



College of Arts, Media and Technology

**GPT 4 Baker**

**Mr. Thictikorne Vin 632115015**

**Mr. Suradit Luo 632115043**

**BACHELOR OF SCIENCE  
SOFTWARE ENGINEERING PROGRAM**

**COLLEGE OF ARTS, MEDIA, AND  
TECHNOLOGY**

**CHIANG MAI UNIVERSITY JULY 2023**



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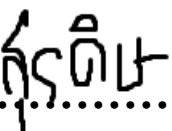
**THIS REPORT HAS BEEN APPROVED TO BE A  
PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE SOFTWARE  
ENGINEERING PROGRAM: COLLEGE OF ARTS  
MEDIA AND TECHNOLOGY**

.....  
  
.....**ADVISOR**

**Asst. Prof. Dr. PREE THIENGBURANATHUM**

.....  
  
.....**MEMBER**

**THICTIKORNE VIN**

.....  
  
.....**MEMBER**

**SURADIT LUO**

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GPT 4 Baker Team

<b>Title</b>	GPT 4 Baker
<b>Author</b>	Thictikorne Vin Suradit Luo
<b>Degree</b>	Bachelor of Science Software Engineering Program
<b>Senior Project Advisor</b>	Asst. Prof. Dr. Pree Thiengburanathum

## **ABSTRACT**

A bakery business is a type of food business that specializes in producing and selling bread, cakes, pastries, and other baked goods. Its industry is a large and diverse industry, ranging from small neighborhood bakeries to large multinational corporations. Therefore, bakeries have to compete with others in many aspects.

One of them is about marketing performance. The bakery should be able to adapt to changes in the market, such as changing target customers or introducing new dietary trends. Designing an innovative product can create a competitive advantage and make their business stand out in this crowded marketplace.

However, proposing a new product for the industry can be quite a challenge. A bad product that doesn't meet customer satisfaction and is unprofitable leads to the end of the production line. Therefore, this project proposes to develop a web browser with an AI-powered chatbot that will help large or individual bakeries in Chiang Mai to decide which type of baked product will be their new production line and provide supporting data.

Speaking of chatbot, it's a technology that contains natural language processing and algorithm in order to perceive user's prompt or input and replies in the form of a message or files. When it comes to marketing, a chatbot can play an important role in driving sales, improving customer engagement, and marketing analysis. With that mention, we will develop a chatbot using a trained AI called GPT to predict which product will be a hit on the market. In addition, we will use Vue.js, a JavaScript framework, to make a web application interface.

We strongly believe that this project will improve profitability and competitiveness while being a creative Chiang Mai bakery. Moreover, this project could be proof that AI has the potential to analyze and predict the market accurately, like professional business analysis.

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# **Chapter 1**

## **Project Proposal**

**GPT 4 Baker**

**Proposal**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

**Bachelor of Science  
Software Engineering Program**

**Department College of Arts, Media, and  
Technology**

**Chiang Mai University**

---

**Project Advisor  
Asst. Prof. Dr. Pree Thiengburanathum**

**GPT 4 Baker**

**Thictikorne Vin 632115015**

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..........**ADVISOR**

**Asst. Prof. Dr. PREE THIENGBURANATHUM**

..........**MEMBER**

**THICTIKORNE VIN**

..........**MEMBER**

**SURADIT LUO**

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\*SL = Suradit Luo

\*TV = Thictikorne Vin

\*PT = Asst. Prof. Dr. Pree Thiengburanathum

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# Chapter 1 | Introduction and Rationale

Recently, many bakeries have been struggling when they need to decide which bread, cake, or pastry will be their new product since the market has become highly competitive and saturated. Therefore, businesses may need to differentiate themselves through product innovation in order to maintain their position and remain competitive.

In the step of introducing a new product, many businesses may go through a marketing analysis in which they conduct a customer survey or competitive analysis to find an opportunity [1]. This can get a job done, but the process is often time-consuming. If Market conditions change rapidly, these approaches conducted at one point in time may quickly become outdated. In addition, customer surveys can be either effective or do nothing. It becomes less effective if the sample is too small, and designing the survey is a bit tricky when you have to consider the repetitiveness and duration of the survey, or else the customer may become fatigued or disengaged to do the survey.

Unlike the approaches that we mentioned, our application is a tool for providing bakeries in Chiang Mai with market insight and the opportunity when introducing a new product using Chatbot [2]. The application allows the user to search for what product is compatible with the market by selecting the district where their bakery shop takes place. The model keeps tracking all bakery shop information in the chosen district, such as an overall review, a menu with the recommended one, and its review article in order to deliver goods that fill the gap between markets. We'll retrieve the information using a web scraper from a food application. Furthermore, the users can adjust the cost of an ingredient (e.g., decrease the price of sugar in Chiang Mai) to give a different result. If the user doesn't know why AI recommend this product, they can ask the chatbot to provide an explanation.

The benefit of using our application is that the bakery can decide what goods can be a total revolution in the bakery. Furthermore, the application can make the company stay relevant and competitive in the market while inventing a product that is both unique and meets customer satisfaction.

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# Chapter 2 | Literature Review

## 2.1 Business Review

### 2.1.1 Overview

Nowadays, Artificial intelligence has become a must-have technology for everyone. They can be from your tutor, who helps your progress in the subject, to a coding advisor. Interestingly, there is a subtype called prediction AI that involves the use of algorithms and data analysis to predict future outcomes based on patterns and trends in historical data.

Prediction AI has been used in many industries. One of the most critical applications of prediction AI is in the field of healthcare. Prediction AI algorithms can analyze large volumes of medical data to identify patterns and predict the likelihood of various health outcomes. Moreover, the sports industry is also interested in this technology as well. Kholkine et al. [3] proposed a study that uses prediction AI to predict a winner in a professional road cycling competition. In addition, prediction AI can also be used to forecast potential injuries. By analyzing data on past injuries, player performance, and other relevant factors, AI models can predict which players are most likely to be injured in the future.

In the marketing industry, prediction AI can be used to analyze customer behavior, identify trends, and predict future purchasing patterns to predict or help businesses make a decision on product development that create the most profit for the organization [4]. During the investigation, we find that many marketing prediction AI is from market analysis websites. The model is not implemented as a chatbot that users can interact with and requires a request to access their technology.

With that mentioned, we'll create a web application that people can freely access to find out the trend in the bakery industry in Chiang Mai and predict the innovative menu through our chatbot, so people in Chiang Mai, specifically and others don't need to go to other websites.

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## **2.1.2 Target**

### **2.1.2.1 Problems**

- Bakeries have been struggling when they need to decide which bread, cake, or pastry will be their new product since the market has become highly competitive and saturated.
- Small and medium-sized bakeries often lack the resources and expertise needed to develop new products that meet changing consumer preferences.
- Deciding a bakery location can be difficult if they lack information about customers' trends in the chosen location.

### **2.1.2.2 Solutions**

- A dashboard that can display the overall bakery industry in Chiang Mai, which helps users gain preliminary information for product initialization and decide on bakery location.
- AI chatbot that can identify the trend in the bakery industry and recommend products to the user based on market preference. The chatbot also helps in decision-making in the business in addition.

## **2.1.3 Benefit**

- Increase success rate in the bakery business.
- Provides the user with marketing insight.
- Reduce information searching time in order to conduct business for users.

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## 2.2 Business Tools / Software Review

### 2.2.1 Marketing Analysis Website

#### 2.2.1.1 Tastewise

The screenshot shows the Tastewise platform interface. At the top, there's a navigation bar with links for Dashboard, Solutions (which is currently selected), New Product Development, Foodservice Sales, Explore, and user profile information. Below the navigation is a section titled "New Product Development" which includes a brief description and a "Get a demo" button. This is followed by two main sections: "Discovery" and "Validation". Each section contains three cards with sub-titles and "Get a demo" buttons. Under "Discovery", the cards are for "Ingredients & flavors", "Dishes & Concepts", and "Consumer Needs". Under "Validation", the cards are for "Ingredients & Flavors", "Dishes & Concepts", and "Consumer Needs". At the bottom, there's a "Trends Report" section with a "Create report" button.

Figure 1: Tastewise solutions page

Tastewise is an AI-powered food intelligence platform that helps businesses in the food industry to track food trends and consumer behavior and make data-driven decisions. In Figure 1, Tastewise can provide a solution for a new product by gathering information from various sources to identify emerging food trends and predict what consumers will be interested in next.

#### Advantage

- Can access real-time data to perform a market analysis.
- Has restaurant assistance feature that guide user to perform marketing.
- Provide a graph that supports decision-making.

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### Dominating consumer needs for sushi

[Copy](#) [PNG](#) [PDF](#) [CSV](#)

The dominating consumer needs across diets, tastes, occasions, cuisines, health demands, and more for sushi according to maturity and growth

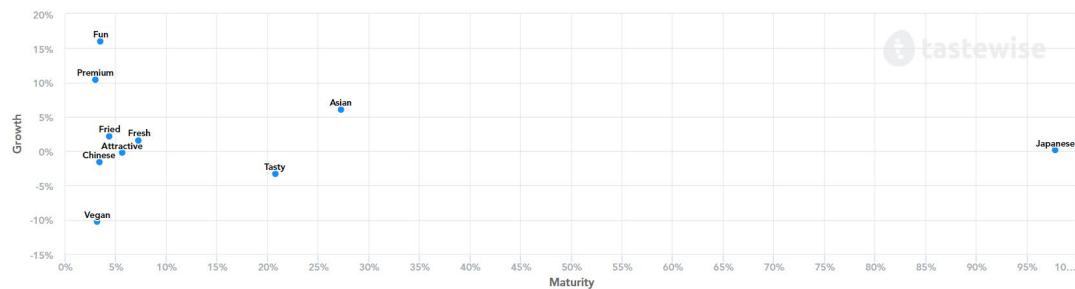


Figure 2: Dominating consumer need for sushi graph by Tastewise

### Disadvantage

- Main disadvantage of Tastewise is limited accessibility; most of the features require a request by email and a monthly subscription.
- Tastewise collects data only on social media and online recipes, which is not enough dataset to perform some tasks. An example is provided in Figure 2.

### Ingredients & flavors for sushi

[Copy](#) [PNG](#) [PDF](#) [CSV](#)

The top established ingredients and/or flavors related to sushi that are experiencing positive growth



Figure 3: An unusual Ingredient & flavors for sushi by Tastewise

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### 2.2.1.2 Spoonshot

The screenshot shows the Spoonshot homepage. On the left sidebar, there are links for Home, Trend Watch, Ingredient Networks, Concept Generator (beta), F&B Explorer, Bookmarks, Insights Library, and a Watch platform tour button. The main content area features a search bar at the top. Below it is a section titled "SUGGESTED TREND" with a link to "Explore". It highlights "Doner Kebab" as a trend, noting it is also known as "Doner Kebap" and is "Expanding". There are also sections for "SUGGESTED INGREDIENT COMBOS" and "SUGGESTED PRODUCTS", each with a "Explore" link and small thumbnail images. A "RECENT BOOKMARKS" section on the right shows a message: "No bookmarks yet" with a star icon, and a note: "When you see something you like in Spoonshot, just click on the star icon to add it to your bookmarks section."

Figure 4: Spoonshot Homepage

Spoonshot is a platform that helps food scientists, consumer insight managers, and marketing departments gather personalized insight. Spoonshot can predict a future trend that tends to have high growth during the next 24 months. Moreover, Spoonshot contains numerous internet articles and reports that help provide statistical data on the ingredients, recipes, and other topics related to food and beverage.

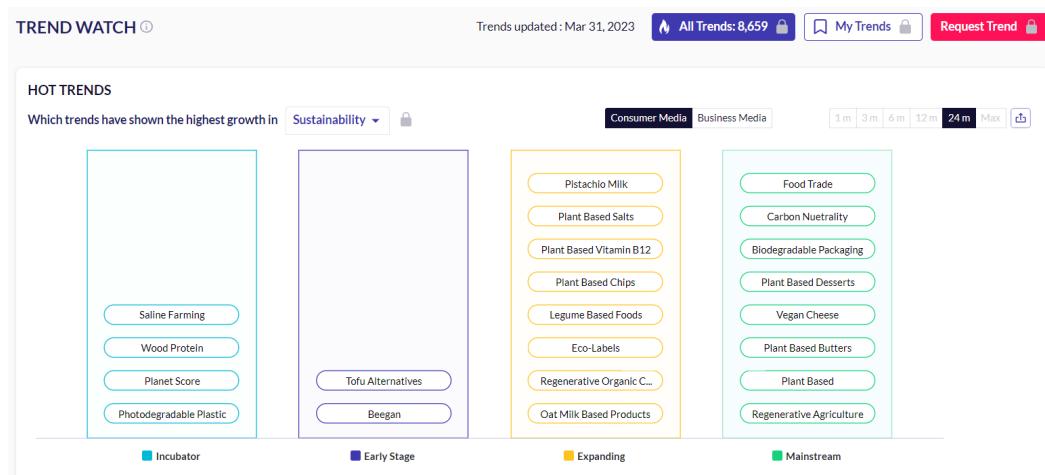


Figure 5: Food trend in the USA during the next 24 months by Spoonshot

### Advantage

- Users can select a country to gain insight based on the chosen one.
- Have a large dataset.

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## Disadvantage

- Some countries don't have the same features as others due to the lack of information.
- Web browsers rely heavily on data and might not capture the full scope of consumer preferences.

## 2.2.2 Marketing Analysis Website Feature Comparison

Application / Feature	Overview dashboard	Competitive analysis	Predict future trend	Restaurant assistance	Ingredient analysis	Menu Innovation	Consumer insight
Tastewise	✓	✓		✓	✓	✓	
Spoonshot	✓		✓		✓	✓	✓

To summarize, Tastewise has a restaurant assistance feature to enhance marketing ability in the industry, while Spoonshot can predict a trend that will grow in the future.

## 2.2.3 AI Chatbot

### 2.2.3.1 Chat GPT

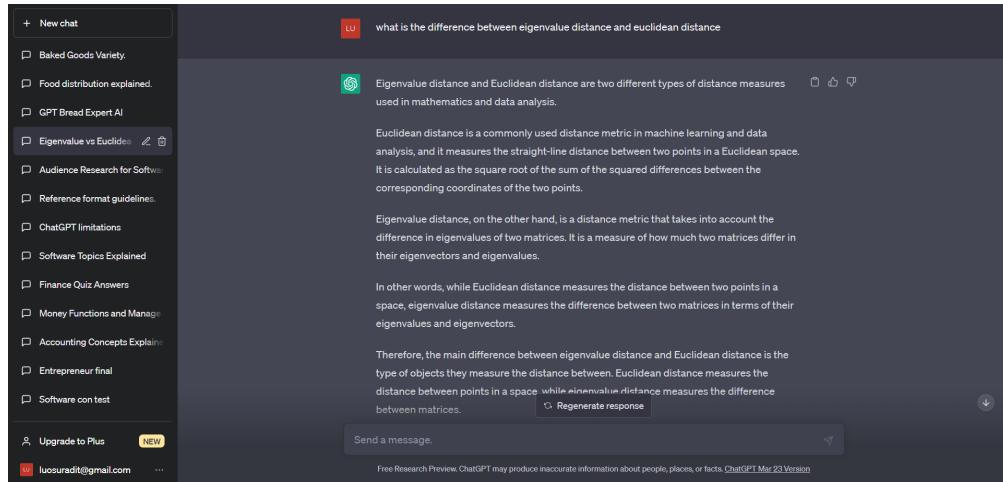


Figure 6: Chat GPT chat box

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Chat GPT [5] is a chatbot made by Open AI. It was released in 2020 and powered by GPT-3. Today, the chatbot is still in the development process. However, it can answer general questions, and users can design a prompt to make it provide clearer and better answers.

### **Advantage**

- Large dataset
- High credibility since it's the fastest-growing application.
- Users can optimize prompts to obtain a satisfactory answer.

### **Disadvantage**

- Cannot answer a real-world data related question. The example is in Figure 7.
- If the user knows how to design a prompt (e.g., role-playing prompt). They could make a model say biased opinion or answer [6].

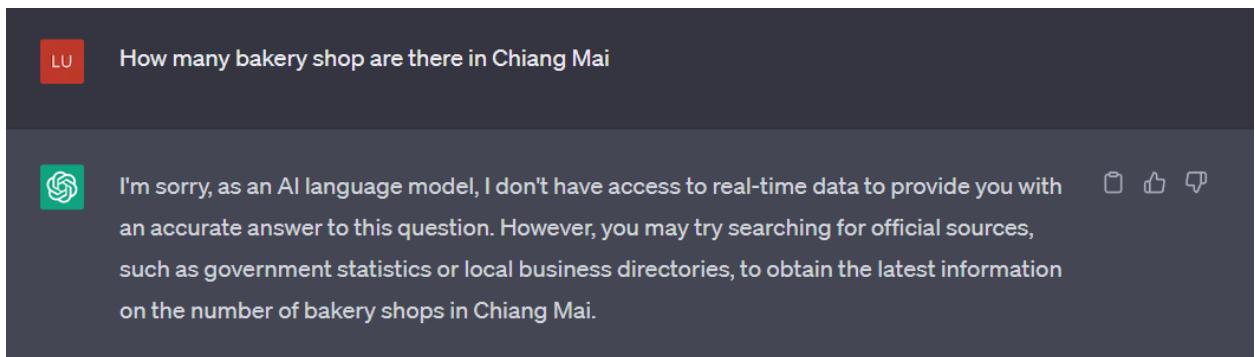


Figure 7: Real-world data related questions to ChatGPT

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### 2.2.3.2 Kuki\_AI

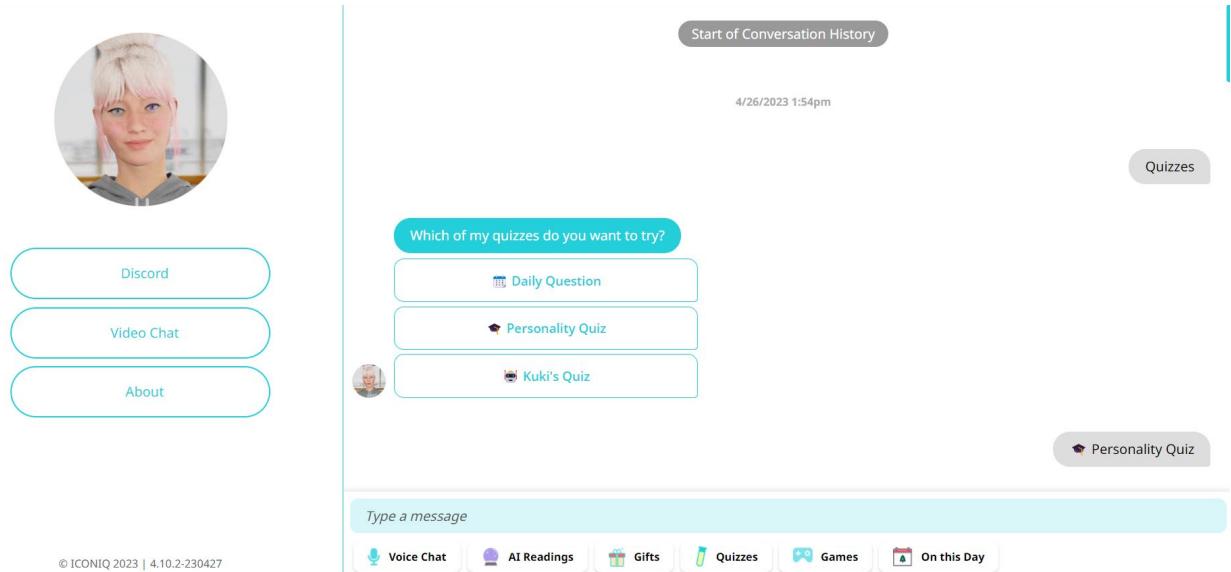


Figure 8: Kuki\_AI chatbox

Kuki AI (Mitsuku [7]) is a social media chatter AI for a user who wants to share hobbies, play games, and talk about daily life. This chatbot can ask users a question like a human and send GIFS and pictures in the chat box.

#### Advantage

- Can send GIFS and Picture
- Human-like Conversation
- Can be personalized to suit individual preferences and needs.

#### Disadvantage

- Doesn't support non-English letter language (e.g., Thai, Mandarin)
- Struggle with some stop words such as "and", "or".
- Cannot help user to perform some tasks such as coding and summarizing the article.

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## 2.2.4 AI Chatbot Feature Comparison

Application / Feature	Natural language processing	Multi-lingual capabilities	Large knowledge base	Sentiment Analysis	Personalization	Emotion Recognition
Chat GPT	✓	✓	✓	✓		
Kuki AI	✓	✓			✓	✓

When comparing both chatbots, we can see that they have their own strong points. In contrast, Kuki AI is good at social conversation. ChatGPT is an all-around expert who can ask them any question, and it will provide a solution to the user.

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# Chapter 3 | Development Tools Review

## 3.1 Vue



Figure 9: Vue.js logo

### Description

Vue is a library for building interactive web interfaces. The goal of Vue.js is to provide the benefits of reactive data binding and composable view components with an API that is as simple as possible.

### Alternative

- Angular
- React

### The Selection of technology

- The team members have experimented using this framework.
- Using it as a front end of our project.

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## 3.2 Selenium framework



Figure 10: Selenium framework logo

### Description

Selenium is a powerful open-source library in Python that provides a convenient framework for automating web browsers. It enables you to control web browsers programmatically, allowing you to interact with web pages, simulate user actions, and scrape data.

### Alternative

- Beautiful Soup

### The Selection of technology

- This scraping service has an example on the internet.
- This framework can stimulate user action to interact with webpage button.

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### 3.3 Llama index



Figure 11: Llama index logo

#### Description

Llama Index is a "data framework" to help you build LLM apps. It provides data connectors to ingest your existing data sources and data formats and structure them (indices, graphs), so that this data can be easily used with LLMs.

#### Alternative

- Mindsdb
- Lang Chain

#### The Selection of technology

- Use as a tool for building an AI that uses GPT as a model.
- Easy to use compare to other technology

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### 3.4 Flask



*Figure 12: Flask app logo*

#### Description

Flask is a micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries. Flask supports extensions that can add application features as if they were implemented in Flask itself. Extensions exist for object-relational mappers, form validation, upload handling, various open authentication technologies, and several common framework-related tools.

#### Alternative

- Django

#### The selection of technology

- Using scraping service of this technology because our team has used it before.
- This scraping service has an example on the internet.

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## 3.5 Spring boot



Figure 13: Spring boot logo

### Description

Spring Boot is an open-source, microservice-based Java web framework. The Spring Boot framework creates a fully production-ready environment that is completely configurable using its prebuilt code within its codebase. The microservice architecture provides developers with a fully enclosed application, including embedded application servers.

### Alternative

- ExpressJS

### The Selection of technology

- The team has experience with the authentication service of this technology.

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## 3.6 GPT



Figure 14: Chat GPT logo

### Description

GPT is a neural network machine learning model trained using internet data to generate any type of text. Developed by OpenAI, it requires a small amount of input text to generate large volumes of relevant and sophisticated machine-generated text.

### Alternative

- Hugging face

### The Selection of technology

- We use technology to be the model for the AI of our project.

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### 3.7 MySQL



Figure 15: MySQL logo

#### Description

MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing the records in the database. MySQL is open-source and free software under the GNU license.

#### Alternative

- Microsoft SQL

#### The Selection of technology

- We use technology to store user information.

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### 3.8 MongoDB



Figure 16: mongoDB logo

#### Description

MongoDB is an open-source, nonrelational database management system (DBMS) that uses flexible documents instead of tables and rows to process and store various forms of data. As a NoSQL database solution, MongoDB does not require a relational database management system (RDBMS), so it provides an elastic data storage model that enables users to store and query multivariate data types with ease.

#### Alternative

- CosmosDB

#### The Selection of technology

- We use this technology to be the database for the scrapping data.

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### 3.9 Docker

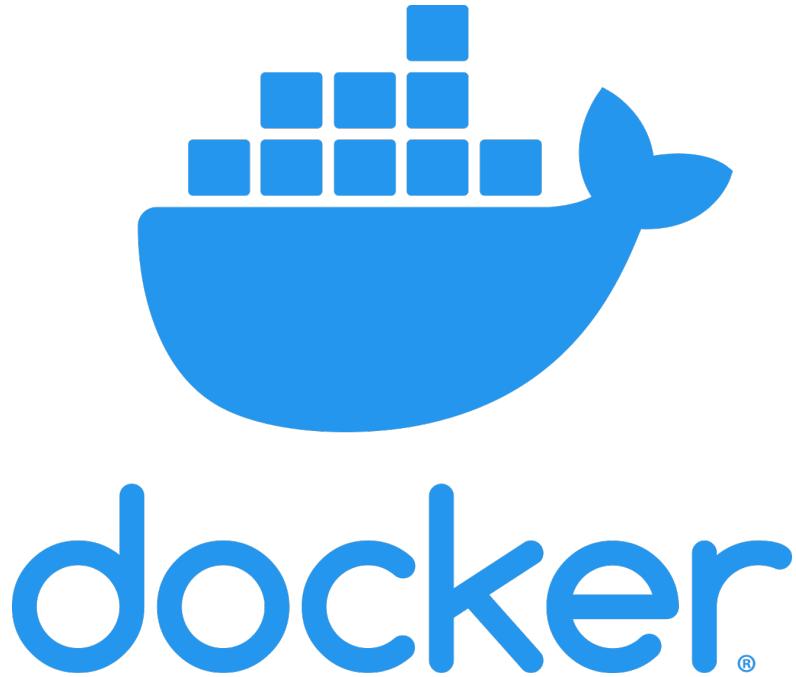


Figure 17: Docker logo

#### Description

Docker is an open-source platform that simplifies the process of building, deploying, and running applications using containerization. It allows you to package an application and its dependencies into a standardized unit called a container. These containers are lightweight, portable, and isolated, providing consistency and flexibility in deploying applications across different environments.

#### Alternative

- Podman
- LXC (Linux Containers)

#### The Selection of technology

We are familiar with this technology and have used this technology in other projects.

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# **Chapter 4 | Quality Standard**

## **ISO 29110 for Very Small Entity (VSE)**

ISO/IEC 29110-4-1:2011 is applicable to Very Small Entities (VSEs). A Very Small Entity (VSE) is defined as an enterprise, organization, department, or project having up to 25 people. A set of standards and guides has been developed according to a set of VSEs' characteristics and needs. The guides are based on subsets of appropriate standards elements, referred to as VSE profiles. The purpose of a VSE profile is to define a subset of International Standards relevant to the VSE context.

### **4.1 Project Management Process**

The purpose of the software management process is to establish, develop and carry out systematically the task of the software implementation project, which allows for complying with the project's objective in the expected quality.

#### **The 4 activities in the project management process**

1. Project planning process
2. Project plan execution process
3. Project assessment and control process
4. Project close process

### **4.2 Software implementation process**

The purpose of the software implementation process is the systematic performance of the analysis, design, construction, integration, and test activities for new or modified software products according to the specified requirements.

#### **Selected processes**

1. Software implementation process
2. Software requirement analysis process
3. Software architectural design process
4. Software construction process
5. Software integration process and test process
6. Software delivery process

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# Chapter 5 | Project Plan

## 5.1 Motivation

The bakery industry is a highly competitive market, with ever-changing consumer preferences and high demand for innovative products. Small and medium-sized bakeries often face challenges in creating new products that meet consumer needs while staying relevant in the industry. In addition, Small and medium-sized bakeries often lack the resources and expertise needed to develop new products that meet changing consumer preferences. Furthermore, managing a bakery business requires a wide range of skills, including inventory management, financial planning, and marketing.

Therefore, our project aims to address these challenges by providing bakeries with tools and resources to create new products and manage their business effectively. By doing so, we will help bakeries to remain competitive and meet changing consumer demands. Furthermore, our project will provide opportunities for bakeries to increase their revenue and expand their customer base, which will contribute to the growth of the local economy.

## 5.2 Aims and Objective

### 5.2.1 Aims

Our project aims to address this challenge by developing a web browser with a chatbot that will help bakeries in Chiang Mai decide which type of baked product will be their new production line. By utilizing a trained AI called GPT, our chatbot will be able to predict which product will be a hit on the market, providing bakeries with valuable insights and supporting data.

### 5.2.2 Objectives

- To develop a web browser with a chatbot that will help large and individual bakeries in Chiang Mai to decide which type of baked product will be their new production line.
- To utilize GPT, a trained AI, to analyze and predict market trends and provide bakeries with data-driven insights that will enable them to make informed decisions about their product offerings.

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## **5.3 Deliverable and Limitation.**

### **5.3.1 Deliverable**

- Proposal
- Software project plan document
- Software requirement document
- Software design document
- Software test plan document
- Software test record document
- Software traceability document
- Software product

### **5.3.2 Limits**

- The system requires an internet connection.
- The chatbot is designed for bakeries in Chiangmai only.
- The accuracy of the chatbot's predictions and recommendations may not always be correct.

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## 5.4 System Architecture

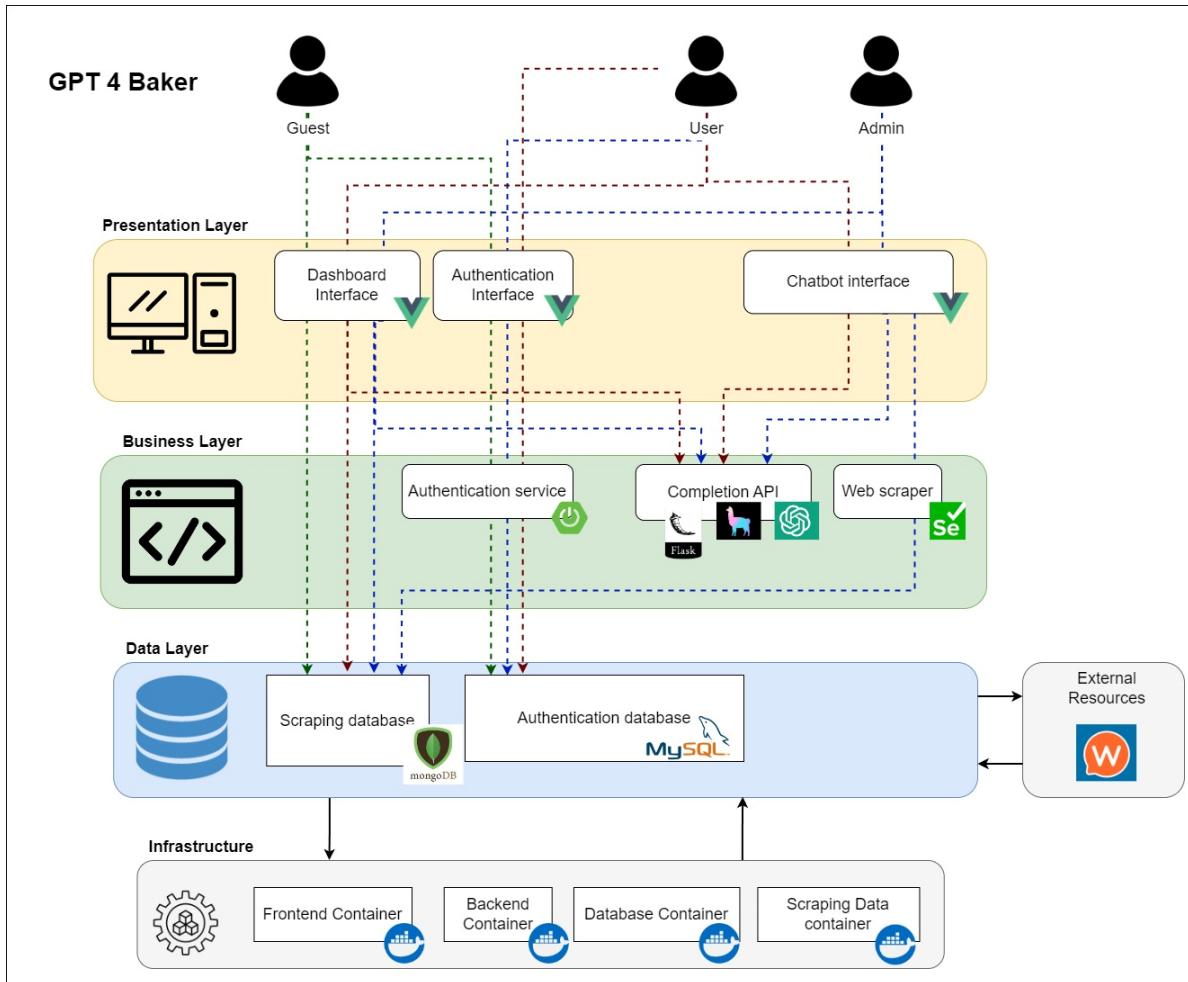


Figure 18: GPT 4 Baker System Architecture

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### **5.4.1 Description**

From the top to the bottom, our architecture will be separated into 3 main layers, including presentation layer, business layer, and data layer. In addition, we'll have 3 types of users. The guest is like a visitor who can access only a dashboard interface. An admin is like a developer. They gain access to data processing features, dashboard, and chatbot. Lastly, a user who registers to our system. They can interact with the chatbot and dashboard interface.

The presentation layer is a layer that contains a web interface component. These components will be implemented by Vue.js. The dashboard interface and Authentication interface can be accessed by every type of user. The chatbot interface, on the other hand, can only be accessed by some types of users.

After the user inputs something, the layer will send the request to the business layer; each component in this layer is designed to receive requests from different sources. We use the Spring boot framework to make an authentication service. Completion API, an API for receiving prompts and sending messages for the chatbot uses Llama index as a tool for training an AI that uses GPT as a model, and then we use Flask library as an API for our model to receive user input and send a message. And lastly, for the scraping API, we'll use Selenium framework for web scraping and storing the data in the component in the data layer. We will use Wong Nai as an external resource in the step of web scraping.

The data layer is the layer that contains two databases. The reason for having two databases is to increase the scalability and reduce the complexity of the database. We use MongoDB as a scraping data database which uses the Wong Nai web browser as a data scraping source, and we use MySQL as a database for storing user information.

And lastly, the infrastructure is the sub-layer in this architecture. This layer includes the frontend container for whole components in the presentation layer, the backend container that is responsible for all of the components in the business layer, a database container that uses to pack an authentication database, and a scraping data container that contains a scraping database. All the components in this layer will be developed by Docker for system deployment and package management.

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### **5.4.2 Type of actors**

- Admin: A system developer who gains access to data processing features (e.g., web scraping, data cleaning), dashboard, and chatbot.
- User: A user who registers to our system. They are the owners of a bakery business who can interact with the chatbot and dashboard interface.
- Guest: The guest is like a visitor who cannot access any feature except the dashboard interface.

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## 5.5 Prototype

The dashboard prototype for GPT 4 Bread features a pink header with the title "GPT 4 Bread". Below the header is a navigation bar with three tabs: "Dashboard", "Bakery management", and "Chat with AI". A user icon is also present in the header area. The main content area is divided into two sections. On the left, an orange sidebar titled "Discovery" contains a "Overview" section with links to "Doi Suthep", "Mueng Chiang Mai", "Tha sala", "San Kamphaeng", and "San Sai". The right section is titled "Overview Dashboard" and displays a message: "There are **2887** bakeries in Chiang Mai". Below this, there is a section titled "Top 5 product" featuring an image of several colorful macarons.

Figure 19: Dashboard prototype

The authentication prototype for GPT 4 Bread features a pink header with the title "GPT 4 Bread". The main content area is divided into two sections. On the left, a large red box contains the text: "Become a Marketing Analysis in Chiang Mai With Bakery Management" and "AI Chatbot". On the right, there is a background image of various breads. Overlaid on this image is a login form with fields for "Business Email" and "Password", a "Log in" button, and links for "Forgot password?" and "Sign up". Below the login form are social media icons for Facebook, Twitter, Instagram, and LinkedIn.

Figure 20: Authentication prototype

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Figure 21: Doi Suthep dashboard prototype

Figure 22: Chatbot prototype

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## 5.5 Software Process

Software Development life cycle is a process used to design, develop, and maintain software systems. It is a framework that describes the phases and activities involved in the development of software applications, from the initial planning and analysis through to implementation, testing, deployment, and maintenance.

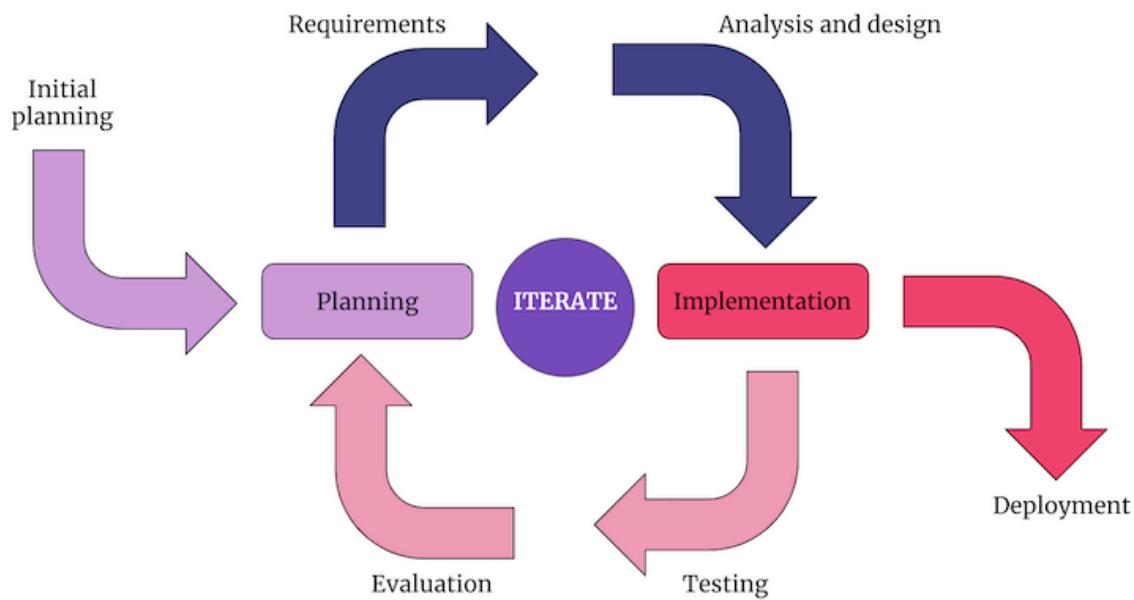


Figure 23: GPT 4 Baker Software Process

For our team, we chose the Iterative Model. It is a particular implementation of a software development life cycle (SDLC) that focuses on an initial, simplified implementation, which then progressively gains more complexity and a broader feature set until the final system is complete. When discussing the iterative method, the concept of incremental development will also often be used liberally and interchangeably, which describes the incremental alterations made during the design and implementation of each new iteration.

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## 5.6 Feature

### Feature #1: Dashboard

**Description:** The dashboard provides overall information and trend about a bakery, such as top ingredients and the number of French bakeries shops in Chiang Mai and its' district.

**Actor:** Guest, User, Admin

- The guest, user, and admin can view the dashboard page.
- The user and admin have permission to fully access the dashboard.

### Feature #2: Authentication

**Description:** The system provides a login page for the user and admin to log in and a registration page for guests to register as a user.

**Actor:** Guest, User, Admin

- The guest can register as a user in the system by inputting their email and password.
- The user and admin can log into the system by inputting their email and password.

### Feature #3: Data preprocessing, data cleaning, and data analysis

**Description:** The system can do textual data scraping using selenium framework libraries and clean the data. The system shall rely on the GPT model and llama index for developing the AI model that is able to perform data analysis.

**Actor:** -

- The system can receive text data and clean it.
- The AI shall build its model from Wong Nai dataset & train by itself.
- The system can perceive and analyze user input and provide a description or predictive result as an answer.

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## **Feature #4: Chatbot**

**Description:** On the chatbot page, the system provides a chat box for interacting with the chatbot to gain a solution and information.

**Actor:** User, Admin

- The chatbot can receive descriptions or predictive results from data analysis feature and deliver them to user as a message.
- The user and admin can interact with the chatbot through the chat box.
- The user and admin can view the chat history on the chatbot page.
- The admin can check the behavior of the chatbot by interacting with it to find the accuracy of the chatbot.

