



INDEPENDENT UNIVERSITY, BANGLADESH

Developing an iOS mobile app

By

Md Saif Uddin Buiyan Adal

Student ID: 1721137

Spring, 2021

Supervisor:

Romasa Qasim

Lecturer

Department of Computer Science & Engineering

Independent University, Bangladesh

Jun 17, 2021

**Dissertation submitted in partial fulfillment for the degree of Bachelor of Science in
Computer Science**

Department of Computer Science & Engineering

Attestation

I hereby attest that, this report and project on ‘Maya - Your Health Assistant’ is all my work and has not been copied in part or whole from any other source except where duly acknowledged. All use of previously published work like article, journal, paper, website have been acknowledged within the main report in Bibliography chapter.



Signature

17 June, 2021

Date

Md Saif Uddin Buiyan Adal

Name

Acknowledgement

I take this opportunity to express my heartiest gratitude to the people who have been instrumental in the successful completion of this report and Internship project. The success depends greatly on the encouragement and guidelines of some special people, which I would like to put on record here with deep gratitude and pleasure.

Firstly, I would like to express my gratitude and respect to my internship supervisor Romasa Qasim, Lecturer, Independent University, Bangladesh for his constant guidance, advice, encouragement in the overall preparation of this report and project.

I feel fortunate to work at Mayalogy Limited. I would like to convey my sincere gratitude to Mr. Manash Kumar Mandal, Head of Engineer, Mayalogy Limited for giving me the opportunity to work on a real-world problem and sharing his wise views with me.

Finally, I feel indebted to Independent University, Bangladesh for providing the platform of learning and wonderful experience.

Evaluation Committee

.....
Signature

.....
Name

.....
Supervisor

.....
Signature

.....
Name

.....
Internal Examiner

.....
Signature

.....
Name

.....
External Examiner

.....
Signature

.....
Name

.....
Convener

Abstract

Mayalogy Limited is a health tech company based in Bangladesh, Sri Lanka and Pakistan. Mayalogy Limited provides health related solution by giving written answer, video call consultancy, voice call consultancy and giving prescription. Maya has grown fast by delivering best experts solution that provide real health and mental benefit.

Maya, Maya Expert, Yeheli, Florence are the product of Mayalogy Limited. Maya is available on Bangladesh and Pakistan. Yeheli available on Sri Lanka. Florence is a web service and Maya expert is a mobile app which are available in all three country. Maya is most revenue generation product of Mayalogy Limited

Letter of Transmittal

Jun 17, 2021

Romasa Qasim

Lecturer

Department of Computer Science and Engineering

Independent University, Bangladesh.

Subject: Internship Report submission Spring, 2021.

Dear Ma'am,

It is of immense pleasure and honor to submit my Internship report on 'Maya - Your Health Assistant' App under your guidance. I have tried to present my project work, my analysis and achievements in this report.

I have completed my Internship from Mayalogy Limited as a Junior iOS Developer Intern from the 1st of March 2021 to date. During this whole time period, I have gathered real life working experience and knowledge in various aspects. This report includes all the project works, experiences and learning that I have achieved during this internship.

I would like to thank you for your constant support, guidance and kindness. I have tried to complete this with utmost honesty and sincerity. I hope and pray that this report fulfills all the requirements and is up to your expectations.

Sincerely,

Md Saif Uddin Buiyan Adal

Table of Contents

Attestation	ii
Acknowledgement	iii
Evaluation Committee.....	iv
Abstract	v
Table of Contents	vii
List of Tables	viii
List of Figures	viii
Chapter 1	7
1.1 Background of the Work.....	7
1.2 Objectives.....	7
1.3 Scopes	8
Chapter 2	9
2.1 Relationship with Undergraduate Studies	9
2.2 Related works.....	9
Chapter 3	12
3.1 Work Breakdown Structure	12
3.2 Activity Wise Time Distribution.....	13
3.3 Gantt Chart	16
3.4 Activity Wise Resource Allocation.....	17
Chapter 4	18
4.1 Agile Methodology	18
4.2 Development Tools	19
Chapter 5	20
5.1 Work Description	20
5.2 System Analysis	21
5.2.1 Six Element Analysis	21
5.2.2 Effect and Constraints Analysis	22
5.3 System Design.....	23
5.3.1 Rich Picture.....	23
5.3.2 UML Diagrams	24
5.3.3 Process Diagrams	26
5.3.4 Functional Requirements and Non-Functionals Requirements	28
Functional Requirements	28

5.4 Product Features.....	31
5.4.1 Architecture.....	31
Chapter 6.....	32
6.1 Sustainability of the Project	32
6.2 Social and Environmental Effects and Analysis	33
6.3 Addressing Ethics and Ethical Issues.....	33
Chapter 7	34
7.1 Future Works.....	34
7.2 Conclusion	34
Bibliography.....	35

List of Tables

<i>Table 1: Activity wise time distribution for version 1.0.0 to 1.0.4</i>	13
<i>Table 2: Activity wise time distribution for version 1.0.5</i>	14
<i>Table 3: Activity wise time distribution for version 2.0.1</i>	15
<i>Table 4: Activity wise time distribution</i>	17
<i>Table 5: Six Elements Analysis</i>	21
<i>Table 6: User Sign Up Function</i>	28
<i>Table 7: User Sign In Function</i>	29
<i>Table 8: Booking Video Call Function</i>	29
<i>Table 9: Vaccine Reminder Function</i>	30

List of Figures

<i>Figure 1: Work Breakdown Structure</i>	12
<i>Figure 2: Gantt Chart</i>	16
<i>Figure 3: Rich Picture</i>	23

<i>Figure 4 :Class Diagram</i>	24
<i>Figure 5: Use Case Diagram</i>	25
<i>Figure 6: Sign In Process</i>	26
<i>Figure 7: Sign Up Process</i>	26
<i>Figure 8: Ask Question Process</i>	27
<i>Figure 9: Video Call Booking Process</i>	27

Chapter 1

Introduction

1.1 Background of the Work

This project is about an iOS mobile app named “Maya - Your Health Assistant” of Mayalogy Limited. The company has Android app, iOS app and web application. Previously this “Maya” app was known as “Maya Apa”. Mayalogy Limited partnered with BRAC to develop the Maya Mobile App in 2015. Maya is a mobile-based digital wellbeing assistant that intelligently understands user questions. Users can directly connect to experts, including doctors and therapists, to get the advice they're looking for—hassle-free and without stigma. The company develop and integrate new feature simultaneously to provide better assistance. ([Ohoaha, 2020](#))

1.2 Objectives

The objective of the company for all platform like Android App, web application and iOS app are same. The main objectives are described in here.

- One of the objectives is communicate with doctor and patient directly by audio or video call from the comfort of their home. So that patient can get advice from physician about their health.
- Another objective is message doctor and councilors anonymously. For our cultural perspective people fell fear of judgment and stigma. While company’s primary concern is privacy so patient can talk freely with verified experts.
- Another objective is informed user from trusted source. While health advice from social media isn’t always backed by science so user can read about fitness, nutrition, beauty and other trending topics at Maya and obviously that will be from trusted source.
- Another objective is kept track of all health information. So that user can ware about his health and expertise can get an organized medical history when he or she need advice and treatment.

