# Executive Summary

The purpose of this project is to build up a web-based system, which should provide appointment management service to the owner of the health-care center, as well as booking service to customers. In this system, the features will be divided into two part: for system administrator and for customers. Administrator (Alena in this case) will be able to manage the information of health-care professionals, and for customers, they will be allowed to update their contact details and book or cancel appointments with their preferred health-care professionals. Further features will be taken into consideration after the initial project is released.

To complete this project, a hybrid systems development life cycle will be chosen, which combines the incremental model with the Agile model, to achieve well-defined requirements. The divided developing phases from incremental will be easier to manage for beginners who are lack of experience. And Kanban from the Agile model will show team members exactly what they are focusing on.

There will be plenty of benefits to the people involved. For the owner of health-care, this project will undoubtedly improve the work efficiency to manage appointments from customers. For the customers, this will enhance the convenience to book or cancel appointments with health-care professionals. For team members, they can gain real working experience, and improve their working skills as well.

However, there are also some constraints during development. Since all the developers are students who are lack of programming experience, they are given limited time to build up this system with assignments simultaneously going. One more limitation of this project is that the owner has insufficient funds to support the service and maintenance. According to the estimation on the website, the total cost would be $570 - $2565/year.

The team member will take different responsibilities during the progress of development. There will be one project manager to arrange meetings with team members, document meeting discussion and do researching. One UI/UX designer and two technical developers who are responsible for programming and testing. And one integration tester to test and debug during the integration.

During the development, the weekly group meetings are essential. Meanwhile, some social media applications and cloud service will be utilized, such as Wechat, google drive, and Github, to document the questions and solutions.

There will be some potential risks when doing this project. In the aspect of the product, for example, it may not match the expectations from the client or vulnerable security may lead to privacy leak. In the part of business, the financial support may be limited at the stage of release. We made a list of risk and show how these risks may affect the whole project.

At the stage of programming to build up website product, five web development frameworks are introduced which are Wix, WordPress, Ruby on Rail, CakePHP and Angular JS. Wix is selected considering the limited funds and inexperienced team members. Also, Wix is more beginner-friendly for students who are new to building up websites.

The progress of development is divided into smaller stages to show the details of work as work breakdown structure(WBS), and task progress chart is created based on WBS, which illustrates the dependency of each stage. According to the frame of the project, it needs to take eight weeks to deliver the final product, and time expense is shown in the time estimation table.

# Table of Contents

# 1.Introduction

## 1.1 Purpose of Document

This Project Management Plan (PMP) document defines the details on how to execute, monitor and control this web-based project for the appointment management system. This PMP document includes all kinds of aspects during the project development process such as project information, project governance, project execution, monitoring, control, etc. It is used throughout the whole project development process as a guideline and records so that the development process can be more efficient and clearer and also can enhance cooperation among all parties.

## 1.2 Audience of Document

**Developers**

This document is a guideline for the developers and records every step of the software development process. It provides a detailed plan and illustrates the order of the steps for the developers. From reading this document, developers can easily follow up the development process and have a clear direction about what they need to do, especially for those developers with less experience of the project.

**Alena (Product owner)**

From this document, Alena can easily monitor the development process and the details of the project and also give her a chance to show her advice in time according to the project plan schedules.

## 1.3 Limitations of Document

This PMP document focus on the recording of the development process. It is obvious that there are many limitations to this document. Firstly, all of our team members do not have any website development experience before so we choose Wix which is friendly for the beginner as a web development framework. However, another limitation of this document is the Wix has storage and bandwidth limitation and if the owner of the website wants to set a domain name without “ Wix” in it, it needs to pay extra money in it. Furthermore, this document only focuses on the requirements from Alena about the appointment management system in the health-care center. There may be some further development of this website with more comprehensive features. What is more, the communication between the document author with Alena is not enough, because the authors only get information from the key requirements document in the case study.

## 1.4 Evolution of Document

Table 1 shows the evolution of the document.

**Table 1: Evolution of document**

| Version | Created by | Date created | Location | Comments |
|---|---|---|---|---|
| 1.0 | SA-11 WeKnowNothing group | 23/4/2019 | Law building | The first version of the PMP document mainly illustrates the first three parts of the whole documents, introduction, project management, and project governance. It focuses on the preliminary work of the project, for example, identify the scope, SDLC model, analysis the risks, choose development technology, make development planning, etc. |

# 2.Project Information

## 2.1 Key Stakeholders

Table 2 shows the key stakeholders in this case.

**Table 2: Key Stakeholders**

| Name | Position | Internal /External | Project Role |
|---|---|---|---|
| Alena | Owner of the health-care center & health-care professional & the Admin user | Both Internal and External | product owner & health-care center employee & customer |
| Health-care center professionals | podiatrist & naturopath & chiropractor | External | Health-care center employee |
| Chaoran Jin | Project Manager, Software Researcher | Internal | SA-11 WeKnowNothing group member |
| Huiwen Zhang | UI/UX Designer | Internal | SA-11 WeKnowNothing group member |
| Li Wang | Technical Developer, Tester | Internal | SA-11 WeKnowNothing group member |
| Weihong Liu | Technical Developer, Tester | Internal | SA-11 WeKnowNothing group member |
| Qijie Li | Integration Tester | Internal | SA-11 WeKnowNothing group member |
| Customers | The customers of this health-care center | External | Customer |

## 2.2 Scope

This section clearly illustrates the whole scope of this web-based system which is developed with limited time and developers.

### 2.2.1 In-scope

In-scope defines which requirements or works will be delivered in this project. The in-scope features of this project are shown below.

***Profiles modification***

The admin user can add, remove or update the profiles of the Health-care professionals and this system should save these profiles. The profiles include the type ( podiatrist or naturopath or chiropractor), name, Email address and charge for a one-hour consultation session of each professional.

Customers add their personal profiles during the registration process and they can update the profiles when they log in the system.

***Customers registration***

new Customers can register in the system by providing their Personal_Information includes name, home address, contact phone number, Email address, and initial password.

***Login function***

Customers can log in to the system by using their email address and the password they have set in their Personal_Information.

