

# Advanced Software Engineering

## Project Increment 4

### FettleUp



### Team 8

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# **1. Introduction**

## **FettleUp**

When we feel sick, we need to go to hospital and take an appointment with doctor. The severity of the disease is less this will be a time taking process in our day-to-day busy life. In this smart world, we thought of having one application that will be handy to opt for a doctor and make an appointment with him in online and discuss regarding our problem and get the necessary suggestions from him, so we can save our time. Finally, we came up with this thought to save time for everyone.

# **2. Project Goal and Objectives**

### **Overall Goal:**

The main goal of this application system is to provide an end-to-end communication between the common people and their consultation doctors. The gap between them is filled by using various resources of communication such as online chat, request for appointment consultation and ease of search in nearby emergency.

### **Specific Objectives:**

Technology is evolving everyday, so creating an interactive web application by reaching our goal within the time frame is our major objective. The key thing of the application is to provide end-to-end relationship between doctor and patient. We personally take care in building a real time system that is user friendly and reachable to patients round the clock. To make a system, which feeds instant

guidelines to people, regarding their appointment status, doctor availability and other related information.

### **Specific Features:**

The features are classified as

- Make a hassle free appointment and consultations with doctor,
- Round the clock advice from doctors by using the chat option,
- Provide daily diet for future reference to doctor's in case of health checkup,
- View prescription and shop for them on e-commerce sites i.e. Wal-Mart pharmacy,
- Look for nearby emergency and pharmacy with single click,
- Feedback option on their experience.

### **Significance:**

As we can see there are many applications for health care but our application is stand out from others. In this application we can quickly check for the availability of doctor in particular categories and schedule an appointment with him or else we can chat with him from our desk itself, which is time saving process. Therefore, this application will become the dominant form of interaction.

### 3. Project Plan

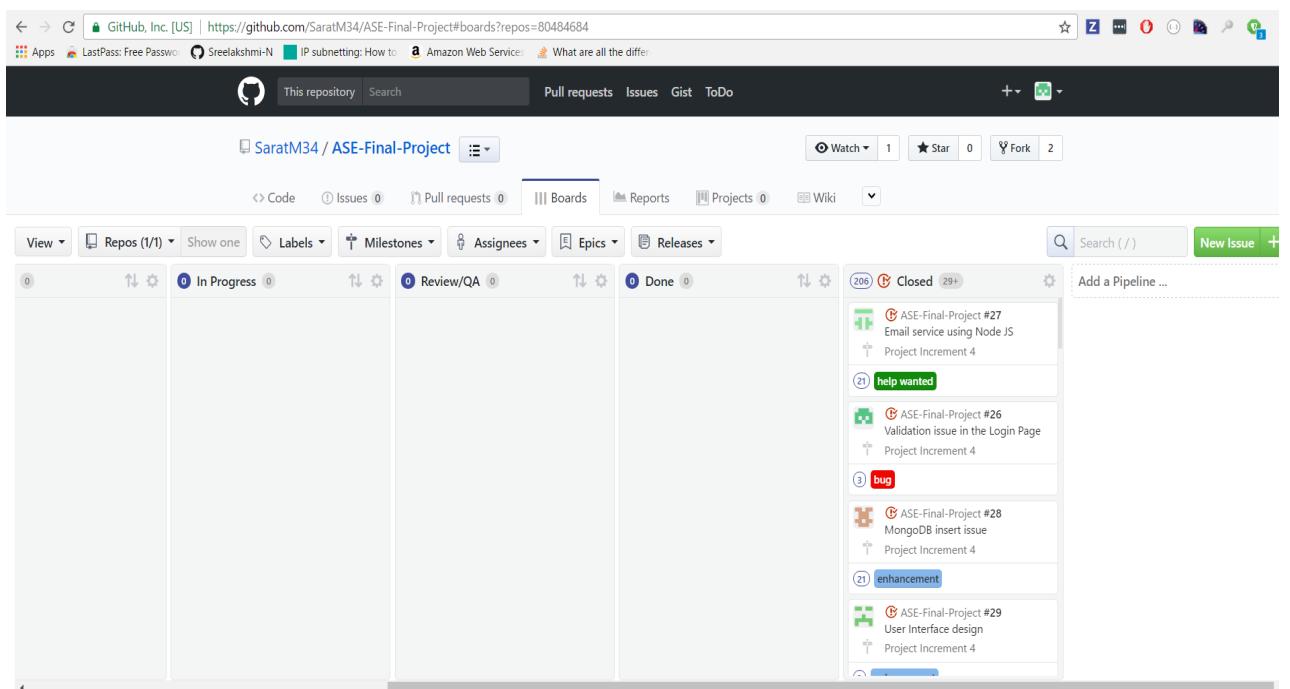
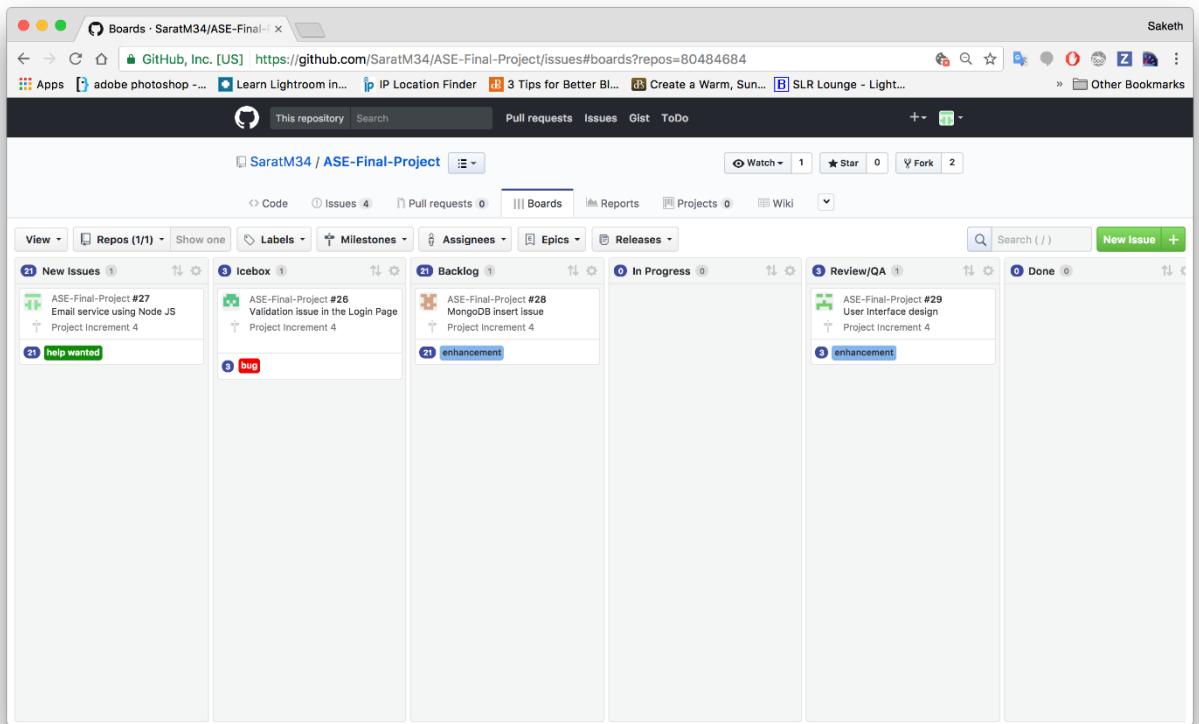
#### Zen-Hub Screenshot:

For the third increment we had issues regarding the functionality of Home page which includes text to speech API and implemented the database and writing unit test cases.

Issue Type	Description	Comments	Status
User Interface design	enhancement	3	In Progress
MongoDB insert issue	enhancement	21	Backlog
Email service using Node JS	help wanted	21	New Issues
Validation issue in the Login Page	bug	3	Icebox

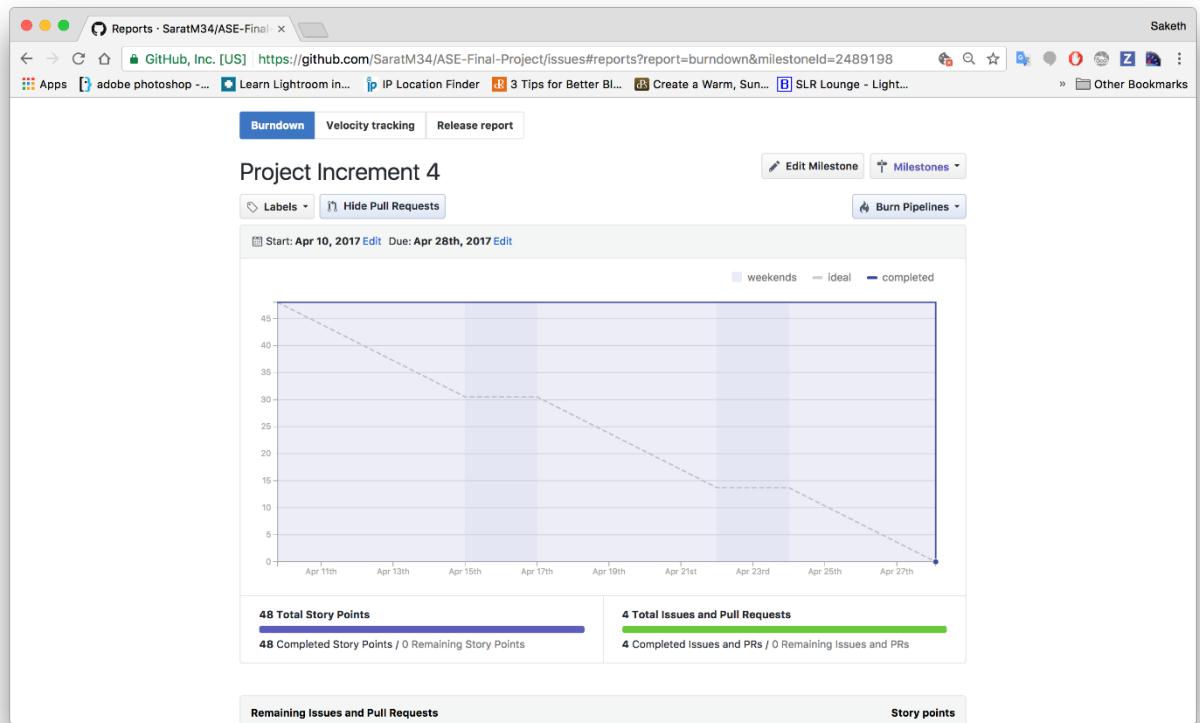
#### Project Timeline, Members and Task Responsibility

The issues that are registered and current one's which we are working are updated and can be viewed in github repository. The below screenshot will show you the issues and their respective categorization's i.e. New issues, Icebox, Backlog, In Progress.



## Burn-Down Chart:

Burn-Down chart is created for the above issues via Milestones in github. Below is the screenshot for more information.



## **4. Fourth Increment Report**

### **Existing Services/REST API's Used**

#### **Google API:**

We also included Google API in our login module using OAuth 2.0 so users can easily login into our web application by using their respective existing accounts.

#### **Bootstrap:**

Bootstrap 4.0 is used in creating the web pages and has a major role in designing the CSS elements and layouts.

#### **Google Maps API:**

We have included Google Maps API to search for the nearest location of the pharmacies.

