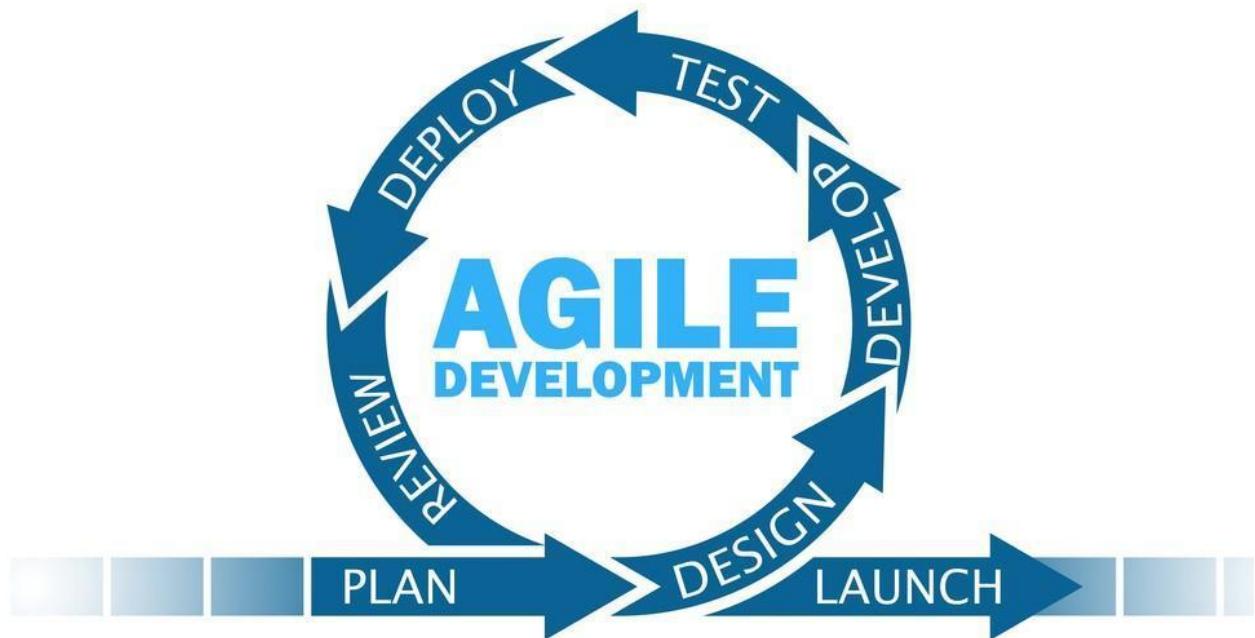


# Project Management Plan

Agile SDLC Methodology  
October 15, 2021, Version 2.2  
Team 03\_06



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**Methodology**  
Agile SDLC Methodology

# 1 Executive Summary

Under the situation that Sally and Anne decided to design Travelling Technology Bus to help students study STEM subjects, our team will utilize the Scrum framework of the Agile model to execute a project plan for building a web application that could manage the schedule of the travelling bus.

The purpose of the document is to determine and elaborate the outcome and scope of the project, involved stakeholders, adopted the SDLC model and the corresponding strategies, business value, existing constraint, related technologies and potential risks. And the audience of the document includes project members, stakeholders and the potential supervision department of the government.

The key stakeholder section of the project planning consists of external stakeholders and internal stakeholders. And the scope part describes in detail what needs to be done during the development process and what is not included in the development requirements. Besides, the SDLC section explicitly states the reason why we choose the Agile model instead of the Waterfall model. In addition, the business value part of the project consists of financial or non-financial benefits which pertain to its strategic objectives, regarding each stakeholder, and the constraints include scope, time, cost, and the existence of Covid-19.

Our team have five Scrum roles: Product Owner, Scrum Master, Dev Team Members, Subject Matter Expert, who will work together to guarantee the smooth running of the project. As for the communication plan, we maintain two plans, one in-team communication plan and one communication plan for stakeholders. Furthermore, the specific risk management section contains the details of unforeseen events that are particular to our project, and our risk response strategies. And the generic risk management section contains the problems that most development projects may encounter. We also determine the technologies to use, which is the WordPress framework.

Furthermore, the following section presents the Sprint Plan for the first sprint, with a Sprint Goal, a Sprint Backlog, an initial Sprint Swinlane board and an ideal Burndown Chart and Velocity. And we have created and signed a group contract that includes four sections: group meetings rules, group work rules, group culture rules, conflict solving rules, roles and time commitment and penalties.

Finally, we document the Project Execution, Monitoring and Control to provide information about Project Status, Process Related Artefacts, Product Related Artefacts and Risk Monitoring and Control for three sprints. Then the lessons learnt part is implemented to show what we have learned from this project from aspects like teamwork, technology choice, time or effort estimations, what worked well and what didn't work well.

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## 3 Introduction

### 3.1 Purpose of document

The purpose of the document is to determine and elaborate the outcome and scope of the project, involved stakeholders, adopted the SDLC model and the corresponding strategies, business value, existing constraint, related technologies and potential risks. It could also be used by the project team to record, promote and review the development of the project. In addition, stakeholders and other relevant personnel could better understand the project through the document.

### 3.2 Audience of document

The audience of the document includes project members, stakeholders and the potential supervision department of the government.

### 3.3 Evolution of document

Version	Individual Responsible	Date created	Comments
1.0	<b>Significant contribution:</b> Yulai Luo 4.4 Yidi Xiang 4.6 Xuanzhe Meng 4.1 Rucheng Fang 4.2 Jieyun Peng 4.5  <b>Together:</b> 1, 2	05/09/2021	Each team member makes a major and equal contribution to the evolution of the document. The individual responsibilities assigned to each member are discussed carefully and agreed upon by all team members. The person who has an advantage in a specific area will undertake the tasks in the relevant field. In addition, the workload is carefully decided to ensure that each team member makes an almost equal contribution.

1.1	<p><b>Significant contribution:</b></p> <p>Yulai Luo 4.4, 5.1 Yidi Xiang 4.6, 5.2 Xuanzhe Meng 4.1 Rucheng Fang 4.2, 4.3 Jieyun Peng 4.5</p> <p><b>Together:</b> 1, 2, 3</p>	08/09/2021	Add more content to Version 1.0 and revise many areas which need to be improved. Similarly, the individual responsibilities assigned to each member are discussed carefully and agreed upon by all team members.
1.2	<p><b>Significant contribution:</b></p> <p>Yulai Luo 4.4, 5.1, 6.1 Yidi Xiang 4.6, 5.2, 5.5 Xuanzhe Meng 4.1, 5.3 Rucheng Fang 4.2, 4.3, 5.4 Jieyun Peng 4.5, 5.3</p> <p><b>Together:</b> 1, 2, 3, 6.2</p>	11/09/2021	Make more improvements based on Version 1.1. Add the last several parts to the document. We check all the content in the last meeting for the first submission and make sure that every section is proper and accurate.
2.0	<p><b>Significant contribution:</b></p> <p>Yulai Luo 4.4, 5.1, 6.1 Yidi Xiang 4.6, 5.2, 5.5 Xuanzhe Meng 4.1, 5.3 Rucheng Fang 4.2, 4.3, 5.4 Jieyun Peng 4.5, 5.3</p> <p><b>Together:</b> 1, 2, 3, 6.2, 7.1</p>	01/10/2021	Add the content of sprint 1 to the documentation due to the end of sprint 1. Also, we revise the previous sections.

2.1	<p><b>Significant contribution:</b></p> <p>Yulai Luo 4.4, 5.1, 6.1 Yidi Xiang 4.6, 5.2, 5.5 Xuanzhe Meng 4.1, 5.3 Rucheng Fang 4.2, 4.3, 5.4 Jieyun Peng 4.5, 5.3</p> <p><b>Together:</b> 1, 2, 3, 6.2, 7.1, 7.2</p>	08/10/2021	Add the content of sprint 2 to the documentation due to the end of sprint 2. Also, we revise the previous sections.
2.2	<p><b>Significant contribution:</b></p> <p>Yulai Luo 4.4, 5.1, 6.1 Yidi Xiang 4.6, 5.2, 5.5 Xuanzhe Meng 4.1, 5.3 Rucheng Fang 4.2, 4.3, 5.4 Jieyun Peng 4.5, 5.3</p> <p><b>Together:</b> 1, 2, 3, 6.2, 7.1, 7.2, 7.3, 8</p>	15/10/2021	Add the content of sprint 3 to the documentation due to the end of sprint 3. Also, we revise the previous sections. Finally, we add a lesson learnt part to show what we have learned from this project.

## 4 Project Information

### 4.1 Key Stakeholders

The stakeholder refers to an individual or a group who may affect a direction, activity, or consequence of the project [1]. The stakeholder may have different types based on the project, it generally consists of users, governance, influence, and providers [2]. This section describes the role-based Stakeholders for the scheduling system, and it contains basic information of an individual or a group, their role on the project, their effect on the project, suggestions for each stakeholder. The following table illustrated the properties of stakeholders for this system.

Name	Internal/External	Role	Level of Stakeholder Engagement
Sally Lee	Internal	Product Owner	Leading
Anna	Internal	Product Owner	Leading
Anna's team	Internal	Project Team	Supportive
Business Sponsors	Internal	Sponsors	Supportive
Admin User	Internal	End Users	Supportive
School	External	End Users	Supportive
Staff (Casual or Support Staff)	External	Suppliers	Supportive
Teachers	External	Suppliers	Supportive
Students	External	Customers	Supportive
Cooperator from local government (Donation)	External	Government	Supportive

## **Internal stakeholder**

The Internal stakeholder aims to make this scheduling system available to customers and users. Any problem occurring in internal stakeholders may have serious impacts on project development or maintenance. Thus, each internal stakeholder is indispensable to the project. For the project Travelling Technology Bus, Sally, Anna, and her team are responsible for project development, and they are critical people of this project, which could change the direction and make the decision in project management. In addition, they are competent to negotiate with business sponsors and the government.

Business sponsors are the main budget resource for this project development, they are typically business partners and contractors. This is a non-profit education project designed for students; hence it is essential to guarantee the lack of budget will not happen during the development.

Admin user is an end-user for the scheduling system after project releases. To use this Web Application, it needs the admin user to have basic knowledge of website content maintenance and awareness of network security. Not only just complete daily missions, but admin users are also capable of identifying threats and vulnerabilities. For example, an admin user should have the ability to detect a phishing email by inspecting the email domain. Maybe it is considered to hire a security consultant responsible for the web security domain. We only divide the level of external stakeholder engagement into two types that are leading and supportive because this is a non-profit organization. We assume that there is no conflict of interest among external stakeholders. Moreover, the organization should monitor the participation of stakeholders as this case study [3] mentioned that poor participation causes negative impacts on the project such as corrupt practices and client dissatisfaction. These risks are possible to happen based on the situation and we should avoid them during the development of process and maintenance.

## **External Stakeholders**

External Stakeholders in this project are suppliers, customers, and the government. Although stakeholders do not conduct direct interference in the development process, they cause effects on the long term of the project. Students are customers while staff and teachers are the main suppliers after the scheduling system release. Communication between these two groups is significant as suppliers provide customers with services then the organization can get feedback. Despite teachers is the most suitable choice because of their rich educational experience and better learning abilities, it is hard to hire enough teachers in a short team. The organization can hire volunteers as casual staff after a short-term training. However, this strategy might bring some potential problems because of casual staff's mobility. Schools that are interested in this

project could mobilize some teachers to fill the casual staff positions. The Travelling Technology Bus could provide service for school as a reward.

In conclusion, this scheduling system is mainly beneficial to students as each participating student can benefit from the activities which increase their interest and knowledge in STEM. While the stakeholder is a key point to make the project successful, the management of stakeholders is difficult. Because the organization needs to realize that the development of the stakeholder mindset is a significant part of successful project management [1].

## 4.2 Scope - What is in-scope?

User Stories	Story Point	Sprint
1. As an admin user, I want to use the default e-mail address and password to access the scheduling system so that I can manage the scheduling system after login.	15	1
2. As a school representative, I want to register on the School Registration Web Page so that I can log into the scheduling system.	15	
3. As a school representative, I want to register the expression of interest on the Expression of Interest Web Page after logging into the scheduling system so that I can request a bus visit.	10	
4. As an admin user, I want the system to automatically send an e-mail to me so that I can know that a new expression of interest has come for scheduling.	10	
5. As an admin user, I want to view the list of all expressions of interests received on the Expressions of Interest Listing Web Page after logging into the scheduling system so that I can do further operations for rostering a schedule for a school.	20	2
6. As an admin user, I want the system to allow the Rostering a Schedule Web Page to display after clicking the hyperlink for any school so that I can roster a schedule for a school.	15	

7. As an admin user, I want the system to automatically send an e-mail to the corresponding school representatives so that they will be reminded to choose a time from the schedule.	15	
8. As a school representative, I want to choose and confirm the time for the bus visit on the Schedule Web Page after logging into the scheduling system so that the bus can visit on the scheduled time.	20	
9. As a school representative, I want to operate on the Cancelling a Scheduled Visit Web Page after logging into the scheduling system so that I can cancel a scheduled visit for the Technology Bus.	15	3
10. As an admin user, I want the system to automatically send an e-mail to me after a school representative cancels a scheduled visit so that I can know the information about the bus visit cancellation.	15	

### 4.3 Scope - What is out-of-scope?

1. In requirement 1, there is no need to create a separate user interface for the administrator who will use the default account login page because all the users shall use one interface.
2. There is no need to set up the function of verifying the email address on the user registration interface, even if the school representative enters an unavailable email address.
3. In requirement 5, as the client needs all expressions of interest collected in a tabular form, we do not need to develop other different types of forms to store this kind of information.
4. Although the schedule needs to be arranged by the administrator on the Web, the system does not need to generate a new schedule based on the time selected by the school representative.
5. There is no need to plan the bus route according to the schedule.

## 4.4 Delivery approach / SDLC - Formal or Agile

Waterfall     Agile     Incremental

Agile is considered the most suitable Software Development Life Cycle for the case study by all team members and its principle and methodologies will be utilized throughout the whole project. Compared to the Waterfall model, the Agile model performs better in the aspects of product quality, project development process system structure and software testing. These aspects are strongly related to the **key requirements** of the project.

The Scrum methodology is decided by all team members to be the approved agile framework and will be implemented by us throughout the whole project. Scrum is an Agile framework to help people to address complicated and adaptive difficulties, and productively and creatively deliver outcomes with the highest potential benefit [4].

In terms of **product quality**, Agile could produce a higher-quality Scheduling System than Waterfall could. Agile could offer outcomes with higher quality and user-friendly attributes [9]. Clients could present feedback to the project team after every sprint so that the products produced using this approach usually end up being quite user-friendly [9]. From the requirements of the project, we could know that there are several sprints to implement the subsystems of the Scheduling System such as administration system, school registration management system, bus management system and database system during the development of the system. If Agile is used, the clients could throw out a suggestion to help improve the product quality after each sprint. At that time, any suggestions from the stakeholders could be utilized and executed by the project team. However, the Waterfall does not support real-time feedback from the clients. It decreases the chance of comprehensively improving the product. In addition, Agile also increases clients satisfaction by frequent communication, whereas Waterfall may lead to the dissatisfaction of clients because of its lack of communication and falling short of the new requirements.

When it comes to the **project development process**, Agile is more appropriate than Waterfall for the Scheduling System due to its high flexibility. And High flexibility leads to the regular adaptation to frequently varying circumstances. Agile divide the project into short sprints that are both manageable and flexible enough to allow the team to implement changes on short notice. This unique high flexibility is the substantial reason to enable dynamic organizations to be fond of utilizing the Agile model in the project [6]. From requirement 2, we could know that the Scheduling System has potential needs for changing the requirements due to the lack of details on documents. For example, restriction for the input of the School name field is text. However, there are better choices like an options menu for students to select a certain number of schools to avoid mistakes. This kind of change of requirements is possible to appear during the project

development process. At that time, the Agile model could adapt to the changing circumstances smoothly and flexibly. But Waterfall does not allow for ambiguity and is markedly hard to adapt to variations [7]. During the development of the Scheduling System, the changes are hard to deliver and may consume huge resources.

From the aspect of **system structure**, Agile is more suitable than Waterfall for the Scheduling System which has multiple complicated and non-sequential deliverables. Agile has its advantages if the project does not always develop sequentially and has complicated deliverables and incremental development, [5]. From the requirements of the project, we could know that there are several sprints to implement the subsystems of the Scheduling System such as administration system, school registration management system, bus management system and database system during the development of the system. Those subsystems lead to the high complexity and demand diversification of the Scheduling System. On the other hand, the administration system, school registration management system, bus management system and database system are not strongly correlated and could be developed non-sequentially. These two attributes make the project quite suitable to adopt the Agile model. However, the Waterfall model is often more accommodated to less complicated projects or projects that have exhaustive specifications, means and roles for group members [5]. Due to the high complexity of the Scheduling System, Waterfall is not an appropriate model for this project.

As for the **software testing**, Agile perform better than Waterfall due to its real-time testing after every sprint. Agile delivers testing concurrently with software development but Waterfall requires the testing to occur after the “Build” stage [8]. From the requirements of the project, we could know that the Scheduling System has multiple complicated and non-sequential deliverables like the administration system, school registration management system, bus management system and database system, which could be implemented in separate sprints. After every sprint, instant testing is necessary as delayed testing may cause big problems which need large costs to solve. Agile carries out instant testing after every sprint of the development of the subsystems, resulting in a relatively small consumption to solve the problems. However, Waterfall put the testing phase after the complete construction of the project. At that time, the problems among separate components of the project are hard to distinguish and solve. Even the issues are settled, it could consume a large number of resources.

In conclusion, in consideration of the requirements of the projects, Agile is more suitable than Waterfall for the case study as it performs better in the aspects of product quality, project development process system structure and software testing. Although Agile has many advantages as above, its **drawbacks** like potentially more expensive consumption and longer deadline might hurt the development of the project [10]. We will pay close attention to the issues caused by Agile’s drawbacks and minimize their impact on the project.

## **4.5 Business Value (Financial & Non-Financial Benefits)**

### **Non-Financial Benefits**

Government & 'Not for Profit' organization:

For the government and the 'Not for Profit' organization set up by Sally and Anna, the online system can be propaganda on STEM education across all age groups and areas for public interests.

Sally:

For Sally and many other parents, the online project provides a good channel for their children to learn STEM knowledge under COVID-19 restrictions, allowing the school to uniformly manage and organize the visits, which is a more standardized, systematic and safe approach.

Anna's team:

The project is conducive to the growth and construction of Anna's team and company. The project itself is also external propaganda for the company.

School:

Based on the remote communication function available for the moderator and schools, the online system has greatly improved the efficiency [11] of STEM education for regional schools and also brought flexibility[11] for schools to arrange the learning activities.

### **Financial Benefits**

Government:

Through improving and innovating the education idea about STEM, this project also promotes relevant consumption and promotes employment through recruiting casual STEM staff, which generates certain tax revenue.

School:

For most regional schools as end-users in this project, the service provided is a more low-cost alternative to STEM incursions or excursions [1], for similar educational goals.

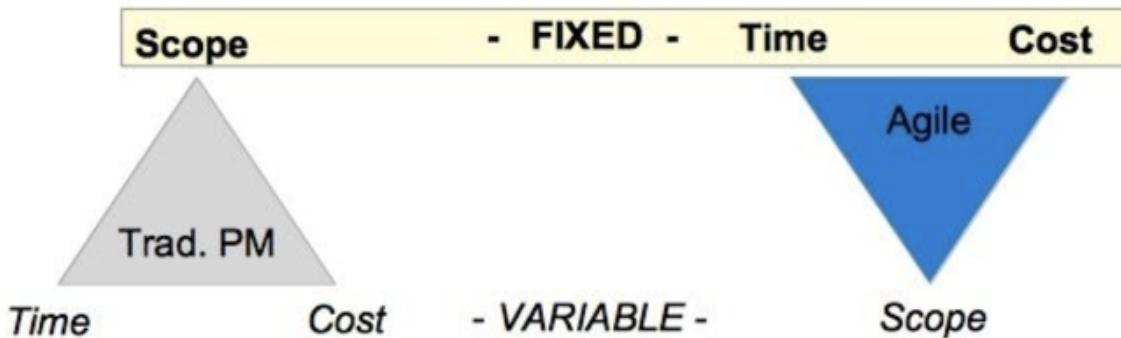
Sponsor:

The project is also a commercial promotion for sponsors who provide the device and technique, also the booking services of "Specialized Activities" and the teacher skill augmentation sessions which are available online in the future would bring them extra income.

## 4.6 Constraints

**Triple Constraints:** Scope, Time, and Cost.

The classical triple constraints of scope, time, and cost apply to this project [12]. As project phase 1 will be undertaken by student teams, the cost of human resources can be assumed minimized, as the students' work is their required course contents. Additionally, the students that work for this project is enrolled in the SWEN90016 class, which limited their time to no more than one semester (3 months). As the agile approach is chosen, according to Cencula [13], the triple constraint for formal approaches are inverted. With given time and cost, the scope here become the relative factor that depends on the other two [13]. Thus, to make sure the required quality of the software is fully achieved, time, cost and scope should be rationally managed to achieve a perfect balance by the team. Since the human resources cost is minimized in this project, the cost constraint gets eased, which makes room for time and scope.



*Figure 1 Time, Cost, Scope*

### The existence of Covid-19.

Another constraint that must be considered during the development of software projects is the existence of Covid-19. As we know, the Covid-19 situation has limited the physical space that SWEN90016 students can travel. For most students of SWEN90016, most certainly the whole project would be undertaken online, including all project management and software development activities. This could apparently affect the team members efficiency and effectiveness in co-operation, which makes it a constraint worth taking notes of.

### **Sourcing open-source software to save costs.**

Relating to our cost constraint, a derived constraint is that the choices for developing the system are limited to mostly open-source software. The reason for this is that the budget for this project is close to none. Most commercial software for software development is expensive. With this constraint, the team will have to pay more attention to sourcing appropriate free software. It is also viable to apply for licenses for commercial software, as the project is non-profit.

### **Inexperience and time limitation of the development team.**

The development team solely contains students in SWEN90016. For this specific group of people, compared to software engineers on the market, their expert skills are lacking because of inexperience. Also, as this project is provided as part of the course requirements, there is a time limit for the students as they are only enrolled in this course for a set period. In the meantime, these students most certainly have other courses to study and invest time for. The Product Owner and Scrum Master need to manage the time and effort based on the characteristics of these students.

### **The limitations that come with our technology choice.**

The final choice of software development framework is WordPress. In itself, there are limitations. Although the market occupation rate of WordPress is high, it is originally designed for building blog websites. Hence, the development cycle of it is different to that of a Java web project or others. This constraint has to be remembered by the team, so that maximum efficiency can be achieved during the development process.

## **5 Project Governance**

### **5.1 Roles and Responsibilities**

#### **Scrum Master:** Yulai Luo.

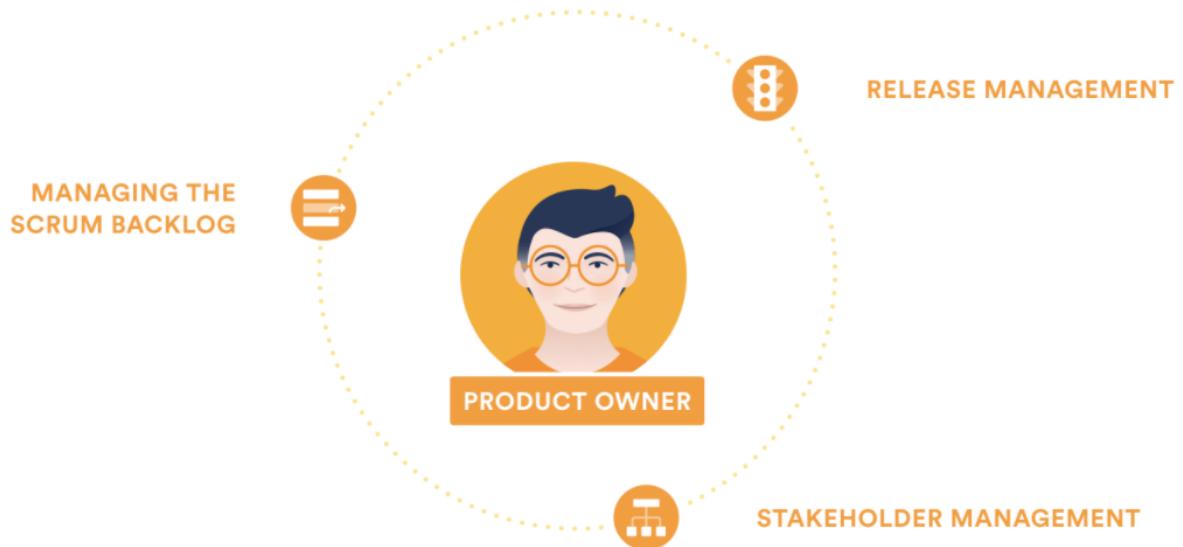
In this project, the Scrum Master is responsible for leading the Scrum process, eliminating problems or barriers throughout the project, teaching the group to follow Scrum rules, values and methods and encouraging the beneficial collaboration between the stakeholders and the Scrum team [14]. He is also responsible for managing and grooming the product backlog and finalizing the sprint backlog items. The scrum master in our team monitors the project progress and uses the burn-down chart to track the velocity. He also plans and conducts project planning meetings, sprint review meetings, sprint retrospective meetings and daily standup meetings.



**Figure 2 Scrum Master**

**Product Owner:** Yidi Xiang.

In this project, the Product Owner is responsible for defining the business vision and specifications and strategies for the product, understanding and interpreting client requirements for the development team, deciding the scheduled release date for product characteristics and controlling the product backlog [15]. He is also responsible for sprint planning and backlog creation. Besides, he helps the Scrum Master to conduct the project planning meetings, sprint review meetings, sprint retrospective meetings and daily standup meetings.