***Appointment booking request***

Customers can create an appointment booking request after login to the system. They can select the available type of health-care professionals from a list. Then the system will show the name and per-hour charge of each health-care professionals of the selected type to the customer so that the customer will select the name of the professionals they prefer to. After that, the system will show the available time of this professional and the customer can select a suitable time and book an appointment. The customer can also enter an optional message to be sent to the professional. Finally, the appointment is successfully booked.

***Appointment booking cancel***

Logged in customers can cancel the appointment they booked before. If the appointment has not been proceeded and finished and the customer is not free or does not satisfy with the appointment they made before, they can log in to the system to cancel the appointment they made before.

***Appointment booking list***

Both customers and the admin user can get appointment information from this list but they have different access authority to the data. Customers only can view their own booked appointment on the list. The admin user can view all the appointment requests from all customers in the center of the list.

***Sending email***

When a customer completed an appointment booking, the system will send an email to the health-care professional regarding the booking. This email includes the name, phone number, email address of the customer, the date and the time of the booking and the per requirement message from the customer ( if there has).

When a customer cancels a booked appointment, another email will be sent to the professional with the information of the name, phone number, email address of the

customer, the appointment date and time and a message to indicating the cancellation of the booked appointment.

***Calendar***

The calendar stores the timetable of each professional in the health-care center. The customers can check when the professional they choose is available and then find a suitable time and make an appointment. If there is an appointment booked, the period during that appointment in the calendar will not be available to the other customers.

***Database***

The database stores the profiles of the customers and the health-care professionals and the appointment booking information in the system. The figure 1 below shows the primary structure of the database.

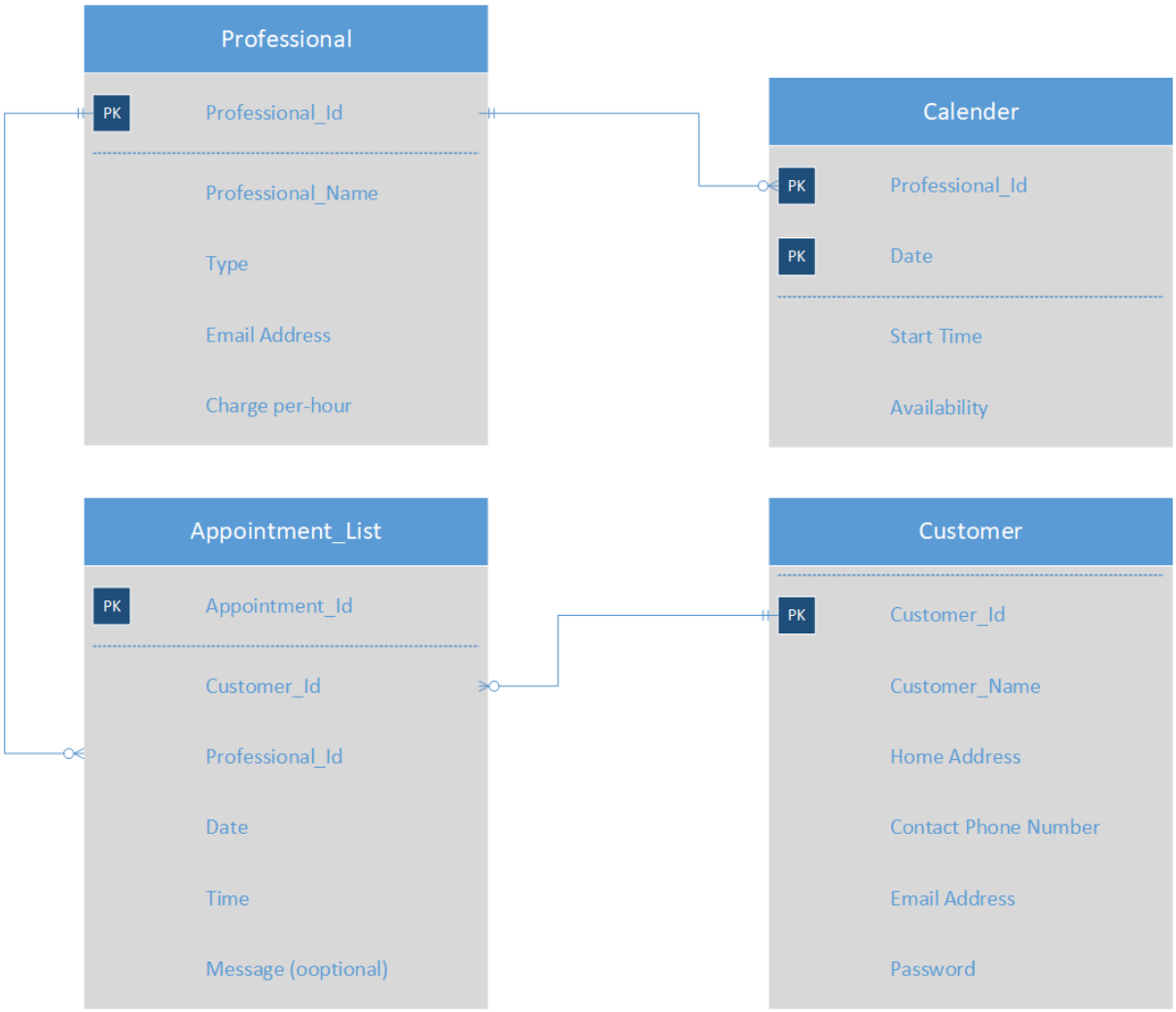


**Figure 1: Database structure**

***User interface***

This is a web-based appointment management system, it is necessary to provide a user-friendly web interface to all the users of this system. Users can get information about this system from the interface and interact with this interface.

## 2.2.2 Out-of-scope

The out-of-scope function means the project team is not responsible for delivering these functions in this project which is shown below:

***The admin user' s login to the system.***

The admin user has already got a pre-defined and system recognizable email username and a default initial password for login so that the project team does not have to responsible for delivering the interface to enter this.