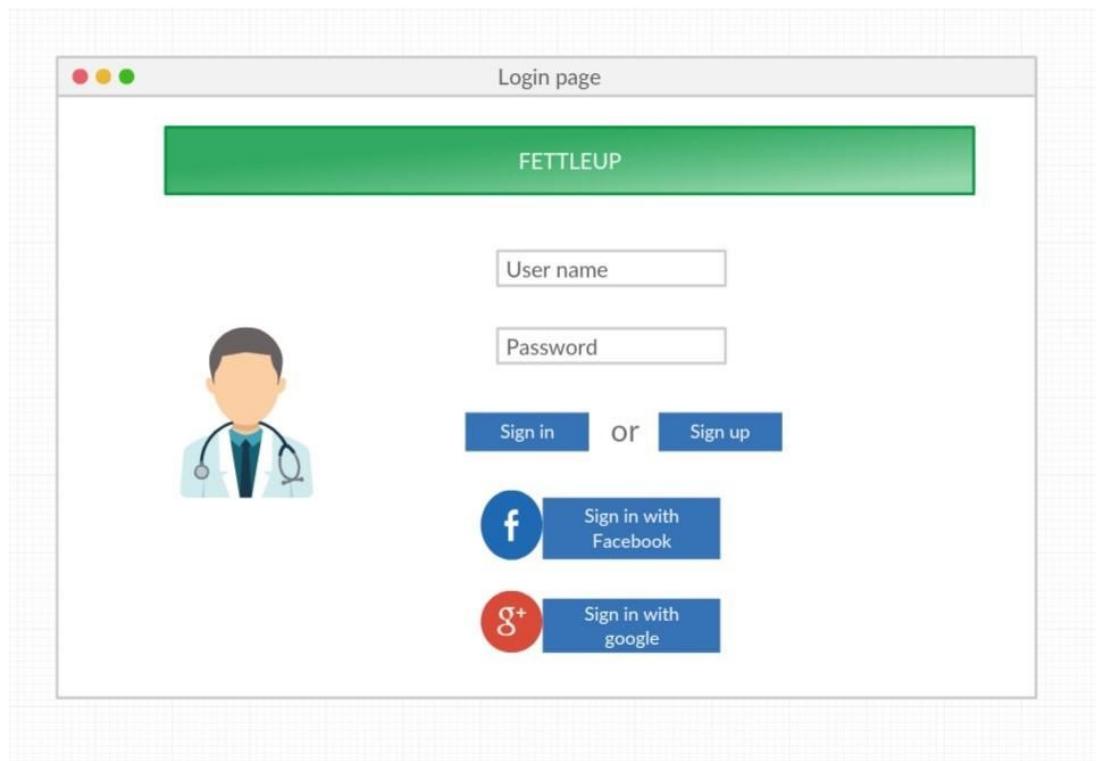
#### **Speech to Text API:**

We have included Speech to Text API, where speech is used as input and in which text is the desired output format.

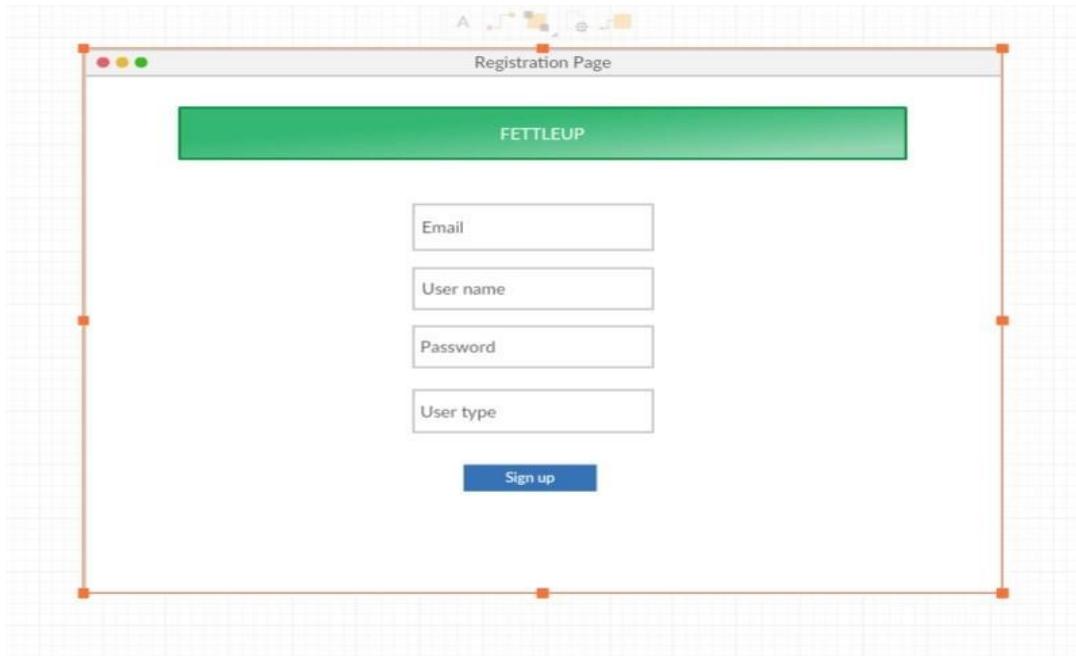
## **Detail Design of Features (using tools)**

### **Wireframes**

#### **Login Page Wireframe:**

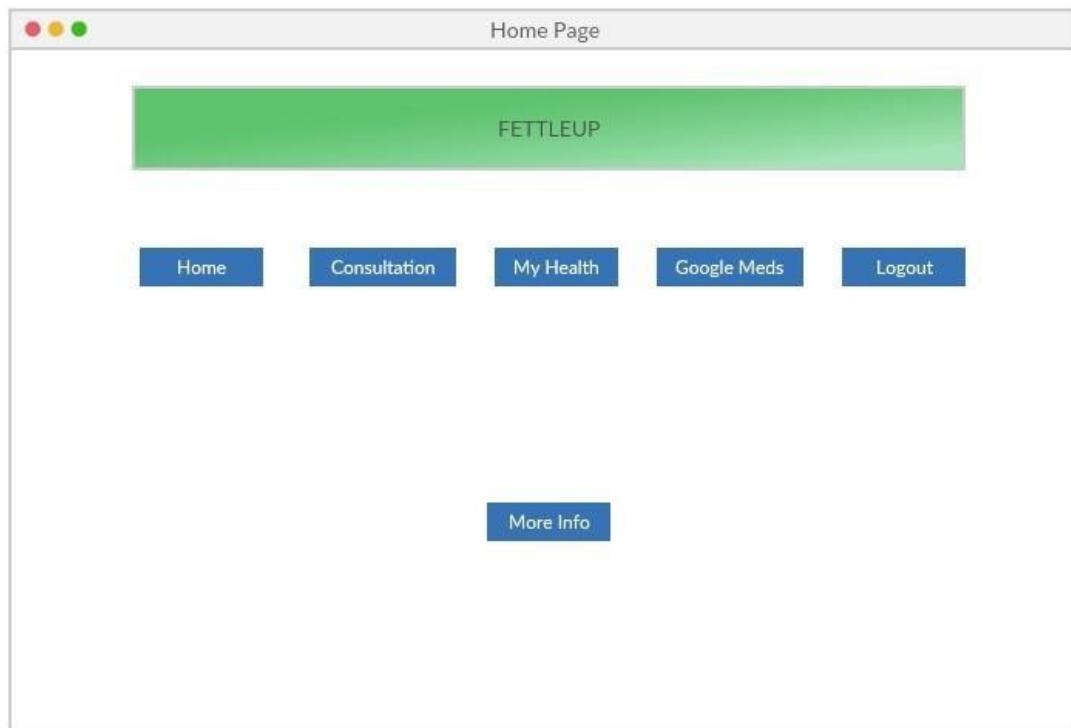


## Register Page Wireframe:



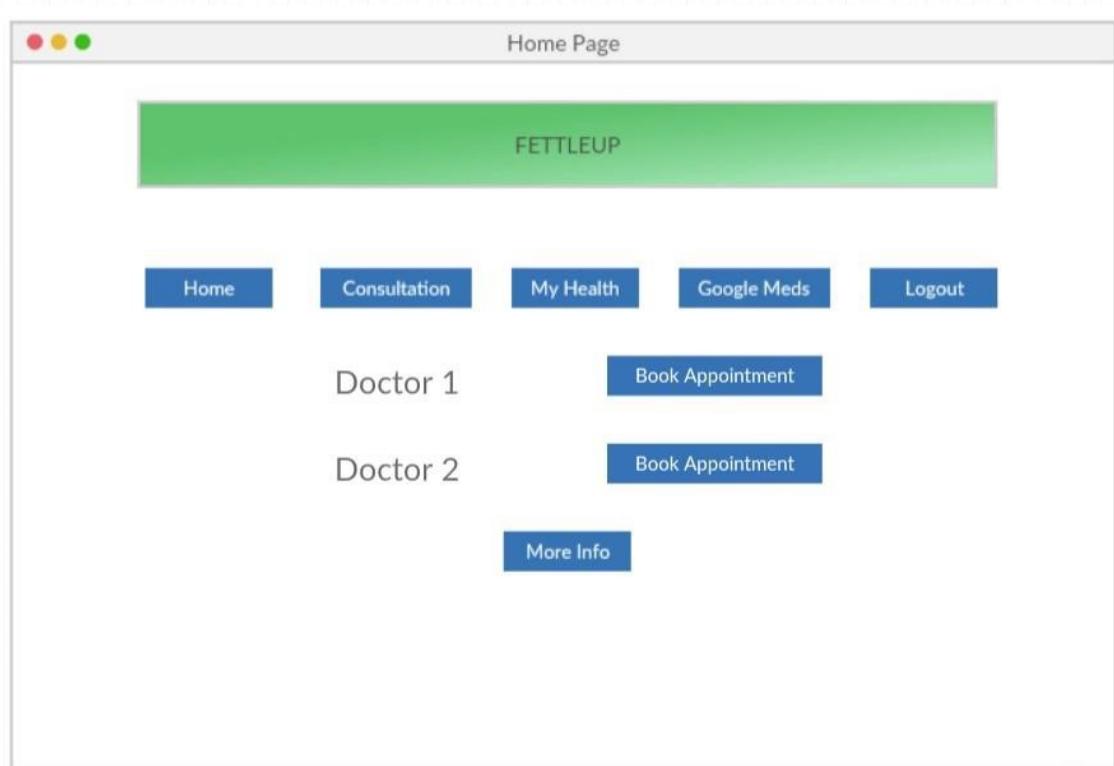
A wireframe diagram of a registration page titled "Registration Page". The page features a green header bar with the text "FETTLEUP". Below the header are four input fields: "Email", "User name", "Password", and "User type". A blue "Sign up" button is positioned at the bottom center of the form.

## Patient Home Page Wireframe:

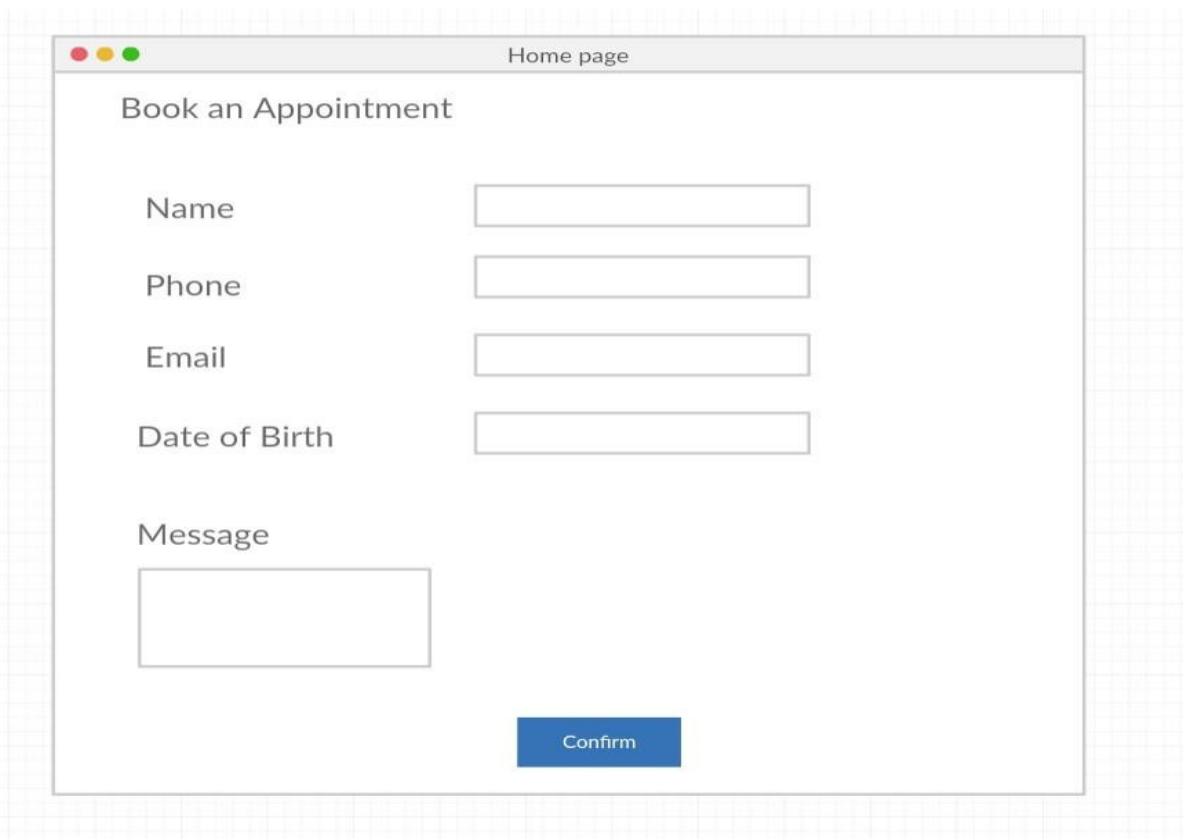


A wireframe diagram of a patient home page titled "Home Page". The page has a green header bar with the text "FETTLEUP". Below the header is a horizontal navigation bar with five buttons: "Home", "Consultation", "My Health", "Google Meds", and "Logout". At the bottom center of the page is a blue "More Info" button.

