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JJFresh – Project Management Plan

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Executive Summary

Jess and James plan to get a web-based system for online ordering of their produce box offerings. In this way, they may be able to gain more orders while maintaining their existing customer base. Because Jess and James are self-operated stores and have insufficient budgets, to reduce development costs, the online store would be implemented by a student team from the University of Melbourne.

Firstly, the development team fully understood the needs of Jess and James. After two group meetings, they determined all the requirements, development models and risk analysis of the project. In addition, predict the possible problems and put forward corresponding solutions. Based on the consideration of the changes in the needs of the project itself and the size of the development team, they chose an agile Scrum model, which will be assigned tasks to members by a short Sprint. In the first phase (4.28-5.8), they plan to deliver a product that meets core requirements to Jess and James within 2 weeks. For instance, the website can implement basic functions such as user login, product selection, and order cancellation. After discussing with Jess and James, it is expected that the second stage of development work will begin on May 11. The core work at this stage is to improve other user needs, such as presenting JJFresh products in a more beautiful way. In the end, 3 iterations of development will be completed within 5 weeks (4.27-5.29), and then the complete website will be delivered.

The entire development cycle is expected to be 5 weeks, and it will cost Jess and James about \$ 3,000 to complete. The product will provide Jess and James with an online sales channel, thereby bringing them additional economic benefits. On the other hand, for the development team, the project will accumulate actual development experience for school students, which will improve their competitiveness in future job search.

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1. Introduction

1.1 Purpose of document

This document provides details about how the development team plans, implements, and monitors the development of the JJFresh online store.

According to the project requirements specification, this document describes in detail the scope of the project and possible risks, and how to control it. The technologies that will be used throughout the development process are defined by the development team, while the project plan containing the development team's size and project needs would be defined by the Scrum master.

This document will serve for all parties involved in the entire development cycle, such as Scrum Master, Product Owner and developers.

1.2 Audience of document

All of the people in the student team participated in the preparation of the document. Yicun Tian is responsible for writing the Executive Summary, Introduction (Chapter 1), Roles and Responsibilities (Section 3.1), Communication Plan (Section 3.2), and Risk management (Section 3.3). Hongzhang Li is the person who wrote the Project Information part (Chapter 2). Pin Wang and Chongjing Zhang, as developers, are responsible for defining the technology used to implement the project (Section 3.4). Zhangfeng Qiu, who served as Scrum Master, provide detail about the Project Planning (Section 3.5) and proofread all content in the document.

1.3 Evolution of document

Version	Created by	Date created	Comments
Version 1.0	Yicun Tian, Hongkang Li, Pin Wang, Chongjing Zhang, Zhangfeng Qiu	4.27	In this version, the student team cooperated together to complete Chapter 1 to Chapter 3 of the Project Management Plan, including the definition of key stakeholders, Scope and SDLC of the project, evaluation of business value, constraints, the definition of people's role in the team, communication plan, risk management, definition of the technology used in the project and project planning.

Table 1.1: Evolution of document

2. Project Information

2.1 Key Stakeholders

Stakeholders	Internal/ External	Influence on Project
Jess and James	Internal	Jess and James are the people who defined the requirements of the project. They will not directly participate in the development of the online store website. They are users of the website and can provide feedback to the development team during the development process.
The teaching team	Internal	The teaching team of SWEN90016 is playing the role of Product Owner in the project. They are responsible for contact with Jess and James and understand their need. They cooperate with the Scrum master of the project and help define the product backlog. Also, they give advice and feedback to the student team during the development process.
The student team	Internal	The student team cooperates as a Scrum team in the project. They are responsible for both planning and developing the online store project.
Customers	External	The satisfaction of the customers is an important factor for project success. The main source of website revenue comes from them. Their feedback can help the development team improve the application.

Table 2.1: Stakeholder Register

2.2 Scope

2.2.1 What is in-scope?

1. **Login system:** Users need to register an account with personal information for the first time. They should be able to log in with an email address and a password. After log in to the online store website, they are able to manage their orders. The owners of JJFresh should have an admin account to manage all the orders. Both customer account and admin account would be accessible from a single URL.

High priority: An online store website is not only for browsing information but also a platform for trading

fruits and vegetables. Without a Login system, either the customers or Jess and James can manage their orders.

2. **Management of personal information:** Users should be able to add or edit their personal information. The name, home address, and upon three multiple contact phone numbers are included in the personal information.

High priority: If the customers change their phone number or address, this function is important to avoid some trouble caused by outdated information. Without this feature, Jess and James may deliver products to the wrong address and cannot contact the buyer.

3. **Products display system:** The website should be able to display different types of products with different sizes and prices to the users. At least three different types of produce boxes with three different sizes would be provided.

High priority: Users should be able to know what products they can buy in the online store. The prices of the products should be shown based on the types, sizes, and the number of products selected by customers.

