

**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE

Software Requirements Specification

for

Smoke-Free Website

Prepared by WhiteNBlack

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1. Introduction

1.1. Purpose

Product: Smoke-Free Application (Demo version)

This SRS describes the entirety of the product, Smoke-Free website application.

The scope of this SRS includes covering the product's target audience, purpose, functions and non functional requirements, system environment, and its interfaces.

1.2. Documents Conventions

1.2.1. Times, font 16, for headings

1.2.2. Time, font 13, for sub-headings

1.2.3. Arial, font 11, for normal text

1.3. Intended Audience

This SRS is intended for developers and tutor.

The rest of this document will contain an overall description of the product and then detailed description of its technical requirement such as functional requirement and system environment, and its non-technical requirement such as the non-functional requirements, security, and safety.

1.4. Product Scope

We aim to promote a healthier community support system by providing a platform with resources to aid smokers in their efforts to quit smoking. Certified doctors will post articles about smoking and its risks, while smokers will be able to comment on these articles and interact with one another. Similarly, smokers will also be able to share their own recovery stories on their own posts.

Non-Smokers can also gain better knowledge about the effects of smoking to share with their community.

By being a community for smokers to quit smoking, we strive for reducing the amount of active smokers and thereby alleviating the cases of lung cancer in Singapore.

1.5. UI Mockups

Refer to Ui Mockups folder

2. Overall Description

2.1. Product Perspective

This product is a new, self-contained website that aims to provide accurate and related information about smoking and lung cancer. Microsoft SQL Server will be used as a database.

2.2. Product Functions

The website must be able to host and display smoking related articles posted by doctors.

Articles need to be viewable and commentable by all registered users.

The website must also be able to host and display smoking related stories posted by smokers and non-smokers.

Stories need to be viewable and commentable by all registered users.

Proper data storage and retrieval by database must be maintained.

Secured Signup and Login of the user must be maintained.

2.2.1. Smokers

- Able to post stories
- Able to read stories
- Able to login and logout

- Able to read article
- Able to comment
- Able to view quit centres

2.2.2. Non smokers

- Able to post stories
- Able to read stories
- Able to login and logout
- Able to read article
- Able to comment
- Able to view quit centres

2.2.3. Doctor

- Able to post articles
- Able to read articles
- Able to login and logout
- Able to read stories
- Able to comment
- Able to view quit centres

2.2.4. Admin

- Able to read stories
- Able to read articles
- Able to approve/reject newly registered doctor
- Able to approve/reject newly posted article

2.2.5. Guest

- Able to sign up as smoker/non-smoker, or doctor
- Able to view quit centres

2.3. User Classes and Characteristics

- **Admin:**
Daily user. With a high privilege level. Important user.
- **Doctor:**
Infrequent user. With normal privilege level. Important user.
- **Smoker:**
Daily user. With normal privilege level. Important user.
- **Non-Smoker:**
Infrequent user. With normal privilege level. Less important user.
- **Guest:**
Impromptu user. With lowest privilege level. Less important user.

2.4. Operating Environment

The product will operate on common internet browsers, Edge, Firefox, Chrome.
Operational on widely used computer operating systems, Windows, Linux, macOS.
Operational on widely used mobile phone, Android, iOS, Windows

2.5. Design and Implementation Constraints

No regulatory policies documented.
Only english language is used for the product.
Constraint from using MVC design architecture.
Developers are responsible for continuous maintenance and updates to the product.

2.6. Assumptions and Dependencies

This product depend on the following external software component:

Nugget packages:

- Microsoft SQL Server
- Antlr v3.5.02
- bootstrap v4.4.1
- EntityFramework v6.1.3
- jQuery v3.4.1
- jQuery.Validation v1.17.0
- Microsoft.AspNet.Identity.Core v2.2.3
- Microsoft.AspNet.Identity.EntityFramework v2.2.3
- Microsoft.AspNet.Mvc v5.2.7
- Microsoft.AspNet.Razor v3.2.7
- Microsoft.AspNet.Optimization v1.1.3
- Microsoft.AspNet.WebPages v3.2.7
- Microsoft.jQuery.Unobtrusive.Validation v3.2.11
- Microsoft.Web.Infrastructure v1.0.0
- Modernizer v2.8.3
- Newtonsoft.Json v12.0.3
- PagedList v1.17.0
- PagedList.Mvc v4.5.0
- popper.js v1.16.0
- WebGrease v1.16.0

API:

- [Leaflet](#) v1.7.1
- [Quit Centres GeoJson](#)

Plugins

- [Bootstrap tagsinput](#) v2.3.2
- [Leaflet-ajax](#) v2.1.0
- [Summernote](#) v0.8.18
- [fullcalendar](#) v.5.3.2

Any updates to the above dependencies can affect the behaviour of the product.

Email notification is dependent on gmail SMTP server.

This product could be affected by outdated or lesser used browsers such as Internet explorer.

3. System Requirements

3.1. External Interface Requirements

3.1.1. User Interfaces

- **Common Navigation Layout** (at the top of all pages)

SMOKE FREE HOME ARTICLES STORIES QUIT CENTRES ABOUT US PROFILE LOGOUT

- **Common trademark** (at the bottom of all pages)

© 2020 - Smoke Free

- **Default fonts** (for all wordings)

LOREM IPSUM DOLOR SIT AMET

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

3.1.2. Hardware Interfaces

Smoke-free website is accessible with any computer/laptop/mobile phone that has a web browser and internet access.