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## 5.7 Schedule Plan

### 5.7.1 Progress Report

#### Normal plan

Senior Project Event	Deliverables
Proposal Presentation	- Project proposal
Progress I Presentation	- Software project plan document - Software requirement document - Software test plan document - Software design document - Software product - Software test record document - Software traceability document
Progress II Presentation	- Software project plan document - Software requirement document - Software test plan document - Software design document - Software product - Software test record document - Software traceability document
Final Progress	- Final Progress Report - Project document

#### Alternative plan

Senior Project Event	Deliverables
Proposal Presentation	- Project proposal
Progress I Presentation	- Software project plan document - Software requirement document - Software test plan document - Software design document - Software product - Software test record document - Software traceability document
Progress II Presentation	- Software project plan document - Software requirement document - Software test plan document - Software design document - Software product - Software test record document

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	- Software traceability document
Final Progress	- Final Progress Report - Project document
Redemption	Remaining features and documents

### Milestone

Phase 1. Proposal: 11 April 2023 – 19 May 2023 = 39 days  
 Phase 2. Progress I: 20 May 2023 – 19 June 2023 = 31 days  
 Phase 3. Progress II: 20 June 2023 – 21 August 2023 = 64 days  
 Phase 4. Final Progress: 22 August 2023 – 9 October 2023 = 49 days

### Phase 1. Proposal: 11 April 2023 – 19 May 2023 = 39 days

Tasks	Start date	End date	Duration	Responsibility
Research and writing proposal document	11 April 2023	11 May 2023	31	SL, TV
Prepare for the presentation	12 May 2023	19 May 2023	8	SL, TV

### Phase 2. Progress I: 20 May 2023 – 19 June 2023 = 31 days

Tasks	Start date	End date	Duration	Responsibility
Software requirement specification document	20 May 2023	25 May 2023	6	SL, TV
Project plan document	20 May 2023	22 May 2023	3	SL, TV
Software design document.	26 May 2023	1 June 2023	7	SL, TV
Software test plan document	2 June 2023	7 June 2023	6	SL, TV
Feature 3 implement.	27 May 2023	11 June 2023	16	SL, TV

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Feature 3 test	12 June 2023	15 June 2023	4	SL, TV
Prepared Progress I report and presentation	16 June 2023	18 June 2023	3	SL, TV

**Phase 3. Progress II: 20 June 2023 – 21 August 2023 = 64 days**

Tasks	Start date	End date	Duration	Responsibility
Software requirement specification document	20 June 2023	27 June 2023	8	SL, TV
Project plan document	24 June 2023	28 June 2023	5	SL, TV
Software design document.	29 June 2023	4 July 2023	6	SL, TV
Software test plan document	5 July 2023	9 July 2023	5	SL, TV
Feature 2 implement.	10 July	15 July 2023	6	SL, TV
Feature 1 implement.	16 July 2023	29 July 2023	14	SL, TV
Feature 4 implement.	30 July 2023	5 August 2023	7	SL, TV
Feature 2 test	6 August 2023	8 August 2023	3	SL, TV
Feature 1 test	9 August 2023	12 August 2023	4	SL, TV
Feature 4 test	13 August 2023	17 August 2023	5	SL, TV
Prepared Progress II report and presentation	18 August 2023	20 August 2023	3	SL, TV

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**Phase 4. Final Progress: 22 August 2023 – 9 October 2023 = 49 days**

Tasks	Start date	End date	Duration	Responsibility
Wrap up and review all of the documents	22 August 2023	27 August 2023	6	SL, TV
Prepared final report and presentation	5 October 2023	8 October 2023	4	SL, TV

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## 5.7.2 Milestone Gantt Chart

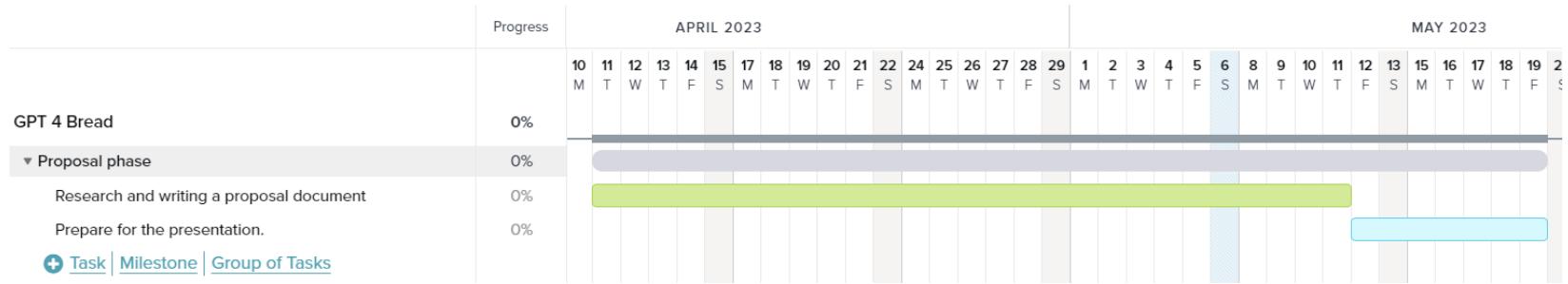


Figure 24: Proposal Gantt Chart

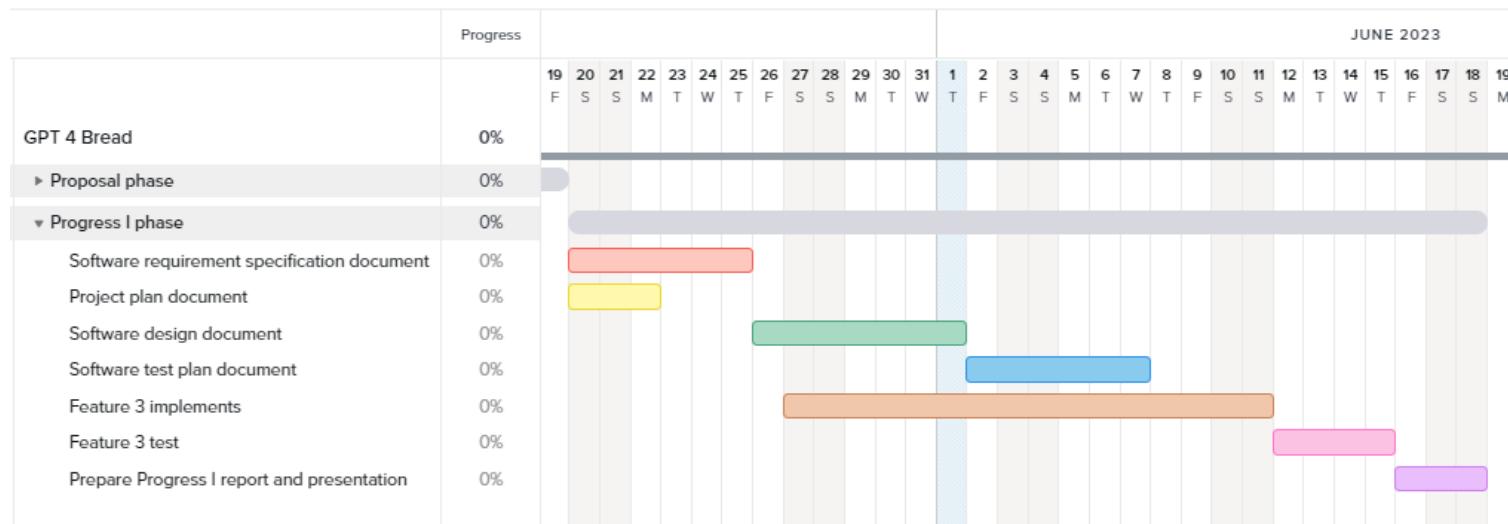


Figure 25: Progress I Gantt chart

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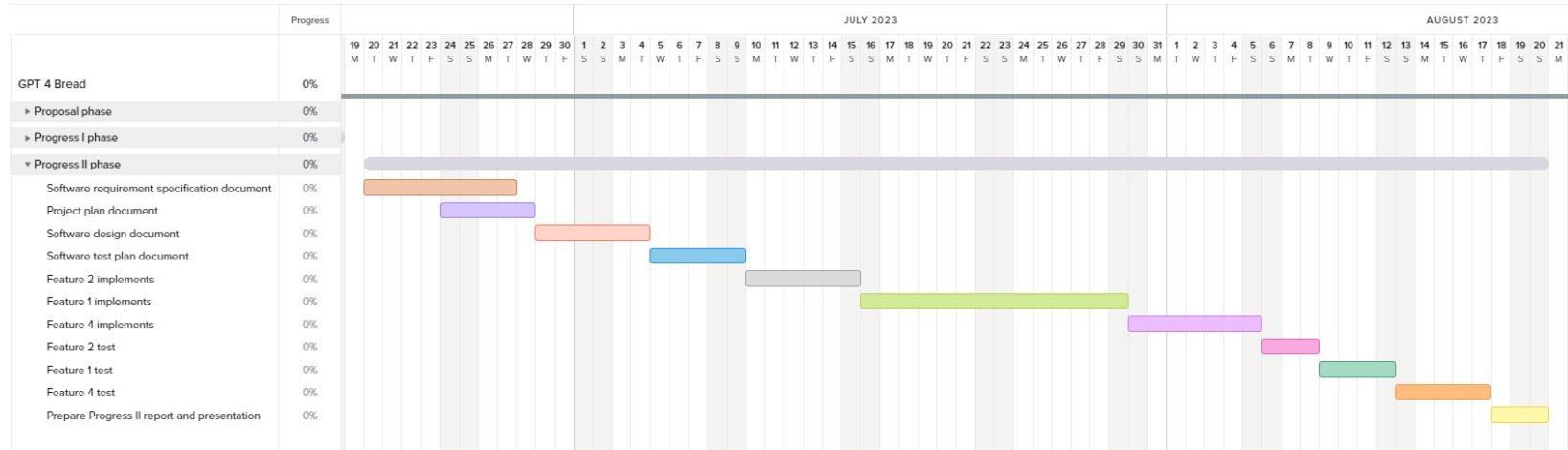


Figure 26: Progress II Gantt Chart

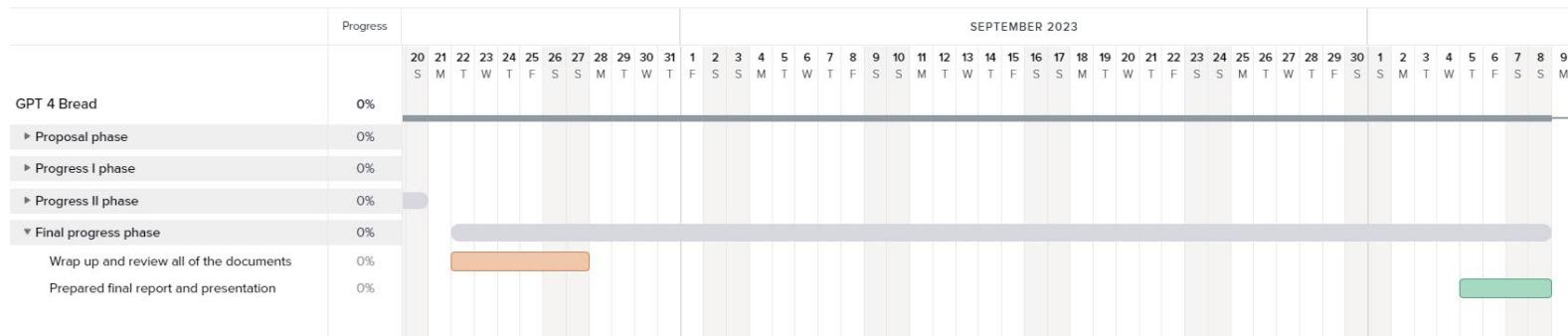


Figure 27: Final Progress Gantt Chart

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## Chapter 6 | References

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## **Chapter 2**

# **Project Management Plan**

**GPT 4 Baker**

**Project Management Plan**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

**Bachelor of Science**  
**Software Engineering Program**

**Department College of Arts, Media, and  
Technology**

**Chiang Mai University**

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**Project Advisor**  
**Asst. Prof. Dr. Pree Thiengburanathum**

# GPT 4 Baker

Thictikorne Vin 632115015

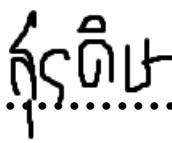
Suradit Luo 632115043

**THIS REPORT HAS BEEN APPROVED TO BE A  
PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE SOFTWARE  
ENGINEERING PROGRAM: COLLEGE OF ARTS  
MEDIA AND TECHNOLOGY**

..........ADVISOR

Asst. Prof. Dr. PREE THIENGBURANATHUM

..........MEMBER  
THICTIKORNE VIN

..........MEMBER  
SURADIT LUO

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## Document History

Document name	Version	History	Status	Date	Editable	Reviewer
Project Management Plan	Project Management Plan_v.0.1	<p>Add Chapter 1</p> <ul style="list-style-type: none"> <li>- Identification</li> <li>- Project Overview</li> <li>- Work product to be developed.</li> <li>- Acronym and definition</li> </ul> <p>Add Chapter 2</p> <ul style="list-style-type: none"> <li>- Development tools</li> <li>- Hardware and material resources</li> </ul> <p>Add Chapter 3</p> <ul style="list-style-type: none"> <li>- Project team structures</li> <li>- Project meeting</li> </ul> <p>Add Chapter 4</p> <ul style="list-style-type: none"> <li>- ISO 29110 for Very Small Entity (VSE)</li> </ul> <p>Add Chapter 5</p> <ul style="list-style-type: none"> <li>- Review/Responsibilities</li> <li>- Testing</li> </ul> <p>Add Chapter 6</p> <ul style="list-style-type: none"> <li>- Estimated duration of tasks</li> </ul> <p>Add Chapter 7</p> <ul style="list-style-type: none"> <li>- Naming Convention</li> <li>- Change management.</li> <li>- Project Repository</li> <li>- Software configuration item table</li> </ul>	Draft	24/05/23	SL, TV	PT

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		Add Chapter 8 - Risk management  Add Chapter 9 - Milestone Gantt chart				
Project Management Plan	Project Management Plan_v.0.2	Update Chapter 1 - Project Overview Update Chapter 9 - Milestone Gantt chart	Edit	29/05/23	SL, TV	PT
Project Management Plan	Project Management Plan_v.0.3	Update Chapter 9 - Milestone Gantt chart	Edit	01/06/23	SL, TV	PT
Project Management Plan	Project Management Plan_v.0.4	Update Chapter 2 - Development Tools Update Chapter 9 - Milestone Gantt chart	Edit	24/06/23	SL, TV	PT
Project Management Plan	Project Management Plan_v.0.5	Update Chapter 7 - Project Repository	Edit	04/07/23	SL, TV	PT
Project Management Plan	Project Management Plan_v.0.6	Update Chapter 9 - Milestone Gantt chart Update Chapter 1 - Deliverable	Edit	17/07/23	SL, TV	PT
Project Management Plan	Project Management Plan_v.1.0	Release document version 1.0	Release	17/07/23	SL, TV	PT

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Project Management Plan	Project Management Plan_v.1.1	Update Chapter 9 - Milestone Gantt chart Update Chapter 1 Deliverable	Edit	02/09/23	SL, TV	PT
Project Management Plan	Project Management Plan_v.2.0	Release document version 2.0	Release	05/09/23	SL, TV	PT
Project Management Plan	Project Management Plan_v.3.0	Release document version 3.0	Release	11/10/23	SL, TV	PT

\*SL = Suradit Luo

\*TV = Thictikorne Vin

\*PT = Asst. Prof. Dr. Pree Thiengburanathum

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# **Chapter 1 | Introduction**

## **1.1 Identification**

GPT 4 Baker is a web application developed by Vue.Js as a web application, Python for a web service, and GPT for AI Machine Learning. The idea of this project is to create an AI chatbot using scraping data from Wong Nai web application and use mindsDB as a tool to train an AI to be able to receive prompts and send output messages to the user. Moreover, our web applications provide a statistical interface to show information about the user's bakery shop performance and the status of the bakery business in Chiang Mai.

This project plan is the document for planning, scheduling activities, and evaluating overall of the project so that the project will complete as successfully as possible in spite of all risks. The project plan documents the plan before starting the project. When the project starts, the project plan is used to track the progress and monitor whether the project follows the plan.

## **1.2 Overview**

GPT 4 Baker is a marketing analysis website that replaces the old one with newer technology. It lets users view the dashboard to obtain marketing and user insight which can be used for supporting decision-making. Moreover, users can interact with the chatbot that works as their expertise in order to gain a deeper understanding of the bakery business and competitors in Chiang Mai.

### **1.2.1 Purpose**

The main purpose of developing this web application is to reduce failure rate in the bakery business and create innovativeness in their new product and make bakery shops stay relevant in the market.

### **1.2.2 Scope**

These are the features that contain in GPT 4 Baker System

- Feature #01: Dashboard
- Feature #02: Authentication
- Feature #03: Data preprocessing, data cleaning, and data analysis
- Feature #04: Chatbot

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## 1.3 Work product to be developed.

### 1.3.1 Deliverable

No.	Deliverable/Release	Media	Copies	Date
1.	<b>Project Proposal</b> <ul style="list-style-type: none"><li>• Proposal Version 1.0</li></ul>	Soft copy	1	19/05/2023
2.	<b>Progress Report I</b> <ul style="list-style-type: none"><li>• Project Management Plan Version 1.0</li><li>• Software Requirement Specification Version 1.0</li><li>• Software Design Document Version 1.0</li><li>• Test Plan Version 1.0</li><li>• Traceability Record Version 1.0</li><li>• Software Version 1.0</li></ul>	Soft copy	3 3 3 3 3 1	16/07/2023
3.	<b>Progress Report II</b> <ul style="list-style-type: none"><li>• Project Management Plan Version 2.0</li><li>• Software Requirement Specification Version 2.0</li><li>• Software Design Document Version 2.0</li><li>• Test Plan Version 2.0</li><li>• Traceability Record Version 2.0</li><li>• Software Version 2.0</li></ul>	Soft copy, Hard copy	3 3 3 3 3 1	05/09/2023
3.	<b>Final Progress Report</b> <ul style="list-style-type: none"><li>• Project Management Plan Version 3.0</li><li>• Software Requirement Specification Version 3.0</li><li>• Software Design Document Version 3.0</li><li>• Test Plan Version 3.0</li><li>• Traceability Record Version 3.0</li><li>• Software Version 3.0</li></ul>	Soft copy, Hard copy	3 3 3 3 3 1	09/10/2023

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### **1.3.2 Non-Deliverable**

No.	Work Product	Media
1	PowerPoint presentation	File
2	Poster Presentation	Poster
3	Video Presentation	File

## **1.4 Acronyms and Definitions**

### **1.4.1 Acronyms**

**URS:** User Requirement Specification  
**SRS:** Software Requirement Specification  
**UC:** Use Case  
**UCD:** Use Case Description  
**SD:** Sequence Diagram  
**UI:** User Interface  
**OS:** Operating System  
**SDD:** Software Design Document  
**VSE:** Very Small Entity  
**PM:** Project Management  
**SI:** Software Implementation  
**SL:** Mr. Suradit Luo  
**TV:** Mr. Thictikorne Vin  
**PT:** Asst. Prof. Dr. Pree Theingburanathum

### **1.4.2 Definitions**

Word	Definition
IEEE	Institute for Electrical and Electronics Engineers. Biggest global interest group for engineers of different branches and computer scientists [IEEE90].
Feature	Transformation of input parameters to output parameters based on a specified algorithm. It describes the functionality of the product in the language of the product. Used for

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	requirements analysis, design, coding, testing, or maintenance [IEEE90].
Milestone	A significant event in the project, usually the completion of the main deliverable [IEEE90].
Plan	A documented series of tasks requires meeting an objective, typically including the associated schedule, budget, resources, organizational description, and work breakdown structure [IEEE90].
Project Plan	A formal, approved document used to guide both project execution and project control. The primary uses of the project plan are to document planning assumptions and decisions, to facilitate communication among stakeholders, and document approved scope, cost, and schedule baseline [IEEE90].
Project management	The application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project [IEEE90].
Risk	An uncertain event or condition that, if it occurs has a positive or negative effect on the project's objectives. It is a function of the probability of occurrence of a given threat's occurrence [IEEE90].
Risk Management	The systematic application of management policies, procedures, and practices to the tasks of identifying, analyzing, evaluating, treating, and monitoring risk [IEEE90].
Traceability	The ability to trace the history, application, or location of an item or activity, or work products or activities, by means of recorded identification. The establishment and maintenance of relationships between such items. Horizontal traceability describes the relationship between work products of the same type (e.g., customer requirements). Vertical traceability describes the relationship between work products that are built upon each other or are derived from each other (e.g., from customer requirements to qualification test cases). Bidirectional traceability allows to directly follow relationships in both directions [IEEE90].

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# Chapter 2 | Infrastructure

## 2.1 Development Tools

- Vue.js
- Visual Studio Code
- PyCharm
- IntelliJ IDEA
- Llama Index
- Selenium Framework
- GitHub
- FlaskAPI

## 2.2 Hardware and Material Resources

### 2.2.1 Laptop

IdeaPad Gaming 3 15ARH05

- CPU: AMD Ryzen 5 4600H with Radeon Graphics 3.00 GHz
- GPU: NVIDIA GeForce GTX 1650 Ti
- RAM: 16.0 GB DDR4 3200 MHz
- Storage: 202 GB + 273 GB SSD
- OS: Windows 11 Home Single Language 64-bit

### 2.2.2 Computer

- CPU: AMD Ryzen 5 1400 Quad-Core Processor 3.20 GHz
- GPU: NVIDIA GeForce GTX 1060
- RAM: 8.0 GB DDR3 1067 MHz
- Storage: 1 TB + 220 GB SSD
- OS: Windows 10 64-bit

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## Chapter 3 | Management Procedures

### 3.1 Project Team Structures

Participants	Activities
Mr. Suradit Luo	Feasibility Study
Mr. Thictikorne Vin	Project Proposal
	Project Plan
	Software Requirement Specification
	Project Design and Development
	Software Implementation
	Project Testing plan
	Project testing Record

### 3.2 Monitoring and Controlling Mechanisms

#### 3.2.1 Project Meeting

Participant	Role
Mr. Suradit Luo	Development team member
Mr. Thictikorne Vin	Development team member
Asst. Prof. Dr. Pree Thiengburanathum	Project Advisor

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### 3.2.2 Software Development Life Cycle

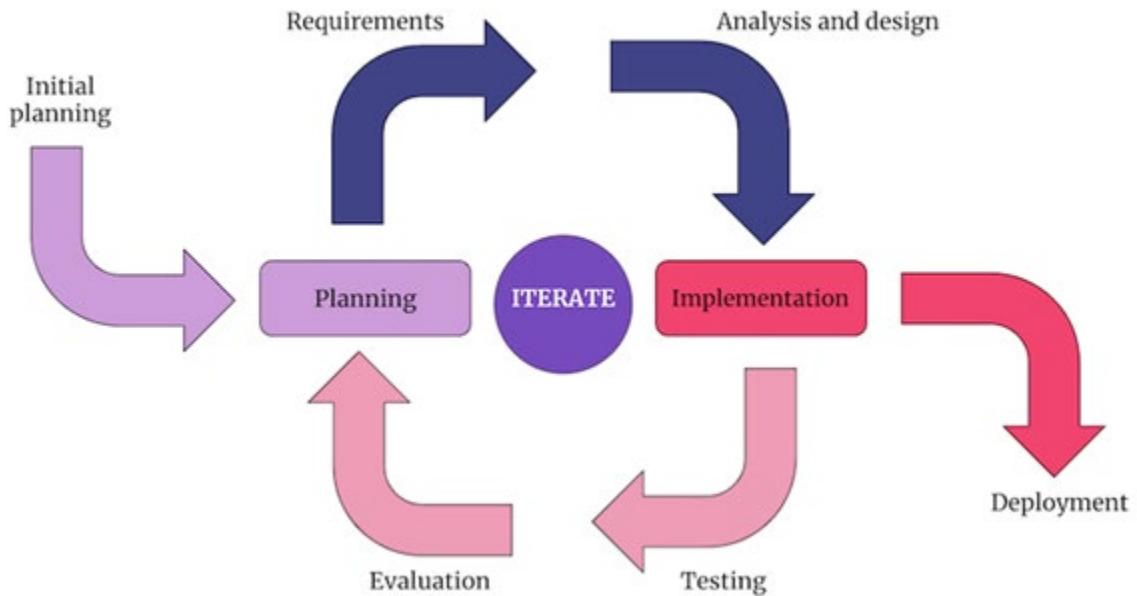


Figure 1: GPT 4 Baker Software Process

The iterative model is a software development approach that emphasizes incremental and repetitive development. It follows a cyclical process where software development activities are divided into multiple iterations. Each iteration involves planning, designing, developing, testing, and reviewing a portion of the software. Feedback and insights gained from each iteration inform subsequent iterations, allowing for progressive refinement and enhancement of the software. This model facilitates early stakeholder involvement, adaptability to evolving requirements, and effective issue management.

The iterative model promotes a flexible and adaptive approach to software development. It breaks down the development process into manageable iterations, enabling early feedback and collaboration with stakeholders. With each iteration, the software evolves and improves, incorporating changes and addressing issues. The model ensures that the final software product aligns with user needs effectively. However, it requires careful planning and coordination to manage multiple iterations successfully. The iterative model offers benefits such as reduced risks, improved software quality, and a more iterative and controlled development process.

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# **Chapter 4 | Quality Standard**

## **ISO 29110 for Very Small Entity (VSE)**

ISO/IEC 29110-4-1:2011 is applicable to Very Small Entities (VSEs). A Very Small Entity (VSE) is defined as an enterprise, organization, department, or project having up to 25 people. A set of standards and guides has been developed according to a set of VSEs' characteristics and needs. The guides are based on subsets of appropriate standards elements, referred to as VSE profiles. The purpose of a VSE profile is to define a subset of International Standards relevant to the VSE context.

### **4.1 Project Management Process**

The purpose of the software management process is to establish, develop and carry out systematically the task of the software implementation project, which allows for complying with the project's objective in the expected quality.

#### **The 4 activities in the project management process**

1. Project planning process
2. Project plan execution process
3. Project assessment and control process
4. Project close process

### **4.2 Software implementation process**

The purpose of the software implementation process is the systematic performance of the analysis, design, construction, integration, and test activities for new or modified software products according to the specified requirements.

#### **Selected processes**

1. Software implementation process
2. Software requirement analysis process
3. Software architectural design process
4. Software construction process
5. Software integration process and test process
6. Software delivery process

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# Chapter 5 | Quality Planning

## 5.1 Review / Responsibilities

State Exit Review			
No.	Stage	Review Item	Responsibility
1	Project Planning	Project Plan	SL
2	Require Specification	Software Requirement Specification	TV
3	Design	Software Design	SL, TV
4	Implementation	Code	SL, TV
5	Software Testing	Test Plan	SL, TV
		Test Record	
6	Project Monitoring	Traceability Record	SL

## 5.2 Testing

State Exit Review			
No.	Stage	Review Item	Responsibility
1	Unit test	Unit test	SL, TV
2	System test	System test	SL, TV

\*SL = Suradit Luo

\*TV = Thictikorne Vin

# Chapter 6 | Estimated Duration of Tasks

Test and Estimated Duration		
No.	Phase	Estimated Duration (Day)
1	Proposal	39
2	Progress I	31
3	Progress II	64
4	Final Progress	49
Total		183

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# Chapter 7 | Software Configuration Management

## 7.1 Naming Convention

For the filename format that we are using for all documents is:

GPT4Baker-[File Name]\_v[Version].[File Type]

- File Name - This part will depend on the substance of that file.
- Version - This part is the version of the file. The version number will be in this format.  
“[Main version].[Sub version]”
- File Type - This part is a type of file.

(I.E., GPT4Baker-ProjectPlan\_v1.0.docx)

## 7.2 Change Management

Change management manages all the changes in the project during the development process. All the change requests will be recorded in the change record document.

The procedures for managing changes are:

1. Discuss with an advisor about the change.
2. Record the change information to change the document.
3. Send the change request to the advisor.
  - 3.1 Request accepted: change document and software following the change information.
  - 3.2 Request rejected: continue and find an alternative solution.

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## 7.3 Project Repository

This project uses “GitHub” to manage the version of the document and software. It can be used to store and share code and binary files for software development projects. In addition, we’ll use Trello as a Kanban board that can be used for managing a version of the documents.

The Repository will be created as follows.

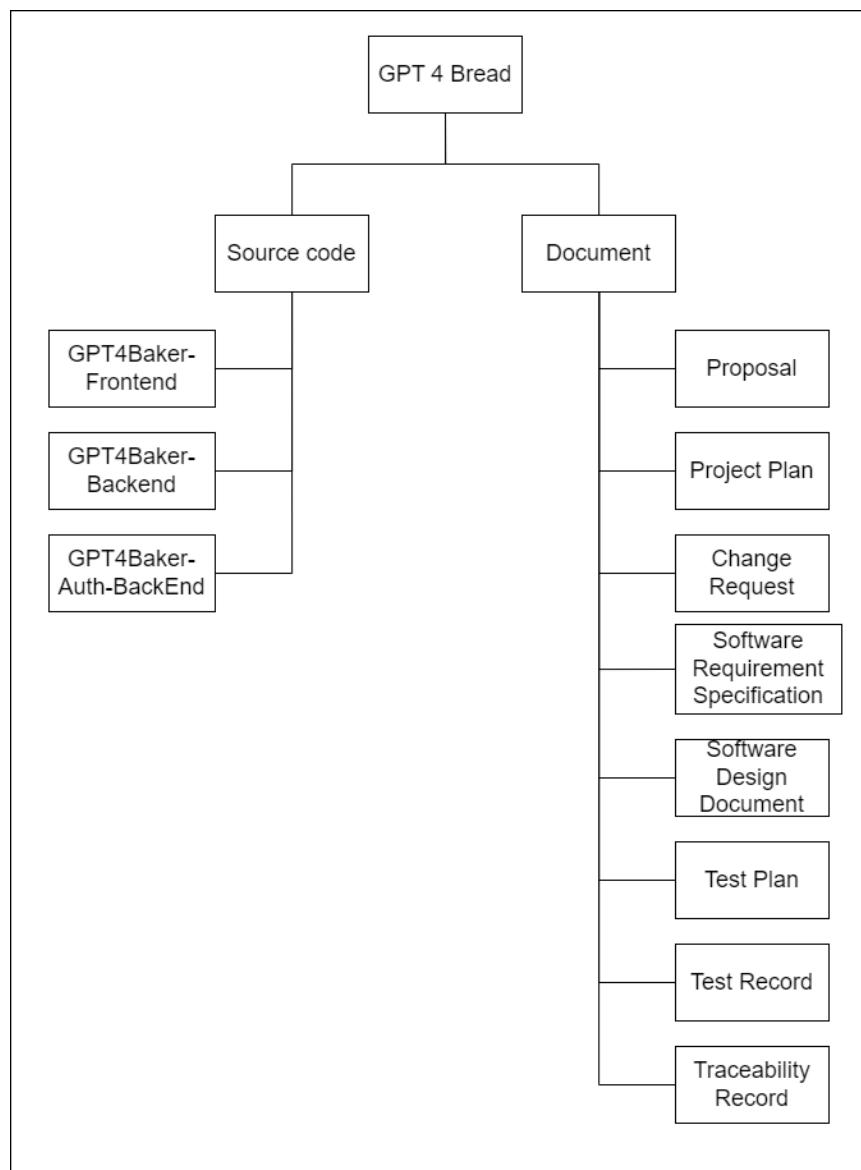


Figure 2: GPT 4 Baker Project Repository Diagram

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This project uses GitHub to manage the version of the software. So, we can store and share source code for development purposes. The names of the repositories are **GPT4Baker-BackEnd [1]**, **GPT4Baker-FrontEnd [2]**, and **GPT4Baker-Auth-BackEnd [3]**. The former is used for implementing the front-end repository while the backend one uses the latter. The branches of the project will be as follows:

- **Main Branch:** Some may call it a stem, when a develop branch reaches a stable point, it should be merged back to the main branch and marked as a release version.

- **Develop Branch:** This is a branch for developing a project or repository without affecting the stem. This branch has a supporting branch as follows.

- **Feature Branch:** A branch for explaining which feature is developing in this specified branch. The repository can have multiple feature branches.

- **Release Branch:** This branch uses for merging multiple feature branches into the Develop Branch

- **Bugfix Branch:** This branch creates when the code in a release branch is missing some of the methods, this may occur when the developer doesn't merge all the feature branches or not doing a merge conflict properly. Therefore, this branch can resolve the following problems.

\*[1] SuraditLuo/GPT4Baker-BackEnd (github.com)

\*[2] SuraditLuo/GPT4Baker-FrontEnd (github.com)

\*[3] SuraditLuo/GPT4Baker-Auth-BackEnd (github.com)

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## 7.4 Software Configuration Item Table

No	Item	File Name	File Type	Owner	Path
1	Project Proposal	GPT4Baker-Proposal_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/Proposal
2	Project Management Plan	GPT4Baker-ProjectManagementPlan_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/ProjectManagementPlan
3	Change Request	GPT4Baker-ChangeRequest_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/ChangeRequest
4	Software Requirement Specification	GPT4Baker-SRS_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/SRS
5	Software Design Document	GPT4Baker-SDD_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/SDD
6	Software Testing Plan	GPT4Baker-TestPlan_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/TestPlan
7	Software Testing Record	GPT4Baker-TestRecord_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/TestRecord
8	Traceability Record	GPT4Baker-TraceabilityRecord_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/TraceabilityRecord
9	Executive Summary	GPT4Baker-ExecutiveSum_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/ExecutiveSum
10	Software Source Code	GPT4Baker-SourceCode_v[version]	.docx	SL, TV	*/GPT4Baker/Docs/SourceCode

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## Chapter 8 | Risk Management

No.	Risk Statement	Solution
1	Our developer might lack essential skills for project development.	Learning from textbooks or online resources.
2	The requirement might change	Make a change request and discuss with our advisor to reprioritize the changed requirement.
3	The process flow might not keep up with the project schedule.	Prioritize tasks to do more important tasks or system feature first. Also, check and review work every Monday.
4	Wong Nai update their website	Learn the new change and adapt to the project as soon as possible.

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# Chapter 9 | Schedule

## 9.1 Milestone Gantt Chart

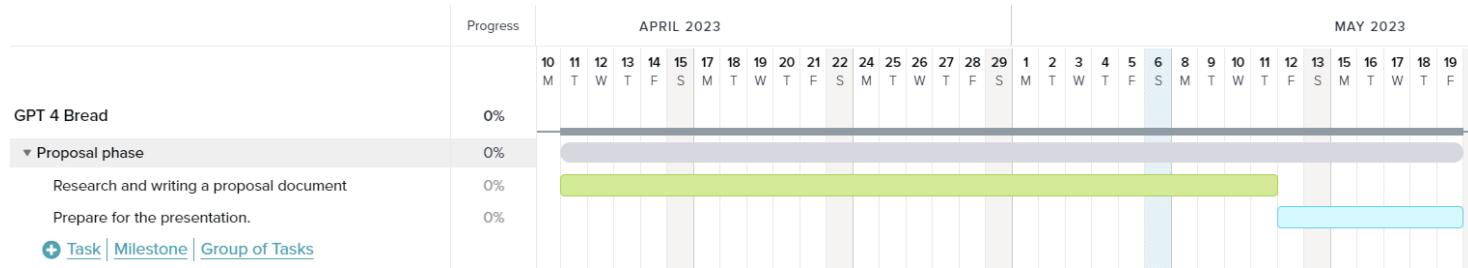


Figure 3: Proposal Gantt Chart

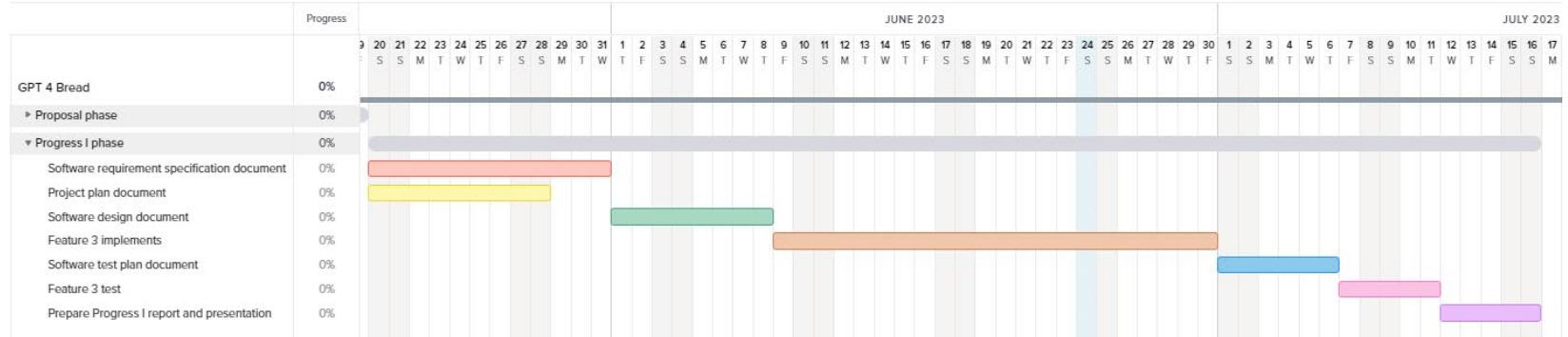


Figure 4: Progress I Gantt chart

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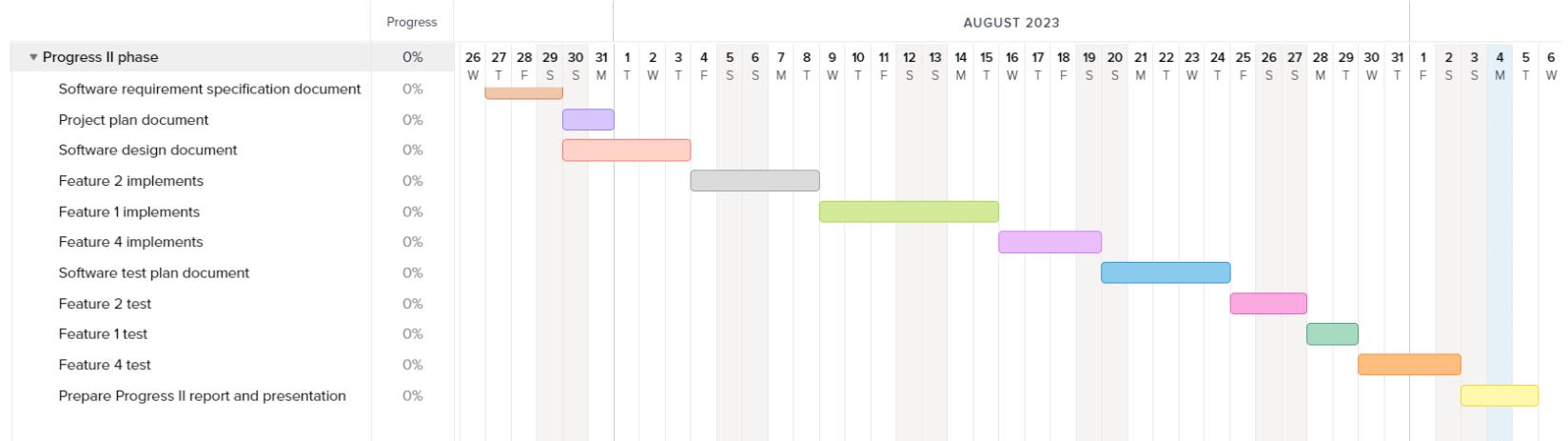


Figure 5: Progress II Gantt Chart

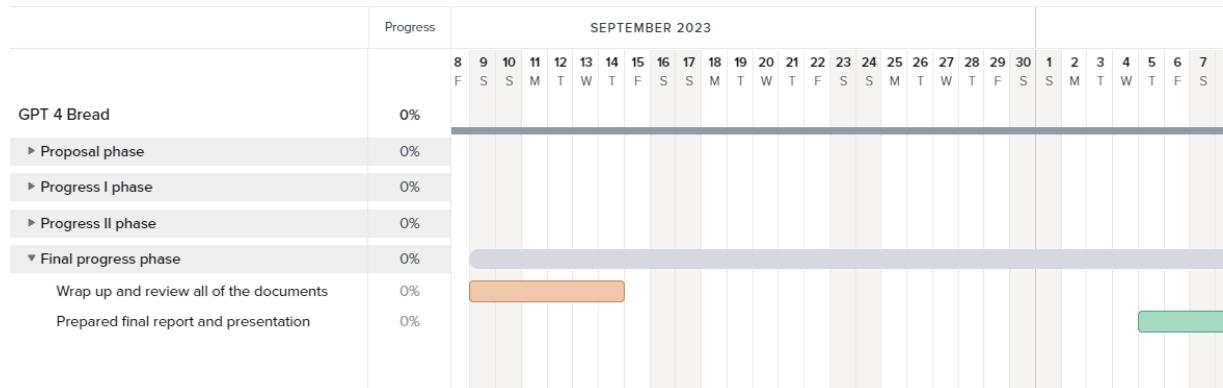


Figure 6: Final Progress Gantt Chart

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## **Chapter 2**

### **Change Request**

**GPT 4 Baker**

**Change Request**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

**Bachelor of Science  
Software Engineering Program**

**Department College of Arts, Media, and  
Technology**

**Chiang Mai University**

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**Project Advisor  
Asst. Prof. Dr. Pree Thiengburanathum**

# GPT 4 Baker

Thictikorne Vin 632115015

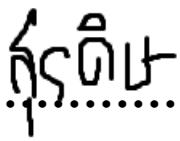
Suradit Luo 632115043

**THIS REPORT HAS BEEN APPROVED TO BE A  
PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE SOFTWARE  
ENGINEERING PROGRAM: COLLEGE OF ARTS  
MEDIA AND TECHNOLOGY**

..........ADVISOR

Asst. Prof. Dr. PREE THIENGBURANATHUM

..........MEMBER  
THICTIKORNE VIN

..........MEMBER  
SURADIT LUO

Document Name	GPT 4 Baker	Owner	SL, TV	Page	71
Document Type	Change Request	Release Date	11/10/23	Print date	11/10/23

## Document History

Document name	Version	History	Status	Date	Editable	Reviewer
Change Request	ChangeRequest_v. 0.1	Add Change Request No.1	Draft	29/5/23	SL, TV	PT
Change Request	ChangeRequest_v. 0.2	Add Change Request No.2	Draft	01/06/23	SL, TV	PT
Change Request	ChangeRequest_v. 0.3	Add Change Request No.3	Draft	11/06/23	SL, TV	PT
Change Request	ChangeRequest_v. 1.0	Release document version 1.0	Release	12/07/23	SL, TV	PT
Change Request	ChangeRequest_v. 2.0	Release document version 2.0	Release	05/09/23	SL, TV	PT
Change Request	ChangeRequest_v. 3.0	Release document version 3.0	Release	11/10/23	SL, TV	PT

\*SL = Suradit Luo

\*TV = Thictikorne Vin

\*PT = Asst. Prof. Dr. Pree Thiengburanathum

Document Name	GPT 4 Baker	Owner	SL, TV	Page	72
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# Change Request No.1

<b>Project Name</b>	GPT 4 Baker	<b>Change Number</b>	1
<b>Requested By</b>	SL	<b>Date of Request</b>	29/05/23
<b>Present to</b>	Asst. Prof. Dr. Pree Thiengburanathum		
<b>Change Name</b>	Remove the bakery management feature		
<b>Description of Change</b>			
Remove feature#5, a bakery management feature with its page.			
<b>Reason of Change</b>			
During the development, we found that this feature will make our work scope become too large to include it in the project because doing a management page consumes a lot of time to the fact that we may not be able to deliver it according to the milestone.			
<b>Effect on Deliverable (Including a list of any affected deliverable)</b>			
<ul style="list-style-type: none"> <li>Reduce the scope in the project management plan document version 1.0.</li> <li>The user interface design of the application would need to be modified to remove any references to the bakery management feature.</li> <li>Test cases would need to be revised to exclude scenarios and tests related to the bakery management feature.</li> </ul>			
<b>Effect on Schedule (Including estimated completion date for this change)</b>			
<ul style="list-style-type: none"> <li>Have enough time to develop the other features and documents.</li> </ul>			
<b>Effect of not approving this change</b>			
<ul style="list-style-type: none"> <li>Might not be able to deliver the finished project in time.</li> </ul>			
<b>Reason for rejection (if applicable)</b>			

## Approval

Approval

Signature: 

Not approval

(Asst. Prof. Dr. Pree ThiengBuranathum)

Date: 30/05/23

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## Change Request No.2

<b>Project Name</b>	GPT 4 Baker	<b>Change Number</b>	2			
<b>Requested By</b>	SL	<b>Date of Request</b>	01/06/23			
<b>Present to</b>	Asst. Prof. Dr. Pree Thiengburanathum					
<b>Change Name</b>	Implement a data process feature instead of a dashboard in the progress I.					
<b>Description of Change</b>						
Implement feature #3, a data process features instead of feature #1, a dashboard feature. Furthermore, update the schedule plan by swapping feature #3 and feature #1.						
<b>Reason of Change</b>						
During the development, we found that if the completion API isn't fully complete, we couldn't implement an advanced dashboard for registered users and admin. In conclusion, we need our AI to complete first before the dashboard.						
<b>Effect on Deliverable (Including a list of any affected deliverable)</b>						
<ul style="list-style-type: none"> <li>• We'll not implement anything related to the front end in our software version 0.1.</li> <li>• We'll include feature #3 in Software Requirement Specification version 1.0.</li> <li>• In the test plan and test record version 1.0, we'll include a test plan and record related to feature #3.</li> </ul>						
<b>Effect on Schedule (Including estimated completion date for this change)</b>						
<ul style="list-style-type: none"> <li>• Swapping feature #3 and feature #1, no effect on other tasks.</li> </ul>						
<b>Effect of not approving this change</b>						
<ul style="list-style-type: none"> <li>• We'll follow the old schedule which implements the dashboard in progress I.</li> </ul>						
<b>Reason for rejection (if applicable)</b>						

### Approval

Approval

Signature: 

Not approval

(Asst. Prof. Dr. Pree ThiengBurana)

Date: 03/06/23

Document Name	GPT 4 Baker	Owner	SL, TV	Page	74
Document Type	Change Request	Release Date	11/10/23	Print date	11/10/23

## Change Request No.3

<b>Project Name</b>	GPT 4 Baker	<b>Change Number</b>	3
<b>Requested By</b>	SL	<b>Date of Request</b>	11/06/23
<b>Present to</b>	Asst. Prof. Dr. Pree Thiengburanathum		
<b>Change Name</b>	Change technology		
<b>Description of Change</b>			
Change scraping framework to Selenium framework and use Llama index to train LLM instead of mindsdb.			
<b>Reason of Change</b>			
First off, Selenium provides better usability than Flask when it comes to web scraping. Then during the development, we found that the mindsdb available feature couldn't train the GPT model well enough. Therefore, we use the Llama index that can train the model with documents and prompts, unlike mindsdb.			
<b>Effect on Deliverable (Including a list of any affected deliverable)</b>			
<ul style="list-style-type: none"> <li>• Technology review and system architecture in the proposal document will be updated.</li> </ul>			
<b>Effect on Schedule (Including estimated completion date for this change)</b>			
<b>Effect of not approving this change</b>			
<ul style="list-style-type: none"> <li>• We will follow the old system architecture and technology in the previous proposal version.</li> </ul>			
<b>Reason for rejection (if applicable)</b>			

### Approval

Approval

Signature: 

Not approval

(Asst. Prof. Dr. Pree ThiengBuranathum)

13/06/23

Date: \_\_\_\_\_

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## **Chapter 3**

# **Software Requirement Specification**

**GPT 4 Baker**

**Software Requirement Specification**  
**Thictikorne Vin 632115015**  
**Suradit Luo 632115043**

**Bachelor of Science**  
**Software Engineering Program**

**Department College of Arts, Media, and  
Technology**  
**Chiang Mai University**

---

**Project Advisor**  
**Asst. Prof. Dr. Pree Thiengburanathum**

**GPT 4 Baker**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

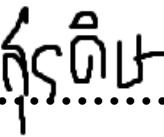
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MEDIA AND TECHNOLOGY**

..........**ADVISOR**

**Asst. Prof. Dr. PREE THIENGBURANATHUM**

..........**MEMBER**

**THICTIKORNE VIN**

..........**MEMBER**

**SURADIT LUO**

Document Name	GPT 4 Baker	Owner	SL, TV	Page	78
Document Type	Software Requirement Specification	Release Date	11/10/23	Print date	11/10/23

## Document History

Document name	Version	History	Status	Date	Editable	Reviewer
Software Requirement Specification	Software Requirement Specification_v.0.1	Add Chapter 1 <ul style="list-style-type: none"> <li>- Identification</li> <li>- Project Scope</li> </ul> Add Chapter 2 <ul style="list-style-type: none"> <li>- Product Perspective</li> <li>- Product Features</li> <li>- User Classes and Characteristics</li> <li>- Operating Environment</li> </ul> Add Chapter 3 <ul style="list-style-type: none"> <li>- Feature description</li> <li>- User requirement specification</li> <li>- System requirement specification</li> <li>- Use case description</li> </ul>	Draft	25/04/23	SL, TV	PT
Software Requirement Specification	Software Requirement Specification_v.0.2	Update Chapter 1 <ul style="list-style-type: none"> <li>- Project scope</li> </ul> Update Chapter 2 <ul style="list-style-type: none"> <li>- Product Features</li> </ul> Update Chapter 3 <ul style="list-style-type: none"> <li>- Feature description</li> <li>- Use case description</li> </ul>	Edit	30/05/23	SL, TV	PT
Software Requirement Specification	Software Requirement Specification_v.0.3	Update Chapter 3 <ul style="list-style-type: none"> <li>- Feature description</li> <li>- Use case description</li> </ul>	Edit	10/06/23	SL, TV	PT

Document Name	GPT 4 Baker	Owner	SL, TV	Page	79
Document Type	Software Requirement Specification	Release Date	11/10/23	Print date	11/10/23

Software Requirement Specification	Software Requirement Specification_v.0.4	Add Chapter 3 - Activity diagram - Use case diagram.	Draft	14/06/23	SL, TV	PT
Software Requirement Specification	Software Requirement Specification_v.0.5	Update Chapter 3 - User requirement specification - System requirement specification - Use case description. - Activity diagram	Edit	11/07/23	SL, TV	PT
Software Requirement Specification	Software Requirement Specification_v.1.0	Release document version 1.0	Release	11/07/23	SL, TV	PT
Software Requirement Specification	Software Requirement Specification_v.1.1	Update Chapter 3 - System requirement specification - Use case description	Edit	13/07/23	SL, TV	PT
Software Requirement Specification	Software Requirement Specification_v.1.2	Update Chapter 3 - User requirement specification - System requirement specification - Use Case Description - Activity Diagram	Edit	31/08/23	SL, TV	PT

Document Name	GPT 4 Baker	Owner	SL, TV	Page	80
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Software Requirement Specification	Software Requirement Specification_v.2.0	Release document version 2.0	Release	05/09/23	SL, TV	PT
Software Requirement Specification	Software Requirement Specification_v.3.0	Release document version 3.0	Release	11/10/23	SL, TV	PT

\*SL = Suradit Luo

\*TV = Thictikorne Vin

\*PT = Asst. Prof. Dr. Pree Thiengburanathum

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# **Chapter 1 | Introduction**

## **1.1 Identification**

The objective of the Software Requirement Specification document is to be the outline for the “GPT4Baker” project web application. These documents provide a description and explanation of the design system including activity following requirements specification and before programming. This document is based on the project proposal, project plan, and software requirement specification and helps developers to understand how to work for this application.

