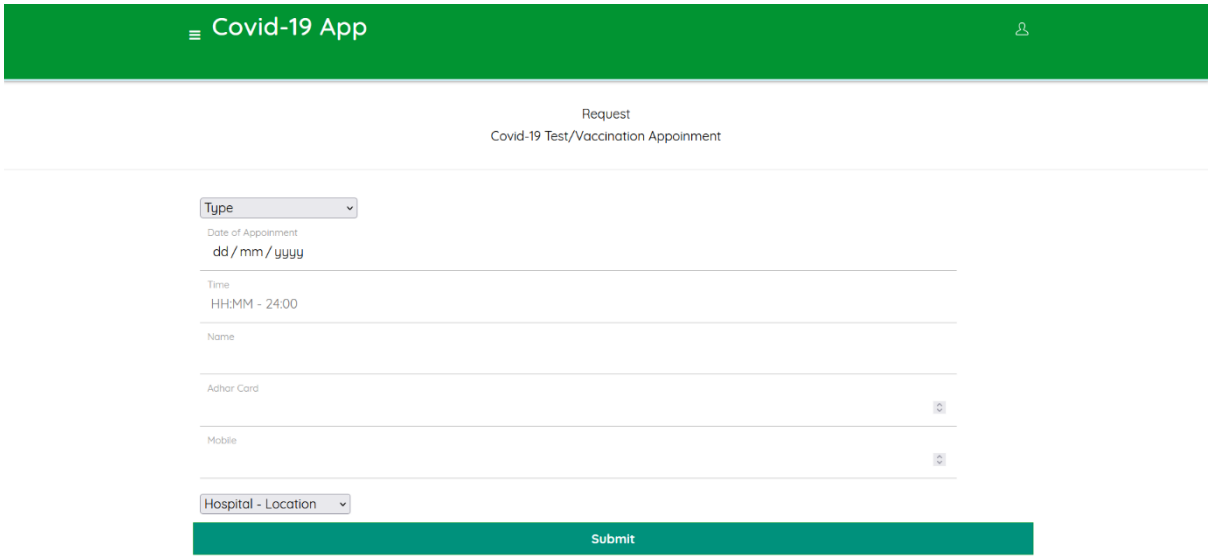
18.2. PATIENT SIDE WEB PAGES



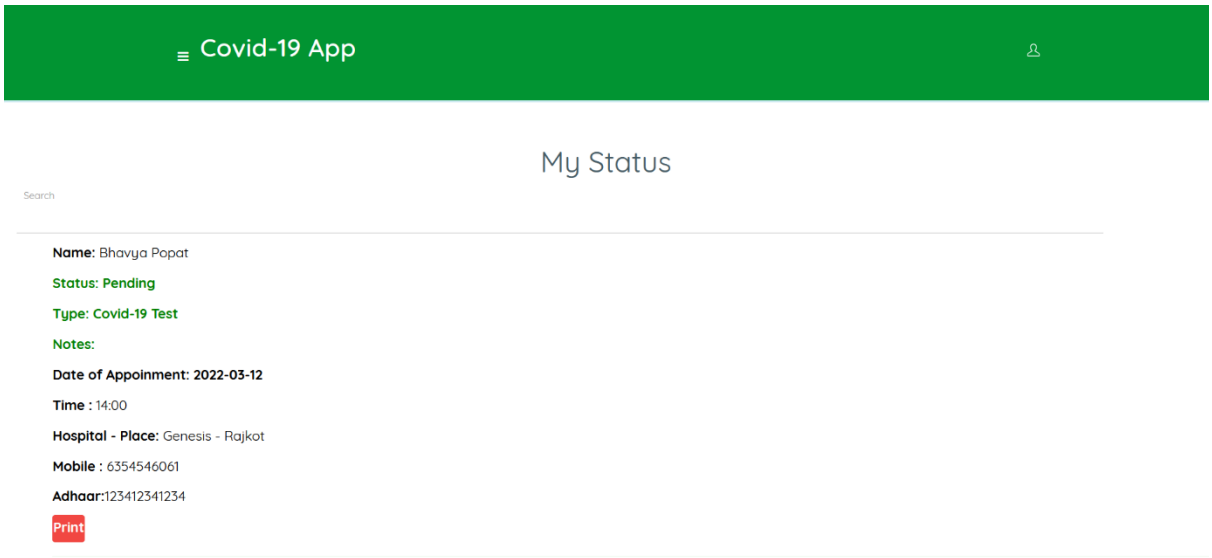
This is the Patient Login Page. Here, all the registered users can enter their credentials to login and if the credentials are correct, they can access the Patient side of the web app.