1.3 Scopes

- People will be move away to take medical advice from inexpert like village doctor or medicine seller.
- Generally, people have to wait in a long que to meet an expert. This service is helping people to relief from this.
- In Covid 19 social distance is being mandatory to keep safe. This service helps both patient and experts to keep them safe.
- Fake medicines are spreading day by day in Bangladeshi market. For customer it is being almost impossible to identify. Maya shop is being a solution to buy original medicine.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

In the Undergraduate courses students are introduced with to various development, analysis and synthesis tools. Also are introduced with to the exciting world of logic, rationalization and decision making through Computer Science. I have learned to visualize and implementation of data structure and object-oriented programming. As well as I have learned database management, data Query, system flow of a software and to analyses.

For ‘Maya - Your Health Assistant’ app development has to analyses system flow, model architecture and build data model to achieve the goal of this apps. All of this have learned from my undergraduate courses. Here I am being familiar with production level project and shaping my skill which I learned from my various courses.

Another thing is here I get scope to understand customer thought demand and analyses it which I also leaned form my marketing courses.

2.2 Related works

In the fall of 2018, corporate finance advisory firm Hampleton published a report titled, “The healthtech sector is currently one of the most dynamic in technology M&A.” ([Thomas, 2021](#)). Mayalogy is a health-tech company and worldwide there are many health-tech companies who are faced the challenges the healthcare services. Some creative and well stablished companies are discussed below.

Wellframe: Founded in 2011, Wellframe is a US based Healthcare organization. Wellframe connects healthcare professionals with patients to provide access to vital medical data and reminders through their user-friendly smartphone app. Currently they are successfully running their services simultaneously through their website (www.wellframe.com) and smartphone app. They have around 150 employees in their team. Their goal is to create healthcare relationships through a new approach that uses high-tech to deliver the high-touch support people need, when and where they need it. They call it Digital Health Management. This makes healthcare and vital medical data more accessible to a large scale of people. ([Wellframe, 2021](#))

Teladoc Health: Founded on 2002, Teladoc Health Inc is a world leading multinational telemedicine and virtual health care company based on US. They provide on demand medical care. As a software company they involved with artificial intelligence, analytics and “licensable platform services”. The company’s physicians treat non-emergencies such as the flu, pink eye, infections, sinus issues, mental health issues, and dermatological conditions among others. The company has an expert network of 55,000 involved in 450 medicals subspecialties. Currently they are successfully running their services on their website (www.teladochealth.com) and smartphone app. The company’s net revenue is US\$ 553 million (2019). (TonyTheTiger, 2021)

Maven: Founded in 2014, Maven is considered to be one of the most comprehensive platforms for providing sensitive and critical support across issues like fertility, pregnancy, adoption, parenting and pediatrics. They have over 1000 women’s and family health specialists under their belt who provides consultancy through video chat or message. They provide these services through their website (www.mavenclinic.com) and their smartphone app “Maven Clinic”. As far they have managed a total funding of US\$ 88 million through venture funding. (Magistretti, 2020)

HealthTap: Founded in 2010, HealthTap is technology company that provides patients to ask questions and get consultancy from licensed physicians through message and video chat. They provide their services through website (www.healthtap.com) and their smart phone app. Health information on the service is supplied interactively by a network of nearly 140,000 licensed doctors in good standing (licensed physicians with active disciplinary actions against them are not admitted to the network). Currently they provide their services across 170 countries.

Amwell: Founded on 2006, Amwell formerly known as American Well is a telemedicine company based on Boston, Massachusetts. Amwell has the largest ecosystem healthcare partners including physicians and hospitals. Amwell sells its platform as a subscription service to healthcare providers to put their medical professionals which is utilized by patients or general consumers. They provide their services through website (www.amwell.com) and smartphone app. In May 2020, Amwell raised \$194 million in the midst of COVID-19 pandemic to help the company meet increased demand for telehealth.

MDLIVE: Founded on 2009, MDLIVE is healthcare company based on USA. They provide health

plans, health consultation through certified doctors, pediatricians and licensed therapists. They provide their services through their website (www.mdlive.com) and smartphone app. Currently the company is acquired by Evernorth. MDLIVE has managed to get \$174 million as funding since 2009.

Doctor Dekhao: Founded on 2018, Doctor Dekhao is a telehealth company based in Bangladesh. They provide doctor on demand services like e-prescription, video consultation among others. They provide their service through their smartphone app.

Halodoc: Founded on 2016, Halodoc is a health-tech platform based on Indonesia. With a mission of simplifying access to healthcare, they are providing access to licensed doctor, insurance, labs and pharmacies to the patients through their smartphone app. Halodoc is the 2018 Forbes Indonesia Choice Award winner. They have also expanded their operations and focused on Covid-19 vaccine coordination.

Babylon: Founded on 2013, Babylon is a UK based health service provider. They provide their services through their website (www.babylonhealth.com) and their smartphone apps. The users are able to contact their healthcare professionals through message and video messaging. They also provide prescription through email. They have expanded their services internationally to Canada, Rwanda, Saudi Arabia and the United States.

Sebaghar: Founded on 2016, Sebaghar is a tele-health company. Sebaghar aims to solve the poor health infrastructural issue through connecting people of remote area with experienced doctors. They provide services like video consultation, online appointment and digital prescription among other through their smartphone app.

DocCure Health Tech Limited: DocCure provide expert medical advice and healthcare through online video consultation. Doc Cure Health Tech Limited is a digital healthcare industry. They provide 24 hour tele-health service by their in house doctors. This project is implemented by Joy Technologies Limited. This company set their goal that provide quality health care as well as build a community.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

‘Maya – Your Health Assistant’ is written in a set of activities or task. As a result it became easier for developer to complete the project.