4. **Order management system:** Users should be able to place their orders after selecting what they want. When the booking is final, a confirmation email containing information about the date, time, type, and size of the box would be sent to the customer. If customers want to modify an existing order, they have to cancel and recreate it. Jess and James should be able to manage these orders on the website.

High priority: It is the basic part of the purchase function. An online store cannot do any business without an order management system.

5. **Database system** A database system that can store information about users, products, and orders is required.

High priority: An online store is a type of software products that need a database system to store more and more data.

6. **Date selecting system:** In this project, the customer should be able to choose a day and time for delivery. Delivery options are in hour blocks. Only two bookings are allowed in a particular hour. Bookings should be available for the next seven days only.

High priority: Because JJFresh online store offers delivery service, a date selection system is required to avoid date conflict and feasible delivery solutions.

2.2.2 What is out-of-scope?

The features in the future enhancements are out-of-scope:

1. An online payment system is not included in the initial development of the project. The physical delivery details need to be considered by Jess and James.
2. No AI solution would be provided to help improve the delivery process.
3. Adding multiple bookings for the same time slot is not currently allowed. Only two bookings are allowed in a particular hour.

Also, the features below are out-of-scope:

1. No navigation system on delivery is included. The system will not verify the authenticity of the address. Jess and James have to find their way to their customers' addresses themselves.

2. No delivery distance calculate function would be provided. The system will not judge whether the address is too far, so Jess and James have to decide whether they would deliver to an address or not.
3. Communication service with customers except confirmation message sending is not included. Jess and James have to decide how to communicate with their customers themselves.

2.3 Delivery approach

The delivery approach we choose for our project is **Scrum**, an agile method that can provide high flexibility and quick delivery. Our decision is based on the following reasons.

1. Scrum can provide an incremental delivery system to help the JJFresh online store retain flexibility while continually producing outcomes. As each sprint backlog represents a new release of the product, we can shorten the time for the project to our clients and improve the user experience of the website based on the feedback from them. Clients are continuously involved during every stage. And it can reduce waste and rework and increase the satisfaction of clients.
2. The sprint process in the Scrum model can provide regular adaptation to changing circumstances. Unlike the Waterfall model, which is very difficult to move back to makes changes in the previous phases, using Scrum would make the development of the JJFresh online store website able to adapt to unforeseen circumstances, allowing for changes to be easily incorporated if required.
3. By doing sprint review and sprint retrospective at the end of each sprint, the client and team know exactly what is complete and what is not. This reduces the risk in the development process.
4. Scrum intends small or mid-sized dedicated teams with high coordination, which is suitable for our team with five members. The Waterfall model, which involves large teams and lack of coordination among team members, can not meet our needs.

2.4 Business Value

JJFresh is currently busy in the morning but almost empty in the afternoon. The deployment of this project will keep JJFresh's existing customers who shop in the morning and shift the afternoon business hours from offline to online, which offers delivery service for current and potential customers who cannot go to JJFresh store at that time. The online store will operate 24 / 7, which is much longer compare to the old business hours, thus provides customers with the convenience of placing orders at any time. With these advantages, the online store project would attract more customers for JJFresh. The increase in customers can increase fruit and vegetable orders, and therefore help Jess and James gain more financial benefits and avoid JJFresh from being closed. The financial and Non-Financial benefits for different stakeholders are shown in Table 2.2.

Stakeholders	Financial benefits	Non-Financial Benefits
Jess and James	Jess and James are the business owners of the JJFresh online store project. The success of the project can help them change their business model. They would gain more customers due to the extension of the business model. Also, the increase in customers would increase the number of orders, which can increase their revenue.	They can gain experience in operating an online fruit shop. The online store website can also increase the chance of JJFresh being searched by a search engine of a browser, which can improve the exposure, thereby improving their brand awareness.
The teaching team	The teaching team of the Software Processes and Management subject is employed by the school. They can get salary by guiding students.	Teaching students in this project can increase their experience in teaching and management.
The student team	If the project achieves commercial success, students may receive financial awards from Jess and James.	They would gain software development experience from the project, which can increase their project experience and help boost their CV. Also, working as a team can improve their teamwork ability.
Customers	For the customers who are used to buy fruits from JJFresh, home delivery can save them time and money. They don't need to spend money on transportation to jjfresh. Of course, the delivery fee must be considered. But it would be a trade-off.	Customers would be able to buy fruits and vegetables with high quality in a more convenient way. Also, for unforeseen circumstances like Covid-19, buying online can reduce their unnecessary travel and keep them safe.

Table 2.2: Business Value

2.5 Constraints

- Team members are lack of experience in Scrum. Scrum is an Agile process and is difficult to do without experience, especially an experienced Scrum master. The student who plays the role of Scrum master has no Scrum management experience before. There may be many problems during the development process.
- People in the development team are unfamiliar with creating a website in Wix.com. Also, students who are responsible for the implementation of the project are not full-time workers. The efficiency of their development may be low, which may result in the delay of the project.
- A virtual team may not able to follow all the processes in Scrum. Appropriate improvements and compromises would be applied to some specific processes in the Scrum. Communication in a virtual team is less frequent and less rich than face-to-face interaction. Some of the team members are not in Australia, and because of the time difference, daily Scrum will be conducted via chat, which may bring negative effects to the project.