3.1.3. Software Interfaces

- **Microsoft Sql Database**
 - Collects and stores user's data in organized manner
- **Quit Centre API from data.gov.sg**
 - Information of Quit Centres around singapore
- **Leaflet Map API**
 - Interactive Map for Quit Centre feature
 - Extended with Leaflet-ajax Plugin to display quit centres on map
 - Extended with HTML5 Geolocation API to display current user's location on map

3.1.4. Communications Interfaces

- **SMTP Client**
 - SMTPClient is used for sending simple email notification to user
 - Any type of email address for the receiver will work

3.2. Functional Requirements

3.2.1. The Website must have a home page.

- 3.2.1.1. The homepage must have a title and summary of our website.
- 3.2.1.2. The homepage must have links to general information about our website.
- 3.2.1.3. The homepage must let users sign in or create an account to use our website.

3.2.2. Before logging in, the homepage must have a navigation bar at the top

- 3.2.2.1. The navigation bar in the homepage will contain 4 tabs: Home, Quit Centres, About Us and Sign In.

3.2.3. Users must be able to select Quit Centres Page.

- 3.2.3.1. Users must be able to view the map with Quit Centres available pin point on it.
- 3.2.3.2. Users must be able click on a specific quit centre on the map.
 - 3.2.3.2.1. Users must be able to view the information of the quit centre on the map.
- 3.2.3.3. Users must be able to click on Find Nearest Button.
 - 3.2.3.3.1. The map must be able to show the nearest quit centres pin point on the map.

3.2.4. The Users must be able to view information About us.

- 3.2.4.1. The User must be able to read about our mission.
- 3.2.4.2. The User must be able to see our team information.

3.2.5. The Users must be able to Sign in using their username and password

- 3.2.5.1.** Users must create an account as a member or doctor to sign in by clicking the Sign Up button.
 - 3.2.5.1.1.** Users who clicked on sign up as member are prompted to enter Username, Password, Confirm Password, Name, Email Address, Date Of Birth, Gender, if they are a smoker, and upload their profile photo.
 - 3.2.5.1.2.** Users who clicked on doctor are prompted to enter Username, Password, Confirm Password, Name, Email Address, Date Of Birth, Gender, Work Location, Contact Number, Doctor ID and upload their profile photo.
 - 3.2.5.1.2.1.** Upon doctor account creation, the admin has to verify the doctor's information before the doctor account can be used.
- 3.2.6. After the user signs in, there will be a navigation bar at the top with additional tabs: Stories, Articles and Profile.**
 - 3.2.6.1.** If it is a doctor account, they will be directed to the Article Page.
 - 3.2.6.2.** If it is a member account, they will be directed to the Stories Page.
 - 3.2.6.3.** If it is an admin account, they will be directed to the Manage Page.
- 3.2.7. Both members and doctors must be able to click on the Articles Page.**
 - 3.2.7.1.** This page must list out articles related to smoking and how it affects a person's health posted by Doctors.
 - 3.2.7.1.1.** Users must be able to search the articles by name or tags.
 - 3.2.7.1.1.1.** If the user searches by name, the user must be able to see articles that have a title containing their search input.
 - 3.2.7.1.1.2.** If the user searched by tags, the user must be able to see articles that have at least one of the searched tags.
 - 3.2.7.1.2.** Users must be able to view articles related to smoking and lungs posted by the Doctor.
 - 3.2.7.1.3.** Users must be able to comment on articles.
- 3.2.8. Both members and doctors must be able to click on the Stories Page.**
 - 3.2.8.1.** This page must list out stories about quit smoking journeys posted by other members.
 - 3.2.8.1.1.** Users must be able to search the stories by name or tags.
 - 3.2.8.1.1.1.** If the user searches by name, the user must be able to see stories that have a title containing their search input.
 - 3.2.8.1.1.2.** If the user searched by tags, the user must be able to see stories that have at least one of the searched tags.
 - 3.2.8.1.2.** Users must be able to click on a particular story to read it.
 - 3.2.8.1.3.** Users must be able to comment on the story.
 - 3.2.8.1.4.** Members must be able to create a new story by selecting the Create Story button.
 - 3.2.8.1.4.1.** For each new story, members must fill in title, content, and tags for their story.
 - 3.2.8.1.4.2.** Members must be able to share a story by selecting on the Create button.
 - 3.2.8.1.4.3.** Members must be able to cancel creating a new story by selecting on the Cancel button.
- 3.2.9. Both members and doctors must be able to click on the Profile Page tab.**
 - 3.2.9.1.** If a User is a member and smoker, a member must be able to view his/her Profile, a list of their own stories, Track My Progress Button, Edit Profile button , and Create Story button.
 - 3.2.9.1.1.** Members must click on the Track My Progress button to view their quit smoking progress.

