PENINSULA COLLEGE

UNIVERSITY OF PLYMOUTH

Project Title:

Food Ordering & Inventory Management System

FINAL PROJECT PROPOSAL

Submitted by:

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1.0 Introduction

1.1 Background

The Sustainable Development Goals is one of the focuses in our current project development. Back on 25 September 2015, Malaysia, alongside other 192 United Nations Member States had put in hands to undergo the 2030 Sustainable Development Agenda. (Ministry of Economy, 2021) The points of implementing these sustainable goals are to work towards improvement of the well-being of the people, ensuring there is diplomacy relationship that could aid in world peace, improvements in the financial states of various countries so that the future generations are able to live a harmonious life. With that being said, it takes effort from every individual to play a role in helping preserve the planet. Without any measures taken, non-renewable energy will go through massive reduction, causing adverse damage to the environment. (International University of Monaco, 2025)

One of the 17 Goals is zero hunger. The objective of the goal is to sow the seeds of a world without hunger. Hunger and food source deficiency have been increasing ever in the past 10 years, as stated by The United Nations. (United Nations, n.d.) Many people in the world suffer from insufficient food which caused the increment of stunted growth of the youths which could cause a decline in an individuals' health and well-being. With the awareness of the happenings through the Sustainable Development Goals, hereby the idea of Ship Eats has been created.

1.2 Problem Statement

The Ship Eats application is an application where students, staff and lecturers at Peninsula College: The Ship Campus are given the opportunity to buy food at a cheaper price after lunch hours. The whole point of the application functioning after lunch hours is to sell off leftover food that is still in good condition and is edible. Therefore, in this development, it focuses on contributing to one of the Sustainable Goal: Zero Hunger.

Besides, students of educational institutions have limitations on their spendings. That's why Ship Eats implements a system where the food is all sold at a cheap and affordable rate. In addition to the idea, when the food sold is at a cheaper price, more people will buy off the food. Furthermore, the idea of a donation is to be implemented in the system too. The food wastage issue can be mitigated with the action of reducing leftover food prices. Online payment options only are allowed for this system, and payment by cash is not an option. It is a preventive measure of last-minute cancellations when customers decide not to show up to pick up the food after it's been prepared.

On top of that, it can be inconvenient to get food when students have classes

or meetings in the afternoon. So, in Ship Eats, a pre-order functionality is implemented so that the users can order their food at their own convenience. The users may also cancel their orders within 30 minutes before the allocated time for their pre-orders if they decide that they do not want the food. With this, it ensures that other customers have the chance of getting food too, and at the same time, reducing waste.

As for the seller or administrative side, they are allowed to edit their menu daily, view their dashboard that visualizes sales overview, stock alerts and order summary, keep track and update order and manage their inventory stocks all in a single application. This creates convenience for the administrator as everything is at their fingertips.

2.0 Objectives

The main objectives of this project are:

1. To enable sellers to manage the menu of leftover food, track incoming orders, and update order status through a dedicated seller interface.

2. To develop an application selling leftover food at a discounted price in order to reduce food waste.

3. To allow students to order and reserve unsold food, make payments, and be notified about successful payments and when students' orders are ready for pickup through the application.

3.0 Scope of the Project

Our system is exclusively designed for Peninsula College: The Ship Campus community, including students, lecturers, and cafeteria staff. Only users with valid college email accounts can register and log in.

In-Scope Features

The project will include two main interfaces: Admin Interface and User Interface, covering the following functionalities:

Admin Interface (for Cafeteria Staff)

- Login: secure login with pre-assigned admin email and password
- Dashboard: displays sales overview, order summary and stock alerts
- Inventory management: add new items, edit existing stock details, delete unavailable items, search stock items and track stock levels
- Order management: view, track, and update order status
- Menu management: add menu items by selecting from inventory, toggle item visibility, remove menu items and preview menu as user will see it
- Profile management: update cafeteria information, toggle notifications for order and low stock alerts, set ordering hours and logout

User Interface (for Students)

- Login & Registration: secure login with college email and password, with an option to create account for new intake students who have just received their college email
- Menu & Ordering: browse available menu, search and filter items, provide special instructions and add items to shopping cart
- Shopping Cart & Payment: manage shopping cart (view, edit, delete), pre-order with pickup time and proceed to online payment through Sandbox prototype
- Order History: view past orders and payment details
- Settings: edit profile, manage payment methods, toggle notifications for menu updates, payment updates and order status, view saved cards, view about ShipEats information, view terms & conditions and logout

Out of Scope

The following elements are excluded from the current project scope:

- Full delivery system - the system supports order placement and pickup orders only.
- External User Access - public users outside Peninsula College cannot register or access the system.
- Integration with multiple external payment gateways - only Sandbox/Stripe prototype testing will be implemented.
- Inclusion of external restaurants - the system will be limited to The Ship Campus Deck 4 cafeteria.

4.0 Literature Review

Food waste reduction has become an increasing concern in both commercial and educational settings. Several digital platforms and mobile applications have been developed to address this issue through online food ordering and surplus management. This section reviews existing systems, highlighting their strengths and limitations in comparison to the ShipEats, a campus-based mobile application.