- The tool provided by Wix.com only has limited functions, which make it impossible to achieve the requirements perfectly. And the website implement by Wix.com has poor scalability. If Jess and James want to expand their business scale, the development team may have to redevelop the entire project with other web technics.
- The delivery range of Jess and James is limited, and users who are too far away cannot get services.
- The time limit of the project is only about one month. The overall implementation of the project may not be perfect in such a short time.

3. Project Governance

3.1 Roles and Responsibilities

Roles	Member	Responsibilities
Business Owner	Jess and James	The business owners are the main Stakeholder of the team. They are responsible for determining the priority of upcoming work in the Backlog, get resources for the team, and modifying the Release Plan as necessary with the Product Owner.
Product Owner	The teaching team	The product owner is the spokesperson for the customer or stakeholders. Their primary responsibility is to ensure the product to-do list is transparent and clearly expressed, and everyone in the team has the same understanding of the project. Also, they are responsible for defining the product backlog with the Scrum master.
Scrum Master	Zhangfeng Qiu	The Scrum Master is the person in charge of the Scrum process. His primary responsibility is to guide the development team and communicate with product owners in daily development activities.
Dev Team Members	Pin Wang, Chongjing Zhang	The Scrum development team is composed of professionals who deliver the incremental work of "Done" products that may be released at the end of each Sprint.
Subject Matter Expert	Tutor(Rajesh), Tian Yicun, Li Hongkang	The people with specialized knowledge or talent that is needed by the Team

Table 3.1: Roles and Responsibilities

3.2 Communication Plan

Firstly, as a virtual team, we mainly use *Slack* and *Zoom* for information transfer, such as publishing message notifications, file sharing, etc.

Secondly, we use *Trello* to help manage our Agile Board. Both the Project Backlog and the Sprint Backlog are managed on the Agile Board.

Furthermore, *Github* is used to help enhance our teamwork and to manage our outcomes, such as the release of code and report.

According to the constraints of running a virtual team (Section 2.5), we adjusted some of the communication processes in Scrum, and our communications matrix is shown in table 3.2.

Processes	Stakeholder	Communication Objective	Format	Frequency	Owner	Importance
Project Planning Meeting	Scrum Master, Product Owner, Development team, Subject Matter Expert	Provide definition of the product backlog and provide a project plan for the whole project.	Virtual Meeting - <i>Zoom</i> ; Formal Report	Weekly before the first sprint	Scrum master	High
Sprint Planning Meeting	Scrum Master, Product Owner	Provide Sprint Backlog, which selects high priority items from the Product Backlog that the Development Team can commit to delivering in a single Sprint.	Virtual Meeting - <i>Zoom</i>	At the beginning of each sprint	Scrum master	High
Daily Scrum	Scrum Master, Product Owner, Development team	A short meeting used to start a day's work	Chat in the <i>daily-scrum</i> channel of <i>Slack</i>	Daily	Scrum master	Medium
Sprint Review	Scrum Master, Business Owner, Product Owner, Development team	Show the demo of new features to Stakeholders and get feedbacks from them.	Virtual Meeting - <i>Zoom</i>	At the end of each sprint	Scrum master	Medium

Sprint Retro- spective	Scrum Master, Business Owner, Product Owner, Development team	An examination of what went well, what could be improved, etc. To make each Sprint more efficient and effective than the last.	Virtual Meet- ing - <i>Zoom</i>	At the end of each sprint	Scrum master	Medium
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Table 3.2: Communication Matrix

3.3 Risk Management

3.3.1 Risk Impact Analysis Table

We follow the following scoring rules to assess the impact of each risk: (1) *no impact*; (2) *minimal impact*; (3) *moderate impact*; (4) *severe impact*; and (5) *catastrophic impact*; The Risk Impact Analysis Table is shown in Table 3.3.

Risk ID	Risk Type	Description	Probability	Impact	Justification
1	Product	Design problem - The software developed by Wix has low scalability and is un-transferable.	30%	4	Although Wix can help quickly implement some basic functions, it may not be suitable for implementing the future enhancement of the project. Also, there are many restrictions on creating a website on Wix. The site created by Wix is not transferrable.
2	Business	Cancel orders maliciously or for no reason.	3%	5	Malicious orders may cause unnecessary waste. Some malicious buyers may intentionally create many orders and cancel them on the day of delivery. This kind of malicious actions may negatively affect the operation of the website and cause unnecessary loss.
3	Business	Email system or network system may fail.	5%	2	If the email system or network system failed, the buyer would be unable to receive a confirming email after ordering. If clients were not able to receive feedback in time, they would not know whether their orders are confirmed or not. This situation may cause adverse effects on the user experience and cause unnecessary loss.