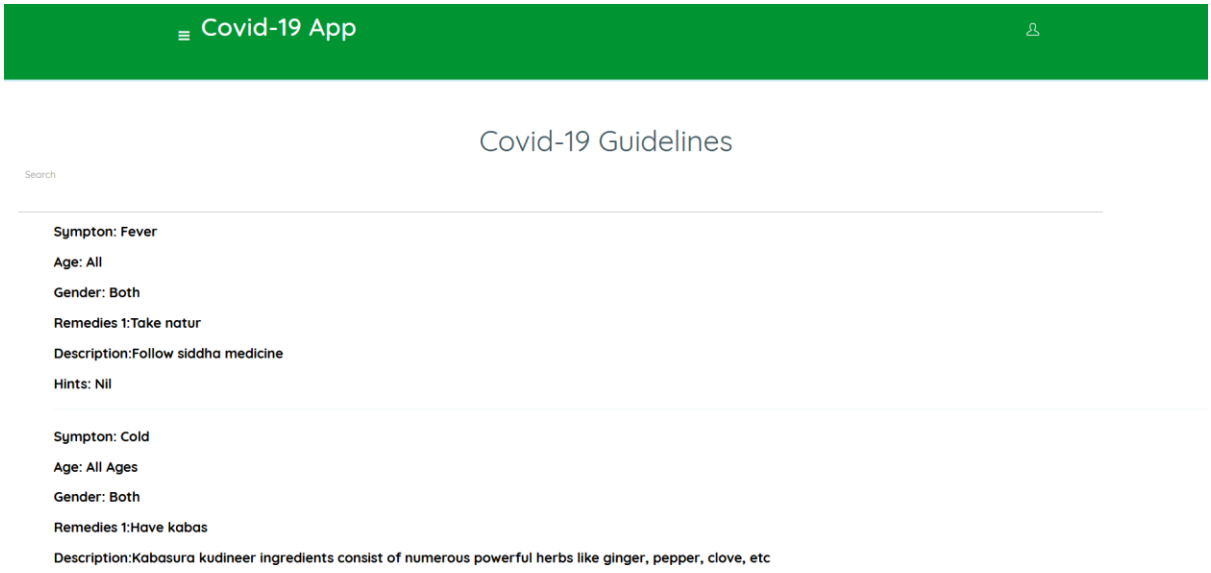
This is Patient Home. Here, all the stuff related to Patients can be found here.



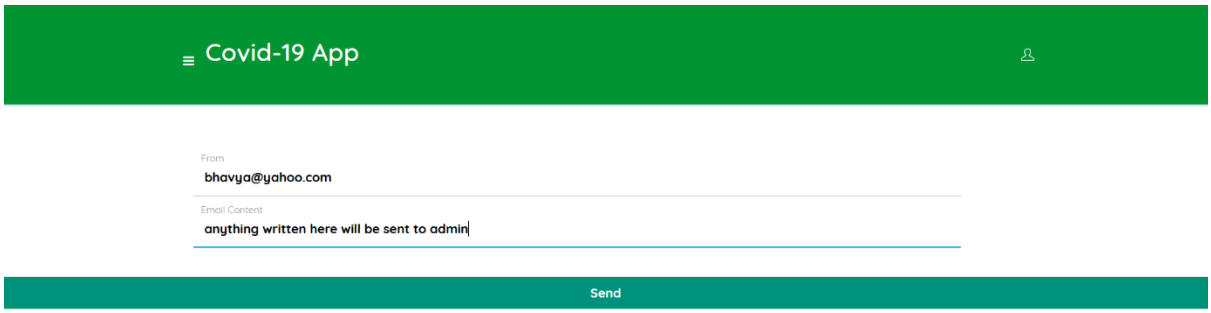
This is the Appointment Page. Here, Patient can book an appointment to any hospital for vaccination or covid test.