- 3.2.9.1.1.1. If members first click on this button, they must be able to enter the number of cigarettes they smoked daily and the amount of money spent per pack.
 - 3.2.9.1.1.2. Members must be able to start their tracking progress by clicking on the date on the calendar shown.
 - 3.2.9.1.1.3. Members must be able to check in to the other dates they had missed checking in.
 - 3.2.9.1.1.4. Members must be able to view the number of days streak, number of days smoke-free, number of sticks of cigarettes avoided and amount of money saved.
 - 3.2.9.1.2. Members must be able to edit their own profile by selecting the Edit Profile button.
 - 3.2.9.1.2.1. Members must be able to edit their profile, by editing the profile form.
 - 3.2.9.1.2.2. Members must be able to click on the Edit button to update their edited profile.
 - 3.2.9.1.3. Members must be able to view the comments on their own stories.
 - 3.2.9.1.4. Members must be able to create a new story by selecting the Create Story button.
 - 3.2.9.1.4.1. For each new story, members must fill in the title, content, and tags for their story.
 - 3.2.9.1.4.2. Members must be able to post a story by selecting on the Create button.
 - 3.2.9.1.4.3. Members must be able to cancel creating a new article by selecting on the Cancel button.
 - 3.2.9.2. If User is a doctor, doctor must be able to view his/her Profile, a list of their own articles with article status, Edit Profile button, Create Article button, Approved, Pending and Rejected Articles button.
 - 3.2.9.2.1. Doctors must be able to edit their own profile by selecting the Edit Profile button.
 - 3.2.9.2.2. Doctors must be able to view the comments on their own articles.
 - 3.2.9.2.3. Doctors must be able to create a new article by selecting the Create Article button.
 - 3.2.9.2.3.1. For each new article, doctors must fill in title, content, tags and insert article picture for their article.
 - 3.2.9.2.3.2. Doctors must be able to post the article by selecting on the Create button.
 - 3.2.9.2.3.3. Doctors must be able to cancel creating a new article by selecting on the Cancel button.
 - 3.2.9.2.4. Doctors must be able to view pending articles by selecting the Pending Article button.
 - 3.2.9.2.5. Doctors must be able to view rejected articles by selecting the Rejected Article button.
 - 3.2.9.2.5.1. For each rejected article, doctors must be able to delete the rejected article.
 - 3.2.9.3. Users must be able to log out by selecting Log Out.
 - 3.2.10. **Administrators must be able to login into the Admin page by appending 'Admin' at the end of the URL.**
 - 3.2.10.1. Administrators must be able to click on the Home tab.
 - 3.2.10.2. Administrators must be able to click on the Manage tab to manage doctor accounts and articles.

3.2.10.2.1. Administrators must be able to view pending articles by selecting the Pending Article Button.

3.2.10.2.2. Administrators must be able to view the individual pending articles by selecting on the specific article.

3.2.10.2.2.1. Administrators must be able to approve the article by clicking on the Approve button.

3.2.10.2.2.2. Administrators must be able to reject the article by clicking on the Reject Button.

3.2.10.2.2.2.1. Administrators must fill in the rejection email form and the system will send an email to the doctor to notify them.

3.2.10.3. Administrators must be able to view approved articles.

3.2.10.4. Administrators must be able view pending doctors.

3.2.10.4.1. Administrators must be able to click on the individual doctor.

3.2.10.4.1.1. Administrators must be able to approve the doctor account by clicking on the approve button.

3.2.10.4.1.2. Admin must be able to reject the doctor account by clicking on the reject button.

3.2.10.4.1.2.1. Admin must fill in the rejection email form and the system will send an email to the doctor to notify them.

3.2.10.5. Administrators must be able to view approved doctors.

3.2.11. Administrators must be able to click on the Broadcast button to create a broadcast message to the users.

3.2.11.1. Admin must be able to see the broadcast message form.

3.2.11.1.1. Admin need to enter the Title, Content and expiry date of the broadcast message.

3.2.11.2. Admin must be able to click on the Submit Form button to broadcast a message.

3.2.11.3. Broadcast messages must be displayed on the website for users.

3.3. Non-Functional Requirements

3.3.1. Usability Requirements

- The functionality of the user interface(UI) are in simple headings that makes it clear to users immediately after they have seen it.
- The appearance with simple colour and standardisation, it is easier for users to read.
- The Buttons Available are also big enough and make it user-friendly for people with eyesight problems.
- No fanciful colours, users who are colourblind can still use our website comfortably.
- There is a search bar for users to search for an article/story easily by typing the keywords of a title or tags.
- Smoke free progress provides sufficient information for members who need to know about their progress and it is easy to use.

3.3.2. Performance Requirements

- When a story or article is created, the website must be updated within 10 seconds.

3.3.3. Security Requirements

- The system requires users to create an account. This is to safeguard the personal information of the members who are using the website.
- There is an Admin who can approve articles to be published. This is to prevent misleading information being spread to the community.

3.3.4. Data Integrity Requirements

- We're using SQL Database to maintain accuracy and consistency in our data.
- It is most commonly used, recognised by developers and highly recommended.