***Customers cannot change the appointment time straightly***

If the booked appointment time is not suitable for the customer, they cannot straightly change the time of the booked appointment in the appointment list. They have to cancel the appointment first and then choose the professional and the available time of the professional again to make another appointment.

***No reminding service to the customer***

There is no reminding service to the customer before each appointment is coming.

***No responsibility for the maintenance of the website.***

The project team only responsible for the development process of this project. After finishing the development of the website, the team will not continue to maintain the website.

***No responsibility for the commercial operation***

Some commercial operation like advertising investment of this website is also out of the scope of this project.

***The further development of the website in this health-care center.***

This project only focuses on an appointment management system in this health-care center. In the further, the health-care may need to develop a comprehensive e-health informatic systems which includes electronic record systems, remote video diagnosis system, etc. All these functions are out of the scope of this project so that the project development team will not responsible for them.

## 2.3 Delivery Approach/SDLC

Consider with the complexity of the project as well as project experiences and available working time team members have, in order to take advantage of both formal and agile lifecycle, a hybrid delivery approach was chosen to complete this project. The incremental model will be used in general, but during the implementation, 'Kanban' methodology from an agile model will be applied to plan and track the progress.

The team members are all lack of experience of project management and it is difficult for students who have different timetables to meet up and work together frequently as agile methodology requires, so formal model is preferred to be chosen. Moreover, the requirements of this project are well-defined, which becomes a characteristic where formal models make sense to use.

The reason why chose the incremental model among all formal models was mainly because of its flexibility in dividing jobs into parts for implementation. In an incremental model, requirements would be divided into various releases and would not affect each other until the integration. For a team that may not has plenty of time to work on together, using incremental model allows members to dominate their time more flexibly to finish assigned work without tracing the other members' schedule. In addition, the incremental model has advantages in testing and debugging. It is also beneficial for scope creep risk that probably happens.

However, as analyzed before, by using incremental model, team members could do their jobs in their own time without work together with other members, what might become an issue is that manager will be difficult to track developers' progress. To deal with such a situation, the team introduce 'Kanban' methodology to record progress and make plans. Everyone should update their progress in 'Kanban' application such as Trello so that other members in the team could know and if someone falls behind schedule, the project manager could warn him to prevent latency of the whole project.

## 2.4 Business Value

***For admin/owner (Alena in this case):***

- Reduce workload and improve efficiency.

  No need to listening messages, confirm customers' bookings and update calendars any longer as the system would finish these tasks instead.

- Easier to manage appointments.

  Without the system, the admin needs to check availability of healthcare professionals when customers make bookings. But the system could check for availability automatically at the time customers choose their appointment time. In addition, booking information could be sent to health-care professionals automatically rather than sent by Alena.

- Save operating costs.

  When a business becomes bigger, the owner would have to hire new staffs to share her work if without the system, but it would be not necessary if the system is put into usage. The salary pay for new staffs is obviously more than the cost to operate a website. And the design and developing of booking system are free provided by university students.

***For customers:***

- Easier to book appointments; user-friendly process.

  The original booking process is extremely complex for customers. Customers need to call the center and leave booking messages and would receive a confirmation mail after Alena made confirmation with all appointment details when she is free to do so. If something goes wrong like lack of personal information or time conflict, they need to talk to Alena to update their appointment. With the new system, customers would know what information needed to complete a booking and when a health-care professional is available at a certain time during their booking processes and would receive confirmation letter as soon as they complete the booking online.

***For health-care professionals:***

- Beneficial for time management.

  Professionals always receive their schedules after Alena arranges all the appointments. With the new system, they will get their appointments sooner so that they could arrange their time earlier.

***For health-care center:***

- Improve the customer experience.

  As analyzed in value for customers. This is a user-friendly system which simplifies the booking processes and the user could get feedback soon.

- Improve the center's image, attract more customers.

  An efficient booking system might make the center looks more professional.

***For the team:***

- Get new project experience.

  By doing this project, team members would learn about a new framework Wix, apply project management methodologies learned from the subject in a real project.

- Improve teamwork skills.

  As working as a team, members would gain experience from working as a team such as improving communication skills and skills to deal with conflicts.

## 2.5 Constraints

***Limited developing time***

As all developers in the team are full-time students, they have four subjects undertaking, and each subject has different assessments such as assignments or mid-term exam. The multitasking would undoubtedly decrease focusing time for each task, so developers will not be able to work on this project with enough time as professionals do.

***Limited funding***

From the case, Alena, that is our client, she does not have sufficient funds to spend on the system. The problem here is that there might be huge money needed to support the service after the project is done. For example, with more customers signing in and booking appointments, it is essential to spend money on maintaining service provided by servers. Or at the stage of developing, part of funds will be spent on creating a database in case the further features. According to the research and estimation on the website, the cost will include domain name registration which costs $10 - $15/year, SSL certification (for security and trustworthiness) that costs $70 - $300/year, hosting rent (rent a server from companies to house the website) which is approximately $40 - $200/year, content delivery network that costs $50 - $250/year, and maintenance which is around $400 - $1800/year. Since there is no expense for designing and developing, the total cost would be $570 - $2565/year. This might be the biggest problem for further developing.

***Lack of experience***

The developers are full-time students, who have never worked in practice. Therefore, the limited experience would be troublesome when they go through some detailed progress, such as creating a proper user interface. Also, this may lead to the delay or failure of the project. For example, when they do project management planning, they may underestimate the time they are supposed to spend and divide the progress of development into vague parts, then they will not be able to deliver the project in time.

# 3. Project Governance

## 3.1 Roles and Responsibilities

***Project manager:*** meeting record; progress tracker;

***UI/UX designer:*** design UI/UX for this system

***Technical developer:*** programming for this project

***Tester:***

- *Usability tester*: responsible for unit test
- *Integration tester*: responsible for testing and debugging during integration. make sure functionalities still work as expected after integrating together.

***Framework researcher:*** doing research about the framework which would be used in this project(Wix) and provide technical support when needed.

***Software researcher:*** doing research about software and application which would be used in this project and provide technical support when needed.