## **1.2 Project Scope**

GPT4Baker is a web application that creates for bakeries to reduce their failure rate in the business and create innovativeness in their new products and make them stay relevant in the market.

These are the features that contain in GPT 4 Baker System

- Feature #01: Dashboard
- Feature #02: Authentication
- Feature #03: Data preprocessing, data cleaning, and data analysis
- Feature #04: Chatbot

## **1.3 Acronyms and Definitions**

### **1.3.1 Acronym**

URS – User Requirement Specification

SRS – System Requirement Specification

UC – Use case

AD – Activity Diagram

UD – Use case Diagram

F – Feature

CSV – Comma-separated values

PDF - Portable Document Format

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### 1.3.2 Definitions

Name	Definition
Feature	Transformation of input parameters to output parameters based on a specified algorithm. It describes the functionality of the product in the language of the product. Used for requirements analysis, design, coding, testing or maintenance. [IEEE90]
IEEE	Institute for Electrical and Electronics Engineers. Biggest global interest group for engineers of different branches and computer scientists. [IEEE90]
Requirement	(1) A condition or capability needed by the user to solve a problem or achieve an objective. (2) A condition or capability that must be met or possessed by a system or system component to satisfy a contract, standard, specification, or other formally imposed document. (3) A documented representation of a condition or capability as in definition (1) or (2). [IEEE90]
Specification	Precise description of an activity or work product that serves as the basic or input for further activities or work product. A specification can comprise requirements for a product and how they will be solved. Different parts of a specification (e.g., what is to be done, how it will be done) must not be mixed. [IEEE90]
Use case	(1) Concept to describe a system based on usage of system resources by its environment. Characterized by an objective-set of interactions within and at the borders of that system. (2) Notation from UML for describing a scenario (Usage approach, operational scenario) from the perspective of this user. [IEEE90]
User intent	The identification and categorization of what a user online intended or wanted to find when they typed their search terms into an online web search engine for the purpose of search engine optimization or conversion rate optimization.
Sample	Samples belong to two or more classes that we want to learn from already labeled data how to predict the class of unlabeled data. In which the aim is to assign each input vector to one of a finite number of discrete categories.
*	Used for explanation or supplementary explanation

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# **Chapter 2 | Overall Description**

## **2.1 Product Perspective**

GPT 4 Baker is a marketing analysis website that replaces the old one with newer technology. It lets users view the dashboard to obtain marketing and user insight which can be used for supporting decision-making. Moreover, users can interact with the chatbot that works as their expertise to gain a deeper understanding of the bakery business and competitors in Chiang Mai.

## **2.2 Product Features**

We separated the project development according to the product features that description as shown below:

- Feature #01: Dashboard
- Feature #02: Authentication
- Feature #03: Data preprocessing, data cleaning, and data analysis
- Feature #04: Chatbot

## **2.3 User Classes and Characteristics**

Character	Role
Guest	It is a type of user that can access only dashboard interface only
User	It is a user who registers to our system. User can interact with the chatbot, dashboard, and bakery management interface.
Admin	Admin is a system developer who gains access to data processing features (e.g., web scraping, data cleaning), dashboard, and chatbot.

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## 2.4 Operating Environment

- **Internet**
- **Laptop**

IdeaPad Gaming 3 15ARH05

- CPU: AMD Ryzen 5 4600H with Radeon Graphics 3.00 GHz
- GPU: NVIDIA GeForce GTX 1650 Ti
- RAM: 16.0 GB DDR4 3200 MHz
- Storage: 202 GB + 273 GB SSD
- OS: Windows 11 Home Single Language 64-bit

- **Computer**

- CPU: AMD Ryzen 5 1400 Quad-Core Processor 3.20 GHz
- GPU: NVIDIA GeForce GTX 1060
- RAM: 8.0 GB DDR3 1067 MHz
- Storage: 1 TB + 220 GB SSD
- OS: Windows 10 64-bit

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# **Chapter 3 | Requirement Specification**

## **3.1 Feature description**

### **F-01: Feature#01 Dashboard**

**Description:** This feature provides a dashboard that contain overall information about the trend of bakery in Chiang Mai such as number of French bakeries in Chiang Mai and number of bakery shop in district. Only user can select the district option to see information about selected district. Moreover, user can download a reference data as an Excel file to ensure the precision of the dashboard itself.

### **F-02: Feature#02 Authentication**

**Description:** This feature is all about login, register system. Guests can register to the system to become a user. The user can get full access to the other features and chatbot features. Users and admin can login and logout from the system.

### **F-03: Feature#03 Data preprocessing, data cleaning, and data analysis**

**Description:** This feature is all about the data processing to get the initialized data to the AI model. This feature is for gathering data from wongnai.com, then cleaning data and use cleaned data to train AI. Admin can run the data training process multiple time.

### **F-04: Feature#04: Chatbot**

**Description:** This feature provides a chatbot to reply to user, user provides with chat box for customize question and prefix question, chat bot can use the user's PDF file for calculation about data in that file, user can create new channel and delete the exited channel and user can edit name of channel and switch the chat channel.

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## 3.2 User Requirement Specification

### F-01: Feature#01 Dashboard

**URS-10:** Users (i.e., user, guest, admin) can view the dashboard page.

**URS-11:** User and admin can select district button to see information about bakery shop at the selected district.

**URS-12:** User can download reference data as an Excel file.

### F-02: Feature#02 Authentication

**URS-13:** Guests can register their information to the system to become a user of the system.

**URS-14:** Guests can login to the system to have full access to feature#01 and feature#04.

**URS-15:** User and admin can logout from the system.

### F-03: Feature#03 Data preprocessing, data cleaning, and data analysis

**URS-01:** Admin can train an AI model by sending a PDF file to the model.

**URS-02:** Admin can scrape and get clean content from wongnai.com.

**URS-03:** Admin can send a csv file to the database server.

**URS-04:** Admin can convert cleaned CSV file which store scraping information from wongnai.com into a pdf file which can be used for an AI training process.

### F-04: Feature#04: Chatbot

**URS-05:** Users (i.e., user and admin) can send a message to the chatbot in chatbot page.

**URS-06:** Users can send a pdf file with a query to the chatbot in the chatbot page.

**URS-07:** Users can send a message to the chatbot using the list of prefix queries (i.e., automated message).

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**USR-08:** User can configure their chat channel by creating a new channel, deleting the existing channel, or editing the channel name.

**URS-09:** User can change their chat channel from one to another.

### 3.3 System Requirement Specification

**URS-01:** Admin can train an AI model by sending a PDF file into the model.

**SRS-01:** The system provides a method for receiving admin's PDF files and queries as a context in the project's source code.

**SRS-02:** After admin inputs a path of the given file and queries, the system will store the PDF in its storage (i.e., knowledge base).

**SRS-03:** When the system successfully stores the file into its storage, the system will save the model by keeping the previously given file permanently in its storage.

**SRS-04:** When system receive a request message, the AI model will read the query and perform a data analysis using its knowledge base and return a response back in JSON format.

**URS-02:** Admin can scrape and get clean content from wongnai.com.

**SRS-05:** The system provides a scraping method and cleaning method for retrieving and cleaning the content from wongnai.com in the system's source code.

**SRS-06:** When admin run scraping method, the system will open Wongnai web browser and perform a scraping task and store them in the specified column in the given data frame as a CSV file and store into the system's folder when the system completes a scraping process.

**SRS-07:** When admin runs a cleaning method, the system will get a scraping CSV file and perform a data cleaning process. Then, the cleaned CSV file will be saved into the system's folder.

**SRS-08:** After data scraping and cleaning process, the system will keep the result file as a CSV table in the system, the table should include bakery shop name, rating, number of ratings, address, menu, opening hour, price, number of seats, review, number of people who check-in and bookmark, shop facilities, and shop accessibility.

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**URS-03:** Admin can send a csv file to the database server.

**SRS-09:** The system provides a method for sending a csv file into database.

**URS-04:** Admin can convert cleaned CSV file which store scraping information from wongnai.com into a pdf file which can be used for an AI training process.

**SRS-10:** The system provides a converting method for converting a cleaned CSV file into a PDF file that displays information for each bakery shop in paragraph. The PDF file will be stored in the system's folder.

**URS-05:** Users (i.e., user and admin) can send a message to the chatbot in chatbot page.

**SRS-04:** When system receive a request message, The AI model will read the query and perform a data analysis using its knowledge base and return a response back in JSON format.

**SRS-11:** The system provides a chat box in the chatbot page for users to ask a question to chatbot by giving text and personal data in PDF format (If any).

**SRS-12:** System provides a submit button in the chatbot page for submitting a query and PDF file (if any) to the chatbot.

**SRS-13:** When user click on submit button, the front end will send requests includes the user's query to the backend.

**SRS-14:** When the frontend receives a message response from the model. System will update the chat page with an answer that has been received.

**URS-06:** Users can send a PDF file with a query to the chatbot in the chatbot page.

**SRS-04:** When system receive a request message, The AI model will read the query and perform a data analysis using its knowledge base and return a response back in JSON format.

**SRS-11:** The system provides a chat box in the chatbot page for users to ask a question to chatbot by giving text and personal data in PDF format (If any).

**SRS-12:** System provides a submit button in the chatbot page for submitting a query and PDF file (if any) to the chatbot.

**SRS-14:** When the frontend receives a message response from the model. System will update the chat page with an answer that has been received.

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**SRS-15:** If users attach a file that is not in PDF format, the system will notify the user with the message “Unfortunately, chatbot only allows PDF files” and the attaching process will be stopped.

**SRS-16:** When user click on submit button, the frontend can send requests includes the user's query and PDF files to the backend.

**SRS-17:** When the back end receives a PDF file from the front end, the system will store a given file temporarily into the model’s storage. The given PDF files will remain in the storage until the backend sends a response back to the front end.

**URS-07:** Users can send a message to the chatbot using the list of prefix queries (i.e., automated message).

**SRS-04:** When system receive a request message, The AI model will read the query and perform a data analysis using its knowledge base and return a response back in JSON format.

**SRS-11:** System provides a chat box in the chatbot page for users to ask a question with chatbot by giving text.

**SRS-14:** When the frontend receives a message response from the model. System will update the chat page with an answer that has been received.

**SRS-18:** In a chatbot page, the system provide a list of automated messages in the chatbot page for the user to use it as a query.

**SRS-19:** When the users click on a generated message in the automatic message list, the generated message will display in the chat log and the front end will send the chosen message as a request to the back end.

**URS-08:** Users can configure their chat channel by creating a new channel, deleting the existing channel, or editing the channel name.

**SRS-20:** System provides the create channel button on the chatbot page for the user to add a new chat channel box.

**SRS-21:** The chat channel box provides a button to edit a chat channel name and delete the channel.

**SRS-22:** When the user clicks on the “delete channel” button, the system will pop up a confirmation box.

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**SRS-23:** If user click “delete” button in delete confirmation box, The chosen chat channel box will be removed from the chat channel list.

**SRS-24:** If the user clicks “cancel” button in delete confirmation box, The chosen chat channel will remain in the chat channel list.

**SRS-25:** When the user clicks on the edit a chat channel name button, the system shows an input bar to the user to type the new chat channel name.

**SRS-26:** If the user inputs a new chat channel name in a chat name’s input bar and presses enter key on their keyboard, the name of the chosen chat channel will change according to the user’s input.

**SRS-27:** While editing a chat channel name, If the user press esc key on their keyboard, the name of the chosen chat channel will remain the same name.

**SRS-28:** If the user doesn’t type anything in a chat name’s input bar and press enter key on their keyboard, the system will display a message “The chat name should have at least one letter or number.” To the user.

**URS-09:** Users can change their chat channel from one to another.

**SRS-29:** On the chatbot page, the system provides a list of user’s chat channels which display as a box for user to select the chat channel.

**SRS-30:** If the user clicks on the unused chat channel box from the list. The system will move chat channels from the used one to the selected one.

**URS-10:** Users (i.e., user, guest, admin) can view the dashboard page.

**SRS-31:** System provides a dashboard page with overall information about bakery shops in Chiang Mai.

**URS-11:** User and admin can select district button to see information about bakery shop at the selected district.

**SRS-32:** On the dashboard page, the system provides a button for selecting district for the login user.

**SRS-33:** When selecting a district, the system will change the dashboard page information into the selected district bakery shop information.

**URS-12:** User can download reference data as an Excel file.

**SRS-34:** On the dashboard page, the system provides a download button for downloading reference data in Excel format.

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**SRS-35:** When user press download button, the system will download the file and store it in user's computer.

**URS-13:** Guests can register their information to the system to become a user of the system.

**SRS-36:** The system provides a register button to open a registration form which requires input email, and password.

**SRS-37:** System checks whether all the input email and password are left blank. System will display the error message "Any text field should not leave blank." Otherwise, the system will validate the user registration data.

**SRS-38:** The system will check whether the email format is correct. If there is an incorrect email, the system will display the error message "the email format is not correct".

**SRS-39:** After validating the data, the system will save the registration data to database and close the register form.

**URS-14:** Guests can login to the system to have full access to feature#01 and feature#04.

**SRS-40:** The system provides a login button to open a login form which requires guests to input email, and password.

**SRS-41:** The system checks whether the user input is not left blank, the system will display error message "Any text field should not leave blank" otherwise the system will validating the login data.

**SRS-42:** The system will be validating the email and password exist in database. Then the system will change the button for login and register into the email text of the user. Otherwise, it displays error message "incorrect email or password."

**URS-15:** User and admin can logout from the system.

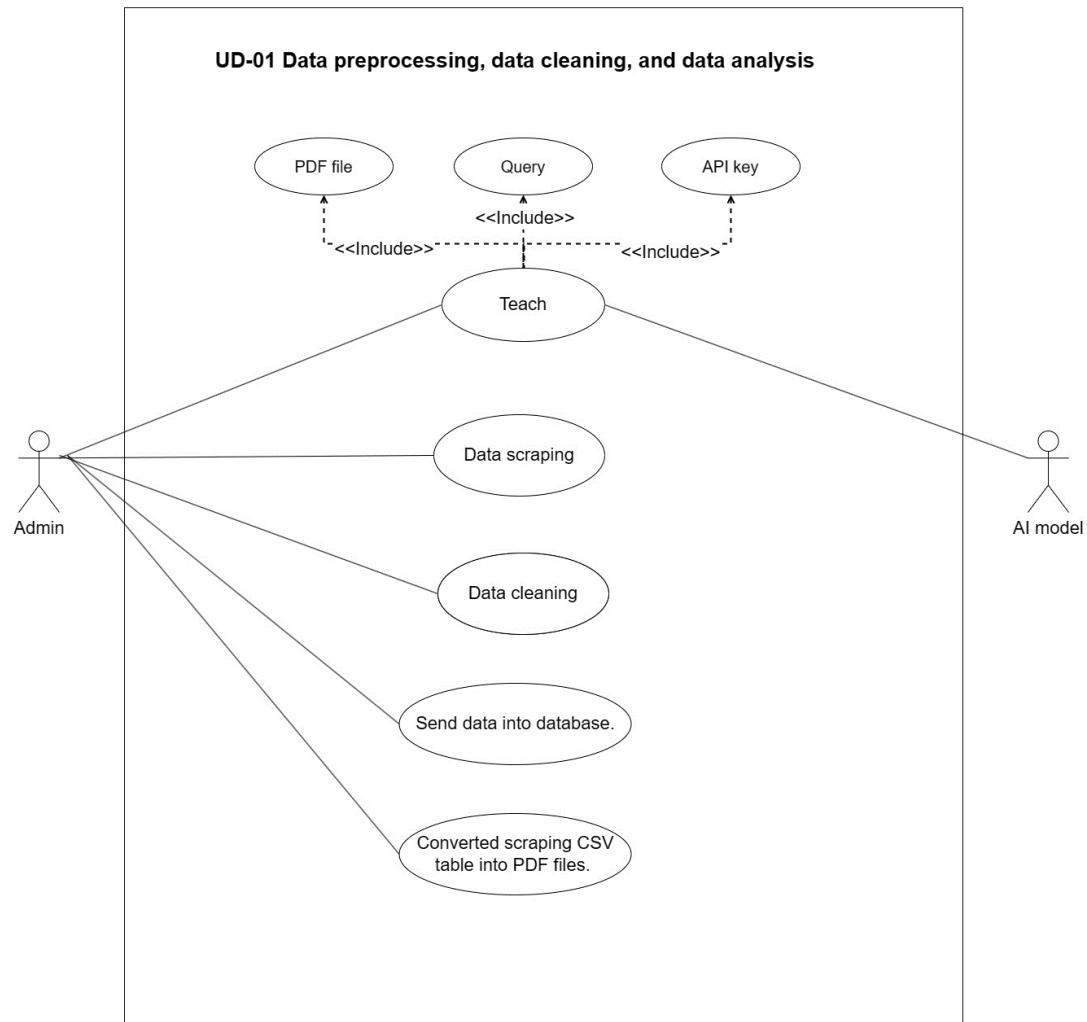
**SRS-43:** The system provides a logout button next to the email text after the user logs in to the system.

**SRS-44:** After the user clicks on logout, the system will remove user data from local storage and redirect to the dashboard page.

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## 3.4 Use Case diagram

### 3.4.1 UD-01: Data preprocessing, data cleaning, and data analysis



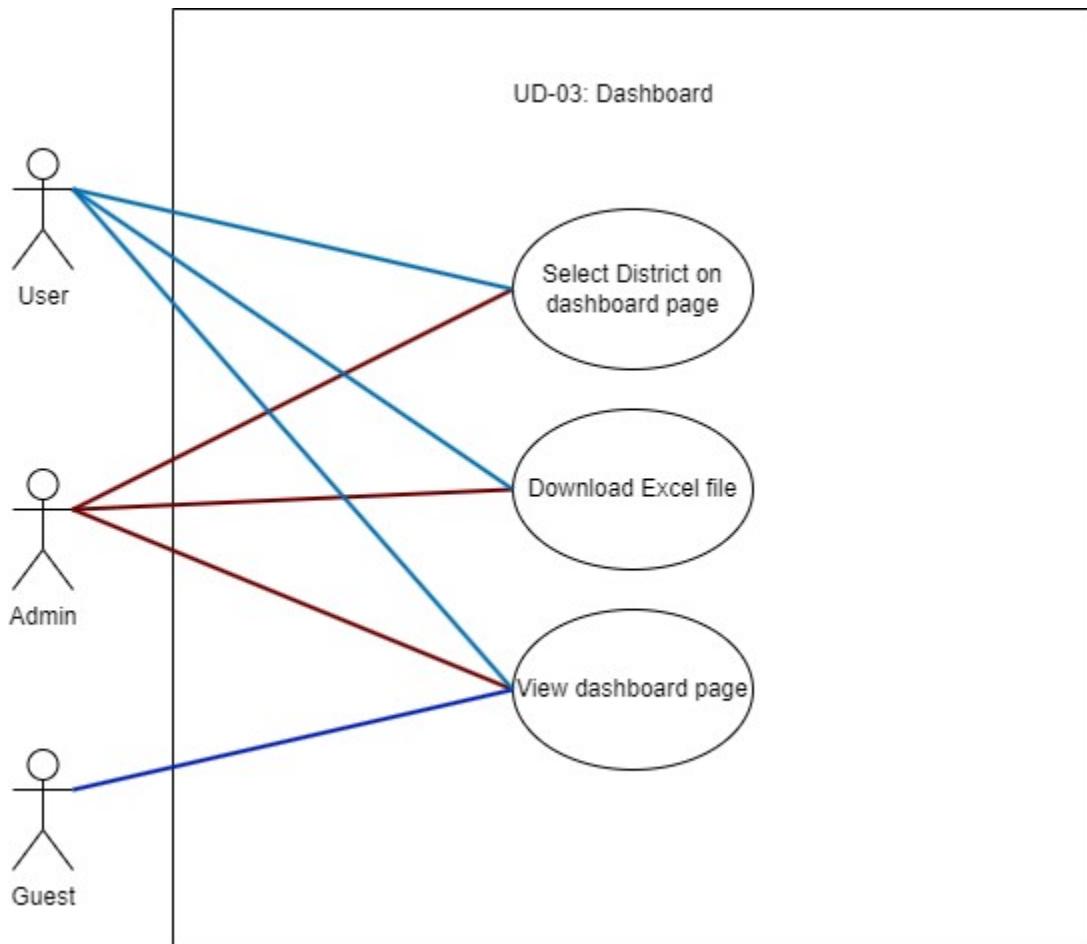
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### 3.4.2 UD-02: Chatbot



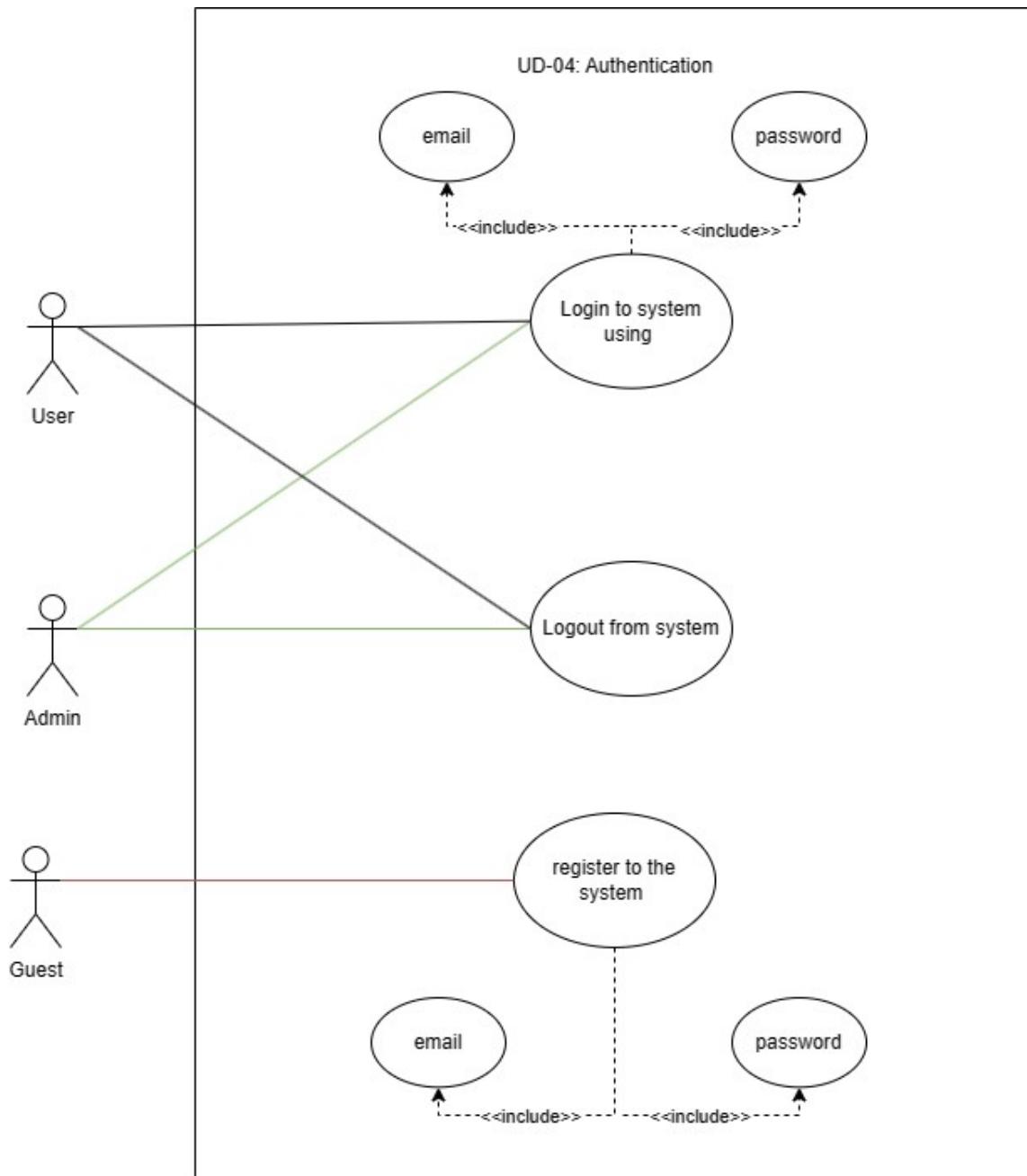
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### 3.4.3 UD-03: Dashboard



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### 3.4.4 UD-04: Authentication



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## 3.5 Use Case Description

**URS-01:** Admin can train an AI model by sending a PDF file into the model.

Use Case ID:	UC-01		
Use Case name:	Admin train AI model		
Created by	Suradit Luo	Last update by	Suradit Luo
Date created	09/07/23	Last revision date	09/07/23
Actor:	Admin		
Description:	Admin can train an AI model by sending the pdf file through system's data cleaning process into the model's storage.		
Trigger:	Admin adds a PDF file with the query and run the training method in the source code.		
Precondition:	Admin needs to access the system's source code.		

### Use Case Input Specification

Input	Type	Constraint	Example
Message	String	The input should not contain more than 4096 tokens*	What is the top 5 bakery in Chiang Mai
File path	String	The input must be a path to a PDF file	../Material/pdf-sample.pdf
Postcondition:	The model will store the given file into its storage in JSON format and return a message		
Normal Flow:	Admin		System
1	1. Admin adds a PDF file with the query and runs the training method in the source code.		2. The system stores the PDF in its storage (i.e., knowledge base) 3. The model reads the query and performs data analysis using its knowledge base and returns a response back in JSON format. [E1: Lost connection to OpenAI API] [E2: OpenAI API key expired]

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		[E3: OpenAI API key reaches the monthly usage quota*] 4. System saves the model by keeping the previously given file permanently in its storage.
Alternative Flow:	-	
Exception Flow:	<p>[E1: Lost connection to OpenAI API]</p> <ol style="list-style-type: none"> <li>1. System display connection lost message in the system console</li> <li>2. End the use case.</li> </ol> <p>[E2: OpenAI API key expired]</p> <ol style="list-style-type: none"> <li>1. System display API key message in the system console</li> <li>2. End the use case.</li> </ol> <p>[E3: OpenAI API key reaches the monthly usage quota]</p> <ol style="list-style-type: none"> <li>1. System displays out of quota message in the system console.</li> <li>2. End the use case.</li> </ol>	
Assumption:	<ul style="list-style-type: none"> <li>- The OpenAI API key must not expire or reach the monthly usage quota*</li> <li>- The admin must understand which method in the source code is a training method.</li> </ul>	

\* Token: the maximum number of letters or numbers that can be processed by the GPT language model in a single API call.

\* Monthly usage quota: Open AI API key limits the usage of their API key which the usage capacity will refresh per month.

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**URS-02:** Admin can scrape and get clean content from wongnai.com.

Use Case ID:	UC-02		
Use Case name:	Admin performs data scraping		
Created by	Suradit Luo	Last update by	Suradit Luo
Date created	09/07/23	Last revision date	09/07/23
Actor:	Admin		
Description:	Admin can run a system to receive a content from wongnai.com		
Trigger:	Admin run a data scraping method in the source code.		
Precondition:	Admin needs to access the system's source code.		
Use Case Input Specification			
Input	Type	Constraint	Example
-	-	-	-
Postcondition:	The system receives a scraped CSV file which contain Chiang Mai bakery shops information and store in the system folder.		
Normal Flow:	Admin		System
1	1. Admin runs a data scraping method.		2. System will open Wongnai web browser and perform a scraping task by retrieving a content and store them in the specified column in the given data frame which will converted into a CSV [E1: Lost connection to wongnai.com]  3. After finishing a scraping process, the system stores the result CSV file into the system's folder.
Alternative Flow:	-		

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Exception Flow:	[E1: Lost connection to wongnai.com] 1. System display connection lost message in the system console 2. End the use case.
Assumption:	- The admin must understand which method in the source code is a scraping method.

Use Case ID:	UC-03		
Use Case name:	Admin performs data cleaning		
Created by	Suradit Luo	Last update by	Suradit Luo
Date created	09/07/23	Last revision date	09/07/23
Actor:	Admin		
Description:	Admin can run a system to clean a specified CSV file that come from a data scraping process		
Trigger:	Admin run a data cleaning method in the source code.		
Precondition:	Admin needs to access the system's source code.		
Use Case Input Specification			
Input	Type	Constraint	Example
File path	String	The input must be a path to a CSV file	../Material/csv-sample.csv
Postcondition:	The system receives a cleaned CSV file which contain Chiang Mai bakery shops information and store in the system's folder.		
Normal Flow:	Admin		System

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1	1. Admin runs a data cleaning method using scraping CSV file path as an input.	2. System will get a scraping CSV file and perform a data cleaning process.
		3. The system stores a cleaned CSV files into the system's folder.
Alternative Flow:	-	
Exception Flow:	-	
Assumption:	<ul style="list-style-type: none"> <li>- The admin must understand which method in the source code is a data cleaning method.</li> </ul>	

#### URS-03: Admin can send a CSV file to the database server.

Use Case ID:	UC-04		
Use Case name:	Admin send CSV to database		
Created by	Suradit Luo	Last update by	Suradit Luo
Date created	09/07/23	Last revision date	09/07/23
Actor:	Admin		
Description:	Admin can send a CSV file to the database server.		
Trigger:	Admin runs a sending data method in the system's source code		

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Precondition:	Admin needs to access the system's source code.		
Use Case Input Specification			
Input	Type	Constraint	Example
-	-	-	-
Postcondition:	If success, the database will contain a content that recently sent.		
Normal Flow:	Admin		System
1	1. Admin runs a data sending method.		2. System will connect to a database server. [E1: Lost connection to database server]
			3. System read a CSV table and insert all the contents into the database.
Alternative Flow:	-		
Exception Flow:	[E1: Lost connection to database server] 1. System display connection lost message in the system console 2. End the use case.		
Assumption:	- The admin must understand which method in the source code is the method for sending data to database server.		

**URS-04:** Admin can convert cleaned CSV file which store scraping information from wongnai.com into a pdf file which can be used for an AI training process.

Use Case ID:	UC-05							
Use Case name:	Admin convert CSV to PDF							
Created by	Suradit Luo	Last update by	Suradit Luo					
Date created	09/07/23	Last revision date	09/07/23					
Actor:	Admin							
Description:	For the sake of AI training admin needs to convert a cleaned bakery information in CSV format into a PDF format which contain a passage about detail on each bakery shop in Chiang Mai							
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Trigger:	Admin runs a converting method in the system's source code		
Precondition:	Admin needs to access the system's source code.		
Use Case Input Specification			
Input	Type	Constraint	Example
File path	String	The input must be a path to a CSV file	../Material/bakery_info.csv
Postcondition:	If success, the system will store a resulted PDF files into the system's folder.		
Normal Flow:	Admin	System	
1	1. Admin runs a data converting method using CSV file path as an input.	2. The system will convert each row in CSV table into a paragraph explains each bakery shop in Chiang Mai.	3. System store a result as a PDF file into system's storage
Alternative Flow:	-		
Exception Flow:	-		
Assumption:	- The admin must understand which method in the source code is the method for converting a CSV file to PDF file.		

**URS-05:** Users (i.e., user and admin) can send a message to the chatbot in chatbot page.

Use Case ID:	UC-06		
Use Case name:	User sends text to chatbot.		
Created by	Thictikorne Vin	Last update by	Suradit Luo
Date created	14/06/23	Last revision date	09/07/23
Actor:	User, Admin		

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Description:	The actor can interact to chatbot by sending a text.		
Trigger:	The actor input text in a chat box and clicks on the “submit” button in the chatbot page.		
Precondition:	The actor has to login to the system and open the chatbot page.		
Use Case Input Specification			
Input	Type	Constraint	Example
Message	String	The input should not contain more than 4096 tokens*	What is the top 5 bakery in Chiang Mai?
Postcondition:	If success, the system will return a message back to the user which will displayed in the chatbot page		
Normal Flow:	User	System	
1	1. User type a message in the chat box and click on “submit” button.	2. In the chatbot page, the system displays the submitted message in the chat log  3. The system sends query requests to the GPT model at the back end. [E1: lost connection to the back end]	4. The GPT model computed the query and sent the message back to the chatbot. [E2: Lost connection to OpenAI API] [E3: OpenAI API key expired] [E4: OpenAI API key reaches the monthly usage quota*]  5. The system update a chat channel by adding chatbot’s response in the chat log.
Alternative Flow:	-		

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Exception Flow:	<p>[E1: lost connection to the back end]</p> <ol style="list-style-type: none"> <li>1. System display connection lost message in the system console</li> <li>2. Goes to normal flow 1</li> </ol> <p>[E2: OpenAI API key expired]</p> <ol style="list-style-type: none"> <li>1. System display API key message in the system console</li> <li>2. End the use case.</li> </ol> <p>[E3: OpenAI API key reaches the monthly usage quota]</p> <ol style="list-style-type: none"> <li>1. System displays out of quota message in the system console.</li> <li>2. End the use case.</li> </ol>
Assumption:	- Actor must know how chat system works

- \* Token: the maximum number of letters or numbers that can be processed by the GPT language model in a single API call.
- \* Monthly usage quota: Open AI API key limits the usage of their API key which the usage capacity will refresh per month.

**URS-06:** Users can send a PDF file with a query to the chatbot in the chatbot page.

Use Case ID:	UC-07		
Use Case name:	User sends text and PDF file to chatbot.		
Created by	Thictikorne Vin	Last update by	Suradit Luo
Date created	14/06/23	Last revision date	09/07/23
Actor:	User, Admin		
Description:	The actor can interact to chatbot by sending a text and PDF file.		
Trigger:	The actor input text and add PDF file in a chat box and clicks on the “submit” button in the chatbot page.		
Precondition:	The actor has to login to the system and open the chatbot page.		
Use Case Input Specification			
Input	Type	Constraint	Example
Message	String	The input should not contain more than 4096 tokens*	What is the top 5 bakery in Chiang Mai?
File path	String	The input must be a path to a PDF file	.. /pdf-sample.pdf

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Postcondition:	If success, the system will return a message back to the user which will displayed in the chatbot page		
Normal Flow:	User	System	
1	1. User type a message in the chat box while attaching a PDF document and click on “submit” button.		2. In the chatbot page, the system displays the submitted message in the chat log [ <u>A1: User submit a non-PDF file</u> ] 3. The system sends query requests to the GPT model at the back end. [ <u>E1: lost connection to the back end</u> ] 4. The system will store a given file temporarily in the model’s storage. 5. The GPT model computed the query and sent the message back to the chatbot. [ <u>E2: Lost connection to OpenAI API</u> ] [ <u>E3: OpenAI API key expired</u> ] [ <u>E4: OpenAI API key reaches the monthly usage quota*</u> ] 6. The system update a chat channel by adding chatbot’s response in the chat log.
Alternative Flow:	[ <u>A1: User submit a non-PDF file</u> ] 1. The system will notify the user with the message “Unfortunately, chatbot only allows PDF files.”. 2. The system will terminate the attaching process. 3. Goes to normal flow 1		
Exception Flow:	[ <u>E1: lost connection to the back end</u> ] 1. System display connection lost message in the system console 2. Goes to normal flow 1 [ <u>E2: OpenAI API key expired</u> ] 1. System display API key message in the system console 2. End the use case. [ <u>E3: OpenAI API key reaches the monthly usage quota</u> ] 1. System displays out of quota message in the system console. 2. End the use case.		

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Assumption:	- Actor must know how chat system works. - Actor must know how to attach a file in the web browser.
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\* Token: the maximum number of letters or numbers that can be processed by the GPT language model in a single API call.

\* Monthly usage quota: Open AI API key limits the usage of their API key which the usage capacity will refresh per month.

**URS-07:** Users can send a message to the chatbot using the list of prefix queries (i.e., automated message).

Use Case ID:	UC-08				
Use Case name:	User sends automated message to chatbot.				
Created by	Thictikorne Vin	Last update by	Suradit Luo		
Date created	14/06/23	Last revision date	09/07/23		
Actor:	User, Admin				
Description:	The actor can interact to chatbot by sending an automated text.				
Trigger:	The actor clicks on an automated message in the list of prefix queries in the chatbot page.				
Precondition:	The actor has to login to the system and open the chatbot page.				
Use Case Input Specification					
Input	Type	Constraint	Example		
Message	String	The input should not contain more than 4096 tokens*	How many bakery shops in Chiang Mai approximately?		
Postcondition:	If success, the system will return a message back to the user which will displayed in the chatbot page				
Normal Flow:	User		System		
1	1. User clicks on an automated message from the list of prefix queries in the chatbot page		2. In the chatbot page, the system displays the automated message in the chat log		
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	<p>3. The system sends the chosen message as a query request to the GPT model at the back end.  [E1: lost connection to the back end]</p> <p>4. The GPT model computed the query and sent the message back to the chatbot.  [E2: Lost connection to OpenAI API]  [E3: OpenAI API key expired]  [E4: OpenAI API key reaches the monthly usage quota*]</p> <p>5. The system update a chat channel by adding chatbot's response in the chat log.</p>
Alternative Flow:	-
Exception Flow:	<p>[E1: lost connection to the back end]</p> <ol style="list-style-type: none"> <li>1. System display connection lost message in the system console</li> <li>2. Goes to normal flow 1</li> </ol> <p>[E2: OpenAI API key expired]</p> <ol style="list-style-type: none"> <li>1. System display API key message in the system console</li> <li>2. End the use case.</li> </ol> <p>[E3: OpenAI API key reaches the monthly usage quota]</p> <ol style="list-style-type: none"> <li>1. System displays out of quota message in the system console.</li> <li>2. End the use case.</li> </ol>
Assumption:	<ul style="list-style-type: none"> <li>- Actor must know how chat system works.</li> <li>- Actor must know how to attach a file in the web browser.</li> </ul>

\* Token: the maximum number of tokens that can be processed by the GPT language model in a single API call.

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**URS-08:** Users can configure their chat channel by creating a new channel, deleting the existing channel, or editing the channel name.

Use Case ID:	UC-09		
Use Case name:	Users create new chat channel.		
Created by	Thictikorne Vin	Last update by	Suradit Luo
Date created	14/06/23	Last revision date	09/07/23
Actor:	User, Admin		
Description:	The actor can create a new chat channel in the chatbot page.		
Trigger:	The actor clicks on the “create chat channel” button at the chatbot page.		
Precondition:	The actor has to login to the system and open the chatbot page.		
Use Case Input Specification			
Input	Type	Constraint	Example
-	-	-	-
Postcondition:	The newly create chat will be located at the chat channel list.		
Normal Flow:	User	System	
1	1. The user clicks on the “create chat channel” button in the chatbot page.	2. The system will insert a new chat channel and set its name it “new chat” as a default name	
Alternative Flow:	-		
Exception Flow:	-		
Assumption:	-		

Use Case ID:	UC-10		
Use Case name:	Users delete chat channel.		
Created by	Thictikorne Vin	Last update by	Suradit Luo
Date created	14/06/23	Last revision date	09/07/23
Actor:	User, Admin		
Description:	The actor can delete an existed chat channel in the chatbot page.		
Trigger:	The actor clicks on the delete button at the side bar of the selected chat in the chatbot page.		

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Precondition:	<ul style="list-style-type: none"> <li>- The actor has to login to the system and open the chatbot page.</li> <li>- The actor should have at least one chat channel on their chatbot page.</li> </ul>		
Use Case Input Specification			
Input	Type	Constraint	Example
-	-	-	-
Postcondition:	The chosen chat channel will be removed from the chat channel list.		
Normal Flow:	User		System
1	1. The user clicks on the delete button in the chat channel box.  3. The user select “Delete” at the confirmation box		2. The system will display a confirmation box before deleting.  4. The system close a confirmation box
			5. The system deletes the chosen chat channel from the chat channel list at the chatbot page. [A1: User select “Cancel” at the confirmation box].
Alternative Flow:	[A1: User select “No” at the confirmation box] 1. The chosen chat channel will remain in the list of chat channels. 2. Goes to normal flow 1		
Exception Flow:	-		
Assumption:	-		

Use Case ID:	UC-11		
Use Case name:	Users edit chat channel name.		
Created by	Thictikorne Vin	Last update by	Suradit Luo
Date created	14/06/23	Last revision date	09/07/23
Actor:	User, Admin		
Description:	The actor can click on edit channel name or delete chat channel.		

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Trigger:	The actor clicks on the edit button in an existing chat channel box in chatbot page.		
Precondition:	<ul style="list-style-type: none"> <li>- The actor has to login to the system and open the chatbot page.</li> <li>- The actor should have at least one chat channel on their chatbot page.</li> </ul>		
Use Case Input Specification			
Input	Type	Constraint	Example
-	-	-	-
Postcondition:	The chosen chat channel's name will change according to the user input.		
Normal Flow:	User	System	
1	1. The user clicks on the edit button in the chat channel box.	2. The system will display an input bar for user to type a new name.	
	3. The user inputs a new name in the input bar and presses the enter key.	4. The chosen chat channel's name will change according to the user input. [A1: User press esc key instead of enter key] [A2: User doesn't type anything in the input bar and press enter key]	
Alternative Flow:	[A1: User press esc key instead of enter key] <ol style="list-style-type: none"> <li>1. The name of the chosen chat channel will not change according to the user's input.</li> <li>2. Goes to normal flow 1</li> </ol> [A2: User doesn't type anything in the input bar and press enter key] <ol style="list-style-type: none"> <li>1. System display "The chat name should have at least one letter or number."</li> <li>2. Goes to normal flow 1</li> </ol>		
Exception Flow:	-		
Assumption:	-		

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**URS-09:** Users can change their chat channel from one to another.

Use Case ID:	UC-12		
Use Case name:	Users switching chat channel.		
Created by	Suradit Luo	Last update by	Suradit Luo
Date created	09/07/23	Last revision date	09/07/23
Actor:	User, Admin		
Description:	The actor can move to another existing chat channel.		
Trigger:	The actor clicks on the unused chat channel		
Precondition:	<ul style="list-style-type: none"> <li>- The actor has to login to the system and open the chatbot page.</li> <li>- The actor should have at least two chat channels on their chatbot page.</li> </ul>		
Use Case Input Specification			
Input	Type	Constraint	Example
-	-	-	-
Postcondition:	The system will change a chat channel to the clicking one.		
Normal Flow:	User	System	
1	1. The user clicks on the unused chat channel	2. The system moves to the clicking chat channel 3. The system will load the history logs on the clicked chat channel.	
Alternative Flow:	-		
Exception Flow:	-		
Assumption:	-		

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**URS-10:** Users (i.e., user, guest, admin) can view the dashboard page.

Use Case ID:	UC-13				
Use Case name:	View the dashboard page				
Created by	Thictikorne Vin	Last update by	Thictikorne Vin		
Date created	22/08/23	Last revision date	22/08/23		
Actor:	User, Admin, guest				
Description:	The actor can view the dashboard page				
Trigger:	The actor clicks on the dashboard button.				
Precondition:	-				
Use Case Input Specification					
Input	Type	Constraint	Example		
-	-	-	-		
Postcondition:	The system will change into dashboard page.				
Normal Flow:	User	System			
1	1. The actor clicks on dashboard button	2. The system display dashboard page. [E1:Lost connection to the database server]			
Alternative Flow:	-				
Exception Flow:	[E1:Lost connection to the database server] 1. System display connection lost message in the system console 2. End the use case.				
Assumption:	-				

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**URS-11:** User and admin can select district button to see information about bakery shop at the selected district.

Use Case ID:	UC-14		
Use Case name:	Select district on dashboard page		
Created by	Thictikorne Vin	Last update by	Thictikorne Vin
Date created	22/08/23	Last revision date	22/08/23
Actor:	User, Admin		
Description:	The actor can select district to change the bakery information base on the chosen district		
Trigger:	The actor press change district button.		
Precondition:	The actor need to login to the system.		
Use Case Input Specification			
Input	Type	Constraint	Example
-	-	-	-
Postcondition:	The system will change dashboard information base on the chosen district		
Normal Flow:	User	System	
1	1. The actor press change district button.  3. The actor choose district or road in Chiang Mai.	2. The system display dialog for select a district or road in Chiang Mai.  4. The system change dashboard information base on the chosen district. [E1:Lost connection to the database server]	
Alternative Flow:	-		
Exception Flow:	[E1:Lost connection to the database server] 1. System display connection lost message in the system console 2. End the use case.		
Assumption:	-		

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**URS-12:** User can download reference data as an Excel file.

Use Case ID:	UC-15		
Use Case name:	Download reference file		
Created by	Suradit Luo	Last update by	SuraditLuo
Date created	31/08/23	Last revision date	31/08/23
Actor:	User, Admin		
Description:	The actor can download a dashboard's reference file in Excel format		
Trigger:	The actor press download file button.		
Precondition:	The actor needs to login to the system.		
Use Case Input Specification			
Input	Type	Constraint	Example
-	-	-	-
Postcondition:	The system will store the downloaded file into user's computer.		
Normal Flow:	User	System	
1	1. The actor press download file button.	2. The system retrieve information from database 3. The system convert the data into Excel file [E1:Lost connection to the database server]	4. The system store the file into the computer.
Alternative Flow:	-		
Exception Flow:	[E1:Lost connection to the database server] 1. System display connection lost message in the system console 2. End the use case.		
Assumption:	-		

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**URS-13:** Guests can register their information to the system to become a user of the system.