3.3.5. Reliability Requirements

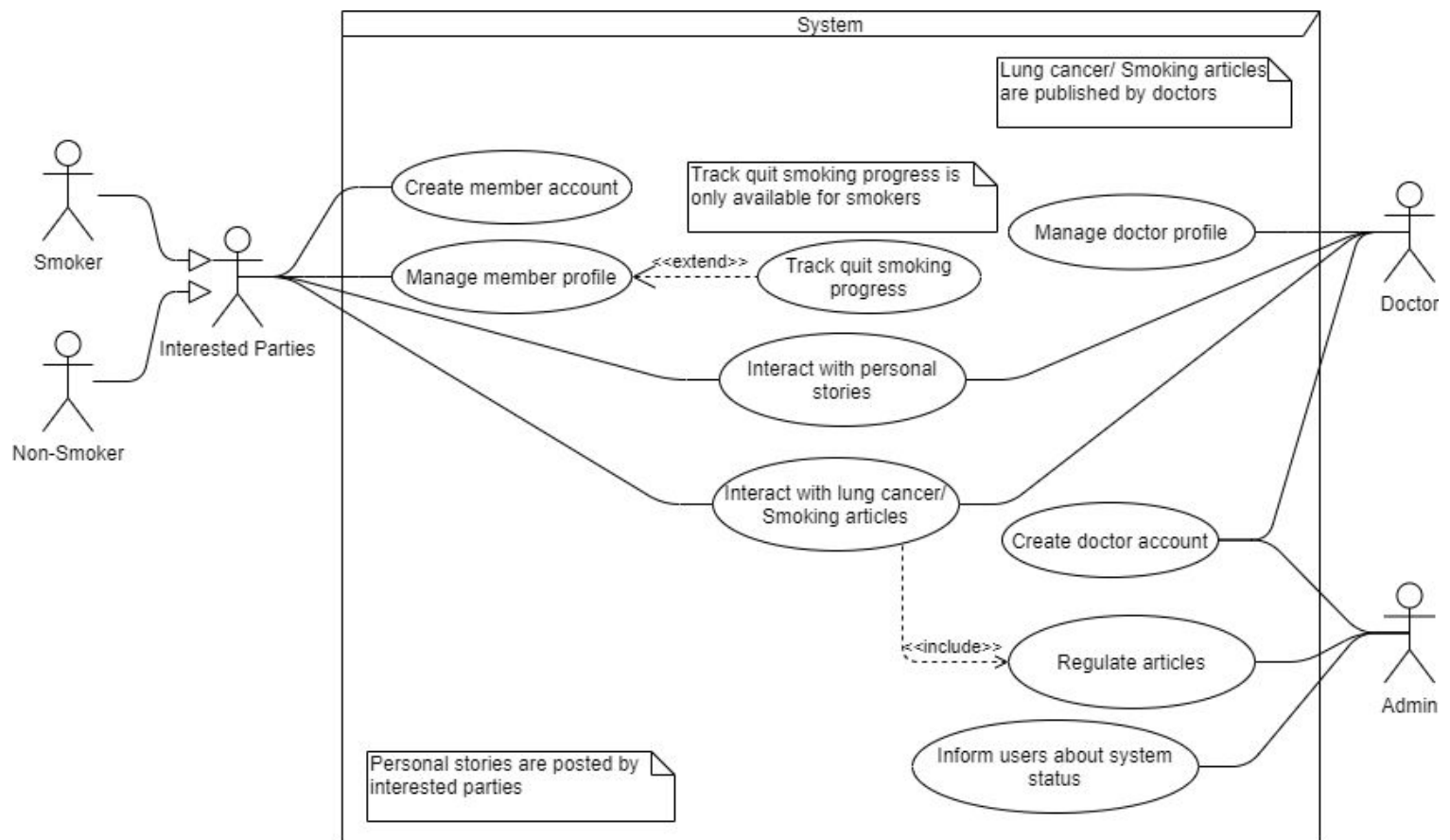
- When the page is refreshed, it will load within 5 seconds.
- Every Doctor will have their registered Doctor ID filled in during their sign up. This is to ensure the articles are posted by real doctors.

4. Data Dictionary

Term	Description
Members	A person who is an interested party.
Doctors	A person who is a certified doctor.
Doctor ID	A unique identification number to identify that the doctor is registered and certified.
Sign up (As Member)	When a User is interested in quitting smoking or wanting to share their own stories, signing up an account in the System allows the User to view stories and articles related to quitting smoking. At the same time, users will also have their own profile which keeps track of their quitting progress.
Sign up (As Doctor)	When a User who is a doctor wants to share their knowledge about the disadvantage of smoking, signing up an account in the System will allow them to write articles.
Article	An essay written by a Doctor. It could cover topics such as lifestyle tips, events coverage, lung cancer-related books, research, inspirational stories. Each article would have a title, the author, its contents (may include images and video), and the date published.
Stories	A story written by an Interested Party. It covers topics such as an individual's lifestyle towards healthy living, their quitting journey, and how to overcome their urge to smoke. Each story will have a title, author, contents and date published.
Comments	Users can ask questions or give comments to article or story they are interested in.
Author	A person or organisation who wrote an article. It will feature their name, a short description of themselves (EG surgeon at XYZ Hospital), and an image if available
Date published	The date that the article was released on the website
Tags	Each article and story have tags attached to it. This will make it easier for users to search for what they want.
Quit Centres	Provide location of Quit Centres available for members who wants to quit smoking.
Smoke Free Progress	Members can track their quit smoking progress through this function provided by the website.
Smoke-Free	Shows the total number of days members did not smoke.
Current Streak	Shows number of consecutive days members checked in.