Features / Criteria	Food Panda	Grab Food	Too Good To Go	WhatsApp/ Telegram Groups	Our system - ShipEats
Mobile Application	Yes	Yes	Yes	No	Yes
Focus on Campus Users	No	No	No	Yes	Yes
Food Waste Reduction	No	No	Yes	No	Yes
Inventory Management	Yes	Yes	Yes	No	Yes
Online Payment Support	Yes	Yes	Yes	No	Yes
Order Pickup	No	No	Yes	Yes	Yes
Real-Time Notifications	Yes	Yes	No	No	Yes
User Feedback	Yes	Yes	Yes	No	Yes
Local Availability	Yes	Yes	No	Yes	Yes

Table 1: Comparison Between Existing Systems and Our System

Existing platforms like FoodPanda and GrabFood serve commercial purposes but they don't fit well for campus use. Too Good To Go promotes sustainability by selling surplus food at discounted prices but it does not connect with local institutions.

Informal methods like WhatsApp or Telegram groups lack structured management and payment integration.

ShipEats bridges these gaps by providing real-time notifications, inventory tracking and secure payments. This aligns with the project's objectives of reducing food waste through discounted leftover food sales, improving operational efficiency by enabling sellers to manage menus and orders effectively, and enhancing the overall ordering experience by allowing students to reserve food, make secure payments, and receive real-time notifications within The Ship Campus community.

5.0 Methodology

In the system development of ShipEats, Agile Methodology is implemented as the framework of the project management. Agile Methodology is a project management method where the project is broken down into smaller parts. The focus of this methodology is to ensure consistent follow-ups within a team and make improvements after every sprint when required. (Paliwal, 2025)

Figure 1: The Agile Process 101: Understanding the Benefits of Using Agile Methodology (Nvisia, 2020)

For this project, the Agile Methodology is chosen as an iterative process; the process works in a way where it runs in a cycle of planning, creating, testing, then refining the system until the requirements and standards are met. It makes sure that every process is reflected after every cycle. Besides, the Agile Methodology imparts teamwork and communication within the team members for the project, ensuring the project to be done in a less complicated manner since the team members are required to work together to face bugs and any problems within the project. In addition, the Agile Methodology is flexible and scalable, as it is not rigid and follows a traditional step-by-step method in system development. (Visual Paradigm, 2023)

To ensure quality and users' satisfaction, the Agile Methodology allows developers to gather information and get guidance from the feedback that is given from users when it comes to the testing process in every sprint. The reason is that user input is important for a project to be up to the mark. (Laoyan, 2025)

5.1 Type of Agile Methodology Used

Scrum

The scrum methodology is the type of Agile Method used in the Ship Eats project development. Scrum is a method where it consists of a leader, known as the Scrum master, groupmates (developers) and a product owner.

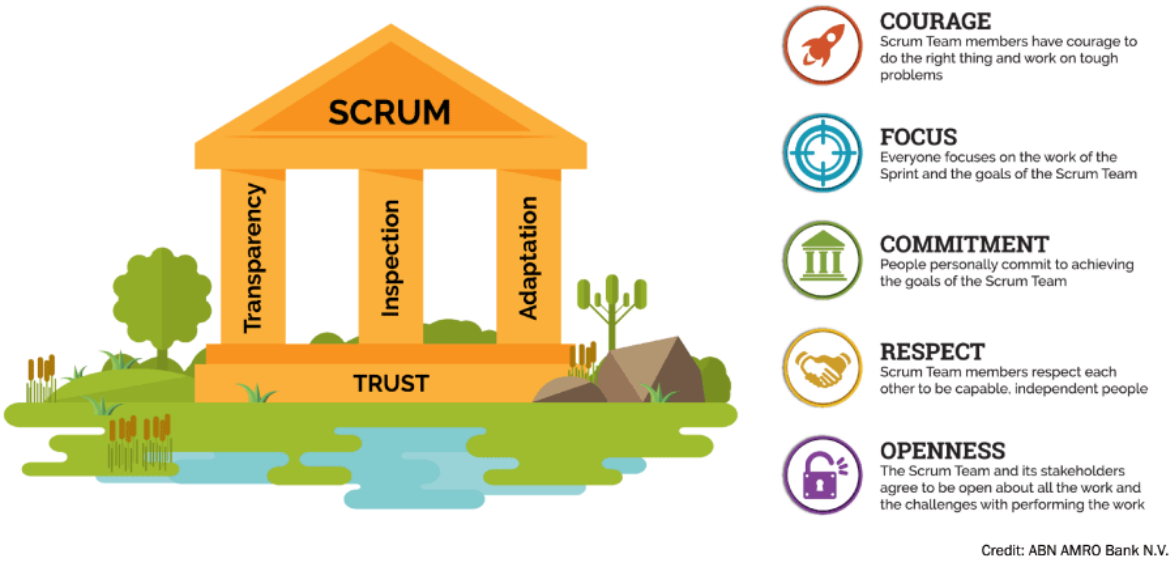

Figure 2: What is Scrum? (Scrum.org, n.d.)