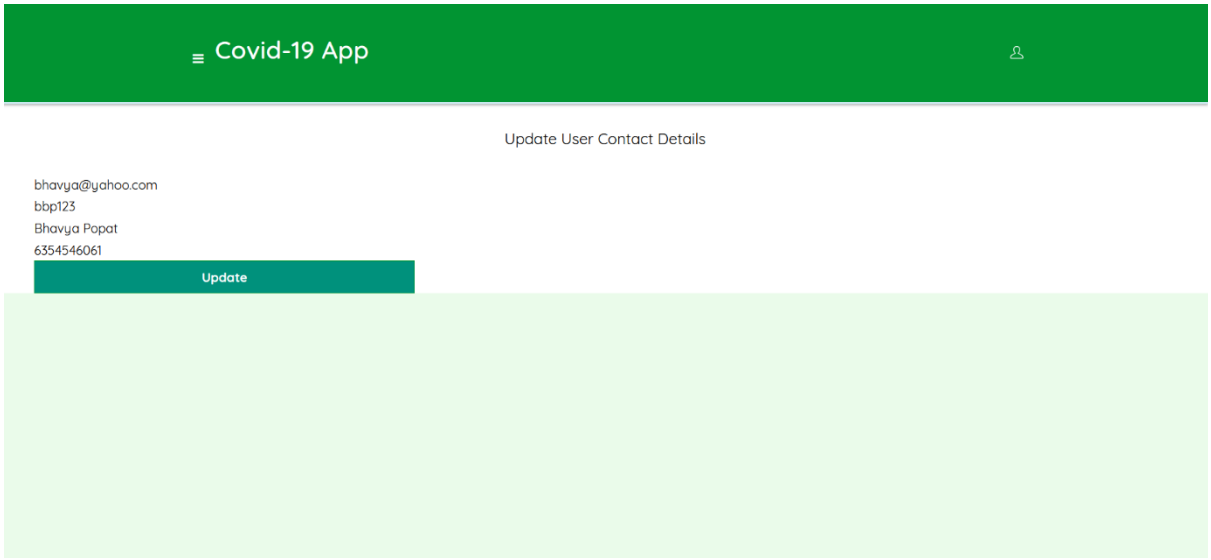
This is My Status page. Here, Patient can view his/her status about covid and can even print it.



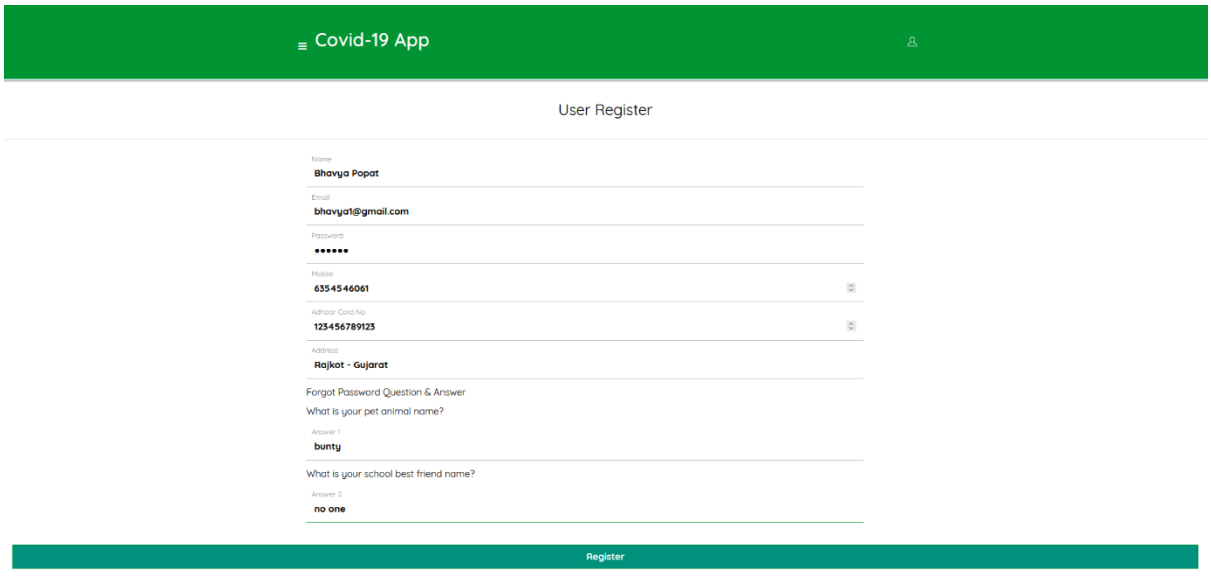
This is Guidelines Page. Here, the patients can view all the guidelines provided by hospitals and admin.



This is Email Page. Here, any message that user sends, is sent as an email to Admin.