## Consultation Page Wireframe:

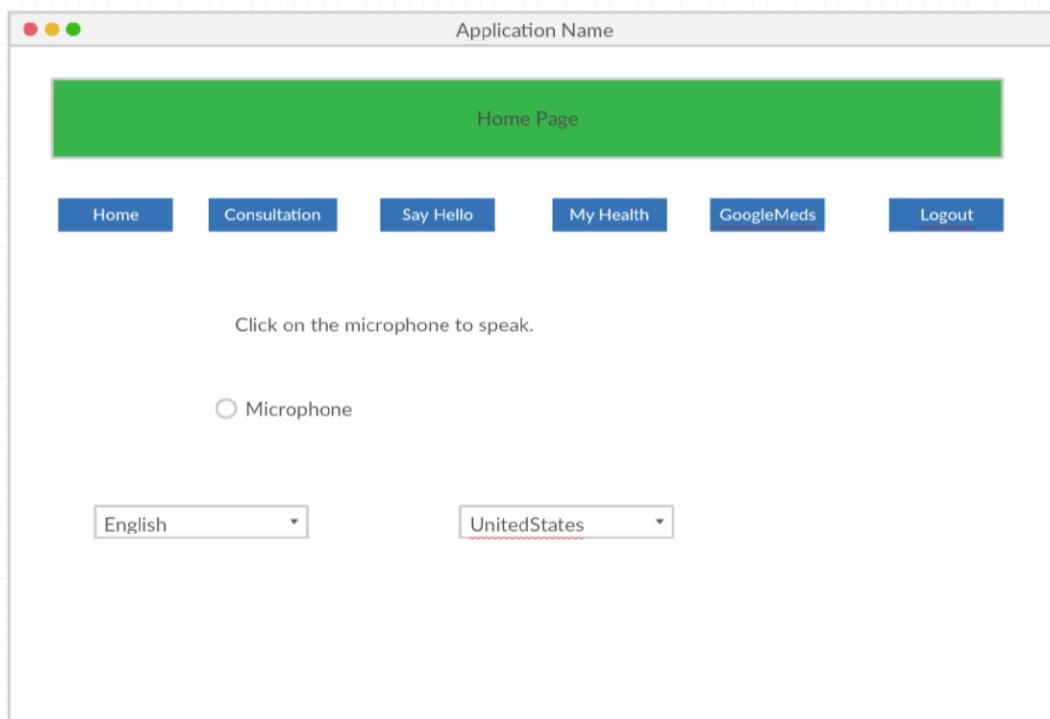


## Book an Appointment Page Wireframe:



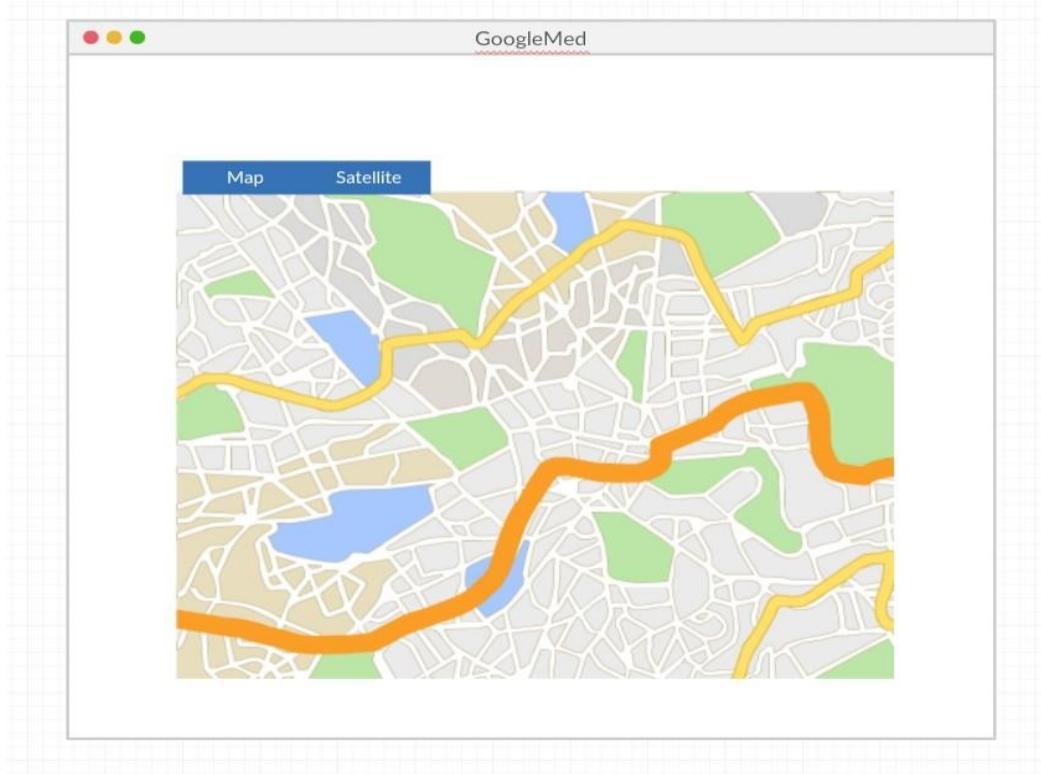
The wireframe shows a window titled "Home page" with a title bar and three red, yellow, and green buttons. The main content area is titled "Book an Appointment". It contains four input fields: "Name", "Phone", "Email", and "Date of Birth", each with a corresponding empty rectangular input box. Below these is a larger input field labeled "Message" with a single-line input box. At the bottom right is a blue rectangular button labeled "Confirm".

## Say Hello Page Wireframe:

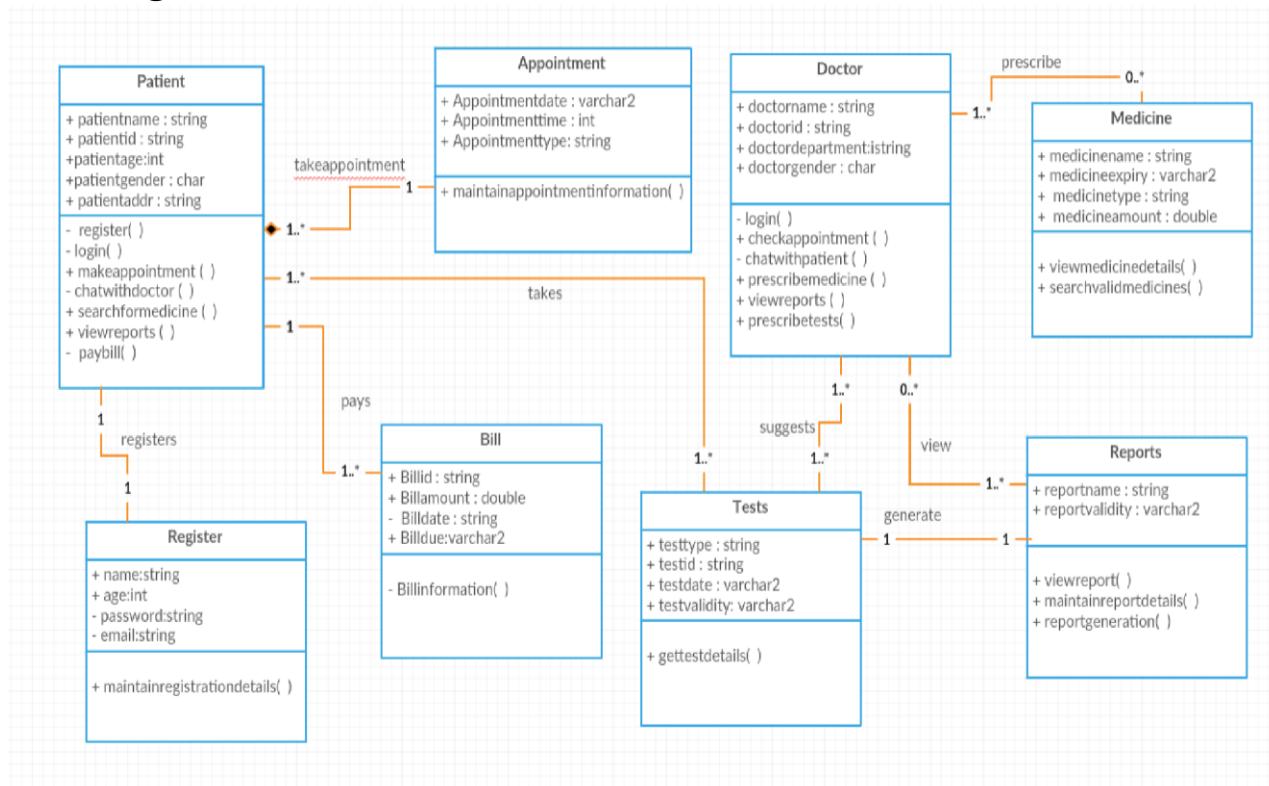


The wireframe shows a window titled "Application Name" with a title bar and three red, yellow, and green buttons. A green horizontal bar spans most of the width of the main content area, with the text "Home Page" centered in it. Below this bar is a row of five blue rectangular buttons with white text: "Home", "Consultation", "Say Hello" (which is highlighted in a darker shade), "My Health", and "GoogleMeds". To the right of "GoogleMeds" is another button labeled "Logout". Below these buttons is a line of text that says "Click on the microphone to speak." Underneath this text is a small circular icon with a line through it, followed by the text "Microphone". At the bottom of the page are two dropdown menus: one for language selection with "English" and a dropdown arrow, and another for location selection with "UnitedStates" and a dropdown arrow.