As shown in Figure 2, the scrum methodology emphasizes on a few pillars like transparency, inspection and adaptation. Besides, the base of the project would be trust within the developers that are grouped together to work as a team.

The way scrum is implemented in a huge project is by breaking sprints into every two to four weeks. This ensures that the project is consistently moving and is not put to a halt. Therefore, efficiency, commitment, and focus exist within the team. (Red Hat, 2022)

5.2 UML Diagrams

I. ER Diagram

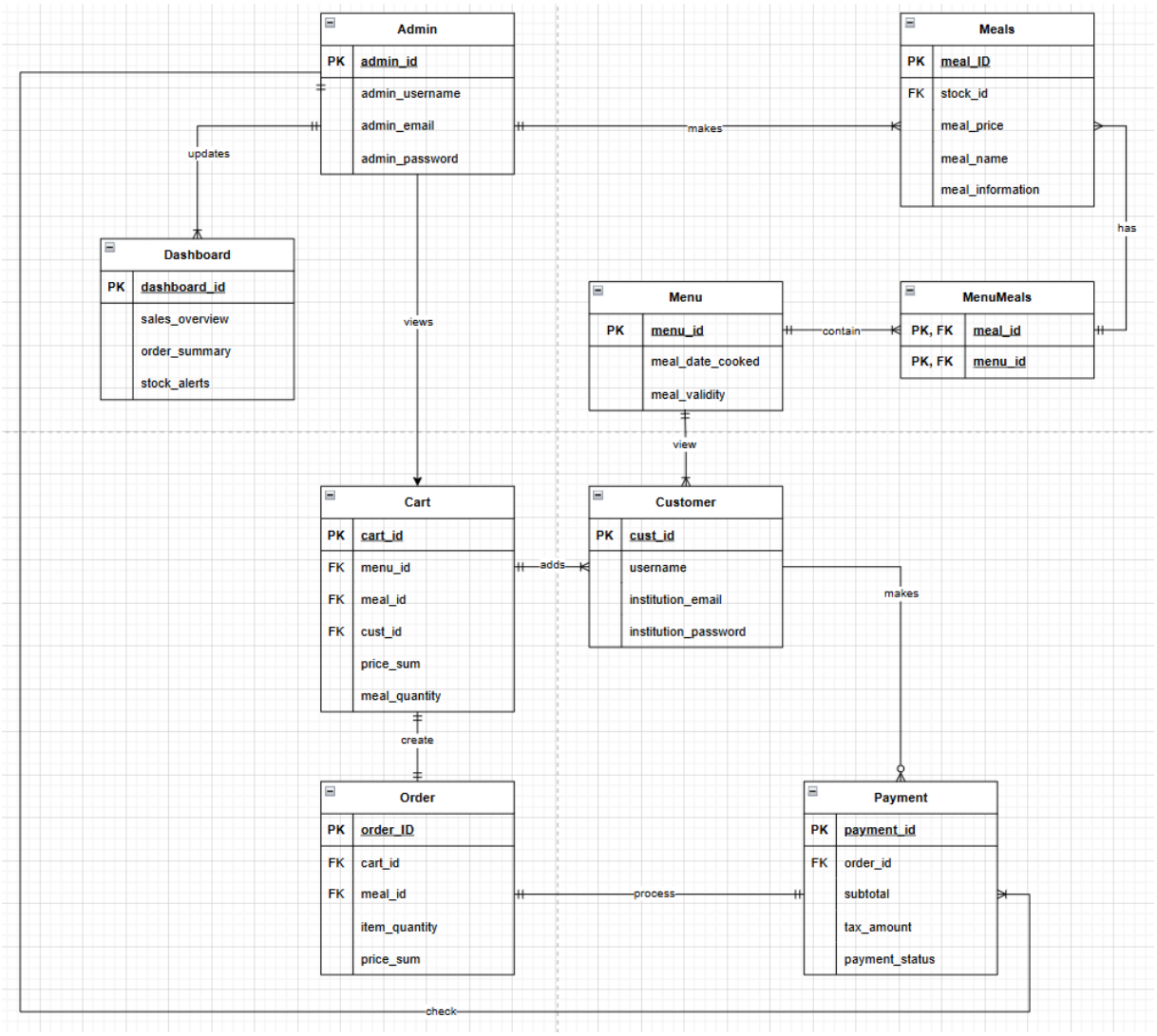

Figure 3: ERD Diagram of ShipEats