Use Case ID:	UC-16		
Use Case name:	Register to the system.		
Created by	Thictikorne Vin	Last update by	Thictikorne Vin
Date created	22/08/23	Last revision date	22/08/23
Actor:	guest		
Description:	The actor can login to the system by using email, and password		
Trigger:	The actor press on register button		
Precondition:	There's no logged in user in the system		
Use Case Input Specification			
Input	Type	Constraint	Example
email	String	Constraint String must be correct the email format	Bb123@gmail.com
Postcondition:	The user information will be registered into the user database.		
Normal Flow:	User	System	
1	1. The actor press on register button	2. The system display dialog for register. [A4: user close register dialog]	
	3. The actor input email, password into the register dialog and click on sign up button	4. The system validate email and password. [A1: invalid email format] [A2: Email left blank] [A3: password left blank] [E1: Email already registered] 5. The system save the registration data to the database	
Alternative Flow:	[A1: invalid email format] <ul style="list-style-type: none"> <li>1. System display “invalid email format”</li> <li>2. Goes to normal flow 3</li> </ul> [A2: Email left blank] <ul style="list-style-type: none"> <li>1. System display “email should not left blank”</li> <li>2. Goes to normal flow</li> </ul> [A3: password left blank]		

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	<ol style="list-style-type: none"> <li>1. System display “password should not left blank”</li> <li>2. Goes to normal flow 3</li> </ol> <p>[A4: user close register dialog]</p> <ol style="list-style-type: none"> <li>1. The system closes the register dialog.</li> <li>2. End the use case.</li> </ol>
Exception Flow:	<p>[E1: Email already registered]</p> <ol style="list-style-type: none"> <li>1. System display “This email already registered.”</li> <li>2. End the use case.</li> </ol>
Assumption:	-

**URS-14:** Guests can login to the system to have full access to feature#01 and feature#04.

Use Case ID:	UC-17		
Use Case name:	Login to the system		
Created by	Thictikorne Vin	Created by	Thictikorne Vin
Date created	22/08/23	Date created	22/08/23
Actor:	User, Admin		
Description:	The actor can login to the system by using email, and password		
Trigger:	The actor press on login button		
Precondition:	-		
Use Case Input Specification			
Input	Type	Constraint	Example
-	-	-	-
Postcondition:	The system display a login dialog.		
Normal Flow:	User	System	
1	1. The actor press on login button	2. The system retrieve information from database	
	3. The actor input email, password into the login dialog and click on sign in button	4. The system validates email and password. [A1: invalid email or password] [A2: Email left blank] [A3: password left blank]	

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		[E1: Lost connection to the database server] 5. The system change login button into actor email with the logout button.
Alternative Flow:	[A1: invalid email or password] 3. System display “invalid email or password” 4. Goes to normal flow 3.  [A2: Email left blank] 3. System display “email should not leave blank.” 4. Goes to normal flow.  [A3: password left blank] 3. System display “password should not leave blank.” 4. Goes to normal flow 3.  [A4: user close login dialog] 1. The system closes the login dialog. End the use case.	
Exception Flow:	[E1: Lost connection to the database server] 1. System display connection lost message in the system console 2. End the use case.	
Assumption:	-	

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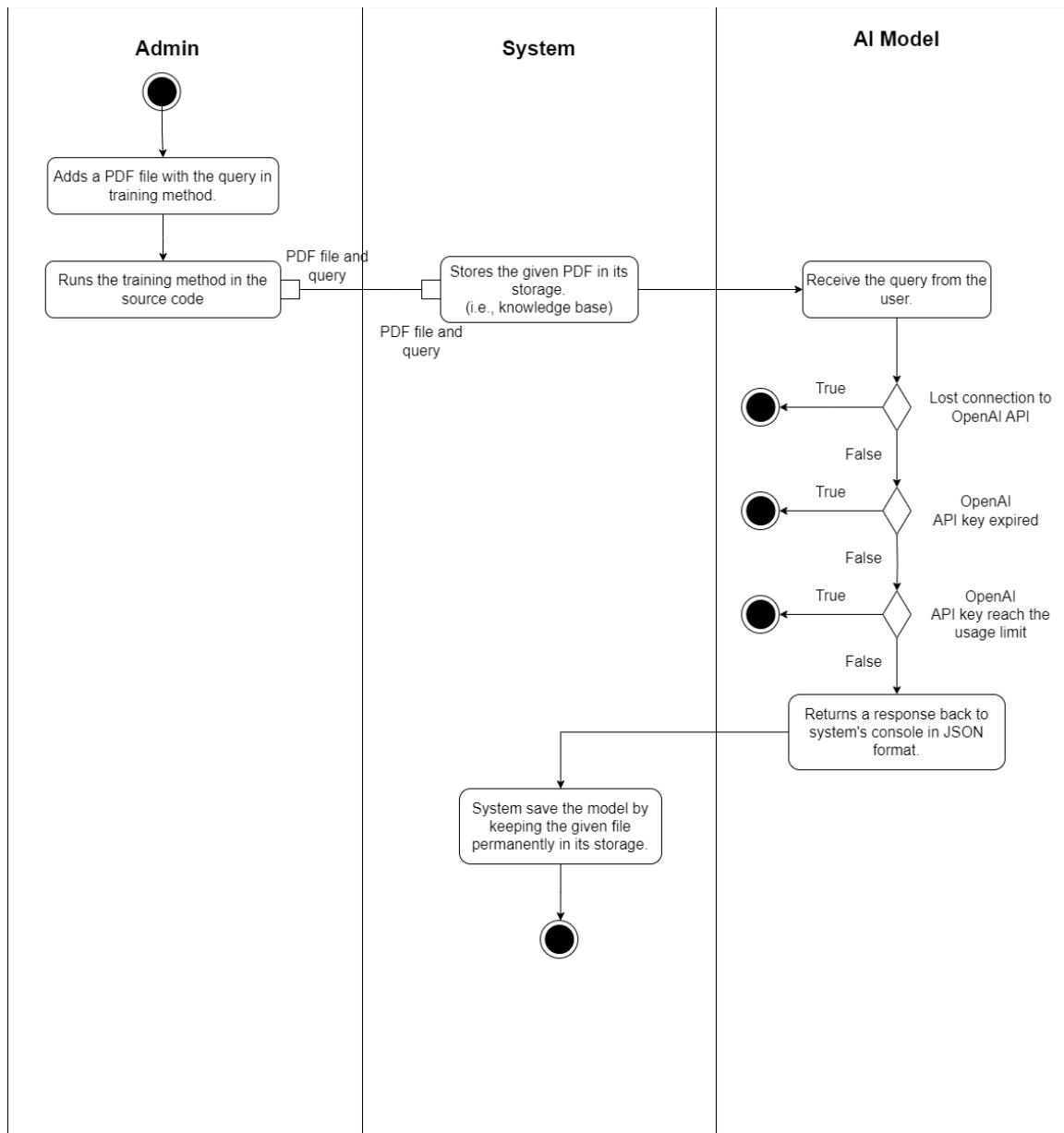
**URS-15:** User and admin can logout from the system.

Use Case ID:	UC-18				
Use Case name:	Logout from the system				
Created by	Thictikorne Vin	Last update by	Thictikorne Vin		
Date created	22/08/23	Last revision date	22/08/23		
Actor:	User, admin				
Description:	The actor can logout from the system				
Trigger:	The actor press on logout button				
Precondition:	The actor is login to the system				
Use Case Input Specification					
Input	Type	Constraint	Example		
-	-	-	-		
Postcondition:	The system display a login, register button.				
Normal Flow:	User	System			
1	1. The actor press on logout button	2. The system remove user data from local storage. 3. The system redirect to the dashboard page 4. The system display a login, register but on			
Alternative Flow:	-				
Exception Flow:	-				
Assumption:	-				

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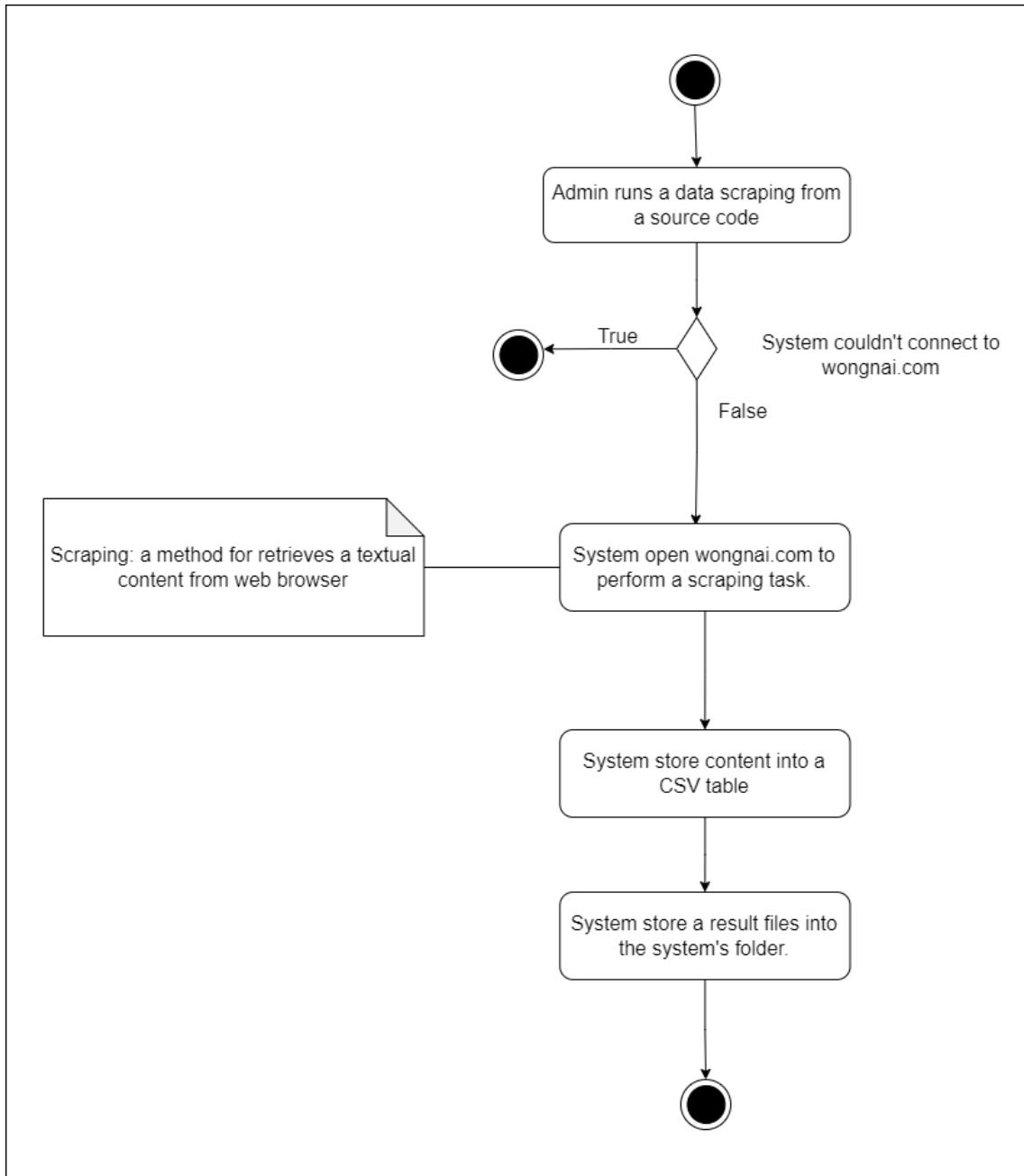
## 3.6 Activity Diagram

**AD-01: Train AI**



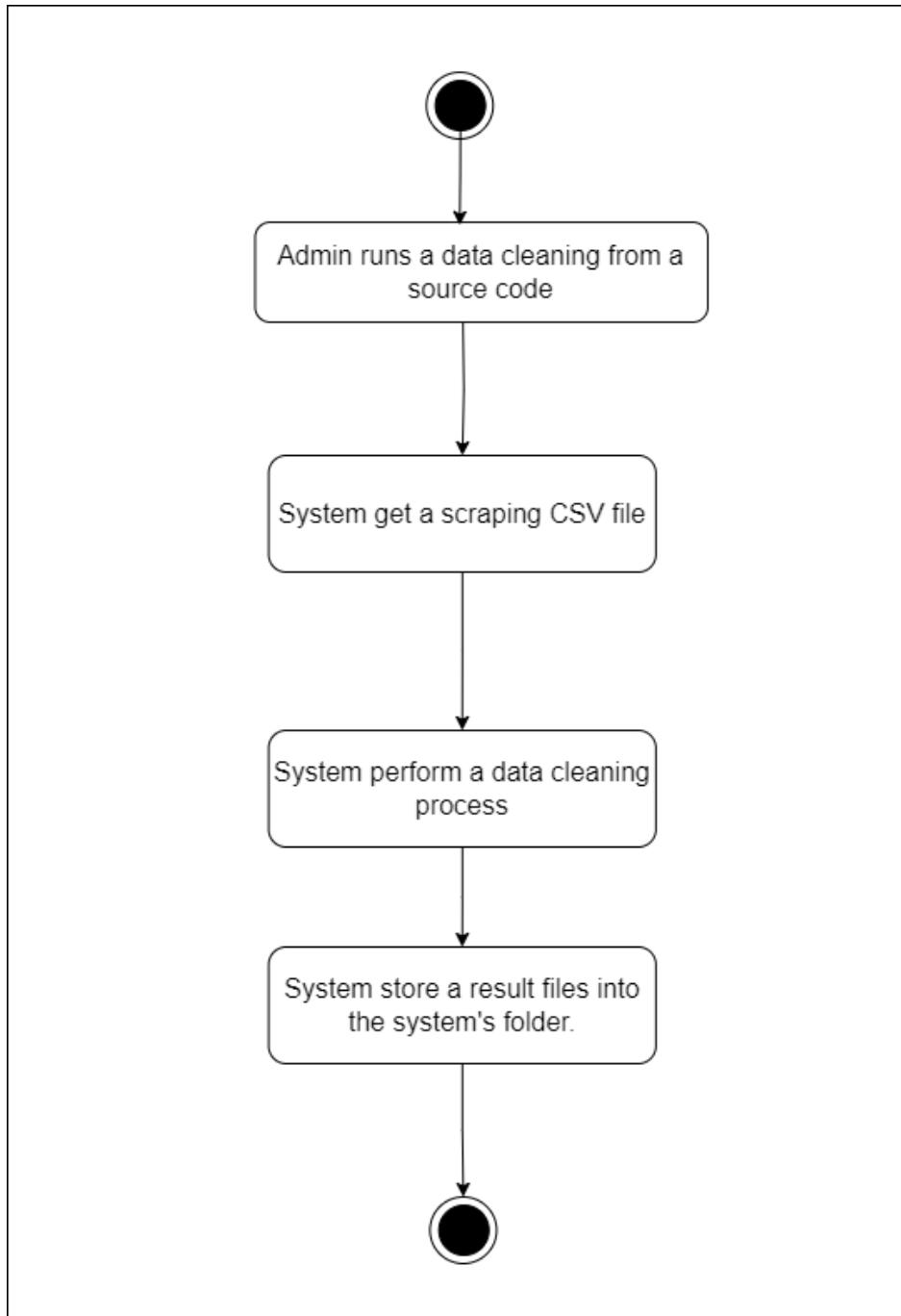
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## AD-02: Admin scraping content from wongnai.com.



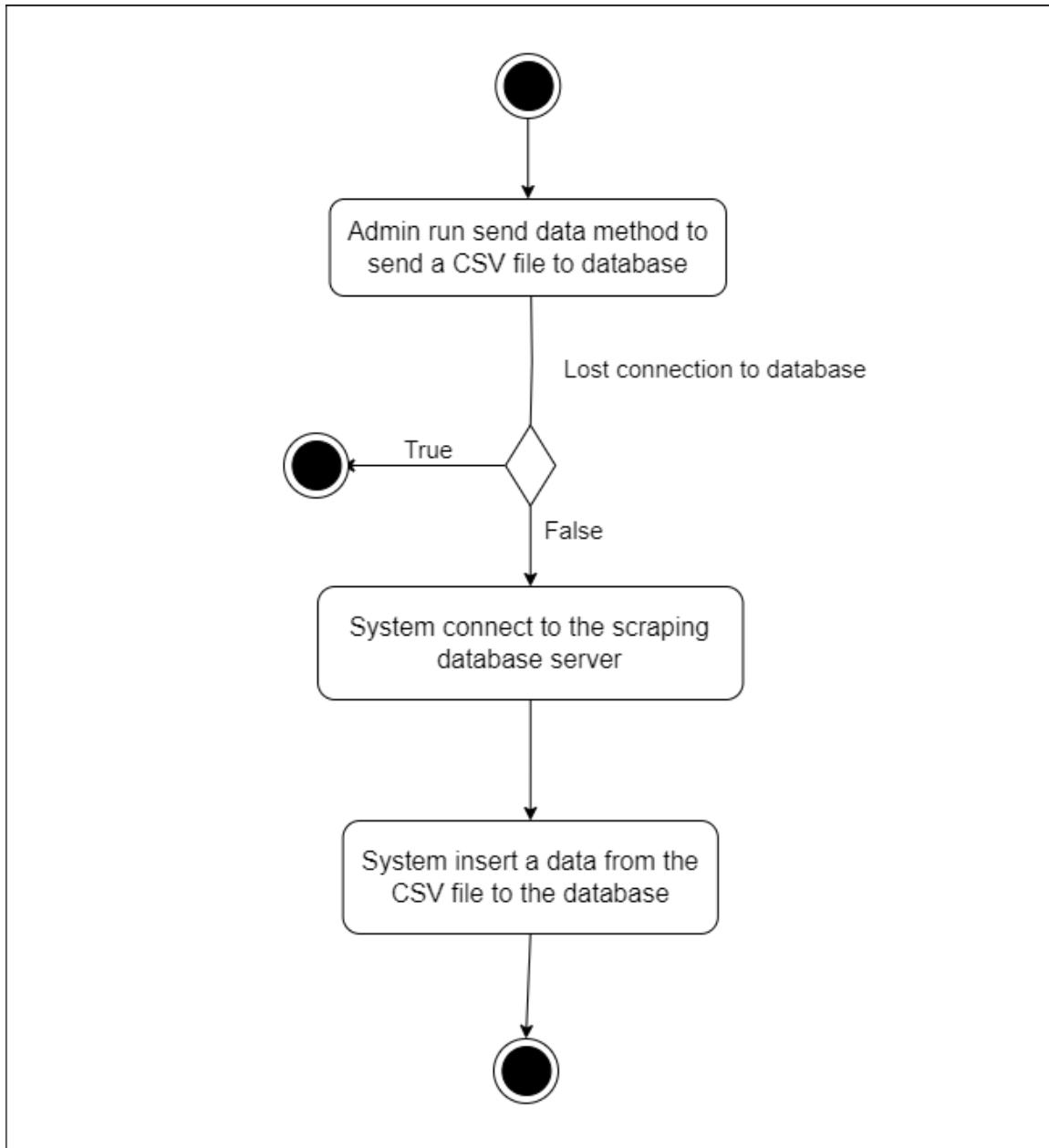
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### AD-03: Admin clean content from scraping CSV file.



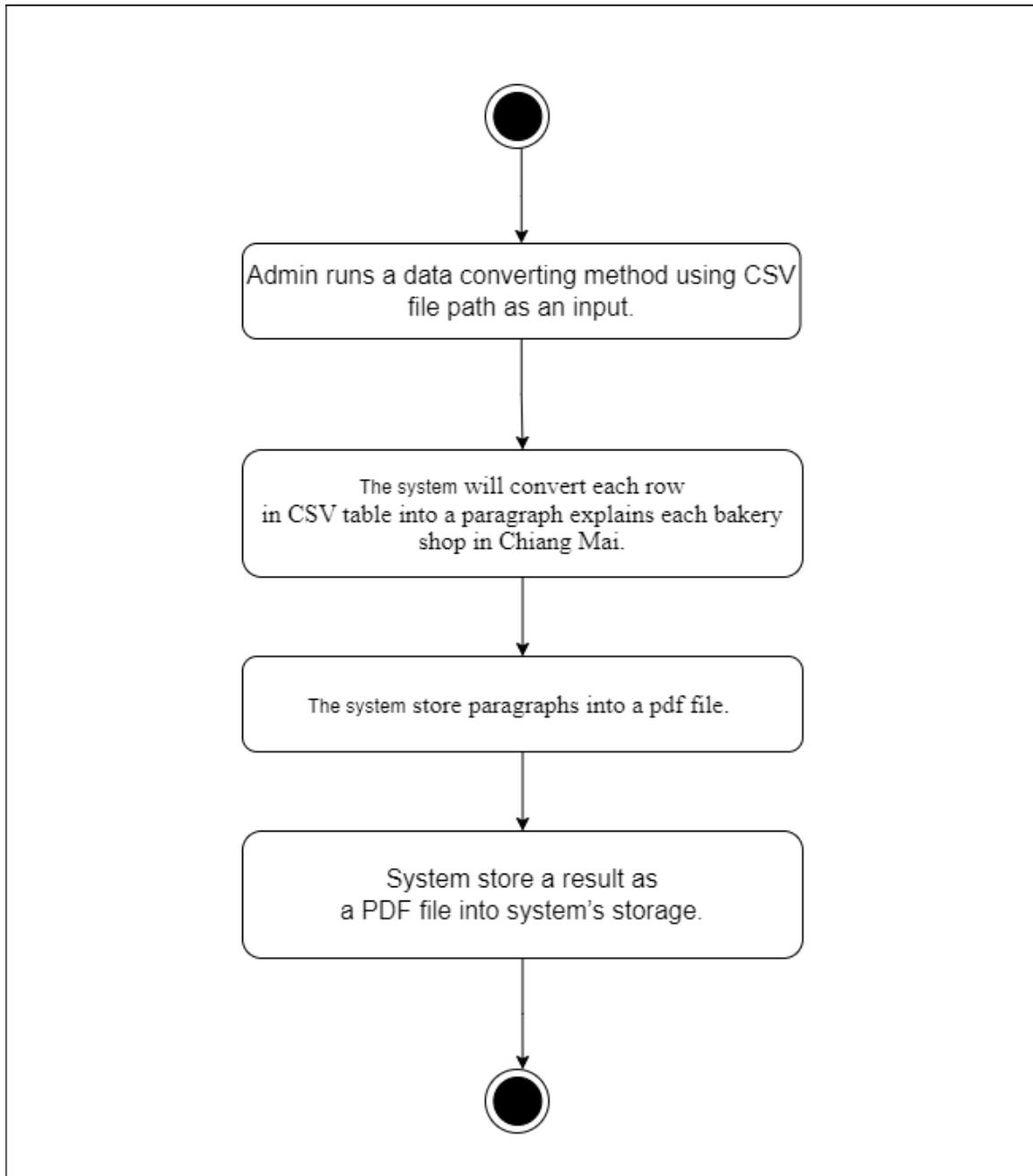
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**AD-04: Admin send a CSV table to scraping database server.**



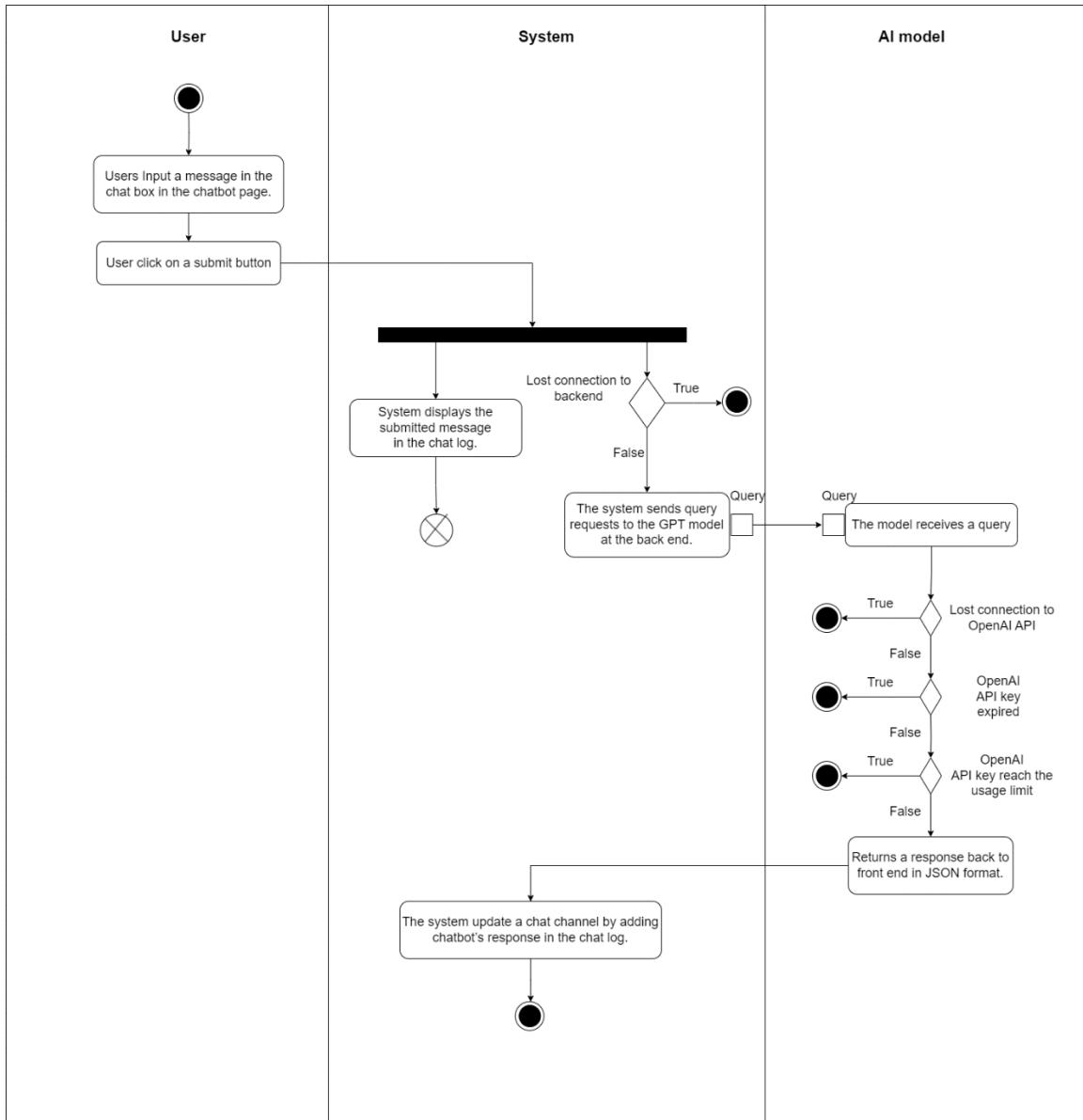
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**AD-05: Admin convert cleaned CSV files into a PDF file.**



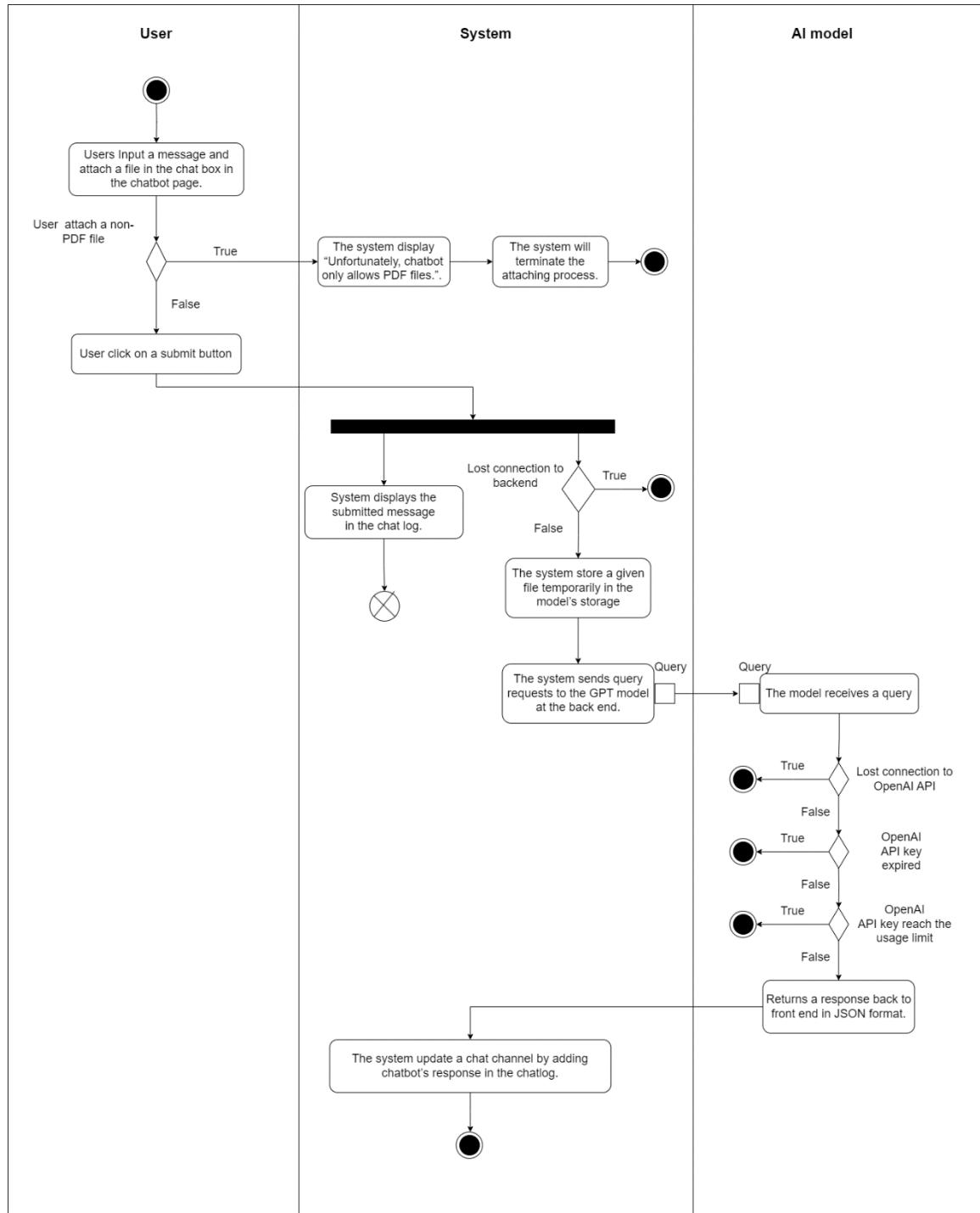
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## AD-06: User/admin send message to chatbot.



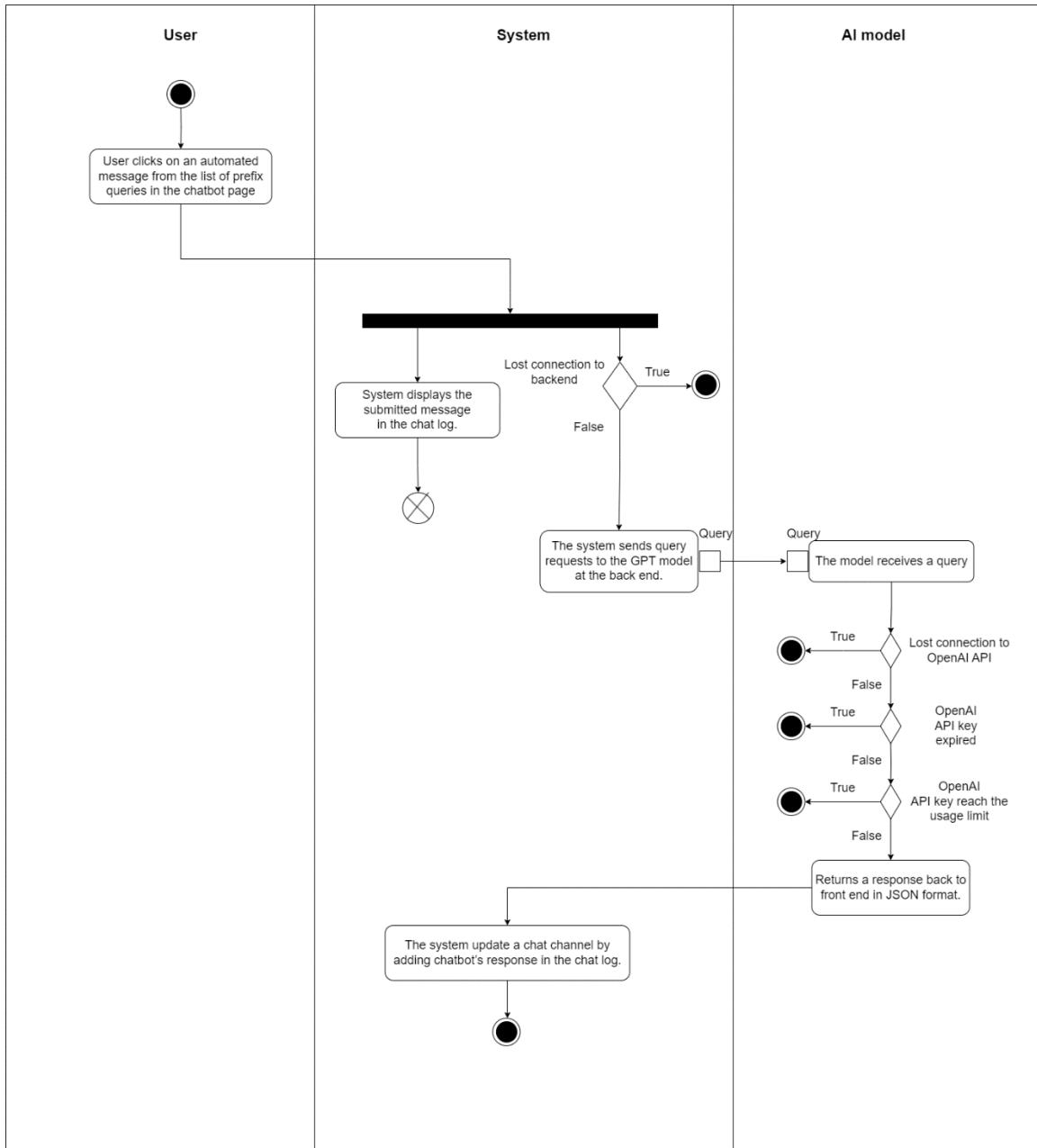
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### AD-07: User/admin send a message with a PDF file attachment.



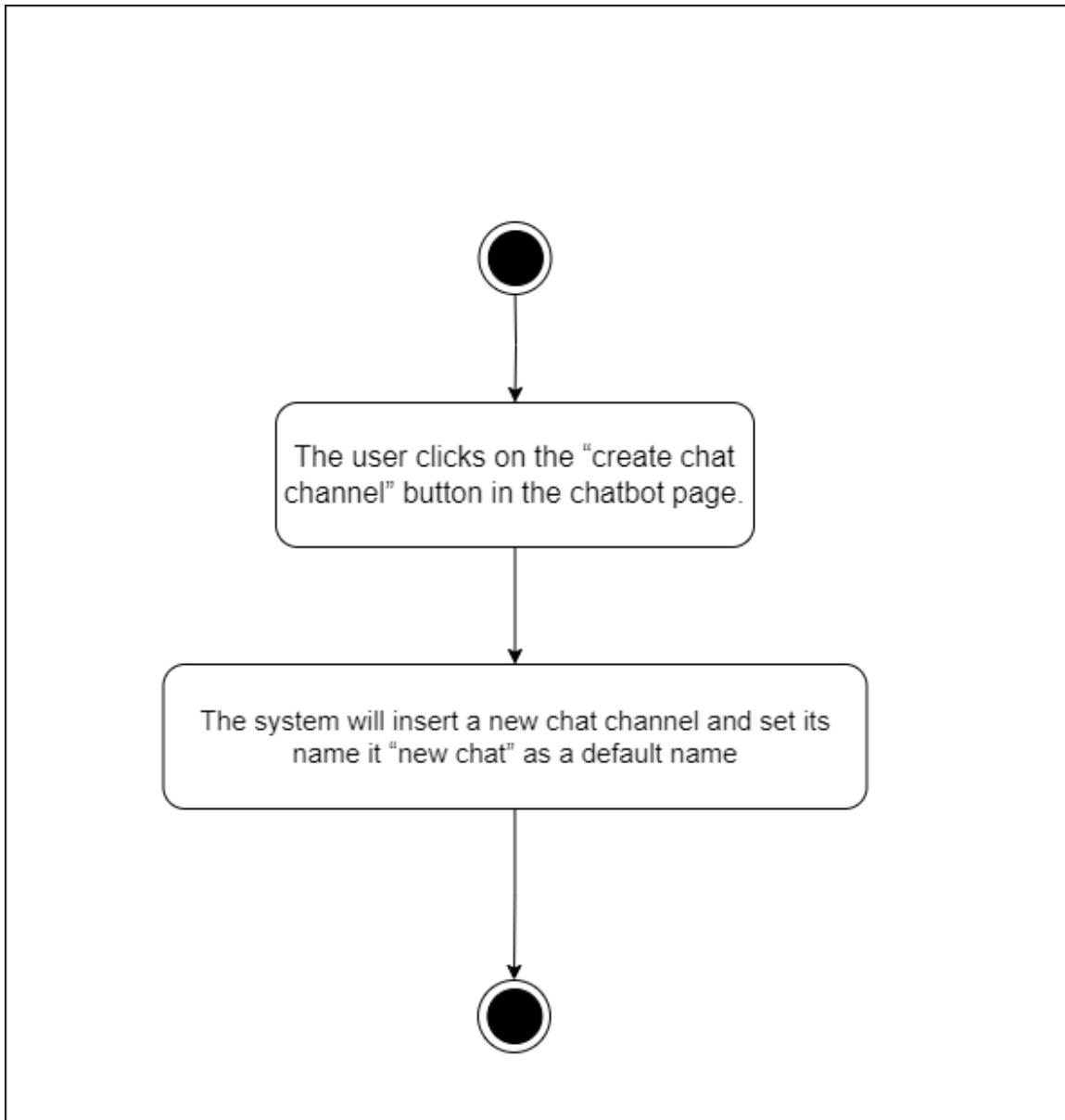
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### AD-08: User/admin sends an automated message to the chatbot.



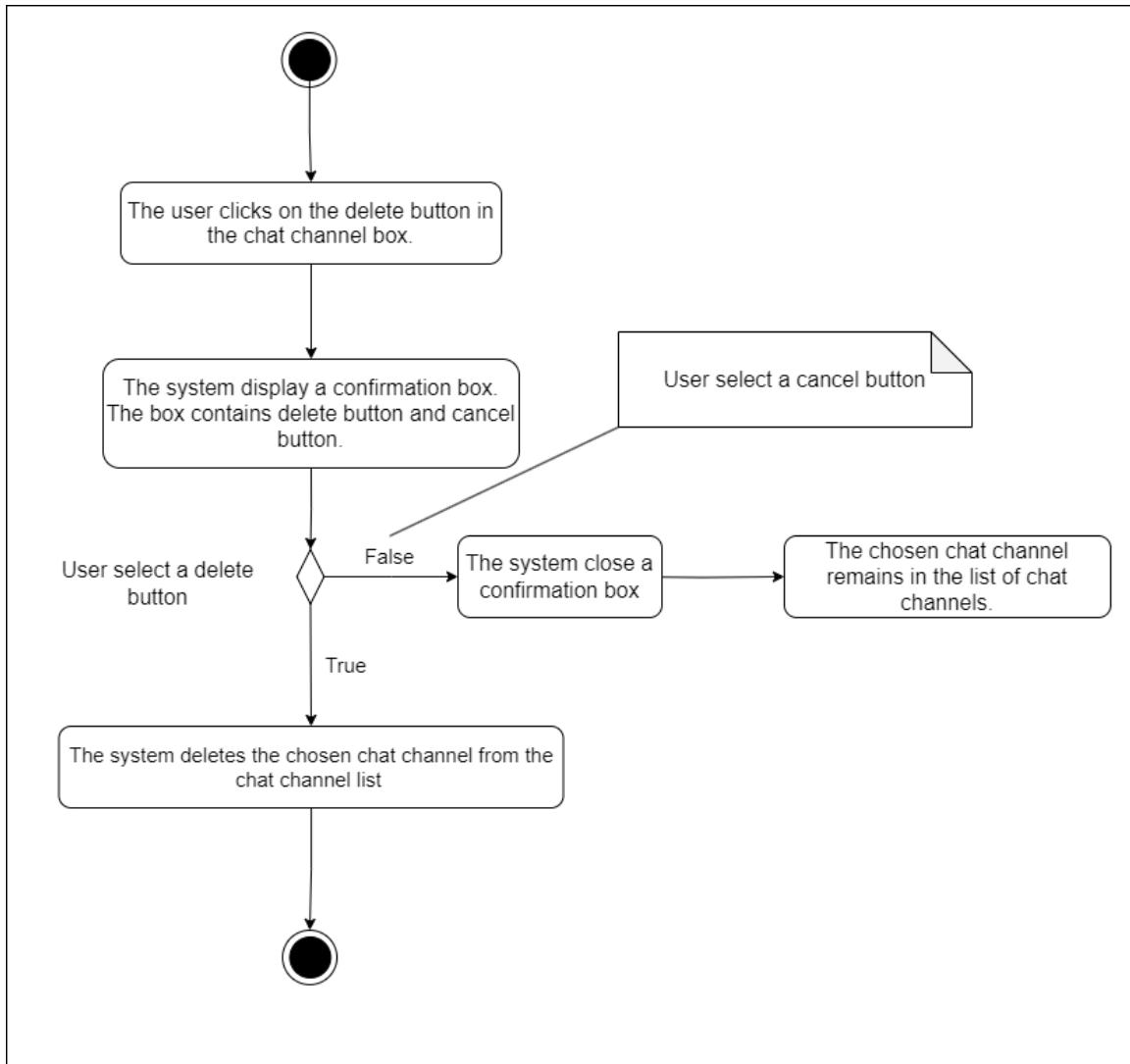
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**AD-09: User/admin create chat channel.**



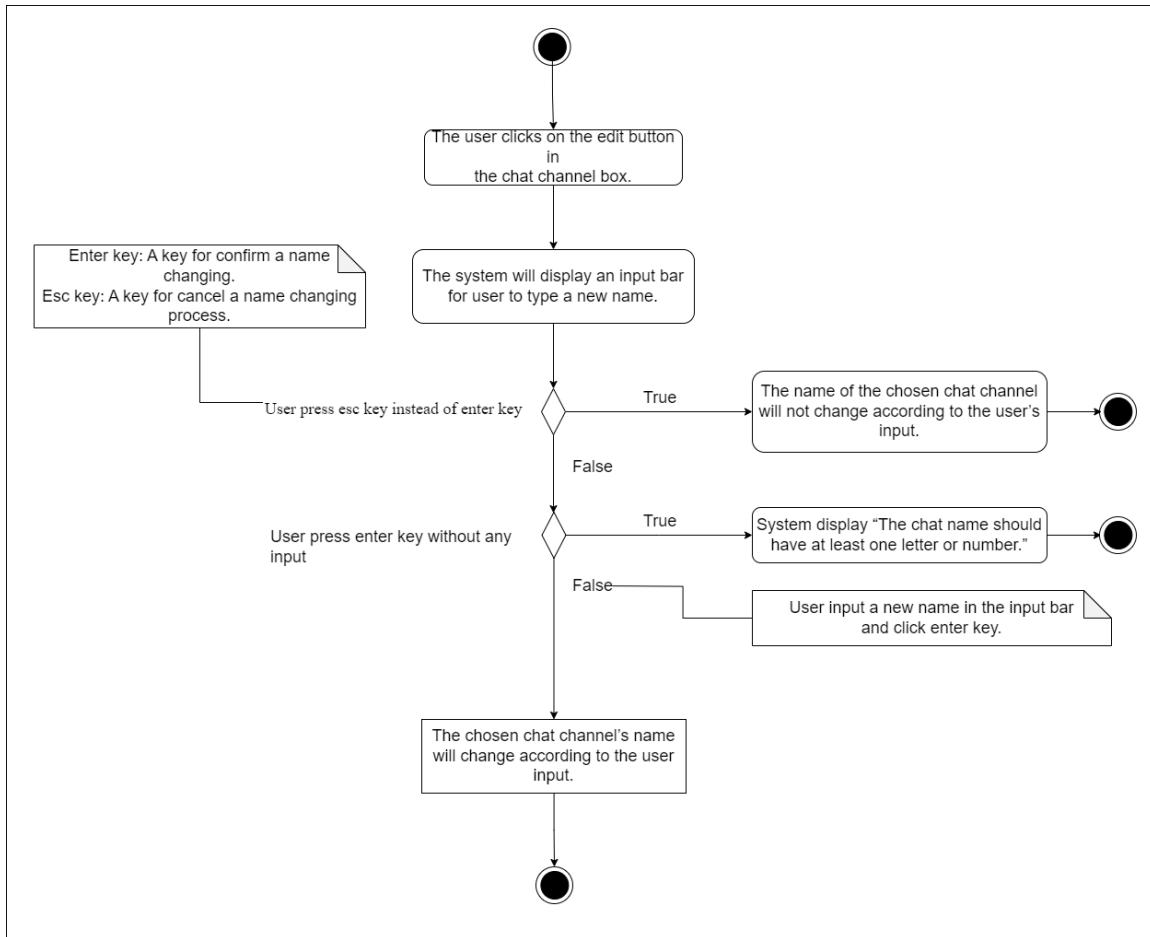
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### AD-10: User/admin delete a chat channel.