**Figure 3 Product Owner**

**Development Team Members:** Xuanzhe Meng and Rucheng Fang.

In this project, the Dev Team Members are responsible for delivering the requirements of the products throughout the project, arranging their workload and the way to finishing it, combining individuals with various skills to achieve targets and working in the same place to promote osmotic communication [17]. They participate in sprint planning and item selection from the

sprint backlog and task selection from the sprint swimlane board. They also participate in sprint review meetings, sprint retrospective meetings and daily standup meetings.



*Figure 4 Development Team*

**Subject Matter Expert:** Jieyun Peng.

In this project, the Subject Matter Expert is responsible for professionally teaching the Scrum team how stuff works and bringing related domain knowledge to the team to help them make more knowledgeable choices and produce more solid strategies to accomplish targets [18]. She is responsible for participating in the project planning meetings, sprint review meetings, sprint retrospective meetings and daily standup meetings.



*Figure 5 Subject Matter Expert*

## 5.2 Communication Plan

### In-team Communications:

For in-team communications,

- Zoom is chosen as the go-to formal communication method.
  - As a virtual team, Zoom provides us with the ability to hold scrum meetings of all kinds in a pseudo and face-to-face way.
- WeChat is chosen for casual communications.
  - Some of our team members are in China, which makes it hard to use communication tools like Messenger (needs VPN).
- For formal notice of work that needs records, we would use emails.
  - A unique advantage of emails is that emails can be easily retrieved when needed proof of records.
- WhatsApp is chosen as our contingency plan for in-team communications.

The frequency of in-team agile ceremonies is recorded in the table below.

Type	Participants	Format	Frequency
Sprint Planning	Every member of the team, lead by the Product Owner[17]	Zoom	At the beginning
Daily Standups	Only team members, ScrumMaster, the Product owner can clarify any questions with user stories[17]	Zoom	Daily
Sprint Reviews	The whole team participates, invite the world[17]	Zoom	At the end of each sprint
Sprint Retrospective	ScrumMaster and Team, Possibly Product Owner, customers and others (But generally NOT)[17]	Zoom	After every sprint

Virtual team tips: As a virtual team, constrained by the Covid-19 situation, real face-to-face communication is hard to achieve. For each occasion that requires a face-to-face meeting, we

replace it with a Zoom meeting. Using Zoom inside the dev team is free of charge, and will incur fees when communicating with stakeholders. If there are issues with Zoom, we have a contingency plan of using Tencent Meeting, which is free of charge.

Escalation process: Escalating openly and rationally reduces uncertainty, delays, and damaged relationships. If an issue cannot be resolved inside the team, the problem needs to be escalated to the next level.

- Both parties of conflicts reach the same page that there is a conflict.
- Clarify the options to resolve these conflicts.
- Escalate the problem to a higher level.
  - If the conflict originated between the team members, escalate the problem to the Product Owner.
  - If the conflict involves the Product Owner, escalate the problem to Sally and Anna.

As the goal is to resolve conflicts, when a face-to-face meeting is impossible, the communication format should be via Zoom. Determined by the whole period of this project, the escalation process cannot take more than 3 days. The responsibility belongs to the Product Owner.

### **Stakeholders Communications:**

A communication matrix is attached below.

Stakeholder	Communication Objective	Format	Frequency	Owner	Importance
Sally Lee	Provide updates on the project on each sprint	Email/Zoom	Weekly	Product Owner	High
Anna's Team	Ask for resources needed whenever needed help	Email/Zoom	Bi-monthly	Scrum Master	Medium
Government Donors/ Business Sponsors	Provide and present the completed project to gain funding, and keep providing updates once they sponsored	Email/Zoom	Monthly	Product Owner	High

School representatives and teachers	Gain potential users' (schools) feedback on the project	Email/Zoom	Once during the project planning phase	Product Owner	Medium
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### 5.3 Risk Management-specific risks

(Note: the table format has been adjusted by us for the elegance of the report. The content of the table remains unchanged.)

**Risk Impact Analysis Table:**

Risk ID	Risk Type (Business/Project/Product)	Description	Probability (0-100%)	Impact (1-10)	Justification
R1	Project (A security risk related to the admin account password)	The first risk we found is that the project contains an issue of information security. For requirement 10, we can see that all of the data is stored in a single database but there is not any requirement for the security domain. One of the vulnerabilities is the password for the admin user. In requirement 2, there is no restriction for password selection. If Admin user password composition is weak, then the attacker can just perform the brute force cracking to try all possible combinations of characters to match the correct one. An eight-character password consisting of all lower-case letters has $26^8$ combinations and this is a huge number for a human's brain. However, a common password cracking tool only needs a few mins to enumerate all the probabilities and find the correct one [18]. If an admin user enhances the password complexity such as involved number, symbol, the number of combinations increases exponentially. This makes the amount of time to crack passwords increased to a few years.	10%	7	Information security is an important issue regardless of what kind of information is stored. The project must ensure confidentiality, integrity, and availability [1]. Otherwise, schools might reject participation in this school because we cannot guarantee their information security. The website can be more secure by adding a few steps during the development.
R2	Product (A product risk that the project may not accept the performance requirement)	The second risk we found is the performance may not reach full requirements. The core reason for this risk is the work pattern. Our delivery approach is agile, but it is hard to follow all the procedures in agile-based on our situation. For example, team members now study in their cities because some ceremonies in agile may not be implemented such as daily stand up. In addition, this situation also reduces the communication between the members. The only way to communicate is by email, phone and online sessions. Overall, if scrum master finds errors or changes the direction, then others might not realize the changes or errors immediately during the development process. These factors may affect the	50%	6	During the product development process cycle, some members of the development team may choose to leave the team because they feel that the work arrangement is unfair and they did not receive a salary that matched the effort they put in.

		quality requirement of the project, thereby affecting the final performance.			
R3	Product (Product risk related to system stability)	Considering a large number of scenes of email sending in this multi-user system, the performance risk of the system is worth being concerned about. Some unstable factors will affect the sending of emails, such as network jitter, communication abnormalities, and even concurrent pressure, which should be considered in the design phase.	20%	6	The communication reliability should be ensured for both moderator and schools, in all scenes including expression of interest, the scheduling, or cancellation of the bus visit. The risk of loss of messages will lead to an interruption of business processes.
R4	Project (A project risk related to the uncertain factors )	Due to the need for start-up funds, the main business should be realized with the help of business sponsors, and thus cannot be carried out simultaneously with the web application, which is 'Proof of Concept' and those factors in the production environment are not taken into account. So, there is a process risk due to quality assurance problems in the early stage, and defects may arise when the project comes into operation in the later stage.	60%	4	The output products of a process will not be of higher quality than the input products[16]. If the products have defects, they will not disappear later but will be amplified. So without initial control on quality, afterwards maintenance is required to amend arisen defects. This might result in enormous work of technical support.
R5	Project (A project risk related to the system failure during the development)	A single point of failure may affect the entire project and even lead to rework due to the interdependence of each requirement. This is because those requirements are mostly designed to be sequential, where some required text and data fields are auto-populated from the previous requirement.  For example, the schedule functionality appears in requirement 6 for the first time. Suppose we make a mistake for the schedule feature and don't realize it until we finish the entire project. Then, we need to fix errors from requirement 6 to requirement 9 as they contain wrong schedule functionality.	60%	6	We choose this risk because the requirements in this project are sequential. Even a small error that occurs in the initial requirement may affect the future requirements because of high dependency. If we ignore the errors in the previous requirements, then the debug process will be expensive in the end and the release time also might be delayed.

### Risk Register:

Risk ID	Risk Trigger	Owner	Response	Response Strategy Type	Resources Required
R1	The attacker tries to hack the system.	Project Team	We can conduct some strategies to mitigate this risk. The website does not accept the simple password composition and it should contain special characters, digits and characters. In addition, we can implement multi-factor authentication. When an admin user account requests to log in, a verification code is sent to the user's phone, the user needs to enter the code to log into the admin account.	Mitigate	None
R2	Lack of communication as a team completes this process by remote working.	Project Team	We can make a good communication plan before the development to mitigate this risk. For example, to perform virtual daily stand up and sprint reviews to conclude the daily development.	Mitigate	More communication time
R3	Messages are lost after being sent.	Project Team	First, a stable protocol of email sending should be confirmed beforehand in the design phase. The appropriate design can be a distributed system for message transfer with re-transmission mechanisms. Second, performance testing is also needed before delivering the project. The above strategies would result in a residual risk with lower probability and impact[17].	Mitigate	Performance test environment

R4	Customer complaints caused by system problems.	Project Team	The end-user trial process can be introduced, with periodical communication with users about work results. Leaders should carefully organize the detection and review of output products and conduct strict testing such as effective boundary testing on each iterative function. When the software product comes into operation, after-sale service or technical support should be available.	Mitigate	Product and technical support personnel test cases and equipment
R5	A single error in one of the requirements causes a serious impact on the project.	Project Team	The development progress should be managed through good planning and monitoring. There should be enough communication and feedback inside the project team to well confirm the requirement details and develop the schedule, so as to respond to changes and errors. We could also decouple the project to reduce its inner dependencies. One way is to apply the developed model of separation of front-end and back-end, where the static pages without data can be prepared in advance. The developing process then ends with a joint debugging test to verify the design meets the system requirements.	Mitigate	None

## 5.4 Risk Management -generic risks

(Note: the table format has been adjusted by us for the elegance of the report. The content of the table remains unchanged.)

**Risk Impact Analysis Table:**

Risk ID	Risk Type (Business/Project /Product)	Description	Probability (0-100%)	Impact (1-10)	Justification
R1	Business	Few users use this product	20%	3	After completing the production of the web, few people may register for this system. This situation may be since the organizer of the event did not carry out reasonable publicity. As a result, most schools that were originally willing to participate in the event did not know that there was such a channel. This may cause no one to care about this product.
R2	Project	Someone quit during the development process	40%	6	During the product development process cycle, some members of the development team may choose to leave the team because they feel that the work arrangement is unfair and they did not receive a salary that matched the effort they put in.
R3	Product	The developer may have insufficient professional competence for a certain skill	10%	9	There may be certain jobs that require special skills during development, but there are no members with this ability in the entire development team. This may cause the progress of the product to stagnate.
R4	Project	The time may not be enough during the development process	20%	6	Halfway through web development, the team found that the remaining development process may not be completed due to a limited time.

R5	Project	There may be security issues in the process of using the web	20%	9	Some criminals may obtain a large amount of school information by attacking this web and may also use this system to learn the whereabouts of the travelling bus and destroy it when the activity is carried out.
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### Risk Register:

Risk ID	Trigger	Owner	Response	Response Strategy Type	Resources Required
R1	There were fewer than 5 new users a week after the web went live.	Project Team	The organizer of the event can increase the intensity of communication and publicity and can send people with professional knowledge to various schools to carry out lectures on this event.	Avoid	Time and human resources
R2	There was a conflict between the members of the development team and the Scrum master because he was asked to take on too much work alone.	Project Team	When assigning work, the team needs to be more careful to judge whether each work is evenly distributed to each developer.	Avoid	Time
R3	In the process of developing the web, an algorithm is needed to support the normal operation of the system, but no team member can solve this algorithm problem, which causes the web to fail to display normally.	Project Team	Team members can get help from other people with relevant experience outside the team by paying a certain amount and use this knowledge to solve the problem.	Avoid	Working space
R4	The team found that the remaining time was not enough to finish the whole product.	Project Team	The team can give feedback to the event organizer and get an extension.	Avoid	Time
R5	On the way to school, vehicles with the same characteristics are often found trailing behind. And school representatives often receive harassing calls.	Project Team	Pay attention to the protection of data while developing the web. The team can add a firewall to the database to block the attacks of criminals.	Mitigate	Time

## 5.5 Technology

The final choice of framework to utilize is WordPress. A complete rundown of our decision process is shown below.

### Analysis of Requirements:

The main purpose of the system is to schedule the time for visits to different schools that want the services of the travelling bus. The interaction needed in this system is mainly between the character of the admin user and school representatives. The whole process initiates with a school representative with interests and ends with a consensus from both sides on either a determined

schedule or a cancellation on the EOI. From this information, the functionalities of this system are not nearly as complicated as an enterprise-level web application. However, it's not a static exhibition website, either.

To gain a deeper understanding, an analysis of the requirements shall be performed. To decide or restrict a circle of choices of software developing framework to use, the functionalities that map the requirements should be extracted. For requirements 1 & 2, it's clear that a login function is needed, along with the ability to distinguish between different types of users (Admin User and School Reps here). Requirements 3, 5, 6, 8 all map to the functionality of filling and showing forms, from which we know that we need a multi-functional interactive form component. From requirements 4, 7, 10, functionality of sending emails with automatically fetched contents is required from both types of users. Requirement 9 tells that a form responsible for showing part of fetched contents is needed, along with the ability to delete records from the database.

The functionalities of a login system, interactive forms, automated generated emails, and persistent database storage became the go-to criteria when we search for developing technology. We limited our choices to three options: WordPress, Wix, or developing a Java-based web application.

### **Comparison of Functionality Provided:**

Our final range to choose from includes WordPress, Wix, or developing a Java-based web application. WordPress [19] is an open-sourced, PHP and MySQL-based Content Management System. Wix [20] is a commercial SaaS (Software as a Service) platform that provides the ability to build websites swiftly. As for a Java-based web application, it's the whole package of frontend (including HTML, CSS, JavaScript), backend (Java), and data persistence (MySQL).

The easiest to use from the three choices is undisputedly Wix [20]. Similar SaaS options like Squarespace [22] are also researched, but Wix wins over Squarespace for its freedom to modify page layouts. Wix provides beautifully designed components to exhibit on the webpage [26]. Moreover, as a website builder, the learning curve of Wix is much less steep comparing to WordPress or Java-based [26]. However, the functionality provided by Wix is, thereby, limited. The choice of functionalities comes from its app market, but there aren't many to choose from [26]. Though it can meet the current functionality requirements, it's hard to scale up to some of the Phase2 requirements.

For a Java-based application, the scalability and functionality are close to limitless. The server can be hosted by ourselves, the logic can be customized in any way we want. Through proper designing and designing, it can scale up to meet Phase2 requirements without a doubt. However, it might not be the best option for this project. As discussed in 4.6 Constraints, the cost allocated to this project is very limited, as well as the time. Additionally, the development team might not

be proficient with Java. If that's the case, the development process could be very, as the learning curve of Java itself is already considerably steep.

Word-press is an open-sourced CMS that charges none by itself. It provides an enormous amount of themes and plugins, that extends its functionality to fit most of the websites' needs [25]. This can be simply proved by the percentage of current-running websites that use WordPress [23]. With some basic level of PHP knowledge, it's relatively easy to build a website based on it [21]. WordPress can cover our requirements in both Phase1 and Phase2, with much fewer efforts on the development process comparing to Java-based. Moreover, unlike Wix, we can choose to host the server of WordPress on our own. In the future, ads are possible to bring profits to Sally, which can later be used on scaling up this non-profit project to benefit more people. The downsides to WordPress lie in its upside as well. Because of its openness, the themes and plugins provided by WordPress are mixed and diversified. Some of the themes and plugins do charge different amounts [24]. Hence, when using WordPress, the development team needs to carefully choose from the ocean of themes and plugins.

	<b>Wix</b>	<b>WordPress</b>	<b>Java-based</b>
<b>Type</b>	Close-sourced SaaS	Open-source CMS	Construct from scratch
<b>Design &amp; Implement Webpage</b>	Mostly drag & drop, visually, intuitively	Start with existing template and modify; Not visually and intuitively, pertains to some level of abstraction	Need solid knowledge of HTML, CSS, and Javascript; Not at all visually and intuitively
<b>Scalability</b>	Low	Moderate	High
<b>Self-host servers</b>	No	Yes	Yes (Compulsory)
<b>Cost</b>	Charged Monthly	Free (may pay for charged themes or plugins)	Fees for a development tool, website hosting, domain name charge, etc.
<b>Functionality</b>	Low	Moderate	High
<b>Support Ads</b>	No	Yes	Yes

### **Requirement Mapping:**

As summarized from the analysis above, the core functionalities to be implemented include the login & signup function, interactive forms, automated emails, and persistent data storage.

WordPress heavily relies on its ecology of plugins and themes. For each of the requirements as a result of the analysis, there are one or more themes and plugins to accommodate. The table below is attached to show the themes and plugins used during the implementation process, each with its functionality description.

	<b>Functionality</b>	<b>Description</b>
<b>CoBlocks</b>	Page Builder	CoBlocks is a suite of professional page building content blocks for the WordPress Gutenberg block editor. Our blocks are hyper-focused on empowering makers to build beautifully rich pages in WordPress.
<b>Elementor</b>	Page Builder	The Elementor Website Builder has it all: drag and drop page builder, pixel perfect design, mobile responsive editing, and more.
<b>LoginWP</b>	Login	Redirect users to different URLs based on their role, capability and more.
<b>Starter Templates</b>	Page Template	Starter Templates is in one solution for complete starter sites, single-page templates, blocks & images. This plugin offers the premium library of ready templates & provides quick access to beautiful Pixabay images that can be imported into your website easily.
<b>Sucuri Security</b>	Security Functions	The Sucuri plugin provides the website owner with the best Activity Auditing, SiteCheck Remote Malware Scanning, Effective Security Hardening and Post-Hack features. SiteCheck will check for malware, spam, blocklisting and other security issues like .htaccess redirects,

		hidden eval code, etc. The best thing about it is it's completely free.
<b>Ultimate Member</b>	User Management	The easiest way to create powerful online communities and beautiful user profiles.
<b>WPForms Lite</b>	Interactive Forms	Beginner-friendly WordPress contact form plugin. Use our Drag & Drop form builder to create your WordPress forms.
<b>Contact Form 7</b>	Interactive Forms	A contact form plugin. Simple but flexible.

## 6 Project Planning

### 6.1 Project planning

By utilizing Scrum methodology, we divide our project into three sprints, which means one sprint lasts for a week due to the time limit of three weeks. The following content is the planning related to the first sprint in week 9 for the project.

#### 6.1.1 Sprint Goal

Sprint 1: To implement the basic functions of the product so that the client could raise instant suggestions and requirements after the first sprint and the development team could design and implement advanced features based on the available and fundamental system.

Sprint 2: To implement the main functions of the product so that the client could try main functions which create data interaction. The development team can conduct self-test and make improvements to the overall system.

Sprint 3: To implement the remaining features left on the initial Sprint Backlog so that the client could have a go on the final product while using the running version provided by Sprint 2 and the development team can design and review the product as a whole during this final sprint.

#### 6.1.2 Sprint Backlog

The Agile Estimation Technique for story point estimation is Planning Poker. The process of Planning Poker in our project is :

1. Yulai pretends to be a customer to read a user story in front of other team members.
2. The other four team members think of it individually and give their estimations.
3. Team members discuss their opinions and try to reach a consensus.
4. After a consensus is reached, we record the story point for the user story.

Three chosen Feature-level User Stories from the Product Backlog and the corresponding Decomposed User Stories are as below:

Feature User Stories	Decomposed User Stories	Low-level Tasks
1. As an admin user, I want to use the default e-mail address and password to access the scheduling system so that I can manage the scheduling system after login. (15 story points)	1.1 As an admin user, I want to view and operate the login interface so that I can enter the default e-mail address and password. (10 story points)	1.1.1 Research and select the proper frontend framework such as React or Vue (2 hours) 1.1.2 Design the login page (3 hours) 1.1.3 Create the prototype of the website login page (3 hours) 1.1.4 Communicate with clients to get their feedback on the prototype (1 hour) 1.1.5 Establish the login page using HTML, CSS, Javascript, WordPress and other techniques (3 hours)
	1.2 As an admin user, I want the system to allow me to log in if the entered e-mail address and password are correct so that I can enter and manage the system. (5 story points)	1.2.1 Research and select the proper backend framework such as Django or Node.js (2 hours) 1.2.2 Establish the backend using the selected framework and the related programming languages (3 hours) 1.2.3 Implement the function to check whether the entered e-mail address and password match (1 hour) 1.2.4 Implement the function to allow the user to log in successfully if the entered e-mail address and password match (3 hours) 1.2.5 Implement the function to alert that the user if he has logged in successfully (1 hour) 1.2.6 Implement the function to alert that the user if he has

		failed to login (1 hour)
2. As a school representative, I want to register on the School Registration Web Page so that I can log into the scheduling system. (15 story points)	2.1 As a school representative, I want to view and operate the register interface so that I can use my information to register an account. (5 story points)	<p>2.1.1 Design the register page (3 hours)</p> <p>2.1.2 Create the prototype of the website registration page (3 hours)</p> <p>2.1.3 Communicate with clients to get their feedback on the prototype (1 hour)</p> <p>2.1.4 Establish layout of the register page using HTML, CSS, Javascript, WordPress and other techniques (3 hours)</p> <p>2.1.5 Add the following User Interface Element to the register page: School Name, School Contact Name, School Contact Number, e-mail address and Password (3 hours)</p> <p>2.1.6 Add constraint to the input to the User Interface Element: School Name, School Contact Name, School Contact Number e-mail address should be text, the password should be masked characters (3 hours)</p>
	2.2 As a school representative, I want to register an account so that I can use the account to log in. (5 story points)	<p>2.2.1 Implement the function to enable the backend to create a user account on the website when a user successfully registers (2 hours)</p> <p>2.2.2 Implement the function to alert the user if he or she has successfully registered (1 hour)</p> <p>2.2.3 Implement the function to alert that the user if he or she has failed to register (1 hour)</p>

		2.2.4 Implement the function to store the details of the registered user including School Name, School Contact Name, School Contact Number, e-mail address and Password (3 hours)
	2.3 As a school representative, I want to log into the system by using the registered account so that I can register the expression of interest. (5 story points)	2.3.1 Implement the function to enable the system to check whether the email address and password match (1 hour) 2.3.2 Implement the function to alert the user if he or she has logged in successfully (1 hour) 2.3.3 Implement the function to alert the user if he or she has failed to login (1 hour) 2.3.4 Implement the function to direct the user to the new page if he or she has logged in successfully (1 hour)
3. As a school representative, I want to register the expression of interest on the Expression of Interest Web Page after logging into the scheduling system so that I can request a bus visit. (10 story points)	3.1 As a school representative, I want to view and operate the Expression of Interest Web Page so that I can submit the details to register the expression of interest. (5 story points)	3.1.1 Design the Expression of Interest Web Page page (3 hours) 3.1.2 Create the prototype of the Expression of Interest Web Page (3 hours) 3.1.3 Communicate with clients to get their feedback on the prototype (1 hour) 3.1.4 Establish layout of the register page using HTML, CSS, Javascript, WordPress and other techniques (3 hours) 3.1.5 Add the following User Interface Element to the Expression of Interest Web Page: School Name, Address, City, State, Postal Code, School Type, Is Secure Parking Present, Total Car

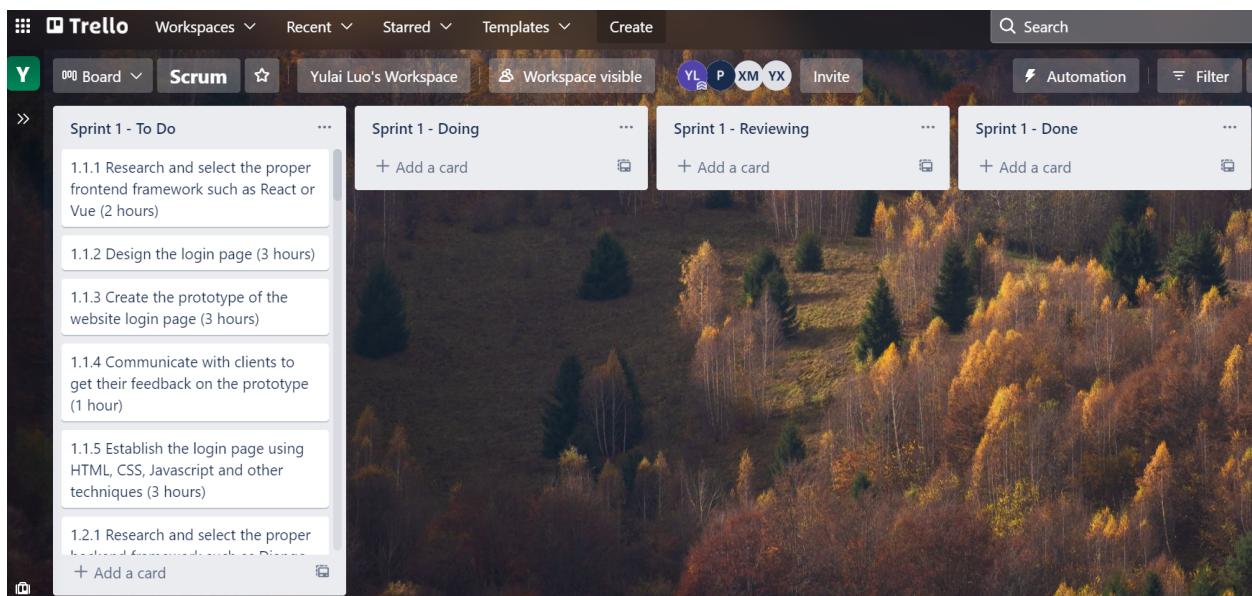
		<p>Parking Spaces, Total Open Areas, Visiting School Name, Nearest Host School Name, Distance from Nearest Host School, Message (5 hours)</p> <p>3.1.6 Add constraint to the input to the User Interface Element: School Name, Address, City, State, Visiting School Name, Nearest Host School Name and Message should be text. The Postal Code, Total Car Parking Spaces, Total Open Areas, Distance from Nearest Host School should be Numeric. School Type should either be Hosting School or Visiting School. Is Secure Parking Present area should be either Yes or No. (3 hours)</p> <p>3.1.7 Add constraint to the input to the User Interface Element: Is Secure Parking Present, Total Car Parking Spaces and Total Open Areas should only be entered if the School Type is Hosting School. Visiting School Name, Nearest Host School Name and Distance from Nearest Host School should only be entered if the School Type is Visiting School. (2 hours)</p>
	<p>3.2 As a school representative, I want to submit registration details on the Expression of Interest Web Page so that the admin user could roster a schedule for the school. (5 story points)</p>	<p>3.2.1 Implement the function to enable the system to check whether all the input fields meet the constraints (1 hour)</p> <p>3.2.2 Implement the function to alert the user if the input field does not meet the constraints (1 hour)</p>