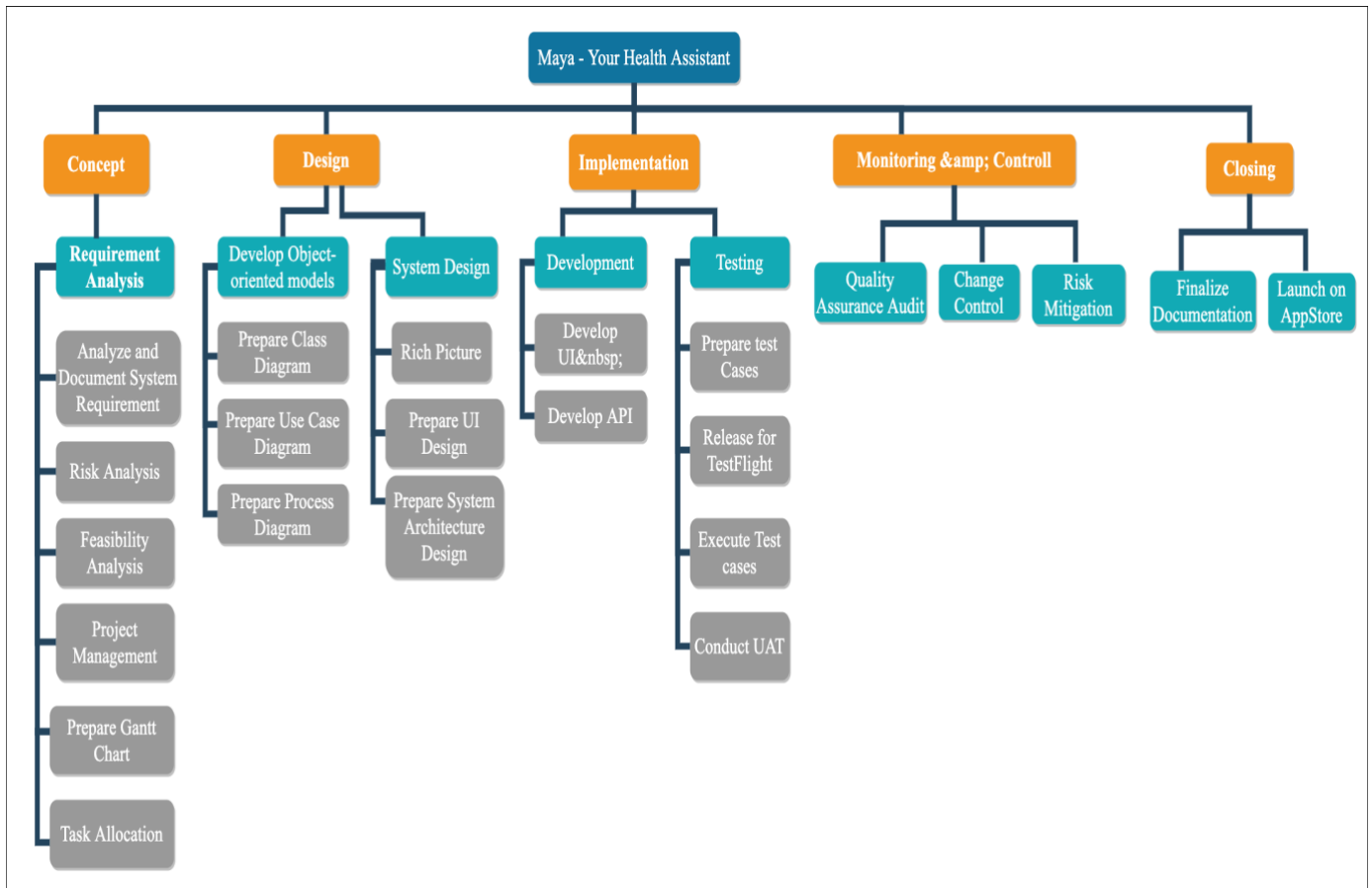


Figure 1: Work Breakdown Structure

3.2 Activity Wise Time Distribution

Before distributing time per activity we need to sequence them first. Then with the 3 point estimation technique we will calculate time taken for each of these activities. The activity sequence and estimated time are given in 3 part. 1st one before I join to implements first 4 versions. 2nd one for bug fixing which is done after I join and 3rd one for implementing vaccine tracker.

Table 1: Activity wise time distribution for version 1.0.0 to 1.0.4

Serial	Activities	Time duration
1	Analyze and document system requirements	Unknown
2	Risk Analysis	Unknown
3	Feasibility Analysis	Unknown
4	Work Breakdown Structure	Unknown
5	Prepare Gantt Chart	Unknown
6	Budget Preparation	Unknown
7	Prepare Class Diagram	Unknown
8	Prepare Use Case Diagram	Unknown
9	Prepare Process Diagrams	Unknown
10	Rich Picture	Unknown
11	Prepare System Architecture Design	Unknown
12	Prepare UI design	Unknown
13	Develop UI design on app	Unknown
14	Develop API	Unknown
15	Prepare Test cases	Unknown
16	Execute test cases	Unknown
17	Conduct User Acceptance Test	Unknown
18	Quality Assurance Audit	Unknown
19	Change Control	Unknown
20	Risk mitigation	Unknown

Table 2: Activity wise time distribution for version 1.0.5

Serial	Activities	Time Duration (Man-Hour)
1	Analyze and understand the current code base and system flow	24
2	Analyze and understand the used pod	24
3	Check the listed bug and finding reason	50
4	Solve the bug	46
5	Execute test case to find another bug	4
6	Fixed the bug	12
7	Understand the video call version 2 system requirement	2
8	Implements video call version 2	46
9	Implement dynamic code for subscription package to control from backend	2
10	Data pipeline to fetch user data	190
11	Implements Google Crashlytics	8
11	Prepare Test case	4
12	Execute Test case	4
13	Quality Assurance Audit	8
14	Risk Mitigation	2
15	Release for TestFlight	8
16	Release for AppStore	8

Table 3: Activity wise time distribution for version 2.0.1

Serial	Activities	Time Duration (Man-Hour)
1	Prepare Gantt Chart	unknown
2	Prepare Class Diagram	unknown
3	Prepare Use Case Diagram	unknown
4	Prepare Process Diagrams	unknown
5	Prepare UI design	unknown
6	Develop API	unknown
10	Understand the UI design and system flow for Vaccine tracker	2
11	Prepare Data Model	40
12	Develop UI design for App	40
13	Prepare view model	40
14	Solve memory leakage issue	16
15	Prepare Test case	4
16	Execute Test case	4
17	Quality Assurance Audit	8
18	Risk Mitigation	2

3.3 Gantt Chart

Maya Health Assistance		Mar				Apr				May			
Task Name		W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4
Task 1	Understand 1.0.4 code base	T1											
Task 1	Understand used pods of 1.0.4	T2											
Task 3	Find the bugs and solved		T3										
Task 4	Implements video call			T4									
Task 5	Implement Data PipeLine												
Task 6	Develop UI design for Vaccine Tracker											T5	
Task 7	Develop Data Model and View Model									T6			

Figure 2: Gantt Chart

3.4 Activity Wise Resource Allocation

We figured out the activities that need to be done to complete the project while developing WBS. Before allocating resource per activity we need to figure out what resources we have and a way to distribute them so that the project can be completed within the estimated time.

Table 4: Activity wise time distribution

Serial	Activities	Time duration
1	Analyze and document system requirements	Project Manager, Business Analyst, Tech Lead
2	Risk Analysis	Project Manager, Tech Lead
3	Feasibility Analysis	Project Manager
4	Work Breakdown Structure	Project Manager
5	Prepare Gantt Chart	Project Manager
6	Budget Preparation	Project Manager, Business Analyst
7	Prepare Class Diagram	Project Manager
8	Prepare Use Case Diagram	Project Manager
9	Prepare Process Diagrams	Project Manager
10	Rich Picture	Project Manager, Business Analyst
11	Prepare System Architecture Design	Tech Lead
12	Prepare UI design	UI Designer
13	Implements UI design	Engineer
14	Develop API	Project Manager, Business Analyst
15	Prepare Test cases	Business Analyst
16	Execute test cases	Business Analyst
17	Risk mitigation	Business Analyst
18	Quality Assurance Audit	Business Analyst
19	Finalize Documentation	Tech Lead

Chapter 4

Methodology

4.1 Agile Methodology

Mobile application development is the set of processes and procedures involved in writing software for small, wireless computing devices, such as smartphones and other hand-held devices. Mobile development process consists of 7 steps like defining Strategy, Planning, designing, Developing, Testing, Deployment.

In business world mobile application is added and increasing the market of it day by day. So to reach the market at earliest and outshine the company business leaders are hunting for every possible way and one of them is “Software Development Methodology ” (SDM) as a framework to plan and control the process of development and maintain. Waterfall and Agile are two SDM. Here Waterfall is user for long time from very beginning and it was the gold standard for software development. But in this era almost all the software company uses Agile methodology or believe they do because development work is influenced by Agile methodology.

Agile values focus on think and interact to achieve agility. They are to continuously adopt and make improvement to the way to work. Agile give some principles and values that a team can decide what should do. Agile team doing standup meeting, product demos, retrospectives, planning poker etc.