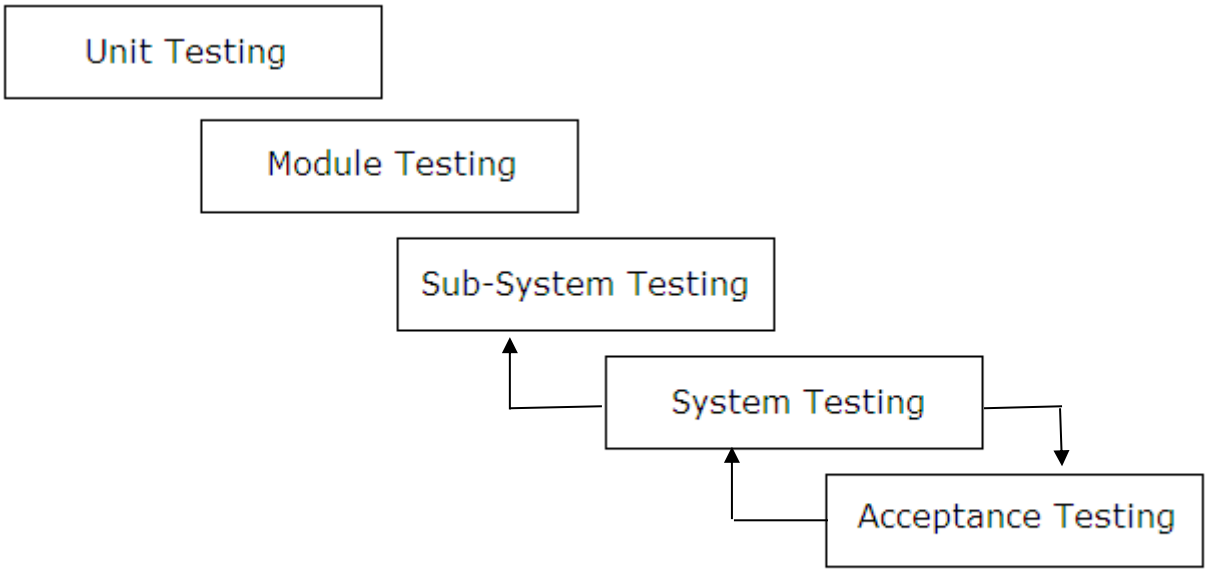
This is My Profile Page for Patient. Here, the patient can update his/her profile details.



Finally, this is the Patient Registration Page. Here, new Patients can register. And, after registration, they can login and use the web app then after.

19. ABOUT TESTING

This is the most crucial phase in the software development cycle. The developed application is thoroughly tested. Testing procedures and requirements differ with the nature of the product. It basically involves running through the whole application and verifying that the functionality is as per the designs.



Testing process is an iterative one with information being fed back from later stages to earlier parts of the process. The stage defines to earlier parts of the process. The stages defined in the above figure are explained as further:

- **Unit Testing**
    - Individual components are tested to ensure that they operate correctly. Each component is tested independently without other system components. For example, whether an individual procedure is working properly or not is tested here.
- **Module Testing**
    - A module is a collection of dependent components. A module encapsulates related components so that it can be tested without other system modules. In this project, one module is there, which contains a procedure, which is used by the project.
- **Sub-System Testing**

- This phase involves testing of collection of modules, which have been integrated into sub-systems. In this project, public module is, which is used by the project.

- **System Testing**
  - The sub-systems are integrated to make the entire system. This testing process is concerned with finding errors, which normally results from unanticipated interaction between sub-system and components.

- **Acceptance Testing**
  - This is the final test in the testing process before the system is accepted for operational use, sometimes called alpha testing. This process states whether the project satisfies all requirements specified by the customer or not.

20. BIBLIOGRAPHY

I built this project at the very starting of my career. To complete this project, I referred to many online resources to learn many topics in order to complete the project. I used the following below online resources:

JavaTPoint AngularJS Tutorial: https://www.javatpoint.com/angularjs-tutorial

W3 Schools PHP Tutorial: https://www.w3schools.com/php/

Tutorialspont MySQL Tutorial: https://www.tutorialspoint.com/mysql/index.htm

Stack Overflow (Small Sample Source Codes): https://stackoverflow.com/

XAMPP: https://www.apachefriends.org/download.html

PHP: http://www.php.net

MySQL: http://www.mysql.com

AngularJS: https://angularjs.org/

CodeWithHarry YT: https://www.youtube.com/c/CodeWithHarry

Telusko YT: https://www.youtube.com/c/Telusko

ProgrammingKnowledge YT: https://www.youtube.com/c/ProgrammingKnowledge

21. SUGGESTIONS