		<p>3.2.3 Implement the function to alert the user if he or she has failed to submit (1 hour)</p> <p>3.2.4 Implement the function to show the “Submit successfully” message if he or she has submitted successfully (1 hour)</p> <p>3.2.5 Implement the function to store all the input data to the phpMyAdmin for MySQL. (2 hours)</p>
4. As an admin user, I want the system to automatically send an e-mail to me so that I can know that a new expression of interest has come for scheduling. (10 story points)	4.1 As an admin user, I want the system to automatically send me an email after the school representative registers the expression of interest so that I can know the registration information. (5 story points)	<p>4.1.1 Implement the function to enable the system to send an email after the school representative registers the expression of interest. (3 hours)</p> <p>4.1.2 Implement the function to send the email to the admin user email address. (1 hour)</p> <p>4.1.3 Implement the function to alert the admin user if the email fails to be sent. (1 hour)</p>
	4.2 As an admin user, I want to receive an email including the information about School Name, Address, School Type and Message from the system so that I can start to roster a schedule. (5 story points)	<p>4.2.1 Implement the function to enable email content to include School Name, Address, School Type and Message. (3 hours)</p> <p>4.2.2 Implement the function to inform the admin user if the email has been successfully delivered. (1 hour)</p>

### 6.1.3 Initial Sprint Swimlane board

Initial Sprint Swimlane Board implemented by Trello Tool:

<https://trello.com/invite/b/EQStDM5o/d165dfcc4b569fd8daad088a51e2040b/scrum>



The screenshot shows a Trello Scrum board titled "Sprint 1". The board is divided into four columns: "Sprint 1 - To Do", "Sprint 1 - Doing", "Sprint 1 - Reviewing", and "Sprint 1 - Done". The "Sprint 1 - To Do" column contains the following cards:

- 1.1.1 Research and select the proper frontend framework such as React or Vue (2 hours)
- 1.1.2 Design the login page (3 hours)
- 1.1.3 Create the prototype of the website login page (3 hours)
- 1.1.4 Communicate with clients to get their feedback on the prototype (1 hour)
- 1.1.5 Establish the login page using HTML, CSS, Javascript and other techniques (3 hours)
- 1.2.1 Research and select the proper frontend framework such as React or Vue (2 hours)

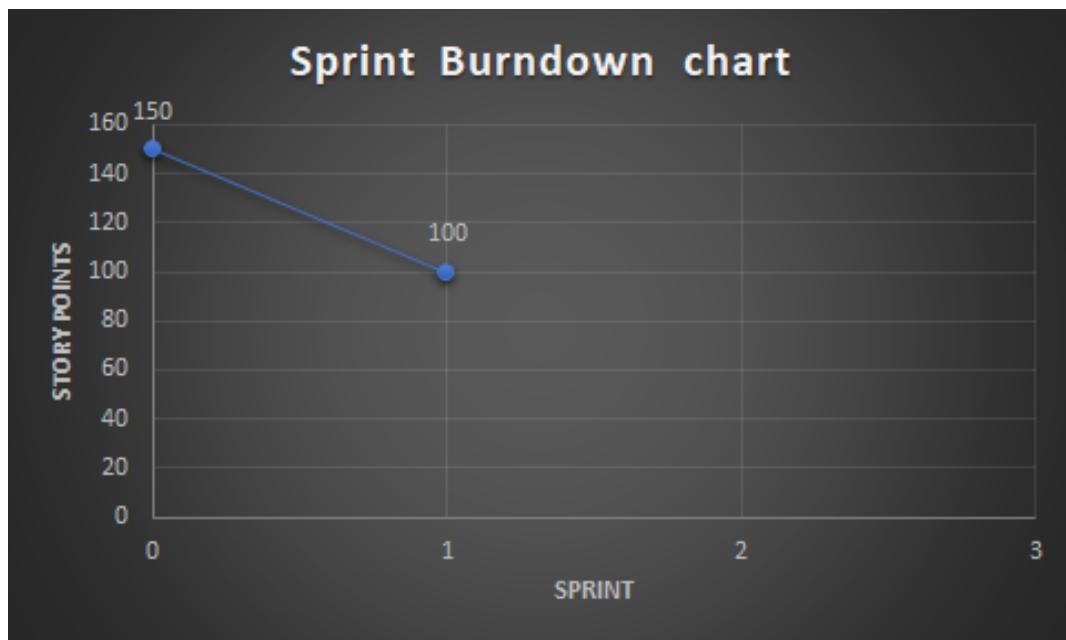
Each card has a "+ Add a card" button below it.

*Figure 6 Initial Sprint Swimlane board*

### 6.1.4 Ideal Burndown Chart

Ideal Velocity: 50 Story points done for each Sprint whose period is 1 week.

Therefore, we will ideally finish the 50 story points during the first sprint, whose period is 1 week.



*Figure 7 Burndown Chart*

## 6.2 Group planning

Below is the group contract created and signed by all group members. It includes four sections, which are group meetings rules, group work rules, group culture rules and conflict solving rules. These rules are critical to the success of the project and will be obeyed carefully by all team members.

### A. Group meetings rules

As a collaborative team, we will:

1. Hold three meetings per sprint throughout the project: a sprint planning meeting, a sprint review meeting, a sprint retrospective meeting and 5 daily standups.
2. Participate in every meeting and make individual contributions, if someone does not participate, he/she should present an acceptable reason to other group members
3. Prepare individual presentations and questions before the meeting
4. Communicate effectively and efficiently with other group members during the meeting
5. Discuss and assign work and responsibilities to each group member during the meeting
6. Take clear and useful notes during the meeting
7. Summarize the important points and share them with other team members after the meeting

### B. Group work rules

As a collaborative team, we will:

1. Finish the high-quality individual work based on the discussion during the meeting
2. Finish the individual work on time and put it in the shared google drive
3. Revise the individual work based on the discussion and suggestions during the meeting
4. Help other members with their work if they are calling for help

### C. Group culture rules:

As a collaborative team, we will:

1. Fully respect other group members' opinions
2. Use polite language throughout the project
3. Do not strongly criticize other members' work if it does not meet the requirements
4. Gently raise suggestions about other members' work
5. Care about other members' mental health and physical health

### D. Conflict solving rules:

When the conflict happens among group members, we will

1. Hold an extra meeting to solve the conflict
2. Objectively evaluate conflicting opinions
3. Vote to decide the result of the conflict
4. Calm down quickly even if there is a big conflict

### E. Roles and Time commitment:

1. As a Scrum Master, Yulai Luo will at least contribute 40 hours per week to accomplish the project and finish the assigned tasks on time.
2. As a Product Owner, Yidi Xiang will at least contribute 35 hours per week to accomplish the project and finish the assigned tasks on time.
3. As one of the Development Team Members, Xuanzhe Meng will at least contribute 35 hours per week to accomplish the project and finish the assigned tasks on time.
4. As one of the Development Team Members, Rucheng Fang will at least contribute 35 hours per week to accomplish the project and finish the assigned tasks on time.
5. As a Subject Matter Expert, Jieyun Peng will at least contribute 30 hours per week to accomplish the project and finish the assigned tasks on time.
6. As an entire team, the time commitment per week should be at least 175 hours.

F. Penalties:

Anyone who breaks the rules, she or he should

1. Apologize to other team members
2. Write a self-reflection report about the wrong actions

Note: If someone continues to break the rules or deny to accept the penalty, other team members have the right to report it to Dr Marion Zalk and ask for removing this person from the team.

**Date:** 2021/09/05

**Signatures:**

Yulai Luo	<i>Yulai Luo</i>
Yidi Xiang	<i>Yidi Xiang</i>
Xuanzhe Meng	<i>Xuanzhe Meng</i>
Rucheng Fang	<i>Rucheng Fang</i>
Jieyun Peng	<i>Jieyun Peng</i>

# 7 Project Execution, Monitoring and Control

## 7.1 Project Status - Friday Week 9 (Sprint 1)

Through the first sprint from 27 September 2021 to 1 October 2021, we have implemented all sprint 1 planned features of the product and documented all processes and status of the related artefacts. The details of the project status and our achievements are as below.

- **Implemented Process Related Artefacts**

The process related artefacts that we have implemented in sprint 1 includes Sprint 1 Feature User Stories, Decomposed User Stories and Low-level Tasks, Agendas, Minutes, Timesheets, Screenshots of communications, Kanban boards (Swimlane Board implemented by Trello Tool), Sprint planning meeting outcomes, Sprint review inputs and outcomes, Sprint retrospective inputs and outcomes, Burndown charts, Velocity estimations and Testing. The process related artefacts show that we have implemented all sprint 1 planned features of the product, and the process to reach this status is fully documented.

- **Implemented Product Related Artefacts**

The product related artefacts that we have implemented in sprint 1 includes Design, Completed features lists, Screenshots of the website, Data storage, Sprint 1 WordPress plugins and Updates to project planning from section 6. The product related artefacts show that we have implemented all sprint 1 planned features of the product. And the relevant artefacts that help us reach this status are presented in the later section.

- **The way to track the Milestone and Deliverable**

There are four milestones in sprint 1: the accomplish of all tasks and features for requirement 1 on September 27, the accomplish of all tasks and features for requirement 2 on September 28, the accomplish of all tasks and features for requirement 3 on September 29 and the accomplish of all tasks and features for requirement 4 on September 30. We conducted 8 meetings to track the milestones and deliverables: 1 Sprint Planning meeting, 5 Daily Stand-up meetings, 1 Sprint Review meeting and 1 Sprint Retrospective meeting. In the meeting, milestones and deliverables are discussed and confirmed. In addition, Trello is also a good way to track them. We assign the tasks to each team member and put them in the column “Sprint 1 To Do” in Trello. With the development of the project, the tasks will be moved by the related team member from “Sprint 1 - Doing” to “Sprint 1 - Reviewing” and finally locate at “Sprint 1 - Done”. This process shows the status of the project and the progress of each task.

- **Updates to Sections 1-6**

**Title Page:** Remove the student ID.

**Section 1:** Shorten the Executive Summary to make it succinct. Add the related content of Sprint 1 to the Executive Summary.

**Section 3.3:** Be more specific about version history. Add past versions to the Evolution of the document.

**Section 4.2:** Add some details to the user stories, delete the non-functional requirement and reassign the story points.

**Section 4.4:** Make the arguments more specific. Support the arguments by relating them to the key requirements. Put the disadvantages of Agile in the last paragraph. Use more words to describe Waterfall. Make the comparison more robust.

**Section 5.1:** assign the responsibilities of managing and grooming the product backlog and finalizing the sprint backlog items, sprint planning and backlog creation, monitoring the project progress and using the burn-down chart to track the velocity, participating in sprint planning and item selection from the sprint backlog and task selection from the sprint swimlane board and planning, conducting and participating in the project planning meetings, sprint review meetings, sprint retrospective meetings and daily standup meetings to the corresponding team members based on their roles.

**Section 6.1.2:** Rewrite the Sprint Backlog based on updated user stories. Add Agile Estimation Technique for story point estimation and the process of it.

**Section 6.1.2:** Update the Sprint Swimlane board based on the update of the Sprint Backlog.

**Section 6.2:** Add the roles and responsibilities and time commitment for each person. Add time commitment for the entire team. Add team rules and penalties to make sure that everyone contributes as planned. Add ways to enforce the agreement and manage conflicts.

### 7.1.1 Process Related Artefacts

#### 7.1.1.1 Sprint 1 Feature User Stories, Decomposed User Stories and Low-level Tasks

Feature User Stories	Decomposed User Stories	Low-level Tasks
1. As an admin user, I want to use the default e-mail address and password to access the scheduling system so that I can manage the scheduling system after login. (15 story points)	1.1 As an admin user, I want to view and operate the login interface so that I can enter the default e-mail address and password. (10 story points)	1.1.1 Research and select the proper frontend framework such as React or Vue (2 hours) 1.1.2 Design the login page (3 hours) 1.1.3 Create the prototype of the website login page (3 hours) 1.1.4 Communicate with clients to get their feedback on the prototype (1 hour) 1.1.5 Establish the login page using HTML, CSS, Javascript, WordPress and other techniques (3 hours)

	<p>1.2 As an admin user, I want the system to allow me to log in if the entered e-mail address and password are correct so that I can enter and manage the system. (5 story points)</p>	<p>1.2.1 Research and select the proper backend framework such as Django or Node.js (2 hours) 1.2.2 Establish the backend using the selected framework and the related programming languages (3 hours) 1.2.3 Implement the function to check whether the entered e-mail address and password match (1 hour) 1.2.4 Implement the function to allow the user to log in successfully if the entered e-mail address and password match (3 hours) 1.2.5 Implement the function to alert that the user if he has logged in successfully (1 hour) 1.2.6 Implement the function to alert that the user if he has failed to login (1 hour)</p>
2. As a school representative, I want to register on the School Registration Web Page so that I can log into the scheduling system. (15 story points)	<p>2.1 As a school representative, I want to view and operate the register interface so that I can use my information to register an account. (5 story points)</p>	<p>2.1.1 Design the register page (3 hours) 2.1.2 Create the prototype of the website registration page (3 hours) 2.1.3 Communicate with clients to get their feedback on the prototype (1 hour) 2.1.4 Establish layout of the register page using HTML, CSS, Javascript, WordPress and other techniques (3 hours) 2.1.5 Add the following User Interface Element to the register page: School Name, School Contact Name, School Contact Number, e-mail address and Password (3 hours) 2.1.6 Add constraint to the input to the User Interface Element: School Name, School Contact Name, School Contact Number e-mail address should be text, the password should be masked characters (3 hours)</p>
	<p>2.2 As a school representative, I want to register an account so that I can use the account to log in. (5 story points)</p>	<p>2.2.1 Implement the function to enable the backend to create a user account on the website when a user successfully registers (2 hours) 2.2.2 Implement the function to alert the user if he or she has successfully registered (1 hour) 2.2.3 Implement the function to alert that the user if he or she has failed to register (1 hour) 2.2.4 Implement the function to store the details of the registered user including School Name, School Contact Name, School Contact Number, e-mail address and Password (3 hours)</p>
	<p>2.3 As a school representative, I want to log into the system by using the registered account so that I can register the expression of interest. (5 story points)</p>	<p>2.3.1 Implement the function to enable the system to check whether the email address and password match (1 hour) 2.3.2 Implement the function to alert the user if he or she has logged in successfully (1 hour) 2.3.3 Implement the function to alert the user if he or she has failed to login (1 hour) 2.3.4 Implement the function to direct the user to the new page if he or she has logged in successfully (1 hour)</p>

<p>3. As a school representative, I want to register the expression of interest on the Expression of Interest Web Page after logging into the scheduling system so that I can request a bus visit. (10 story points)</p>	<p>3.1 As a school representative, I want to view and operate the Expression of Interest Web Page so that I can submit the details to register the expression of interest. (5 story points)</p>	<p>3.1.1 Design the Expression of Interest Web Page page (3 hours) 3.1.2 Create the prototype of the Expression of Interest Web Page (3 hours) 3.1.3 Communicate with clients to get their feedback on the prototype (1 hour) 3.1.4 Establish layout of the register page using HTML, CSS, Javascript, WordPress and other techniques (3 hours) 3.1.5 Add the following User Interface Element to the Expression of Interest Web Page: School Name, Address, City, State, Postal Code, School Type, Is Secure Parking Present, Total Car Parking Spaces, Total Open Areas, Visiting School Name, Nearest Host School Name, Distance from Nearest Host School, Message (5 hours) 3.1.6 Add constraint to the input to the User Interface Element: School Name, Address, City, State, Visiting School Name, Nearest Host School Name and Message should be text. The Postal Code, Total Car Parking Spaces, Total Open Areas, Distance from Nearest Host School should be Numeric. School Type should either be Hosting School or Visiting School. Is Secure Parking Present area should be either Yes or No. (3 hours) 3.1.7 Add constraint to the input to the User Interface Element: Is Secure Parking Present, Total Car Parking Spaces and Total Open Areas should only be entered if the School Type is Hosting School. Visiting School Name, Nearest Host School Name and Distance from Nearest Host School should only be entered if the School Type is Visiting School. (2 hours)</p>
	<p>3.2 As a school representative, I want to submit registration details on the Expression of Interest Web Page so that the admin user could roster a schedule for the school. (5 story points)</p>	<p>3.2.1 Implement the function to enable the system to check whether all the input fields meet the constraints (1 hour) 3.2.2 Implement the function to alert the user if the input field does not meet the constraints (1 hour) 3.2.3 Implement the function to alert the user if he or she has failed to submit (1 hour) 3.2.4 Implement the function to show the “Submit successfully” message if he or she has submitted successfully (1 hour) 3.2.5 Implement the function to store all the input data to the phpMyAdmin for MySQL. (2 hours)</p>
<p>4. As an admin user, I want the system to automatically send an e-mail to me so that I can know that a new expression of interest has come for scheduling. (10 story points)</p>	<p>4.1 As an admin user, I want the system to automatically send me an email after the school representative registers the expression of interest so that I can know the registration information. (5 story points)</p>	<p>4.1.1 Implement the function to enable the system to send an email after the school representative registers the expression of interest. (3 hours) 4.1.2 Implement the function to send the email to the admin user email address. (1 hour) 4.1.3 Implement the function to alert the admin user if the email fails to be sent. (1 hour)</p>

	<p>4.2 As an admin user, I want to receive an email including the information about School Name, Address, School Type and Message from the system so that I can start to roster a schedule. (5 story points)</p>	<p>4.2.1 Implement the function to enable email content to include School Name, Address, School Type and Message. (3 hours) 4.2.2 Implement the function to inform the admin user if the email has been successfully delivered. (1 hour)</p>
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### 7.1.1.2 Agendas

The Agendas for Sprint 1 includes a Sprint Planning meeting, a Sprint Review meeting, and a Sprint Retrospective meeting.

The Agendas can be found in Appendix [Sprint 1 Planning Meeting Agenda](#), [Sprint 1 Review Meeting Agenda](#), and [Sprint 1 Retrospective Meeting Agenda](#).

### 7.1.1.3 Minutes

The Minutes for Sprint 1 includes a Sprint Planning meeting, a Sprint Review meeting, and a Sprint Retrospective meeting.

The Minutes can be found in Appendix [Sprint 1 Planning Meeting Minutes](#), [Sprint 1 Review Meeting Minutes](#), and [Sprint 1 Retrospective Meeting Minutes](#).

### 7.1.1.4 Timesheets

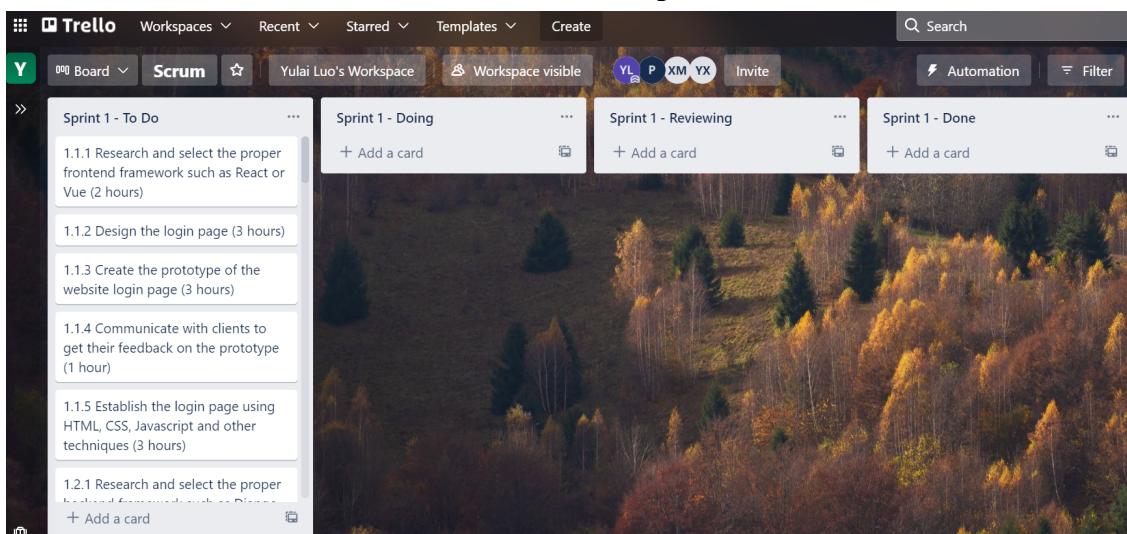
The Completed Timesheets can be found in Appendix [Sprint 1 Timesheets](#).

### 7.1.1.5 Screenshots of communications

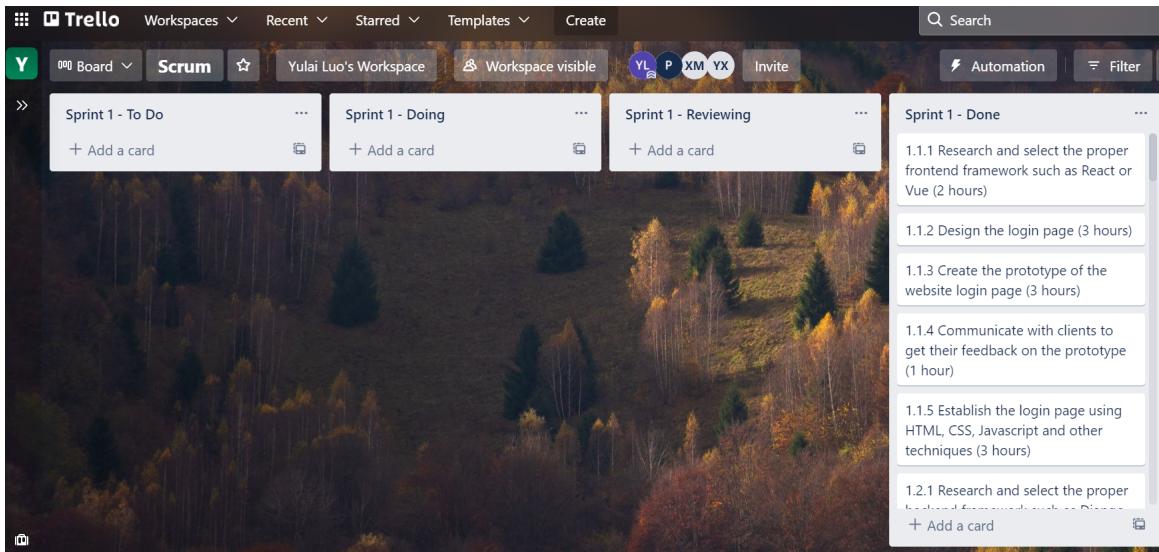
The screenshots of communications can be found in Appendix [Sprint 1 Screenshots of communications](#).

### 7.1.1.6 Kanban boards (Swimlane Board implemented by Trello Tool)

The screenshot of the Kanban board for initial sprint 1:



The screenshot of the Kanban board for the end of sprint 1:



### 7.1.1.7 Sprint planning meeting outcomes

Detailed meeting minutes can be found in [Sprint 1 Planning Meeting Minutes](#).

**First Half:**

- **What can be done:**
  - The team will identify the sprint goal, and select Sprint Backlog items that correspond to the goal.
- **Sprint Goal:**

To implement the basic functions of the product so that the client could raise instant suggestions and requirements after the first sprint and the development team could design and implement advanced features based on the available and fundamental system. ([6.1.1 Sprint Goal](#))
- **Relevant Backlog Items([6.1.2 Sprint Backlog](#)):**
  - 1. As an admin user, I want to use the default e-mail address and password to access the scheduling system so that I can manage the scheduling system after login.
  - 2. As a school representative, I want to register on the School Registration Web Page so that I can log into the scheduling system.
  - 3. As a school representative, I want to register the expression of interest on the Expression of Interest Web Page after logging into the scheduling system so that I can request a bus visit.
  - 4. As an admin user, I want the system to automatically send an e-mail to me so that I can know that a new expression of interest has come for scheduling.

## **Second Half:**

- **How to do the work:**
  - We predict the risks that may happen in sprint 1 so that everyone could have adequate preparation.
  - We discussed new high-level user stories.
  - We divided them into small tasks with story points, the table in the process related artefacts contains the full details of tasks.
  - We prioritized the user stories and decided to focus more on features whose related user stories have more story points.
- **Work Breakdown Structure (Decomposed User Stories):**

The result of this Sprint Planning meeting includes a **Work Breakdown Structure** for Feature-level User Stories selected for Sprint 1 to complete. The complete version of this WBS is located at [7.3.1.1 Sprint 1 Feature User Stories, Decomposed User Stories, and Low-level Tasks](#).
- **Swimlane Board**

Another deliverable as a result of the Sprint Planning meeting is a Swimlane Board containing action items to be completed. The complete version of this WBS is located in [7.1.1.6 Kanban Boards](#).

### **7.1.1.8 Sprint review inputs and outcomes**

In the sprint review meeting, we first checked the progress for all action items from the previous meeting. Through Trello, it is easy to tell that every member of our team successfully completed the job assigned to them perfectly on time. The result of corresponding functions completed can be reflected on the website.

Then, we did a progress update on each member. Every member completed their action items assigned in time. Finally, we performed a demo of our current product to all participants of this Sprint Review. The detailed meeting records can be found in [Sprint 1 Review Meeting Minutes](#).

- **Inputs**
  - The working software: Our current website
  - The decomposed user story: [7.1.1.1 Sprint 1 Feature User Stories, Decomposed User Stories, and Low-level Tasks](#)
- **Outcomes**
  - All decomposed task items have been completed by the corresponding team member.
  - All decomposed task items have met the acceptance criteria provided by Sally and Anna.
  - All functions of the final product have been approved by Sally and Anna.