Engineering team of maya focuses on a delivery cadence called a sprint. For that here meeting structure like

- **Planning** — Project managers and team leaders are identified the sprint priorities.
- **Commitment** — In this stage decided that how much work can be done in the sprint's duration and head of engineer are noted it. For that Jira software to keep the record and task of an individual is noted as ticket.
- **Daily stand up meetings** — Teams can communicate updates on their development status and clear the dependencies on every day at 10.00 am. While all the team members are working from home that why google meet is user for stand-up meeting.

On every Thursday sprints end with a demo meeting where the functionality is shown to the product managers and discusses here what went well and what needs improvement

4.2 Development Tools

In the process of development of "Maya- Your Health Assistant" several modern development tools were used like UIKit, Core Animation, CocoaPods and almost 65 Pods. As well as MVVMC (Model View View-Model Constraints) pattern is followed.

- **UIKit:** UIKit is a user interface kit. It contains UI Components and style. This Components provide functionality.
- **Core Animation:** Core Animation provides high frame rates and smooth animations without burdening the CPU and slowing down your app. Here required to draw each frame of animation. In app end start and end point have to configure rest are done by Core Animation. This animation infrastructure available on both iOS and OS X.
- **CocoaPods :** CocoaPods provides a standard format for managing external libraries. It manages Objective-C, Swift on the Objective-C runtime. External libraries of "Maya- Your Health Assistant" are described here:
 - **Twilio:** Twilio's Programmable Video iOS SDK is used this app to add real time video and video.
 - **NicoProgress:** NicoProgress is used for simple material design progress bar. It responds well to resizes or being added via interface builder.
 - **Rx-Swift :** Rx-Swift is a multi-platform standard reactive programming library. it used to easily handle asynchronous code to changes in data and respond to user events in Swift.
 - **PromiseKit:** PromiseKit is a most popular swift implementation of promises. It manages asynchronicities. It has an execution life cycle so it can easily cancel.
 - **Alamofire:** Alamofire is a Swift-based HTTP networking library. It's used for iOS and macOS. It provides chainable request, response methods, JSON parameter and response serialization, authentication, and many other features

Chapter 5

Body of the Project

5.1 Work Description

"Maya- Your Health Assistant" is an iOS operation system supported mobile-based digital wellbeing assistant that intelligently understands user questions. Users can directly connect to experts, including doctors and therapists, to get the advice user looking for—hassle-free and without stigma. [Mixpanel](#) and [Google Analytics](#) is integrated to in app data collect to understand user's behaviors and requirement. Marketing team uses this data to plan and implement the better marketing strategy.

As well as [Firebase Crashlytics](#) integrated here to get the crash report of the apps.

The previous version 1.0.4 has bug to connect with video call and include attachment for video call appointment and ask question.

This issue has been solved and data pipeline for in app data collecting is implemented on version 1.0.5. As well as subscription package view is converted to dynamically and now it's totally dependent on API response. For this number of packages, design and their feature can change without releasing a new version.

Company has decided to add new feature vaccine tracker for baby and women for version 1.0.6. This feature is already implemented, and it is being waited for release. Though the release date is decided by top management, but possible date is end of the May 2021.

5.2 System Analysis

5.2.1 Six Element Analysis

Table 5: Six Elements Analysis

Process	System Roles				
	Human	Computing hardware	Software	Database	Network & Communication
Login	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
View Articles	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
View Questions	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
Video Call Appointment	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
View Shop	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
Purchase from shop	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
Package view	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
Package purchase	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
Ask question	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
Prescription Download	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
Prescription Download	Patient/ User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
Create vaccine tracker account	User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN
Get Vaccine reminder	User	iPhone/ iPad	iOS 11.0 to 14.5	MySQL/ MongoDB	WAN

5.2.2 Effect and Constraints Analysis

- The individual user API should work independently. They should not have any dependency on each other.
- There cannot be any outage or downtime while integrating features into the system or while integrating other third-party API in the system.
- While new features are being added, the users will still be using some third-party solutions side-by-side. So, data consistency needs to be maintained with the third- party applications.