**Table 3: Team Roles**

| Name | Roles | Responsibilities |
|---|---|---|
| Chaoran Jin | Project manager, Software researcher | meeting recording; progress tracker; doing research about software and application which would be used in this project and provide technical support for the team |
| Huiwen Zhang | UI/UX designer | design UI/UX for this system |
| Li Wang | Technical Developer, Tester | responsible for programming and unit test. |
| Weihong Liu | Technical Developer, Tester | responsible for programming and unit test. |
| Qijie Li | Integration Tester | Responsible for testing and debugging during integration. make sure functionalities still work as expected after integrating together. |

## 3.2 Communication Plan

First, we make a weekly plan on Trello, including thing to do, doing, done, based on the submission date from LMS.

There will be a 2-hour group meeting every Tuesday to discuss the project plan. During the meeting, all thoughts and comments will be documented on google drive, at the same time, questions that cannot be solved after discussion will be collected.

All team members attend a tutorial on Thursday, and the questions in the collection will be forwarded to tutor, then the answers will be collected and sent to the group chat on Wechat in case some members are not able to attend the tutorials.

There will be another review meeting on Sunday, which will take approximately 2 hours, to summarize individual works on Google drive.

Last but not least, at the stage of developing, the codes will be collected on Github to be shared among team members.

## 3.3 Risk Management

**Table 4: Risk Impact Analysis Table**

| Risk ID | Risk Type | Description | Probability | Impact | Justification |
|---|---|---|---|---|---|
| 1 | Product | Users' privacy may be leaked by the system | Low | This could lead to the exposure of users' privacy. It may bring some legal issues to the business. | All users' data are stored in the database, the firewall of the database may not be strong enough to prevent all potential attacks. This is a top priority risk. Users' data security needs to be guaranteed. |
| 2 | Project | The product could be stuck at some development stage. | Medium | This could cause the project is canceled. Development team members are not sophisticated developers; | This risk is a common risk that could happen in every project which could due to the leak of resources or technique |

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| | | | | hence they could not be able to implement the certain function of the product and may fail at the final integration stage. | issue. This risk is rank high in the priority as it could fail the project suddenly. |
| 3 | Product | Product not matching the expectation and meet the requirements listed in the document | Medium | Some functionalities may need to be re-implemented and the user interface may need to be re-designed. | Due to the leak of experience for students in this project, some requirements may not be completed satisfactorily. The priority of this risk is high, as it is a major risk of the project. |
| 4 | Project | The wrong SDLC could be adapted for this project. | Low | The wrong SDLC can make the change of product requirement hard to deliver and some future enhancements are not able to implement. | This risk could happen at the beginning stage of the project but detected by the development team at the late stage, which could lead to a very time-consuming fix. Hence the need to be confirmed at a very early stage, the priority of it is medium. |
| 5 | Business | Low financial support for maintenance of server and database | High | If financial support is not enough, the service may suffer high latency and jitter. This could | To successfully build the application, server and database are required which |

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| | | | | jeopardize the business's reputation. | are not free. This risk will impact on the user experience of the appointment system; hence the priority is medium. |
| 6 | Product | The system server and the database storage hard drive could be physically damaged. | Low | If the server and hard drive are damaged, the system will not function properly, and all the users' data could be lost. | This could due to some natural disasters or fire. This is a risk which has a small possibility of happening, but extremely destructive of the appointment system. Hence the priority is medium. |
| 7 | Project | There might be disagreement within the team that cannot be solved after negotiation | Low | This risk could cause delay the completeness of the product, or even destroy it. | This could happen as the project goes on, a team member may argue about some details in the project. This risk is not very likely to happen hence low priority. |
| 8 | Business | There too many appointments emerged that the business cannot handle due to the small capacity of it. | Low | Some potential appointments could be declined because there is no time slot available. This can damage the business reputation. | The wait time for each appointment could be increased a lot. This risk could emerge as the business's expansion, which needs a more human |

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|---|---|---|---|---|---|
| | | | | | resource to accommodate more customers. It won't impact current business much, hence priority is low. |
| 9 | Product | Incompatibility between product and users' operation system | Low | The website created may only some certain version of the web browser, which could cause some users to fail to open the system. | This risk is mentioned here because of this risk will only be detected if it actually happened on some certain device and browser. It is not a crucial risk of the product. The priority of it is low. |
| 10 | Business | Some potential customers may do not know how to use the appointment system | Medium | Some customer may not choose this health center as their service provider, and business may suffer from the loss of potential customers. | This could happen to some customer do not know how to use a website browser and this is not a major risk and the impact is not that much hence the priority is low. |

**Table 5: Risk Register**

| Risk ID | Trigger | Owner | Response | Resources Required |
|---|---|---|---|---|
| 1 | The appointment system is hacked, or the user's password is compromised. | Attacker of the system or user | Lock all the users' account immediately and ask them to change password. The system should use a strong firewall system to prevent the attack. The database stores the passwords should use an encryption algorithm to encode the passwords. | Technique support and human resources. |
| 2 | Some technique that needs to develop the system is not known by the developer. | Team members | One possible solution is to find an outsourcing company to help to implement the part that causes the project stuck. | Financial resources and human resources. |
| 3 | Some functionalities asked in the requirement is beyond the current ability of developers. | Team members | Developers could learn the corresponding skills and do some research on it. | Time and human resources. |
| 4 | When the business requirements cannot fit into the SDLC | Team members | Try to mitigate the mistakes caused by the wrong SDLC and find the right one, then transform the project to it. | Time and human resources. |
| 6 | Natural disasters or fire | Unknown reasons | Backup the system and database regularly and use them when the system and database are destroyed. | Backup server and backup hard drives. |
| 7 | Disagreements between team members | Team members | The team manager should solve the disagreements and help the team member to | Time and human resources. |

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| | | | communicate in a friendly way. | |
| 9 | The system cannot be accessed from some version of web browsers | User's a web browser | If there an only few users have this problem, ask them to use another version of browser or the system need to upgrade to support that browser version. | Time and human resources. |

## 3.4 Technology

There are many web development frameworks, in order to find the most suitable website development technology for us, we made a search about language/technology/framework for the software project.