### 7.1.1.9 Sprint retrospective inputs and outcomes

In this Sprint Retrospective meeting, we focus on reviewing our team operation. To do this, we listed and reviewed our methodology that has been adapted throughout the project. Then, we make attempts to come up with reflections on our processes in order to improve our teamwork in the future.

The detailed meeting records can be found in [Sprint 1 Retrospective Meeting Minutes](#)

- **Inputs**

- The things (processes) we have done in Sprint 1:
  - Requirement -> Design -> Code -> Test
  - The requirement is done by breaking down feature user stories into decomposed tasks together as a team
  - Design is done by the subject matter expert and the developers, with the supervision of the scrum master
  - Code is done by developers
  - The test is done by every member of the team, plus Sally and Anna for acceptance testing

- **Outcomes**

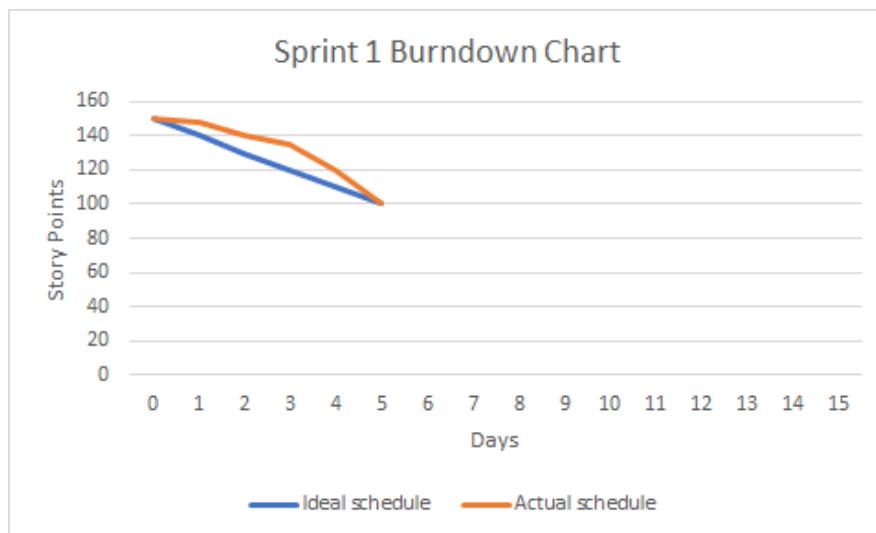
- Reflections on the way or tool to build our website
  - Using traditional website techniques such as Html, CSS and Javascript to build the website is very slow. For this simple scheduling system, we could use WordPress more often to save time. (Proposed by Yulai Luo)

### 7.1.1.10 Burndown charts

Sprint 1: from Day 1 to Day 5

Sprint 2: from Day 6 to Day 10

Sprint 3: from Day 11 to Day 15



### **7.1.1.11 Velocity estimations**

Velocity = number of story points completed / time period

Number of story points completed in sprint 1 = 50 story points

Time period = 1 sprint

Thus, velocity = 50 story points per sprint

### **7.1.1.12 Testing**

- **Unit Testing**

We test every individual piece of code or part of our product in sprint 1. The main individual part that we have tested are: registering an account, logging in, logging out, profile, entering the expression of interest, submitting the form and automatic email sending.

- **Integration Testing**

We test the subsystem of our product in sprint 1. For the registration and login system, log in, log out and profile are tested. For the expression of interest registration subsystem, entering the expression of interest and submitting the form are tested. Besides, for the email reminder subsystem, the automatic email sending is tested.

- **Acceptance Testing**

Our product owner Yidi Xiang provides the Acceptance Criteria to the team to test the acceptance. All the features of the product in sprint 1 have been tested to ensure that they meet the business requirements and users' expectations.

## **7.1.2 Product Related Artefacts**

**(Note: We are using WordPress to build our website. It is an online platform and all the major features are developed on it by using WordPress plugins. No files in WordPress could be downloaded to submit. Thus, we will show the major components of our website online using WordPress during the presentation)**

### **7.1.2.1 Design**

Through the project planning meeting, we have decided to design three subsystems for our website in sprint 1: login and registration subsystem, expression of interest registration subsystem and email reminder subsystem. Each subsystem has its related key requirements, features and web pages.

The login and registration subsystem includes registration and login pages. The admin user could use the default e-mail address and password to log into the scheduling system. Besides, the school representative could register on the School Registration Web Page and then log into the scheduling system. This subsystem is related to requirements 1 and 2 and their related features and web pages.

The expression of interest registration subsystem includes the Expression of Interest Web Page. The school representative could register on the School Registration Web Page by providing the

necessary information. This subsystem is related to requirements 3 and its related features and web pages.

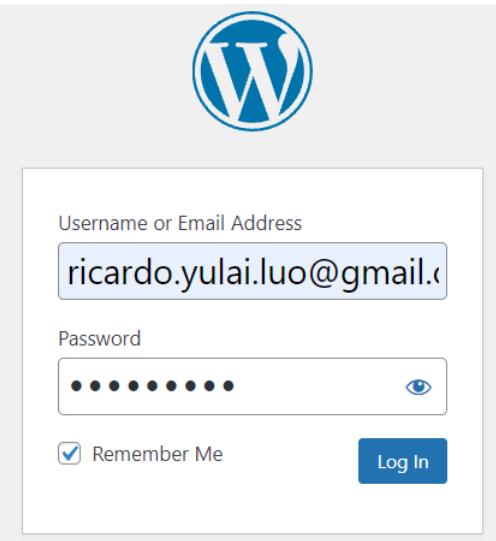
The email reminder subsystem includes the function of automatic email sending. The admin user would receive the email with the content including School Name, Address, School Type, Message after the school representative registers the expression of interest. This subsystem is related to requirements 4 and its related features and web pages.

### 7.1.2.2 Completed features lists

#### Sprint 1:

- The admin user could use the default e-mail address and password to access the scheduling system.
- The school representative could register on the School Registration Web Page by providing the information including School Name, School Contact Name, School Contact Number, e-mail address and Password.
- The school representative could log into the scheduling system after registration.
- The school representative could register the expression of interest to request a bus visit by providing the information including School Name, Address, City, State, Postal Code, School Type, Is Secure Parking Present, Total Car Parking Spaces, Total Open Areas, Visiting School Name, Nearest Host School Name, Distance from Nearest Host School and Message after login.
- The admin user would receive the email with the content including School Name, Address, School Type, Message after the school representative registers the expression of interest.

### 7.1.2.3 Screenshots of the website



#### Admin user login page:

The admin user could use the default e-mail address and password to access the scheduling system.

This screenshot shows the admin user logging in. On the left, there's a sidebar with a profile picture of a person named 'yulai.luo', a link to 'Edit', and navigation links for 'Your account' and 'Logout'. The main area has a large 'Login' button. To the right is the familiar WordPress login form. Above the form, a red-bordered error message box displays the text: 'Error: the password you entered for the email address ricardo.yulai.luo@gmail.com is incorrect. [Lost your password?](#)'.

#### Admin user login page:

If the admin user successfully logs into the scheduling system, a profile page with the information of the admin user will be shown.

If the email address and password do not match, the user will fail to log in and the system will alert the user by showing the error message.

# Register

# Register

The image displays a school registration form on a web page. The form fields and their current values are:

- School Name: abc
- School Contact Name: abc
- School Contact Number: 123
- E-mail Address: aa895023420@gmail.com
- Password: \*\*\*\*\*
- Confirm Password: \*\*\*\*\*

Validation errors are shown in red boxes:

- School Name is required
- School Contact Name is required
- School Contact Number is required
- E-mail Address is required
- Password is required

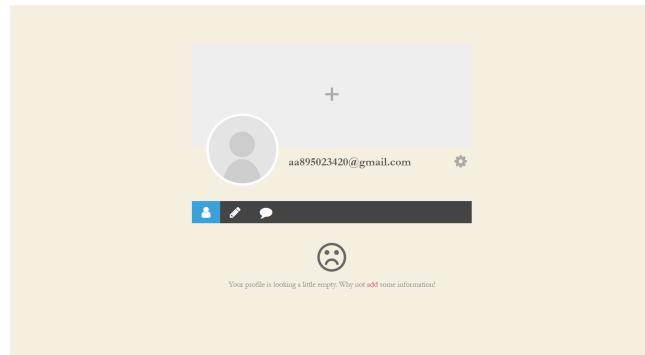
At the bottom of the form are two buttons: "Register" (blue) and "Login" (gray).

### School Registration Web Page:

The school representative could register an account on the School Registration Web Page by submitting the information including School Name, School Contact Name, School Contact Number, e-mail address and Password.

If the submitted form is incomplete, the system will remind the user of the blank field.

**aa895023420@gmail.co  
m**



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[To the top ↑](#)

### School Representative profile Page:

If the school representative successfully registers an account, a profile page with the information of the school representative will be shown.

# Login

# Login

E-mail Address

Password

[Login](#)

[Register](#)

E-mail Address

Password

Error: the password you entered for the email address aa895023420@gmail.com is incorrect. [Lost your password?](#)

Password is incorrect. Please try again.

[Login](#)

[Register](#)

### School Representative Login Web Page:

If the school representative successfully logs into the scheduling system, a profile page with the information of the school representative will be shown.

If the email address and password do not match, the user will fail to log in and the system will alert the user by showing the error message.

# School Expression of Interest

[Already registered the expression of interest? Click here to choose a time from the Schedule.](#)

[Do you want to cancel your scheduled visit? Click here to cancel it.](#)

School Name

Address

City

State

Postal Code

School Type  
 Hosting School  Visiting School

Is Secure Parking Present?  
(To be entered only if School Type -> Hosting School)  
 Yes  No

Total Car Parking Spaces  
(To be entered only if School Type -> Hosting School)

Total Open Areas  
(To be entered only if School Type -> Hosting School)

Visiting School Name  
(To be entered only if School Type -> Visiting School)

Nearest Host School Name  
(To be entered only if School Type -> Visiting School)

Distance from Nearest Host School  
(To be entered only if School Type -> Visiting School)

Message

**SUBMIT**

[Already registered the expression of interest? Click here to choose a time from the Schedule.](#)

[Do you want to cancel your scheduled visit? Click here to cancel it.](#)

School Name

Address

City

State

Postal Code

School Type  
 Hosting School  Visiting School

Is Secure Parking Present?  
(To be entered only if School Type -> Hosting School)  
 Yes  No

Total Car Parking Spaces  
(To be entered only if School Type -> Hosting School)

Total Open Areas  
(To be entered only if School Type -> Hosting School)

Visiting School Name  
(To be entered only if School Type -> Visiting School)

Nearest Host School Name  
(To be entered only if School Type -> Visiting School)

Distance from Nearest Host School  
(To be entered only if School Type -> Visiting School)

Message

**SUBMIT**

## Expression of Interest Web Page:

The school representative could register the expression of interest to request a bus visit by providing the necessary information.

If the selected School Type is Hosting School, “Is Secure Parking Present”, Total Car Parking Spaces and Total Open Areas should be entered.

If the selected School Type is Hosting School, Visiting School Name, Nearest Host School Name and Distance from Nearest Host School should be entered.

Congratulations! You have successfully submitted the details to register the expression of interest to request a bus visit.

### Expression of Interest Web Page:

If the school representative successfully submits the form, the system will show the messages to remind the user of the success of the action.

## School Expression of Interest

Already registered the expression of interest? Click here to choose a time from the Schedule.  
Do you want to cancel your scheduled visit? Click here to cancel it.

School Name  
  
The field is required.

Address  
  
The field is required.

City  
  
The field is required.

State  
  
The field is required.

Postal Code  
  
The field is required.

School Type  
 Hosting School    Visiting School  
The field is required.

Is Secure Parking Present?  
(To be entered only if School Type > Hosting School)  
 Yes    No

Total Car Parking Spaces  
(To be entered only if School Type > Hosting School)

Total Open Areas  
(To be entered only if School Type > Hosting School)

Visiting School Name  
(To be entered only if School Type > Visiting School)

Nearest Host School Name  
(To be entered only if School Type > Visiting School)

Distance from Nearest Host School  
(To be entered only if School Type > Visiting School)

Message  
  
The field is required.

**SUBMIT**

One or more fields have an error. Please check and try again.

### Expression of Interest Web Page:

If the submitted form is incomplete, the system will remind the user of the missing field.

# Scheduling System "New Expression of Interest"

 [wordpress@yulailuo.com](mailto:wordpress@yulailuo.com)  
to me ▾

School Name:

abc

Address:

abc, abc, abc, 123

School Type:

Hosting School

Message:

abc123

## The function of Intimation to Moderator about a new Expression of Interest:

The admin user would receive the email with the content including School Name, Address, School Type, Message after the school representative registers the expression of interest.

### 7.1.2.4 Data storage

The data storage tool that we use for this project is phpMyAdmin for MySQL. It could be accessed by login into the GoDaddy website which is the hosting provider for our website. In sprint 1, we need to store the information of the default email address and password for admin users in the database to allow the admin user to log in. After the registration of the school representative on the School Registration Web Page, the data including School Name, School Contact Name, School Contact Number, e-mail address, Password of the school representative will be stored in the database to allow the school representative to log in. As for the Expression of Interest Web Page, the data submitted through the form on this page will be stored in the database as well. Then the School Name, Address, School Type, Message in the database will be sent to the admin user by email after the school representative submits the form to register the expression of interest.

### 7.1.2.5 Sprint 1 WordPress plugins

- Ultimate Member  
It provides a quick way to build the login and register system.
- Contact Form 7: create a form to contain the UI Element including School Name, Address, City, State, Postal Code, School Type, Is Secure Parking Present, Total Car Parking Spaces, Total Open Areas, Visiting School Name, Nearest Host School Name,

Distance from Nearest Host School and Message. It could also be used to send the email with custom content.

- WP Data Access:  
It is used to get data in the backend by accessing the phpMyAdmin for MySQL. The data includes School Name, School Contact Name, School Contact Number, e-mail address, Password and so on.
- Elementor:  
It is used to build the frontend page with a good-looking style.
- LoginWP:  
It is used to create redirections for the pages.
- Wordfence:  
It is used to protect our website from hackers.

#### 7.1.2.6 Updates to project planning from section 6

- **Updates to project planning from Section 6**

**Section 6.1.2:** Rewrite the Sprint Backlog based on updated user stories. Add Agile Estimation Technique for story point estimation and the process of it.

**Section 6.1.2:** Update the Sprint Swimlane board based on the update of the Sprint Backlog.

**Section 6.2:** Add the roles and responsibilities and time commitment for each person. Add time commitment for the entire team. Add team rules and penalties to make sure that everyone contributes as planned. Add ways to enforce the agreement and manage conflicts.

#### 7.1.3 Risk Monitoring and Control

##### 7.1.3.1 The originally identified risks that occurred in sprint 1

We found that the originally identified technical risk called SQL injection occurred during sprint 1. It happens due to the flaw between the application layer and the data layer of the website. After inserting the SQL command in the blank fields on the Expression of Interest Web Page, the data which the school representative submits could be deleted because the system regards the injected SQL command as the normal one. Thus, the hackers could use the SQL injection to delete the data in our database without getting the admin user's email and password.

##### 7.1.3.2 Whether and how did we migrate the risks as planned

We successfully mitigate the risk by using the WordPress plugins: Wordfence. After researching website security, we found that the Wordfence plugin could protect our website from SQL injection. Before installing the Wordfence, the SQL injection could delete the data in the phpMyAdmin database. However, after installing Wordfence, SQL injection does not affect our website anymore. Wordfence constraint the input from the Expression of Interest Web Page. Any

SQL injection will be rejected on the front end of the website. In addition, Wordfence transfers the symbol in input into other symbols. For example, it transfers “ to \“ by using the escape method provided by MySQL. This way migrates the risk on the backend of the websites. By preventing the SQL injection through the frontend and backend, Wordfence helps us successfully migrate this risk.

#### **7.1.3.3 Identified new risks**

After identifying SQL injection, we found a very similar risk called Cross-Site Scripting (XSS) on our website. Normally Cross-Site Scripting inserts the Javascript code snippet to normal input. Then the script could run on users’ browsers if users run our website. It could get users’ cookies or redirect them to some malicious websites. This risk would be handled by us in sprint 2.

## **7.2 Project Status - Friday Week 10 (Sprint 2)**

In week 10, we completed the user stories of sprint 2. This section summarizes how we planned and implemented the task for sprint 2. This project status consists of process related artefacts, product related artefacts, the way to track the milestone and deliverable, risk monitoring and control and evolution of the document table.

- Implemented Process Related Artefacts**

We have three meetings in this sprint which are a sprint planning meeting on Monday, a sprint review meeting and a sprint retrospective meeting on Friday. We created an agenda and minutes for each meeting to record the details.

In the sprint planning meeting, we divided our user stories of sprint 2 into tasks and made a plan for them.

In the sprint review meeting, all team members and two product owners attended this meeting to identify the tasks and features of Sprint 2.

In the sprint retrospective meeting, team members and product owners concluded the problem in Sprint 2 and prepared for Sprint 3.

More details about the meeting can be found in the appendix.

We also added the following artefacts to our sprint 2: Two Kanban boards for each sprint to illustrate the working condition. The first one is the initial situation of this sprint and the second one is the ending situation of this sprint, inputs and outcomes for each meeting, and the burndown charts and velocity estimations.

- Implemented Product Related Artefacts**

This section contains how we designed the system, the features list, and the data storage location. We also provided a screenshot and description corresponding to each critical functionality.

The Way to track the Milestone and Deliverable

- **Milestones**

We decided to create three milestones for this sprint as we have three high-level user stories, and each milestone corresponds to a deliverable.

Three high-level user stories about the admin user:

As an admin user, I want to identify all the expressions of a listing web page after logging into the system so that I can manage the schedule functionality.

As an admin user, I want to see the school information after selecting a particular school so that I can roster a schedule for this school.

As an admin user, I want the system to send a confirmation email with schedule details to the corresponding school when I complete a schedule.

In order to complete these user stories, we've held a demand confirmation meeting for proofreading designs of databases, processes and methods of function realization. Based on the structural features of web forms, the MySQL database is selected for data persistence. We also preconstructed a database with testing data given the defined table fields and integrity constraints.

Milestones	Date	Things we have done in this milestone
Milestone1	October 4th to October 6th	We completed the function of expressing a listing web page and fixed some bugs. In addition, we found two new risks in this phase and the section of Risk Monitoring and Control 7.2.3 contains more details.
Milestone2	October 6th to End date October 7th	We completed the page of scheduling and fixed some bugs
Milestone3	October 7th to End date October 8th	We completed the function of sending a confirmation email automatically and fixed some bugs. Moreover, we planned two meetings to conclude sprint2 and prepare for Sprint 3.

- **Deliverable**

In Sprint 2, we delivered three main functionalities of Sprint 2, some process related artefacts related to the tasks and minutes for each meeting.

Three functionalities :

The user interface of schools was delivered on October 6th,

A scheduling page with the function of the schedule was delivered on October 7th.

The functionality of automatic sending confirmation emails was delivered on October 8th.

For process related artefacts, we scheduled three meetings on October 4th and October 8th respectively. The Kanban board was updated in real-time but we only inserted screenshots from the start of Sprint 2 and the end of Sprint 2 into this report. The Burndown chart and velocity estimations were produced at the end of the Sprint. We also performed some testing when we completed all functionalities.

- **Updates to Sections 1-6**

**Section 4.1:**

We redefined the level of stakeholder Engagement for Teachers, Students, and Staff to be supportive.

**Section 5.3:**

The definitions of specific risks were refined and supplemented with a sub-title respectively. In addition, we updated the risk triggers to our risk register.

## 7.2.1 Process Related Artefacts

### 7.2.1.1 Sprint 2 Feature User Stories, Decomposed User Stories, and Low-level Tasks

Feature User Stories	Decomposed User Stories	Low-level Tasks
5. As an admin user, I want to view the list of all expressions of interests received on the Expressions of Interest Listing Web Page after logging into the scheduling system so that I can do further operations for rostering a schedule for a school. (20)	5.1 As an admin user, I want to see a user interface that contains a list of schools so that I can check which schools are interested in our project.	5.1.1 Design an expression page that contains a listing of schools. 5.1.2 Create a prototype of the expression page. 5.1.3 Establishing the backend using the selected framework and related programming language. 5.1.4 Implement the function to identify if there are contents in the list. 5.1.5 Implement the function to display the list of school
6. As an admin user, I want the system to allow the Rostering a Schedule Web Page to display after clicking the hyperlink for any school so that I can roster a schedule for a school. (15)	6.1 As an admin user, I want each school to have a hyperlink so that I can click it and check the details of this school.	6.1.1 Implement the function to allow the admin user to click a certain name of the school.
	6.2 As an admin user, I want to see a user interface that contains school information and scheduling date.	6.2.1 Design a schedule page that contains school information and available date. 6.2.2 Create a prototype of the schedule page.
	6.3 As an admin user, I want each school to have a unique ID so that I can read the information easily	6.3.1 Implement the function to Auto-generate the unique 3 digit number starting with 100.

	6.4 AS an admin user, I want the text field of school name and school type to be populated from the previous page so that I can understand which school I selected to schedule.	6.4.1 Implement the function to auto-populate the text field of school name and school type.
	6.5 As an admin user, I want the page to allow me to select the start date and end date so that I can make a schedule for this school	6.5.1 Implement the function to allow the admin user to select the Start Date and End Date.  6.5.2 Implement the function to check if the selected date is idle.
	6.6 As an admin user, I want the system to check that the difference between the start date and end date is not more than 2 months so that I can make the schedule correctly.	6.6.1 Implement the function to check if the difference between the Start Date and End Date is more than 2 months. 6.6.2 Web page will give a notice if the difference is more than 2 months.
	6.7 As an admin user, I want the web page to give notice so that I will know whether I make the schedule successfully.	6.7.1 Implement the function to show the admin user a notice that school was scheduled successfully. 6.7.2 If the admin user makes a failed schedule, then the web page should also give the admin user a remainder.
7. As an admin user, I want the system to automatically send an email to the corresponding school representatives so that they will be reminded to choose a time from the schedule.	7.1 As an admin user, I want the system to automatically send an email to the corresponding school representatives so that they will be reminded to choose a time from the schedule.	7.1.1 Implement the function to send a confirmation email to the corresponding school which contains, acceptance ID, school information and schedule date.

### 7.2.1.2 Agendas

The Agendas for Sprint 2 includes a Sprint Planning meeting, a Sprint Review meeting, and a Sprint Retrospective meeting.

The Agendas can be found in Appendix [Sprint 2 Planning Meeting Agenda](#), [Sprint 2 Review Meeting Agenda](#), and [Sprint 2 Retrospective Meeting Agenda](#).

### 7.2.1.3 Minutes

The Minutes for Sprint 2 includes a Sprint Planning meeting, a Sprint Review meeting, and a Sprint Retrospective meeting.

The Minutes can be found in Appendix [Sprint 2 Planning Meeting Minutes](#), [Sprint 2 Review Meeting Minutes](#), and [Sprint 2 Retrospective Meeting Minutes](#).

### 7.2.1.4 Timesheets

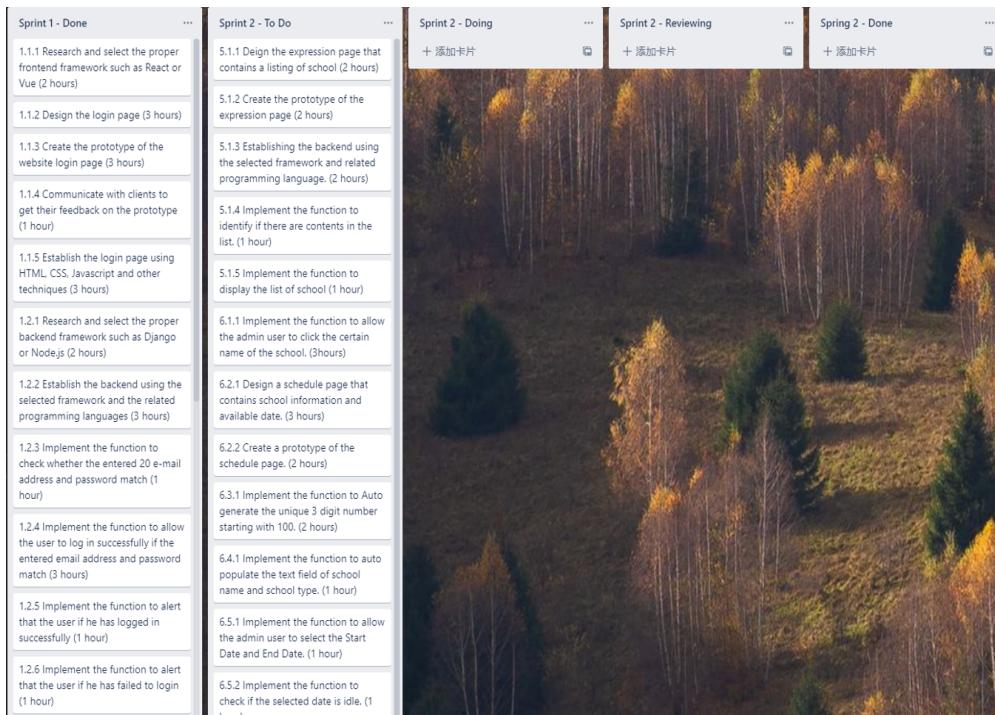
The Completed Timesheets can be found in Appendix [Sprint 2 Timesheets](#).