5.3 System Design

5.3.1 Rich Picture

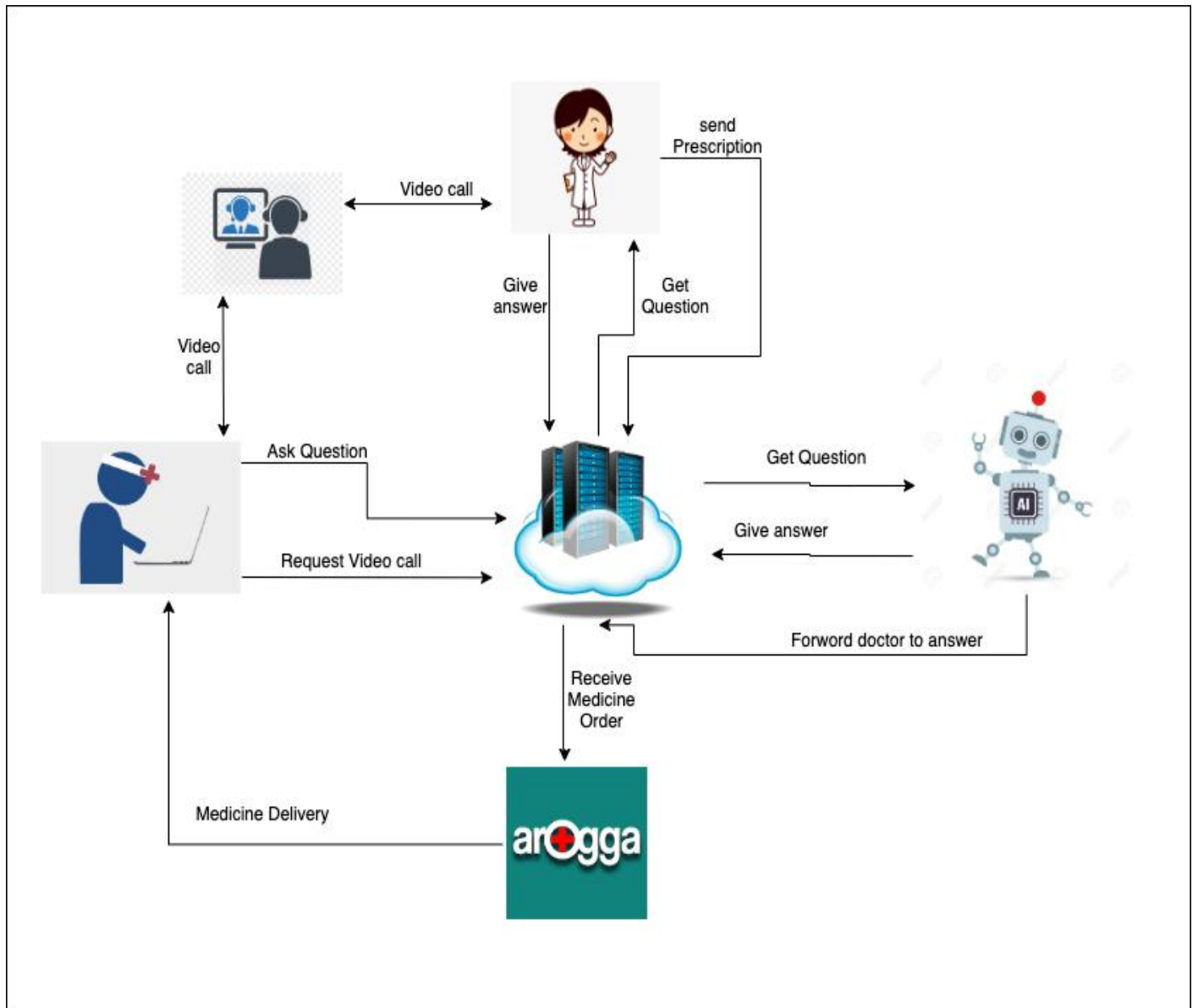


Figure 3: Rich Picture

5.3.2 UML Diagrams

Structural Diagram: Class Diagram

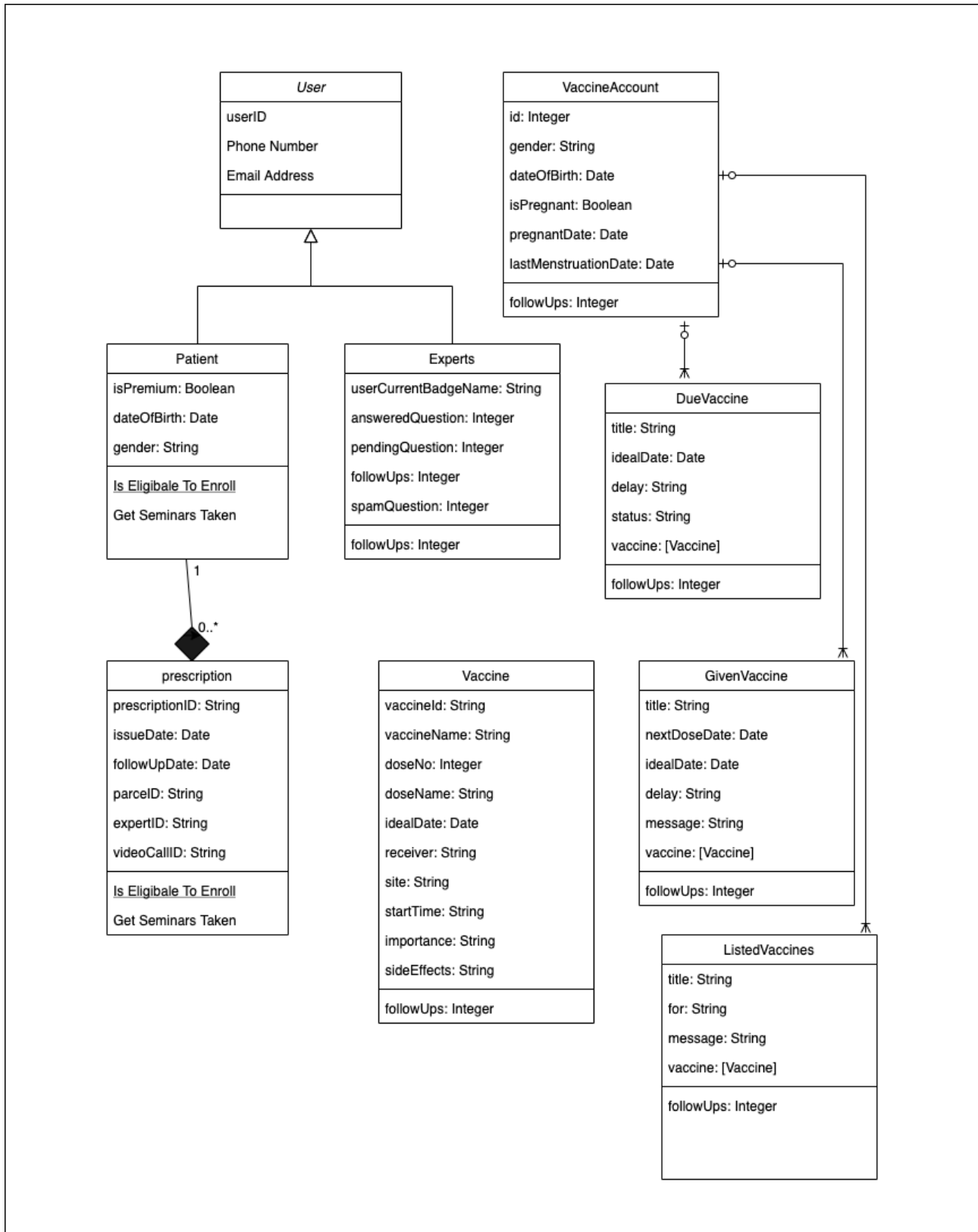


Figure 4 :Class Diagram

Behavioural Diagram: Use Case Diagram

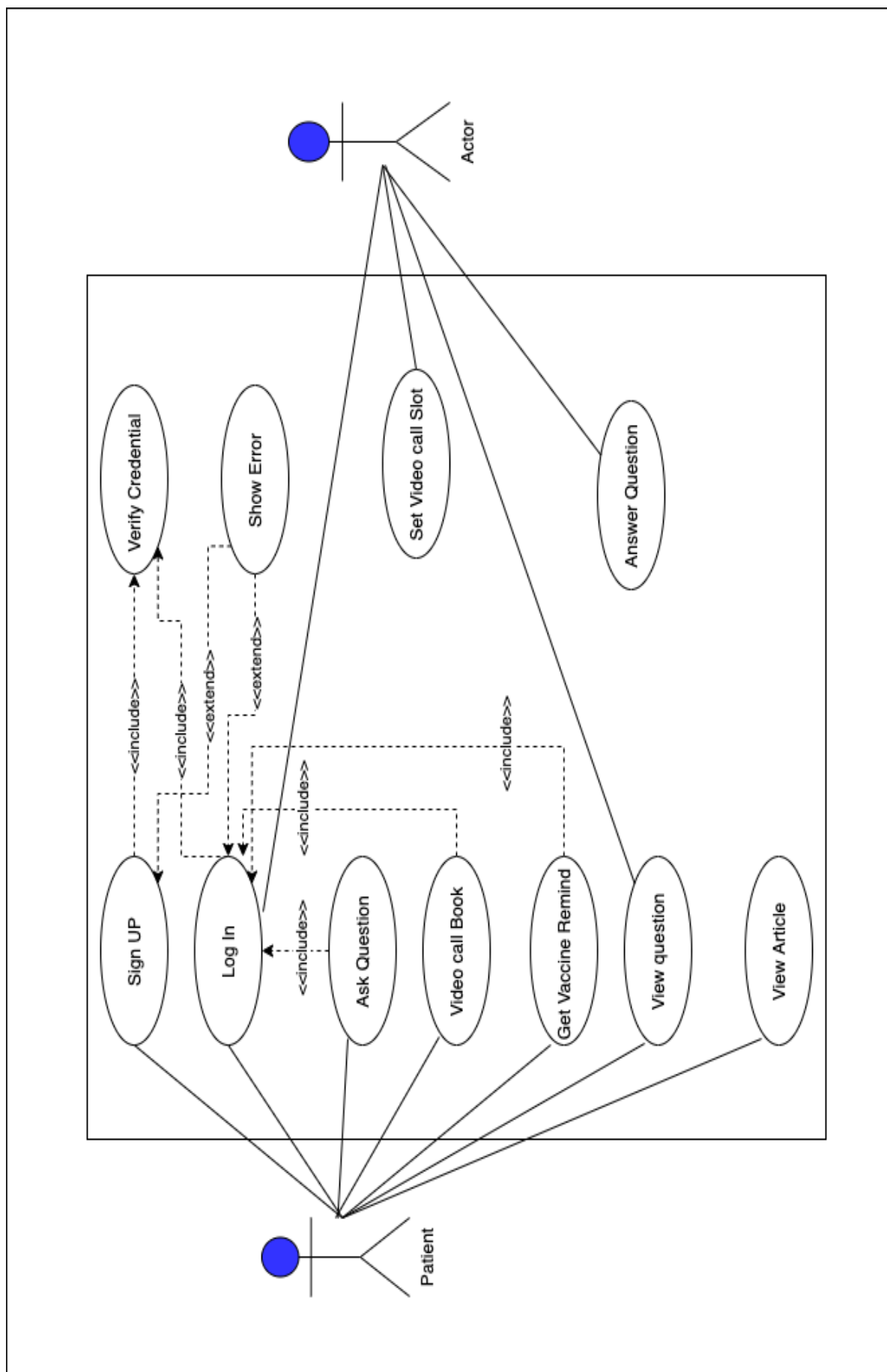


Figure 5: Use Case Diagram

5.3.3 Process Diagrams

Sign Up Process

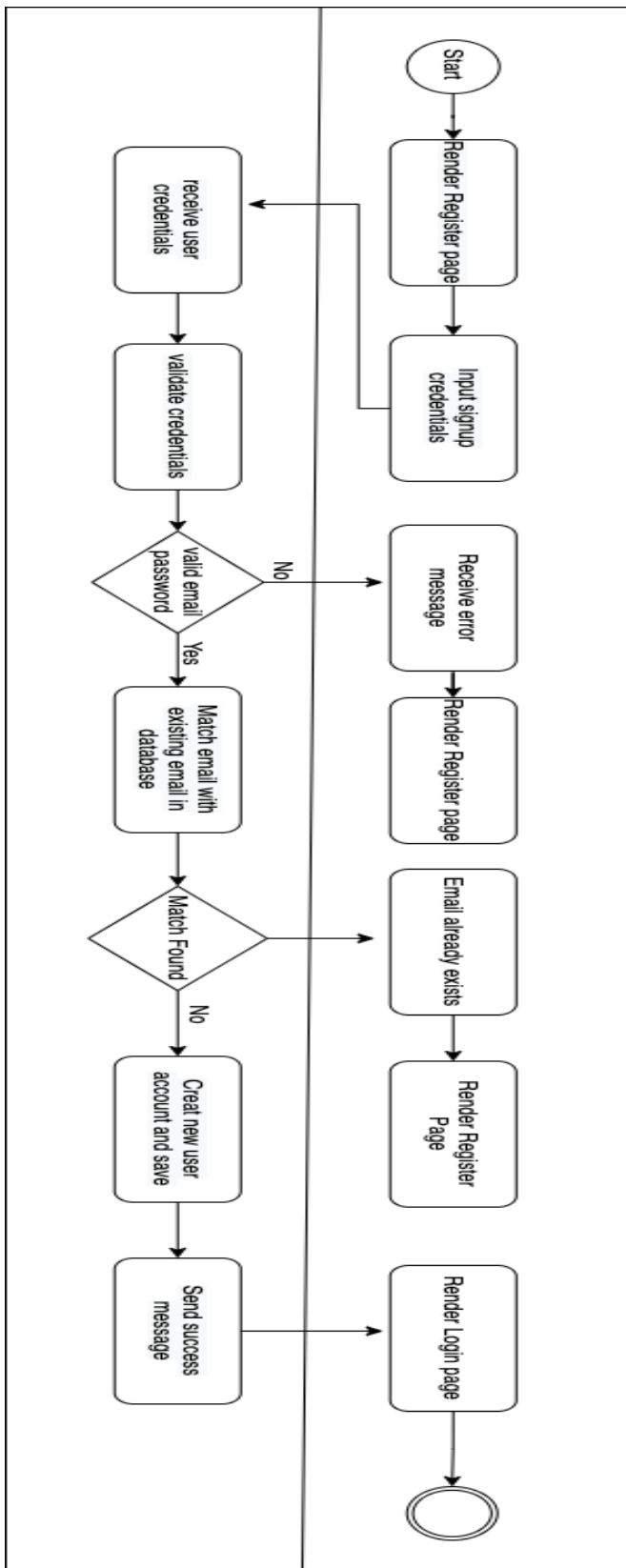


Figure 7: Sign Up Process

Sign In Process

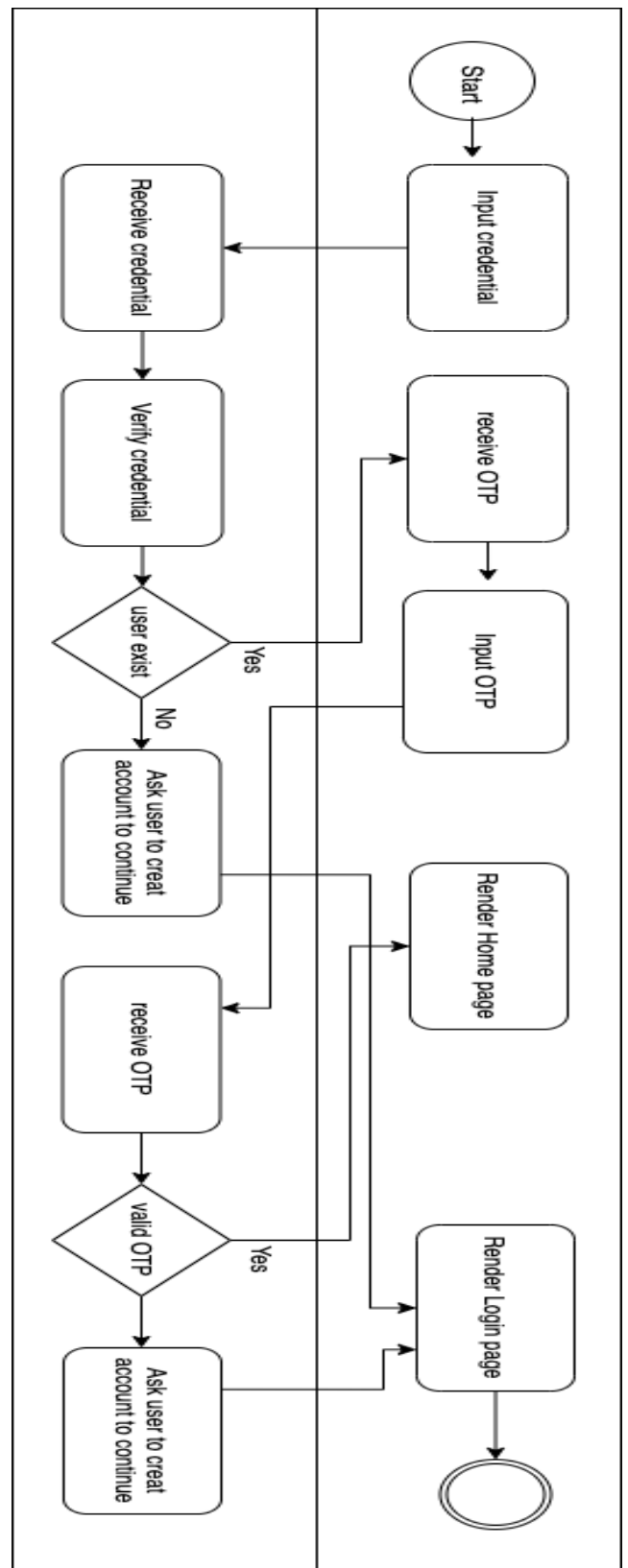


Figure 6: Sign In Process

Ask Question Process

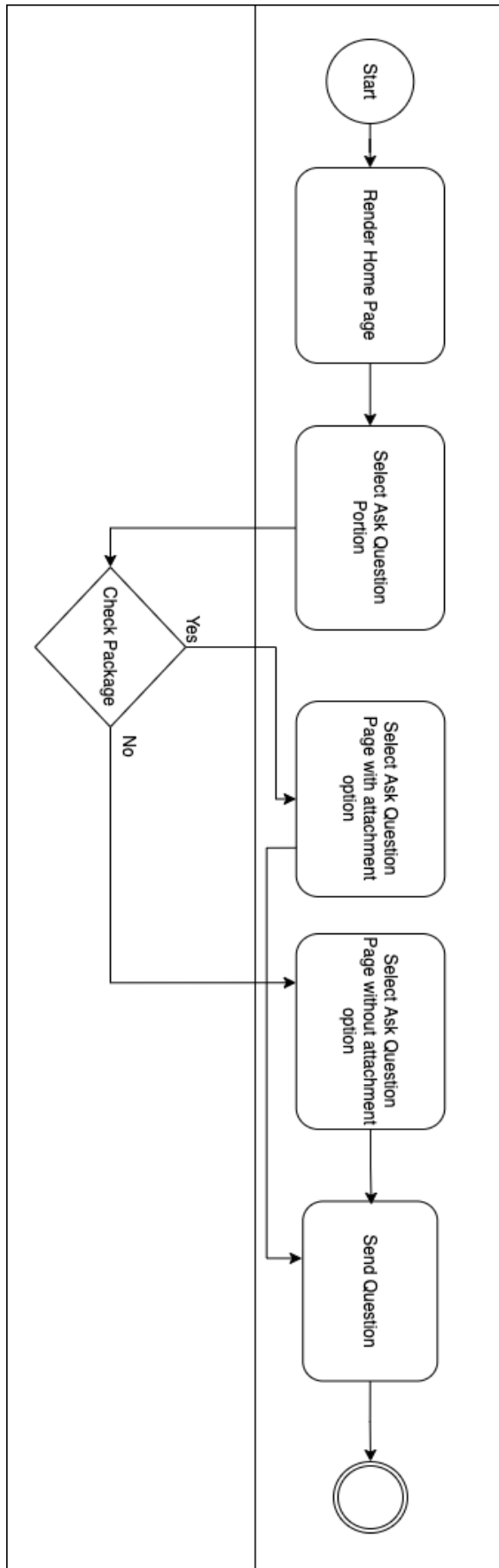


Figure 8: Ask Question Process

Video Call Booking Process

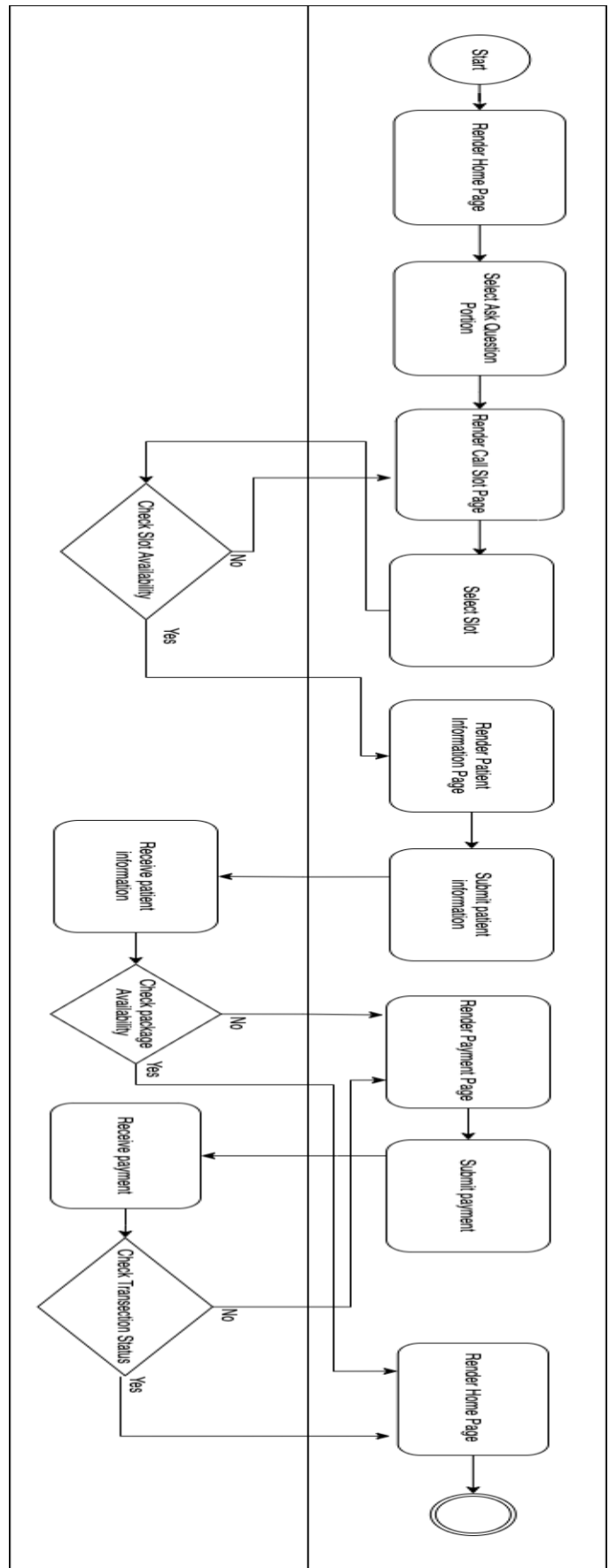


Figure 9: Video Call Booking Process

5.3.4 Functional Requirements and Non-Functionals Requirements

Functional Requirements

Table 6: User Sign Up Function

Name of the function: User sign up		
Precondition: User must be connected to internet		
Input: 1. Username 2. Email 3. Password	Process: An API will be called by server to save the user to database	Output: New user will be created and added to the user collection in database