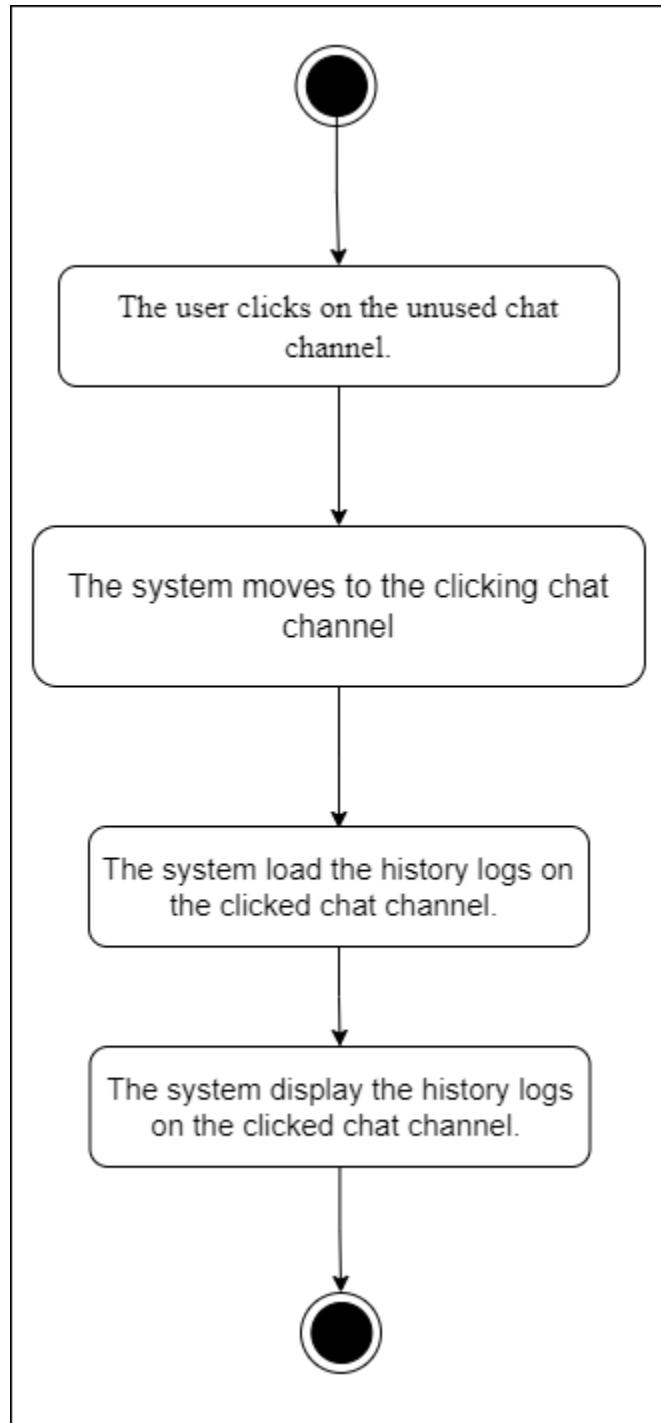
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### AD-11: User/admin edit their chat channel.



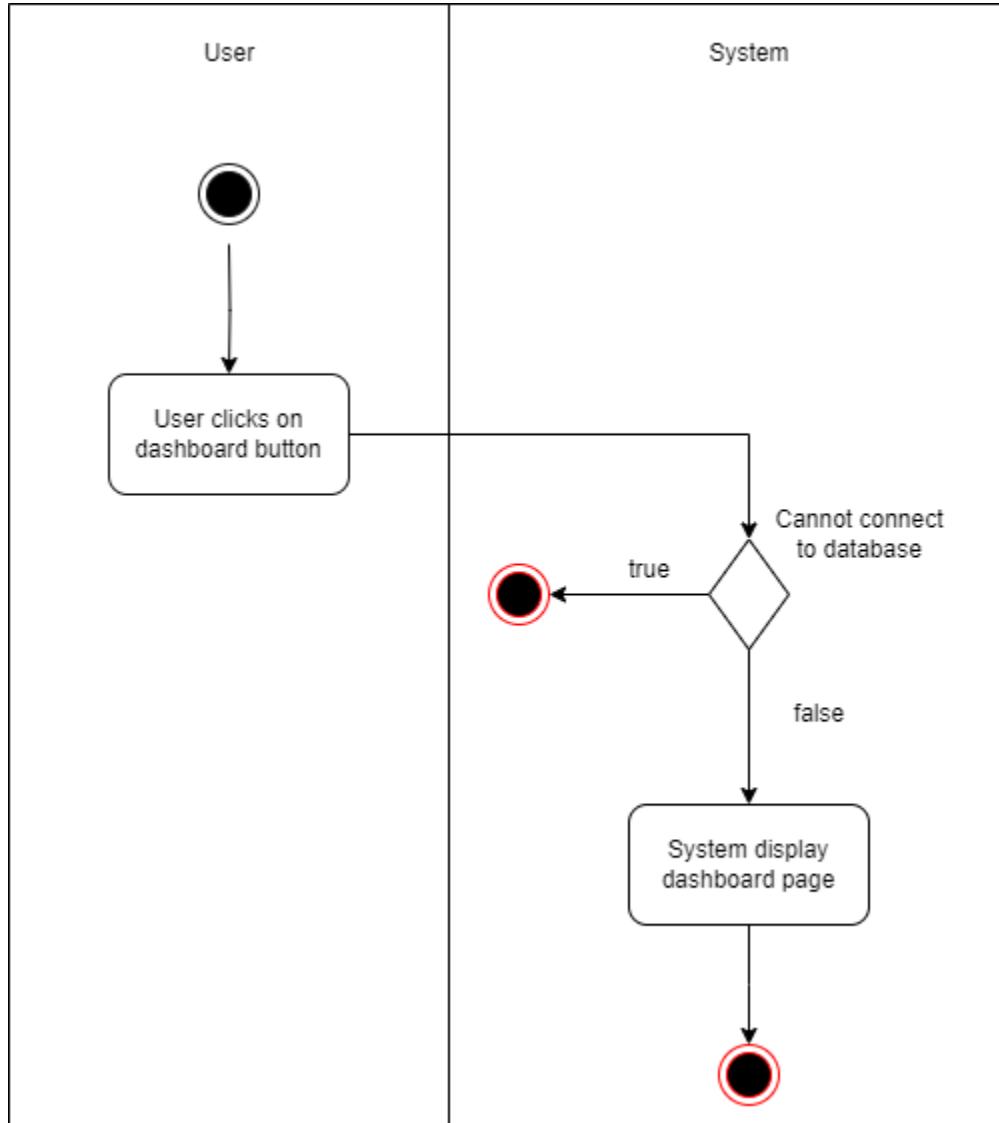
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**AD-12: User/admin can move to another chat channel.**



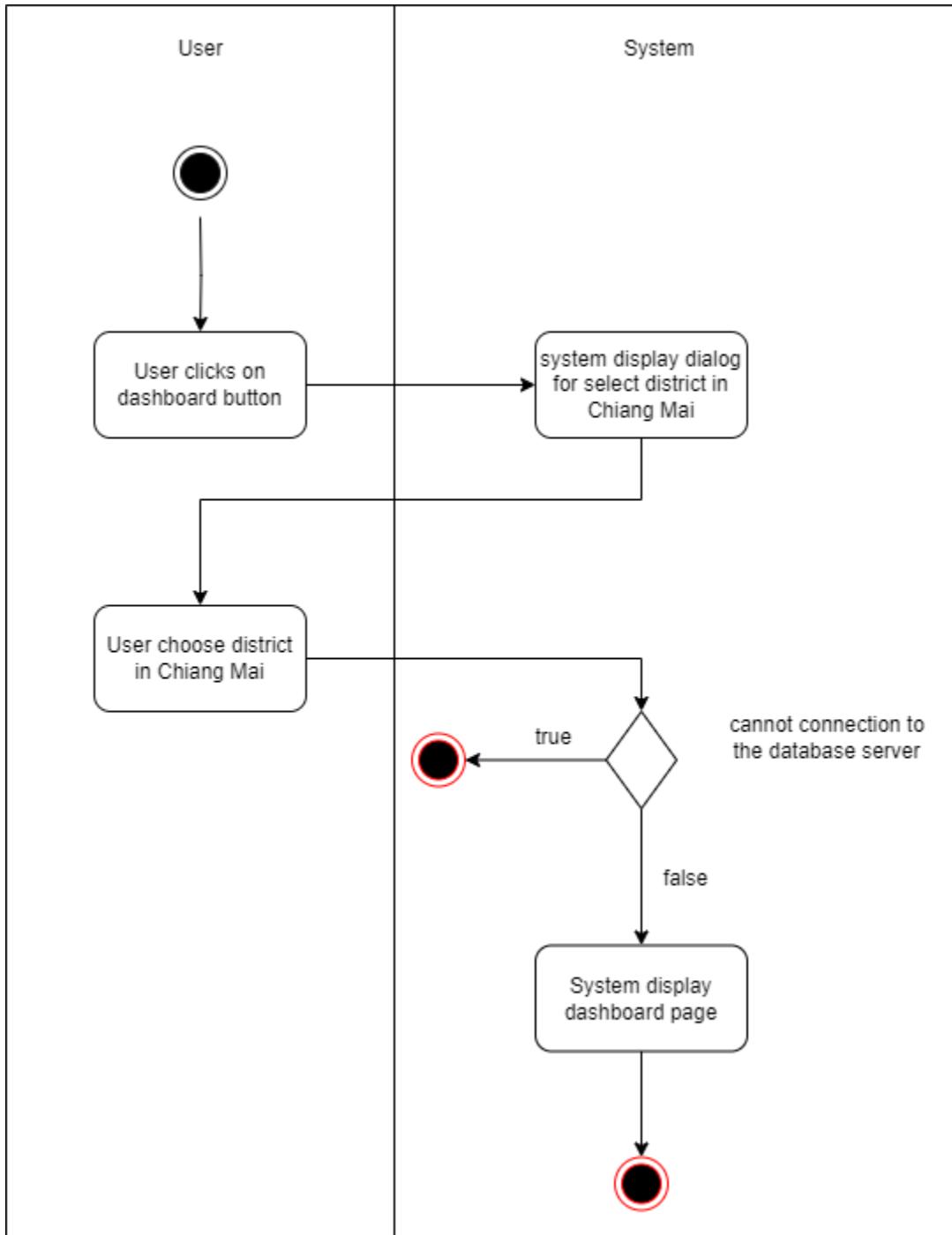
Document Name	GPT 4 Baker	Owner	SL, TV	Page	132
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### AD-13: Users view dashboard page.



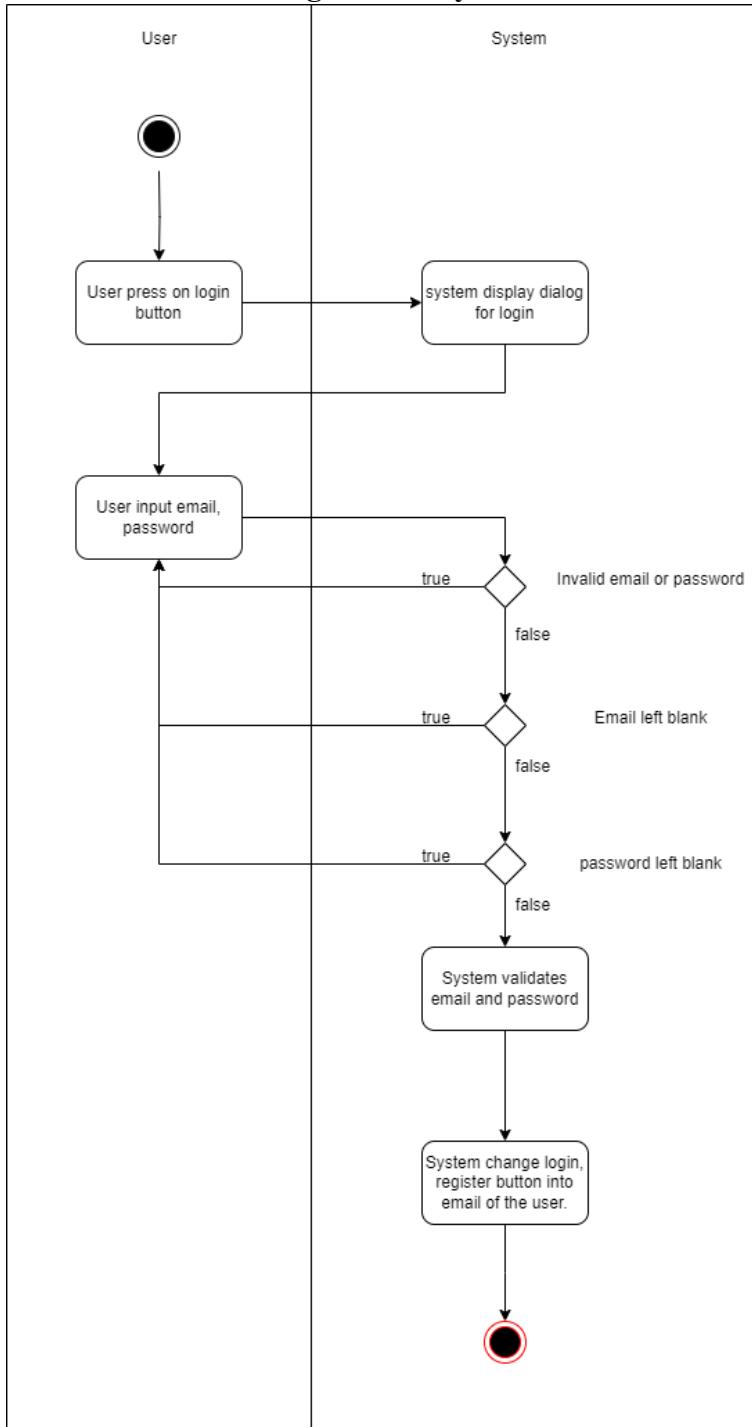
Document Name	GPT 4 Baker	Owner	SL, TV	Page	133
Document Type	Software Requirement Specification	Release Date	11/10/23	Print date	11/10/23

#### AD-14: User/admin select district on dashboard page



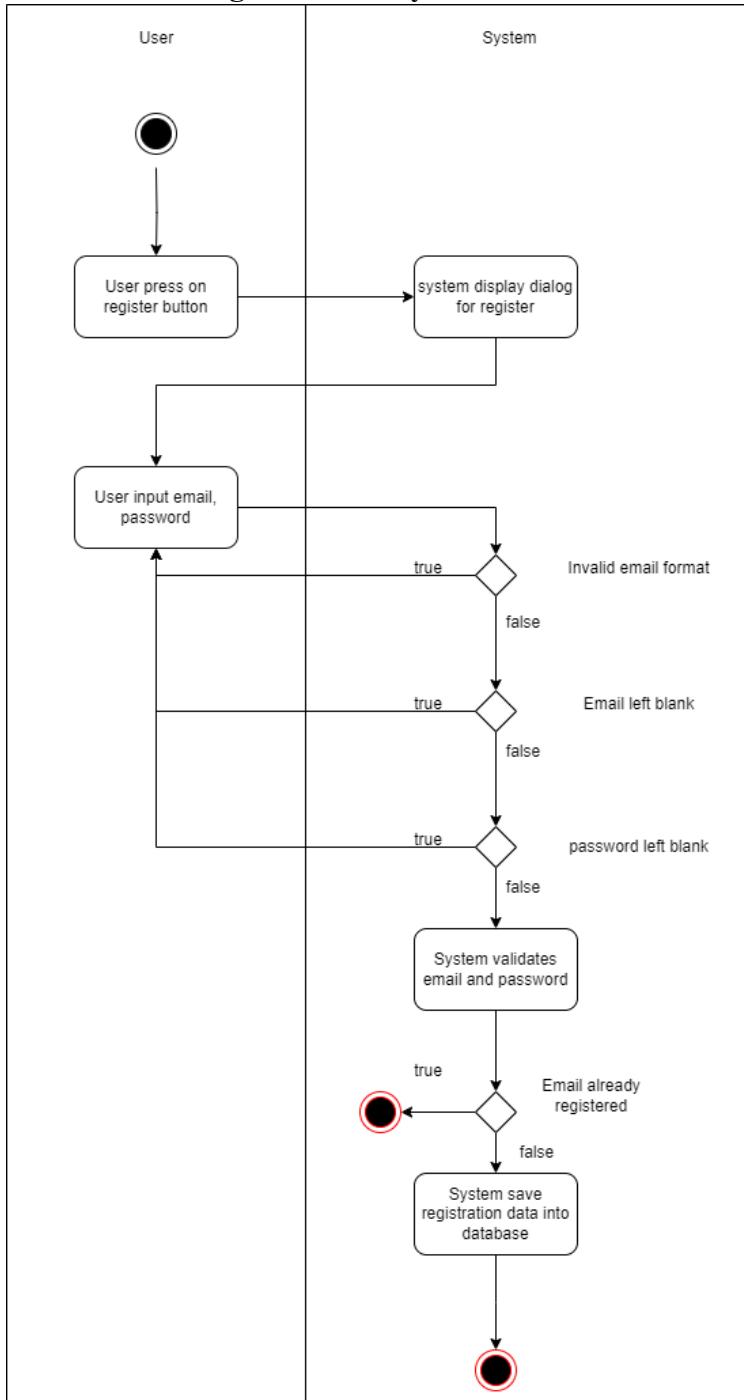
Document Name	GPT 4 Baker	Owner	SL, TV	Page	134
Document Type	Software Requirement Specification	Release Date	11/10/23	Print date	11/10/23

### AD-15: User/admin login to the system



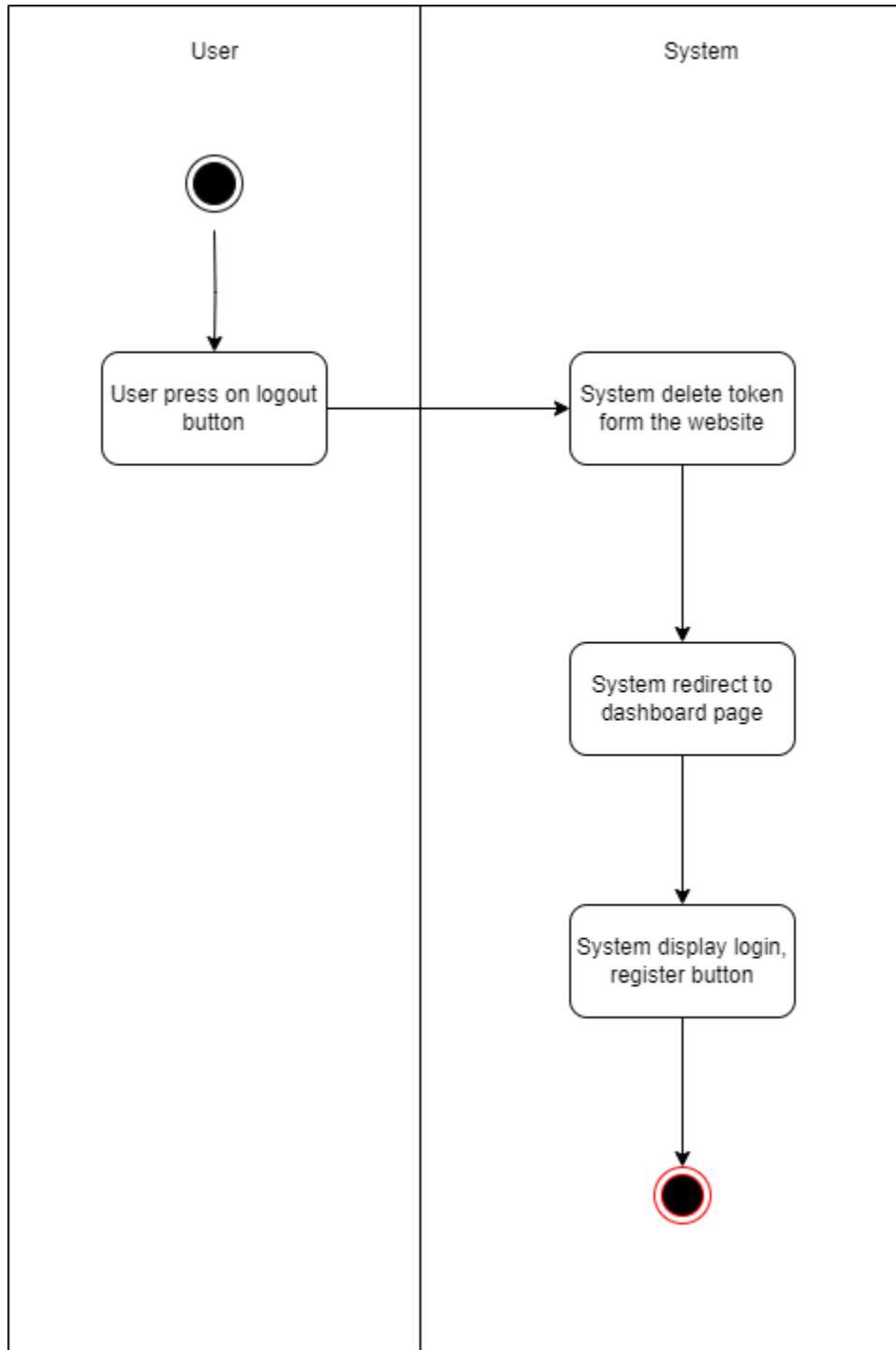
Document Name	GPT 4 Baker	Owner	SL, TV	Page	135
Document Type	Software Requirement Specification	Release Date	11/10/23	Print date	11/10/23

### AD-16: Guest register to the system



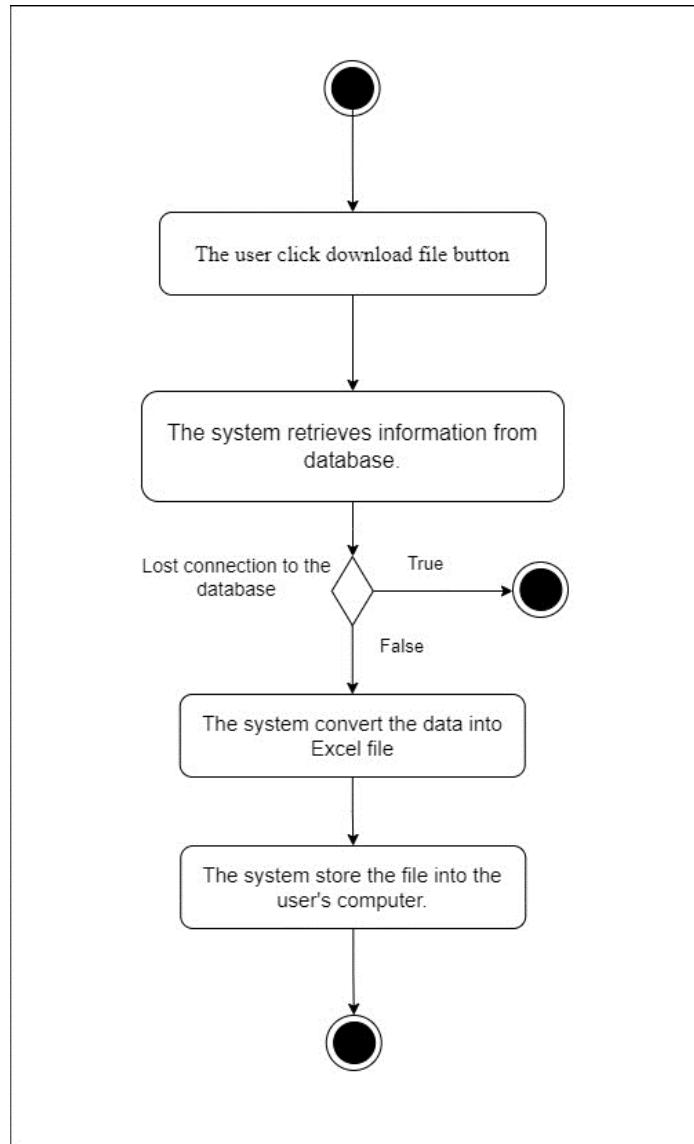
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### AD-17: User/admin logout from the system



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**AD-18: User download dashboard's reference as Excel file.**



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## **Chapter 4**

### **Software Design Document**

**GPT 4 Baker**

**Software Design Document**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

**Bachelor of Science**  
**Software Engineering Program**

**Department College of Arts, Media, and  
Technology**

**Chiang Mai University**

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**Project Advisor**  
**Asst. Prof. Dr. Pree Thiengburanathum**

**GPT 4 Baker**

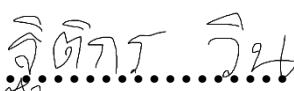
**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

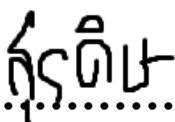
**THIS REPORT HAS BEEN APPROVED TO BE A  
PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE SOFTWARE  
ENGINEERING PROGRAM: COLLEGE OF ARTS  
MEDIA AND TECHNOLOGY**

..........**ADVISOR**

**Asst. Prof. Dr. PREE THIENGBURANATHUM**

..........**MEMBER**

**THICTIKORNE VIN**

..........**MEMBER**

**SURADIT LUO**

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## Document History

Document name	Version	History	Status	Date	Editable	Reviewer
Software Design Document	Software Design Document v.0.1	Add Chapter 1 - Purpose - Project Scope - Acronyms and definition Add Chapter 2 Add Chapter 3 - Class diagram - Class diagram description Add Chapter 4	Draft	24/05/23	SL, TV	PT
Software Design Document	Software Design Document v.0.2	Update Chapter 3 - Class diagram - Class diagram description Update Chapter 4	Edit	11/06/23	SL, TV	PT
Software Design Document	Software Design Document v.0.3	Add Chapter 3 - Package diagram Update Chapter 3 - Class diagram - Class diagram description	Edit	22/06/23	SL, TV	PT
Software Design Document	Software Design Document v.0.4	Update Chapter 4 - Database Structure Add Chapter 5 - User Interface Design	Edit	25/06/23	SL, TV	PT
Software Design Document	Software Design Document v.0.5	Add Chapter 3 - Sequence Diagram	Draft	06/07/23	SL, TV	PT

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Software Design Document	Software Design Document v.1.0	Release version 1.0	Release	11/07/23	SL, TV	PT
Software Design Document	Software Design Document v.1.1	Update Chapter 3 - Class Diagram - Class Diagram Description	Draft	28/08/23	SL, TV	PT
Software Design Document	Software Design Document v.1.2	Update Chapter 3 - Class Diagram Description	Edit	29/08/23	SL, TV	PT
Software Design Document	Software Design Document v.1.3	Update Chapter 3 - Sequence Diagram	Edit	01/09/23	SL, TV	PT
Software Design Document	Software Design Document v.1.4	Update Chapter 4 - Database Structure Update Chapter 5 - User Interface Design	Edit	03/09/23	SL, TV	PT
Software Design Document	Software Design Document v.2.0	Release version 2.0	Release	05/09/23	SL, TV	PT
Software Design Document	Software Design Document v.3.0	Release version 3.0	Release	11/10/23	SL, TV	PT

\*SL = Suradit Luo

\*TV = Thictikorne Vin

\*PT = Asst. Prof. Dr. Pree Thiengburanathum

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# **Chapter 1 | Introduction**

## **1.1 Purpose**

The purpose of the software design document of GPT4Baker is to design the details structure of the system according to the software requirements specification. This document also creates for members of our project team to understand the design of the system using class diagram, sequence diagram, entity relationship and user interface design.

## **1.2 Project Scope**

GPT4Baker is a web application that create for bakeries to reduce their failure rate in the business and create innovativeness in their new products and make them stay relevant in the market.

These are the features that contain in GPT 4 Baker System

- Feature #01: Dashboard
- Feature #02: Authentication
- Feature #03: Data preprocessing, data cleaning, and data analysis
- Feature #04: Chatbot
- Feature #05: Bakery Management

## **1.3 Acronyms and Definition**

### **1.3.1 Acronyms**

SRS – Software Requirement Specification

URS – User Requirement Specification

UI – User Interface

SD – Sequence Diagram

UC – Use Case

CSV – Comma Separated Value

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### 1.3.2 Definition

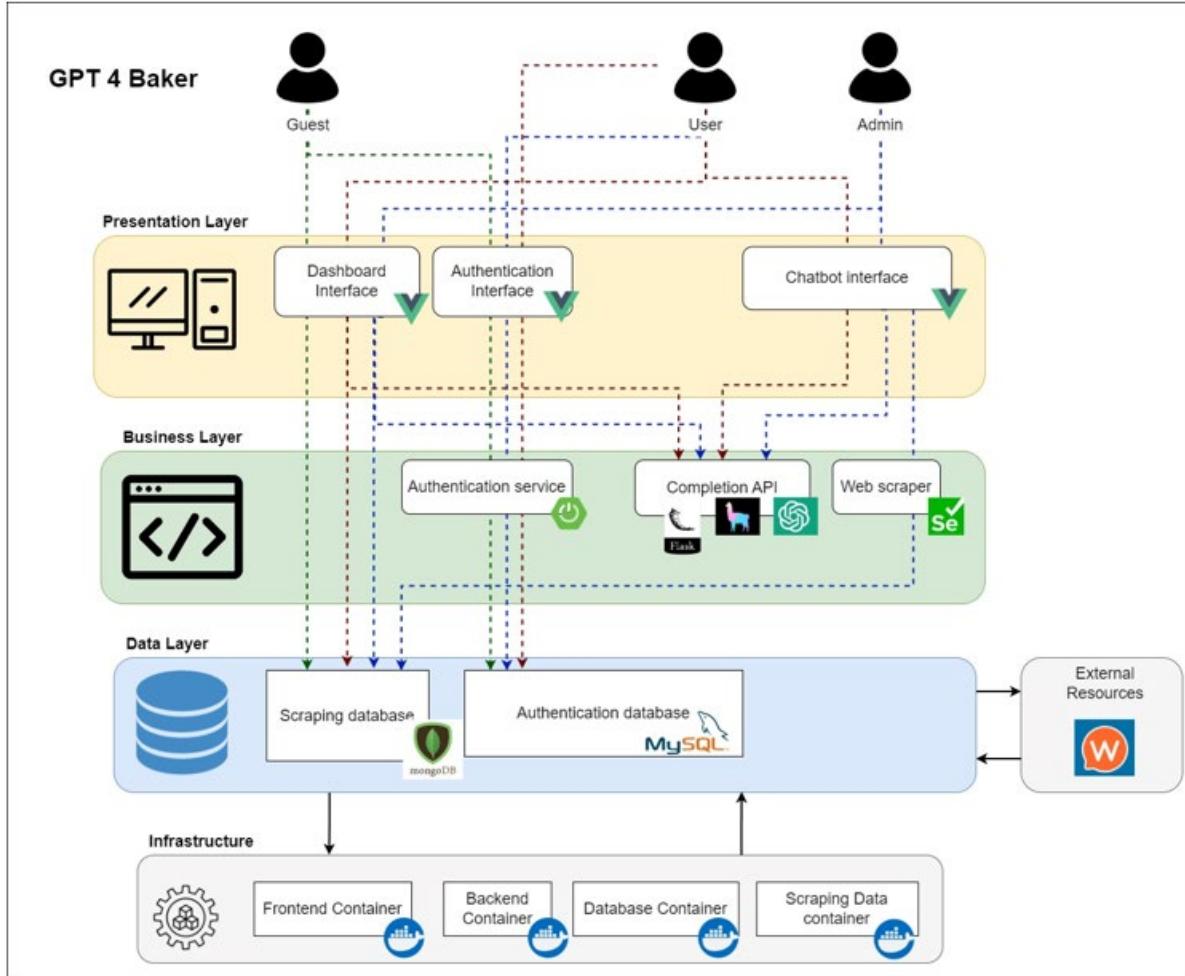
Name	Definition
Feature	Transformation of input parameters to output parameters based on a specified algorithm. It describes the functionality of a product in the language of the product. Used for requirement analysis, design, coding, testing or maintenance. [IEEE90]
Design	The period in the software life cycle during which the design for architecture, software components, interfaces, and data are created, documented, and verified to satisfy requirement. [IEEE90]
IEEE	Institute for Electrical and Electronics Engineers. Biggest global interest group for engineers of different branches and for computer scientists. [IEEE90]
Requirement	(1) A condition or capability needed by a user to solve a problem or achieve an objective. (2) A condition or capability that must be met or possessed by a system or system component to satisfy a contract, standard, specification, or other formally imposed document. (3) A documented representation of a condition or capability as in definition (1) or (2) [IEEE90]
Specification	Precise description of an activity or work product which serves as basis or input for further activities or work product. A specification can comprise requirement to a product how they will be solved. Different parts of a specification (e.g., what is to be done, how it will be done) must not be mixed.) [IEEE90]
Sequence Diagram	A sequence diagram in a Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. A sequence diagram shows object interaction arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of message exchanged between the object need to carry out the functionality of the scenario.
UML	Unified Modeling Languages. Standardized notation for Modeling design descriptions, architectures, or scenarios. Not depending on a specific method. Issued

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	and maintained by the Object Management Group (OMG). [IEEE90]
Class Diagram	In software engineering, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operation (or methods), and the relationship among the classes.
User Interface	The portion of a computer program with which the user interacts, I.e., the interface between a user and a computer program. There is command-line interface, menu-driven interfaces, and graphical user interface (GUIs).

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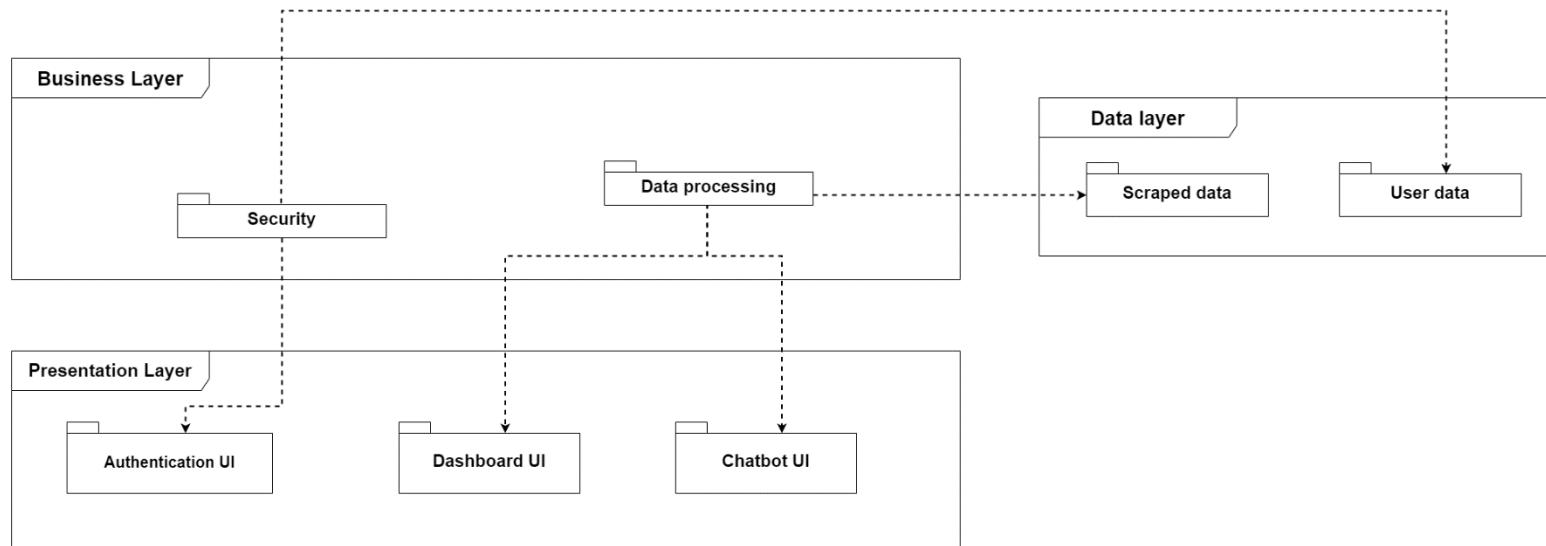
# Chapter 2 | System Architecture



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# Chapter 3 | Detailed Design

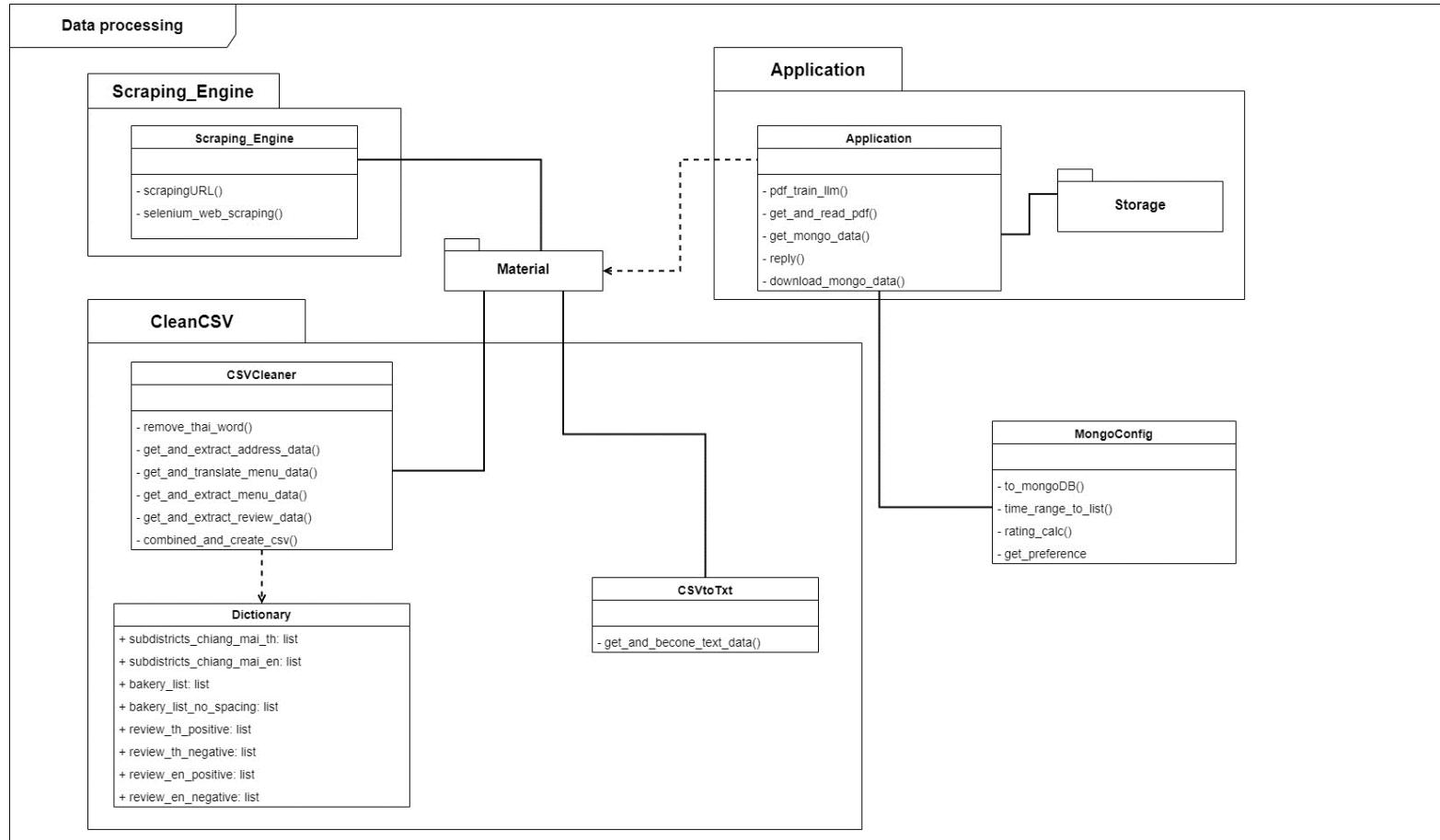
## 3.1 Package diagram



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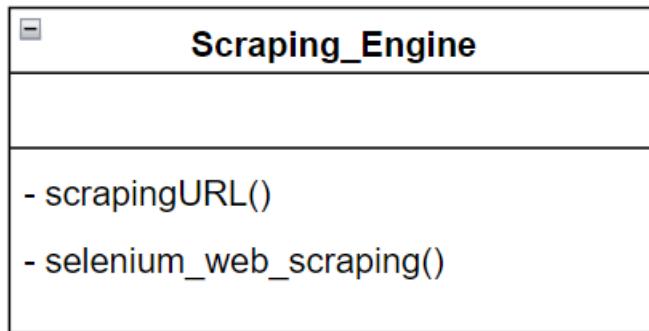
## 3.2 Class Diagram

### 3.2.1 Data Processing Package Class Diagram



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## CD-01: Scraping engine

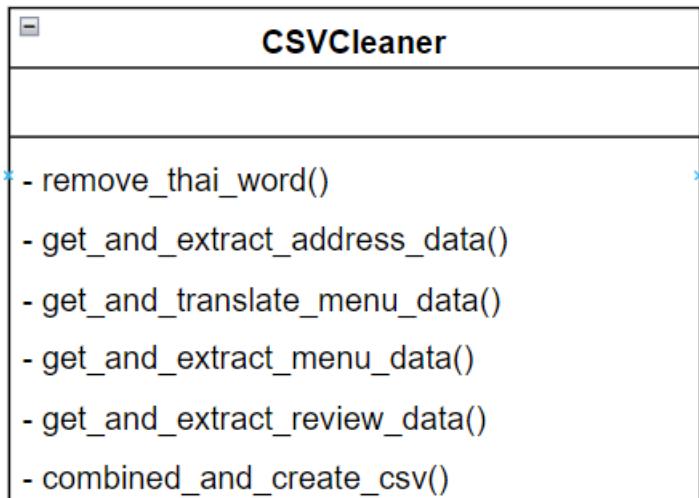


ID	CD-01-M01
Name	scrapingURL
Parameters	-
Description	A web scraper that retrieves URLs of bakery shops in Wong Nai. After scraping, keep the list of bakeries shops and their URL and save it as a csv file in material folder.
Return	-

ID	CD-01-M02
Name	selenium web scraping
Parameters	-
Description	Get a list of URLs from the CSV file and start to visit the Chiang Mai bakery shop/restaurant page in Wong Nai that has their shop/restaurant detail (e.g., bakery menus, review from customers). Scrape the information with Selenium framework for each bakery shop/restaurant into each row in the dataset and then save it as a CSV file in material folder.
Return	-

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## CD-02: CSVCleaner



ID	CD-02-M01
Name	remove_thai_word
Parameters	String: text - A long string of address detail or review.
Description	Clean the string by removing Thai stop words (e.g., และ, หรือ), a symbol, and a preface (e.g., ถนน, วิ่ง, ชื่อ) to make it easier for keyword detection in further CSV cleaning process.
Return	String: text – A cleaned string of address detail or review.

ID	CD-02-M02
Name	get_and_extract_address_data
Parameters	<ul style="list-style-type: none"> <li>- String: input_file – A string contains a path where the input file is located.</li> <li>- String: output_file – A string contains a path where the output file will be located.</li> </ul>
Description	For each row in address column in an input_file, detect Chiang Mai district, subdistrict, and road in Thai. And convert that string into a list that contains English words for the Chiang Mai district, subdistrict, and road. Finally, update the address column, save the updated dataset as a CSV file, and save it according to the path string of output_file.
Return	-

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ID	CD-02-M03
Name	get_and_translate_menu_data
Parameters	<ul style="list-style-type: none"> <li>- String: input_file – A string contains a path where the input file is located.</li> <li>- String: output_file – A string contains a path where the output file will be located.</li> </ul>
Description	For each row in the menu column in an input_file, get a list of menus and translate them from Thai to English using googletrans external library, save it as a CSV file, and save it according to the path string of output_file.
Return	-

ID	CD-02-M04
Name	get_and_extract_menu_data
Parameters	<ul style="list-style-type: none"> <li>- String: input_file – A string contains a path where the input file is located.</li> <li>- String: output_file – A string contains a path where the output file will be located.</li> </ul>
Description	For each row in the menu column in an input_file, get a list of translated menus and detect the bakery menu in the list and replace that row with a list of detected bakery menus. Save an updated dataset as a CSV file, and store it according to the path string of output_file.
Return	-

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ID	CD-02-M05
Name	get_and_extract_review_data
Parameters	<ul style="list-style-type: none"> <li>- String: input_file – A string contains a path where the input file is located.</li> <li>- String: output_file – A string contains a path where the output file will be located.</li> </ul>
Description	For each row in the review column in an input_file, get the list that contains a string of review comments. For each comment in the list, detect positive and negative review keywords in Thai and convert that string into a list that contains positive and negative review keywords in English. Finally, update the review column, save the updated dataset as a CSV file, and save it according to the path string of output_file.
Return	-

ID	CD-02-M06
Name	combined_and_create_csv
Parameters	<ul style="list-style-type: none"> <li>- String: input_file – A string contains a path where the input file is located.</li> <li>- String: address_file – A string contains a path where the CSV file with the updated address column is located.</li> <li>- String: menu_file - A string contains a path where the CSV file with the updated menu column is located.</li> <li>- A string contains a path where the CSV file with the updated review column is located.</li> <li>- String: output_file – A string contains a path where the output file will be located.</li> </ul>
Description	Get columns from input_file and replace a column that shares the same name as an updated column from address_file, menu_file, and review_file. Finally, save the updated dataset as a CSV file, and save it according to the path string of output_file.
Return	-

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## CD-03: Dictionary

Dictionary	
+ subdistricts_chiang_mai_th: list	
+ subdistricts_chiang_mai_en: list	
+ bakery_list: list	
+ bakery_list_no_spacing: list	
+ review_th_positive: list	
+ review_th_negative: list	
+ review_en_positive: list	
+ review_en_negative: list	

### Field Summary

ID	Modifier	Type	Field	Description
CD-03-F01	public	list	subdistricts_chiang_mai_th	A list of Chiang Mai district, subdistrict, and roads in Thai.
CD-03-F02	public	list	subdistricts_chiang_mai_en	A list of Chiang Mai district, subdistrict, and roads in English.
CD-03-F03	public	list	bakery_list	A list of bakery menus
CD-03-F04	public	list	bakery_list_no_spacing	This is also a list of bakery menus but replace a space between words with ‘_’ (e.g., cinnamon_roll, pound_cake) which is an appropriate format for storing it in a scraping database
CD-03-F05	public	list	review_th_positive	A list of Thai review words that normally

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				include in the positive review comment.
CD-03-F06	public	list	review_th_negative	A list of Thai review words that normally include in the negative review comment.
CD-03-F07	public	list	review_en_positive	A list of English review words that normally include in the positive review comment.
CD-03-F08	public	list	review_en_negative	A list of English review words that normally include in the negative review comment.