### 7.2.1.5 Screenshots of communications

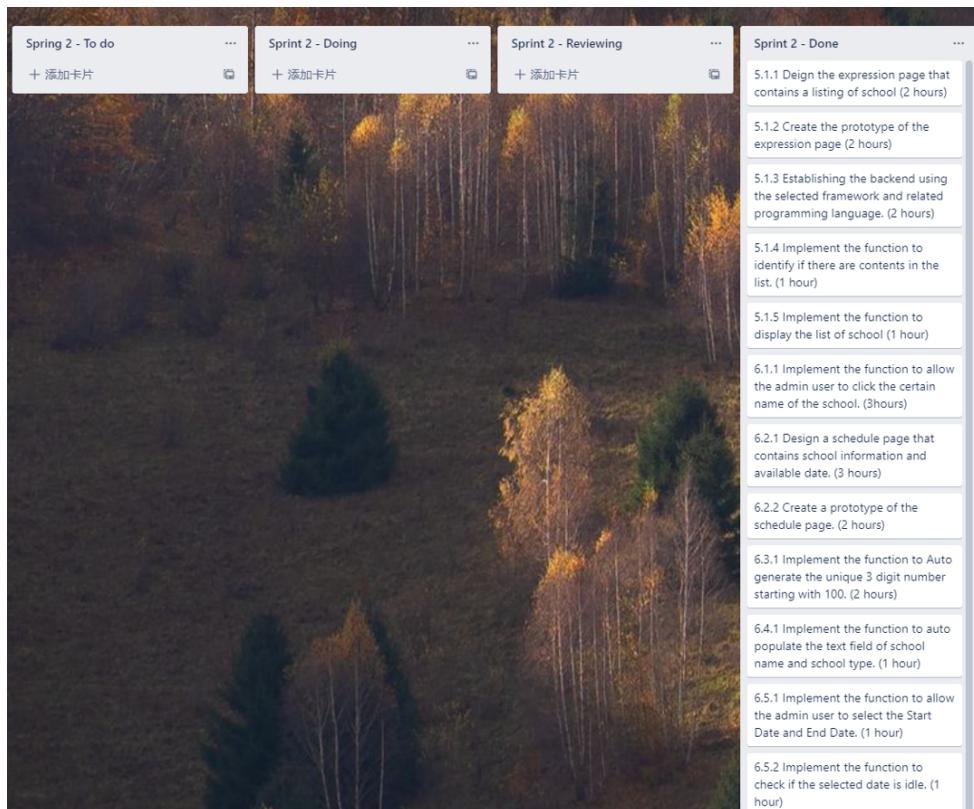
The screenshots of communications can be found in Appendix [Sprint 2 Screenshots of communications](#).

### 7.2.1.6 Kanban boards (Swimlane Board implemented by Trello Tool)

The screenshot of the Kanban board for initial sprint 2:



The screenshot of the Kanban board for the end of sprint 2:



### **7.2.1.7 Sprint planning meeting outcomes**

Detailed meeting minutes can be found in [Sprint 2 Planning Meeting Minutes](#).

#### **First Half:**

- **What can be done:**

- Briefly summarize the problems that occurred in Sprint1 and identify the goal for Sprint 2.
- We have three new high levels of user stories and the team needs to discuss them and assign story points to them.

- **Sprint Goal:**

To implement the main functions of the product so that the client could try the main functions which create data interaction. The development team can conduct self-test and make improvements to the overall system. ([6.1.1 Sprint Goal](#))

- **Relevant Backlog Items([6.1.2 Sprint Backlog](#)):**

- 5. As an admin user, I want to view the list of all expressions of interests received on the Expressions of Interest Listing Web Page after logging into the scheduling system so that I can do further operations for rostering a schedule for a school.
- 6. As an admin user, I want the system to allow the Rostering a Schedule Web Page to display after clicking the hyperlink for any school so that I can roster a schedule for a school.
- 7. As an admin user, I want the system to automatically send an e-mail to the corresponding school representatives so that they will be reminded to choose a time from the schedule.

#### **Second Half:**

- **How to do the work:**

- We mentioned the problems that occurred in sprint 1 so that all team members will have experience when we encounter the same issues.
- We discussed new high-level user stories.
- We divided them into small tasks with story points, the table in the process related artefacts contains the full details of tasks.
- We estimated that the amount of work for the first user story is more than the rest of them, therefore we plan to spend more time on the user story one.
- As sprint 1 was not delayed, we were confident to deliver the Sprint 2 on time.

- **Work Breakdown Structure (Decomposed User Stories):**

The result of this Sprint Planning meeting includes a **Work Breakdown Structure** for Feature-level User Stories selected for Sprint 2 to complete. The complete version of this WBS is located at [7.2.1.1 Sprint 2 Feature User Stories, Decomposed User Stories, and Low-level Tasks](#).

- **Swimlane Board**

Another deliverable as a result of the Sprint Planning meeting is a Swimlane Board containing action items to be completed. The complete version of this WBS is located in [7.2.1.6 Kanban Boards](#).

#### 7.2.1.8 Sprint review inputs and outcomes

The detailed meeting records can be found in [Sprint 2 Review Meeting Minutes](#).

- **Inputs**

- Check whether all team members finished their tasks successfully
- Test the functionality of this Sprint.
- Yulai Luo will take a small demo of these functionalities.
- Make a final decision for two new risks we found in this sprint.
- Question and answer session.
- Progress update from team members

- **Outcomes**

- We decided to ignore two new risks because of time limitations.
- All team members completed the tasks that were scheduled during the planning meeting.
- All team members completed the documentation part for Sprint 2.
- No potential problems were found in Sprint 2.
- Unit testing, integration testing, and acceptance testing have all been performed this afternoon by Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, Sally, and Anna.
- Sally and Anna have approved all tasks of Sprint 2.

#### 7.2.1.9 Sprint retrospective inputs and outcomes

The detailed meeting records can be found in [Sprint 2 Retrospective Meeting Minutes](#)

- **Inputs**

- The things (processes) we have done in Sprint 2:
  - Requirement -> Design -> Code -> Test
  - The requirement is done by breaking down feature user stories into decomposed tasks together as a team
  - Design is done by the subject matter expert and the developers, with the supervision of the scrum master
  - Code is done by developers
  - The test is done by every member of the team, plus Sally and Anna for acceptance testing

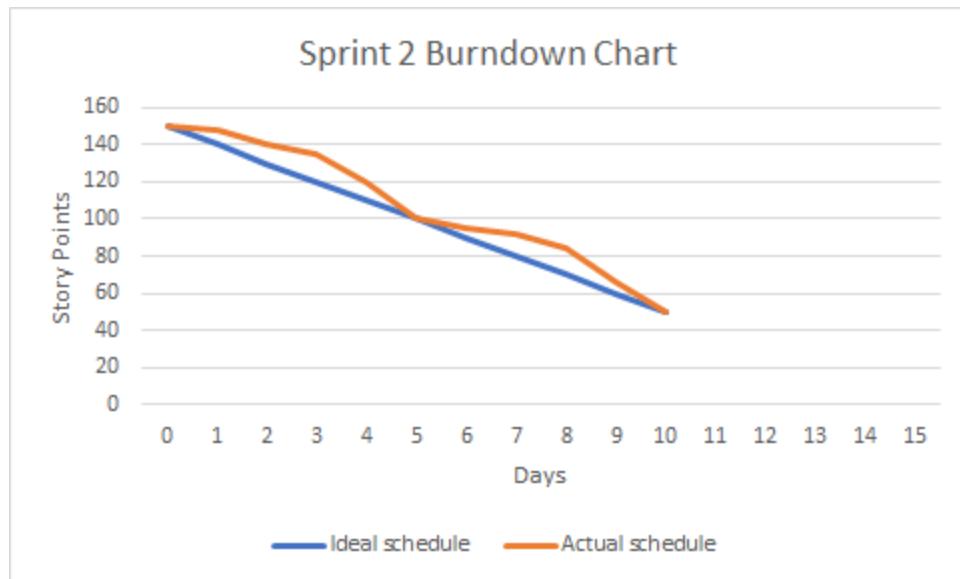
- **Outcomes**
  - Reflections on the methodology we have adapted so far
    - Finally, all team members agreed to ignore two new security risks we found for the second user story in this sprint. Because we have to complete sprint 2 on time otherwise the delay of sprint 2 will cause sprint 3 to delay as well. Moreover, we consider the probability of risk is low as our system is designed to be non-profit. There is no reason for the attacker to spend time on this system. Therefore, we considered the balance between time cost and the construction of reliability.

#### 7.2.1.10 Burndown charts

Sprint 1: from Day 1 to Day 5

Sprint 2: from Day 6 to Day 10

Sprint 3: from Day 11 to Day 15



#### 7.2.1.11 Velocity estimations

Velocity = number of story points completed / time period

Number of story points completed in sprint 2 = 50 story points

Time period = 1 sprint

Thus, velocity = 50 story points per sprint

#### 7.2.1.12 Testing

- **Unit Testing**

For the user story or expression of the school list, our system is able to show the correct content which schools are interested in this project. For the user story of the rostering

schedule, we test each critical functionality and the web system has the ability to handle all of the requirements. For instance: Remind the admin user the difference date is more than 2 months, and the school activity was scheduled successfully. For the user story of sending confirmation automatically, we used a test email, and it can receive the confirmation email after the admin user completed the schedule.

- **Integration Testing**

When we click the school name on the expression page, it will jump to a schedule page automatically. Then, the admin user can create a schedule for a selected school. If all of the text fields and schedule dates were filled without errors, then the test mailbox will receive a confirmation email with activity details from our system. Therefore, the web system passed the integration test.

- **Acceptance Testing**

Our product owner Yidi Xiang provided the Acceptance Criteria and reconfirmed the completeness of all functions in Sprint 2. All the functions satisfy the customer requirements.

## 7.2.2 Product Related Artefacts

(Note: We are using WordPress to build our website. It is an online platform and all the major features are developed on it by using WordPress plugins. No files in WordPress could be downloaded to submit. Thus, we will show the major components of our website online using WordPress during the presentation)

### 7.2.2.1 Design

We first divided the process into four steps regarding the requirements, and then determined the operators correspondingly, which are followed by the definition of technical implementations. In the first step, the administrator views the listing of expressions of interest, whose data is retrieved from the database. Second, the administrator clicks the hyperlink redirecting him to another page, which is realized through front-end functions. In the next step, the scheduling form should be presented and filled by the administrator, where some data is pre-defined and needs to be retrieved from the database before presenting the form, and other data is to be filled and saved into the database. This process also involves the verification of input data, which is double-checked by both front and back ends. In the final step, the system automatically sends out the email, which is realized by the back end.

A database is defined and built-in parallel for data persistence and retrieval, and for the administrator to operate as well. The MySQL server is run locally, and connected to the online web pages using phpMyAdmin.

Users						
<a href="#">All (2)</a>   <a href="#">Approved (2)</a>   <a href="#">Pending review (0)</a>   <a href="#">Waiting e-mail confirmation (0)</a>   <a href="#">Inactive (0)</a>   <a href="#">Rejected (0)</a>						
<a href="#">Administrator (1)</a>   <a href="#">Subscriber (1)</a>						
Bulk actions	<a href="#">Apply</a>	<a href="#">Change role to...</a>	<a href="#">Change</a>	UM Action	<a href="#">Apply</a>	2 items
<input type="checkbox"/>	Username	Name	Email	Role	Posts	Status
<input type="checkbox"/>	 aa895023420@gmail.com	—	aa895023420@gmail.com	Subscriber	0	Approved
<input type="checkbox"/>	 yulailuo	—	ricardo.yulai.luo@gmail.com	Administrator	0	Approved
<input type="checkbox"/>	Username	Name	Email	Role	Posts	Status
Bulk actions	<a href="#">Apply</a>	<a href="#">Change role to...</a>	<a href="#">Change</a>	UM Action	<a href="#">Apply</a>	2 items

### 7.2.2.2 Completed features lists

#### Sprint 1:

- The admin user could use the default e-mail address and password to access the scheduling system.
- The school representative could register on the School Registration Web Page by providing the information including School Name, School Contact Name, School Contact Number, e-mail address and Password.
- The school representative could log into the scheduling system after registration.
- The school representative could register the expression of interest to request a bus visit by providing the information including School Name, Address, City, State, Postal Code, School Type, Is Secure Parking Present, Total Car Parking Spaces, Total Open Areas, Visiting School Name, Nearest Host School Name, Distance from Nearest Host School and Message after login.
- The admin user would receive the email with the content including School Name, Address, School Type, Message after the school representative registers the expression of interest.

#### Sprint 2:

- Create a listing of schools expressing their interests.
- The school names on the list are made into hyperlinks, which can be clicked and directed to show each school's scheduling page.
- Create a form on the page Rostering a Schedule that consists of relevant school information and available dates.
- There is verification for a valid time arrangement before confirming a time slot, including a time overlap check and period length (no more than two months).
- An email will be sent to the school automatically after arranging the time slot.

### 7.2.2.3 Screenshots of the website

## Expressions of Interest Listing

Name of the School	School Type
abc	Hosting School

The page contains a table that has two columns “Name of the School” and “School Type” to inform the administrator of the expressions of interest, normally one school can only initiate one application at a time corresponding to one record. The administrator can click the hyperlink of a school to schedule a time slot.

## Rostering a Schedule

This screenshot shows a form titled "Rostering a Schedule". It includes fields for "Expression of Interest Acceptance ID" (containing "936"), "School Name" (containing "abc"), "School Type" (containing "Hosting School"), "Start Date" (containing "mm/dd/yyyy" and a red error message "The field is required."), and "End Date" (containing "mm/dd/yyyy" and a red error message "The field is required."). Below these fields is a "Recipient's Email" field (containing "aa895023420@gmail.com") and a "CONFIRM" button. A yellow box at the bottom states "One or more fields have an error. Please check and try again."

## Rostering a Schedule

This screenshot shows the same "Rostering a Schedule" form as the previous one, but with all fields successfully filled. The "Start Date" and "End Date" fields now contain "10/20/2021" and "10/30/2021" respectively. The "Recipient's Email" field still contains "aa895023420@gmail.com". The "CONFIRM" button is present at the bottom.

The page contains a form to be filled by the administrator, where the first three fields are automatically populated from the “Expressions of Interest Listing” page, and the last three fields are required. The administrator can choose a start time and an end time, where we apply an algorithm to restrict the period length which is less than two months and eliminate the time periods that are already scheduled.

Congratulations! You have successfully scheduled the time window for the school to choose the bus visit.

After submitting the form of “Rostering a Schedule”, there will be a prompt of successful scheduling, and an email will be automatically sent to the mailing address indicated by the administrator.

#### 7.2.2.4 Data storage

In this sprint, we need to retrieve the information about expressions of interest, which is defined and persisted in sprint 1. Then, for the sixth requirement in features lists, the contents about the school schedule arranged by the admin user should be stored in the database. These online web pages will connect to phpMyAdmin in GoDaddy hosting and use it to store data.

#### 7.2.2.5 Sprint 2 WordPress plugins

- Contact Form 7: create a form to contain the UI Element including Expression of Interest Acceptance ID, School Name, School Type, Start Date, End Date and so on. It could also be used to send the email with custom content.
- WP Data Access:  
It is used to get data in the backend by accessing the phpMyAdmin for MySQL. The data includes Expression of Interest Acceptance ID, School Name, School Type, Start Date, End Date and so on.
- Elementor:  
It is used to build the frontend page with a good-looking style.
- LoginWP:  
It is used to create redirections for the pages.
- Wordfence:  
It is used to protect our website from hackers.

### 7.2.3 Risk Monitoring and Control

#### 7.2.3.1 The originally identified risks that occurred in sprint 2

For sprint 2, we did not encounter any risks originally identified in the previous section as they are not related to this topic.

#### 7.2.3.2 Whether and how did we migrate the risks as planned

N/A

### 7.2.3.3 Identified new risks

We find a new project risk when we complete our user stories and test the functionalities. The website field will accept any input characters, and this might have potential vulnerabilities such as Cross-site scripting (XSS).

A screenshot of a web application interface. At the top, there is a label "E-mail Address". Below it is a text input field containing the malicious script: <script> alert(document.cookie);</script>.

Figure 1

Figure 1 is an example of XSS, an attacker can type this malicious script instead of the regular email address. This script aims to steal the user's cookie from the website. The cookie leakage causes invasion of privacy because the user's cookie contains some private information such as account Email address and password. If a user uses the same Email address and password for other accounts, then it will bring them more serious problems.

A screenshot of a web application interface with three fields. The first field is labeled "Expression of Interest Acceptance ID" and contains the value "anything' OR 'x='x". The second field is labeled "School Name" and also contains the value "anything' OR 'x='x". The third field is labeled "School Type" and also contains the value "anything' OR 'x='x".

Figure2

Similarly, figure 2 is an example of SQL malicious code injection, and it can be used to attack websites that use a type of SQL database. An attacker can access the database and modify the existing data, changing balances, and affect transactions. To avoid these risks, the website field needs a functionality of input validation and it cannot accept some special characters which can compose the malicious script or code. However, we actually ignored two new risks because if we

spend more time on handling new risks, then it may affect the delivery date of sprint 2, which means sprint 3 will be affected as well.

### 7.3 Project status - Friday Week 11 (Sprint 3)

We completed the user stories of sprint 3 from 11 October 2021 to 15 October 2021. This section summarizes how we planned and implemented the task for sprint 3. This project status consists of process related artefacts, product related artefacts, the way to track the milestone and deliverable, risk monitoring and control and evolution of the document table.

- **Implemented Process Related Artefacts**

We have three meetings in this sprint which are a sprint planning meeting on Monday, a sprint review meeting and a sprint retrospective meeting on Friday. We created an agenda and minutes for each meeting to record the details.

In the sprint planning meeting, we divided our user stories of sprint 3 into tasks and planned for them.

In the sprint review meeting, we check if everything has been completed and check the result of the test.

In the sprint retrospective meeting, we reviewed the things that have been done in sprint 3.

More details about the meeting can be found in the appendix.

We add two Kanban boards for each sprint to illustrate the working condition. The first one is the initial situation of this sprint and the second one is the ending situation of this sprint.

- **Implemented Product Related Artefacts**

This section contains how we designed the system, the features list, and the data storage location. We also provided a screenshot and description corresponding to each critical functionality.

- **The Way to track the Milestone and Deliverable**

#### **Milestones**

We decided to create three milestones for this sprint as we have three high-level user stories and each milestone corresponds to a deliverable.

Three high-level user stories about the admin user:

1. As a school representative, I want to choose and confirm the time for the bus visit after logging into the scheduling system so that the bus can visit at the scheduled time.
2. As a school representative, I want to operate on the Cancelling a Scheduled Visit Web Page after logging into the scheduling system so that I can cancel a scheduled visit for the Technology Bus.

- As an admin user, I want the system to automatically send an e-mail to me after a school representative cancels a scheduled visit so that I can know the information about the bus visit cancellation.

In order to complete these user stories, we've held a demand confirmation meeting for proofreading designs of databases, processes and methods of function realization. Based on the structural features of web forms, the MySQL database is selected for data persistence. We also preconstructed a database with testing data given the defined table fields and integrity constraints.

Milestones	Date	Things we have done in this milestone
Milestone1	October 11th to October 13rd	We completed the function of confirming and time selecting web page and fixed some bugs. In addition, we found one new risk in this phase and the section of Risk Monitoring and Control 7.3.3 contains more details.
Milestone2	October 13th to October 14th	We completed the page of Cancelling and fixed some bugs.
Milestone3	October 14th to October 15th	We completed the function of sending a confirmation email automatically and fixed some bugs.

- Deliverable**

In sprint3, we delivered three major functions:

The user interface that can be used to provide confirmation information was delivered on October 13. On October 14th, a user interface capable of cancelling operations was Released. The automatic confirmation email function was delivered on October 15th.

- Updates to Sections 1-6**

**Section 4.6:** Added three constraints that are more specific to this project, including sourcing open-source software to save costs, inexperience and time limitation of the development team and the limitations that come with our technology choice.

**Section 5.2:** Reorganized the communication plan section and made it more specific in every section. Divided the section into **in-team communication** and **stakeholder communication**. Added the plan for the **escalation process**.

**Section 5.5:** Added a **Requirement Mapping** part to better illustrate how our chosen technology fits the required functions.

### 7.3.1 Process Related Artefacts

#### 7.3.1.1 Sprint 3 Feature User Stories, Decomposed User Stories, and Low-level Tasks

Feature User Stories	Decomposed User Stories	Low-level Tasks
8. As a school representative, I want to choose and confirm the time for the bus visit on the Schedule Web Page after logging in so that the bus can visit on the scheduled time. (20 points)	8.1 As a school representative, I want to view and operate the Schedule Web Page after logging in so that I can choose and confirm the time for the bus visit. (5points)	8.1.1 Design the user interface (1hour) 8.1.2 Identify the fields of form needed(1hour) 8.1.3 Identify the appropriate plugin widgets to use(1hour) 8.1.4 Implement the page(2hours)
	8.2 As a school representative, I want the information on the Schedule Web Page consistent with the roster I picked so that I can confirm the time for the bus visit. (5points)	8.2.1 Identify the connection between this page to Rostering a Schedule Web Page(1hour) 8.2.2 Make sure the data used by these two pages are connected(2hour) 8.2.3 Test this aspect of the Schedule Web Page(2hour)
	8.3 As a school representative, I want to modify the Start Date and End Date inside the allowed range so that I can fit the bus visit time to the school's schedule. (5points)	8.3.1 Make sure the Default Start Date and the Default End Date is consistent with the Rostering a Schedule Web Page(1hour) 8.3.2 Identify the appropriate plugin widgets to use(2hour) 8.3.3 Implement the function(2hour)
	8.4 As a school representative, I want to choose to participate in specialized activities so that the students can have the benefit of participation in those activities. (5points)	8.4.1 Identify the design of Participate in Specialized Activity field(1hour) 8.4.2 Implement the Participate in Specialized Activity field and Total Students Participating field(2hour) 8.4.3 Implement the calculation function to calculate the Total Cost(2hours)
9. As a school representative, I want to log in and operate on the Cancelling a Scheduled Visit Web Page so that I can cancel a scheduled visit for the Technology Bus. (15points)	9.1 As a school representative, I want to view and operate on the Canceling a Scheduled Visit Web Page so that I can cancel a scheduled visit for the Technology Bus. (5points)	9.1.1 Design the web page(1hours) 9.1.2 Identify appropriate plugin widgets to use for the web page (1hours) 9.1.3 Make sure the data retrieved from this page is consistent with the scheduled visit to be fetched from the database (1hour) 9.1.4 Implement the web page (2hours)
	9.2 As a school representative, I want to view the details of the scheduled visit that I made so that I can decide to go back and cancel the cancellation process. (5points)	9.2.1 Design the detailed look of the scheduled visit to be cancelled (1hour) 9.2.2 Make sure the data is consistent with the scheduled visit to be fetched (1hour) 9.2.3 Implement the detailed form of the scheduled visit to be cancelled (3hours)
	9.3 As a school representative, I want to cancel the scheduled visit so that I can adjust the school's schedule for something else. (5points)	9.3.1 Implement the reason for cancellation field (1hour) 9.3.2 Implement the cancellation function (2hours) 9.3.3 Implement the notification of cancelling result function (2hours)
10. As an admin user, I want the system to automatically send an e-mail to me after a school representative cancels a scheduled visit so that I can know the information about bus cancellation. (15points)	10.1 As an admin user, I want to receive an email informing me of the details of cancellation so that I know a scheduled visit has been cancelled. (7points)	10.1.1 Design the format of notification email (2hour) 10.1.2 Decide on the representation format of the details in the notification email (2hour) 10.1.3 Involve the customer to check if they are happy about the design of the email format (3hour)

	<p>10.2 As an admin user, I want to make the emails about cancellations automatic and stable so that I would not miss any cancellations of existing scheduled visits. (8points)</p>	<p>10.2.1 Identify the tool/ plugin widget to use for automating emails to specific addresses (2hours)            10.2.2 Implement the automated email notification function(3hours)            10.2.3 Test for a sufficient number of times to make sure that emails can be sent and received at a stable rate(3hours)</p>
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### 7.3.1.2 Agendas

The Agendas for Sprint 3 includes a Sprint Planning meeting, a Sprint Review meeting, and a Sprint Retrospective meeting.

The Agendas can be found in Appendix [Sprint 3 Planning Meeting Agenda](#), [Sprint 3 Review Meeting Agenda](#), and [Sprint 3 Retrospective Meeting Agenda](#).

### 7.3.1.3 Minutes

The Minutes for Sprint 3 includes a Sprint Planning meeting, a Sprint Review meeting, and a Sprint Retrospective meeting.

The Minutes can be found in Appendix [Sprint 3 Planning Meeting Minutes](#), [Sprint 3 Review Meeting Minutes](#), and [Sprint 3 Retrospective Meeting Minutes](#).