5. Requirement Analysis

5.1. Use Case Diagram



5.2. Use Case Description

Refer to CZ2006 Use Case Description

5.3. Class Diagram

Refer to CZ2006 Class Diagram

5.4. Sequence Diagram

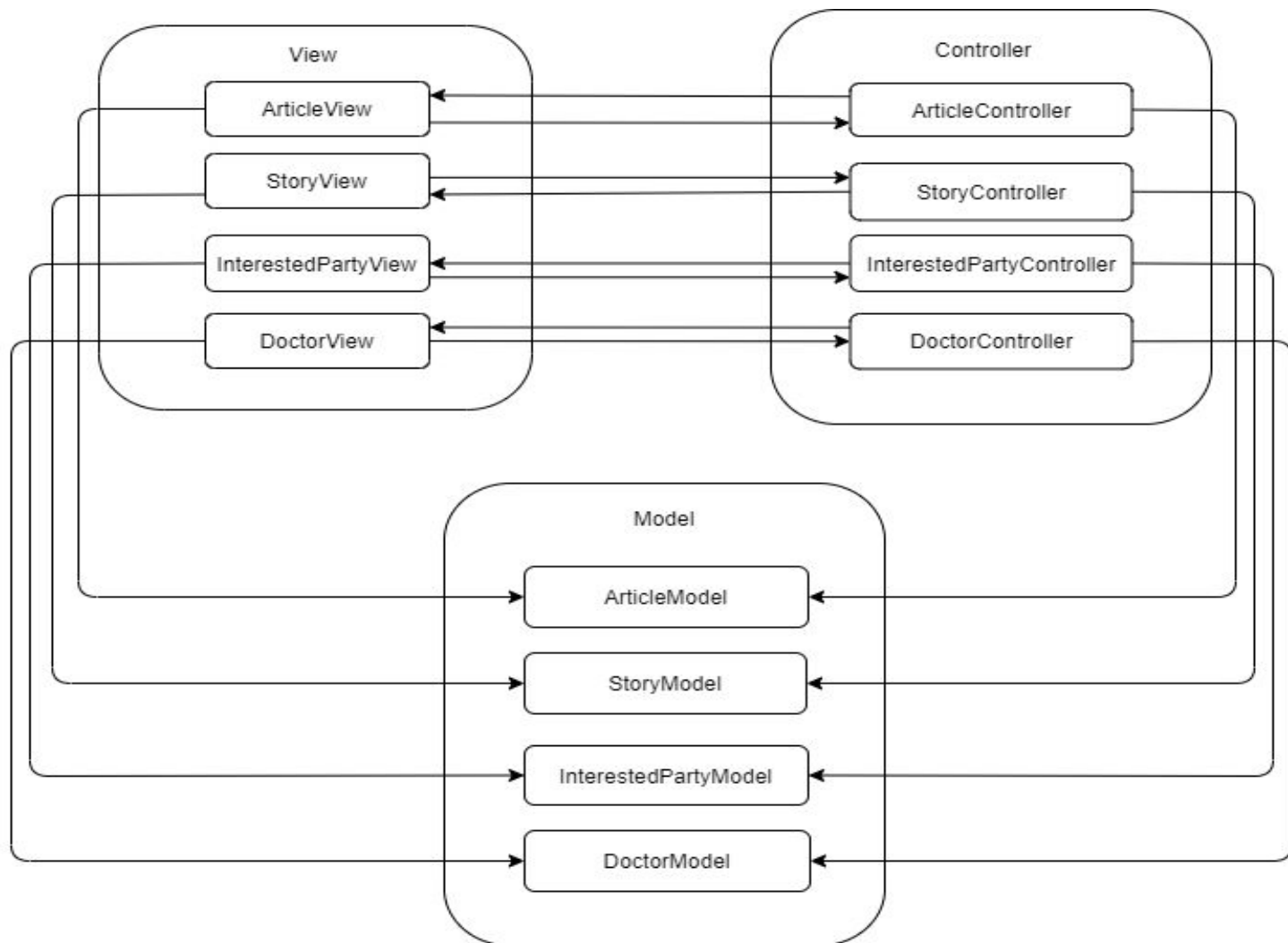
Refer to CZ2006 Sequence Diagram

5.5. Dialog Map

Refer to CZ2006 Dialog Map

6. System Architecture

Model-View-Controller



7. Testing Cases and Results

7.1. Black box testing

7.1.1. Doctor Login

7.1.1.1. (Doctor) Login: Verify username

Equivalence classes:

- Valid: username = data username
- Invalid: username != data username

7.1.1.2. (Doctor) Login: Verify password

Equivalence classes:

- Valid: password = data password
- Invalid: password != data password

7.1.1.3. (Doctor) Login: Verify account is approved by admin

Equivalence classes:

- Valid: Admin Verify = True
- Invalid: Admin Verify = False

Black Box Testing (Doctor Login) Table

Test Inputs		Expected Output	Actual Output
Username	Password		
		Please fill out this field	Please fill out this field
	password1	Please fill out this field	Please fill out this field
abcde		Please fill out this field	Please fill out this field
abcd	pass123	Wrong username/password, please try again	Wrong username/password, please try again
abcd	password1	Wrong username/password, please try again	Wrong username/password, please try again
abcde	passw0rd1	Wrong username/password, please try again	Wrong username/password, please try again
abcde	password1	Account has not been verified by an administrator yet. Please give it at least 2 working days.	Account has not been verified by an administrator yet. Please give it at least 2 working days.
Unverified doctor account			
abcde	password1	No error. Successful Login	No error. Successful Login