Alternate options: 1. 1.If the user does not input username, email or password, the system will warn and user will not be added. 2. If password length is less than 6 characters, system will warn and user will not be added. 3. If the email does not match valid email format, the system will warn the user and account will not be created.		
Post-condition: User will get a success message and redirected to login page.		

Table 7: User Sign In Function

Name of the function: User sign in		
Precondition: User must be connected to internet and should have existing account		
Input: 1. Email 2. Password 3. OTP	Process: An API will be called by server to match existing users in database to find the user	Output: User will be logged into the system
Alternate options: If the user does not input email or password the system will warn and user will not be added. If password does not match, system will warn and user will not be added. If the email does not match existing email, the system will warn the user and account will not be logged in. If the OTP does not match with sending OTP, the system will warn the user and account will not be logged in.		
Post-condition: User will get a success message and redirected to home page.		

Table 8: Booking Video Call Function

Name of the function: User booking video call		
Precondition: User must be connected to internet and must have existing account		
Input: 1. Select a slot. 2. Input patient name, gender and age 3. Patient problems 4. Add attachment if has	Process: An API will be called by server to match available slot in database to find the availability	Output: Selected slot will be booked for the user
Alternate options: 1. If the user is not logged into the system it will warn before booking and booking will be unsuccessful. 2. If the slot is unavailable, system will show the an error message to select another slot. 3. If any package is not availed by user system redirect to payment page. If anyone is not succeeded booking will be cancelling after 30 minutes.		
Post-condition: User will get a success message and redirected to confirmation page.		