### 7.3.1.4 Timesheets

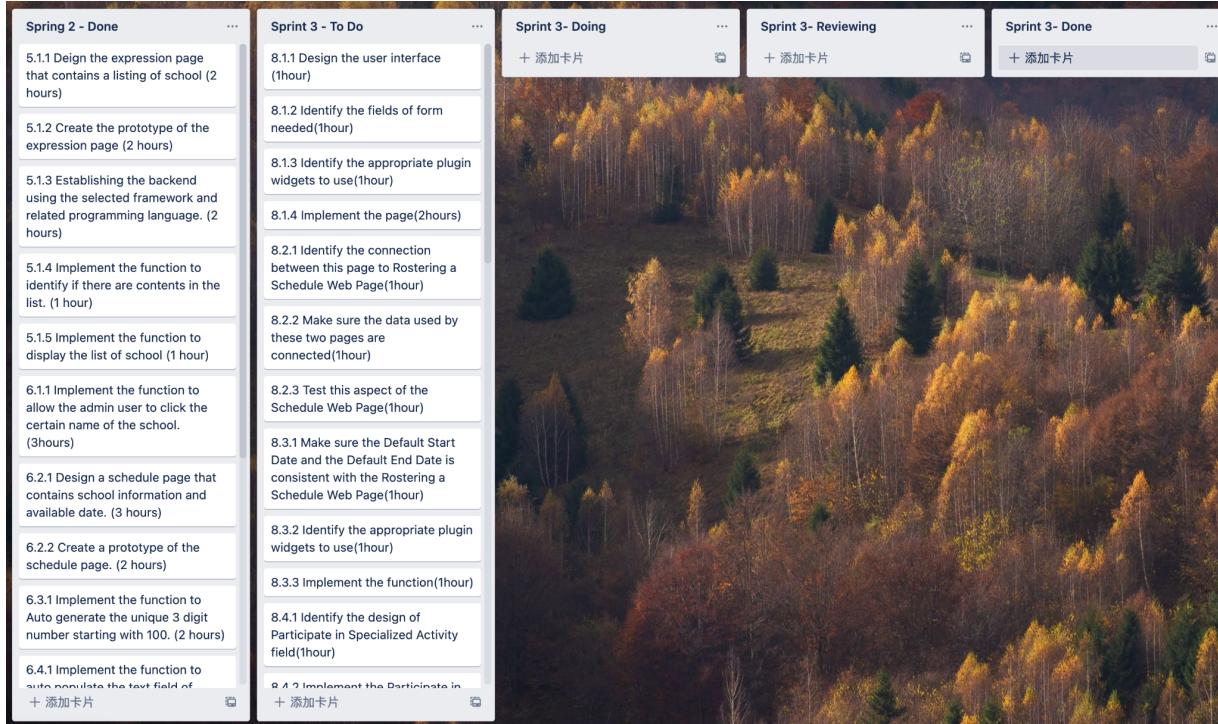
The Completed Timesheets can be found in Appendix [Sprint 3 Timesheets](#).

### 7.3.1.5 Screenshots of communications

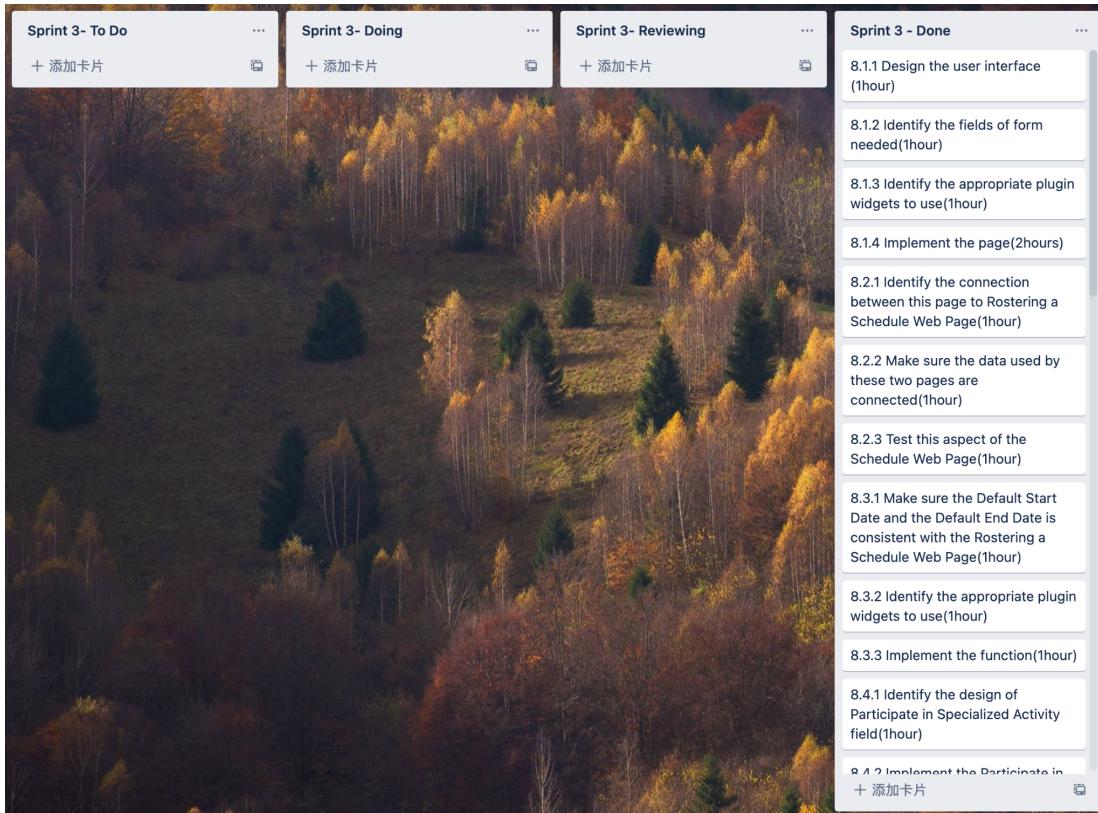
The screenshots of communications can be found in Appendix [Sprint 3 Screenshots of communications](#).

### 7.3.1.6 Kanban boards (Swimlane Board implemented by Trello Tool)

The screenshot of the Kanban board for initial sprint 3:



The screenshot of the Kanban board for the end of sprint 3:



### 7.3.1.7 Sprint planning meeting outcomes

Detailed meeting minutes can be found in [Sprint 3 Planning Meeting Minutes](#).

#### First Half:

- **What can be done:**

- Identify the Sprint Goal for Sprint 3.
- Identify relevant Sprint Backlog items.
- Break them down to create a WBS(Work Breakdown Structure).
- Check the meeting minutes from the last Sprint Review and Sprint Retrospective.
- Hear everyone's individual suggestions to this Sprint.

- **Sprint Goal:**

To implement the remaining features left on the initial Sprint Backlog so that the client could have a go on the final product while using the running version provided by Sprint 2 and the development team can design and review the product as a whole during this final sprint. ([6.1.1 Sprint Goal](#))

- **Relevant Backlog Items([6.1.2 Sprint Backlog](#)):**

- 8. As a school representative, I want to choose and confirm the time for the bus visit on the Schedule Web Page after logging into the scheduling system so that the bus can visit on the scheduled time.
- 9. As a school representative, I want to operate on the Cancelling a Scheduled Visit Web Page after logging into the scheduling system so that I can cancel a scheduled visit for the Technology Bus.
- 10. As an admin user, I want the system to automatically send an email to me after a school representative cancels a scheduled visit so that I can know the information about the bus visit cancellation.

#### Second Half:

- **How to do the work:**

- User Story Decomposition Tool: Google Doc
- Swimlane Board Tool: Trello
- Communication Tool: see [5.2 Communication Plan](#)
- Development Framework: WordPress
- Database Support: phpMyAdmin
- UI Design tool: wireframe.cc

- **Work Breakdown Structure (Decomposed User Stories):**

The result of this Sprint Planning meeting includes a **Work Breakdown Structure** for Feature-level User Stories selected for Sprint 3 to complete. The complete version of this WBS is located at [7.3.1.1 Sprint 3 Feature User Stories, Decomposed User Stories, and Low-level Tasks](#).

- **Swimlane Board**

Another deliverable as a result of the Sprint Planning meeting is a Swimlane Board containing action items to be completed. The complete version of this WBS is located in [7.3.1.5 Kanban Boards](#).

#### 7.3.1.8 Sprint review inputs and outcomes

In the sprint review meeting, we first checked the progress for all action items from the last meeting. Through Trello, it is easy to tell that every member of our team successfully completed the job assigned to them perfectly on time. The result of corresponding functions completed can be reflected on the website.

Then, we did a progress update on each member. Every member completed their action items assigned in time. Lastly, we performed a demo of our final product to all participants of this Sprint Review. The detailed meeting records can be found in [Sprint 3 Review Meeting Minutes](#).

- **Inputs**

- The working software: Our running website
- The decomposed user story: [7.3.1.1 Sprint 3 Feature User Stories, Decomposed User Stories, and Low-level Tasks](#)

- **Outcomes**

- All decomposed task items have been completed by the corresponding team member.
- All decomposed task items have met the acceptance criteria provided by Sally and Anna.
- All functions of the final product have been approved by Sally and Anna.

#### 7.3.1.9 Sprint retrospective inputs and outcome

In this Sprint Retrospective meeting, we focus on reviewing our team operation. To do this, we listed and reviewed our methodology that has been adapted throughout the project. Then, we make attempts to come up with reflections on our processes in order to improve our teamwork in the future.

The detailed meeting records can be found in [Sprint 3 Retrospective Meeting Minutes](#)

- **Inputs**

- The things (processes) we have done in Sprint 3:
  - Requirement -> Design -> Code -> Test
  - The requirement is done by breaking down feature user stories into decomposed tasks together as a team
  - Design is done by the subject matter expert and the developers, with the supervision of the scrum master
  - Code is done by developers

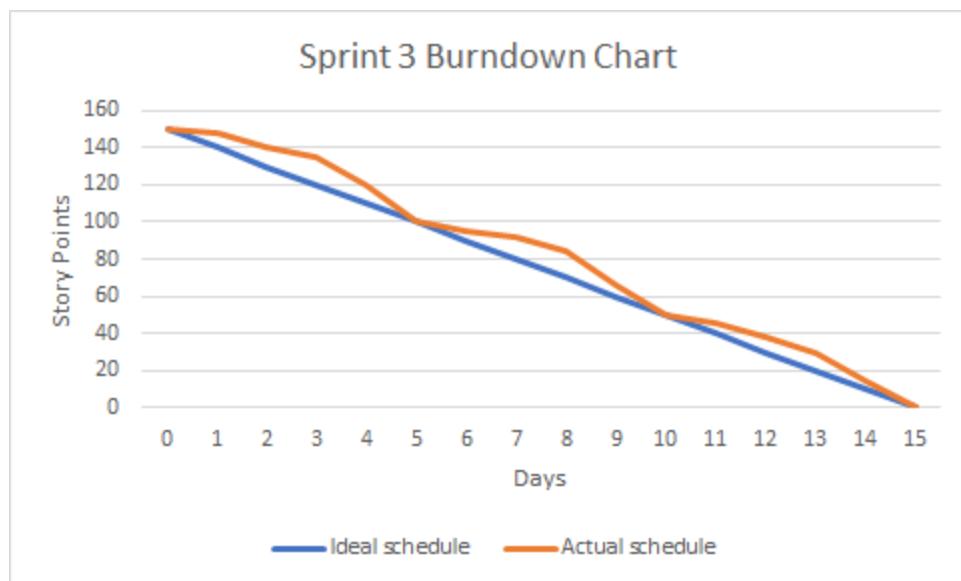
- The test is done by every member of the team, plus Sally and Anna for acceptance testing
- **Outcomes**
  - Reflections on the methodology we have adapted so far
    - Some sections in the documentation in this project are overlapping some other sections, in a way that they are recording the same information from different angles. This could be minimized in the future by refactoring the components of the documentation. (Proposed by Yidi Xiang)

### 7.3.1.10 Burndown charts

Sprint 1: from Day 1 to Day 5

Sprint 2: from Day 6 to Day 10

Sprint 3: from Day 11 to Day 15



### 7.3.1.11 Velocity estimations

Velocity = number of story points completed / time period

Number of story points completed in sprint 3 = 50 story points

Time period = 1 sprint

Thus, velocity = 50 story points per sprint

### 7.3.1.12 Testing

- **Unit Testing**

We tested every individual piece of code or part of our product in sprint 3. The main individual part that we have tested are: logging into the scheduling system, entering the Schedule Web Page, timeslots form, cost calculation functions, data consistency.

- **Integration Testing**

We tested the subsystem of our product in sprint 3. For the registration and login system, log in, log out are tested. For the scheduling subsystem, choosing the schedule and submitting the form are tested. Besides, for the email reminder subsystem, the automatic email sending is tested.

- **Acceptance Testing**

Our product owner Yidi Xiang provides the Acceptance Criteria to the team to test the acceptance. All the features of the product in sprint 3 have been tested to ensure that they meet the business requirements and users' expectations.

### 7.3.2 Product Related Artefacts

(Note: We are using WordPress to build our website. It is an online platform and all the major features are developed on it by using WordPress plugins. No files in WordPress could be downloaded to submit. Thus, we will show the major components of our website online using WordPress during the presentation)

#### 7.3.2.1 Design

We divide the process into three steps according to the requirements and then implement them technically in turn.

First, as the first step, each school representative can view the time frame of the scheduled visit to their school. They can select the specific date they want in this interface, and the data will be verified by the system backend for reasonableness. Subsequently, the school representative can cancel their reservation and enter the reason. In the last step, the system automatically sends emails, which is implemented by the backend.

#### 7.3.2.2 Completed features lists

##### Sprint 1:

- The admin user could use the default e-mail address and password to access the scheduling system.
- The school representative could register on the School Registration Web Page by providing the information including School Name, School Contact Name, School Contact Number, e-mail address and Password.
- The school representative could log into the scheduling system after registration.
- The school representative could register the expression of interest to request a bus visit by providing the information including School Name, Address, City, State, Postal Code, School Type, Is Secure Parking Present, Total Car Parking Spaces, Total Open Areas, Visiting School Name, Nearest Host School Name, Distance from Nearest Host School and Message after login.

- The admin user would receive the email with the content including School Name, Address, School Type, Message after the school representative registers the expression of interest.

### **Sprint 2:**

"Expressing of Interest Listing" page

- A listing of schools expressing their interests.
- The school names on the list are made into hyperlinks, which can be clicked and directed to show each school's scheduling page.

"Rostering a Schedule" page

- Relevant school information and available dates.
- There is verification for a valid time arrangement before confirming a time slot, including the time overlap check and period length (no more than two months).
- An email will be sent to the school automatically after arranging the time slot.

### **Sprint 3:**

- The school representative can select and confirm the school bus visit time on the Schedule Web Page after logging in so that the school bus can visit at the time.
- The school representative can log in and cancel the scheduled visit of the technology bus on Cancelling a Scheduled Visit Web Page.
- The system can automatically send an email to the administrator user after the school representative cancels the scheduled visit to let him know about the bus cancellation information.

#### **7.3.2.3 Screenshots of the website**

[Already registered the expression of interest? Click here to choose a time from the Schedule.](#)

When school representatives log in, they can see a link that can be clicked and redirected to the "Choosing a time from the Schedule" web page.

# Choosing a time from the Schedule

The image shows two side-by-side screenshots of a web form. Both screenshots have a light beige background and a white header bar.

**Left Screenshot:**

- Expression of Interest Acceptance ID: 936
- School Name: abc
- School Type: Hosting School
- Start Date: 10/20/2021
- End Date: 10/30/2021
- Participate in Specialized Activities:  
• Yes (radio button selected)  
○ No
- Total Students Participating (To be entered only if Participate in Specialized Activities? -> Yes):  
The field is required.
- Cost Per Student: \$ 30
- Total Cost: \$ 0
- CONFIRM** button

A yellow box at the bottom left of the form area contains the text: "One or more fields have an error. Please check and try again."

**Right Screenshot:**

- Expression of Interest Acceptance ID: 936
- School Name: abc
- School Type: Hosting School
- Start Date: 10/20/2021
- End Date: 10/30/2021
- Participate in Specialized Activities:  
• Yes (radio button selected)  
○ No
- Total Students Participating (To be entered only if Participate in Specialized Activities? -> Yes):  
10
- Cost Per Student: \$ 30
- Total Cost: \$ 300
- CONFIRM** button

The page contains a form to be filled by the school representative, where the first five fields are automatically populated from the “Rostering a Schedule” page, and the last three fields are required or can be changed. The school representative can change a start time and an end time, where we apply an algorithm to restrict the period length more than a week and less than three weeks and eliminate the time periods that are already scheduled. If “Yes” is selected, the last field is required.

# Choosing a time from the Schedule

Expression of Interest Acceptance ID  
936

School Name  
abc

School Type  
Hosting School

Start Date  
10/20/2021

End Date  
10/30/2021

Participate in Specialized Activities  
 Yes  No

Total Students Participating (To be entered only if Participate in Specialized Activities? -> Yes)  
0

Cost Per Student: \$ 30  
Total Cost: \$ 0

**CONFIRM**

If “No” is selected, the last field is not required.

Congratulations! You have successfully chosen a time from the schedule.

After submitting the form of “Choosing a time from the Schedule”, there will be a prompt of successful scheduling.

[Do you want to cancel your scheduled visit? Click here to cancel it.](#)

After the successful submission of the schedule, school representatives can have the chance to cancel their booking.

# Cancelling a Scheduled Visit

Expression of Interest Acceptance ID  
936

School Name  
abc

School Type  
Hosting School

Start Date  
2021-10-20

End Date  
2021-10-30

Participate in Specialized Activities  
Yes

Total Students Participating  
10

Cost Per Student  
\$ 30

Total Cost  
\$ 300

Reason for Cancellation

The field is required.

**CONFIRM**

One or more fields have an error. Please check and try again.

The page has only one field that needs to be filled, that is the reason for the cancellation.

Congratulations! You have successfully cancelled a scheduled visit.

After submitting the form of “Cancelling a Schedule Visit”, there will be a prompt of successful scheduling.

## Scheduling System "Cancellation for the Technology Bus"



[wordpress@yulailuo.com](mailto:wordpress@yulailuo.com)

to me ▾

Details about a cancellation of the bus visit to a school

Expression of Interest Acceptance ID:

936

School Name:

abc

School Type:

Hosting School

Start Date:

2021-10-20

End Date:

2021-10-30

Participate in Specialized Activities?

Yes

Total Students Participating:

10

Cost Per Student:

\$ 30

Total Cost:

\$ 300

Reason for Cancellation:

abc123

After submitting the form of “Cancelling a Scheduled Visit”, there will be a prompt of successful scheduling, and an email will be automatically sent to the mailing address indicated by the administrator.

### 7.3.2.4 Data storage

In this sprint, first, we need to store the information about school participation for the specialized activities and the number of total students participating. Then, for the second requirement in features lists, we need to store the text of the reason for cancellation typing by the school representatives if they cancel a scheduled visit. These online web pages will connect to phpMyAdmin in GoDaddy hosting and use it to store data.

### **7.3.2.5 Sprint 3 WordPress plugins**

- Contact Form 7: create a form to contain the UI Element including Total Students Participating, Cost Per Student, Total Cost and so on. It could also be used to send the email with custom content.
- WP Data Access:  
It is used to get data in the backend by accessing the phpMyAdmin for MySQL. The data includes Total Students Participating, Cost Per Student, Total Cost and so on.
- Elementor:  
It is used to build the frontend page with a good-looking style.
- LoginWP:  
It is used to create redirections for the pages.
- Wordfence:  
It is used to protect our website from hackers.

### **7.3.3 Risk Monitoring and Control**

#### **7.3.3.1 The originally identified risks that occurred in sprint 3**

We found that the originally identified technical risk called Cross-site request forgery during sprint 3. It forces the user to perform undesired actions on a webpage in which they have already been verified. For example, the hacker may send a link via email to users of our website. If the user clicks the link in the email, the attacker may trick the browser of the user to execute the operations of the hackers.

#### **7.3.3.2 Whether and how did we migrate the risks as planned**

We successfully mitigate the risk by using the WordPress plugins: Sucuri. After researching website security, we found that the Sucuri plugin could protect our website from Cross-site request forgery. Before installing the Sucuri, Cross-site request forgery may trick the browser of the user to execute the operations of the hackers. However, after installing Sucuri, Cross-site request forgery does not affect our website anymore. Sucuri adds the verification steps for the users, which prevents the tricking actions of hackers. It strictly verifies users' credentials and eliminates any tricking methods.

By preventing the Cross-site request forgery, Sucuri helps us successfully migrate this risk.

#### **7.3.3.3 Identified new risks**

As the result of the Sprint Review indicates, there are no new risks identified. In addition, there are also no risks identified process-wise.

## 8. After the project – Project retrospective

### 8.1 Lessons learnt

#### 8.1.1 Teamwork

Although some changes occurred and adjustments were made in our assignment, there was no great obstacle or rework in our project as we kept holding the meetings and discussing the demand points on schedule. We can see Agile's merit of well adapting to potential changes. Meanwhile, since we have five members sharing different responsibilities, it is crucial to have proper goal setting and work-route planning initially and keep close connection during the process of requirements, design, development and testing, to reduce the risk caused by inconsistent progress and incompatible functions.

Periodic work reviews and final retrospection are very important, and it is necessary for all staff to participate so that the whole team can have better control over the project progress, and check leaks and fill a vacancy to perfect the structure.

#### 8.1.2 Technology Choice

Due to the fact that the system is not heavy or complicated, using traditional website building technologies may not be the best way to build the website in just 3 weeks. Before using WordPress, we decided to use the combination of traditional website building technologies to implement the project: Html, Css and Javascript for the frontend, Java or Python for the backend. However, it took us much time to only build a small part of the website and we realized that we might not have enough time. Thus, we decided to find a better and quicker way to build a lightweight system. Then we found that WordPress is perfect for building a simple system in a short time. WordPress has many useful plugins to help build the website in just several steps. We used the plugins like WPForms, Contact Form 7 and so on to quickly implement all requirements. In the future, we will always remember that the technologies research before the start of the project is really important which may decide the success or failure of the whole project.

#### 8.1.3 Effort estimations

In agile, the product owner must manage a backlog, which is a list of deliverables. They will estimate the amount of work required to complete each project. They will look at user stories and story points instead of using time or cost estimates.

#### 8.1.4 What worked well

For the part of system development, we tried our best to complete all the requirements mentioned in the file. All of the functionalities passed the test and performed well in the demo. We consider that our customer and admin user might be unfamiliar with programming, therefore this

scheduling system is friendly to users who do not have programming experience. Our system will provide users with notice for each behaviour and operation, thereby users can know whether they schedule the activities successfully. Some support functionalities help the admin user maintain this scheduling system easily, such as auto-population of text fields and auto email confirmation.

For the team, we guarantee the quality of the product and complete the entire project without delay. We always observe the principle of Agile. We divided all of the requirements into three sprints. For each sprint, all team members were active to participate in the sprint meetings and any changes and problems are welcome in the meetings. Each team member made a contribution to the project.

### **8.1.5 What didn't work well**

Although our teamwork is seamless most of the time, our communication still has some problems from time to time. Because we are a geographically separated team, our communication can only be online, so we will suffer from some time zone inconsistencies and inconsistent life patterns. Sometimes there are some issues that were not mentioned in the daily standup and will be added to WeChat later, but sometimes no definitive response can be obtained.

In addition, because each of us has a different skill tree, in many cases we work with the entire team, but some people in the team have weak skills in this link, which affects the efficiency of cooperation. In fact, our efficiency is already very good, but because of the above reasons, it can still be improved. This is caused by inexperienced teams in [Constraints](#). But although it is an inexperienced Agile team, we also learned a lot of process-related and technology-related knowledge in this cooperation. If we have the opportunity to work as a team again in the future, we will make great progress.

## References

- [1] Worsley, L. M., *Stakeholder-led project management : changing the way we manage projects*. First edition. Business Expert Press (Portfolio and project management collection), 2017. [Online]. Available: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=cat00006a&AN=melb.b6580366&site=eds-live&scope=site>
- [2] Rogers, M. *et al.*, 'Stakeholder engagement in an online community education project via diverse media engagements', *Issues in Educational Research*, 31(2), pp. 626–643. 2021. [Online]. Available: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=ejh&AN=151341629&site=eds-live&scope=site>
- [3] Tengan, C & Aigbavboa, C., 'Level of Stakeholder Engagement and Participation in Monitoring and Evaluation of Construction Projects in Ghana', *Procedia engineering*, p. 630. 2021. [Online]. Available: [<https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=edsbl&AN=vdc.100062138958.0x000001&site=eds-live&scope=site>](https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=edsbl&AN=vdc.100062138958.0x000001&site=eds-live&scope=site).  
[<https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=edselp&AN=S1877705817331788&site=eds-live&scope=site>](https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=edselp&AN=S1877705817331788&site=eds-live&scope=site).
- [4] "What is Scrum?", *Scrum.org*, 2021. [Online]. Available: <https://www.scrum.org/resources/what-is-scrum>.
- [5] "Agile vs Waterfall – What's the Difference?", *Aipm.com.au*, 2021. [Online]. Available: <https://www.aipm.com.au/blog/agile-vs-waterfall-whats-the-difference>.
- [6] "9 Key Benefits of Using the Agile Methodology", *Kissflow*, 2021. [Online]. Available: <https://kissflow.com/project/agile/benefits-of-agile/>.
- [7] J. Santos, "Agile vs. Waterfall | Software Development Methodologies", *Project-Management.com*, 2021. [Online]. Available: <https://project-management.com/agile-vs-waterfall/>.
- [8] T. Hamilton, "Agile Vs Waterfall: Know the Difference Between Methodologies", *Guru99*, 2021. [Online]. Available: <https://www.guru99.com/waterfall-vs-agile.html>.
- [9] P. KUKHNAVETS, "Agile vs Waterfall: Difference Between Two Powerful Methodologies", *Hygger.io Guides*, 2021. [Online]. Available: <https://hygger.io/guides/agile/agile-vs-waterfall/>.
- [10] B. Nash, "Agile vs Waterfall: Learn the Differences in 5 Minutes", *Trustradius*, 2021. [Online]. Available: <https://www.trustradius.com/buyer-blog/difference-between-agile-vs-waterfall>.
- [11] Gustafsson, P., et al. "Identifying IT impacts on organizational structure and business value." (2009).
- [12] R. Shankarmani, R. Pawar, S. S. Mantha and V. Babu, "Agile Methodology Adoption: Benefits and Constraints", *International Journal of Computer Applications*, vol. 58, no. 15, pp. 31-37, 2012. Available: 10.5120/9361-3698.
- [13] P. Cencula, "Agile inverts the Triple Constraints of Project Management", *Linkedin.com*, 2021. [Online]. Available: <https://www.linkedin.com/pulse/agile-inverts-triple-constraints-project-management-paul-cencula/>

- [14] A. Albertin, "Agile Scrum Roles - 3 Roles that Make or Break Scrum - Agile Scrum", *Agile Scrum*, 2021. [Online]. Available: <https://www.exin.com/agile-scrum/agile-scrum-roles-make-or-break-scrum/>.
- [15] R. Schuurman, "The Subject Matter Expert (A Misunderstood Product Owner Stance)", *Medium*, 2021. [Online]. Available: <https://medium.com/the-value-maximizers/the-subject-matter-expert-a-misunderstood-product-owner-stance-73e420851365>.
- [16] Kimhan, S. C., & King, D. M. . (1984). The Effects of Software Quality Control and Baseline Management on the Acquisition of Computer Programs.
- [17] Marion Zalk (2021). Risk Management. SWEN90016.
- [18] Andress J, Winterfeld S, Katsaropoulos C, Limbert M. *The basics of information security : understanding the fundamentals of InfoSec in theory and practice*. Second edition. Syngress; 2014. (The Basics). [Online] Available: <https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=cat00006a&AN=melb.b7598899&site=eds-live&scope=site>
- [19] "WordPress.com: Create a Free Website or Blog", *WordPress.com*, 2021. [Online]. Available: <https://wordpress.com/>. [Accessed: 09- Sep- 2021].
- [20] Wix.com, 2021. [Online]. Available: <https://www.wix.com/>. [Accessed: 14- Sep- 2021].
- [21] K. Baker, "How to Use WordPress: Ultimate Guide to Building a WordPress Website", *Blog.hubspot.com*, 2021. [Online]. Available: <https://blog.hubspot.com/marketing/wordpress-website>.
- [22] "Build a Website – Website Builder – Squarespace", *Squarespace*, 2021. [Online]. Available: <https://www.squarespace.com/>.
- [23] H. Lee, "Web Design Methodology for Wordpress Site based on WordPress Theme Customization", *The Journal of the Korea Contents Association*, vol. 16, no. 2, pp. 277-286, 2016. Available: 10.5392/jkca.2016.16.02.277.
- [24] N. Sethi, N. Bhateja, S. Kaushal and J. Singh, "LAUNCHING WORDPRESS- BLOGS AND DOMAINS", *International Journal of Innovative Research in Computer Science & Technology*, vol. 8, no. 3, 2020. Available: 10.21276/ijircst.2020.8.3.18.
- [25] "What is WordPress? How does it work? - Quora", *Quora.com*, 2021. [Online]. Available: <https://www.quora.com/What-is-WordPress-How-does-it-work-2>.
- [26] "Wix vs Wordpress: 6 Differences To Know For 2021", *Sitebuilderreport.com*, 2021. [Online]. Available: <https://www.sitebuilderreport.com/wix-vs-wordpress>.
- [27]"Manifesto for Agile Software Development", Agilemanifesto.org, 2021. [Online]. Available: <https://agilemanifesto.org/>. [Accessed: 27- Sep- 2021].