7.1.2. Registration

7.1.2.1. Password: Number of characters

Equivalence classes:

- Valid range: Password ≥ 8
- Invalid range: Password ≤ 7

Valid Boundary values :

- 8
- Value just below the boundary: 7

Invalid Boundary values:

- 7
- Value just above the boundary: 8
- Value just below the boundary: 6

7.1.2.2. Username: Must be unique

Equivalence classes:

- Valid range:
 - Username not in system database
 - Username ≥ 5 characters
 - Username ≤ 50 characters
- Invalid range:
 - Username in system database
 - Username ≤ 4 characters
 - Username ≥ 51 characters

Valid Boundary values :

- Username not in system database
- 5, 50
- Value just below the boundary: 4

- Value just above the boundary: 51

Invalid Boundary values :

- Username in system database
- 4,51
- Value just above the boundary: 52
- Value just below the boundary: 3

7.1.2.3. Age: Older than 18-year old

Equivalence classes:

- Valid range: Current Date - Date of Birth ≥ 18
- Invalid range: Current Date - Date of Birth ≤ 17

Valid Boundary values:

- 18
- Value just below the boundary: 17

Invalid Boundary values:

- 17
- Value just above the boundary: 18
- Value just below the boundary: 16

7.1.2.4. Contact Number: at least 8 numbers

Equivalence classes :

- Valid range: Contact Number ≥ 8
- Invalid range:
 - Contact Number ≤ 7

Valid Boundary values:

- 8
- Value just above the boundary: 9
- Value just below the boundary: 7

Invalid Boundary values :

- 7
- Value just above the boundary: 8
- Value just below the boundary: 6

7.1.2.5. Email: Must have a proper email (@gmail.com / @hotmail.com / etc)

Equivalence classes :

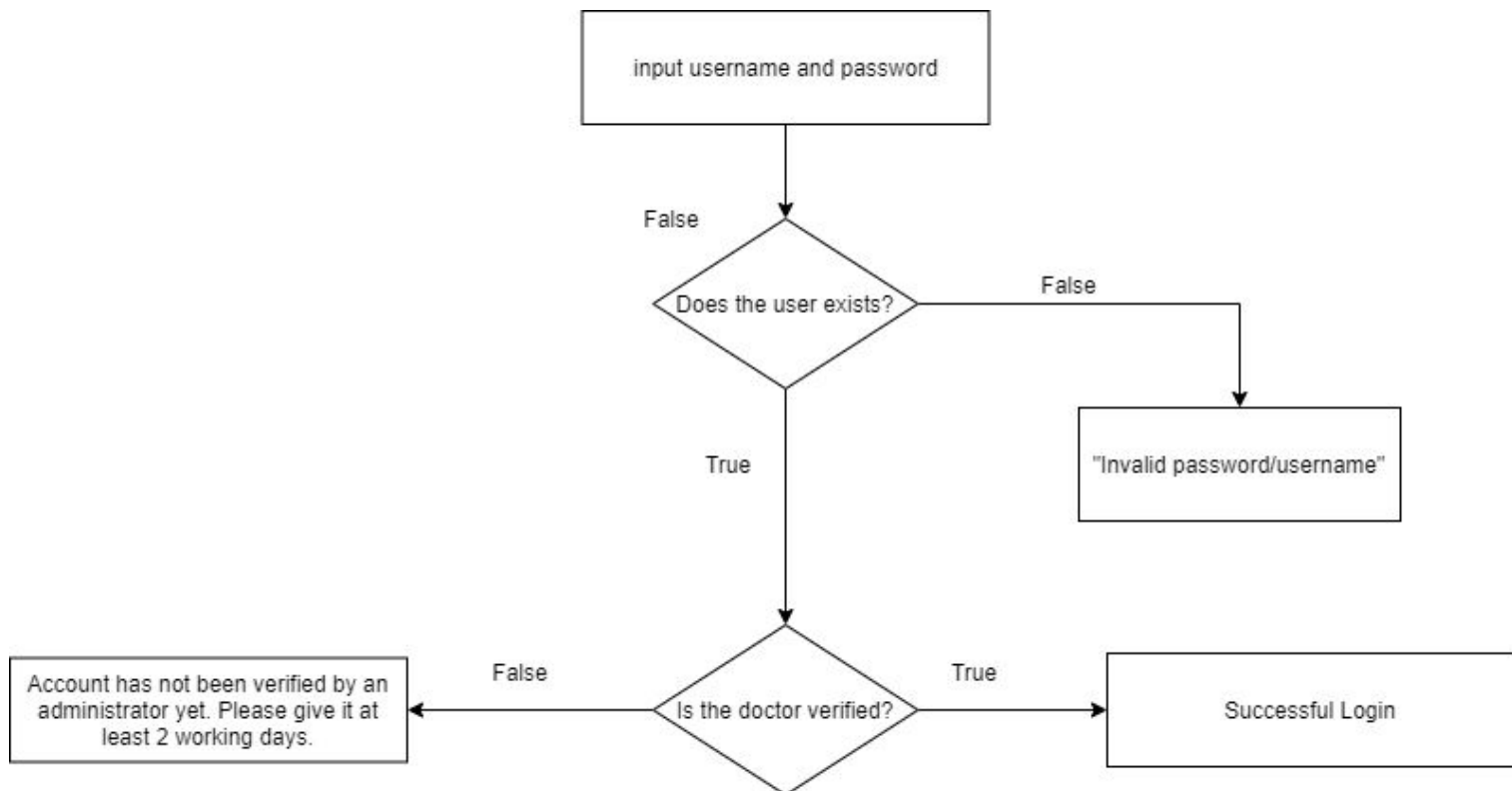
- Valid range: contain @something.com
- Invalid range: does not contain @something.com