4	Business	Service cancelation - Jess and James cannot deliver in time due to unforeseen circumstances.	5%	1	Unforeseen circumstances like Jess and James getting sick or unnecessary travel ban may result in delivery cancelation. When they are unable to deliver, they have to provide reasons for their customer and cancel the order. Even though they may lose some money and customers may be disappointed, the impact of it would be small.
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Table 3.3: Risk Impact Analysis Table

3.3.2 Risk Register

Risk ID	Trigger	Owner	Response	Response Strategy Type	Resources Required
1	Jess and James' extended functionality cannot be achieved.	The development team	The development team can redevelop the whole system based on traditional web technics. Although it may take more time for the development team, it can meet the needs of users. Also, keeping more reusable interfaces during development can help reduce the impact of this risk.	Mitigate or avoid	The development team needs to keep more reusable interfaces during the development process.
2	A user creates lots of orders in a short time and then cancels them without any reason.	Jess and James	Limiting the number of times a user can cancel per week and limiting the time when the user cancels the order can help reduce the impact of this risk. For example, cancelation within 24 hours of the specified delivery time is not allowed. Also, customers would be asked to pay an advance deposit to reduce the economic loss caused by cancelation.	Mitigate	Jess and James need to spend effort to judge the reliability of the orders.

3	Users cannot receive feedback from the system.	Users(Jess & James and customers)	If this risk occurs due to network failure, the system should be able to detect the user's network conditions and provide prompts automatically. The operation of the user to place an order is idempotent, which means that two identical operations will only operate once. If there is a problem with the function of auto-replying emails, the administrator of the maintenance system should be able to detect it in the background, the system is abnormal, and fix the bug in time.	Mitigate	The system needs to consume resources to detect the user's network environment and react to it.
4	Jess or James is sick, or the government announced an unnecessary travel ban policy.	Jess and James	If an unnecessary travel ban policy is announced, Jess and James have to follow the rules and cancel their orders with an apology email sent to their customers. If the order cannot be delivered in time because the seller is sick or other assents, they can decide to hire another person to deliver or cancel their orders. It would be a trade-off between economic loss and user satisfaction loss.	Mitigate or accept	Hiring others for delivery would result in an economic loss, while cancelation of orders can bring negative effects to user experience.

Table 3.4: Risk Register

3.4 Technology

The following are some technologies we researched for web development.

Name	Responsibility	Description	Pros	Cons
HTML	Front end language	Hypertext markup language (HTML) is a standard markup language designed for documents to be displayed in web browsers and describes the structure of web pages.	<No comparison>	<No comparison>
CSS	Front end language	Cascading Style Sheets is a style sheet language that describes the presentation of documents written in markup languages such as HTML.	<No comparison>	<No comparison>
JavaScript	Front end language	JavaScript is a high-level, often just-in-time, multi-paradigm programming language that supports interactive web pages. It is an important part of web applications.	<No comparison>	<No comparison>
Bootstrap	Front end framework	Bootstrap is a front-end framework that includes HTML and CSS based design templates and JavaScript plugins. It allows users to create responsive designs easily.	Easy to use and saves time; Compatible with all browsers; Responsive structures and styles;	Load time can be slow, file size can be huge; All websites using Bootstrap look the same with out style customization;

Foundation	Front end framework	Foundation is a front-end framework that is a collection of HTML, CSS and JS. It is a easy-to-use, powerful, and flexible framework for building web applications on any device.	Fast development; Adapt to all devices; Robust grid system;	Community support is worse compare to Bootstrap; Need time to learn for beginners;
Angular	Front end framework (JS)	Angular is a development platform for building web applications using TypeScript.	Component-based architecture allows reuse of components of UI, which is easy for writing tests; High performance; Fast development;	Difficult to manage components; Need time to learn for beginners; Lacks CLI documentation;
React.js	Front end framework (JS)	React is a JavaScript library for building user interfaces. It can be used as the basis for developing web pages and mobile applications.	Components are modularized; Stable; Compatible with all browsers; Fast development;	Longer learning time than Angular; Lack of documentation; Less straightforward than pure JavaScript;
Vue.js	Front end framework (JS)	Vue.js is an progressive, incrementally adoptable MVVM JavaScript framework for building user interfaces and single-page applications.	Clear documentation, simple to study; Small and fast; Components are modularized;	Too flexible that the codes are irregular; New framework, not very mature, has a smaller community;
Java	Back end programming language	Java is a programming language that is class-based, object-oriented, and concurrent.	High-level language with simple syntax; Object-oriented programming allows reuse of codes; Supports multi-threading and distributed computing; Compatible for all platforms;	Slower than natively compiled languages; Less compact;