| Technology /platform | language | Introduction |
|---|---|---|
| Wix | | Wix.com is an Israeli cloud-based web development platform, it allows users to create HTML5 websites and mobile sites through the use of online drag and drop tools.[1] Wix has More than 510 stunning templates covering all industries and Powerful customization tools including the best drag-and-drop editor in the business, so it's very friendly for beginner to create a professional website without having to know a line of code. |
| WordPress | | WordPress (WordPress.org) is a free and open-source content management system (CMS) based on PHP & MySQL. |
| Ruby on Rail | Ruby | Ruby on Rails, or Rails, is an open source web application framework for the Ruby programming language. Rails is a full-stack framework, meaning that it gives the web developer the ability to create pages and applications that gather information from the web server, talk to or query the database, and render templates out of the box.[2] |
| CakePHP | PHP | CakePHP is an open-source web framework. It follows the model–view–controller (MVC) approach and is written in PHP.[3] CakePHP uses well-known software engineering concepts and software design patterns, One of the project's inspirations was Ruby on Rails. A |

| | | |
|---|---|---|
| | | modern PHP 7 framework offering a flexible database access layer and a powerful scaffolding system that makes building both small and complex systems simpler, easier and, of course, tastier.[4] |
| Angular JS | Javascript | AngularJS is a JavaScript-based open-source front-end web framework mainly maintained by Google and by a community of individuals and corporations to address many of the challenges encountered in developing single-page applications. |

**Table 6: Research of the Project Framework**

Since none of our team members have experience in full stack development, we decided to choose between Wix and WordPress, which are friendly for beginner to create a website without learning to code. So, we need to compare Wix and wax which is more suitable for our project.

| | Wix | WordPress | comments |
|---|---|---|---|
| Cost | Wix is free for builders. However, it has some downsides to it.<br>1. Wix branded advertisements on the top and bottom of our website.<br>2. The basic plan in Wix has storage and bandwidth limitation. | The WordPress software is open source, and it is available for free for anyone to use.<br>But we need our own domain name and web hosting to install it. Which means we need to pay for our domain name. | In this project, our budget is limited. And Considering that there will not be large storage and high bandwidth requirements at the beginning of the project, so a basic Wix plan will meet our needs. Besides that, we can also use free wix.com address instead of paying for our own domain name. |
| Ease of Use | Wix is easy to use since it offers a simple drag and drop interface where we can select any element on your site and start editing it. | WordPress comes with a visual editor to write your content and a theme customizer which allows you to edit your theme properties. To get full control of the appearance, we need to familiarize different sections like navigation menus, customizer, visual post editor, | Since members in our team do not have experience in developing a website and we are not able to spend extra time learning technical development skills like visual post editor in WordPress. In this case, Wix is more suitable for our team. |

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|---|---|---|---|
| | | etc. This means that WordPress requires a small learning curve for beginners. | |
| Design and Layout | Wix comes with more than 500+ pre-made templates to choose from. We can further customize our site design, change the layout, and rearrange items. | WordPress has thousands of free and paid themes. Free themes come with limited support, but they also go through a strict review process. | WordPress has a much larger range of themes and design layouts than Wix. However, it is also easy to find a health care center website template in Wix. |
| E-commerce | Wix offers eCommerce with their paid plans. This means users with the free plan cannot run their eCommerce store on Wix without upgrading to a paid plan. With the WixStores, we can accept payments using PayPal or Authorize.net. | WordPress makes it super easy to create our online store using WooCommerce, which powers more than 42% of all e-commerce websites in the world. There are also plenty of other eCommerce plugins available for WordPress that we can use | Though in this project, there is no clarity whether a payment system is required. However, it could be necessary for further development. Both of Wix and WordPress can solve this problem though we may need to pay for the advanced plan in Wix. |

**Table 7: Comparision between Wix and WordPress.**

By comparison of Wix and WordPress, we can conclude that Wix is more suitable for our team in this project since Wix is more friendly for us to develop our website and it can meet most of our needs. So, we decide to choose Wix to develop our website system.

## 3.5 Project Planning

### 3.5.1 Work Breakdown Structure (WB)

| | Activity | Work Breakdown | Dependencies | Resource Name |
|---|---|---|---|---|
| 1 | **Concept** | | | |
| | 1.1 | Clarify Concept Scope | | all the team members |
| | 1.2 | Preliminary Concept Planning | 1.1 | Chaoran Jin |
| | 1.3 | Preliminary Analysis | | |
| | | 1.3.1 Initial Technology Research (language/framework/technology) | 1.2 | Huiwen Zhang, Chaoran Jin |
| | | 1.3.2 Technology Risk Assessment | 1.2 | |
| | | 1.3.3 Initial Requirements | 1.2 | |
| | | 1.3.4 Problem definition with client | 1.3.3 | |
| | | 1.3.5 Build Configuration | 1.2 | |
| | 1.4 | Initial Project Plan | 1.3 | all the team members |
| | 1.5 | Concept Evaluation | 1.4 | Chaoran Jin |
| | | | | |
| 2 | **Requirements** | | | |
| | 2.1 | Requirements Iteration 1 - User Landing<br>Users landing includes user login, registration and withdraw | | |
| | | 2.1.1 Requirement Elicitation | 1.4 | Li Wang, Weihong Liu |
| | | 2.1.2 Requirement Analysis | 2.1.1 | |
| | | 2.1.3 Requirement model | 2.1.2 | |
| | 2.2 | Requirements Iteration 2 - Professional Interface<br>Enable Admin health care professionals to the system. | | |
| | | 2.2.1 Requirement Elicitation | 2.1.2 | Li Wang, Weihong Liu |
| | | 2.2.2 Requirement Analysis | 2.2.1 | |
| | | 2.2.3 Requirement model | 2.2.2 | |