Black Box Testing (Registration) Table

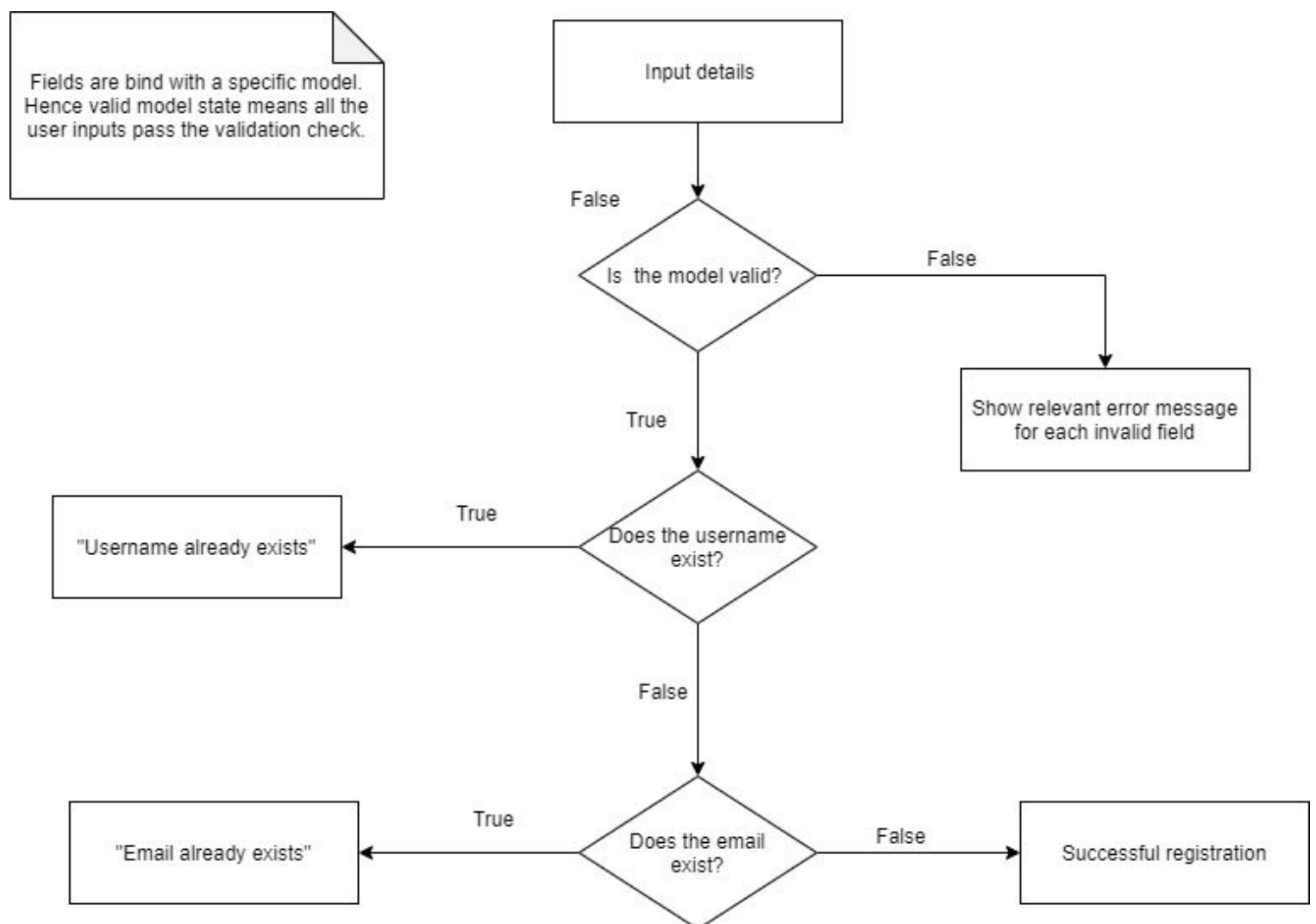
Test Inputs					Expected Output	Actual Output
Username	Password	Email	Age	Contact Number		
abcd	password1	abcd@gmail.com	40	91234567	Username must be between 5 to 50 characters	Username must be between 5 to 50 characters
abcdefghijklm nopqrst vwxyz bcdefghijk lmnopqrst vwxyz	password1	abcd@gmail.com	40	91234567	Username must be between 5 to 50 characters	Username must be between 5 to 50 characters
Existing username	password1	abcd@gmail.com	40	91234567	Username already exists.	Username already exists
abcde	p123	abcd@gmail.com	40	91234567	The password cannot be shorter than 8 characters	The password cannot be shorter than 8 characters
abcde	password1	aagmail.com	40	91234567	Please put a proper email. E.g. abc@gmail.com	Please put a proper email. E.g. abc@gmail.com
abcde	password1	existing@gmail.com	40	91234567	Email already exists	Email already exists
abcde	password1	abcd@gmail.com	17	91234567	You must be at least 18 years old to register.	You must be at least 18 years old to register.
abcde	password1	abcd@gmail.com	40	9999	Please enter a proper phone number. E.g. 91234567	Please enter a proper phone number. E.g. 91234567
abcde	password1	abcd@gmail.com	40	91234567	No error, successfully registers	No error, successfully registers