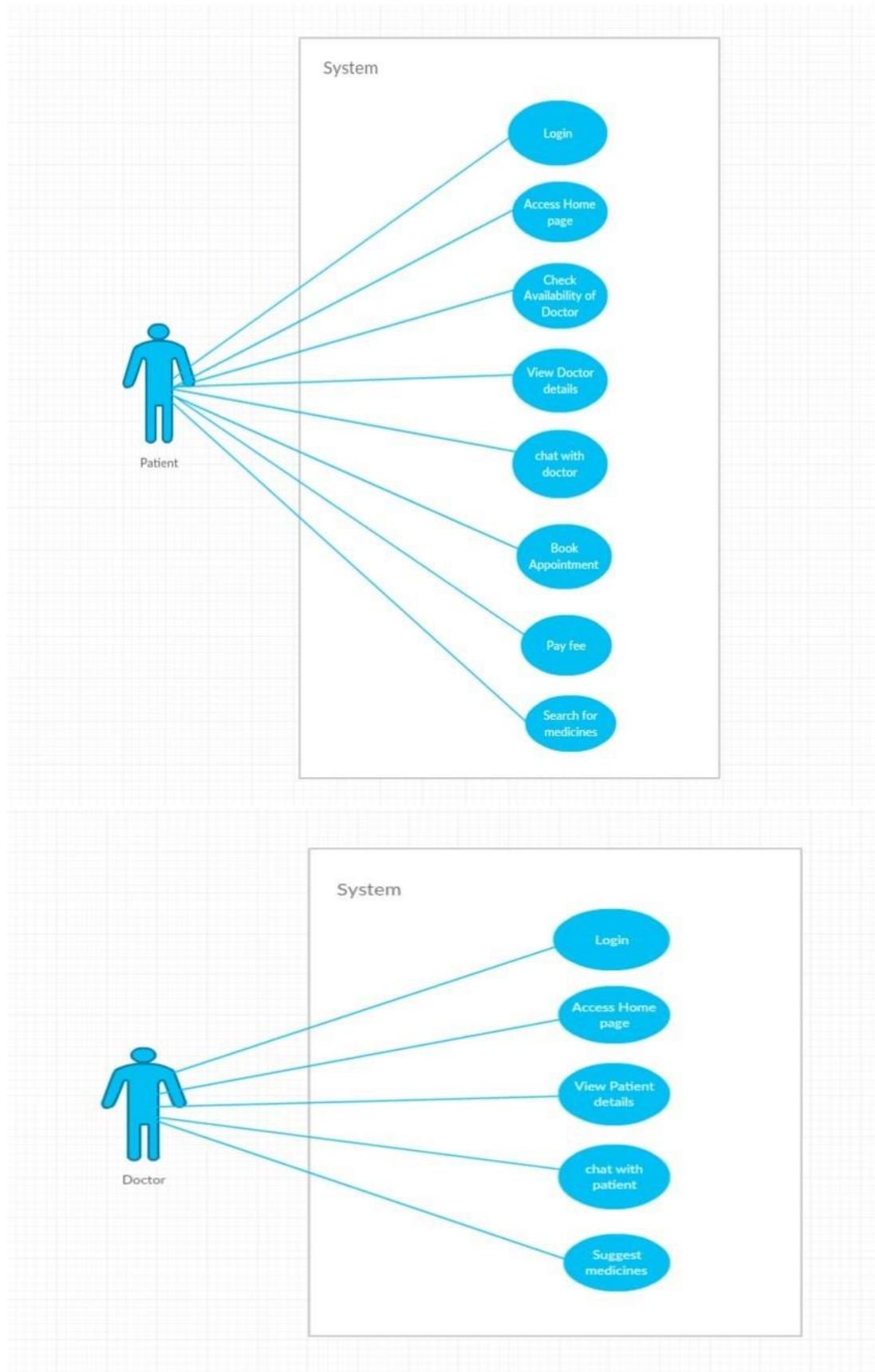
## Google Meds Page Wireframe:



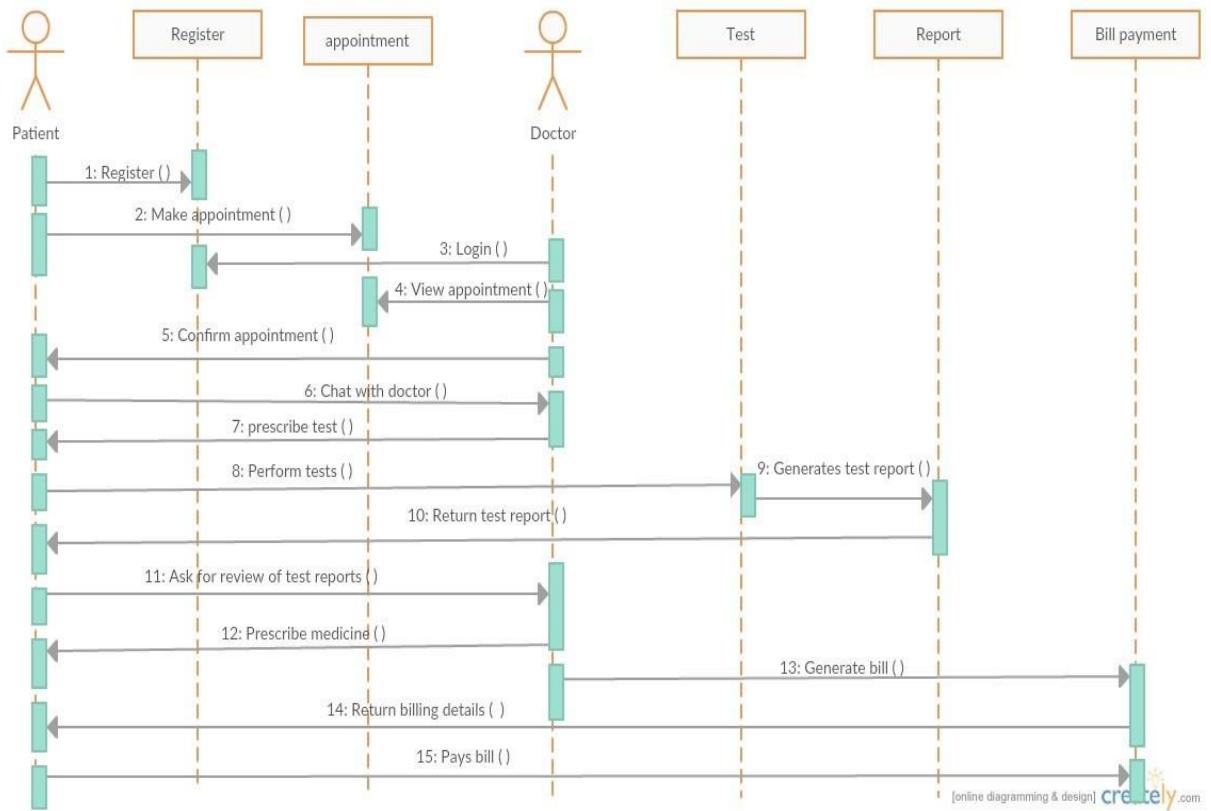
## Class Diagram



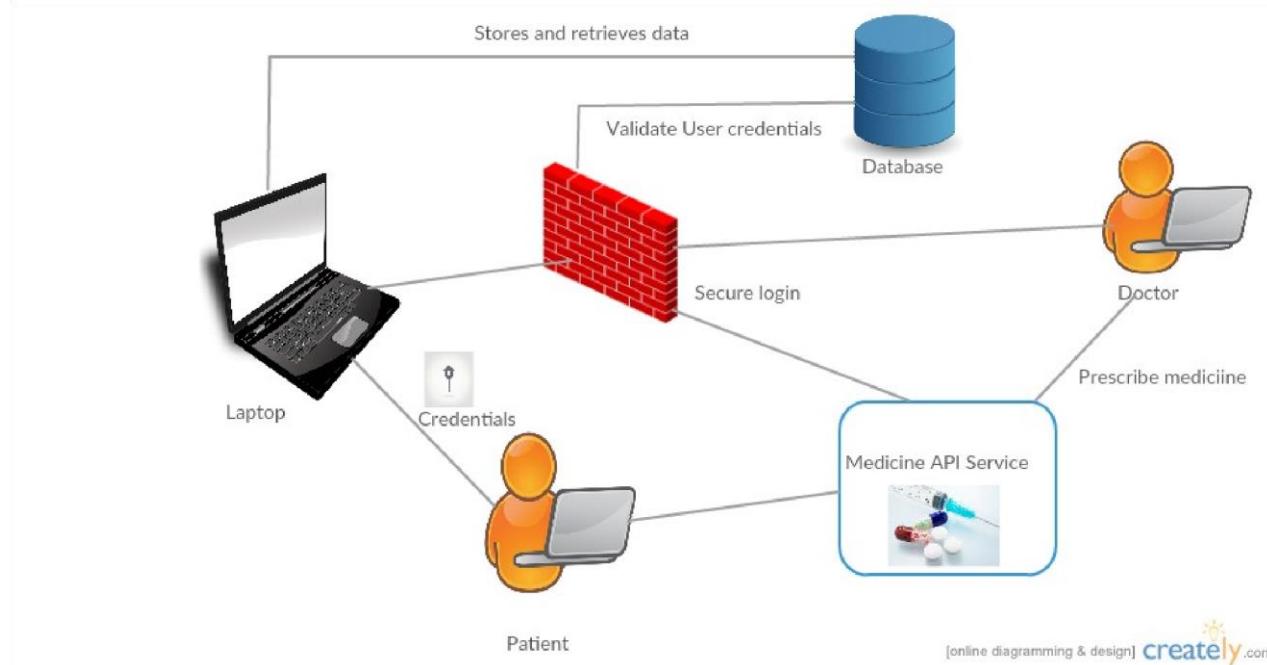
## Usecase Diagram



## Sequence Diagram



## Architecture Diagram



## Design Patterns

Pattern	Scenario
Creational - Builder	Share health condition with doctor in chat
Creational - Singleton	Every user have their own login credentials
Behavioral - Observer	Notification is sent as an Email
Behavioral – State	Chat status – online/offline
Structural - Facade	Using API we can use various functionalities
Structural – Flyweight	All patients health information can be shared to doctor

### Singleton

- Ensure a class has only one instance, and provide a global point of access to it.

### Builder

- Factory for building complex objects incrementally

### Observer

- Dependents update automatically when a subject changes

### State

- Object whose behavior depends on its state

### Facade

- Facade simplifies the interface for a subsystem

### Flyweight

- Use sharing to support large numbers of fine-grained objects efficiently.

## User Stories

<b>As a</b>	<b>I want to</b>	<b>So that</b>
User	Book an appointment for consultation	I can discuss my condition with the doctor.
User	Chat with the designated person	I can able to get the help during emergency.
User	Search for a nearby pharmacy store	I'll be able to reach them without hurry.
User	Upload my documents in the website	My doctor can view health condition and other general information.
User	Search for a nearby doctor	I'll be able to reach him quickly in an emergency situation.
User	Book an appointment with a doctor	Doctor gets an email notification as a confirmation message.

## Unit Testing

### Test cases for Login and Sign Up Pages

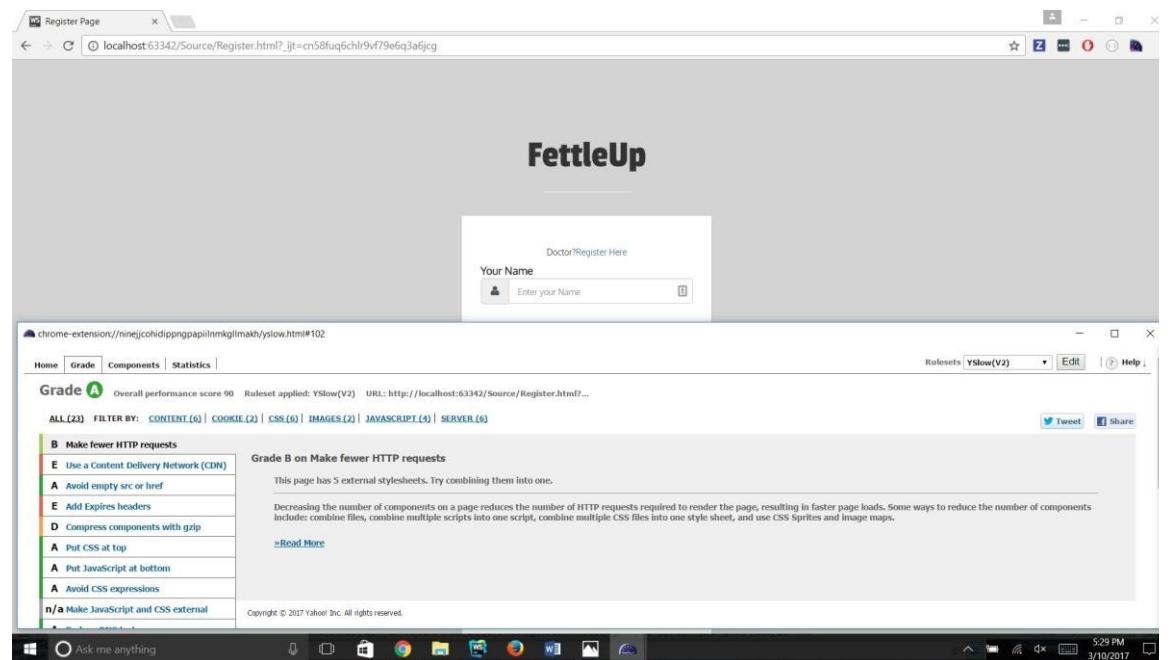
<b>Case</b>	<b>Test Case Description</b>	<b>Expected Result</b>	<b>Actual Result</b>	<b>Result</b>
Login	Invalid Username and Invalid Password	Error Message should pop up, stating that invalid credentials and Re-enter valid credentials.	Error Message should pop up, stating that invalid credentials and Re-enter valid credentials.	Pass
Login	Invalid Username and Valid Password	Error Message should pop up, stating that	Error Message should pop up, stating that	Pass
		invalid credentials and Re-enter valid credentials.	invalid credentials and Re-enter valid credentials.	
Login	Valid Username and Invalid Password	Error Message should pop up, stating that invalid credentials and Re-enter valid credentials.	Error Message should pop up, stating that invalid credentials and Re-enter valid credentials.	Pass
Login	Valid Username and Valid Password	Re-direct to Home Page.	Re-direct to Home Page.	Pass
Signup	Must satisfy email ID format	Error Message is please enter a valid email ID.	Error Message is please enter a valid email ID.	Pass