| | | | | |
|---|---|---|---|---|
| | 2.3 | Requirements Iteration 3 – Appointment Book<br>Allow customers to create a booking request and inform professionals through email | | |
| | | 2.3.1 Requirement Elicitation | 2.2.2 | Li Wang, Weihong Liu |
| | | 2.3.2 Requirement Analysis | 2.3.1 | |
| | | 2.3.3 Requirement model | 2.3.2 | |
| | 2.4 | Requirements Iteration 4 – Other Requirements | | |
| | | 2.4.1 Requirement Elicitation | 2.3.2 | Li Wang, Weihong Liu |
| | | 2.4.2 Requirement Analysis | 2.4.1 | |
| | | 2.4.3 Requirement model | 2.4.2 | |
| | 2.5 | Requirements Specification | 2.4.3 | Li Wang, Weihong Liu |
| | 2.6 | Requirements Validation | 2.5 | all the team members |
| | | | | |
| **3** | **Design** | | | |
| | 3.1 | Software Architecture Design - Select the appropriate Wix template | 2.6 | Huiwen Zhang |
| | | | | |
| **4** | **Implementation** | | | |
| | 4.1 | Incremental Cycle 1 – User landing<br>Users landing includes user login, registration and withdraw | | |
| | | 4.1.1 coding | 3.1 | Weihong Liu |
| | | 4.1.2 testing release 1 | 4.1.1 | Qijie Li, Huiwen Zhang |
| | 4.2 | Incremental Cycle 2 – Professional Interface<br>Enable Admin health care professionals to the system. | | |
| | | 4.2.1 coding | 3.1 | Li Wang |
| | | 4.2.2 testing release 2 | 4.2.1 | Qijie Li, Huiwen Zhang |
| | 4.3 | Incremental Cycle 3 – Appointment Book<br>Allow customers to create a booking request and inform professionals through email | | |
| | | 4.3.1 coding | 4.1.2, 4.2.2 | Weihong Liu, Li Wang |

| | | | | |
|---|---|---|---|---|
| | | 4.3.2 testing release 3 | 4.3.1 | Qijie Li, Chaoran Jin |
| | | 4.3.3 Integration testing of release 1,2,3 | 4.3.2 | Qijie Li, Chaoran Jin |
| | 4.4 | Incremental Cycle 4 – Other Requirements | | |
| | | 4.4.1 coding | 4.3.3 | Weihong Liu, Li Wang |
| | | 4.4.2 testing release 4 | 4.4.1 | Qijie Li, Huiwen Zhang |
| | 4.5 | Integrate release 1,2,3,4 | 4.4.2 | Weihong Liu, Li Wang |
| | 4.6 | Integration testing of release 1,2,3,4 | 4.5 | Qijie Li, Huiwen Zhang |
| | | | | |
| 5 | **Acceptance Testing** | | 4.6 | all the team members |