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## CD-04: CSVtoTxt

CSVtoTxt
- get_and_become_text_data()

ID	CD-04-M01
Name	get_and_become_text_data
Parameters	<ul style="list-style-type: none"><li>- String: input_file – A string contains a path where the input file is located.</li><li>- String: text_file – A string contains a path where the text file that use for storing the shops/restaurants detail paragraph is located.</li></ul>
Description	For each row in input_file, summarize the bakery shop/restaurant detail from the row in the table to a formatted paragraph, and write it into the text file, the location of the text file is labeled in the text_file string variable.
Return	-

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## CD-05: Application

Application	
- pdf_train_llm()	
- get_and_read_pdf()	
- get_mongo_data()	
- reply()	
- download_mongo_data()	

ID	CD-05-M01
Name	pdf train llm
Parameters	<ul style="list-style-type: none"> <li>- String: pdf</li> <li>- String: query</li> </ul>
Description	A method for manually training LLM (Large Language Model) by giving a path of the PDF files and query as the context of the files or a question about the given file. Then the model will store the PDF file as a JSON format into the storage folder and send an answer as an object.
Return	A response object from the model

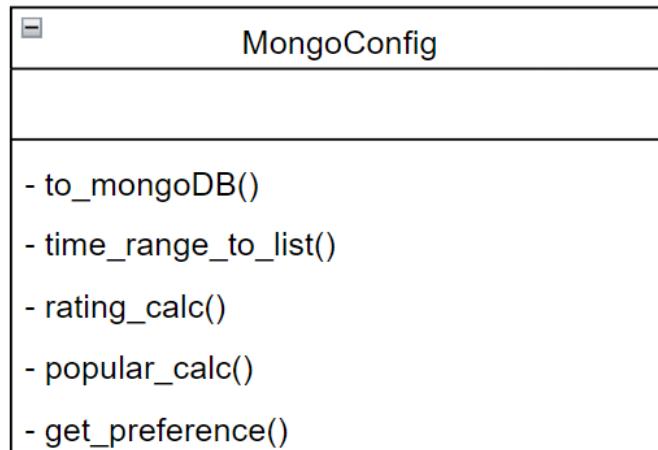
ID	CD-05-M02
Name	get_and_read_pdf
Parameters	-
Description	A flask API method for receiving a pdf file and user's query through API and sending a response as a JSON object
Return	A response object from the model

ID	CD-05-M03
Name	get mongo data
Parameters	-
Description	A method for retrieve a collections of bakery shops from mongoDB , processing, and sending data as a JSON object.
Return	A processed response object contains bakery shops data.
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ID	CD-05-M04
Name	reply
Parameters	-
Description	A flask API method for receiving a user's query through API and sending a response as a JSON object
Return	A response object from the model

ID	CD-05-M05
Name	download mongo data
Parameters	-
Description	A method for retrieve a collections of bakery shops from mongoDB to use them as a content in Excel files.
Return	A list of raw bakery shops data

## CD-06: MongoConfig



ID	CD-06-M01
Name	to_mongoDB
Parameters	DataFrame: df
Description	Send a data frame into MongoDB collection and store them as a scraping database
Return	Return true when a data frame is successfully sent to MongoDB. Otherwise, return false

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ID	CD-06-M02
Name	time range to list()
Parameters	String: time range
Description	Convert a range of time as string to a list of times (e.g., “18:00 – 19:00” to [“18:00”, “19:00”])
Return	A list of available time of the bakery shop.

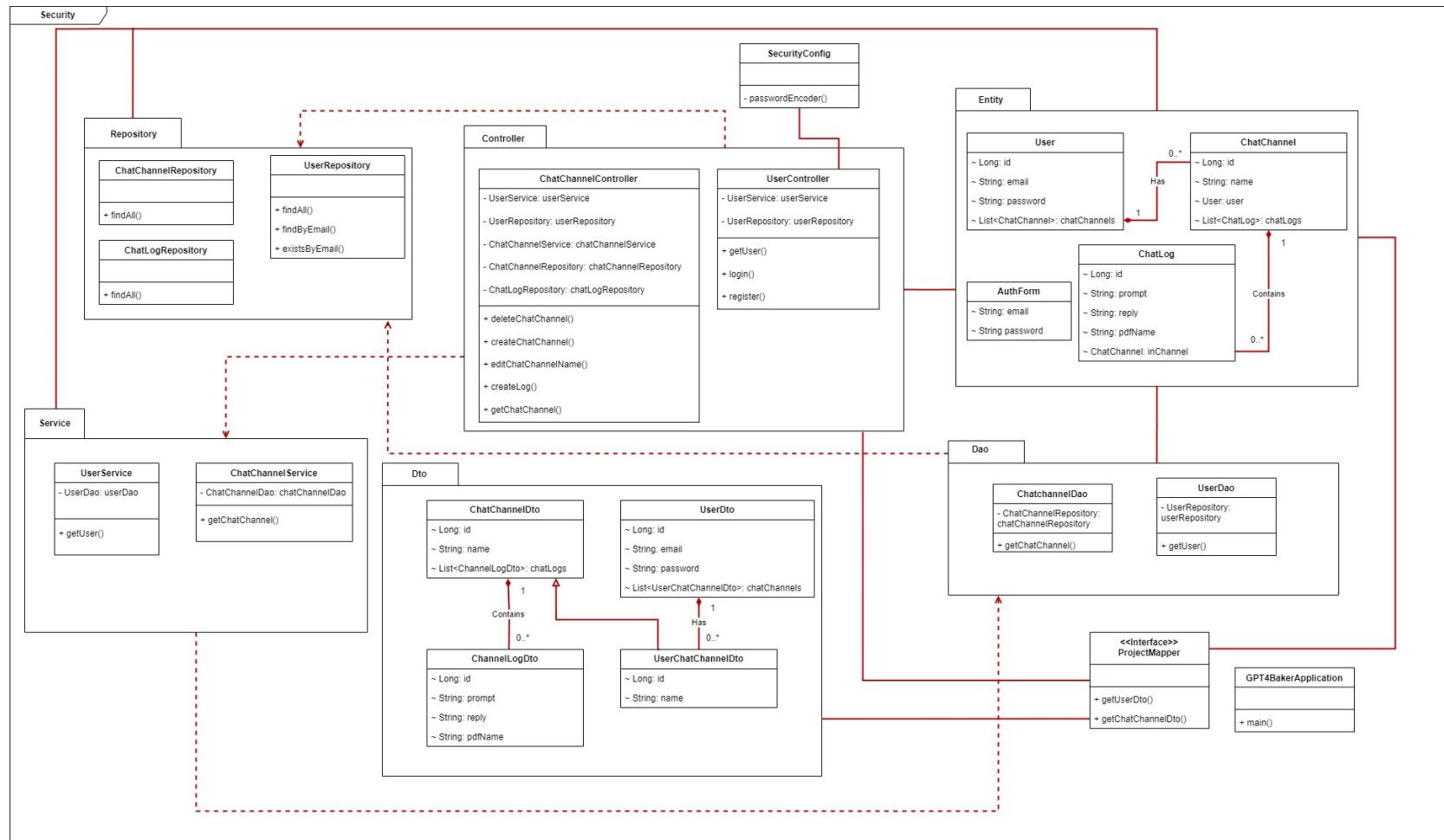
ID	CD-06-M03
Name	rating calc()
Parameters	Double: rating, Integer: rating amt, String: name
Description	Calculate a rating score of the bakery shop based on the overall and amount of people who rated.
Return	A rating score

ID	CD-06-M04
Name	popular calc()
Parameters	Integer: check in, Integer: bookmark, String: name
Description	Calculate a popularity score of the bakery shop based on the amount of people who check in and bookmark.
Return	A popularity score

ID	CD-06-M05
Name	get preference()
Parameters	Boolean: is for kids, Boolean is for group
Description	Get a restaurant preference based on two Booleans.
Return	A preference of the bakery shops

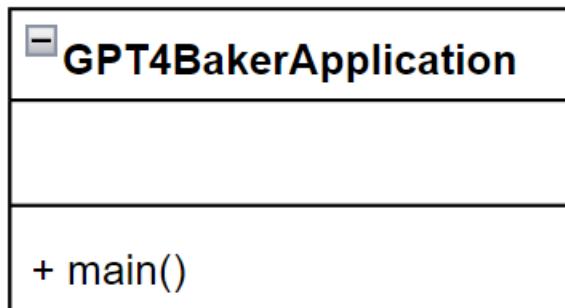
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### 3.2.2 Security Package Class Diagram



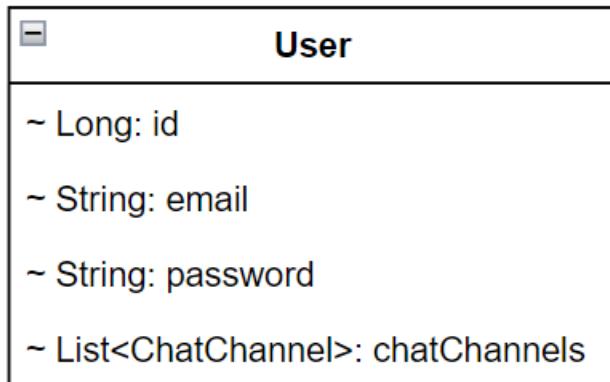
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## CD-07: GPT4BakerApplication



ID	CD-07-M01
Name	main
Parameters	String [] args
Description	Run Spring boot application on the specified server port
Return	-

## CD-08: User

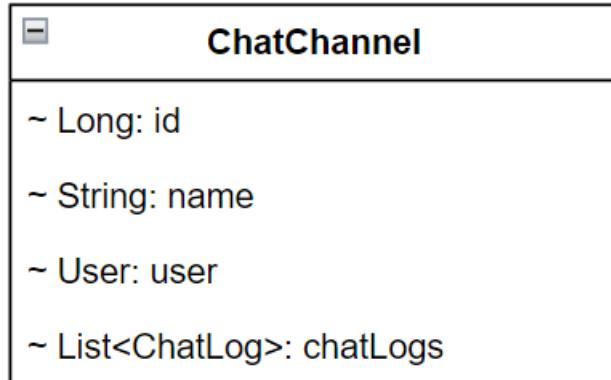


### Field Summary

ID	Modifier	Type	Field	Description
CD-08-F01	default	Long	id	The user Id
CD-08-F02	default	String	email	User's email address
CD-08-F03	default	String	password	User's password

CD-08-F04	default	List<ChatChannel>	chatChannels	A list contains user's chat channel.
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## CD-09: ChatChannel

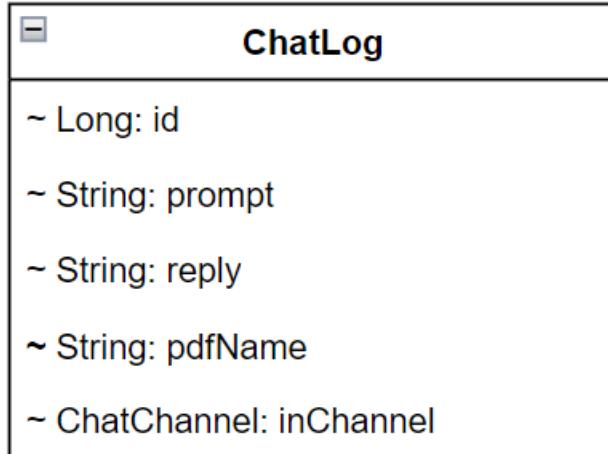


### Field Summary

ID	Modifier	Type	Field	Description
CD-09-F01	default	Long	id	The channel Id
CD-09-F02	default	String	name	The name of the channel
CD-09-F03	default	User	user	User who owns the channel
CD-09-F04	default	List<ChatLog>	chatLogs	A list of chat log in the channel

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## CD-10: ChatLog

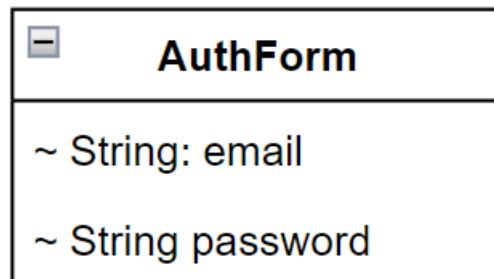


### Field Summary

ID	Modifier	Type	Field	Description
CD-10-F01	default	Long	id	The chat log Id
CD-10-F02	default	String	prompt	The user's input to the chatbot
CD-10-F03	default	String	reply	The reply from the chatbot
CD-10-F04	default	String	pdfName	The name of the attached pdf file
CD-10-F05	default	ChatChannel	inChannel	A chat channel that contains the chat log

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## CD-11: AuthForm

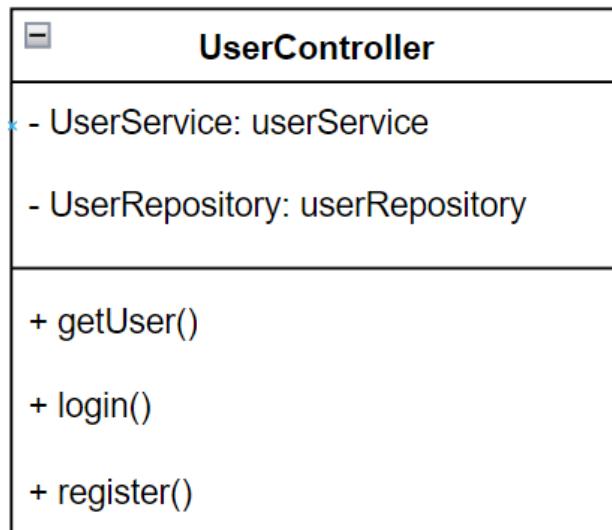


### Field Summary

ID	Modifier	Type	Field	Description
CD-11-F01	default	String	email	The email address input from the login or register form
CD-11-F02	default	String	password	The password input from the login or register form

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## CD-12: UserController



### Field Summary

ID	Modifier	Type	Field	Description
CD-12-F01	private	UserService	userService	Instance of UserService for calling its method.
CD-12-F02	private	UserRepository	userRepository	Instance of UserRepository for calling its method.

ID	CD-12-M01
Name	getUser
Parameters	Long: id
Description	Get a user by specified the user id.
Return	User data that contains attribute id, email, password, and list of their chat channels.

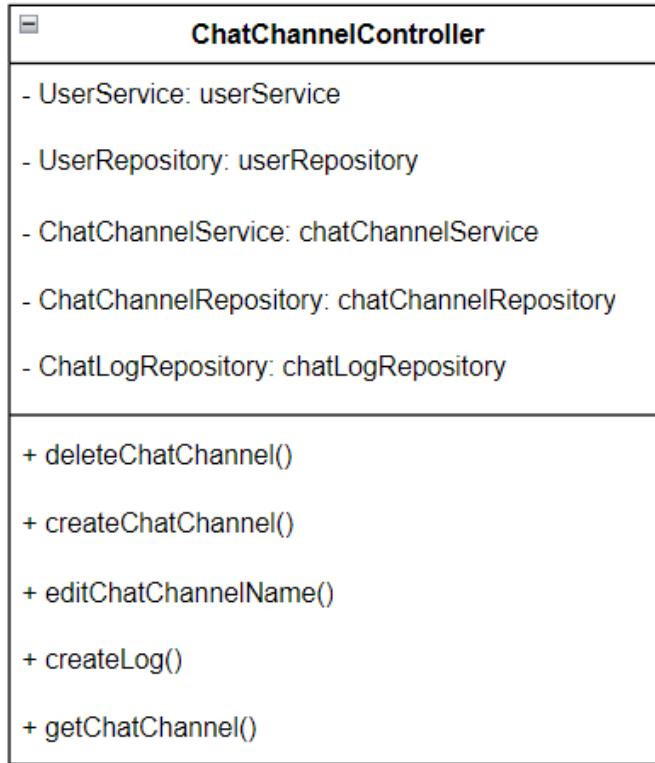
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ID	CD-12-M02
Name	login
Parameters	AuthForm: loginForm
Description	Method for verify user's credentials and grant them an access to the application
Return	Return logged in user id and email when logged in successfully. If not, return error message "Invalid username or password"

ID	CD-12-M03
Name	register
Parameters	AuthForm: registerForm
Description	Method for handle a new user into the system
Return	Return message "Registration successfully" when successfully add the new user. If not, return error message "Email already taken"

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## CD-13: ChatChannelController



### Field Summary

ID	Modifier	Type	Field	Description
CD-13-F01	private	UserService	userService	Instance of UserService for calling its method.
CD-13-F02	private	UserRepository	userRepository	Instance of UserRepository for calling its method.
CD-13-F03	private	ChatChannelService	chatChannelService	Instance of ChatChannelService for calling its method.
CD-13-F04	private	ChatChannelRepository	chatChannelRepository	Instance of ChatChannelRepository for

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				calling its method.
CD-13-F05	private	ChatLogRepository	chatLogRepository	Instance of ChatLogRepository for calling its method.

ID	CD-13-M01
Name	deleteChatChannel
Parameters	Long: channelId
Description	Delete the chat channel which its id is match the channelId
Return	User object with their updated list of chat channels.

ID	CD-13-M02
Name	createChatChannel
Parameters	Long: userId
Description	Create the chat channel and assign it to the user who have id the same as userId.
Return	User object with their updated list of Chat Channels.

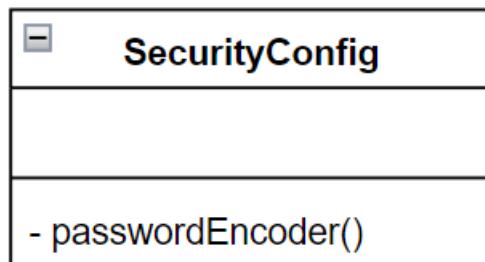
ID	CD-13-M03
Name	editChatChannelName
Parameters	<ul style="list-style-type: none"> <li>- Long: id</li> <li>- String name</li> </ul>
Description	Change the specified chat channel's name to the given name in the parameter
Return	Chat channel object with the updated name attribute

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ID	CD-13-M04
Name	createLog
Parameters	<ul style="list-style-type: none"> <li>- Long: id</li> <li>- String: prompt</li> <li>- String: reply</li> <li>- String pdfName</li> </ul>
Description	Create a new chatlog using the given prompt, reply, and pdfName. Then assign to the chat channel that have id the same as the id in parameter.
Return	Chat channel object with the updated list of chat logs.

ID	CD-13-M05
Name	getChatChannel
Parameters	Long: id
Description	Get channel by specified its id.
Return	Get the chat channel with its attribute id, name, and list of its chat log.

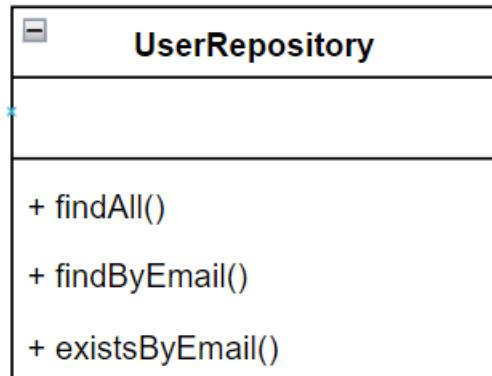
## CD-14: SecurityConfig



ID	CD-14-M01
Name	passwordEncoder
Parameters	-
Description	A built-in Spring boot security for encrypt user's password to store in the database
Return	The encrypted password.

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## CD-15: UserRepository



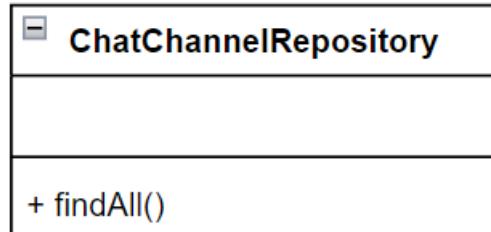
ID	CD-15-M01
Name	findAll
Parameters	-
Description	Find all users in database
Return	List of users

ID	CD-15-M02
Name	findByEmail
Parameters	-
Description	Find the user by their email address
Return	User with the specified email address

ID	CD-15-M03
Name	existsByEmail
Parameters	-
Description	Boolean for checking whether the email is already existed in database.
Return	Return true when it exists. Else, return false.

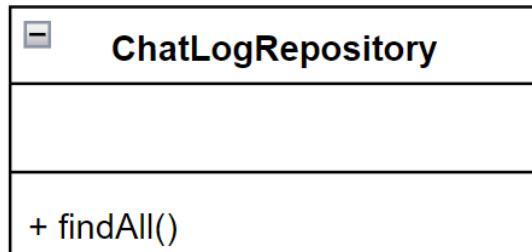
Document Name	GPT 4 Baker	Owner	SL, TV	Page	171
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## CD-16: ChatChannelRepository



ID	CD-16-M01
Name	findAll
Parameters	-
Description	Find all chat channels in database
Return	List of chat channels

## CD-17: ChatLogRepository



ID	CD-17-M01
Name	findAll
Parameters	-
Description	Find all chat logs in database
Return	List of chat logs

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## CD-18: UserService



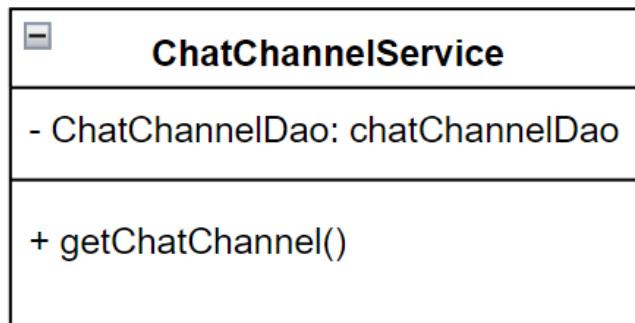
### Field Summary

ID	Modifier	Type	Field	Description
CD-18-F01	private	UserDao	userDao	Instance of UserDao for calling its method.

ID	CD-18-M01
Name	getUser
Parameters	Long: id
Description	Get a user by id
Return	User data that contains attribute id, email, password, and list of their chat channels.

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## CD-19: ChatChannelService



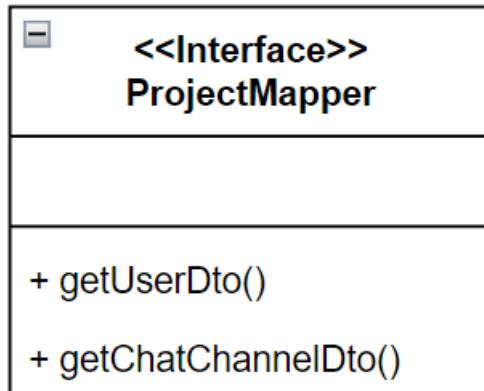
### Field Summary

ID	Modifier	Type	Field	Description
CD-19-F01	private	ChatChannelDao	chatChannelDao	Instance of ChatChannelDao for calling its method.

ID	CD-19-M01
Name	getChatChannel
Parameters	Long: id
Description	Get channel by specified its id.
Return	Get the chat channel with its attribute id, name, and list of its chat log.

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## CD-20: ProjectMapper

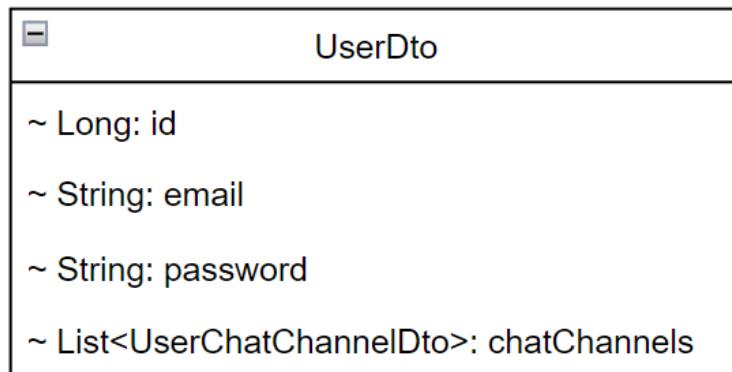


ID	CD-20-M01
Name	getUserDto()
Parameters	User: user
Description	Map the data from the User object to UserDto object to helps manage data transfer and security.
Return	UserDto object

ID	CD-20-M02
Name	getChatChannelDto()
Parameters	ChatChannel: chatChannel
Description	Map the data from the ChatChannel object to ChatChannelDto object to helps manage data transfer and security.
Return	ChatChannelDto object

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## CD-21: UserDto



### Field Summary

ID	Modifier	Type	Field	Description
CD-21-F01	default	Long	id	The user Id
CD-21-F02	default	String	email	User's email address
CD-21-F03	default	String	password	User's password
CD-21-F04	default	List<UserChatChannelDto>	chatChannels	A list contains user's chat channel in the form of DTO object.

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## CD-22: ChatChannelDto

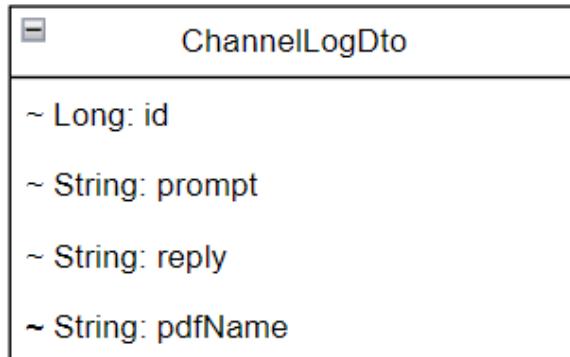


### Field Summary

ID	Modifier	Type	Field	Description
CD-22-F01	default	Long	id	The channel Id
CD-22-F02	default	String	name	The name of the channel
CD-22-F03	default	List<ChatLog>	chatLogs	A list of chat log in the channel in the form of DTO object

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## CD-23: ChannelLogDto



### Field Summary

ID	Modifier	Type	Field	Description
CD-23-F01	default	Long	id	The chat log Id
CD-23-F02	default	String	prompt	The user's input to the chatbot
CD-23-F03	default	String	reply	The reply from the chatbot
CD-23-F04	default	String	pdfName	The name of the attached pdf file

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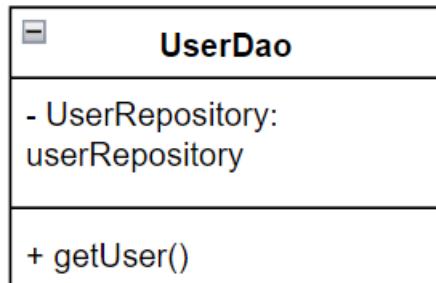
## CD-24: UserChannelDto



### Field Summary

ID	Modifier	Type	Field	Description
CD-24-F01	default	Long	id	The channel Id
CD-24-F02	default	String	name	The name of the channel

## CD-25: UserDao



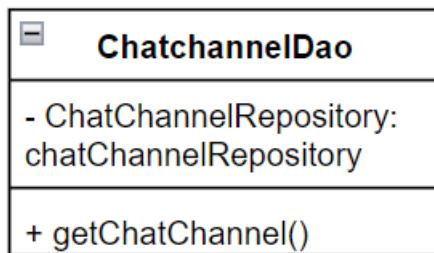
### Field Summary

ID	Modifier	Type	Field	Description
CD-25-F01	private	UserRepository	userRepository	Instance of UserRepository for calling its method.

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ID	CD-25-M01
Name	getUser
Parameters	Long: id
Description	Get a user by specified the user id.
Return	User data that contains attribute id, email, password, and list of their chat channels.

## CD-26: ChatChannelDao



### Field Summary

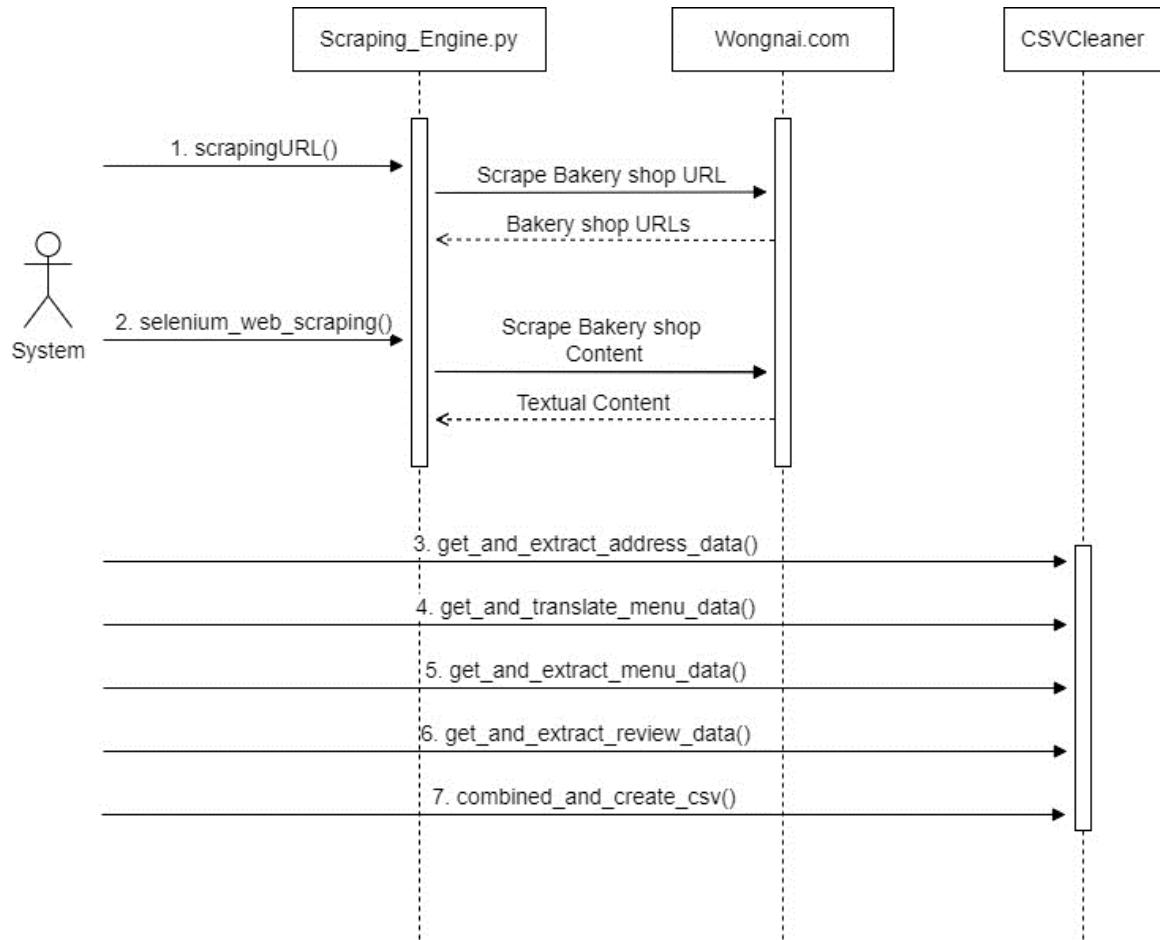
ID	Modifier	Type	Field	Description
CD-26-F01	private	ChatChannelRepository	chatChannelRepository	Instance of ChatChannelRepository for calling its method.

ID	CD-26-M01
Name	getChatChannel
Parameters	Long: id
Description	Get chat channel by specified its id.
Return	Get the chat channel with its attribute id, name, and list of its chat log.

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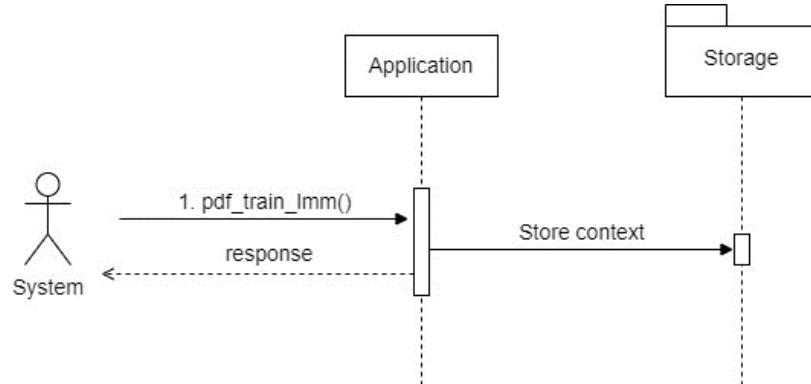
### 3.3 Sequence Diagram

SD-01: The system can receive content about bakery shops in Chiang Mai from wongnai.com and clean those data.

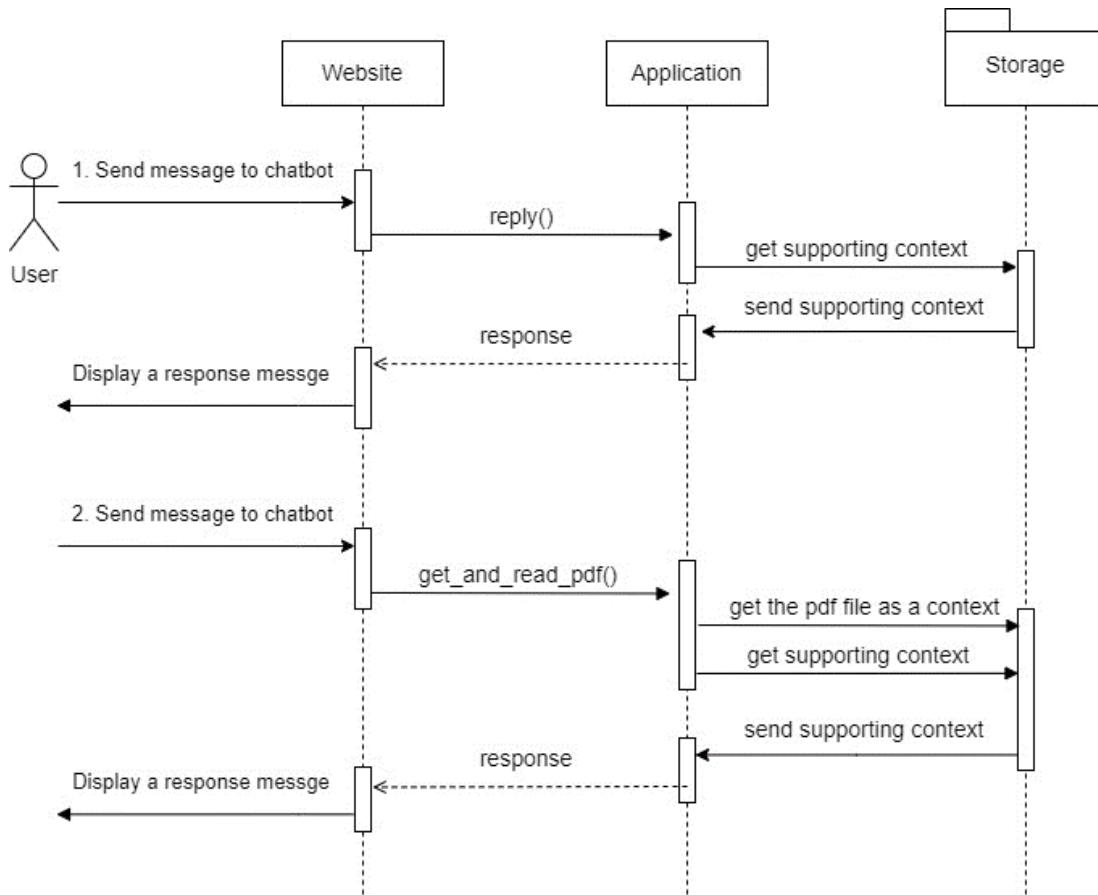


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SD-02: The AI model can learn and adapt itself by adding a pdf file to their knowledge base which is known as a storage folder.

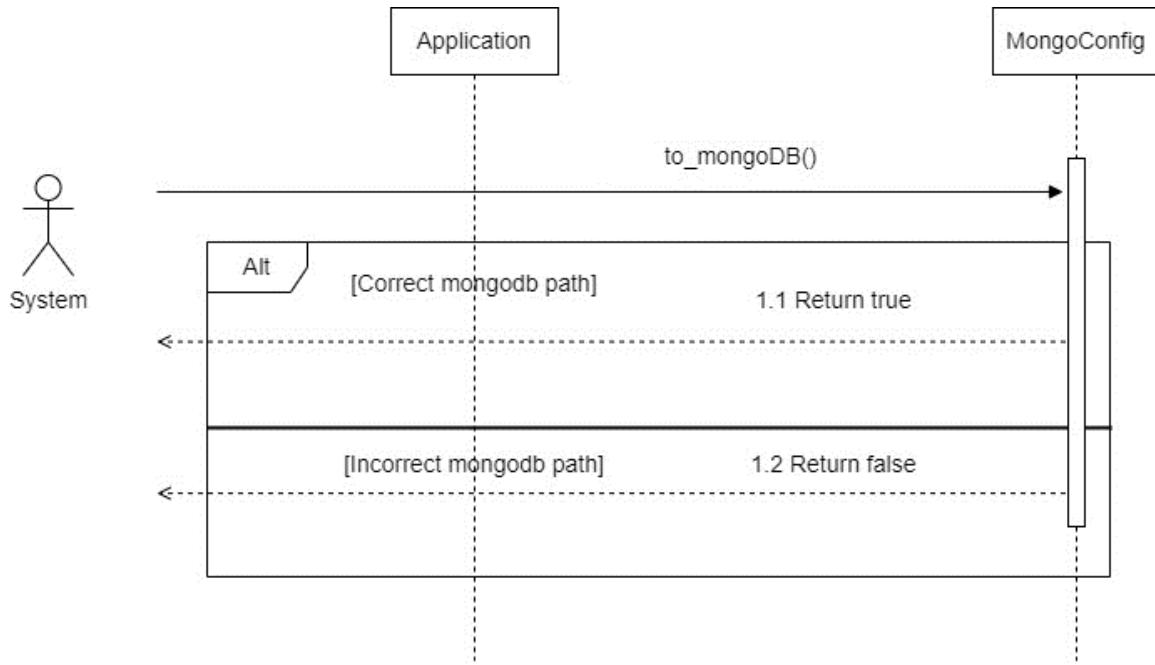


SD-03: User can send a message or send a message with a pdf file to the model and the model can response user back as a message.

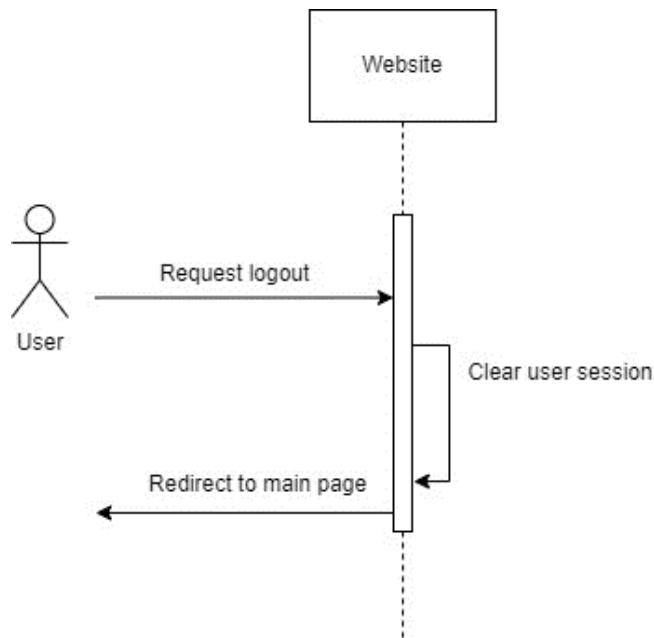


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SD-04: The application can send bakery data to MongoDB to store them as a collection.

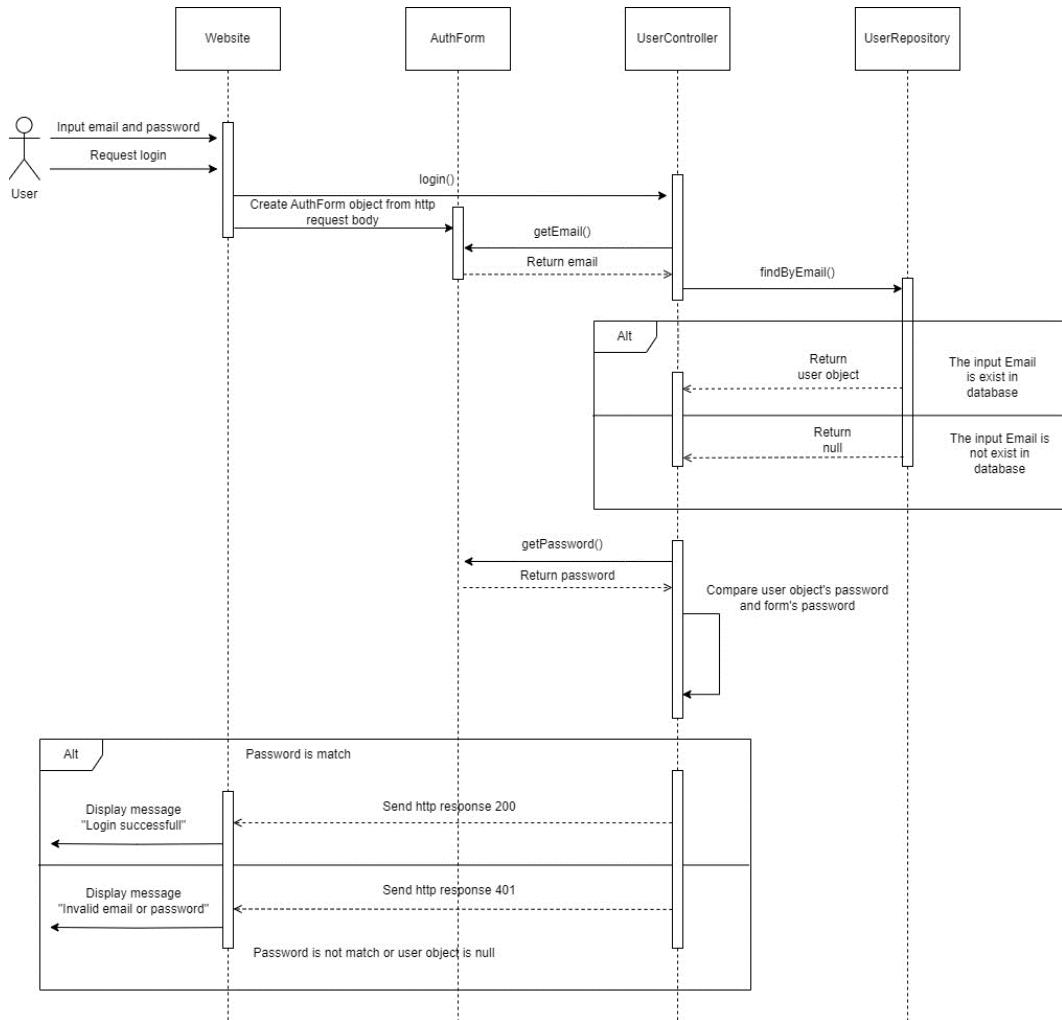


SD-05: User can log out of the system.