# Appendix

## Sprint 1

In the duration of each sprint, a total of 8 meetings were conducted. They are:

1 Sprint Planning meeting, 5 Daily Stand-up meetings, 1 Sprint Review meeting and 1 Sprint Retrospective meeting.

As the agile manifesto [27] suggests, the documentation for an agile project should be minimized and replaced with working software. Based on that principle, we did not document the contents of our daily standup meetings, as those are meant to be short and precise. The meeting Agendas and Minutes were used for Sprint Planning, Sprint Review, and Sprint Retrospective meetings.

### Sprint 1 Planning Meeting Agenda

#### Team T03\_06 Agenda Date: 27 Sep 2021 (Mon)

1. Welcome and apologies
  - Present: Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng
  - Absent: N/A
2. Minutes of previous meeting and review of the Action Items
  - No previous meeting.
  - In today's Sprint Planning meeting:
    - In the first half, the team will identify the sprint goal, and select Sprint Backlog items that correspond to the goal.
    - In the second half, the team will first break down the user stories in the Sprint Backlog to specific task items and assign story points to them.
3. Progress update from team members
  - N/A (This is a Sprint Planning meeting)
4. Planning the activities for the next submission
  - In the second half of the meeting, the team will first break down the user stories in the Sprint Backlog to specific task items and assign story points to them. For the next submission, each group member should finish the artefacts related to the assigned story points including documentation or code.
5. Other tasks
  - N/A

## Sprint 1 Planning Meeting Minutes

### Minutes

*Meeting of:* T03\_06

*Held at:* Zoom

*Date:* 27 Sep 2021

*Time:* 8AM – 9AM

#### Present:

Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng

#### Apologies:

N/A

#### Approval of minutes

The minutes of the previous meeting were unanimously approved as distributed.

#### Agenda items

1. Identify the sprint goal for sprint 1.
2. Select items from the Sprint Backlog.
3. Decompose user stories into low-level tasks
4. Assign the task to choose techniques to calculate story points
5. Assign the story points and Assign the task to finish individual tasks related to the user story points
6. Assign the task to create and update the initial Sprint Swimlane board
7. Assign the task to draw the initial Burndown Chart
8. Assign the task for velocity estimation
9. Assign the tasks for risk monitoring and control

#### Action items

Action Item	Owner(s)	Deadline	Status
Identify the sprint goal	All team members	27 September 2021	Completed

Select items from the Sprint Backlog	All team members	27 September 2021	Completed
Decompose user stories into low-level tasks	All team members	27 September 2021	Completed
Assign the story points to each member	All team members	27 September 2021	Completed
Choose techniques to calculate story points	Yulai Luo	1 October 2021	Assigned
Finish individual tasks related to the user story points	Yulai Luo	1 October 2021	Assigned
Create and update the initial Sprint Swimlane board	Yidi Xiang	1 October 2021	Assigned
Draw the initial Burndown Chart	Xuanzhe Meng	1 October 2021	Assigned
Velocity estimation	Rucheng Fang	1 October 2021	Assigned
Risk monitoring and control	Jieyun Peng	1 October 2021	Assigned

### Next meeting

The next general meeting will be at 5-6 pm on 1 October 2021 by using Zoom.

Minutes submitted by: Yulai Luo

Approved by: Yidi Xiang

## Sprint 1 Review Meeting Agenda

### Team T03\_06 Agenda Date: 1 Oct 2021 (Fri)

1. Welcome and apologies
  - Present: Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng,  
**Sally, Anna**
  - Absent: N/A
2. Minutes of previous meeting and review of the Action Items
  - In the previous Sprint Planning meeting on September 27, Sprint 1 was planned out. Each member has been assigned action items with deadlines.
  - In today's **Sprint Review** meeting, we will first review if the action items are completed by their deadline.
    - All the action items from the meeting on 27 September 2021 have been completed.
3. Progress update from team members
  - Check if Rucheng Fang, Xuanzhe Meng, Jieyun Peng has completed the research and design tasks from each decomposed user story by Oct 1.
  - Check if Rucheng Fang and Xuanzhe Meng have completed the implementation tasks from each decomposed user story by Oct 1.
  - Check if the documentation has been finished by each team member by Oct 1.
  - Check if risk monitoring and control has been researched by Jieyun Peng by Oct 1.
  - Check if unit testing, integration testing, and acceptance testing have all been performed by Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, Sally, and Anna.
  - Check the result of 3 types of testing, if performed.
4. Planning the activities for the next submission
  - Next submission and activities will be raised and confirmed at the sprint planning meeting
5. Other tasks
  - N/A

## Sprint 1 Review Meeting Minutes

### Minutes

*Meeting of:* T03\_06

*Held at:* Zoom

*Date:* 1 Oct 2021

*Time:* 5PM – 6PM

#### Present:

Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, **Sally, Anna**

#### Apologies:

N/A

#### Approval of minutes

The minutes of the previous meeting were unanimously approved as distributed.

#### Agenda items

1. Check the progress for all action items from the last meeting.  
Every task is recorded on Trello and can be viewed by all team members.
2. Progress updates from team members
  - Rucheng Fang, Xuanzhe Meng, Jieyun Peng completed the research and design tasks from each decomposed user story by Oct 1.
  - Rucheng Fang and Xuanzhe Meng have completed the implementation tasks from each decomposed user story by Oct 1.
  - Each team member has finished documentation about their own parts.
  - Jieyun Peng has done research about risk monitoring and control and presented it to other team members.
  - Unit testing, integration testing, and acceptance testing have all been performed this afternoon by Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, Sally, and Anna.
3. Check the result of testing & Demo the final product to all participants.
  - All decomposed task items have been completed by the corresponding team member.
  - All decomposed task items have met the acceptance criteria provided by Sally and Anna.
  - All functions of the Sprint 1 product have been approved by Sally and Anna.

## Action items

Action Item	Owner(s)	Deadline	Status
N/A	N/A	N/A	N/A

## Next meeting

The next general meeting will be at 7 - 7:30 pm on 8 October 2021 by using Zoom

Minutes submitted by: Yulai Luo

Approved by: Yidi Xiang

## **Sprint 1 Retrospective Meeting Agenda**

**Team T03\_06 Agenda**

**Date: 1 Oct 2021 (Fri)**

1. Welcome and apologies
  - Present: Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng
  - Absent: N/A
2. Minutes of previous meeting and review of the Action Items
  - In the previous Sprint Review meeting on Oct 1 5 PM - 6 PM, Sprint 1 was concluded and reviewed.
  - In today's **Sprint Retrospective** meeting:
    - Briefly review the things we have done in Sprint 1.
    - Make attempts to reflect on things that could have been done better.
3. Progress update from team members
  - N/A (This is a Sprint Retrospective meeting)
4. Planning the activities for the next submission
  - Record these suggestions and record them for the development of the team.
5. Other tasks
  - N/A

## Sprint 1 Retrospective Meeting Minutes

### Minutes

*Meeting of:* T03\_06

*Held at:* Zoom

*Date:* 1 Oct 2021

*Time:* 7PM – 7:30PM

#### Present:

Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng

#### Apologies:

N/A

#### Approval of minutes

The minutes of the previous meeting were unanimously approved as distributed.

#### Agenda items

1. Briefly review the things we have done in Sprint 1.
    - Our workflow followed the agile methodology
      - Requirement -> Design -> Code -> Test
      - The requirement is done by breaking down feature user stories into decomposed tasks together as a team
      - Design is done by the subject matter expert and the developers, with the supervision of the scrum master
      - Code is done by developers
      - The test is done by every member of the team, plus Sally and Anna for acceptance testing
  2. Change the way or tool to build our website
    - Using traditional website techniques such as Html, CSS and Javascript to build the website is very slow. For this simple scheduling system, we could use WordPress more often to save time.
- (Proposed by Yulai Luo)

## Action items

Action Item	Owner(s)	Deadline	Status
Record the ideas about the way to build the website from all team members	Yulai Luo, Yidi Xiang	Oct 1 ASAP	Completed

## Next meeting

The next general meeting will be at 8-9 am on 4 October 2021 by using Zoom.

Minutes submitted by: Yulai Luo

Approved by: Yidi Xiang

## Sprint 1 Timesheets

### Timesheet

*Member Name:* Yulai Luo

*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaram

*Date:* 1 Oct 2021

Date	Activity	Planned	Actual
Monday 27 September	Reading Assignment speciation	2 hours	2 hours
Monday 27 September	Prepare and attend the sprint planning meeting	1 hour	1 hour
Tuesday 28 September	Finish the assigned tasks about the documentation including choosing techniques to calculate story points	6 hours	6 hours
Wednesday 29 September	Finish the assigned tasks about the documentation including drawing the initial Burndown Chart	6 hours	6 hours
Thursday 30 September	Finish the assigned tasks about the documentation including velocity estimation	6 hours	6 hours
Friday 1 October	Prepare and Attend sprint review meeting	1 hour	1 hour
Friday 1 October	Prepare and Attend sprint retrospective meeting	30 minutes	30 minutes

## Timesheet

*Member Name:* Yidi Xiang

*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaramhour

*Date:* 1 Oct 2021

Date	Activity	Planned	Actual
Monday 27 September	Reading Assignment speciation	2 hours	2 hours
Monday 27 September	Attend sprint planning meeting	1 hour	1 hour
Tuesday 28 September	Finish the assigned tasks about the documentation	6 hours	6 hours
Wednesday 29 September	Finish the assigned tasks about the documentation	6 hours	6 hours
Thursday 30 September	Finish the assigned tasks about the documentation	6 hours	6 hours
Friday 1 October	Attend sprint review meeting	1 hour	1 hour
Friday 1 October	Attend sprint retrospective meeting	30 minutes	30 minutes

## Timesheet

*Member Name:* Xuanzhe Meng

*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaram

*Date:* 1 Oct 2021

Date	Activity	Planned	Actual
Monday 27 September	Reading Assignment speciation	2 hours	2 hours
Monday 27 September	Attend sprint planning meeting	1 hour	1 hour
Tuesday 28 September	Finish the assigned tasks about the website	6 hours	6 hours
Wednesday 29 September	Finish the assigned tasks about the website	6 hours	6 hours
Thursday 30 September	Finish the assigned tasks about the website	6 hours	6 hours
Friday 1 October	Attend sprint review meeting	1 hour	1 hour
Friday 1 October	Attend sprint retrospective meeting	30 minutes	30 minutes

## Timesheet

*Member Name:* *Rucheng Fang*

*Team name:* *T03\_06*

*Tutor:* *Rajesh Chittor Sundaram*

*Date:* *1 Oct 2021*

<b>Date</b>	<b>Activity</b>	<b>Planned</b>	<b>Actual</b>
Monday 27 September	Reading Assignment speciation	2 hours	2 hours
Monday 27 September	Attend sprint planning meeting	1 hour	1 hour
Tuesday 28 September	Finish the assigned tasks about the website	6 hours	6 hours
Wednesday 29 September	Finish the assigned tasks about the website	6 hours	6 hours
Thursday 30 September	Finish the assigned tasks about the website	6 hours	6 hours
Friday 1 October	Attend sprint review meeting	1 hour	1 hour
Friday 1 October	Attend sprint retrospective meeting	30 minutes	30 minutes

## Timesheet

*Member Name:* Jieyun Peng

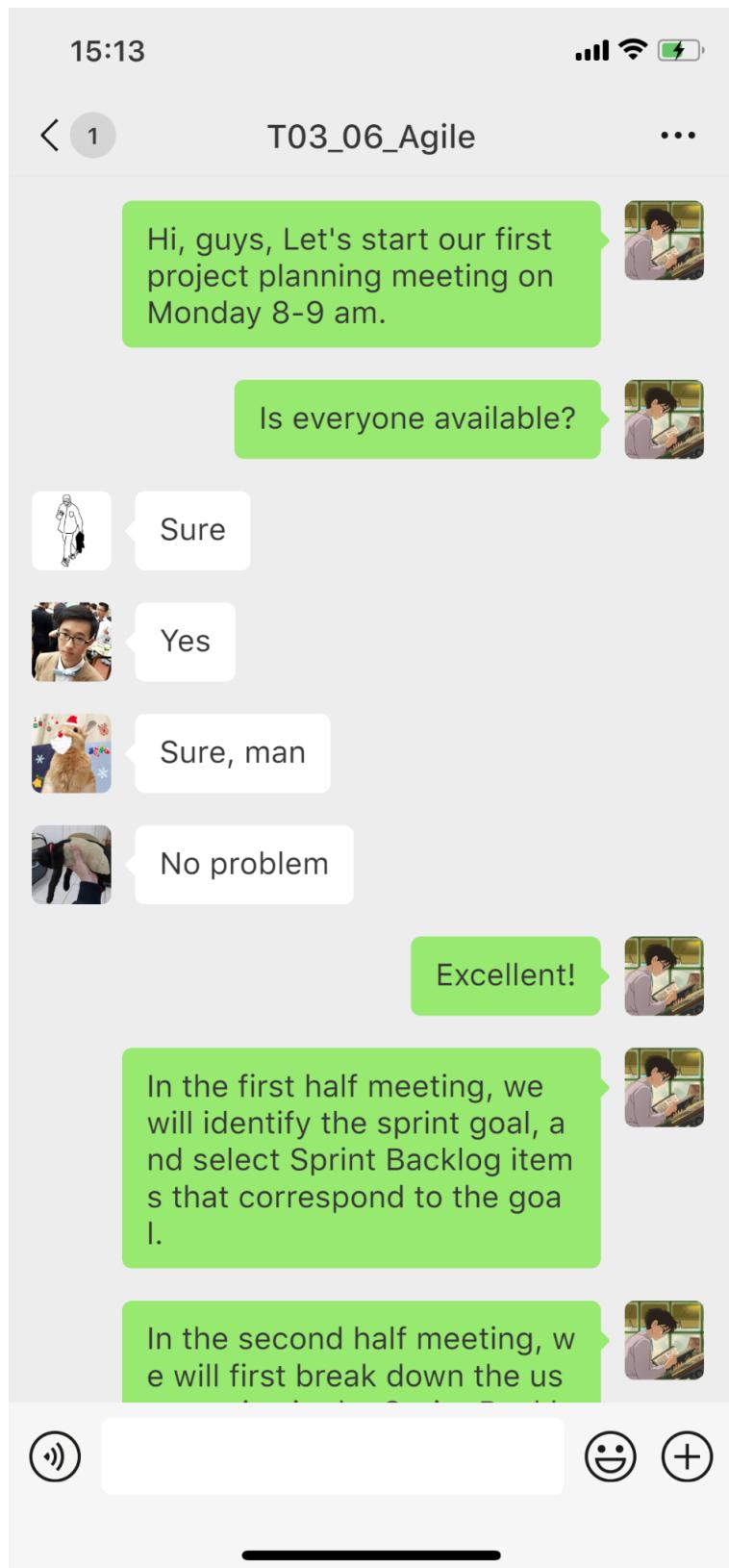
*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaram

*Date:* 1 Oct 2021

Date	Activity	Planned	Actual
Monday 27 September	Reading Assignment speciation	2 hours	2 hours
Monday 27 September	Attend sprint planning meeting	1 hour	1 hour
Tuesday 28 September	Finish the assigned tasks about the documentation	6 hours	6 hours
Wednesday 29 September	Finish the assigned tasks about the documentation	6 hours	6 hours
Thursday 30 September	Finish the assigned tasks about the documentation	6 hours	6 hours
Friday 1 October	Attend sprint review meeting	1 hour	1 hour
Friday 1 October	Attend sprint retrospective meeting	30 minutes	30 minutes

## Sprint 1 Screenshots of communications



15:06



T03\_06\_Agile



Hi, folks. Our first sprint review meeting is ready to go on Friday 5-6 pm.



Are you guys all available to attend the meeting?



I'm available



Me too



Do we use Zoom for this time?



I'm ok



For this meeting, we will check the progress for all action items from the last meeting.



Right?



## Sprint 2

### Sprint 2 Planning Meeting Agenda

**Team T03\_06 Agenda**

**Date: 4 Oct 2021 (Mon)**

#### 6. Welcome and apologies

- Present: Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng
- Absent: N/A

#### 7. Minutes of previous meeting and review of the Action Items

- The previous meeting was the review of Sprint 1. We completed all tasks of Sprint 1 and achieved feedback from the stakeholders.
- In today's Sprint Planning meeting:
  - In the first half, we will briefly summarize the problems that occurred in Sprint1 and identify the goal for Sprint 2.
  - In the second half, we have three new high levels of user stories and the team needs to discuss them and assign story points to them.

#### 8. Progress update from team members

- N/A (This is a Sprint Planning meeting)

#### 9. Planning the activities for the next submission

- In the second half, we have three new high levels of user stories and the team needs to discuss them and assign story points to them.

#### 10. Other tasks

- N/A

## Sprint 2 Planning Meeting Minutes

### Minutes

*Meeting of:* T03\_06

*Held at:* Zoom

*Date:* 4 Oct 2021

*Time:* 8AM – 9AM

#### Present:

Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng

#### Apologies:

N/A

#### Approval of minutes

The minutes of the previous meeting were unanimously approved as distributed.

#### Agenda items

1. We mentioned the problems that occurred in sprint 1 so that all team members will have experience when we encounter the same issues.
2. We talked about new high-level user stories:
  1. As an admin user, I want to view the list of all expressions of interests received on the Expressions of Interest Listing Web Page after logging into the scheduling system so that I can do further operations for rostering a schedule for a school.
  2. As an admin user, I want the system to allow the Rostering a Schedule Web Page to display after clicking the hyperlink for any school so that I can roster a schedule for a school.
  3. As an admin user, I want the system to automatically send an e-mail to the corresponding school representatives so that they will be reminded to choose a time from the schedule.
3. We divided them into small tasks with story points, the table in the process related artefacts contains the full details of tasks.
4. We estimated that the amount of work for the first user story is more than the rest of them, therefore we plan to spend more time on the user story one.
5. As sprint 1 was not delayed, we were confident to deliver Sprint 2 on time.

## Action items

Action Item	Owner(s)	Deadline	Status
[Action item]	[Name(s)]	[Date]	[Status, such as Assigned, In Progress or Complete]
Assign action items to team members	Jieyun Peng, Yulai Luo	Oct 5	Complete
Research and find how we can design for each page user interface	Rucheng Fang, Xuanzhe Meng, Yulai Luo	Oct 6	Complete
Implement all tasks in the table	Xuanzhe Meng, Yidi Xiang, Rucheng Fan	Oct 8	Complete

## Next meeting

The next general meeting will be at 8:00 a.m. on October 8 on ZOOM.

Minutes submitted by: Yulai Luo

Approved by: Yidi Xiang

## Sprint 2 Review Meeting Agenda

### Team T03\_06 Agenda Date: 8 Oct 2021 (Fri)

1. Welcome and apologies
  - Present: Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng,  
**Sally, Anna**
  - Absent: N/A
2. Minutes of previous meeting and review of the Action Items
  - The previous meeting was the planning meeting of Sprint 2 on Oct 4, we made a plan for this sprint and each member has received their tasks.
  - In today's **Sprint Review** meeting:
    1. We will check whether all team members finished their tasks successfully
    2. We will test the functionality of this Sprint.
    3. Yulai Luo will take a small demo of these functionalities.
    4. We will make a final decision for two new risks we found in this sprint.
    5. Question and answer session.
3. Progress update from team members
  - Check if Rucheng Fang, Xuanzhe Meng, Yulai Luo completed the design of the user interface on the scheduling page.
  - Check if each member has completed the documentation on time.
  - Check if each member has completed the tasks on time.
  - Check if any team members find potential problems for Sprint 2.
  - Check if unit testing, integration testing, and acceptance testing have all been performed by Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, Sally, and Anna.
4. Planning the activities for the next submission

The sprint Retrospective will involve the next submission.
5. Other tasks
  - N/A

## Sprint 2 Review Meeting Minutes

### Minutes

*Meeting of:* T03\_06

*Held at:* Zoom

*Date:* 8 Oct 2021

*Time:* 5PM – 6PM

#### Present:

Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, **Sally, Anna**

#### Apologies:

N/A

#### Approval of minutes

The minutes of the previous meeting were unanimously approved as distributed.

#### Agenda items

- We decided to ignore two new risks because of time limitations.
- All team members completed the tasks that were scheduled during the planning meeting.
- All team members completed the documentation part for Sprint 2.
- No potential problems were found in Sprint 2.
- Unit testing, integration testing, and acceptance testing have all been performed this afternoon by Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, Sally, and Anna.
- Sally and Anna have approved all tasks of Sprint 2.

#### Action items

Action Item	Owner(s)	Deadline	Status
N/A	N/A	N/A	N/A

**Next meeting**

The next general meeting will be at 7:00 p.m. on October 12 on ZOOM.

Minutes submitted by: Yulai Luo

Approved by: Yidi Xiang

## **Sprint 2 Retrospective Meeting Agenda**

**Team T03\_06 Agenda**

**Date: 8 Oct 2021 (Tue)**

### 4. Welcome and apologies

- Present: Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng
- Absent: N/A

### 5. Minutes of previous meeting and review of the Action Items

- In the previous Sprint Review meeting on Oct 8, Sprint 2 was concluded and reviewed. Besides, some initial thoughts on Sprint 3 were brought up.
- In today's Sprint Planning meeting:
  - In the first half, the team will review the tasks completed in Sprint 2.
  - In the second half, the team will identify potential issues or make improvements on each requirement.

### 6. Progress update from team members

- N/A (This is a Sprint Planning meeting)

### 7. Planning the activities for the next submission

- Test the functionality of the previously designed pages and demonstrate the product to the client.

### 8. Other tasks

- N/A

## Sprint 2 Retrospective Meeting Minutes

### Minutes

*Meeting of:* T03\_06

*Held at:* Zoom

*Date:* 8 Oct 2021

*Time:* 7PM – 7:30PM

#### Present:

Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng

#### Apologies:

N/A

#### Approval of minutes

The minutes of the previous meeting were unanimously approved as distributed.

#### Agenda items

1. Review the tasks completed in Sprint 2.
  - Requirement -> Design -> Code -> Test
  - The requirement is done by breaking down feature user stories into decomposed tasks together as a team
  - Design is done by the subject matter expert and the developers, with the supervision of the scrum master
  - Code is done by developers
  - The test is done by every member of the team, plus Sally and Anna for acceptance testing
2. Identify potential issues or make improvements on each requirement
  - Finally, all team members agreed to ignore two new security risks we found for the second user story in this sprint. Because we have to complete sprint 2 on time otherwise the delay of sprint 2 will cause sprint 3 to delay as well. Moreover, we consider the probability of risk is low as our system is designed to be non-profit. There is no reason for the attacker to spend time on this system. Therefore, we considered the balance between time cost and the construction of reliability.