Signup	Satisfy password length to be greater than 8	Error Message is please enter a valid password.	Error Message is please enter a valid password.	Pass
Signup	Password and confirm password fields must match	Error Message is passwords are not same.	Error Message is passwords are not same.	Pass
Consultation tab in Home Page	Should navigate to doctor's information page	Page should redirect successfully	Page should redirect successfully	Pass
Booking Appointment in Consultation tab	Can book an appointment with a doctor	User can book an appointment successfully	User can book an appointment successfully	Pass
Say Hello in Home Page	Navigate to chat application page where user or doctor can chat	The speech input will successfully converts to text	The speech input will successfully converts to text	Pass
GoogleMeds in Home Page	Navigate to google maps where we can see the nearby pharmacies	Must show the location of nearby pharmacies accurately	Must show the location of nearby pharmacies accurately	Pass
Myhealth page	Must satisfy email ID format	Error Message is please enter a valid email ID.	Error Message is please enter a valid email ID.	Pass
Myhealth page	Must satisfy phonenumber ID format	Error Message is please enter a valid phone number.	Error Message is please enter a valid phone number.	Pass
Myhealth page	Satisfy age length to be limited to 2	Error Message is please enter a valid age.	Error Message is please enter a valid age.	Pass
Book an appointment page	Must sent an email notification to a doctor	Error message is doctor unable to receive confirmation	Error message is doctor unable to receive confirmation	Pass

		message	message	
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## Performance Testing

Our entire application got a grading of ‘A’ when we tested using YSlow extension. Here are some screenshots of our application,





The screenshot shows a web browser window with the following details:

- Title Bar:** Consultation
- Address Bar:** localhost:63342/FettleUp/BookAppointment1.html#
- Open Tabs:** Apps, Student Office 365, Employee-facing regi..., Welcome, Sri Sai Sar..., CS5551 - 2017 Spring, The Python Standard, sarah/chandru...
- Content Area:**
  - ## Book an Appointment.
  - Name:**
  - Phone:**
  - Email Address:**
- YSlow Extension Header:** chrome-extension://ninejjcohidppngpapiinnmkglmakh/yslow.html#1
- Performance Headers:** Home, Grade, Components, Statistics
- Grade:** Grade B (Overall performance score 81)
- Ruleset:** YSlow(V2)
- Actions:** Edit, Help
- Content:**
  - Grade D: Make fewer HTTP requests**
  - Grade F: Use a Content Delivery Network (CDN)**
  - Avoid empty src or href**
  - Add Expires headers**
  - Compress components with gzip**
  - Put CSS at top**
  - Put JavaScript at bottom**
  - Avoid CSS expressions**
- Notes:** This page has 7 external Javascript scripts. Try combining them into one.  
This page has 6 external stylesheets. Try combining them into one.
- Explanation:** Decreasing the number of components on a page reduces the number of HTTP requests required to render the page, resulting in faster page loads. Some ways to reduce the number of components include: combine files, combine multiple scripts into one script, combine multiple CSS files into one style sheet, and use CSS Sprites and image maps.
- Read More:** >Read More

The screenshot shows a web browser with two tabs open. The top tab is titled "localhost:63342/FettleUp/GoogleMeds.html" and displays a map of Westport, Connecticut, with several red markers indicating specific locations. The bottom tab is titled "chrome-extension://ninejjcohidppngpapilmkgilmakh/ySlow.html#1" and is a performance analysis tool. It shows a grade of B with an overall score of 81. The page includes navigation links like Home, Grade, Components, and Statistics. Below the grade, it says "Ruleset: YSlow(V2)". The main content area is titled "Grade F on Make fewer HTTP requests" and states: "This page has 18 external Javascript scripts. Try combining them into one." It provides several tips to reduce the number of components:

- F Make fewer HTTP requests
- F Use a Content Delivery Network (CDN)
- A Avoid empty src or href
- F Add Expires headers
- B Compress components with gzip
- A Put CSS at top
- A Put JavaScript at bottom
- A Avoid CSS expressions

At the bottom, there is a link "[Read More](#)".

The screenshot shows a web application interface. At the top, there is a navigation bar with links: HOME, CONSULTATION, SAY HELLO, MY HEALTH, GOOGLE MEDS, and LOGOUT. Below the navigation bar, the main content area has a light orange header with the word "FETTLEUP" in large, bold, dark letters. Underneath the header, there is a sub-navigation bar with links: Home, Grade, Components, Statistics, and Rulesets (with a dropdown menu). The main content area displays a performance analysis report for a page titled "Grade C". The report includes the overall performance score (70), the ruleset applied (YSlow(V2)), and the URL (https://umkc-csm.symplicity.com/students/index.php?...). It also lists the number of components found across five categories: CONTENT (6), COOKIE (2), CSS (6), IMAGES (2), and JAVASCRIPT (4) SERVER (6). A detailed section titled "Grade F on Make fewer HTTP requests" highlights that the page has 75 external Javascript scripts and 18 external stylesheets, suggesting they should be combined into one. There is also a note about compressing components with gzip. The bottom of the report includes a copyright notice (Copyright © 2017 Yahoo! Inc. All rights reserved.) and a "Read More" link.

## 5. Implementation and Deployment

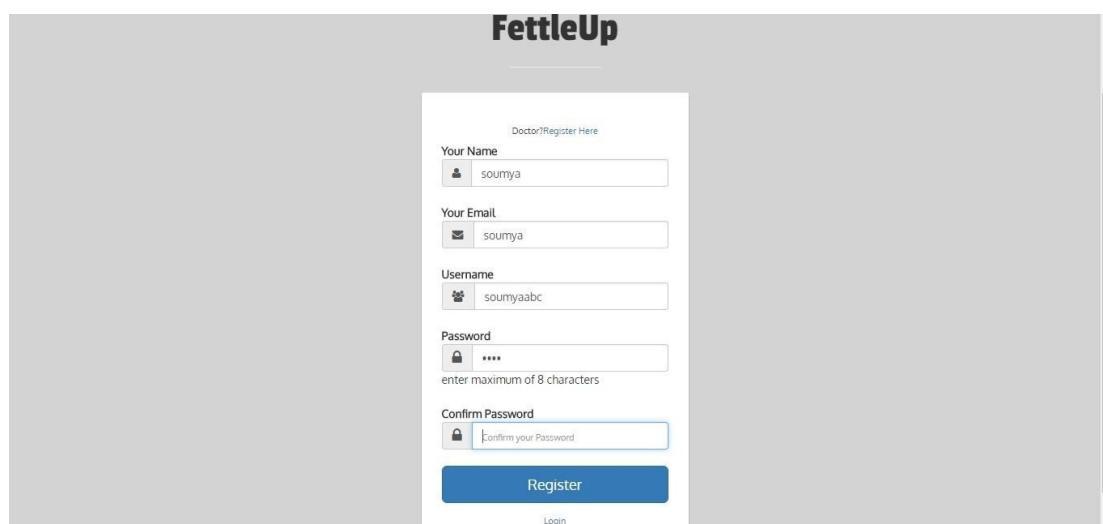
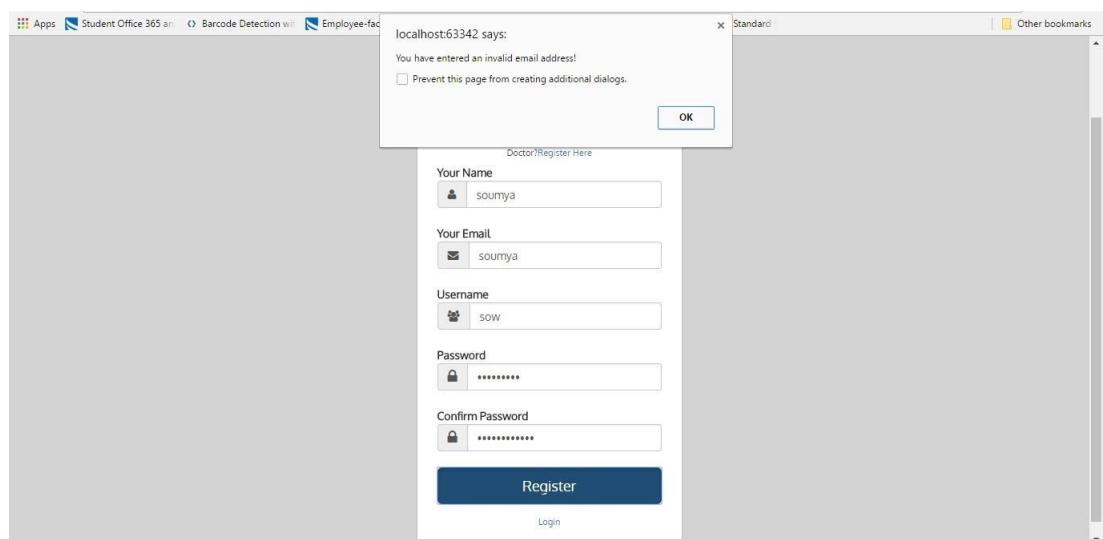
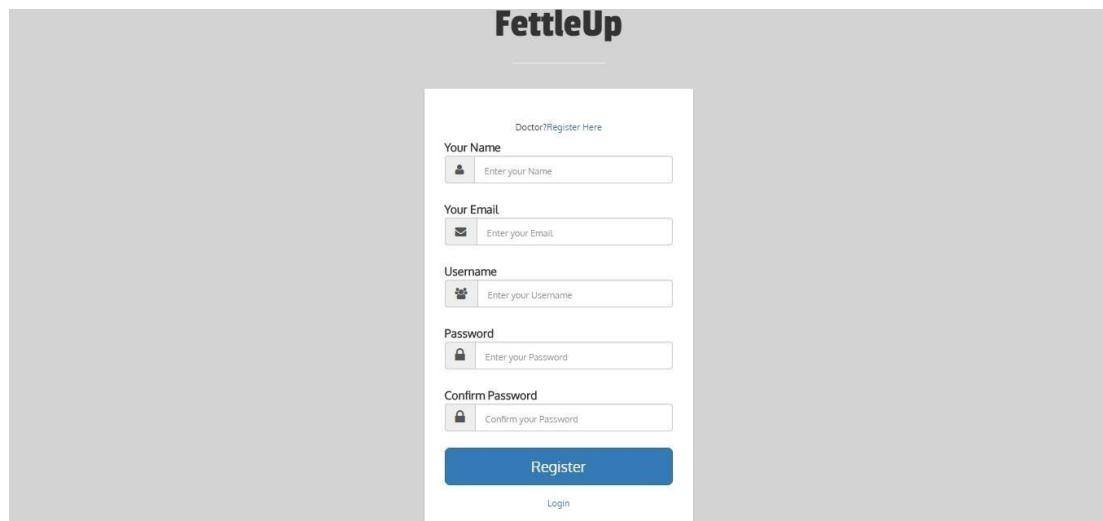
We have implemented our web application using the mentioned API's and modules.