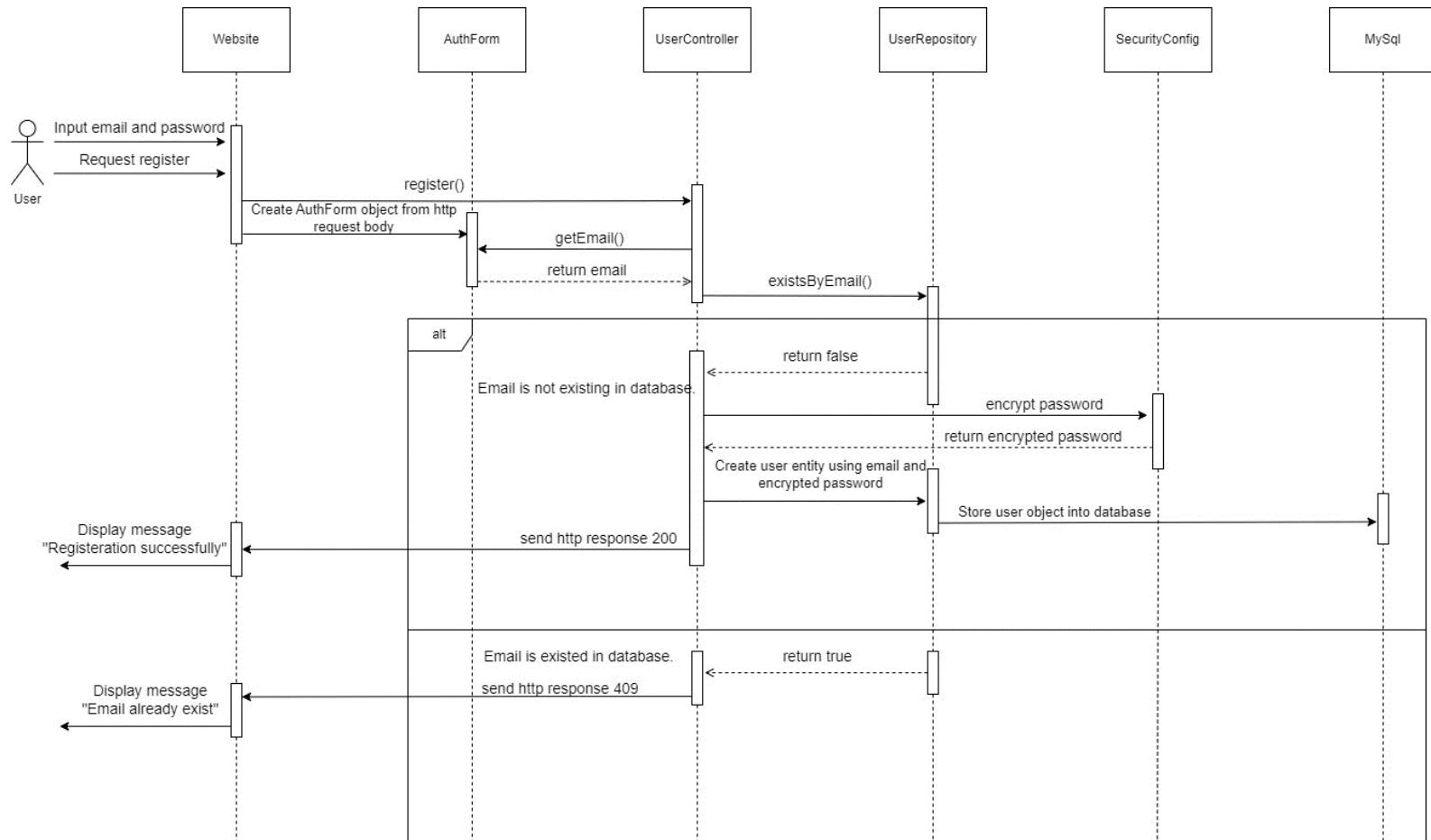
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**SD-06: User can login to the system using email and password.**

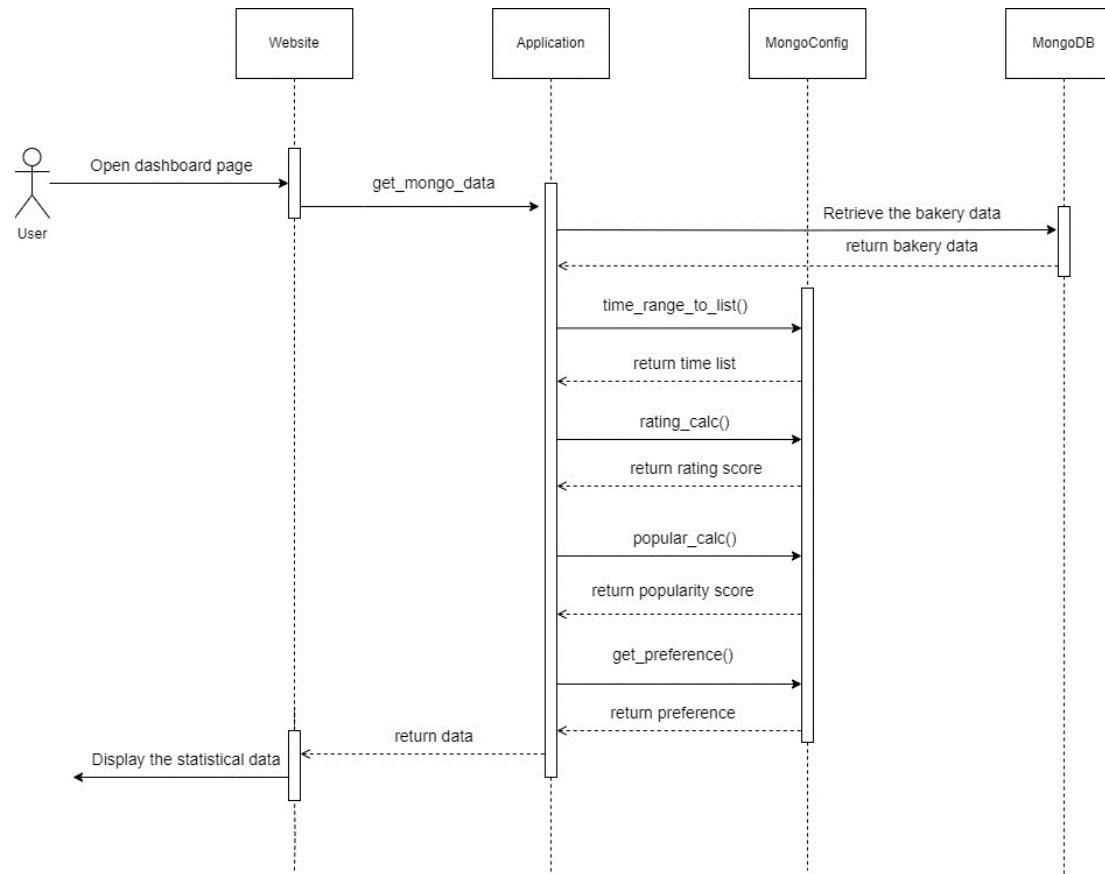


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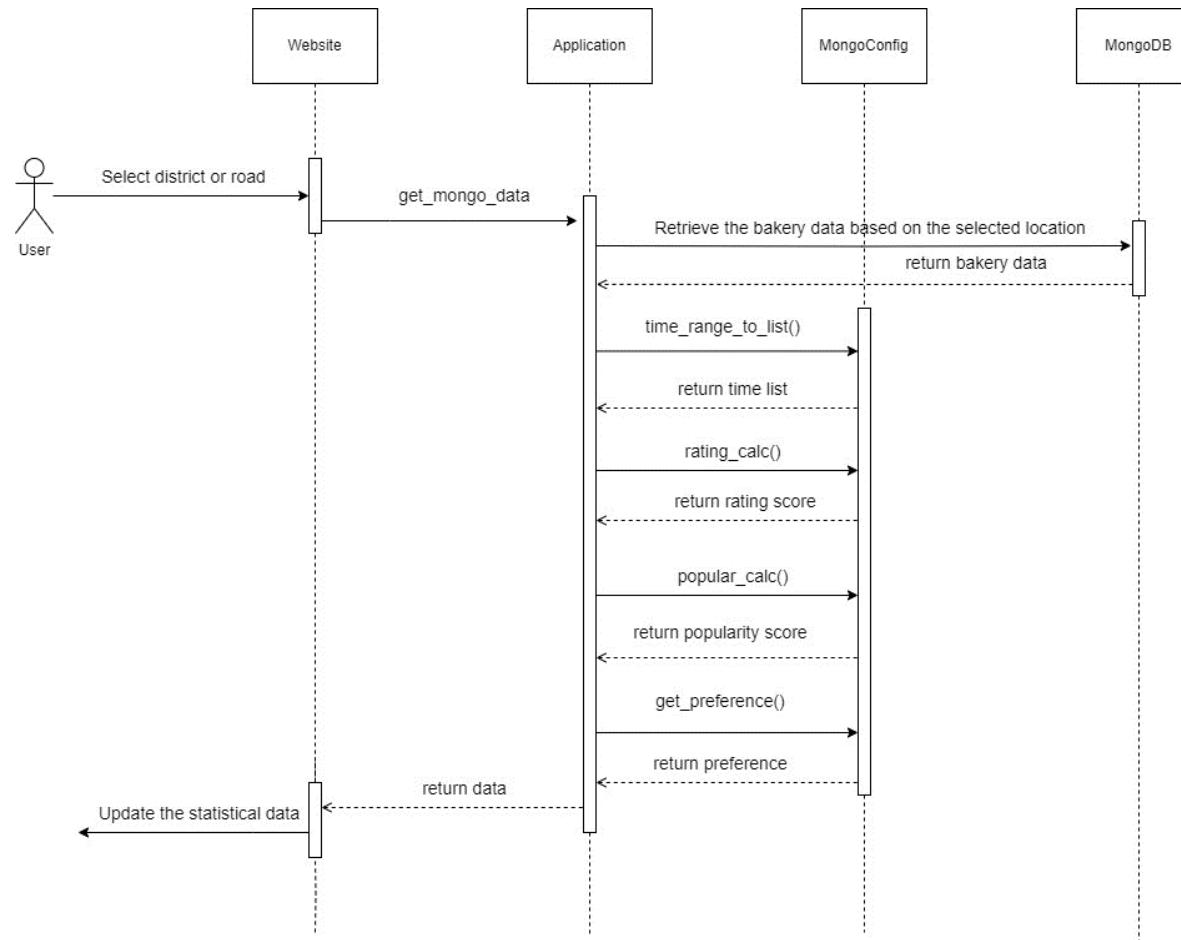
SD-07: User can perform registration into the system.



SD-08: User can see the visualized bakery data in the dashboard page.

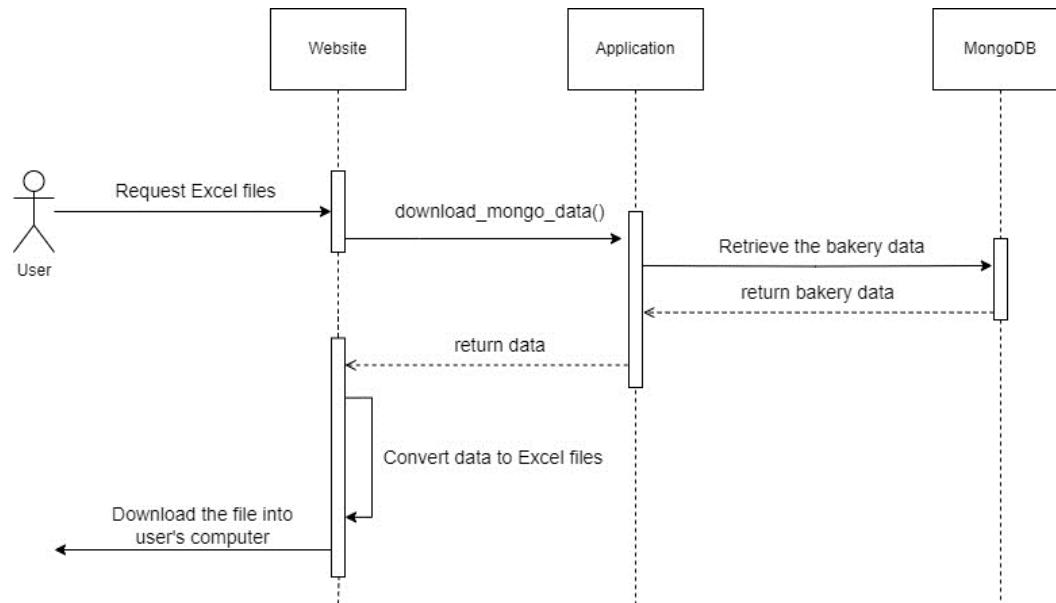


SD-09: User can choose to see visualized data based on their selected district or road.



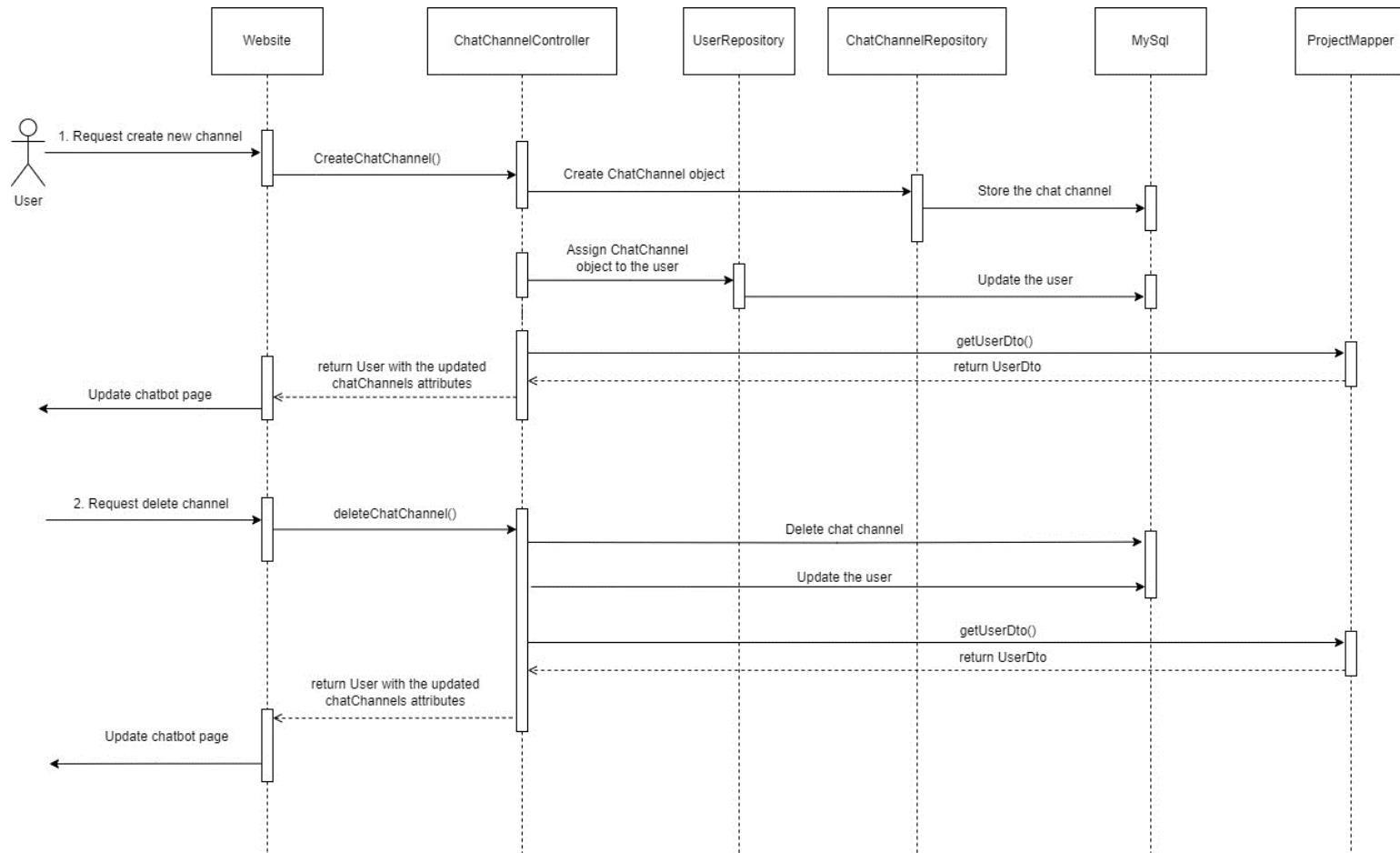
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SD-10: User can download the dashboard data reference as an excel file.



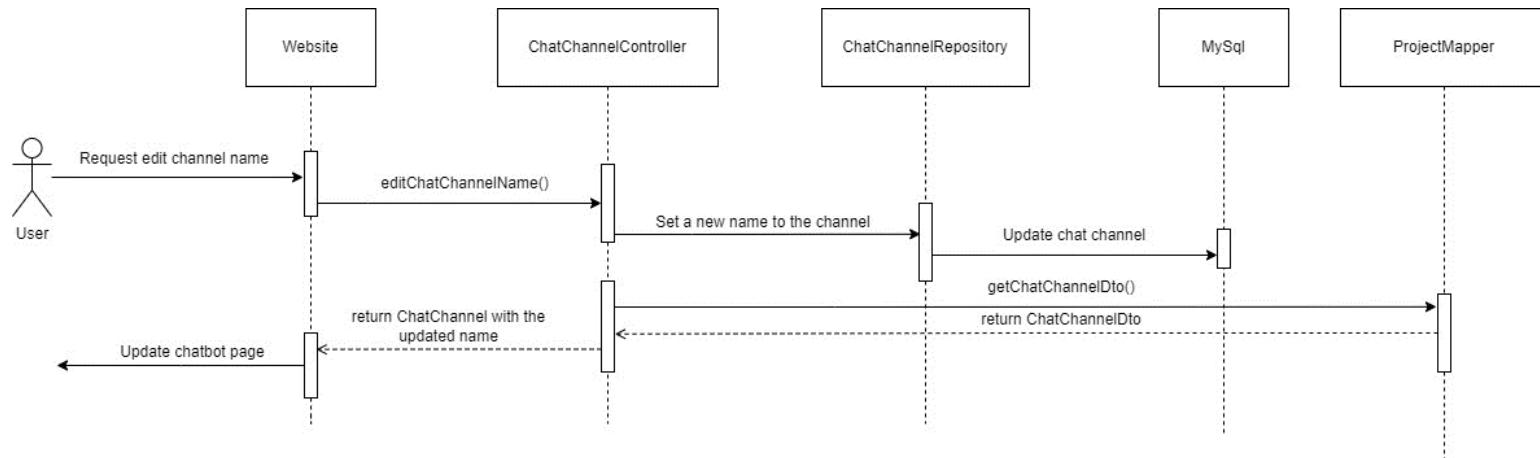
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SD-11: User can create a new chat channel and delete the existing chat channel.

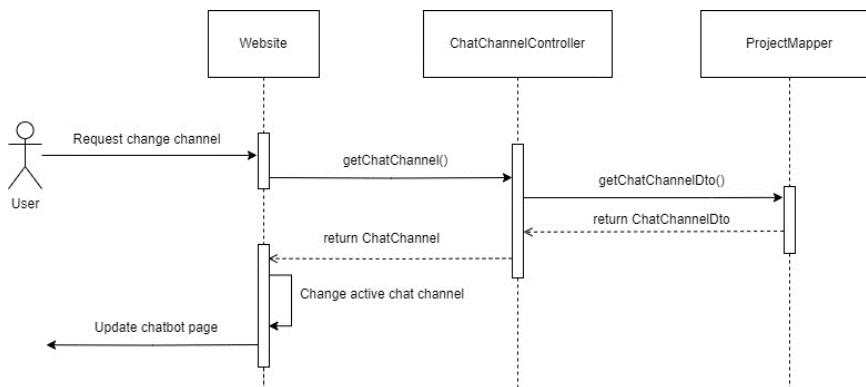


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SD-12: User can edit their chat channel name.

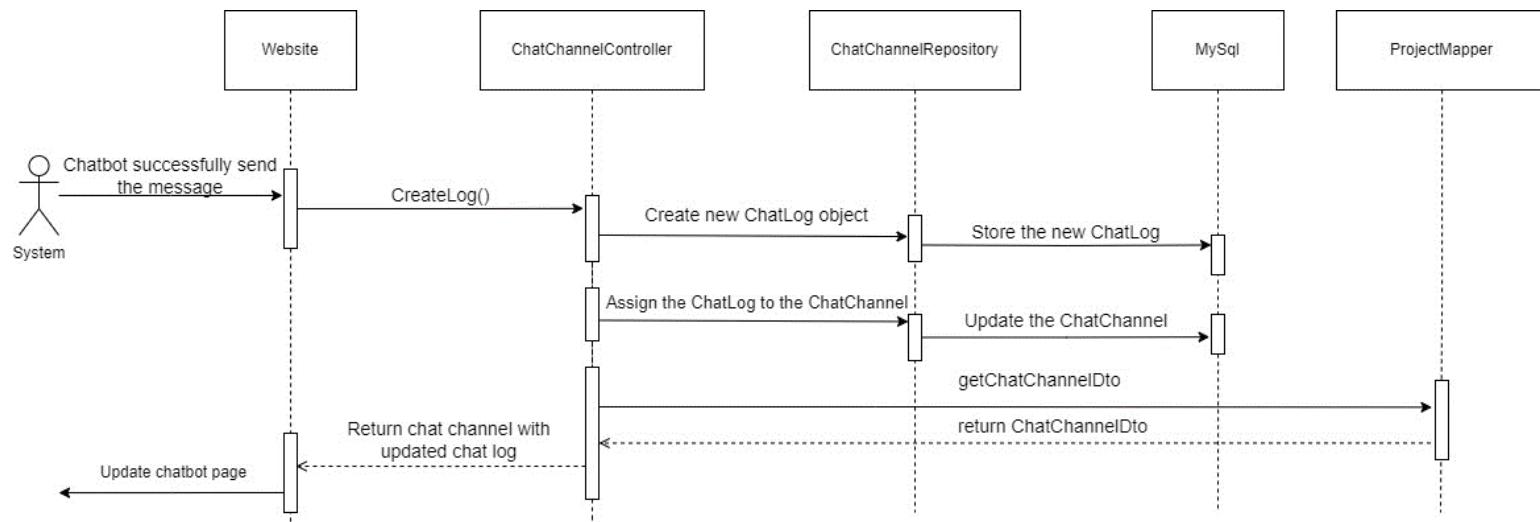


SD-13: User can select chat channel from one to another.



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SD-14: When the chatbot response, the system can store user input message, chatbot message, and the name of the pdf file as a ChatLog object and assign it to the used ChatChannel.



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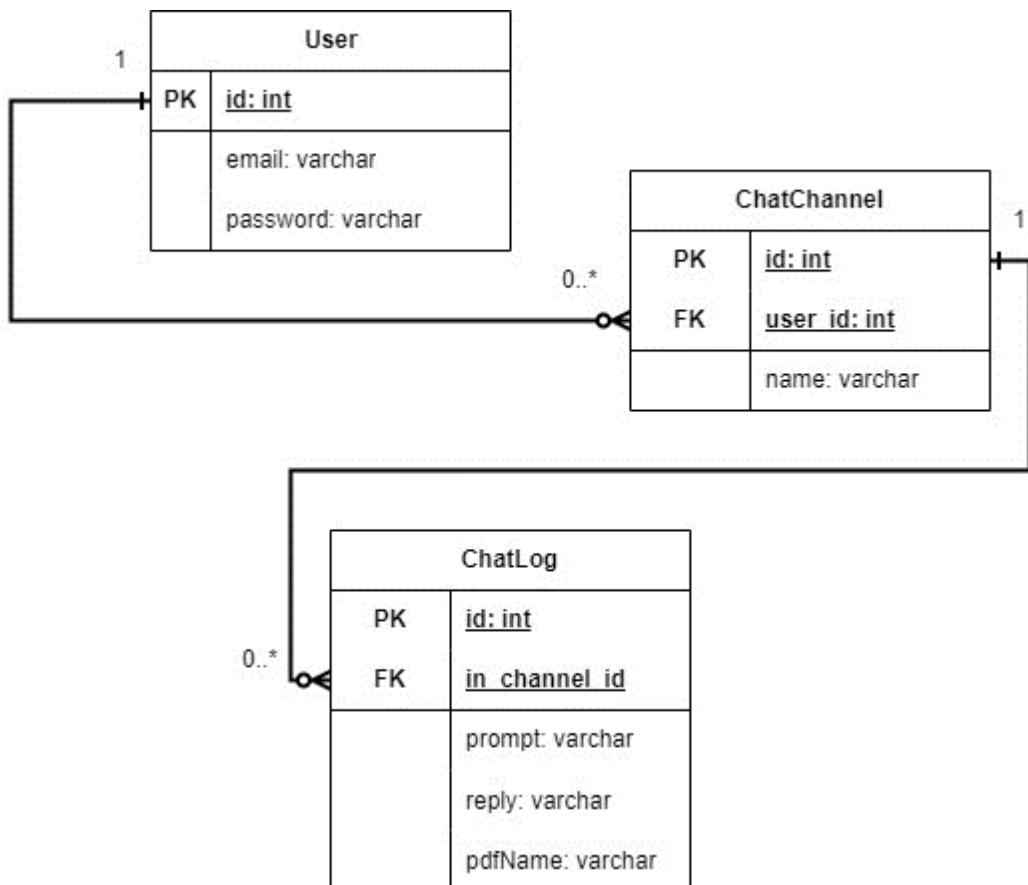
# Chapter 4 | Database Structure

## DB-01: Scraping Database

bakery_shop
name: String rating: Double rating_amt: Int address: String menu: String open_hr: String delivery_hr: String price_scale: ENUM('1', '2', '3', 'none') *(either '1', '2', '3', or 'none') seat_amt: Int review: String check_in: int bookmarked: int car_park: Boolean wi_fi: Boolean petAllows: Boolean card_accept: Boolean delivery: Boolean for_kids: Boolean for_group: Boolean

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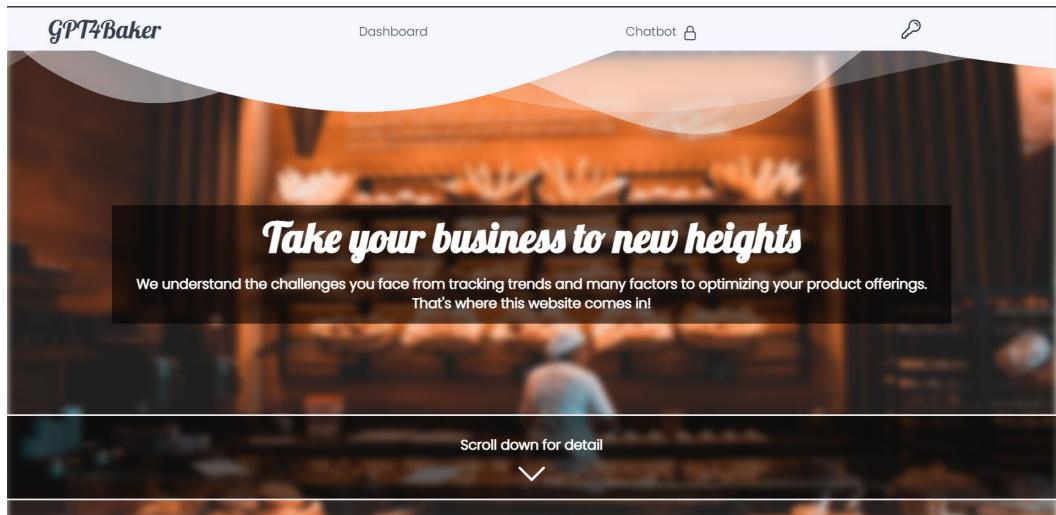
## DB-02: User Authentication Database



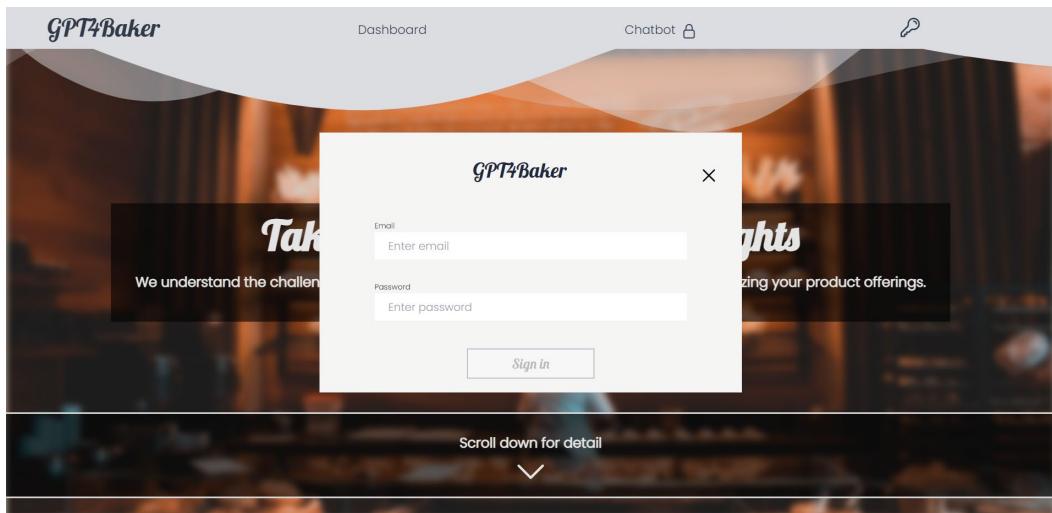
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# Chapter 5 | User Interface Design

## UI-01: Home page

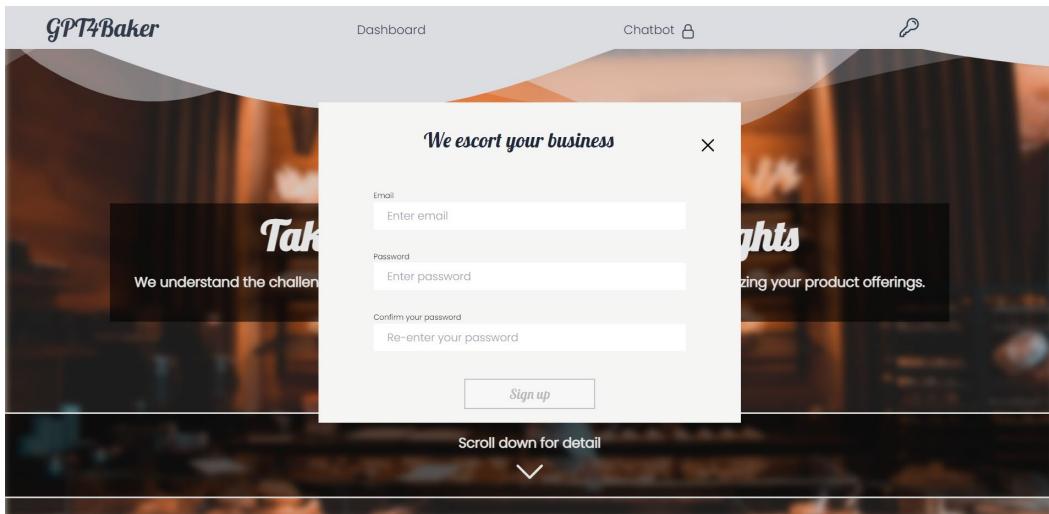


## UI-02: Login Page

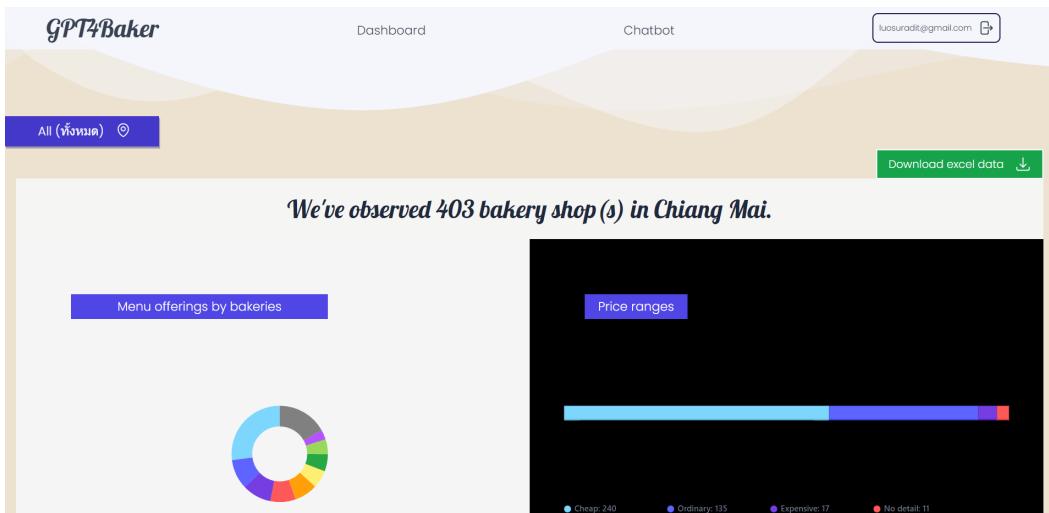


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## UI-03: Register Page



## UI-04: Dashboard Page



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## UI-05: User select location menu Page

The screenshot shows a user interface for a bakery application. At the top, there's a header with the logo 'GPT4Baker', navigation links for 'Dashboard' and 'Chatbot', and a user account icon. A sidebar on the left has a 'All (ทั้งหมด)' button. The main content area features a modal dialog titled 'Select district/road'. This dialog contains a grid of 16 items, each with a name in English and Thai. Below the grid is a 'Close' button. At the bottom of the page, there's a circular donut chart and a horizontal bar chart showing price ranges.

All (ทั้งหมด)	Mueang Chiang Mai (เมืองเชียงใหม่)	Chang Klan (ช้างคลาน)	Chang Mai (เชียงใหม่)
Chang Phueak (ช้างเผือก)	Fa Ham (ฟ้าหมา)	Hang Dong (หางดง)	Huai Kaew (ห้วยแก้ว)
Mae Hia (แม่เหีย)	Mae Rim (แมรีม)	Mae On (แม่อ่อน)	Nong Hoi (หนองหอย)
Nong Pa Khrang (หนองป่าครัง)	Pa Daet (ป่าเดต)	San Kamphaeng (สันกำแพง)	San Sai (สันไทร)
San Kamphaeng (สันกำแพง)	San Pa Tong (สันป่าตอง)	Saraphi (สารภี)	Sri Phum (ศรีภูมิ)
Suthep (สุเทพ)	Business Park (อุป頂きใน บริษัทสถาพร)	Nimmanhaemin (นิมมานเหมินทร์)	Charoenrat (เจริญราษฎร์)
Ratchaphruek (ราชพฤกษ์)	Charoenrat (เจริญราษฎร์)	Tha Phae (ಥาแพ)	Prapokkla (ประพอกกล้า)
Chotana (จตุณนา)			

## UI-06: User selected location page (i.e., select Suthep)

This screenshot shows the application after a user has selected the 'Suthep' location. The header and sidebar are similar to UI-05. The main content area now displays a message: 'We've observed 53 bakery shop(s) in Suthep.' Below this message are two charts: a donut chart for 'Menu offerings by bakeries' and a horizontal bar chart for 'Price ranges'.

**Menu offerings by bakeries:**

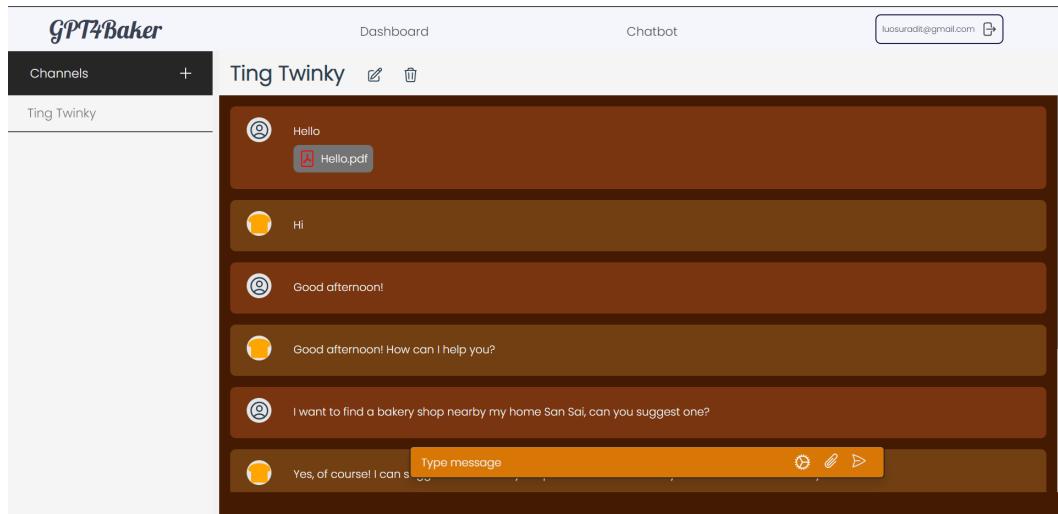
- Cheap: 29
- Ordinary: 22
- Expensive: 2
- No detail: 11

**Price ranges:**

- Cheap: 29
- Ordinary: 22
- Expensive: 2

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## UI-07: Chatbot page



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# **Chapter 5**

## **Test Plan**

**GPT 4 Baker**

**Test Plan**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

**Bachelor of Science  
Software Engineering Program**

**Department College of Arts, Media, and  
Technology**

**Chiang Mai University**

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**Project Advisor  
Asst. Prof. Dr. Pree Thiengburanathum**

# GPT 4 Baker

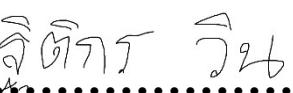
Thictikorne Vin 632115015

Suradit Luo 632115043

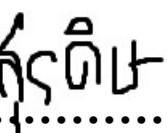
**THIS REPORT HAS BEEN APPROVED TO BE A  
PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE SOFTWARE  
ENGINEERING PROGRAM: COLLEGE OF ARTS  
MEDIA AND TECHNOLOGY**

.....  
.....ADVISOR

**Asst. Prof. Dr. PREE THIENGBURANATHUM**

.....  
.....MEMBER

**THICTIKORNE VIN**

.....  
.....MEMBER

**SURADIT LUO**

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## Document History

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\*SL = Suradit Luo

\*TV = Thictikorne Vin

\*PT = Asst. Prof. Dr. Pree Thiengburanathum

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# **Chapter 1 | Introduction**

## **1.1 Project Objective**

GPT 4 Baker is a marketing analysis website that replaces the old one with newer technology. It lets users view the dashboard and use a chatbot to obtain marketing and user insight in order to reduce the failure rate in the bakery business and create innovativeness in their new product and make bakery shops stay relevant in the market.

## **1.2 Test Method**

<b>Unit test</b>	<b>System Test</b>
Whitebox testing	Blackbox testing (Includes function test and GUI test)

## **1.3 Intended Audience**

The main intended audience of this document is all significant stakeholders, which include the development team, the project owner, testers, the senior project advisor (Asst. Prof. Dr. Pree Thiengburanathum), and anyone evaluating the project.

## **1.4 Project Scope**

The scope of this project is to develop a webpage and AI model to help people who want to start or be successful with their bakery business in Chiang Mai by interacting with our chatbot or gathering marketing and customer insight from a dashboard. Our chatbot provides a message box for users to send a message to our AI model. The web application also has a dashboard for better visualization of data to help bakery owners or a user to make decisions on their business. Guest and Users have different dashboard accessibility. Users can use dashboard and chatbot features like admin.

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## 1.5 Acronym & Definition

### 1.5.1 Acronym

UTS – Unit Test Script

STS – System Test Script

UTC – Unit Test Case

STC – System Test Case

### 1.5.2 Definition

Name	Definition
IEEE	Institute for Electrical and Electronics Engineers. Biggest global interest group for engineers of different branches and computer scientists. [IEEE90]
Requirement	A condition or capability needed by the user to solve a problem or achieve an objective. A condition or capability that must be met or possessed by a system or system component to satisfy a contract, standard, specification, or other formally imposed document. A documented representation of a condition or capability as in definition (1) or (2). [IEEE90]
Specification	Precise description of an activity or work product that serves as the basic or input for further activities or work product. A specification can comprise requirements for a product and how they will be solved. Different parts of a specification (e.g., what is to be done, how it will be done) must not be mixed. [IEEE90]
Unit Test	A test of individual programs or modules in order to remove design or programming errors.
Acceptance Test	Test activities for sample checks to verify that the system (or product, solution) has the right quality for deployment or usage. Often an acceptance test is done by the customer. [IEEE90]

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Feature	Transformation of input parameters to output parameters based on a specified algorithm. It describes the functionality of the product in the language of the product. Used for requirements analysis, design, coding, testing or maintenance. [IEEE90]
Plan	A documented series of tasks requires meeting an objective, typically including the associated schedule, budget, resources, organizational description, and work breakdown structure. [IEEE90]
Project Plan	A formal, approved document used to guide both project execution and project control. The primary uses of the project plan are to document planning assumptions and decisions, to facilitate communication among stakeholders, and document approved scope, cost, and schedule baseline. [IEEE90]
Project Management	The application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project. [IEEE90]
Risk	An uncertain event or condition that, if it occurs has a positive or negative effect on the project's objectives. It is a function of the probability of occurrence of a given threat's occurrence. [IEEE90]
Risk Management	The systematic application of management policies, procedures, and practices to the tasks of identifying, analyzing, evaluating, treating and monitoring risk. [IEEE90]
Traceability	The ability to trace the history, application or location of an item or activity, or work products or activities, by means of recorded identification. The establishment and maintenance of relationships between such items. Horizontal traceability describes the relationship between work products of the same type (eg. customer requirements). Vertical traceability describes the relationship between work products that build upon each other or are derived from each other (eg. from customer requirements to qualification test cases). Bidirectional traceability allows to directly follow relationships in both directions. [IEEE90]
*	Used for explanation or supplementary explanation.

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# Chapter 2 | Unit Test

## UTS-001

**Test method:** remove\_thai\_word(str: text): return str

**Description:** Test a method that removes specified Thai word and replace it with a blank space. Helpful for text recognition that requires a cleaned text.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result
UTC-001	Test the method can clean Thai address detail	“335 บุคลเมือง ซอย9 ต.ศรีภูมิ อ.เมือง จ.เชียงใหม่ 50200 เชียงใหม่ (ซอยหลังก้ายเดี่ยว สายเยี่ยม แจ่งศรีภูมิ (เข้า บุคลเมือง ซอย9 30 เมตร และ เลี้ยวขวา))”	“335 บุคลเมือง 9 ศรีภูมิ เมือง เชียงใหม่ 50200 เชียงใหม่ ( หลังก้ายเดี่ยว สายเยี่ยม แจ่งศรีภูมิ (เข้า บุคล เมือง 9 30 เมตร เลี้ยวขวา))”
UTC-002	Test when all words are stop words.	“อ. จ. ถนน และ ตำบล, หรือ ซอย”	“ ”

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## UTS-002

**Test method:** reply(): return Object

**Description:** Test the response message and the confidence score is meet the expectation.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result
UTC-003	Chatbot can count how many bakery shop in district approximately	"How many bakery shops/restaurant in Suthep? Number only"	{ "date": **, "message": { "response": "\n53" }, "response": "200", "score": * }
UTC-004	Chatbot can list top 5 bakery shops in Chiang Mai	"Top 5 bakery shops in Chiang Mai? List only."	{ "date": **, "message": { "response": "\n1. Cheevit Ch eeva\n2. Mooh Store Chiangmai Bakery\n3. Praew Factory\n4. Ba an Piemsuk\n5. Chiang Mai Cake Shop" }, "response": "200", "score": * }

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UTC-005	Chatbot can predict a popular bakery menu based on a specified scenario	'Can you predict a bakery menu that might sell well in Chiang Mai when sugar becomes expensive?'	<pre>{   "date": **,   "message": {     "response": ***   },   "response": "200",   "score": * }</pre> <p>The response satisfaction scale is more than 7</p>
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\* The value of the score should be between 0.7 and 1 ( $0.7 \leq \text{score} \leq 1.0$ ), the score indicates to how confident the response is.

\*\* “date” value refers to the date that this response object is sent. The date format should be ([Day], [date] [month] [year] [hour:minute:second] GMT)

\*\*\* An unpredictable response, this value measure by a satisfaction of the tester (scale 1-10).

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## UTS-003

**Test method:** get\_and\_read\_pdf(): return Object

**Description:** Test when the chatbot receives a pdf file, it can read the files and answer the question based on the given files.

**Prerequisite:** The sample data is prepared in Appendix A.

### Test data from Appendix A

File name	Content inside pdf
Pig_Question.pdf	There are 5,000 pigs inside Bryan's house.

File name	Content inside pdf
Drake_Question.pdf	Drake Story: Drake is the bakery owner, his shop take place in Tha Sala and mainly sold cinnamon roll. One day he decided to sell cake instead of cinnamon rolls, but no one bought a cake. Years later, his business shut down.

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**Test cases:**

ID	Description	Input	Expected result
UTC-006	Chatbot can read pdf file and response simple answer.	Attach file Pig_Question.pdf  And ask "How many pigs are in Bryan's house? Number only."	{         "date": **, "message": { "response": "\n5,000" }, "response": "200", "score": *       }
UTC-007	Chatbot can analyze the pdf file using its knowledge base	Attach file Drake_Question.pdf  And ask "According to Drake story, give me a reason why bakery shop shouldn't change their menu suddenly."	{         "date": **, "message": { "response": *** }, "response": "200", "score": 0.859973013917168       } The response satisfaction scale is more than 7

\* The value of the score should be between 0.7 and 1 ( $0.7 \leq \text{score} \leq 1.0$ ), the score indicates to how confident the response is.

\*\* “date” value refers to the date that this response object is sent. The date format should be ([Day], [date] [month] [year] [hour:minute:second] GMT)

\*\*\* An unpredictable response, this value measure by a satisfaction of the tester (scale 1-10).