II. Use Case Diagram

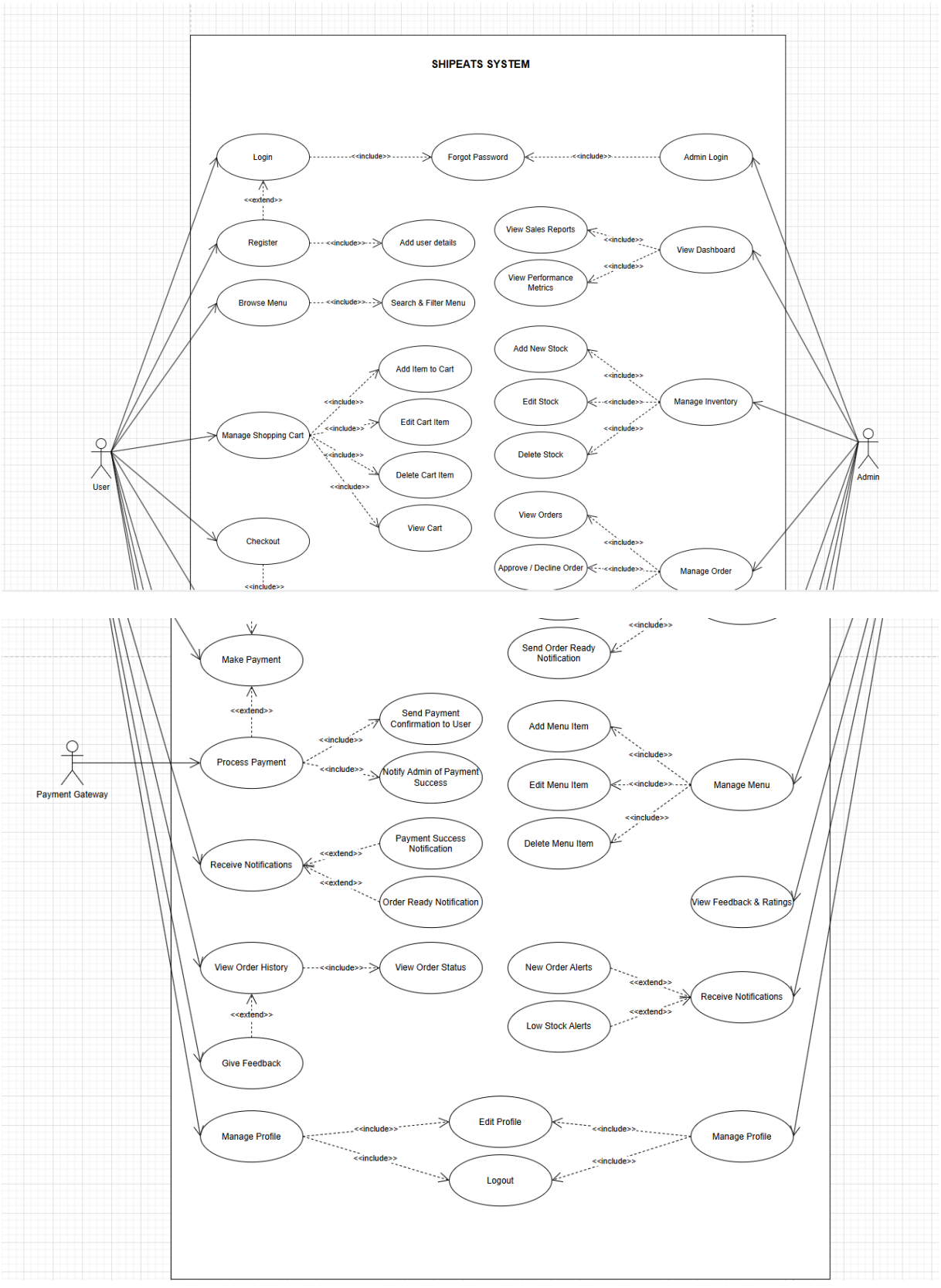

Figure 4: Use Case Diagram of ShipEats

III. Data Flow Diagram

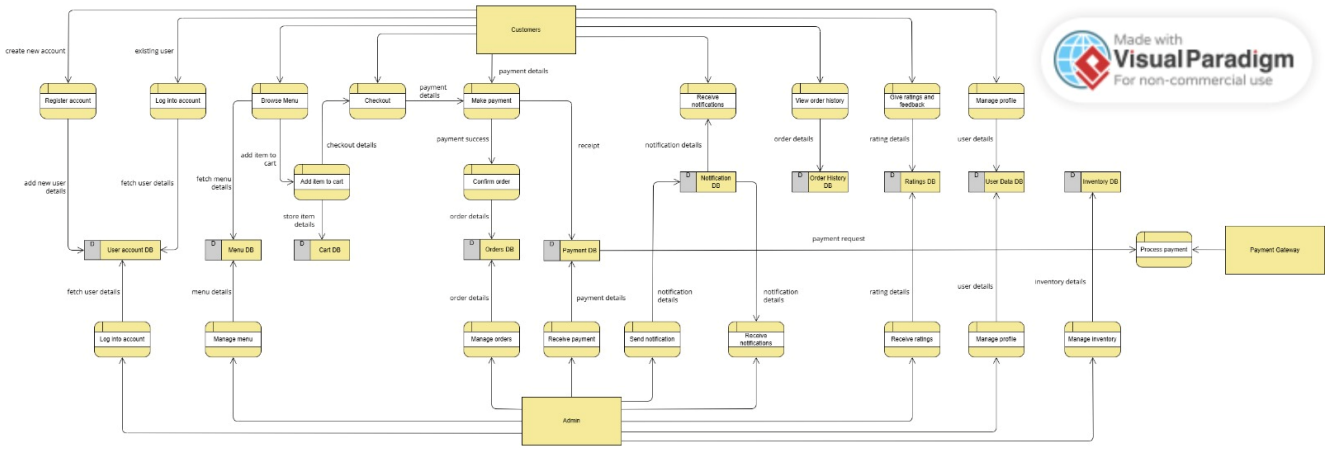

Figure 5: Data Flow Diagram of ShipEats

IV. Flowchart

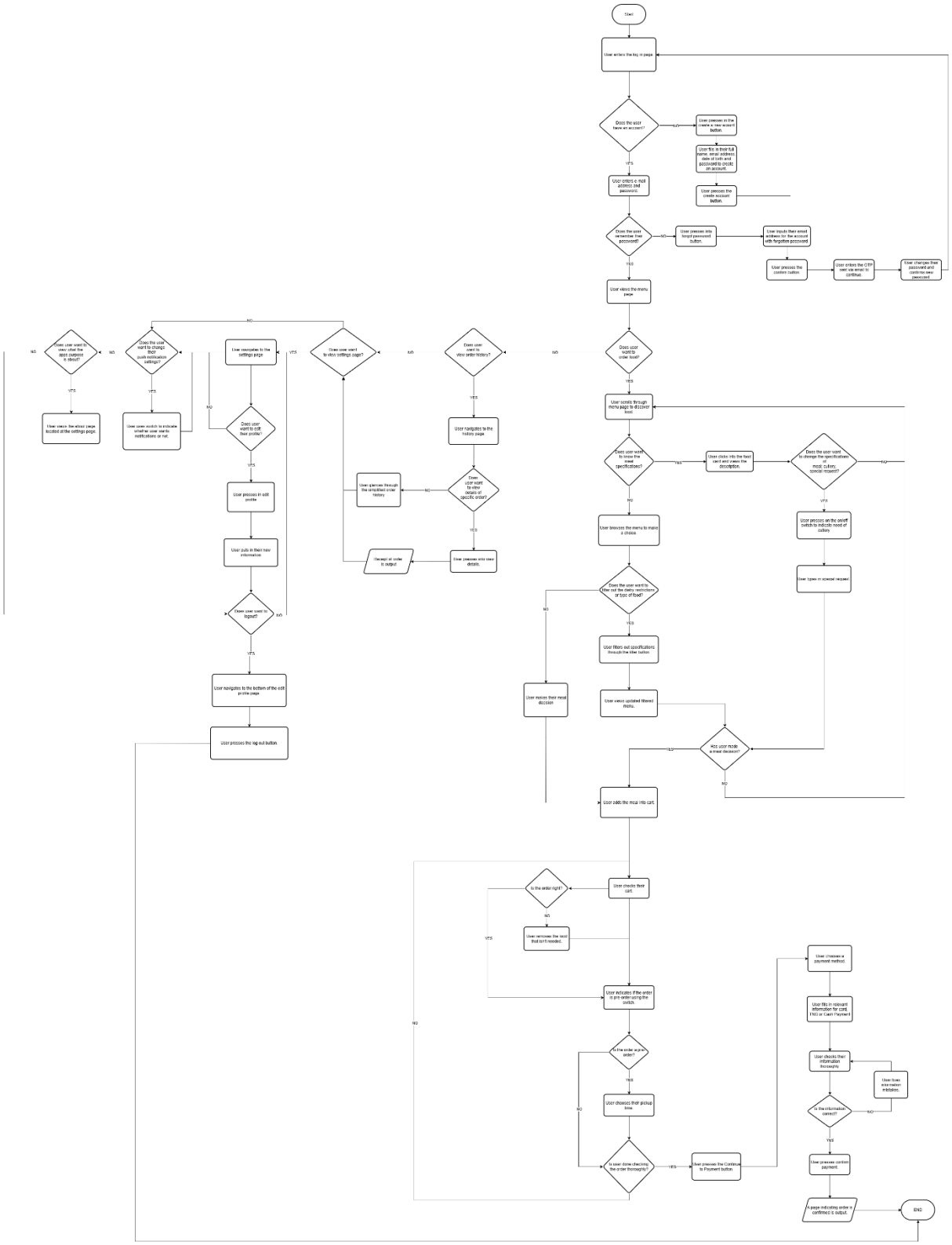

Figure 6: Flowchart of ShipEats (Customer)