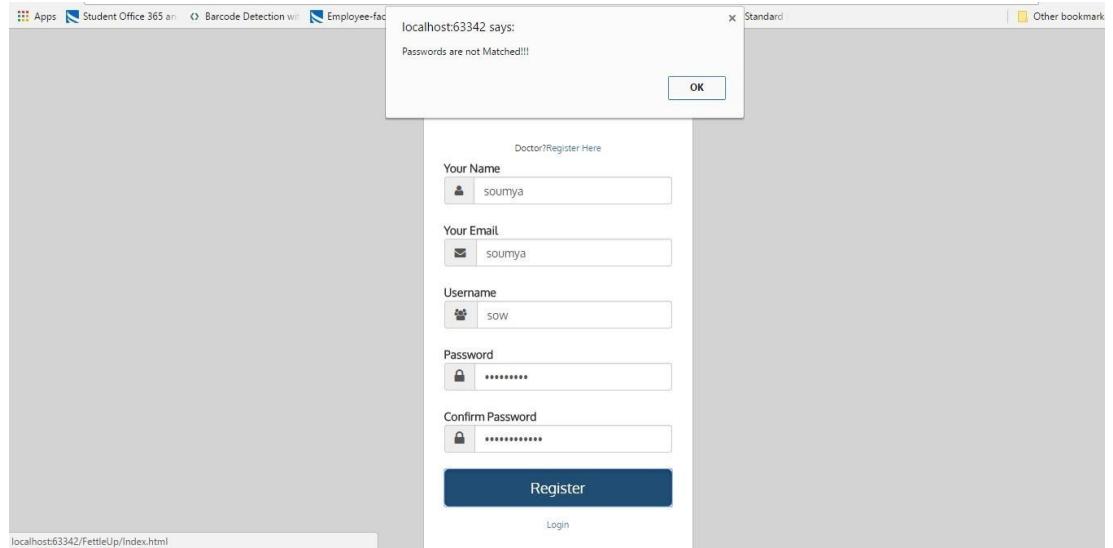
The process flow of the application can be viewed in the below screenshots,

- The Login Page design and fields for user input are given in the FettleUp application. It also consists of Facebook and Google API's for user to sign in with their respective credentials.



- The Registration Page for new users consists of different fields in which they have to enter all of them to process for the access of FettleUp services. Validation is done for email ID, password and blank fields in this module. The screenshots of Registration Page and all validations can be observed below,



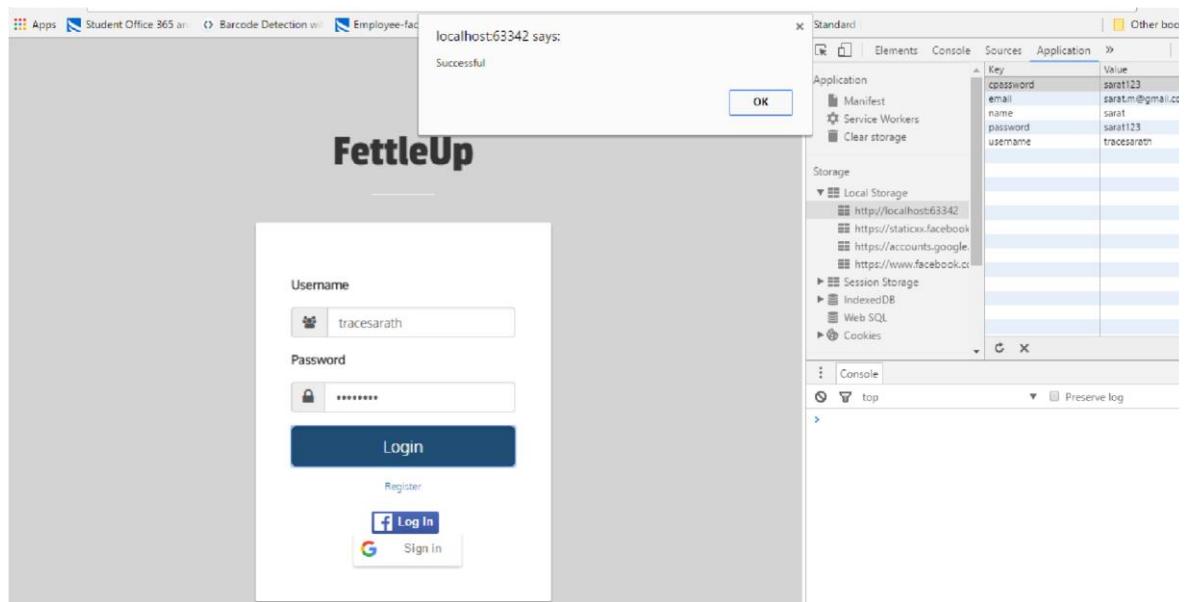
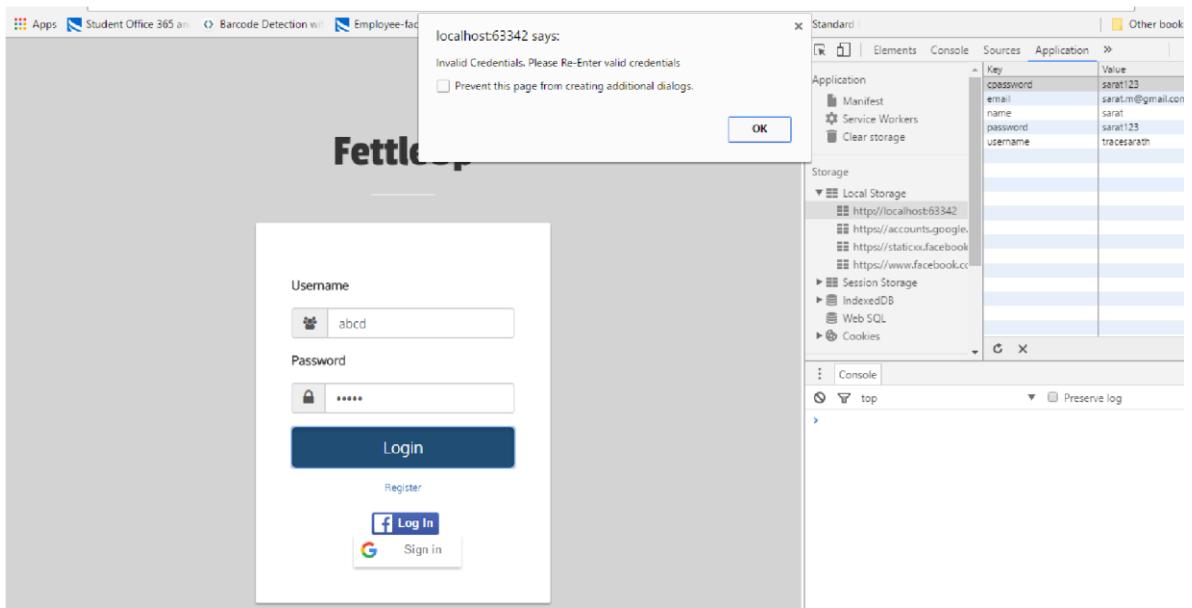


- On successful registration the details of the user are stored in the local storage of the browser, which are used for future login authentication.
- Below screenshot will give you details,

The screenshot shows a web browser window with a registration form titled "FettleUp". The form fields are identical to the previous one: Your Name (soumya), Your Email (soumya), Username (SOW), Password (\*\*\*\*\*), and Confirm Password (\*\*\*\*\*). Below the form is a blue "Register" button. At the bottom left is a "Login" link. To the right of the browser window is the Chrome DevTools Storage panel. Under the "Local Storage" section for the domain "http://localhost:63342", there are five entries:

Key	Value
password	sarath123
email	sarat.m@gmail.com
name	sarat
password	sarath123
username	tracesarath

Now, user will give the registered details for accessing the FettleUp application system. Below are the screenshots for validation of Login Page and success pop up window,



Facebook and Google API's screenshots are given below,

The image displays two side-by-side browser windows illustrating the FettleUp application's integration with external social networks.

**Left Window (Facebook Login):** This window shows a Facebook login dialog box overlaid on a FettleUp interface. The dialog box has fields for "Email or Phone" (containing "tracesarath@gmail.com") and "Password". It includes a "Log In" button, a "Forgot account?" link, and a "Create New Account" button. Below the dialog, there are "Facebook" and "Google" social login buttons.

**Right Window (Google Accounts Sign-in):** This window shows a Google Accounts sign-in dialog box. It features a large circular profile picture with a letter "S", the name "sarath chandra varma m", and the email address "tracesarath@gmail.com". It has fields for "Enter your Password" (containing "\*\*\*\*\*") and a "Sign in" button. Below the password field are links for "Stay signed in" and "Forgot password?". At the bottom, there is a link "Sign in with a different account".

On successful user login it redirects to main home page of FettleUp where user can be able to access all resources of the application,



## WE ARE ON A GOAL TO HELP HUMANS LIVE HEALTHIER

EVERY DAY PEOPLE AROUND THE WORLD STRIVE FOR SUPERIOR HEALTHCARE. WE WANT TO CHANGE THAT.

This starts with helping them find the best doctors and culminates into a single intelligent healthcare account for the people around the world that stores all their health data so they can make better healthcare decisions.

Use your health, even to the point of wearing it out. That is what it is for. Spend all you have before you die; do not outlive yourself.

[MORE INFO](#)

If the user clicks on the consultation tab he will be redirected to the page where he can a list of doctors and make an appointment option.

Dr. Antony	BOOK APPOINTMENT
MBBS,MD & Psychiatrist   Neuro Psychiatrist Research Psychiatric Centre Kansas City	100 \$ MON-FRI
Dr. Richards	BOOK APPOINTMENT
MBBS,MD - Obstetrics & Gynaecology   General Physician Saint Luke's Hospital Kansas City	300 \$ MON-WED
Dr. Stephanie	BOOK APPOINTMENT
LAW,LLB, M.Phil Oxford, UK	50 \$ MON-FRI

User can check the doctor details and once he was satisfied with the doctor he can make an appointment with him by clicking Book Appointment option.

**Book an Appointment.**

Name:

Phone:

Email Address:

Date of Birth:  DD/MM/YYYY

Appointment Date:  DD/MM/YYYY

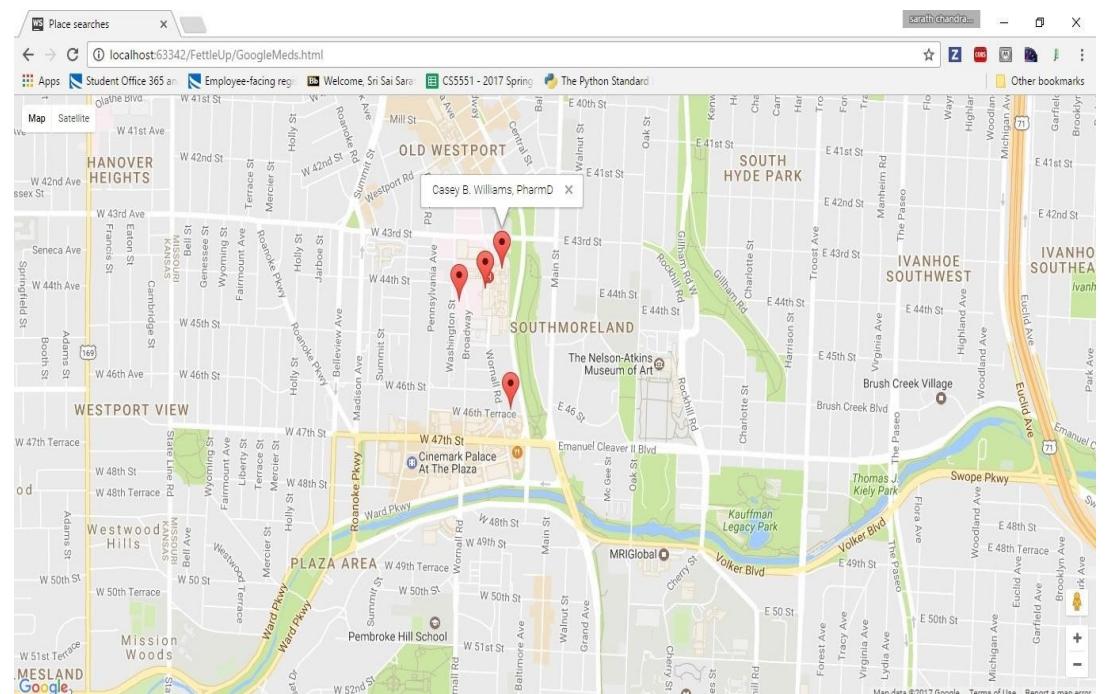
Booked with us Before?