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## UTS-004

**Test method:** ResponseEntity<Map<String, String>> login(LoginForm loginForm) :  
return ResponseEntity

**Description:** Test Login method to checking whether the method can get email and password and verify it.

**Prerequisite:** The test data is available at appendix B

**Testcase:**

ID	Description	Input	Expected result
UTC-008	Test the method to login successfully	{ “email”: “luosuradit@gmail.com” “password”: “TokiDoki@081” }	{"message": "Login successful"}
UTC-009	Test for incorrect any input field	{ “email”: “luosuradit@gmail.com” “password”: “TokiDoki” }	{"message": "Invalid username or password"}

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## UTS-005

**Test method:** ResponseEntity<Map<String, String>> register(RegisterForm registrationForm) : return ResponseEntity

**Description:** Test Register method to check is it enable to assign new user to the system

**Prerequisite:** -

**Testcase:**

ID	Description	Input	Expected result
UTC-010	Test the method that can successfully register new user	{ “email”: “user01@gmail.com” “password”: “user101” }	{"message", "Registration successfully"
UTC-011	Test that the same email that already registered cannot register again.	{ “email”: “luosuradit@gmail.com” “password”: “TokiDoki” }	{"message", "Email already taken"

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## UTS-006

**Test method:** time\_range\_to\_list(time\_range): return list of String

**Description:** Test a method that it can verify that it correctly converts a time range string into a list of time intervals.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result
UTC-012	Input the valid range of time	“08:00 - 10:30”	["08:00", "09:00", "10:00"]
UTC-013	Input the same start time and the end time	“12:00 - 12:00”	["12:00"]

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## UTS-007

**Test method:** rating\_calc(rating, rating\_amt, name):return object

**Description:** Test a method that it can calculates the rating score correctly based on the provided rating and rating amount.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result
UTC-014	Input the valid rating amount	`rating`=4.5, `rating_amt`=100, `name`="Bakery A"	{'name': 'Bakery A', 'rating_score': 4.5}
UTC-015	Input zero rating amount	`rating`=3.0, `rating_amt`=0, `name`="Bakery B"	{'name': 'Bakery B', 'rating_score': 0}
UTC-016	Input negative rating amount	`rating`=4.5, `rating_amt`=-10, `name`="Bakery A"	{'name': 'Bakery A', 'rating_score': 0}

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## UTS-008

**Test method:** get\_preference(is\_for\_kids, is\_for\_group):return String

**Description:** Test a method that it can method to determine the preference category based on the provided values for "is\_for\_kids" and "is\_for\_group."

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result
UTC-017	Both Values are Dictionaries	'is_for_kids'='{}', 'is_for_group'='{}'	'no_preference'
UTC-018	Both Values are Booleans	'is_for_kids'=True, 'is_for_group'=True	'for_both'
UTC-019	"is_for_kids" is a Boolean, "is_for_group" is a Dictionary	'is_for_kids'=True, 'is_for_group'='{}'	'for_kids'
UTC-020	"is_for_kids" is a Dictionary, "is_for_group" is a Boolean	'is_for_kids'={}, 'is_for_group'='True'	'for_group'

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UTC-021	Invalid input type	`is_for_kids`=10, `is_for_group`=20	'no_preference'
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## UTS-009

**Test method:** popular\_calc: return object

**Description:** Test a method that it can calculate popularity score by using check-in and bookmark count and return object correctly.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result
UTC-022	Input the valid check-in, bookmark count	‘check_in’=100, ‘bookmark’=50, ‘name’="Bakery A"	{'name': 'Bakery A', 'popularity_score':3.0}
UTC-023	Input the zero check-in and bookmark	‘check_in’=0, ‘bookmark’=0, ‘name’="Bakery B"	{'name': 'Bakery B', 'popularity_score': 0.0}

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# Chapter 3 | System Test

## STS-001

**Test:** Guest register as user.

**Description:** This system test for URS-13. Guest can register to the system to be the user by fill the registration form.

**Prerequisite:** -

**Test Step:**

1. Click on the key icon.
2. Choose the register option.
3. Fill the registration form by given email, password, confirm password.
4. Click on the sign-up button.

**Test cases:**

ID	Description	Input	Expected result
STC-001	Test for the correct case by input email, password, confirm password	{ “email”: “user01@gmail.com” “password”: “user101”: “passwordOnrepeat”: “user101” }	The system notify to the user that there is a successfully register to the user.

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STC-002	Test for the incorrect case by using email that already registered	{           "email": "user01@gmail.com"           "password": "user101"           "passwordOnrepeat": "user101"         }	The system notify the user that the input email already exist in the user database.
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## STS-002

**Test:** Guest login to the system

**Description:** This system test for URS-14. Guest can login to the system.

**Prerequisite:** -

**Test Step:**

1. Click on the key icon.
2. Choose the login option.
3. Fill the login form by given email, password.
4. Click on the sign-in button.

**Test cases:**

ID	Description	Input	Expected result
STC-003	Test for the correct case by input email, password	{           "email": "user01@gmail.com"           "password": "user101"         }	The system change the key icon into user email that can click to log out

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STC-004	Test for the incorrect case by input wrong email or password	{           "email": "user01@gmail.com",           "password": "user",         }	The system notify to the user that there are incorrect email or password.
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## STS-003

**Test:** User can logout from the system

**Description:** This system test for URS-15. User can logout of the system

**Prerequisite:** -

**Test Step:**

1. Click on the Logout button.

**Test cases:**

ID	Description	Input	Expected result
STC-005	Test for user can logout from the system	-	The system change the logout button to key icon that can use for login and register.

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## **STS-004**

**Test:** User can view dashboard page.

**Description:** This system test for URS-10. All users can view the dashboard page and see the information about overall bakery shop in Chiang Mai

**Prerequisite:** -

**Test Step:**

1. Click on the dashboard button.

**Test cases:**

ID	Description	Input	Expected result
STC-006	Test for user to check on the dashboard page	-	The system will change to dashboard page and provide information about bakery shop in Chiang Mai

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## **STS-005**

**Test:** User and admin can select district.

**Description:** This system test for URS-11. User and admin can select district button to change the dashboard page to have information about bakery of selected district.

**Prerequisite:** -

**Test Step:**

1. Click on the dashboard button.
2. Click on “select location” button.
3. Select the district by clicking on one of the locations in the dialog box.

**Test cases:**

ID	Description	Input	Expected result
STC-007	Test for user to select district and change information in the dashboard page.	-	The system will change the bakery shop information on the dashboard page depend on the selected district.

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## **STS-006**

**Test:** User and admin can send message to chatbot in chatbot page

**Description:** This system test for URS-05. User and admin can send a message to the chatbot in the chatbot page.

**Prerequisite:** users need to login to the system before using chatbot

### **Test Step:**

1. Click on the chatbot button.
2. Users type a message in the chat box.
3. Click on the submit button.

### **Test cases:**

ID	Description	Input	Expected result
STC-008	Test for user to send a message to chatbot	“List top 5 bakery shop in Chiang Mai”	The chatbot response back in the chatlog.

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## **STS-007**

**Test:** User and admin can send text and pdf file to chatbot in chatbot page

**Description:** This system test for URS-06. User and admin can send a message with pdf file to the chatbot in chatbot page.

**Prerequisite:** users need to login to the system before using chatbot

### **Test Step:**

1. Click on the chatbot button.
2. Users attaching pdf file in chatbot and message in chat box.
3. Click on the submit button.

### **Test cases:**

ID	Description	Input	Expected result
STC-009	Test for user to send a message and pdf file to chatbot	Attach file Pig_Question.pdf from Appendix A and ask "How many pigs are in Bryan's house? Number only."	The chatbot response the answer back in the chatlog.

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## **STS-008**

**Test:** User and admin can send messages to chatbot by using list of prefix queries.

**Description:** This system test for URS-07. User and admin can send a message by choose a question from a chat wheel option at the chat box.

**Prerequisite:** users need to login to the system before using chatbot

### **Test Step:**

1. Click on the chatbot button.
2. Users click on the chat wheel button.
3. Users click one question from the list of prefix queries.

### **Test cases:**

ID	Description	Input	Expected result
STC-010	Test for user to send an automated message	-	The chatbot will response the answer back in the chatlog.

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# STS-009

**Test:** Users can edit their chat channel in the chatbot page.

**Description:** This system test for URS-08. Users can configure their chat channel by creating, deleting, and editing chat channel name.

**Prerequisite:** users need to login to the system before using chatbot

## Test cases:

ID	Description	Input	Test step	Expected result
STC-011	Test for user to create new chat channel.	-	<ol style="list-style-type: none"><li>Click on the chatbot button.</li><li>Click on the add chat channel.</li></ol>	The system will create new chat channel.
STC-012	Test for user to delete chat channel.	-	<ol style="list-style-type: none"><li>Click on the chatbot button.</li><li>Click on the delete chat channel button.</li><li>User click delete in the confirmation dialog.</li></ol>	The system will delete selected channel

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STC-013	Test for user to edit chat channel name.	“Test101”	<ol style="list-style-type: none"> <li>1. Click on the chatbot button.</li> <li>2. Edit chat channel name.</li> <li>3. User type “Test101” and press enter key.</li> </ol>	The system changes the chat channel to “Test101”
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## STS-010

**Test:** Users can change their chat channel one to another

**Description:** This system tests for URS-09. Users can change their chat channel from one to the next selected chat channel.

**Prerequisite:** users need to login to the system before using chatbot

**Test Step:**

1. Click on the chatbot button.
2. Users select chat channel.

**Test cases:**

ID	Description	Input	Expected result
STC-014	Test for user to change their chat channel	-	The system will change the chat channel to the selected chat.

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## STS-11

**Test:** User can download the Excel file

**Description:** This system tests for URS-12. Users can download reference data as an Excel file.

**Prerequisite:** User need to login to the system to download the Excel file

### Test Step:

1. Open the dashboard page.
2. Users press download file button.

### Test cases:

ID	Description	Input	Expected result
STC-015	Test for user can download the excel file	-	The system store the excel file into the user's computer and the files contains list of Chiang Mai bakery information

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## Appendix A

<b>File name</b>	<b>Content inside pdf</b>
Pig_Question.pdf	There are 5,000 pigs inside Bryan's house.

<b>File name</b>	<b>Content inside pdf</b>
Drake_Question.pdf	<p>Drake Story:</p> <p>Drake is the bakery owner, his shop take place in Tha Sala and mainly sold cinnamon roll. One day he decided to sell cake instead of cinnamon rolls, but no one bought a cake.</p> <p>Years later, his business shut down.</p>

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## Appendix B

```
[  
  {  
    "id": 1,  
    "email": "luosuradit@gmail.com",  
    "password": "TokiDoki@081",  
    "chatChannels": [  
      {  
        "id": 1,  
        "name": "Ting Twinky"  
      }  
    ]  
  },  
  {  
    "id": 2,  
    "email": "thictikorne@gmail.com",  
    "password": "Bang093",  
    "chatChannels": [  
      {  
        "id": 2,  
        "name": "Lala"  
      }  
    ]  
  },  
  {  
    "id": 3,  
    "email": "user@outlook.com",  
    "password": "anuser082",  
    "chatChannels": [  
      {  
        "id": 3,  
        "name": "Po"  
      }  
    ]  
  }  
]
```

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## Appendix C

```
[  
  {  
    "id": 1,  
    "name": "Ting Twinky",  
    "chatLogs": [  
      {  
        "id": 1,  
        "prompt": "Hello",  
        "reply": "Hi"  
      }  
    ]  
  },  
  {  
    "id": 2,  
    "name": "Lala",  
    "chatLogs": [  
      {  
        "id": 2,  
        "prompt": "How are you?",  
        "reply": "I'm fine, thank you!"  
      }  
    ]  
  },  
  {  
    "id": 3,  
    "name": "Po",  
    "chatLogs": [  
      {  
        "id": 3,  
        "prompt": "Thank you",  
        "reply": "You welcome!"  
      }  
    ]  
  }  
]
```

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# **Chapter 6**

## **Test Record**

**GPT 4 Baker**

**Test Record**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

**Bachelor of Science**

**Software Engineering Program**

**Department College of Arts, Media, and  
Technology**

**Chiang Mai University**

---

**Project Advisor**

**Asst. Prof. Dr. Pree Thiengburanathum**

**GPT 4 Baker**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

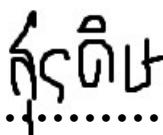
**THIS REPORT HAS BEEN APPROVED TO BE A  
PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE SOFTWARE  
ENGINEERING PROGRAM: COLLEGE OF ARTS  
MEDIA AND TECHNOLOGY**

.....**ADVISOR**

**Asst. Prof. Dr. PREE THIENGBURANATHUM**

..........**MEMBER**

**THICTIKORNE VIN**

..........**MEMBER**

**SURADIT LUO**

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## Document History

Document name	Version	History	Status	Date	Editable	Reviewer
Test Record	TestReco rd_v.0.1	Add Chapter 1 - Objective - Test method - Intended Audience - Project Scope - Acronym & Definition Add Chapter 2 - Unit test Add Appendix A	Draft	16/6/23	SL, TV	PT
Test Record	TestReco rd_v.1.0	Release document version 1.0	Release	12/07/23	SL, TV	PT
Test Record	TestReco rd_v.1.1	Update Chapter 2 - Unit test Add Chapter 3 - System test Add Appendix B Add Appendix C	Edit	02/09/23	SL, TV	PT
Test Record	TestReco rd_v.2.0	Release document version 2.0	Release	05/09/23	SL, TV	PT
Test Record	TestReco rd_v.3.0	Release document version 3.0	Release	11/10/23	SL, TV	PT

\*SL = Suradit Luo

\*TV = Thictikorne Vin

\*PT = Asst. Prof. Dr. Pree Thiengburanathum

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# **Chapter 1 | Introduction**

## **1.1 Project Objective**

GPT 4 Baker is a marketing analysis website that replaces the old one with newer technology. It lets users view the dashboard and use a chatbot to obtain marketing and user insight in order to reduce the failure rate in the bakery business and create innovativeness in their new product and make bakery shops stay relevant in the market.

## **1.2 Test Method**

<b>Unit test</b>	<b>System Test</b>
Whitebox testing	Blackbox testing (Includes function test and GUI test)

## **1.3 Intended Audience**

The main intended audience of this document is all significant stakeholders, which include the development team, the project owner, testers, the senior project advisor (Asst. Prof. Dr. Pree Thiengburanathum), and anyone evaluating the project.

## **1.4 Project Scope**

The scope of this project is to develop a webpage and AI model to help people who want to start or be successful with their bakery business in Chiang Mai by interacting with our chatbot or gathering marketing and customer insight from a dashboard. Our chatbot provides a message box for users to send a message to our AI model. The web application also has a dashboard for better visualization of data to help bakery owners or a user to make decisions on their business. Guest and Users have different dashboard accessibility. Users can use dashboard and chatbot features like admin.

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## 1.5 Acronym & Definition

### 1.5.1 Acronym

UTS – Unit Test Script

STS – System Test Script

UTC – Unit Test Case

STC – System Test Case

### 1.5.2 Definition

Name	Definition
IEEE	Institute for Electrical and Electronics Engineers. Biggest global interest group for engineers of different branches and computer scientists. [IEEE90]
Requirement	A condition or capability needed by the user to solve a problem or achieve an objective. A condition or capability that must be met or possessed by a system or system component to satisfy a contract, standard, specification, or other formally imposed document. A documented representation of a condition or capability as in definition (1) or (2). [IEEE90]
Specification	Precise description of an activity or work product that serves as the basic or input for further activities or work product. A specification can comprise requirements for a product and how they will be solved. Different parts of a specification (e.g., what is to be done, how it will be done) must not be mixed. [IEEE90]
Unit Test	A test of individual programs or modules in order to remove design or programming errors.
Acceptance Test	Test activities for sample checks to verify that the system (or product, solution) has the right quality for deployment or usage. Often an acceptance test is done by the customer. [IEEE90]

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Feature	Transformation of input parameters to output parameters based on a specified algorithm. It describes the functionality of the product in the language of the product. Used for requirements analysis, design, coding, testing or maintenance. [IEEE90]
Plan	A documented series of tasks requires meeting an objective, typically including the associated schedule, budget, resources, organizational description, and work breakdown structure. [IEEE90]
Project Plan	A formal, approved document used to guide both project execution and project control. The primary uses of the project plan are to document planning assumptions and decisions, to facilitate communication among stakeholders, and document approved scope, cost, and schedule baseline. [IEEE90]
Project Management	The application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project. [IEEE90]
Risk	An uncertain event or condition that, if it occurs has a positive or negative effect on the project's objectives. It is a function of the probability of occurrence of a given threat's occurrence. [IEEE90]
Risk Management	The systematic application of management policies, procedures, and practices to the tasks of identifying, analyzing, evaluating, treating and monitoring risk. [IEEE90]
Traceability	The ability to trace the history, application or location of an item or activity, or work products or activities, by means of recorded identification. The establishment and maintenance of relationships between such items. Horizontal traceability describes the relationship between work products of the same type (eg. customer requirements). Vertical traceability describes the relationship between work products that build upon each other or are derived from each other (eg. from customer requirements to qualification test cases). Bidirectional traceability allows to directly follow relationships in both directions. [IEEE90]
*	Used for explanation or supplementary explanation.

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# Chapter 2 | Unit Test

## UTS-001

**Test method:** remove\_thai\_word(str: text): return str

**Description:** Test a method that removes specified Thai word and replace it with a blank space. Helpful for text recognition that requires a cleaned text.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
UTC-001	Test the method can clean Thai address detail	“335 บุลเมือง ซอย 9 ต.ศรีภูมิ อ.เมือง จ.เชียงใหม่ 50200 เชียงใหม่ (ซอย หลังก้าวเดียวสี่แยก แจ้งศรีภูมิ (เข้า บุลเมือง ซอย 9 30 เมตร และ เดียวขา))”	“335 บุลเมือง 9 ศรีภูมิ เมือง เชียงใหม่ 50200 เชียงใหม่ ( หลังก้าวเดียว สี่แยก แจ้งศรีภูมิ (เข้า บุลเมือง 9 30 เมตร เดียว ขา))”	“335 บุลเมือง 9 ศรีภูมิ เมือง เชียงใหม่ 50200 เชียงใหม่ ( หลังก้าวเดียว สี่แยก แจ้งศรีภูมิ (เข้า บุลเมือง 9 30 เมตร เดียว ขา))”	Pass
UTC-002	Test when all words are stop words.	“อ. จ. ถนน และ ตำบล, หรือ ซอย”	“ ”	“ ”	Pass

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## UTS-002

**Test method:** reply(): return Object

**Description:** Test the response message and the confidence score is meet the expectation.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test status
UTC-003	Chatbot can count how many bakery shop in district approximately	“How many bakery shops/restaurant in Suthep? Number only”	{           "date": **,           "message": {             "response": "\n53"           },           "response": "200",           "score": *         }	{           "date": "Thu, 15 Jun 2023 07:47:41 GMT",           "message": {             "response": "\n53"           },           "response": "200",           "score": 0.85         } 75409817812947	Pass
UTC-004	Chatbot can list top 5 bakery shops in Chiang Mai	“Top 5 bakery shops in Chiang Mai? List only.”	{           "date": **,           "message": {             "response": "\n1. Cheevit Cheeva\n2. Mooh Store Chiangmai Bakery\n3. Praew Factory\n4. Baan Piemsuk\n5. Chiang Mai Cake Shop"           },           "response": "200",           "score": *         }	{           "date": "Thu, 15 Jun 2023 07:53:31 GMT",           "message": {             "response": "\n1. Cheevit Cheeva\n2. Mooh Store Chiangmai Bakery\n3. Praew Factory\n4. Baan Piemsuk\n5. Chiang Mai Cake Shop"           },           "response": "200",           "score": *         }	Pass

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			{ }	"response": "200", "score": 0.86 0848137041879 3 }	
UTC-005	Chatbot can predict a popular bakery menu based on a specified scenario	'Can you predict a bakery menu that might sell well in Chiang Mai when sugar becomes expensive?'	{           "date": **, "message": { "response": ***" }, "response": "200", "score": * } The response satisfaction scale is more than 7	{           "date": "Thu, 15 Jun 2023 07:55:31 GMT", "message": { "response": ***" }, "response": "200", "score": 0.85 } The response satisfaction scale is more than 7	Pass

\* The value of the score should be between 0.7 and 1 ( $0.7 \leq \text{score} \leq 1.0$ ), the score indicates to how confident the response is.

\*\* “date” value refers to the date that this response object is sent. The date format should be ([Day], [date] [month] [year] [hour:minute:second] GMT)

\*\*\* An unpredictable response, this value measure by a satisfaction of the tester (scale 1-10).

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## UTS-003

**Test method:** get\_and\_read\_pdf(): return Object

**Description:** Test when the chatbot receives a pdf file, it can read the files and answer the question based on the given files.

**Prerequisite:** The sample data is prepared in Appendix A.

### Test data from Appendix A

File name	Content inside pdf
Pig_Question.pdf	There are 5,000 pigs inside Bryan's house.

File name	Content inside pdf
Drake_Question.pdf	Drake Story: Drake is the bakery owner, his shop take place in Tha Sala and mainly sold cinnamon roll. One day he decided to sell cake instead of cinnamon rolls, but no one bought a cake. Years later, his business shut down.

### Test cases:

ID	Description	Input	Expected result	Actual result	Test status
UTC-006	Chatbot can read pdf file and response simple answer.	Attach file Pig_Question.pdf  And ask "How many pigs are in Bryan's house? Number only."	{ "date": **, "message": { "response": "\n5,000" }, "response": "200", "score": * }	{ "date": "Thu, 15 Jun 2023 07:59:15 GMT", "message": { "response": "\n5,000" }, "response": "200", "score": * }	Pass

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				<pre>"score": 0.8 95226848975 5324 }</pre>	
UTC-007	Chatbot can analyze the pdf file using its knowledge base	Attach file Drake_Quest ion.pdf And ask “According to Drake story, give me a reason why bakery shop shouldn't change their menu suddenly.”	<pre>{   "date": **,   "message": {     "response": "***"   },   "response": "200",   "score": * }</pre> <p>The response satisfaction scale is more than 7</p>	<pre>{   "date": "Thu, 15 Jun 2023 08:00:20 GMT",   "message": {     "response": "***"   },   "response": "200",   "score": 0.8 }</pre> <p>The response satisfaction scale is more than 7</p>	Pass

\* The value of the score should be between 0.7 and 1 ( $0.7 \leq \text{score} \leq 1.0$ ), the score indicates to how confident the response is.

\*\* “date” value refers to the date that this response object is sent. The date format should be ([Day], [date] [month] [year] [hour:minute:second] GMT)

\*\*\* An unpredictable response, this value measure by a satisfaction of the tester (scale 1-10).

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## UTS-004

**Test method:** ResponseEntity<Map<String, String>> login(LoginForm loginForm) :  
return ResponseEntity

**Description:** Test Login method to checking whether the method can get email and password and verify it.

**Prerequisite:** The test data is available at appendix B

**Testcase:**

ID	Description	Input	Expected result	Actual result	Test Status
UTC-008	Test the method to login successfully	{           "email": "luosuradit@gmail.com"           "password": "TokiDoki@081"         }	{           "message": "Login successful"         }	{           "message": "Log in successful",           "userId": "2",           "email": "thictikorne@gmail.com",           "status": "200"         }	Pass
UTC-009	Test for incorrect any input field	{           "email": "luosuradit@gmail.com"           "password": "TokiDoki"         }	{           "message": "Invalid email or password"         }	{           "message": "Invalid email or password",           "status": "401"         }	Pass

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## UTS-005

**Test method:** ResponseEntity<Map<String, String>> register(RegisterForm registrationForm) : return ResponseEntity

**Description:** Test Register method to check is it enable to assign new user to the system

**Prerequisite:** -

**Testcase:**

ID	Description	Input	Expected result	Actual result	Test Status
UTC-010	Test the method that can successfully register new user	{ “email”: “user01 @gmail.com” “password”: “user101” }	{"message", "Registration successfully"	{ “message”: "Registration successfully", "status": "200" }	Pass
UTC-011	Test that the same email that already registered cannot register again.	{ “email”: “luosuradit @gmail.com” “password”: “TokiDoki” }	{"message", "Email already taken"	{ “message”: "Email already taken", "status": "409" }	Pass

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## UTS-006

**Test method:** time\_range\_to\_list(time\_range): return list of String

**Description:** Test a method that it can verify that it correctly converts a time range string into a list of time intervals.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
UTC-012	Input the valid range of time	“08:00 - 10:30”	["08:00", "09:00", "10:00"]	["08:00", "09:00", "10:00"]	Pass
UTC-013	Input the same start time and the end time	“12:00 - 12:00”	[“12:00”]	[“12:00”]	Pass

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## UTS-007

**Test method:** rating\_calc(rating, rating\_amt, name):return object

**Description:** Test a method that it can calculates the rating score correctly based on the provided rating and rating amount.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
UTC-014	Input the valid rating amount	`rating`=4.5, `rating_amt`=100, `name`="Bakery A"	{'name': 'Bakery A', 'rating_score': 4.5}	{'name': 'Bakery A', 'rating_score': 4.5}	Pass
UTC-015	Input zero rating amount	`rating`=3.0, `rating_amt`=0, `name`="Bakery B"	`{'name': 'Bakery B', 'rating_score': 0}`	{'name': 'Bakery B', 'rating_score': 0}	Pass
UTC-016	Input negative rating amount	`rating`=4.5, `rating_amt`=-10, `name`="Bakery A"	`{'name': 'Bakery A', 'rating_score': 0}`	{'name': 'Bakery A', 'rating_score': 0}	Pass

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## UTS-008

**Test method:** get\_preference(is\_for\_kids, is\_for\_group):return String

**Description:** Test a method that it can method to determine the preference category based on the provided values for "is\_for\_kids" and "is\_for\_group."

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
UTC-017	Both Values are Dictionaries	`is_for_kids` =`{}` , `is_for_group`=`{}`	'no_preference'	'no_preference'	Pass
UTC-018	Both Values are Booleans	`is_for_kids` =True, `is_for_group`=True	'for_both'	'for_both'	Pass
UTC-019	"is_for_kids" is a Boolean, "is_for_group" is a Dictionary	`is_for_kids` =True, `is_for_group`=`{}`	"for_kids"	"for_kids"	Pass
UTC-020	"is_for_kids" is a Dictionary, "is_for_group" is a Boolean	`is_for_kids` =`{}` , `is_for_group`='True'	"for_group"	"for_group"	Pass
UTC-021	Invalid input type	`is_for_kids` =10, `is_for_group`=20	'no_preference'	'no_preference'	Pass

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## UTS-009

**Test method:** popular\_calc: return object

**Description:** Test a method that it can calculate popularity score by using check-in and bookmark count and return object correctly.

**Prerequisite:** -.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
UTC-022	Input the valid check-in, bookmark count	'check_in'=100, 'bookmark'=50, 'name'="Bakery A"	{'name': 'Bakery A', 'popularity_score': 3.0}	{'name': 'Bakery A', 'popularity_score': 3.0}	Pass
UTC-023	Input the zero check-in, bookmark count	'check_in'=0, 'bookmark'=0, 'name'="Bakery B"	{'name': 'Bakery B', 'popularity_score': 0.0}	{'name': 'Bakery B', 'popularity_score': 0.0}	Pass

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# Chapter 3 | System Test

## STS-001

**Test:** Guest register as user.

**Description:** This system test for URS-12. Guest can register to the system to be the user by fill the registration form.

**Prerequisite:** -

**Test Step:**

1. Click on the key icon.
2. Choose the register option.
3. Fill in the registration form by given email, password, confirm password.
4. Click on the sign-up button.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
STC-001	Test for the correct case by input email, password, confirm password	{ “email”: “user01@gmail.com” “password”: “user101”: “passwordOnrepeat”: “user101” }	The system notify to the user that there is a successfully register to the user.	The system notify to the user that user is successfully register with message “Congratulations! You are now a member of our website.”	Pass
STC-002	Test for the incorrect case by using email that already registered	{ “email”: “user01@gmail.com” “password”: “user101”: “passwordOnrepeat”: “user101” }	The system notify to the user that the input email already exist in the user database.	The system notify to the user that the email that user input is already exist.	Pass

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## STS-002

**Test:** Guest login to the system

**Description:** This system test for URS-13. Guest can login to the system.

**Prerequisite:** -

**Test Step:**

1. Click on the key icon.
2. Choose the login option.
3. Fill the login form by given email, password.
4. Click on the sign-in button.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
STC-003	Test for the correct case by input email, password	{ “email”: “user01@g mail.com”, “password ”: “user101”: }	The system will change the key icon into user email that can click to log out	The system will change the key icon into user email that can click to log out	Pass
STC-004	Test for the incorrect case by input wrong email or password	{ “email”: “user01@g mail.com” “password ”: “user” }	The system will notify to the user that there are incorrect email or password.	The system notify to the user that the input email or password is incorrect.	Pass

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## **STS-003**

**Test:** User can logout from the system

**Description:** This system test for URS-14. User can logout of the system

**Prerequisite:** -

**Test Step:**

1. Click on the Logout button.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
STC005	Test for user can logout from the system	-	The system will change the logout button to key icon that can use for login and register.	The system change back to the key icon for login and register to the system.	Pass

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## **STS-004**

**Test:** User can view dashboard page.

**Description:** This system test for URS-10. All users can view the dashboard page and see the information about overall bakery shop in Chiang Mai

**Prerequisite:** -

**Test Step:**

1. Click on the dashboard button.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
STC006	Test for user to check on the dashboard page	-	The system will change to dashboard page and provide information about overall bakery shop in Chiang Mai	The system redirect to dashboard page and provide the overall information about bakery shop in Chiang Mai	Pass

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## **STS-005**

**Test:** User and admin can select district.

**Description:** This system test for URS-11. User and admin can select district button to change the dashboard page to have information about bakery of selected district.

**Prerequisite:** -

**Test Step:**

1. Click on the dashboard button.
2. Click on “select location” button.
3. Select the district by clicking on one of the locations in the dialog box.

**Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
STC-007	Test for user to select district and change information in the dashboard page.	-	The system will change the bakery shop information on the dashboard page depend on the selected district.	The system changes the information of the overall bakery shop into the bakery shop in the selected district.	Pass

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## STS-006

**Test:** User and admin can send message to chatbot in chatbot page

**Description:** This system test for URS-05. User and admin can send a message to the chatbot in the chatbot page.

**Prerequisite:** users need to login to the system before using chatbot

### Test Step:

1. Click on the chatbot button.
2. Users type a message in the chat box.
3. Click on the submit button.

### Test cases:

ID	Description	Input	Expected result	Actual result	Test Status
STC-008	Test for user to send a message to chatbot	User message	The system display a chatbot response	The system display a chatbot response	Pass

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## **STS-007**

**Test:** User and admin can send text and pdf file to chatbot in chatbot page

**Description:** This system test for URS-06. User and admin can send a message with pdf file to the chatbot in chatbot page.

**Prerequisite:** users need to login to the system before using chatbot

### **Test Step:**

1. Click on the chatbot button.
2. Users attaching pdf file in chatbot and message in chat box.
3. Click on the submit button.

### **Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
STC-009	Test for user to send a message and pdf file to chatbot	User's pdf file with their message	The system display chatbot response message based on the given pdf file.	The system display chatbot response message based on the given pdf file.	Pass

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## **STS-008**

**Test:** User and admin can send messages to chatbot by using list of prefix queries.

**Description:** This system test for URS-07. User and admin can send a message by choose a question from a chat wheel option at the chat box.

**Prerequisite:** users need to login to the system before using chatbot

### **Test Step:**

1. Click on the chatbot button.
2. Users click on the chat wheel button.
3. Users click one question from the list of prefix queries.

### **Test cases:**

ID	Description	Input	Expected result	Actual result	Test Status
STC-010	Test for user to send an automated message	-	The system display a chatbot response	The system display a chatbot response	Pass

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## STS-009

**Test:** Users can edit their chat channel in the chatbot page.

**Description:** This system test for URS-08. Users can configure their chat channel by creating, deleting, and editing chat channel name.

**Prerequisite:** users need to login to the system before using chatbot

### Test cases:

ID	Description	Input	Test step	Expected result	Actual result	Test Status
STC-011	Test for user to create new chat channel.	-	3. Click on the chatbot button. 4. Click on the add chat channel.	The system will create new chat channel.	The system will create new chat channel.	Pass
STC-012	Test for user to delete chat channel.	-	4. Click on the chatbot button. 5. Click on the delete chat channel button. 6. User click delete in the confirmation dialog.	The system will delete selected channel	The system will delete selected channel	Pass

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STC-013	Test for user to edit chat channel name.	“Test101”	<ol style="list-style-type: none"> <li>1. Click on the chatbot button.</li> <li>2. Edit chat channel name.</li> <li>3. User type “Test101” and press enter key.</li> </ol>	The system changes the chat channel to “Test101”	The system changes the chat channel to “Test101”	Pass
---------	--	-----------	--	--	--	------

## STS-010

**Test:** Users can change their chat channel one to another

**Description:** This system tests for URS-09. Users can change their chat channel from one to the next selected chat channel.

**Prerequisite:** users need to login to the system before using chatbot

### Test Step:

1. Click on the chatbot button.
2. Users select chat channel.

### Test cases:

ID	Description	Input	Expected result	Actual result	Test Status
STC-014	Test for user to change their chat channel	-	The system will change the chat channel to the selected chat.	The system will change the chat channel to the selected chat.	Pass

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## STS-11

**Test:** User can download the Excel file

**Description:** This system tests for URS-12. Users can download reference data as an Excel file.

**Prerequisite:** User need to login to the system to download the Excel file

### Test Step:

1. Open the dashboard page.
2. Users press download file button.

### Test cases:

ID	Description	Input	Expected result	Actual result	Test Status
STC-015	Test for user can download the excel file	-	The system store the excel file into the user's computer and the files contains list of Chiang Mai bakery information	The system store the excel file into the user's computer and the files contains list of Chiang Mai bakery information	Pass

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## Appendix A

<b>File name</b>	<b>Content inside pdf</b>
Pig_Question.pdf	There are 5,000 pigs inside Bryan's house.

<b>File name</b>	<b>Content inside pdf</b>
Drake_Question.pdf	<p>Drake Story:</p> <p>Drake is the bakery owner, his shop take place in Tha Sala and mainly sold cinnamon roll. One day he decided to sell cake instead of cinnamon rolls, but no one bought a cake.</p> <p>Years later, his business shut down.</p>

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## Appendix B

```
[  
  {  
    "id": 1,  
    "email": "luosuradit@gmail.com",  
    "password": "TokiDoki@081",  
    "chatChannels": [  
      {  
        "id": 1,  
        "name": "Ting Twinky"  
      }  
    ]  
  },  
  {  
    "id": 2,  
    "email": "thictikorne@gmail.com",  
    "password": "Bang093",  
    "chatChannels": [  
      {  
        "id": 2,  
        "name": "Lala"  
      }  
    ]  
  },  
  {  
    "id": 3,  
    "email": "user@outlook.com",  
    "password": "anuser082",  
    "chatChannels": [  
      {  
        "id": 3,  
        "name": "Po"  
      }  
    ]  
  }  
]
```

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Document Type	Test Record	Release Date	11/10/23	Print date	11/10/23

## Appendix C

```
[  
  {  
    "id": 1,  
    "name": "Ting Twinky",  
    "chatLogs": [  
      {  
        "id": 1,  
        "prompt": "Hello",  
        "reply": "Hi"  
      }  
    ]  
  },  
  {  
    "id": 2,  
    "name": "Lala",  
    "chatLogs": [  
      {  
        "id": 2,  
        "prompt": "How are you?",  
        "reply": "I'm fine, thank you!"  
      }  
    ]  
  },  
  {  
    "id": 3,  
    "name": "Po",  
    "chatLogs": [  
      {  
        "id": 3,  
        "prompt": "Thank you",  
        "reply": "You welcome!"  
      }  
    ]  
  }  
]
```

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# **Chapter 7**

## **Traceability Record**

**GPT 4 Baker**

**Traceability Record**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

**Bachelor of Science**

**Software Engineering Program**

**Department College of Arts, Media, and  
Technology**

**Chiang Mai University**

---

**Project Advisor**

**Asst. Prof. Dr. Pree Thiengburanathum**

**GPT 4 Baker**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

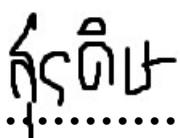
**THIS REPORT HAS BEEN APPROVED TO BE A  
PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE SOFTWARE  
ENGINEERING PROGRAM: COLLEGE OF ARTS  
MEDIA AND TECHNOLOGY**

..........**ADVISOR**

**Asst. Prof. Dr. PREE THIENGBURANATHUM**

..........**MEMBER**

**THICTIKORNE VIN**

..........**MEMBER**

**SURADIT LUO**

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## Document History

Document name	Version	History	Status	Date	Editable	Reviewer
Traceability Record	Traceability Record _v.0.1	Add Chapter 1 - Introduction Add Chapter 2 - Traceability Record	Draft	07/07/23	SL, TV	PT
Traceability Record	Traceability Record _v.0.2	Update Chapter 2 - Traceability Record	Edit	12/07/23	SL, TV	PT
Traceability Record	Traceability Record _v.1.0	Release document version 1.0	Release	12/07/23	SL, TV	PT
Traceability Record	Traceability Record _v.1.2	Update Chapter 2 - Traceability Record	Edit	04/09/23	SL, TV	PT
Traceability Record	Traceability Record _v.2.0	Release document version 2.0	Release	05/09/23	SL, TV	PT
Traceability Record	Traceability Record v.3.0	Release document version 3.0	Release	11/10/23	SL, TV	PT

\*SL = Suradit Luo

\*TV = Thictikorne Vin

\*PT = Asst. Prof. Dr. Pree Thiengburanathum

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# **Chapter 1 | Introduction**

## **1.1 Project Objective**

GPT 4 Baker is a marketing analysis website that replaces the old one with newer technology. It lets users view the dashboard and use a chatbot to obtain marketing and user insight in order to reduce the failure rate in the bakery business and create innovativeness in their new product and make bakery shops stay relevant in the market.

## **1.2 Project Scope**

The scope of this project is to develop a webpage and AI model to help people who want to start or be successful with their bakery business in Chiang Mai by interacting with our chatbot or gathering marketing and customer insight from a dashboard. Our chatbot provides a message box for users to send a message to our AI model. The web application also has a dashboard for better visualization of data to help bakery owners or a user to make decisions on their businesses. Guest and Users have different dashboard accessibility. Users can use dashboard and chatbot features like admin. And Traceability matrix documents describe the relationship between software project documents.

## **1.3 Acronyms**

SRS – Software requirement specification

URS – User requirements specification

UTS – Unit Test Script

STS – System Test Script

UC – Use case

UTC – Unit Test Case

STC – System Test Case

AD – Activity Diagram

F – Feature

UD – Use case Diagram

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## Chapter 2 | Traceability Record

F	URS	SRS	UD	UC	AD	UTS	UTC	STS	STC	
F-01	URS-10	SRS-31	UD-03	UC-13	AD-13	UTS-006	UTC-012 UTC-013	STS-004	STC-006	
	URS-11	SRS-32 SRS-33		UC-14	AD-14	UTS-007	UTC-014 UTC-015 UTC-016	STS-005	STC-007	
	URS-12	SRS-34 SRS-35		UC-15	AD-18	UTS-008	UTC-017 UTC-018 UTC-019 UTC-020 UTC-021	STS-011	STC-015	
							UTC-022 UTC-023			
F-02	URS-13	SRS-36 SRS-37 SRS-38 SRS-39	UD-04	UC-16	AD-16	UTS-004	UTC-008 UTC-009	STS-001	STC-001 STC-002	
	URS-14	SRS-40 SRS-41 SRS-42		UC-17	AD-15	UTS-005	UTC-010 UTC-011	STS-002	STC-003 STC-004	
	URS-15	SRS-43 SRS-44		UC-18	AD-17			STS-003	STC-005	
F-03	URS-01	SRS-01 SRS-02 SRS-03 SRS-04	UD-01	UC-01	AD-01	UTS-001	UTC-001 UTC-002	-	-	

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	<b>URS-02</b>	<b>SRS-05 SRS-06 SRS-07 SRS-08</b>		<b>UC-02 UC-03</b>	<b>AD-02 AD-03</b>				
	<b>URS-03</b>	<b>SRS-09</b>		<b>UC-04</b>	<b>AD-04</b>				
	<b>URS-04</b>	<b>SRS-10</b>		<b>UC-05</b>	<b>AD-05</b>				
<b>F-04</b>	<b>URS-05</b>	<b>SRS-04 SRS-11 SRS-12 SRS-13 SRS-14</b>	<b>UD-02</b>	<b>UC-06</b>	<b>AD-06</b>	<b>UTS-002</b>	<b>UTC-003 UTC-004 UTC-005</b>	<b>STS-006</b>	<b>STC-008</b>
								<b>STS-007</b>	<b>STC-009</b>
	<b>URS-06</b>	<b>SRS-04 SRS-11 SRS-12 SRS-14 SRS-15 SRS-16 SRS-17</b>		<b>UC-07</b>	<b>AD-07</b>	<b>UTS-003</b>	<b>UTC-006 UTC-007</b>	<b>STS-008</b>	<b>STC-010</b>
								<b>STS-009</b>	<b>STC-011 STC-012 STC-013</b>
								<b>STS-010</b>	<b>STC-014</b>

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## **Chapter 8**

### **Project Status**

**GPT 4 Baker**

**Project Status**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

**Bachelor of Science  
Software Engineering Program**

**Department College of Arts, Media, and  
Technology**

**Chiang Mai University**

---

**Project Advisor  
Asst. Prof. Dr. Pree Thiengburanathum**

## Progress I Project Status Report

<b>Project name:</b> GPT 4 Baker			
Prepared by:	Date:	<b>Report process:</b> Progress I	
Suradit Luo Thictikorne Vin	19 July 2023		
<b>Project status report:</b> Every document including the system implementation are on schedule.			
Milestone Deliverable	% Complete	Deliverable Status	Version
Software Requirement Specification	100 %	On schedule	1.0
Project Management Plan	100 %	On schedule	1.0
Software Design Document	100 %	On schedule	1.0
Test Plan	100 %	On schedule	1.0
Test Record	100 %	On schedule	1.0
Traceability Record	100 %	On schedule	1.0
Source Code	100 %	On schedule	1.0

## Progress II Project Status Report

<b>Project name:</b> GPT 4 Baker			
Prepared by:	Date:	<b>Report process:</b> Progress II	
Suradit Luo Thictikorne Vin	05/09/23		
<b>Project status report:</b> Every document including the system implementation are on schedule.			
Milestone Deliverable	% Complete	Deliverable Status	Version
Software Requirement Specification	100 %	On schedule	2.0
Project Management Plan	100 %	On schedule	2.0
Software Design Document	100 %	On schedule	2.0
Test Plan	100 %	On schedule	2.0
Test Record	100 %	On schedule	2.0
Traceability Record	100 %	On schedule	2.0
Source Code	100 %	On schedule	2.0

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# Final Progress Project Status Report

<b>Project name:</b> GPT 4 Baker			
Prepared by:	Date:	<b>Report process:</b> Final progress	
Suradit Luo Thictikorne Vin	11/10/23		
<b>Project status report:</b> Every document including the system implementation are on schedule.			
Milestone Deliverable	% Complete	Deliverable Status	Version
Software Requirement Specification	100 %	On schedule	3.0
Project Management Plan	100 %	On schedule	3.0
Software Design Document	100 %	On schedule	3.0
Test Plan	100 %	On schedule	3.0
Test Record	100 %	On schedule	3.0
Traceability Record	100 %	On schedule	3.0
Source Code	100 %	On schedule	3.0

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## **Chapter 9**

### **Executive Summary**

**GPT 4 Baker**

**Executive Summary**

**Thictikorne Vin 632115015**

**Suradit Luo 632115043**

**Bachelor of Science  
Software Engineering Program**

**Department College of Arts, Media, and  
Technology**

**Chiang Mai University**

---

**Project Advisor**  
**Asst. Prof. Dr. Pree Thiengburanathum**

# GPT 4 Baker

## Executive Summary

### Progress I

In this progress, we have gone through a few numbers of modifications on proposal documents. Therefore, this progress will only focus on a 3<sup>rd</sup> feature, a data preprocess, data cleaning, and data analysis. In addition, we decided to implement some documentation about the 4<sup>th</sup> feature, a chatbot feature. The reason behind this is to show our project committees why we need to have an AI model which comes from the 3<sup>rd</sup> feature.

Have to mention that we haven't implemented the front end yet. Since the 3<sup>rd</sup> feature is all about the backend server. Our frontend will be implemented when we do the next progress, which have 1<sup>st</sup>, 2<sup>nd</sup>, and 4<sup>th</sup> feature (Dashboard, Authentication, and Chatbot features)

Here's what we have changed from previous progress.

- We remove the 5<sup>th</sup> feature (Bakery management feature)
- We implement the 3<sup>rd</sup> feature first instead of the 1st feature.
- We change technology in the system architecture.
- We update a schedule since the progress's time period has changed.

Here's what we have done so far in this progress in summary.

- **Data preprocess, data cleaning, and data analysis feature**
  - Done all the source code.
    - Scraping method
    - Cleaning method
    - Analysis (i.e., training) method
    - Method for sending data to scraping database server (MongoDB).
  - All the related documents

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- **Chatbot feature**
  - Done only some method.
    - Method for replying to text.
    - Method for replying to text and pdf.
  - Documenting
    - Software requirement
    - Software design document
      - Haven't designed a class and method in the front end.
    - Software test plan & record

Only the unit test was implemented.

## Progress II

In this progress, we've implemented 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> features which we dome only some part of it in the 1<sup>st</sup> progress. We also implement our frontend in this progress and authentication database for store user data include their chat history and their chat channels. Since we've done all the features, we'll start deploying our software product after we complete this progress.

There's no change request happen in this progress.

Here's what we have done so far in this progress.

- **Dashboard feature**
  - **Done all the source code and all the related documents.**
    - Dashboard Graph
    - Excel Downloader
    - Change location feature.
- **Authentication Feature**
  - **Done all the source code and all the related documents.**
    - Basic authentication method (login, log out, and register).
- Chatbot feature
  - **Done all the source code and all the related documents.**
    - Chat channel configuration (create, delete, and edit chat channel)
    - Chatbot interaction (send text, automated text, and text with a pdf file).

## Final Progress

Since we have done all the software components in the previous phase, we decided to train our GPT model before the SE showpro event. After the event, we decided to wrap up the project.

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