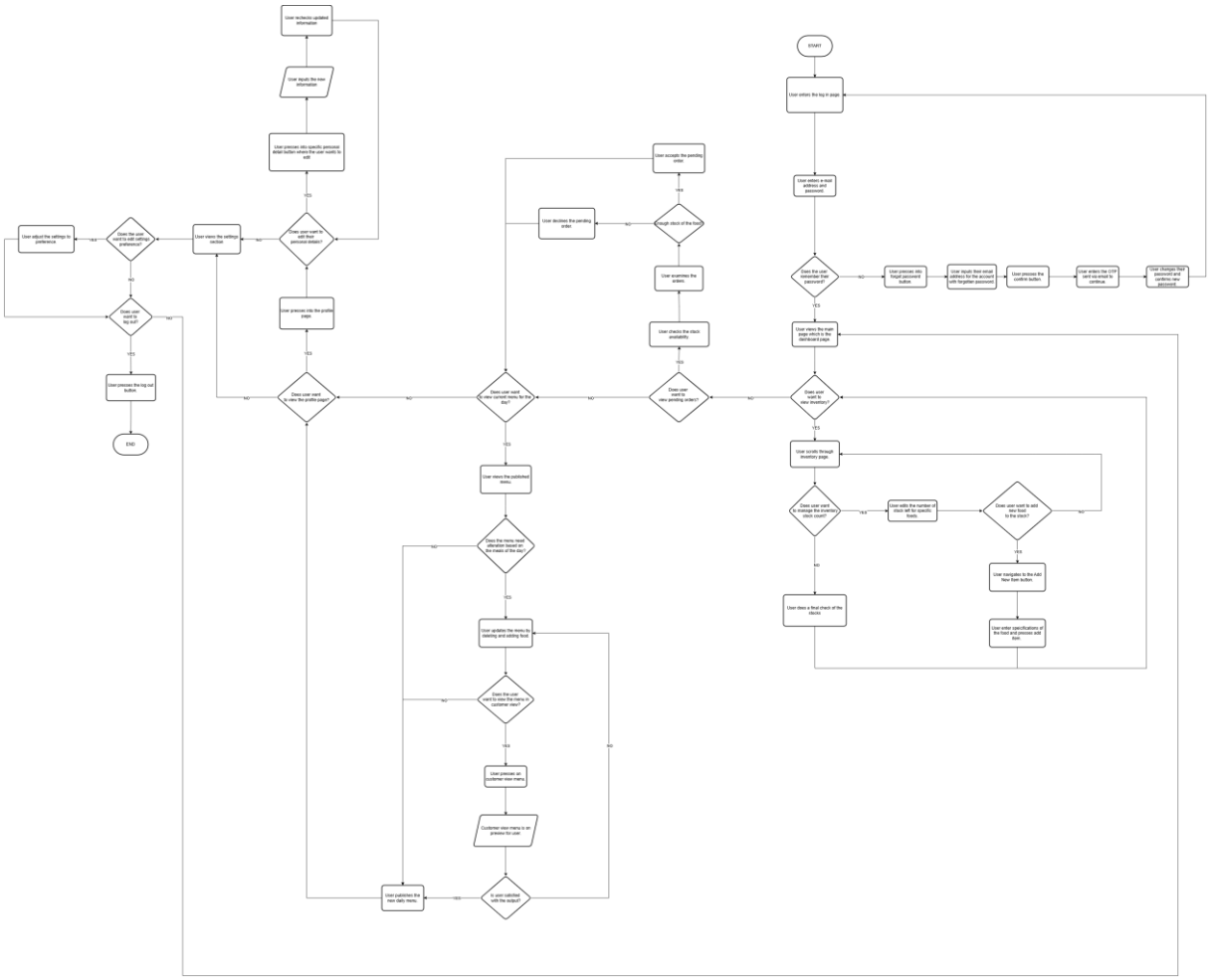

Figure 7: Flowchart of ShipEats (Admin)