**Table 7: Comparision between Wix and WordPress.**

## 3.5.2 Task Network

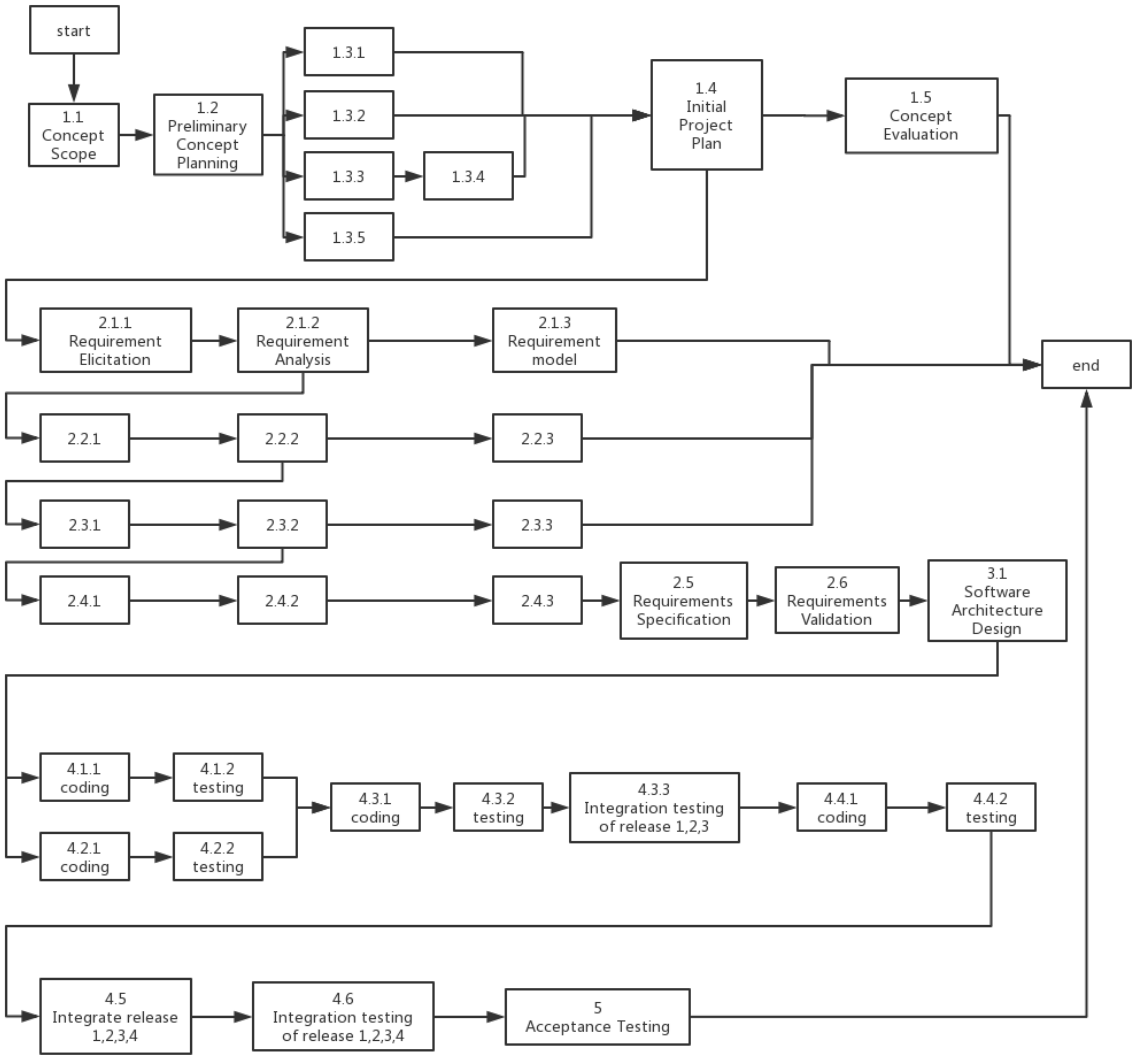


**Figure 2: Task Network**

### 3.5.3 Time Estimation

| | Activity | predecessor | Time estimate | | | Expected time(T) |
|---|---|---|---|---|---|---|
| | | | Opt. (O) | Normal(M) | Pess. (P) | |
| 1 | 1.1 | — | 1 | 1 | 1 | 1.00 |
| 2 | 1.2 | 1.1 | 1 | 1 | 1 | 1.00 |
| 3 | 1.3.1 | 1.2 | 1 | 2 | 3 | 2.00 |
| 4 | 1.3.2 | 1.2 | 1 | 1 | 1 | 1.00 |
| 5 | 1.3.3 | 1.2 | 1 | 2 | 4 | 2.17 |
| 6 | 1.3.4 | 1.3.3 | 1 | 1 | 1 | 1.00 |
| 7 | 1.3.5 | 1.2 | 1 | 2 | 3 | 2.00 |
| 8 | 1.4 | 1.3 | 1 | 3 | 4 | 2.83 |
| 9 | 1.5 | 1.4 | 1 | 1 | 1 | 1.00 |
| 10 | 2.1.1 | 1.4 | 1 | 1 | 1 | 1.00 |
| 11 | 2.1.2 | 2.1.1 | 1 | 1 | 1 | 1.00 |
| 12 | 2.1.3 | 2.1.2 | 1 | 1 | 1 | 1.00 |
| 13 | 2.2.1 | 2.1.2 | 1 | 1 | 1 | 1.00 |
| 14 | 2.2.2 | 2.2.1 | 1 | 1 | 1 | 1.00 |
| 15 | 2.2.3 | 2.2.2 | 1 | 1 | 1 | 1.00 |
| 16 | 2.3.1 | 2.2.2 | 1 | 1 | 1 | 1.00 |
| 17 | 2.3.2 | 2.3.1 | 1 | 1 | 1 | 1.00 |
| 18 | 2.3.3 | 2.3.2 | 1 | 1 | 1 | 1.00 |
| 19 | 2.4.1 | 2.3.2 | 1 | 1 | 1 | 1.00 |
| 20 | 2.4.2 | 2.4.1 | 1 | 1 | 1 | 1.00 |
| 21 | 2.4.3 | 2.4.2 | 1 | 1 | 1 | 1.00 |
| 22 | 2.5 | 2.4.3 | 1 | 2 | 3 | 2.00 |
| 23 | 2.6 | 2.5 | 2 | 3 | 4 | 3.00 |
| 24 | 3.1 | 2.6 | 1 | 2 | 4 | 2.17 |
| 25 | 4.1.1 | 3.1 | 4 | 5 | 7 | 5.17 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26 | 4.1.2 | 4.1.1 | 1 | 2 | 3 | 2.00 |
| 27 | 4.2.1 | 3.1 | 4 | 5 | 7 | 5.17 |
| 28 | 4.2.2 | 4.2.1 | 1 | 2 | 3 | 2.00 |
| 29 | 4.3.1 | 4.1.2，4.2.2 | 4 | 6 | 7 | 5.83 |
| 30 | 4.3.2 | 4.3.1 | 1 | 2 | 3 | 2.00 |
| 31 | 4.3.3 | 4.3.2 | 1 | 2 | 3 | 2.00 |
| 32 | 4.4.1 | 4.3.3 | 4 | 5 | 6 | 5.00 |
| 33 | 4.4.2 | 4.4.1 | 1 | 2 | 3 | 2.00 |
| 34 | 4.5 | 4.4.2 | 1 | 1 | 1 | 1.00 |
| 35 | 4.6 | 4.5 | 3 | 4 | 5 | 4.00 |
| 36 | 5 | 4.6 | 1 | 1 | 1 | 1.00 |