PHP	Back end programming language	PHP is a server scripting language and a powerful tool for web development. It is fast, flexible and pragmatic that makes it easier to make dynamic and interactive web pages.	Compatible for all platforms; Easily embedded into HTML; High scalability; Large community;	Slower than other languages; Flexibility allows bad code;
Python	Back end programming language	Python is an interpreted, high-level, general-purpose programming languages.	Easy to use and read; Multi-paradigm approach; Flexible;	Slower than natively compiled languages; Doesn't allow multi-threading;
Django	Back end framework (Python)	Django is a Python-based high-level web framework follows MTV architectural pattern. It encourages rapid development and clean, pragmatic design.	Fast processing and developing; Scalable and flexible;	Not for smaller projects; Monolithic;
Spring MVC	Back end framework (Java)	Spring MVC is a Java-based web framework that implements all the basic features of a core Spring framework like Inversion of Control and Dependency Injection.	Highly scalable and flexible; Use of modularity thus easy for testing; Large community;	Too complex, need time to learn for beginners; No clear guidelines;
Express.js	Back end framework (Node.js)	Express is a minimal and flexible Node.js web application framework that provides a robust set of features for building web applications and APIs.	Fast development; Same language can be used to code front end; Simple; Flexible	Not for heavy projects;
Wix	Web development platform	Wix is a popular cloud-based website builder. It provides an easy-to-use combination of powerful features that make it easy to build websites.	Flexible; Provides an app market; Easy to use; Massive template collection;	Loading is slow; Templates cannot be changed easily; Site cannot be transferred;

Weebly	Web development platform	Weebly is a simple site builder with templates for great design. It allows the user to edit a website without any coding skills.	Massive template collection; Built-in support for e-commerce; Easy to use; Flexible;	Cannot add functionality not provided;
WordPress	Web development platform	WordPress is a free and open source website builder.	Powerful features; Scalability; Easy to use; Massive themes; A lot of free plugins;	Loading can be slow; Need to keep website updated; Doesn't support drag and drop;

Table 3.5: Available Web Development Technologies

Among all technologies we researched above, we choose to use Wix content management system to build the website. Wix requires no coding skills or other usage of frameworks. It supports drag and drop to build web pages and provides a user-friendly UI to set the style of web components that integrates HTML and CSS from codes into user interfaces. And Wix also provides user-friendly UI to react to user actions with event handlers, this supports visualization of JavaScript. So far, Wix substitutes all front end languages or frameworks coding with user interfaces without any code. And Wix conceals the back end code in encapsulated apps, but also let users to implement customized logic using Node.js. Nonetheless, Wix offers a database operated by itself which also supports changes through graphical user interface. This database maintains the consistency of the usage of Wix platform, without extra database construction.

Compare to other website builders, Wix is more flexibly as it supports usage of Node.js to write customized backend code and take action when doing processes. And it already provides ready-made modules including online shop, user login, user permission management, and check out with credit card which can be used in developing the JJFresh website.

By using Wix, we will save time of building and integrating the frameworks and adjusting the component properties with the help of visible user interface. And since we don't have much experience in web development, Wix's characteristic that it requires as least coding as possible is suitable us, and can help us focus on project management instead of catching up with the technology stacks. Therefore, we decided to use Wix to develop the website.

3.5 Project Planning

The SDLC of our project is Scrum. Since the key requirements for the initial development provided by Jess and James are fixed, a Fixed-Scope Release Planning would be used to plan our project.

3.5.1 Product Backlog

The detail of product backlog is shown in table 3.6. BFTB Score is the abbreviate of the Bang-for-the-Buck Score, which is a way of measuring how to get the most value in the shortest time. It is used to help assess the priority of the features. The BFTB Score is calculated by the formula below:

$$\text{BFTB Score} = \frac{\text{Value Point}}{\text{Store Point}}$$

The story points of different features are estimated by the development team and the Scrum master, based on the volume, risk, uncertainty and complexity of the features. The value points of them are estimated by the product owners. **Fabonacci sequence** is used to provided relative estimation to both story point and value point. Each story point equals about an hour of work.

Except for the tree future user stories at the end of the product backlog table, all others are must-have stories because they are key requirements defined by Jess and James.

Feature	User Story	Tasks	Story Point	Value Point	BFTB Score
Browse product menu	As a customer, I want a menu that shows all the products, so that I can know what products are the website selling.	1.Provide a page for showing the list of the products(<i>3-hour</i>); 2.Show the types of the products(<i>1-hour</i>); 3.Show the price of the products(<i>1-hour</i>); 4.The price would change automatically(<i>1-hour</i>); 5.Show the pictures of products(<i>1-hour</i>).	8	5	0.625
Customer sign up	As customers, I want to sign up for the website, so that I can a member of the website.	1.Check whether the information of the user is valid(<i>1-hour</i>); 2.Add the user to the database and send a confirming email to the new member if valid(<i>1-hour</i>).	2	2	1
Customer sign in and sign out	As customers, I should be able to sign in and sign out, so that I can manage my account and orders.	1.Sign in, check whether the user exist and whether the user's password correct(<i>1-hour</i>); 2.Sign out(<i>1-hour</i>); 3.Handle the problem of forgetting the user password (Allow password reset)(<i>1-hour</i>).	3	3	1
Customer add and edit client information	As customers, after login, I can add or edit my information like home address, user name, email address, and contact number.	1.Add and edit the name, email address, home address(<i>1-hour</i>); 2.Add and edit up to three multiple contact phone numbers(<i>1-hour</i>).	2	3	1.5
Add products to shopping cart	As customers, after login, I can add or edit my information like home address, user name, email address, and contact number.	1.Select size, type and amount of the products and add them to shopping cart.(<i>2-hour</i>)	2	5	2.5