V. Context Diagram

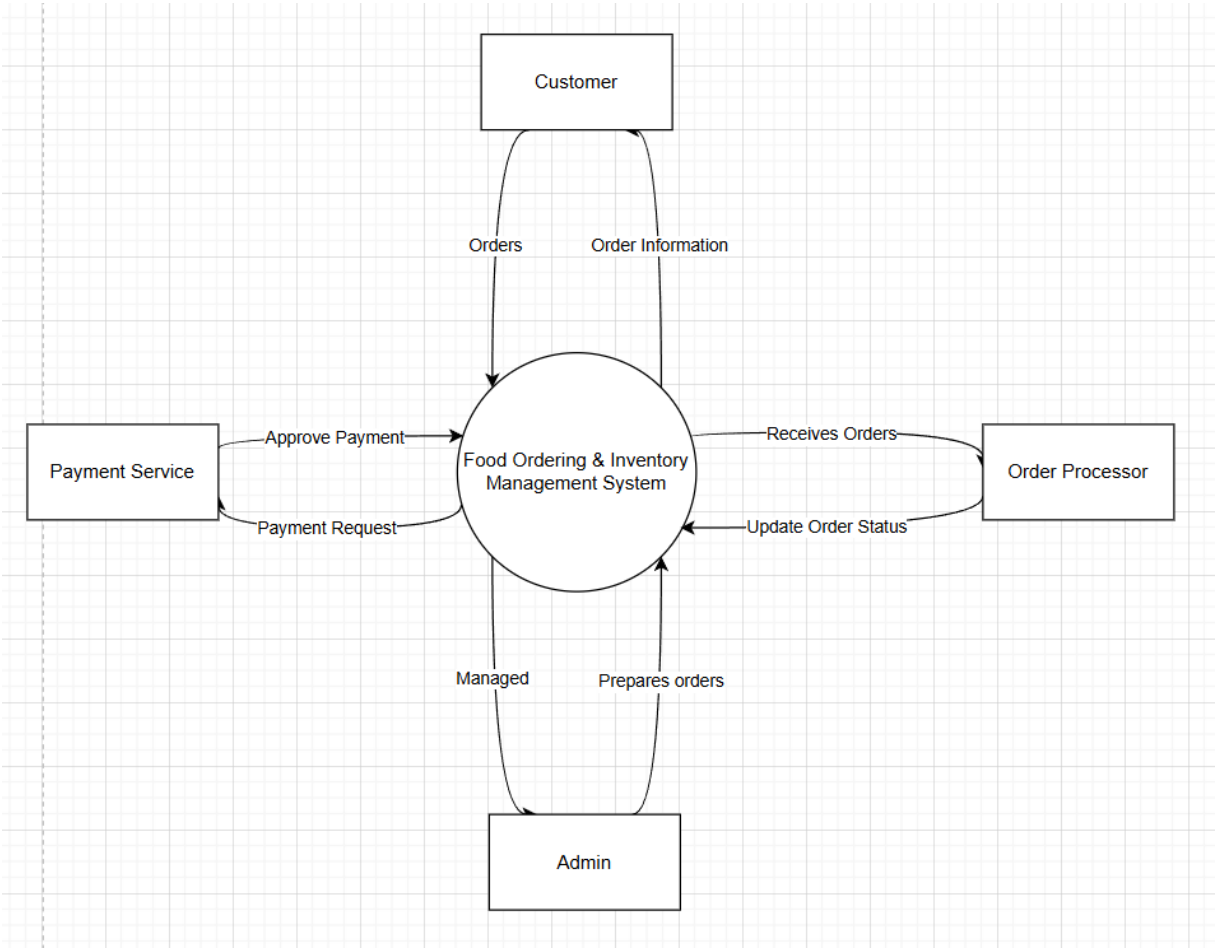

Figure 8: Context Diagram of ShipEats

6.0 Expected Deliverables

The ShipEats: Food Ordering and Management System mobile application is expected to deliver benefits to the users. For the users, a convenient experience in ordering their food and browsing available food within the application is to be provided by the system. In this instance, users can pre-order, browse food that is still in stock and make payments via the application ensuring time efficiency and need not queue up to buy food. As for the payment, a secure payment gateway, Stripe, is implemented within the application to support secured online transactions.

Likewise, for the staff, they have the ability to update their inventory of the food that is available in real-time, manage student food status, view a dashboard of the sales percentage and statistics, and modify the menu on a daily basis.

Additionally, easy communication is to exist within the system between the users and the staff of the Deck 4 Cafeteria in Peninsula College: The Ship Campus. The staff can update the status of the ordered food whether the food is ready to be picked up or is still being prepared. Then, the users will be notified through the application, on the notifications regarding their food status.

Furthermore, the system only focuses on the scoped users, which are the staff of Deck 4 Cafeteria and Food Stores in Peninsula College: The Ship Campus. Therefore, users need to sign up and log in by using the Peninsula College e-mail that has been provided to all students and staff of the college to be able to utilize the application.

Moreover, users are able to track their purchase history. This part of the system is crucial so that the staff can keep track on which students have already gotten their food or not as the staff update the status of the food. On the other hand, if the student has not received their food, they have proof in their hands that they are yet to claim their food. For the purpose of integrity and honesty, the feature is applied into the system by ensuring there are traces in any case of uncertainties within the orders.

7.0 Project Timeline

Below is a Gantt Chart depicting the group's progress throughout this project:

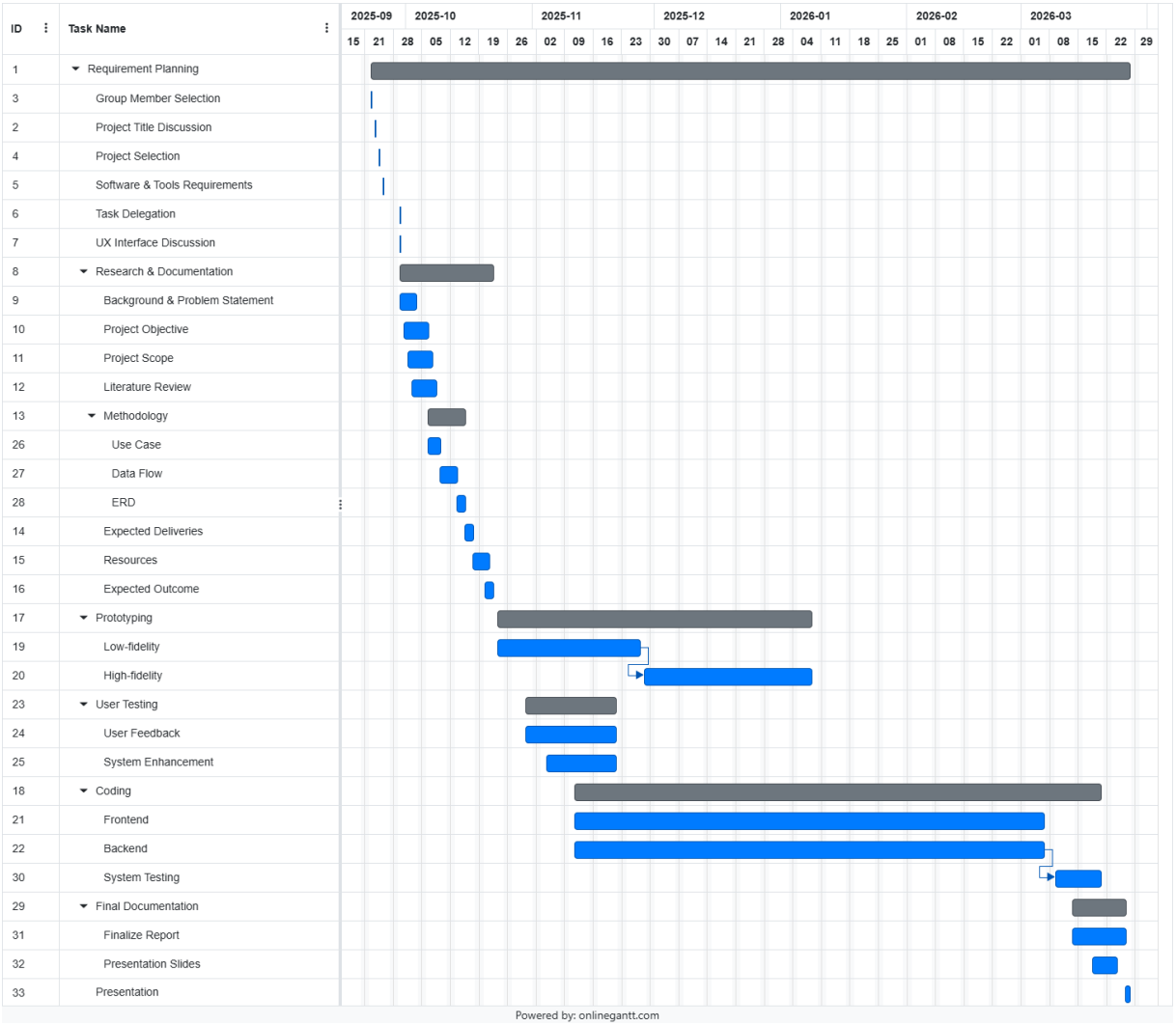

Figure 9: Gantt Chart of ShipEats Project Timeline

8.0 Resources Required

- **Hardware requirements**

Below are the hardware requirements needed for the project:

Category	System Name
Processor	Intel(R) Core(TM) i3-10110U CPU @ 2.10GHz (2.59 GHz)
RAM	8.00GB
System Type	64-bit operating system, x64-based processor

Table 2: Hardware Requirements

- **Software requirements**

Below are the software requirements needed for the project:

Category	Tools
Code Editor/IDE	Android Studio
Version Control	GitHub
Fronted Development	XML
Backend Development	Java
Database	Firebase Database
DevOps & Deployment	GitHub
Prototyping	Figma

Table 3: Software Requirements

Other supporting technologies used to create this project includes:

Category	Tools
Payment	Stripe API (Sandbox)
Email	Microsoft Outlook
Real-time Updates	Firestore Database
Analytics (Interactive Dashboard)	Android Studio

Table 4: Supporting Technologies

9.0 Expected Outcome and Significance

Once fully implemented, the food ordering and management system aims to bring several meaningful results. It primarily creates a centralized digital platform for food ordering and management. The system also focuses on student affordability by listing budget-friendly meal options. Not only will this help students stay within their monthly budget, but it will also provide students with a nutritious meal. On the other hand, the system aims to provide a channel for vendors to sell surplus food at discounted prices. Vendors can also track their inventory as the system includes automated inventory tracking to reduce manual work. It offers an interactive sales dashboard to monitor vendor performance at a glance.

This project is significant because it benefits the students, food vendors, and the institution as a whole. As for students, the system not only helps increase access to affordable, nutritious meals but also reduces financial stress and supports better focus and well-being. The system's pre-ordering function can save time and help with unpredictable schedules. On the other hand, food vendors can gain operational efficiency through automated systems. It also helps reduce food waste and administrative workload. The sales dashboard provides data insights to improve the menu and sales strategies. By selling leftovers, vendors can recover revenue and increase profitability.

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Appendix

Appendix A

In Appendix A, a Google Drive link that redirects to the UML diagrams of our project is listed the Google Drive Folder link below.

Google Drive Link:
https://drive.google.com/file/d/1p_bGE3j1PLVQ8hSfpJNAq9DmumsbjRBp/view?usp=sharing