**Table 9: Time Estimation**

## 3.5.4 Gantt Chart

| ID | Task Name | Start | Finish | Duration (days) |
|---|---|---|---|---|
| 1.1 | Concept Scope | 2019-03-28 | 2019-03-28 | 1.0 |
| 1.2 | Preliminary Concept Planning | 2019-03-29 | 2019-03-29 | 1.0 |
| 1.3.1 | Technology Research | 2019-03-30 | 2019-03-31 | 2.0 |
| 1.3.2 | Risk Assessment | 2019-03-30 | 2019-03-30 | 1.0 |
| 1.3.3 | Initial Requirements | 2019-03-30 | 2019-03-31 | 2.2 |
| 1.3.4 | Problem definition | 2019-04-01 | 2019-04-01 | 1.0 |
| 1.3.5 | Build Configuration | 2019-03-30 | 2019-03-31 | 2.0 |
| 1.4 | Initial Project Plan | 2019-04-02 | 2019-04-04 | 2.83 |
| 1.5 | Concept Evaluation | 2019-04-05 | 2019-04-05 | 1.0 |
| 2.1.1 | Requirements1 Elicitation | 2019-04-05 | 2019-04-05 | 1.0 |
| 2.1.2 | Requirement1 Analysis | 2019-04-06 | 2019-04-06 | 1.0 |
| 2.1.3 | Requirement1 model | 2019-04-06 | 2019-04-08 | 1.0 |
| 2.2.1 | Requirements2 Elicitation | 2019-04-06 | 2019-04-08 | 1.0 |
| 2.2.2 | Requirement2 Analysis | 2019-04-08 | 2019-04-08 | 1.0 |
| 2.2.3 | Requirement2 model | 2019-04-09 | 2019-04-09 | 1.0 |
| 2.3.1 | Requirements3 Elicitation | 2019-04-09 | 2019-04-09 | 1.0 |
| 2.3.2 | Requirement3 Analysis | 2019-04-10 | 2019-04-10 | 1.0 |
| 2.3.3 | Requirement3 model | 2019-04-11 | 2019-04-11 | 1.0 |
| 2.4.1 | Requirements4 Elicitation | 2019-04-11 | 2019-04-11 | 1.0 |
| 2.4.2 | Requirement4 Analysis | 2019-04-12 | 2019-04-12 | 1.0 |
| 2.4.3 | Requirement4 model | 2019-04-13 | 2019-04-13 | 1.0 |
| 2.5 | Requirements Specification | 2019-04-14 | 2019-04-15 | 2.0 |
| 2.6 | Requirements Validation | 2019-04-16 | 2019-04-18 | 3.0 |
| 3.1 | Design | 2019-04-19 | 2019-04-20 | 2.2 |
| 4.1.1 | Incremental1 coding | 2019-04-21 | 2019-04-25 | 5.2 |
| 4.1.2 | testing release 1 | 2019-04-26 | 2019-04-27 | 2.0 |
| 4.2.1 | Incremental2 coding | 2019-04-21 | 2019-04-25 | 5.2 |
| 4.2.2 | testing release 2 | 2019-04-26 | 2019-04-27 | 2.0 |
| 4.3.1 | Incremental3 coding | 2019-04-28 | 2019-05-03 | 5.8 |
| 4.3.2 | testing release 3 | 2019-05-04 | 2019-05-05 | 2.0 |
| 4.3.3 | Integration testing 1,2,3 | 2019-05-06 | 2019-05-07 | 2.0 |
| 4.4.1 | Incremental4 coding | 2019-05-08 | 2019-05-12 | 5.0 |
| 4.4.2 | testing release 4 | 2019-05-13 | 2019-05-14 | 2.0 |
| 4.5 | Integrate release 1,2,3,4 | 2019-05-15 | 2019-05-15 | 1.0 |
| 4.6 | Integration testing 1,2,3,4 | 2019-05-16 | 2019-05-19 | 4.0 |
| 5 | Acceptance Testing | 2019-05-20 | 2019-05-20 | 1.0 |

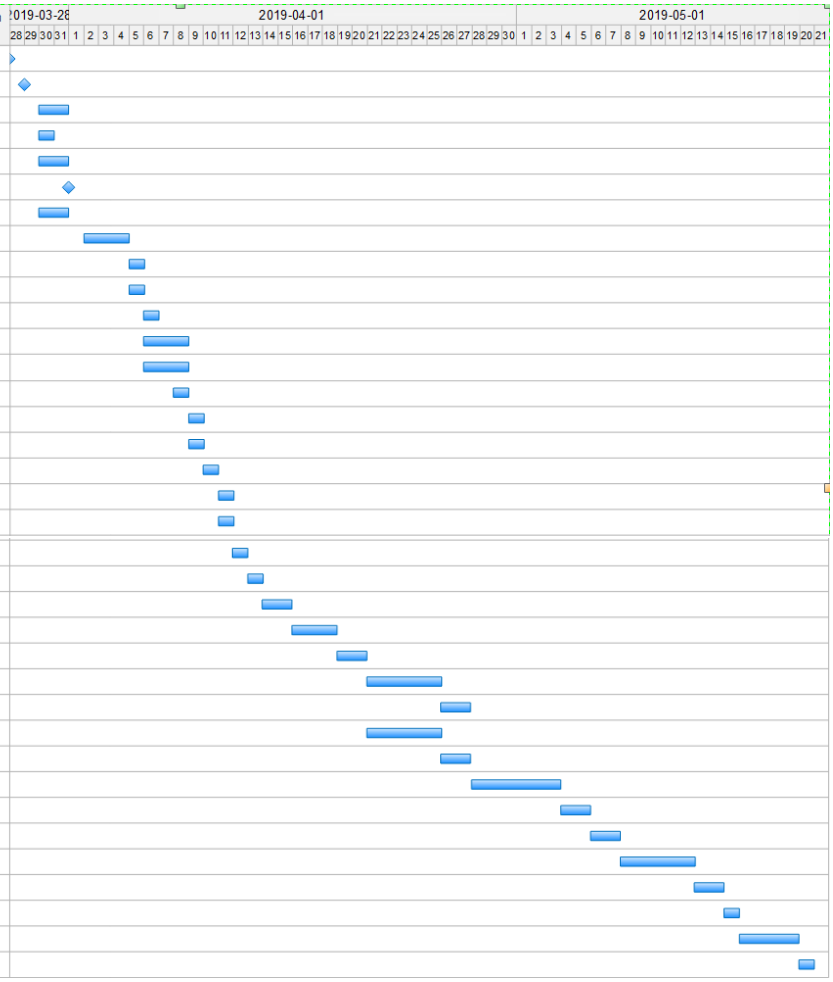


**Figure 3: Gantt Chart**

### 3.5.5 Milestone

| Week | Milestone |
|---|---|
| week4(28/03-4/4) | Initial project plan and complete technology research. Decide suitable technology/language/framework in this project through group meeting. |
| week5(5/4-11/4) | Clarify the part of the requirements in our project. |
| week6(12/4-18/4) | Clarify all the requirements in our project, including requirements validation. |
| week7(18/4-25/4) | Architecture Design - Select the appropriate Wix template, Complete implementation of User Landing Interface and Professional Interface. |
| Mid-break(26/4-28/4) | Complete testing User Landing Interface and Professional Interface |
| week8(29/4-5/5) | Complete implementation and testing of Appointment-Booking system |
| week9(6/5-12/5) | Test the integration of User Landing Interface, Professional Interface, and Appointment-Booking system. Complete implementation of all the rest requirements. |
| week10(13/5-19/5) | Integrate User Landing Interface, Professional Interface, Appointment-Booking system and delivery from Incremental cycle 4. Test the entire website. |
| week11(20/5-24/5) | Test the whole system and make the final optimization |

**Table 10: Milestone**

## Reference

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