Manage shopping cart	As a customer, I want to manage my shopping cart, so that I can remove those I don't want or add some more products.	1.Select the items to pay(<i>1-hour</i>); 2.Change the amount of items(<i>1-hour</i>); 3.Delete items(<i>1-hour</i>); 4.View the price of the items selected(<i>1-hour</i>); 5.Provide a page to show all the items in the shopping cart(<i>3-hour</i>).	8	5	0.625
Check out shopping cart	As a customer, I want to choose the day and time for delivery, so that I can get the fruit on the right day.	1.Choose a day and time for delivery.(<i>1-hour</i>). Only two bookings are allowed in a particular-hour.); 2.Send a confirming email to the customer(<i>1-hour</i>); 3.Show the day and time which is valid(<i>2-hour</i>); 4.Add an order to the user's order list(<i>1-hour</i>); 5.Handle synchronization problem(<i>2-hour</i>).	8	5	0.625
Cancel orders	As a customer, I need to get the ability to cancel an order so that I can modify an order and then re-create.	1.Cancel order(<i>1-hour</i>); 2.Send emails to both customer and admin(<i>1-hour</i>).	2	2	1
Build database	As an admin, I need a database, so that I can store all the information of customers orders.	1.Define the order model(<i>1-hour</i>); 2.Define the user information model(<i>1-hour</i>); 3.Define the admin information model(<i>1-hour</i>); 4.Create table and relation(<i>2-hour</i>); 5.Test(<i>1-hour</i>)	8	5	0.625
Admin sign in and sign out	As an admin, I want to provide my username and password, so that I can register an admin account.	1.Sign in(<i>1-hour</i>); 2. Sign out(<i>1-hour</i>).	2	2	1
View and manage orders	As an admin, I want the specific information of the user's order, so that I can packaging user orders.	1.Confirm order(<i>1-hour</i>); 2.Order rank by date(<i>1-hour</i>); 3.Cancel order and provide reason(<i>1-hour</i>); 4.Provide a page to show order list with order information attach to it(<i>4-hour</i>);	8	5	0.625

Manage product information	As an admin, I want to manage product information, so that I can change the price or picture of my products.	1.Change the price of products(<i>1-hour</i>); 2.Change the pictures of products(<i>1-hour</i>); 3.Change the type of products(<i>1-hour</i>); 4.Add products(<i>1-hour</i>); 5.Delete products(<i>1-hour</i>).	5	3	0.6
Register admin account	As an admin, I need to get the ability to register for a new admin account, so that I can get more admin accounts if I need them.	1.Provide way for admin account registration(<i>1-hour</i>).	1	1	1
Edit admin account information	As an admin, I may want to edit my admin account information, so that I can change the password.	1.Provide way for admin account information editing(<i>1-hour</i>).	1	1	1
Add multiple bookings for the same slot	As an admin, I want to add multiple bookings for the same slot in the future. So that I can employ others to deliver boxes.	1.Allow multiple bookings for the same slot(<i>6-hour</i>).	8	2	0.25
Using AI to calculate delivery routes and times	As an admin, I want to use AI technology to help me calculate an optimal route and time for delivery.	1.Create a model and an algorithm for the AI to learn and help calculate the optimal routes and time for delivery(<i>12-hour</i>).	13	3	0.231
Extended to allow for payment online.	As an admin, I want to be paid online, so that I can save my time and improve the delivery efficiency.	1.Provide ways for online payment(<i>5-hour</i>); 2.Secure user information(<i>8-hour</i>).	13	3	0.231

Table 3.6: Product Backlog

3.5.2 Must-have Story Points

Without calculating the features needed in the future, the total number of must-have story points is 60.

$$SP_{total} = 60 \text{ (Story Point)}$$

3.5.3 Velocity Estimating

There are two developers in our team. Since both of them are students, each of them can only spend about 1.2 to 1.5 hours a day on the project. They can work five days a week, so the total working hours of a week are

12 to 15 hours. We expect each story point to be equivalent to one hour of working time. So the min velocity (V_{min}) for a two-week sprint is about 24 story points, and the max velocity (V_{max}) is about 30 story points. And by using the formula shown below, we can get our minimum and maximum number of sprints, which are 2 and 2.5, respectively. The initial burndown chart for the whole project is shown on figure 3.1.