Table 9: Vaccine Reminder Function

Name of the function: get vaccine reminder		
Precondition: User must be connected to internet and must have existing account		
<p>Input:</p> <ol style="list-style-type: none"> 1. Select a category from Baby or Girl. 2. Create account with age name birthdate. If category is girl input pregnant information 	<p>Process:</p> <p>An API will be called to store the account information.</p>	<p>Output:</p> <p>Users due, given and vaccine list will be sent as a collection and Send push Notification to remind the due vaccine time to time</p>
<p>Alternate options:</p> <ol style="list-style-type: none"> 1. If the user is not logged into the system it will warn before adding an account. 2. If the account already exists, system will show the user an error message and account creation addition will be unsuccessful. 		
Post-condition: User will get a success message and redirected to vaccine list page.		

Non-Functional Requirements

Non-functional requirements of "Maya- Your Health Assistant" are briefly discussed below:

- **Performance:** Represents the performance of the system which is required to exhibit and to meet the needs of users. Performance describes the acceptable throughput rate and acceptable response time. This application should provide a smooth experience for the user and should have no input lag while it cannot download below iOS 11.0.

- **Efficiency:** Represents the system's ability to produce outputs with minimal waste. We have tried to eliminate duplicate steps in the processes and to use the resources in an efficient way. Keeping our code non repetitive by using reusable code and components is how we achieved efficiency.
- **Security and Control:** Security and administrations are always a concern for any system. All information on the server side and client side is secured. Only the application administrators and developers have access to core code of the application to be able to directly manipulate any sort of information. In this project Laravel and , node.js and express.js have been used for back-end technology, which have various layers of security, where security requirements for this system have been taken care of. Control requirements represent the environment in which the system must operate, as well as the type and degree of security that must be provided. Access to the system or information must be controlled with the privacy requirements.
- **Scalability:** There is one standard User interface designed for the look and feel of the application. The application can be expanded to accommodate many further modules without making any changes to any existing modules. The application is created in such a way that the developers can easily maintain both the server and client sides.

5.4 Product Features

5.4.1 Architecture

Software architecture is what defines and structures a solution that meets technical and operational requirements. Software architecture optimizes attributes involving a series of decisions, such as security, performance, and manageability. It describes the organization and interaction of software components. To make the User Interface code easier to maintain and test MVVMC (Model View View-model Constraint) pattern was used to develop "Maya- Your Health Assistant" app.

Chapter 6

Project as Engineering Problem Analysis

6.1 Sustainability of the Project

Sustainable development is a systematic concept relating to the continuity of economic, social, institutional, and environmental aspects of human society as well as the non-human environment. It is characteristic of a process or state that a business can be maintained at a certain level indefinitely. The definition of sustainability may vary depending on the area of studies or interaction or the context or situations over many scales of space and time from small ones to global balance of production and consumption. It is a proven truism that most projects are failing because of the lack of an appropriate sustainability plan. It is therefore very necessary for a comprehensive analysis of the social, economic, legal, cultural, educational, and political environments for project implementation. (Morfow, 2014)

Some sustainability measures are as follows:

- **Social Desirability** : Due to COVID-19 people are not visiting hospital much for appointment or medical advices. But the rate is not that low. It is better to stay in home rather than visit physically these days due to safety issues. Neither the patients nor the doctors knows who is the carrier. So more people will be interested to stay in home and take medical services to reduce the outspread of corona.
- **Economic Sustainability** : with future launch on India and Pakistan Maya Health assistance will get more user base. User can ask more questions and purchase premium package. Obviously, they are considered as customers of the company and they will help to grow revenue.

Technical Feasibility : As we are planning to launch on India and Pakistan the company will add Urdu and Hindi language and that will increase the user interaction. For that project will be Technically feasible and sustainable.

6.2 Social and Environmental Effects and Analysis

Social Effects and Analysis: Mayalogy Limited aims to engage more people on "Maya- Your Health Assistant" by providing affordable medical services .Thus a chance of improving the people's health.

Environmental Effects and Analysis: Medical services from home and experts tips for healthy life and digital prescription will impact in environment. For this services traveling will be reduce and that will decrease the fuel burning. On the other hand, digital payment and prescription will reduces the uses of paper and will decrease the demand and forest will be saved.

6.3 Addressing Ethics and Ethical Issues

In 21st Century data breaching affecting millions of users are far too common. Many renowned websites and organizations collects user data but intention is not same for all. Though "Maya- Your Health Assistant" is a bigger platform, but we ensure to follow some ethical guidelines so that the user data remains safe with us and also the user should feel safe. Some ethical guidelines that will be follwed are as follows:

- **Relevant Data Collection:** The application is only collecting relevant user data to provide them customize feed for better user engagement.
- **Strict policy of not sharing or selling data:** As payment gateway is been introduced so the data collected will not be entertained for any third-party.
- **Strict policy on Third party services and API usage:** "Maya- Your Health Assistant" does not violate any rules of the third party services or API that have been used in development stage.
- **Relevant advertisements:** Advertisements related to "Maya- Your Health Assistant" premium package is shown only. No other advertisement will be shown anyway.

Chapter 7

Future Work & Conclusion

7.1 Future Works

“Maya- Your Health Assistance” is continuing to evolve as we plan to add more feature to make it fully fledged website. Some of the key feature that we want to include are:

- Add Period tracker
- Improve existing features
- Add more features for users
- Add Quiz feature
- Update the user interface

The current version with the previous design and with core feature. New version will be released with new UI design and new feature. This version will be released in the end of the June.

7.2 Conclusion

It was a great pleasure and wonderful experience for me to working with Mayalogy Limited. During this period I learnt a lot. I learnt about some cutting-edge technology during this period and I was pushed to adapt rapidly to come up with better solution to complete the project. This opportunity to work has paved the way for me to investigate the development environment and a taste of real world work experience. I would like to thank Mayalogy Limited again for giving me this opportunity and people who supported me during this time.

Bibliography

Wellframe, 2021. *About Wellframe*. [Online]

Available at: <https://www.wellframe.com/about-wellframe/>

[Accessed 19 May 2021].

TonyTheTiger, 2021. *Teladoc Health*. [Online]

Available at: https://en.wikipedia.org/wiki/Teladoc_Health

[Accessed 19 May 2021].

Magistretti, B., 2020. *Innovation*. [Online]

Available at: <https://www.forbes.com/sites/berenicemagistretti/2020/06/02/fembeat-fueled-by-its-45-million-series-c-digital-health-clinic-maven-acquires-bright-parenting-to-equip-parents-with-behavioral-skills/?sh=1cd3fa389e77>

[Accessed 19 May 2021].

Morflow, J., 2014. *Fundamentals of project sustainability*. 13th Edition ed. North America, Phonix: Project Management Institute.

Ohoaha, 2020. *Mayalogy*. [Online]

Available at: <https://en.wikipedia.org/wiki/Mayalogy>

[Accessed 19 May 2021].

Thomas, M., 2021. *Builton*. [Online]

Available at: <https://builton.com/healthcare-technology/healthcare-technology-companies>

[Accessed 20 May 2021].