Yes  
 No

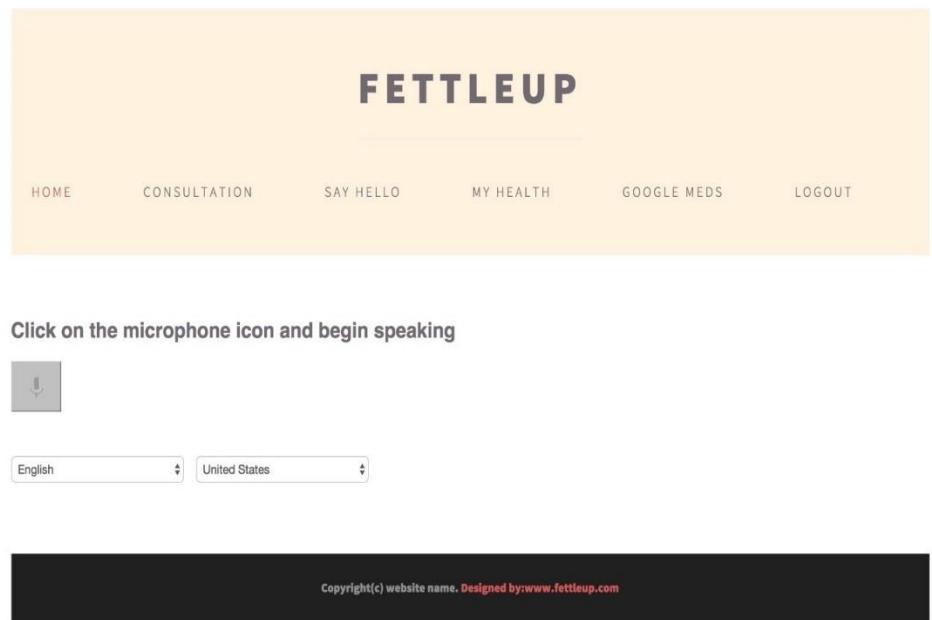
Message:

**CONFIRM**

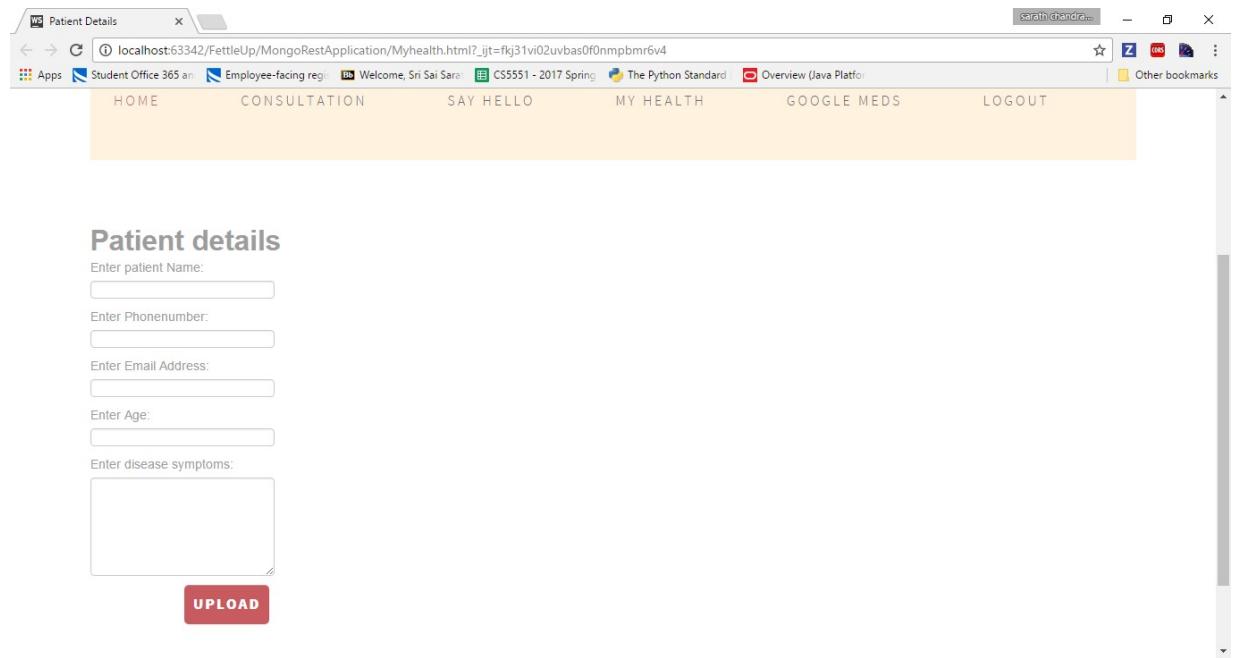
If the user clicks on the GoogleMed tab in the home page he will be redirected to the google maps where he can check for the nearby pharmacies.



If the user clicks on Say Hello tab in the home page he will be redirected to the page where the user can chat.



The below screenshot depicts the myhealth page for the patient where he can enter the details of his health condition.



Patient Details

localhost:63342/FettleUp/MongoRestApplication/Myhealth.html

HOME CONSULTATION SAY HELLO MY HEALTH GOOGLE MEDS LOGOUT

Enter patient Name:  
sarath

Enter Phononenumber:  
7654325433

Enter Email Address:  
sarat.m@gmail.com

Enter Age:  
23

Enter disease symptoms:  
Test

**UPLOAD**

Patient Details

localhost:63342/FettleUp/MongoRestApplication/Myhealth.html

HOME CONSULTATION SAY HELLO MY HEALTH GOOGLE MEDS LOGOUT

Enter patient Name:  
varma

Enter Phononenumber:  
7856543211

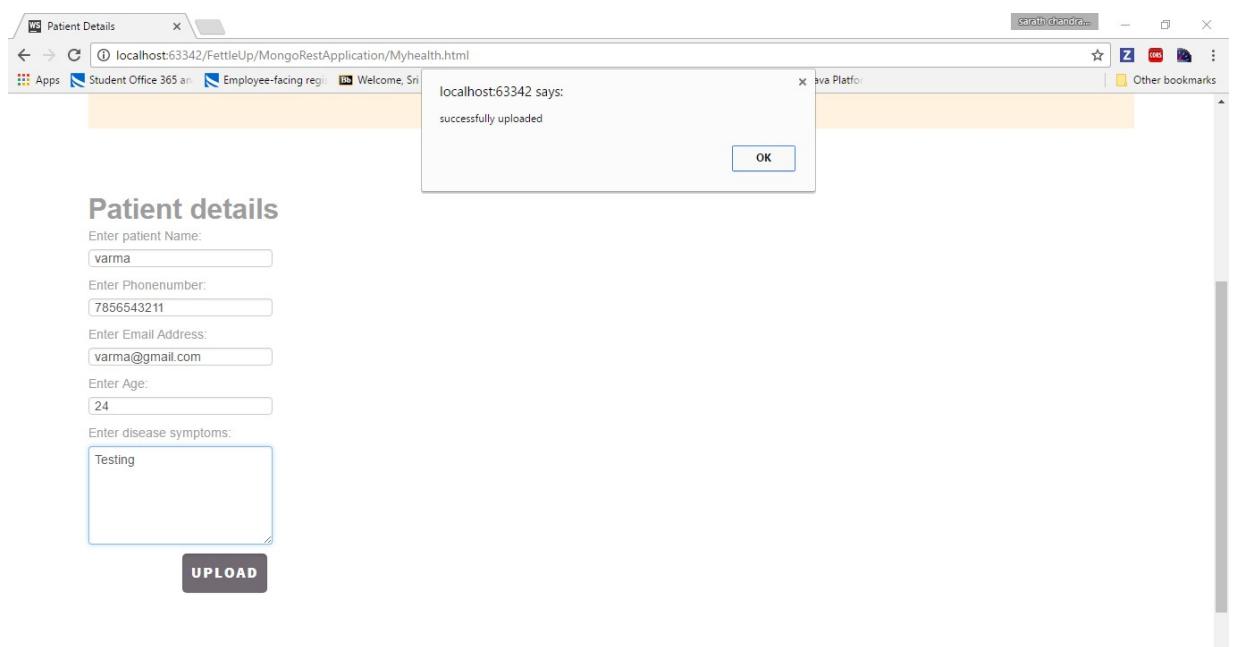
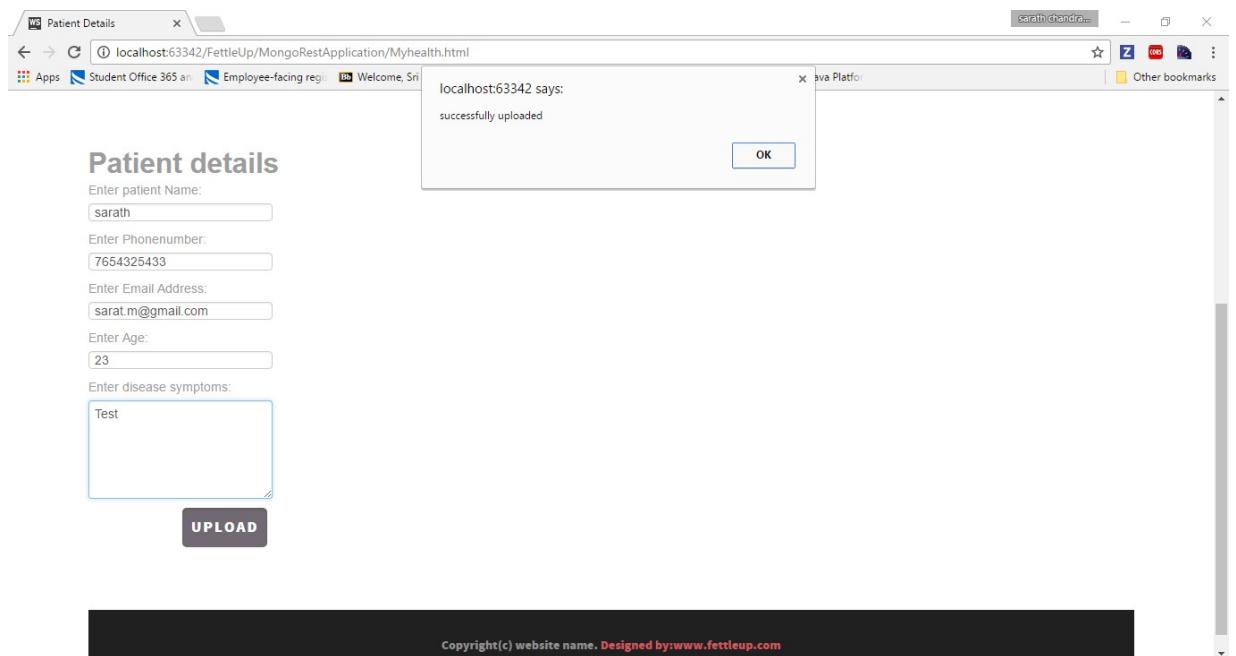
Enter Email Address:  
varma@gmail.com

Enter Age:  
24

Enter disease symptoms:  
Testing

**UPLOAD**

If the patient click on the upload button then he will be redirected to home page and the details are uploaded in the db.



When the user clicks on the upload button the details are stored in the mongodb.

The screenshot shows the mLab MongoDB interface for the 'ase' collection. The left panel displays the document structure and data for two entries:

```

{
  "_id": {
    "$oid": "58ec078cc79d0414686f6240"
  },
  "fname": "smith",
  "pno": "7654325433",
  "email": "sarat.m@gmail.com",
}

{
  "_id": {
    "$oid": "58ec07c8c79d0414686f6241"
  },
  "fname": "varma",
  "pno": "7856543211",
  "email": "Varma@gmail.com",
}

```

The right panel contains a summary of the collection's documents.

The below screenshot shows the home page for the doctor where he there are tabs like patient details, say hello.