$$S_{min} = \frac{SP_{total}}{V_{max}}, S_{max} = \frac{SP_{total}}{V_{min}}$$

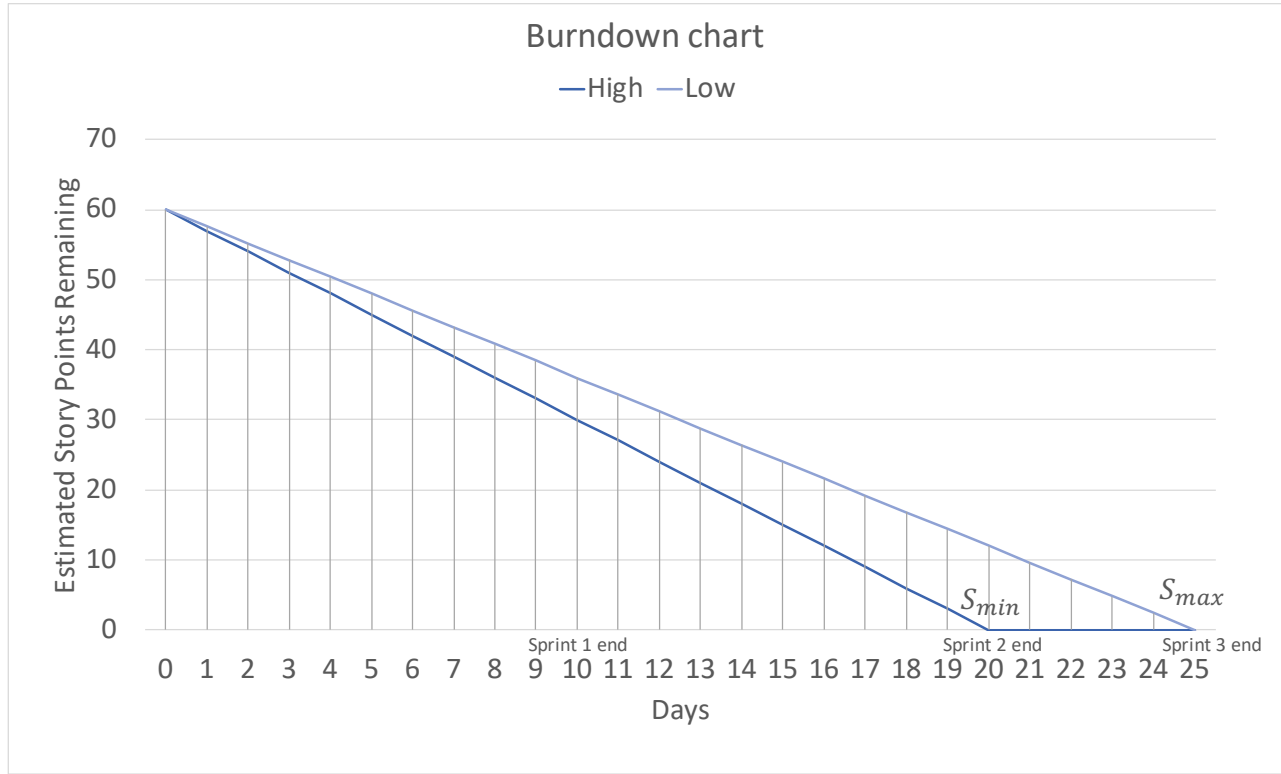


Figure 3.1: Initial Burndown Chart for the Whole Project

3.5.4 Sprint Planning

Sprint Cycle

The development phase of our project would start on **Monday, April 25**. Since the final delivery due date of the whole project is **June 1**, we decided to divide our development into three phases, each corresponding to a sprint.

The first phase is to let the website go online without the function of purchase. The website can display all kinds of information about the products and provide the service of user registration. At the same time, the database is initially established to record the data of users and products. The first sprint will last for two weeks, **from Monday, April 27 to Friday, May 8**.

In the second phase, we need to realize the function that users place orders to purchase products, and sellers can view and modify user orders. Preliminary testing will also take place at this phase. The second sprint will last for two weeks, **from Monday, May 11 to Friday, May 22.**

The third stage is mainly based on user feedback to repair the vulnerability, carry out more tests and improve the existing functions. If some functions left over from the first two sprints are not implemented, they will also be solved in this sprint. As the project is nearing its end and there is less work left, the sprint in this phase will last only one week, **from Monday, May 25 to Friday, May 29.**

On **the first Monday of every sprint**, a Sprint Planning meeting would be held to select high priority items from the product backlog that the development team can commit to delivering in a single Sprint. The select itmes would be add to Sprint Backlog.

On **the last Friday of each sprint**, a Sprint Review meeting would be held to demonstrate the new features to Stakeholders, and a Sprint Retrospective meeting would be held to review the sprint.

A 15-minute Daily Scrum would be held **everyday** to start up the jobs. Everyone has to share what he/she did yesterday, what he/she plan to do, and what obstacles are slowing him/her.

3.5.5 The First Sprint Plan

As mention in section 3.5.4, the main goal of the first sprint is to launch a webpage where customers can browse products. Considering both the BFTB Score, which is shown in table 3.6 and the actual development needs, the Sprint Backlog of the first sprint is shown in table 3.7. The total velocity and the delivery value of the first sprint is 30 story points and 25 value points, respectively.