## Action items

Action Item	Owner(s)	Deadline	Status
Test the functionality of the previously designed pages and demonstrate the product to the client	Yulai Luo, Yidi Xiang	Oct 11	Complete

## Next meeting

N/A

Minutes submitted by: Yulai Luo

Approved by: Yidi Xiang

## Sprint 2 Timesheets

### Timesheet

*Member Name:* Yidi Xiang

*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaram

*Date:* 5 Oct 2021

Date	Activity	Planned	Actual
Tuesday 5 Oct	Assign action items to team members	1 hour	1 hour
Wednesday 6 Oct	5.1.4 Implement the function to identify if there are contents in the list	2 hours	2 hours
Thursday 7 Oct	6.3.1 Implement the function to Auto-generate the unique 3 digit number starting with 100	2 hours	3 hours
Friday 8 Oct	6.7.2 If the admin user makes a failed schedule, then the web page should also give the admin user a remainder	2 hours	2 hours

## **Timesheet**

*Member Name:* Yulai Luo

*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaram

*Date:* 5 Oct 2021

<b>Date</b>	<b>Activity</b>	<b>Planned</b>	<b>Actual</b>
Tuesday 5 Oct	Assign action items to team members	1 hour	1 hour
Wednesday 6 Oct	5.1.3 Establishing the backend using the selected framework and related programming language	2 hours	2 hours
Thursday 7 Oct	6.4.1 Implement the function to auto-populate the text field of school name and school type	2 hours	2 hours
Friday 8 Oct	6.7.1 Implement the function to show the admin user a notice that school was scheduled successfully	2 hours	2 hours

## Timesheet

*Member Name:* Xuanzhe Meng

*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaram

*Date:* 5 Oct 2021

Date	Activity	Planned	Actual
Tuesday 5 Oct	5.1.5 Implement the function to display the list of school	2 hours	1 hour
Wednesday 6 Oct	5.1.3 Establishing the backend using the selected framework and related programming language	2 hours	2 hours
Thursday 7 Oct	6.1.1 Implement the function to allow the admin user to click a certain name of the school.	1 hour	1.5 hours
Friday 8 Oct	7.1.1 Implement the function to send a confirmation email to the corresponding school which contains, acceptance ID, school information and schedule date.	2	2 hours

## **Timesheet**

*Member Name:* **Rucheng Fang**

*Team name:* **T03\_06**

*Tutor:* **Rajesh Chittor Sundaram**

*Date:* **5 Oct 2021**

<b>Date</b>	<b>Activity</b>	<b>Planned</b>	<b>Actual</b>
Tuesday 5 Oct	5.1.1 Design an expression page that contains a listing of schools	1.5 hour	1 hour
Wednesday 6 Oct	5.1.2 Create a prototype of the expression page	2 hour	2 hours
Thursday 7 Oct	6.6.1 Implement the function to check if the difference between the Start Date and End Date is more than 2 months	2 hours	2 hours
Friday 8 Oct	6.6.2 Web page will give a notice if the difference is more than 2 months	1.5 hour	1.5 hour

## Timesheet

*Member Name:* Jieyun Peng

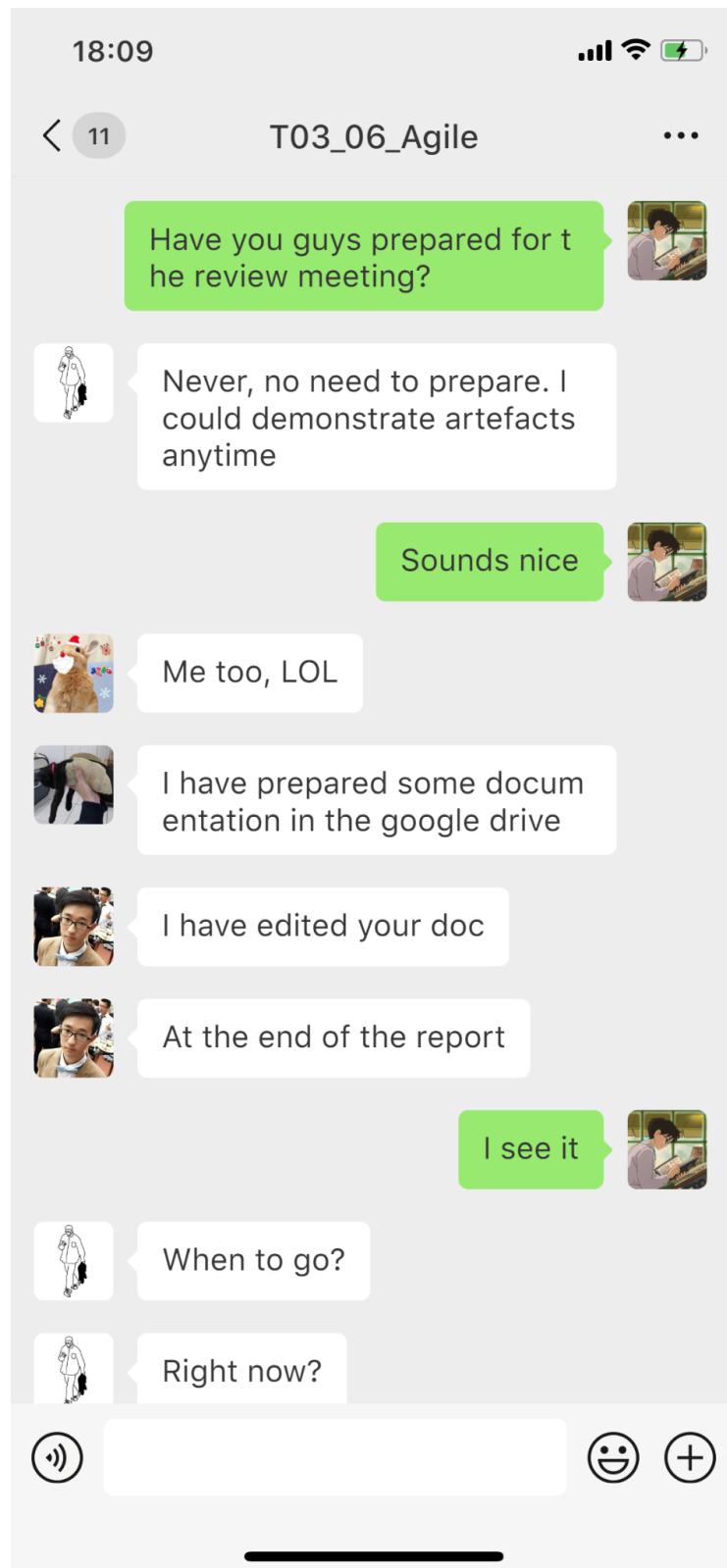
*Team name:* T03\_06

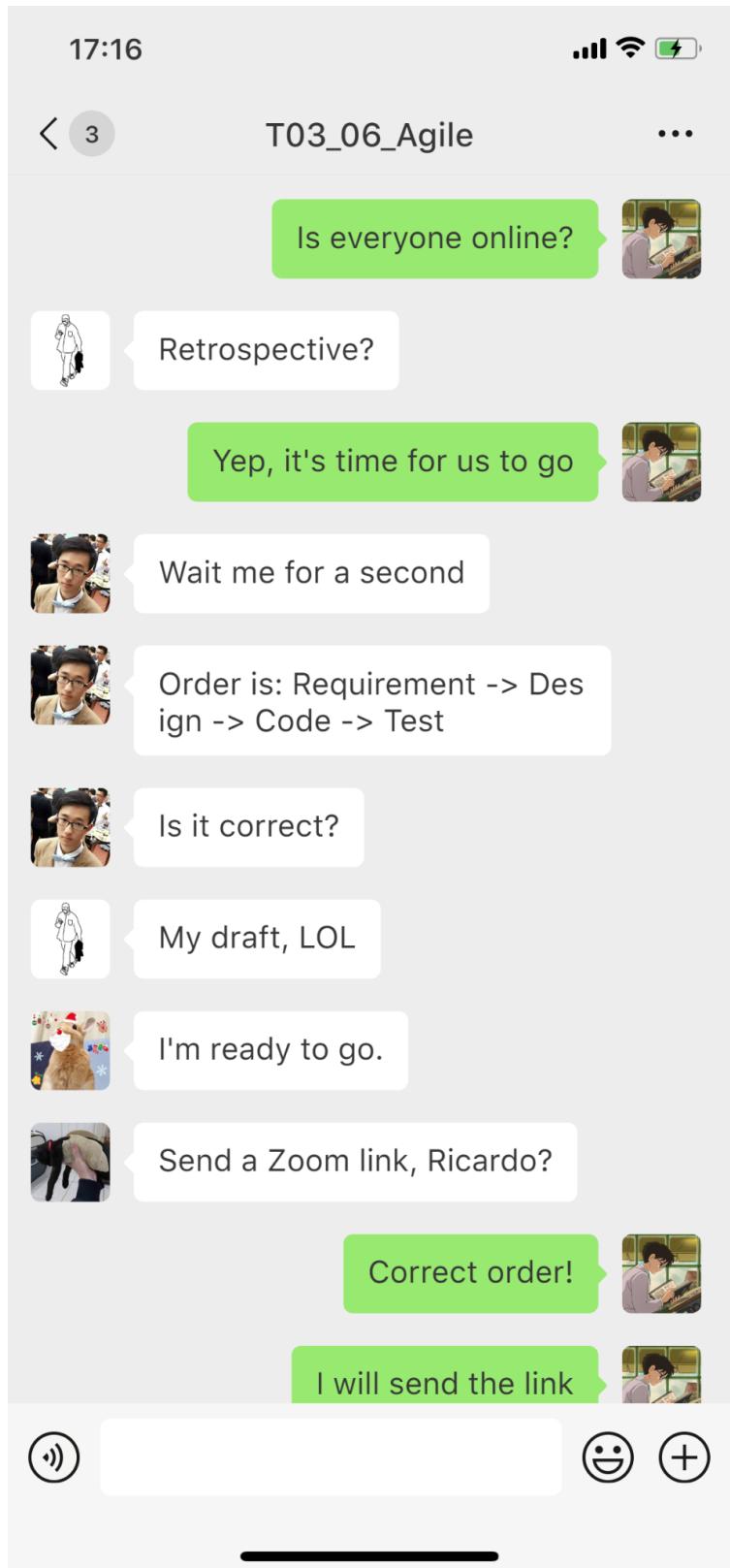
*Tutor:* Rajesh Chittor Sundaram

*Date:* 5 Oct 2021

Date	Activity	Planned	Actual
Tuesday 5 Oct	6.2.1 Design a schedule page that contains school information and available date	2 hour	2 hour
Wednesday 6 Oct	6.2.2 Create a prototype of the schedule page	2 hour	2 hours
Thursday 7 Oct	6.5.1 Implement the function to allow the admin user to select the Start Date and End Date	2 hour	1.5 hour
Friday 8 Oct	6.5.2 Implement the function to check if the selected date is idle	1 hour	1 hour

## Sprint 2 Screenshots of communications





## Sprint 3

### Sprint 3 Planning Meeting Agenda

#### Team T03\_06 Agenda

Date: 11 Oct 2021 (Mon)

1. Welcome and apologies
  - Present: Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng
  - Absent: N/A
2. Minutes of previous meeting and review of the Action Items
  - In the previous Sprint Review meeting on Oct 8, Sprint 2 was concluded and reviewed. Besides, some initial thoughts on Sprint 3 were brought up.
  - In today's **Sprint Planning** meeting:
    - In the first half, the team will identify the sprint goal, and select Sprint Backlog items that correspond to the goal.
    - In the second half, the team will first break down the user stories in the Sprint Backlog to specific task items and assign story points to them.
3. Progress update from team members
  - N/A (This is a Sprint Planning meeting)
4. Planning the activities for the next submission
  - In the second half of the meeting, the team will first break down the user stories in the Sprint Backlog to specific task items and assign story points to them.
5. Other tasks
  - N/A

## Sprint 3 Planning Meeting Minutes

### Minutes

*Meeting of:* T03\_06

*Held at:* Zoom

*Date:* 11 Oct 2021

*Time:* 8AM – 9AM

#### Present:

Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng

#### Apologies:

N/A

#### Approval of minutes

The minutes of the previous meeting were unanimously approved as distributed.

#### Agenda items

##### 1. Identify the sprint goal for sprint 3

Our first task as a beginning of Sprint 3 is to identify the sprint goal for sprint 3, which can guide our actions throughout the whole sprint. As we acknowledged before, this project is not high in complexity. Hence, the sprint goal for this sprint should be similar to the previous 2 sprints, with different action items.

##### 2. Select Sprint Backlog items for Sprint 3

As the previous sprints completed all their tasks perfectly, the remaining tasks should all be completed in Sprint 3.

##### 3. Break down User Stories selected above

This task is done by all 5 members of the team to reach maximum speed and consensus.

##### 4. Assign action items to team members.

This is done by the product owner and scrum master.

#### Action items

Action Item	Owner(s)	Deadline	Status

Assign action items to team members	Yidi Xiang, Yulai Luo	Oct 11 ASAP	Completed
The research and design tasks from each decomposed user story	Rucheng Fang, Xuanzhe Meng, Jieyun Peng	Oct 13	Completed
The implementation tasks from each Decomposed user story	Rucheng Fang, Xuanzhe Meng	Oct 15	Completed

### **Next meeting**

The next general meeting will be at [insert next meeting time] on [insert next meeting date] at Zoom.

Minutes submitted by: Yulai Luo

Approved by: Yidi Xiang

## Sprint 3 Review Meeting Agenda

### Team T03\_06 Agenda

Date: 15 Oct 2021 (Fri)

1. Welcome and apologies
  - Present: Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng,  
**Sally, Anna**
  - Absent: N/A
2. Minutes of previous meeting and review of the Action Items
  - In the previous Sprint Planning meeting on Oct 11, Sprint 3 was planned out.  
Each member has been assigned action items with deadlines.
  - In today's **Sprint Review** meeting, we will first review if the action items are completed by their deadline.
    - All the action items from the meeting on 11 Oct 2021 have been completed.
3. Progress update from team members
  - Check if Rucheng Fang, Xuanzhe Meng, Jieyun Peng has completed the research and design tasks from each decomposed user story by Oct 13.
  - Check if Rucheng Fang and Xuanzhe Meng have completed the implementation tasks from each decomposed user story by Oct 15 morning.
  - Check if unit testing, integration testing, and acceptance testing have all been performed by Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, Sally, and Anna.
  - Check the result of 3 types of testing, if performed.
4. Check the result of testing & Demo the final product to all participants.
  - If anything comes up as a result of this Sprint Review, the team will fix it ASAP.
5. Other tasks
  - N/A

## Sprint 3 Review Meeting Minutes

### Minutes

*Meeting of:* T03\_06

*Held at:* Zoom

*Date:* 15 Oct 2021

*Time:* 5PM – 6PM

#### Present:

Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, **Sally, Anna**

#### Apologies:

N/A

#### Approval of minutes

The minutes of the previous meeting were unanimously approved as distributed.

#### Agenda items

1. Check the progress for all action items from the last meeting.  
Through Trello, it is easy to tell that every member of our team successfully completed the job assigned to them perfectly on time. The result of corresponding functions completed can be reflected on the website.
2. Progress updates from team members
  - Rucheng Fang, Xuanzhe Meng, Jieyun Peng completed the research and design tasks from each decomposed user story by Oct 13.
  - Rucheng Fang and Xuanzhe Meng have completed the implementation tasks from each decomposed user story by Oct 15 morning.
  - Unit testing, integration testing, and acceptance testing have all been performed this afternoon by Yulai Luo, Yidi Xiang, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, Sally, and Anna.
3. Check the result of testing & Demo the final product to all participants.
  - All decomposed task items have been completed by the corresponding team member.
  - All decomposed task items have met the acceptance criteria provided by Sally and Anna.
  - All functions of the final product have been approved by Sally and Anna.

## Action items

Action Item	Owner(s)	Deadline	Status
N/A	N/A	N/A	N/A

## Next meeting

7 PM – 7:30 PM on 15 Oct 2021

Minutes submitted by: Yulai Luo

Approved by: Yidi Xiang

## Sprint 3 Retrospective Meeting Agenda

### Team T03\_06 Agenda

Date: 15 Oct 2021 (Fri)

1. Welcome and apologies
  - Present: Yulai Luo, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, Yidi Xiang
  - Absent: N/A
2. Minutes of previous meeting and review of the Action Items
  - In the previous Sprint Review meeting on Oct 15 5 PM - 6 PM, Sprint 3 was concluded and reviewed.
  - In today's **Sprint Retrospective** meeting:
    - Briefly review the things we have done in Sprint 3.
    - Make attempts to reflect on things that could have been done better.
3. Progress update from team members
  - N/A (This is a Sprint Retrospective meeting)
4. Make attempts to reflect on the methodology we have adapted so far
  - Record these suggestions and record them for the development of the team.
5. Other tasks
  - N/A

## Sprint 3 Retrospective Meeting Minutes

### Minutes

*Meeting of:* T03\_06

*Held at:* Zoom

*Date:* 15 Oct 2021

*Time:* 7PM – 7:30PM

#### Present:

Yulai Luo, Rucheng Fang, Xuanzhe Meng, Jieyun Peng, Yidi Xiang

#### Apologies:

N/A

#### Approval of minutes

The minutes of the previous meeting were unanimously approved as distributed.

#### Agenda items

1. Briefly review the things we have done in Sprint 3.
  - Same as in Sprint 1 and Sprint 2, our workflow followed the agile methodology
    - Requirement -> Design -> Code -> Test
    - The requirement is done by breaking down feature user stories into decomposed tasks together as a team
    - Design is done by the subject matter expert and the developers, with the supervision of the scrum master
    - Code is done by developers
    - The test is done by every member of the team, plus Sally and Anna for acceptance testing
2. Make attempts to reflect on the methodology we have adapted so far
  - Some sections in the documentation in this project are overlapping some other sections, in a way that they are recording the same information from different angles. This could be minimized in the future by refactoring the components of the documentation. (Proposed by Yidi Xiang)

## Action items

Action Item	Owner(s)	Deadline	Status
Record the suggestions on methodology for future directions of the team	Yulai Luo, Yidi Xiang	Oct 15 ASAP	Completed

## Next meeting

N/A

Minutes submitted by: Yulai Luo

Approved by: Yidi Xiang

## Sprint 3 Timesheets

### Timesheet

*Member Name:* Yidi Xiang

*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaram

*Date:* 11 Oct 2021

Date	Activity	Planned	Actual
Monday 11 Oct	Assign action items to team members	1 hour	1 hour
Monday 11 Oct	8.3.1 Make sure the Default Start Date and the Default End Date is consistent with the Rostering a Schedule Web Page	1 hour	1 hour
Tuesday 12 Oct	8.3.2 Identify the appropriate plugin widgets to use	2 hours	2 hours
Wednesday 13 Oct	8.3.3 Implement the function	2 hours	3 hours
Wednesday 13 Oct	9.3.1 Implement the reason for cancellation field	1 hour	0.5 hour
Thursday 14 Oct	9.3.2 Implement the cancellation function	2 hours	1.5 hours
Friday 15 Oct	9.3.3 Implement the notification of cancelling result function	2 hours	2 hours

## **Timesheet**

*Member Name:* Yulai Luo

*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaram

*Date:* 11 Oct 2021

<b>Date</b>	<b>Activity</b>	<b>Planned</b>	<b>Actual</b>
Monday 11 Oct	Assign action items to team members	1 hour	1 hour
Tuesday 12 Oct	8.4.2 Implement the Participate in Specialized Activity field and Total Students Participating field	2 hours	2 hours
Wednesday 13 Oct	8.4.3 Implement the calculation function to calculate the Total Cost	2 hours	2 hours
Thursday 14 Oct	10.1.2 Decide on the representation format of the details in the notification email	2 hours	2 hours
Thursday 14 Oct	10.1.3 Involve the customer to check if they are happy about the design of the email format	3 hours	3 hours

## Timesheet

*Member Name:* Xuanzhe Meng

*Team name:* T03\_06

*Tutor:* Rajesh Chittor Sundaram

*Date:* 11 Oct 2021

Date	Activity	Planned	Actual
Monday 11 Oct	8.2.2 Make sure the data used by these two pages are connected	2 hours	1 hour
Monday 11 Oct	8.2.3 Test this aspect of the Schedule Web Page	2 hours	2 hours
Tuesday 12 Oct	9.2.2 Make sure the data is consistent with the scheduled visit to be fetched	1 hour	1.5 hours
Wednesday 13 Oct	9.2.3 Implement the detailed form of the scheduled visit to be cancelled	3 hours	3.5 hours
Thursday 14 Oct	10.2.2 Implement the automated email notification function	3 hours	3 hours

## Timesheet

*Member Name:* *Rucheng Fang*

*Team name:* *T03\_06*

*Tutor:* *Rajesh Chittor Sundaram*

*Date:* *11 Oct 2021*

<b>Date</b>	<b>Activity</b>	<b>Planned</b>	<b>Actual</b>
Monday 11 Oct	8.1.2 Identify the fields of form needed	1 hour	1 hour
Monday 11 Oct	8.1.3 Identify the appropriate plugin widgets to use	1 hour	1 hour
Tuesday 12 Oct	8.1.4 Implement the page	2 hours	2 hours
Wednesday 13 Oct	9.1.2 Identify appropriate plugin widgets to use for the web page	1 hour	1 hour
Thursday 14 Oct	9.1.3 Make sure the data retrieved from this page is consistent with the scheduled visit to be fetched from the database	1 hour	1 hour
Thursday 14 Oct	9.1.4 Implement the web page	2 hours	2 hours
Friday 15 Oct	10.2.3 Test for sufficient number of times to make sure that emails can be sent and received at a stable rate	3 hours	3 hours

## Timesheet

*Member Name: Jieyun Peng*

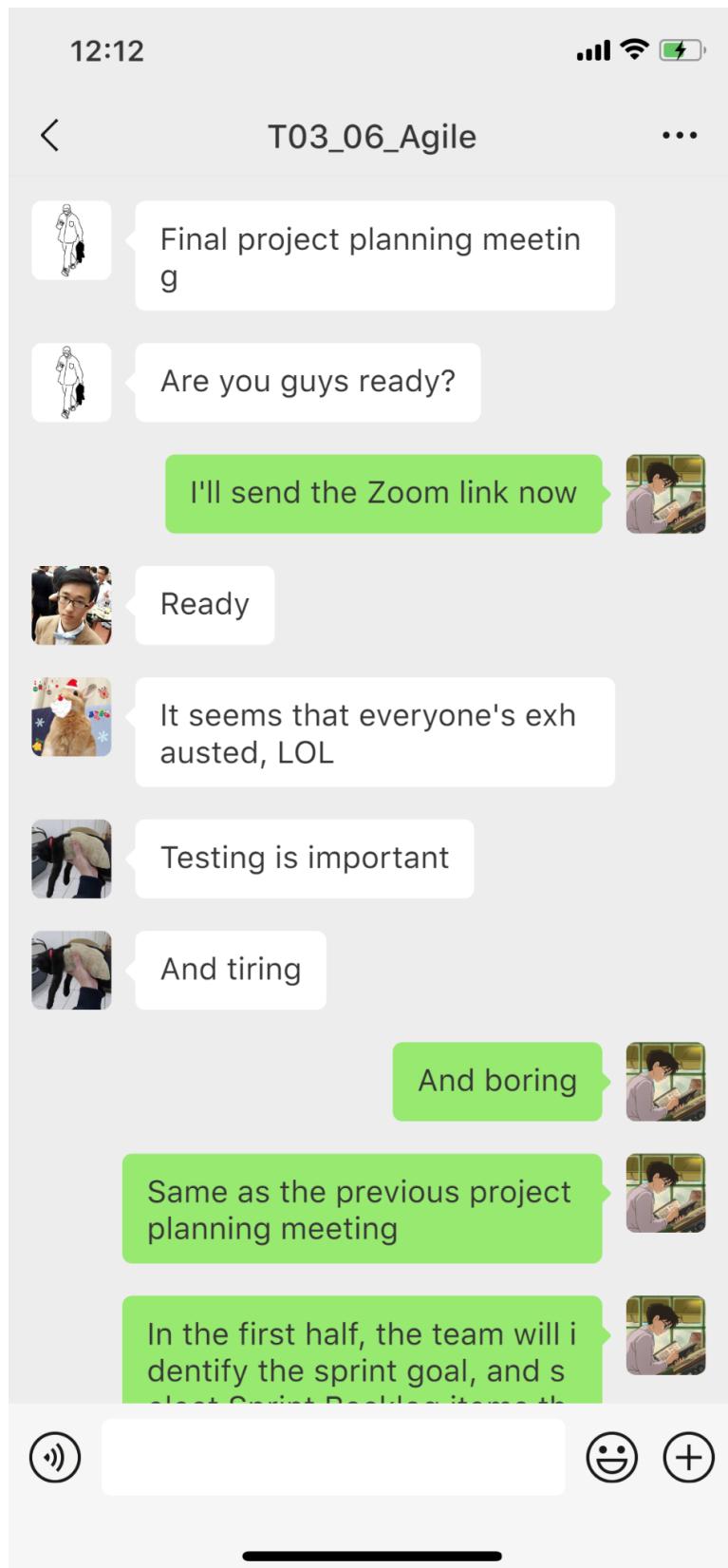
*Team name: T03\_06*

*Tutor: Rajesh Chittor Sundaram*

*Date: 11 Oct 2021*

<b>Date</b>	<b>Activity</b>	<b>Planned</b>	<b>Actual</b>
Monday 11 Oct	8.1.1 Design the user interface	1 hour	1 hour
Monday 11 Oct	8.2.1 Identify the connection between this page to Rostering a Schedule Web Page	1 hour	1 hour
Tuesday 12 Oct	8.4.1 Identify the design of Participate in Specialized Activity field	1 hour	0.5 hour
Tuesday 12 Oct	9.1.1 Design the web page	1 hour	2 hours
Tuesday 12 Oct	9.2.1 Design the detailed look of the scheduled visit to be cancelled	1 hour	1.5 hours
Wednesday 13 Oct	10.1.1 Design the format of the notification email	2 hours	1 hour
Thursday 14 Oct	10.2.1 Identify the tool/ plugin widget to use for automating emails to specific addresses	2 hours	2 hours

### Sprint 3 Screenshots of communications



20:18



## T03\_06\_Agile



Congratulation!



Bravo!



Bravo!



We did it



Cool website



Every function is fine so far



No bugs



It seems that we could make more improvements on the login interface



I agree



May add some Javascript code snippets?