The screenshot shows the doctor's homepage with the following layout:

- Header:** FETTLEUP
- Navigation:** HOME, PATIENT DETAILS, SAY HELLO, LOGOUT
- Section 1:** WE ARE ON A GOAL TO HELP HUMANS LIVE HEALTHIER
- Section 2:** EVERY DAY PEOPLE AROUND THE WORLD STRIVE FOR SUPERIOR HEALTHCARE. WE WANT TO CHANGE THAT.
- Text:** This starts with helping them find the best doctors and culminates into a single intelligent healthcare account for the people around the world that stores all their health data so they can make better healthcare decisions.
- Text:** Use your health, even to the point of wearing it out. That is what it is for. Spend all you have before you die; do not outlive yourself.
- Button:** MORE INFO

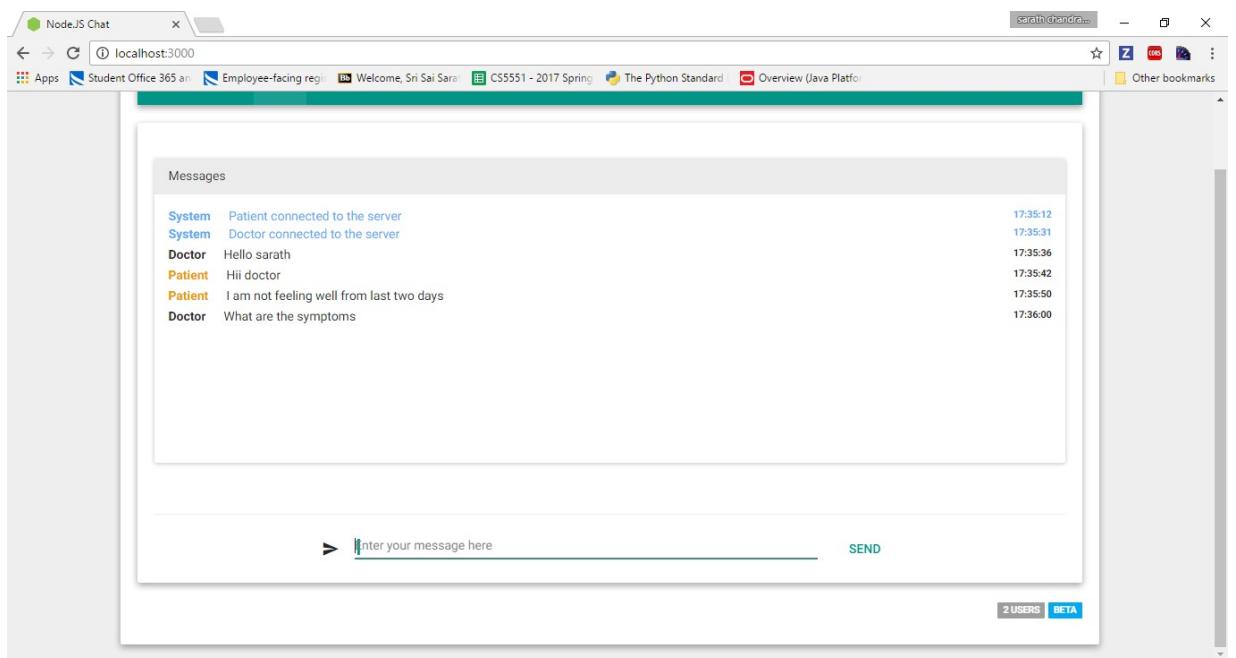
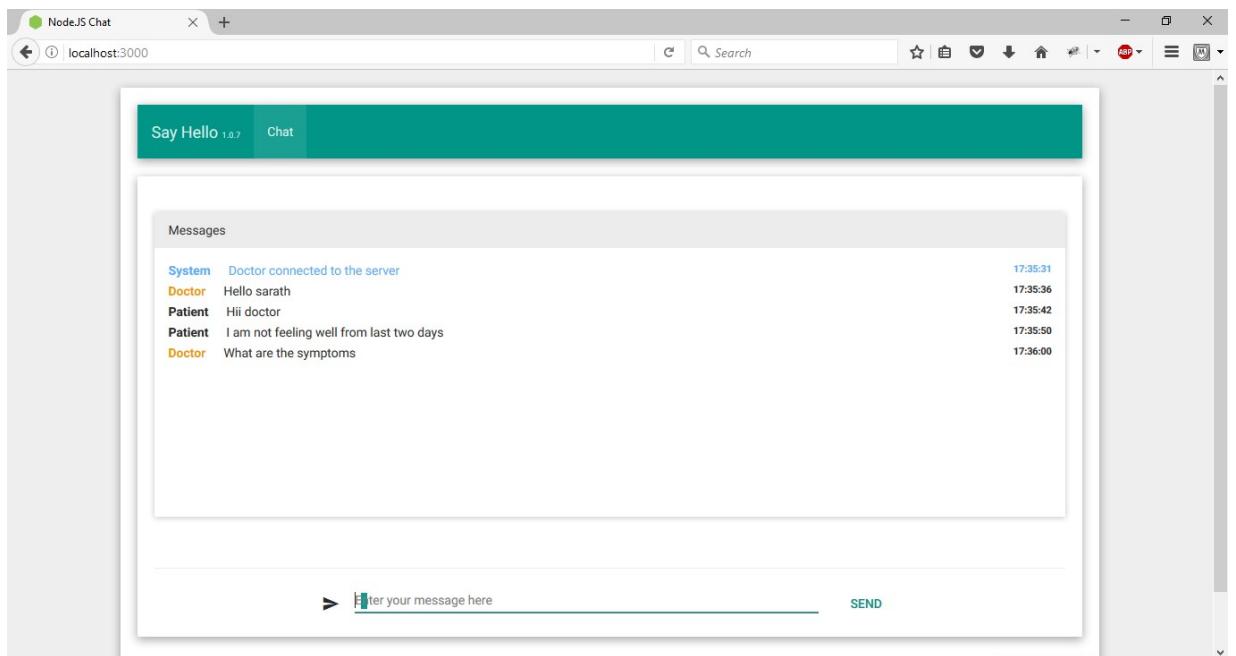
When the user clicks on the patient details tab he can retrieve the patient health condition.

The screenshot shows a web browser window titled "Doctor Homepage". The address bar indicates the URL is "localhost:63342/FettleUp/MongoRestApplication/doctor1.html". The main content area has a light beige background with the word "FETTLEUP" in large, bold, dark letters. Below this are four navigation links: "HOME", "PATIENT DETAILS", "SAY HELLO", and "LOGOUT". Underneath these links is a table with the following data:

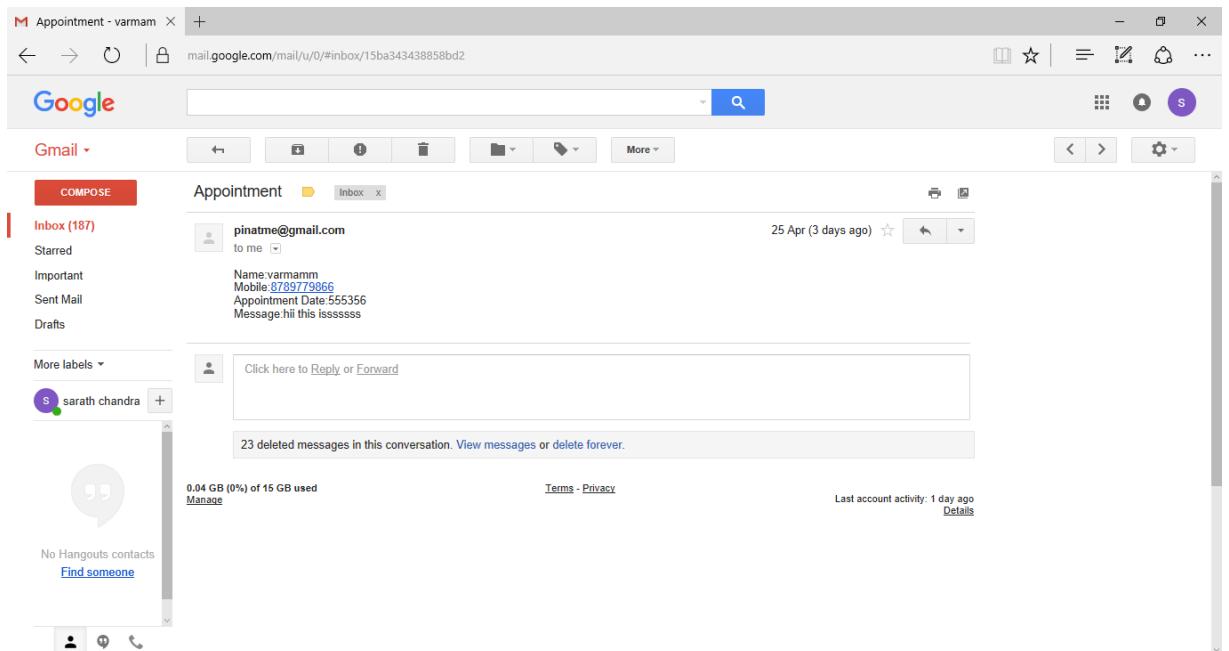
S.No	PatientName	Phonenumber	Email	Age	Disease Symptoms	ID
0	sarath	7654325433	sarat.m@gmail.com	23	Test	58ec078cc79d0414686f6240
1	varma	7856543211	varma@gmail.com	24	Testing	58ec07c8c79d0414686f6241

When the doctor and patient clicks on the say hello tab in their respective homepage tabs they can able to chat. This can be done by running the node.js server.

The screenshot shows a web browser window titled "Node.js Chat". The address bar indicates the URL is "localhost:3000". The main content area has a green header bar with two tabs: "Say Hello 1.0.7" and "Chat". The "Say Hello" tab is currently active. Below the tabs is a section titled "Messages" which contains a large empty white area. At the bottom of this section is a thin horizontal line with a small user icon and the text "Choose an username". To the right of this text input field is a blue "CONNECT" button. The overall interface is minimalist and modern.



When the patient book an appointment with a doctor then email notification is sent to doctor. This can be done by running the node.js server.



## Github Wiki Page

The github wiki page URL for the screenshots and the process flow is updated in the following link

- <https://github.com/SaratM34/ASE-Final-Project/wiki/Project-Increment-4>

# **6. Project Management**

## **Implementation Status Report**

### **Technologies Used**

We have collaborated various technologies in the development of the project and in building the application. Some of them are,

- HTML5
- CSS3
- Angular JS
- JavaScript
- MongoDB
- Node.js

### **Work Completed**

The completed tasks in this increment are,

- Design and base layout of the tabs in the Home Page,
- Implemented MongoDB to store and retrieve details of the patient,
- Integrated chat application between patient and doctor,
- Integrated Email notification after booking an appointment with a doctor
- Architecture and flow of the application is defined,
- API's are successfully integrated in the application.

### **Responsibility and Time Taken for Increment 4**

- Implemented Email notification: Sarat 1/2 hr, Saketh 1/2 hr

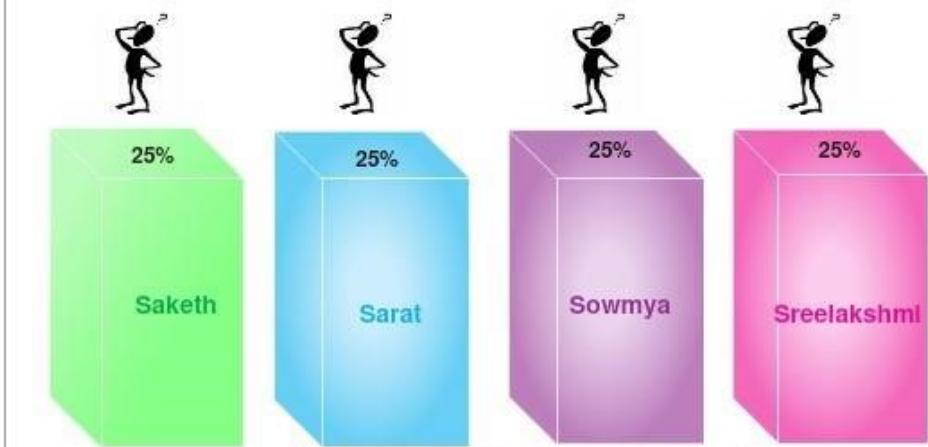
- Implemented Speech to Text API: Sowmya 1/2 hr, Sreelakshmi ½ hr
- Wireframes: Saketh 1/2 hr, Sarat 1/2 hr.
- Integrating Pages: Saketh 1/2 hr, Sarat 1/2 hr.
- User Stories: Sree Lakshmi 1 hr.
- Unit Test cases: Sowmya 1hr.
- Project Increment Report: Sowmya 1/2 hr, Sreelakshmi 1/2 hr, Sarat 1/2 hr, Saketh 1/2 hr.

## Contributors

- Saketh Garuda- **25%**
- Mudunuri Sri Sai Sarat Chandra Varma- **25%**
- Yalamanchili Sowmya- **25%**
- Nandanamudi Sreelakshmi- **25%**

Below is the bar graph that represents contribution of each person in the team towards project,

## BAR CHART



## 7. Bibliography

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9. [www.mlab.com](http://www.mlab.com)
10. <https://cloud.google.com/speech/>