Index	Feature	Tasks	Story Point
1	Build database	1.Define the order model(<i>1-hour</i>); 2.Define the user information model(<i>1-hour</i>); 3.Define the admin information model(<i>1-hour</i>); 4.Create table and relation(<i>2-hour</i>); 5.Test(<i>1-hour</i>)	8
2	Browse product menu	1.Provide a page for showing the list of the products(<i>3-hour</i>); 2.Show the types of the products(<i>1-hour</i>); 3.Show the price of the products(<i>1-hour</i>); 4.The price would change automatically(<i>1-hour</i>); 5.Show the pictures of products(<i>1-hour</i>).	8
3	Customer sign up	1.Check whether the information of the user is valid(<i>1-hour</i>); 2.Add the user to the database and send a confirming email to the new member if valid(<i>1-hour</i>).	2
4	Customer sign in and sign out	1.Sign in, check whether the user exist and whether the user's password correct(<i>1-hour</i>); 2.Sign out(<i>1-hour</i>); 3.Handle the problem of forgetting the user password (Allow password reset)(<i>1-hour</i>).	3
5	Customer add and edit client information	1.Add and edit the name, email address, home address(<i>1-hour</i>); 2.Add and edit up to three multiple contact phone numbers(<i>1-hour</i>).	2
6	Manage product infomation	1.Change the price of products(<i>1-hour</i>); 2.Change the pictures of products(<i>1-hour</i>); 3.Change the type of products(<i>1-hour</i>); 4.Add products(<i>1-hour</i>); 5.Delete products(<i>1-hour</i>).	5

7	Admin sign in and sign out	1.Sign in(1-hour); 2. Sign out(1-hour).	2
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Table 3.7: The first Sprint Backlog (4.27 - 5.8)

Trello is used as the PMP board to help us manage our Scrum process. After the first sprint planning, the PMP board of our project is shown in Figure 3.2. The label of the card is about the value point of the feature. The Story point of the feature is shown in the upper right corner of the card.

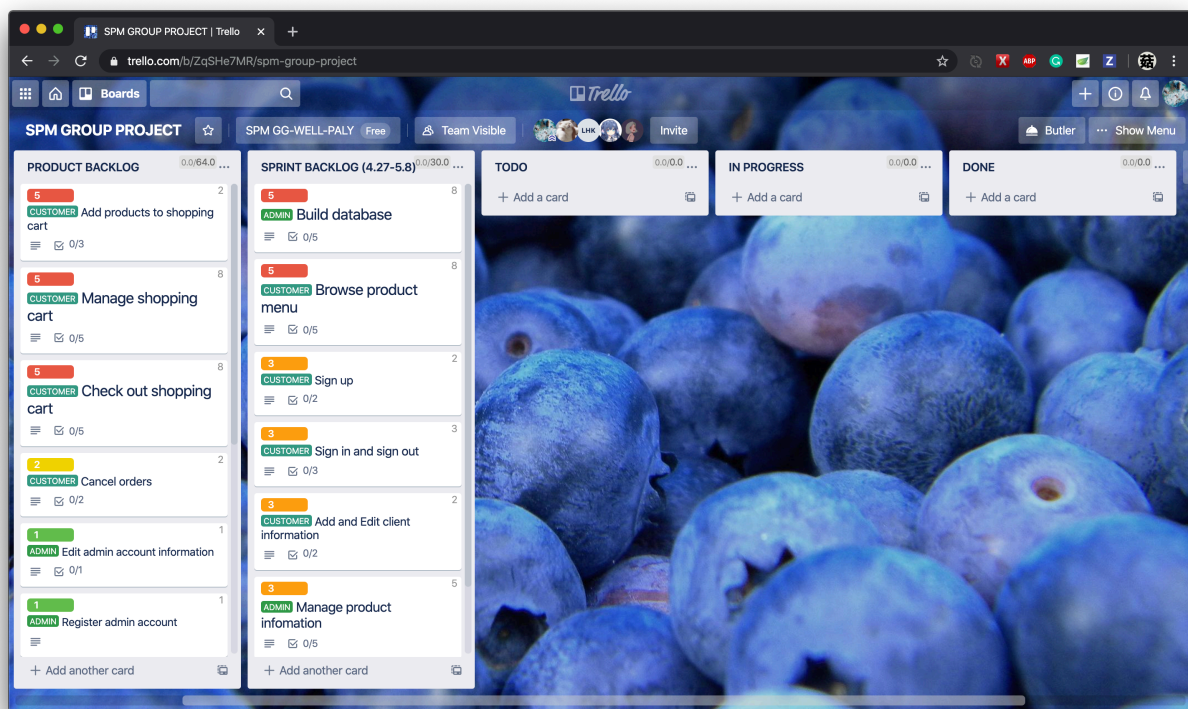


Figure 3.2: The PMP Board set after the first Sprint Planning