7.2. White box testing (Control flow)

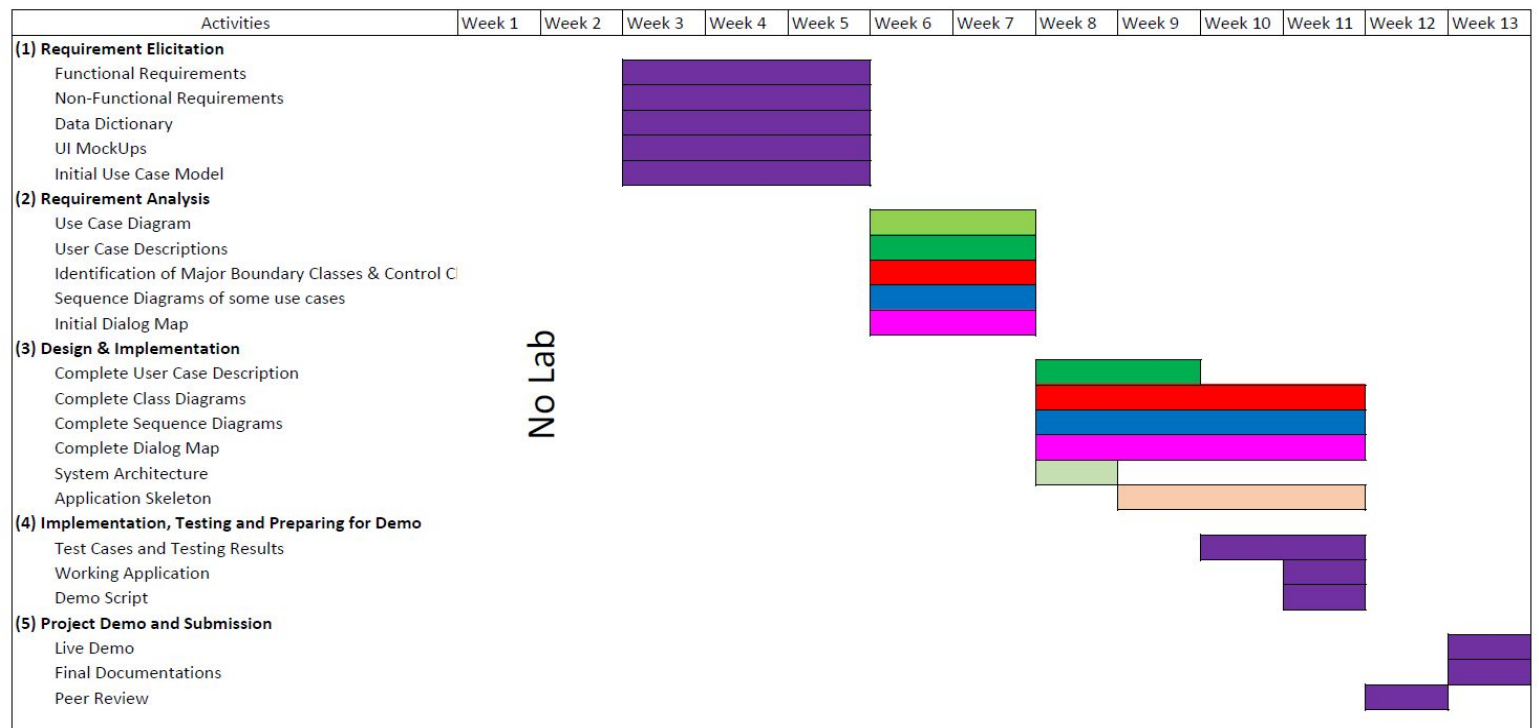
7.2.1. Doctor Login



7.2.2. Registration



8. Project Schedule



9. References

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<https://data.gov.sg/dataset/quit-centres>

User interface style reference, Retrieved August 27, 2020, from healthhub website:

<https://www.healthhub.sg/programmes/88/IQuit>

User interface style reference, Retrieved August 27, 2020, from moh gov website:

<https://www.moh.gov.sg/hpp/all-healthcare-professionals/healthcare-professionals-search>

Top 5 Leading Cancer by Gender

(n.d.). Retrieved August 28, 2020, from Data.gov website:

<https://data.gov.sg/dataset/top-5-leading-cancers>

Top 3 Causes of death in Singapore

(n.d.). Retrieved August 27, 2020, from Axa website:

<https://www.axa.com.sg/blog/health/top-3-causes-of-death-singapore>

Anjana Motihar Chandra, Cigarette Smoking Is The Main Cause Of Lung Cancer

(n.d.). Retrieved August 28, 2020, from HealthXChange website:

<https://www.healthxchange.sg/cancer/lung-cancer/cigarette-smoking-main-cause-lung-cancer>

All images for application demo [Online image]. Retrieved Sept 25, 2020, from unsplash website:

<https://unsplash.com/>