APPLIED INFORMATION TECHNOLOGY AND COMPUTER SCIENCE
e-ISSN: 2773-5141

AITCS

Vol. 6 No. 1 (2025) 1838-1855
https://publisher.uthm.edu.my/periodicals/index.php/aitcs

Perwira Chronicles Foodies

Raffael Lawrenzier[1], Mohd Amin Mohd Yunus[1]*

[1] *Fakulti Sains Komputer dan Teknologi Maklumat,*
Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat, 86400, MALAYSIA

*Corresponding Author: aminy@uthm.edu.my
DOI: https://doi.org/10.30880/aitcs.2025.06.01.102

Article Info

Received: 12 June 2024
Accepted: 9 May 2025
Available online: 30 June 205

Keywords

Recipe, Premium Plan, Agile Model, e-Recipe

Abstract

Abstract: The Perwira Chronicles Foodies is an interactive E-Recipe website. The purpose of developing this system is to solve the problem of the home cooker and chef in searching for a good recipe. There are many different websites with different recipes, making it difficult for users to find what they're looking for. Some recipes exclude crucial details like ingredient lists, cooking times, and nutritional data. Here, the user will find a centralized hub organized by categories, offering comprehensive details with every recipe. Ingredient lists, step-by-step instructions, helpful tips, and even nutritional information ensure successful culinary ventures. After completion, the system will allow users to access a wide range of recipes across various categories. Additionally, users will have the opportunity to attempt these recipes, thereby enhancing their cooking skills. Therefore, this website also give you chance to explre the authentic and traditional flavors of your own food learning different cooking techniques and discover new ingredient. This website will not only benefit home cooks but also assist professional chefs in improving their culinary creations and expanding their own recipes.

1. Introduction

In response to the culinary needs and aspirations of a broad audience that includes home cooks, professional chefs, and food bloggers, this project seeks to improve the user experience of the existing food recipe website, resepichenom.com. Resepichenom.com will be redesigned into a dynamic cooking website catering to home cooks, chefs, and food bloggers. Featuring a recipe database, advanced search, interactive tools and multimedia support, it aims to be the gateway to all things food, making recipes easier to find, share and engaged in communities of interest This project eliminates the divide between online and offline cooking resources, for all food enthusiasts, provides a user-friendly experience will be used.

Despite their popularity, cooking websites are messy issues. Finding specific recipes is a chore due to the scattered content, while important information such as ingredients, timing, nutrition information is often missing, limiting those with dietary restrictions at risk. The lack of interactive communities hinders the development of the kitchen and the success of its implementation.

This project will greatly affect the chefs by providing a space in the location for culinary enthusiasts. Users will also benefit from easier recipes and improved community engagement, enhancing culinary experiences. The restaurant providing a space for food enthusiast to improve their own skills and knowledge. Next, the project will provide an opportunity to restaurant to learn more about technology and marketing which can help them expand their business.

This project will contain 5 chapters. Chapter 1 begins with an introduction to its project background, goals, and limitations. Literature review will be in Chapter 2. Chapter 3 will explain about methodology and technology

used to build a system. Lastly, analysis and design of the development system will be in Chapter 4 and Chapter 5 will explain about implementation testing of the development system.

2. Literature Review

Food recipe websites, which include a huge library of recipes, cooking tips, and culinary inspiration, have become a valuable resource for home cooks and culinary enthusiasts. The popularity of cooking at home and the ease with which recipes can be accessed online have led to a significant rise in the food recipe website domain in recent years.

Hundreds of food recipe websites offer a variety of audiences and tastes. While some websites offer a complete collection of recipes from different nations and traditions, others focus on particular cuisines or cooking styles. Yummly, Kuali, and Resepi CheNom are well-known websites with food recipes with millions of monthly visits. Yummly is a comprehensive food recipe website that offers various recipes, cooking videos, and meal-planning tools. It features a personalized recipe recommendation algorithm that suggests recipes based on user preferences and dietary restrictions.

2.1 Recipes

A recipe is a formula of ingredients and a list of instructions for creating prepared foods. It is used to control quality, quantity, and food costs in a food service operation. A recipe may be simple to complex based on the requirements of the operation and the intended user. For example, an experienced chef may need a recipe with only a few details, while a beginner cook may need more information about ingredients, preparation steps, cooking times and temperatures, visual cues, and equipment requirements.[1]

Recipes are formatted differently depending on the author and the intended use. Professional chefs record recipes in pocket notebooks, binders, or digital devices, using simple to complex details, depending on the type of recipe and the experience level of the chef. Information might include ingredients, prep steps, kitchen notes, and hand-drawn plate presentations. Recipes for the general consumer must be written with the assumption that the intended user knows very little about food preparation. When writing recipes that others will use in your kitchen, provide as much information so that anyone who is preparing, inexperienced or skilled, can easily understand. Include information on ingredients, prep steps for fabricating or measuring, cooking instructions, recipe yield, and required equipment.[2]

2.2 Study of Existing Related Systems

Food recipe websites have become increasingly popular in recent years, as they offer a wide variety of recipes, cooking tips, and other resources for cooks of all levels. In this article, we will introduce three popular food recipe websites: Yummly, Kuali, and Resepi CheNom. Yummly is a comprehensive food website and app that offers a wide variety of recipes from a variety of cuisines. Yummly also offers a variety of features to help users personalize their experience, such as the ability to filter recipes by dietary restrictions, allergies, and cooking time.[3] Kuali is a Malaysian recipe website that features a wide variety of recipes from Malay, Chinese, Indian, and Nyonya cuisines. Kuali also offers a variety of features to help users find the perfect recipe, such as the ability to search by ingredient, cuisine, and occasion.[4] Resepi CheNom is a Malaysian recipe website that features a wide variety of recipes from Malay cuisine. Resepi CheNom also offers a variety of features to help users find the perfect recipe, such as as the ability to search by ingredient, cuisine, and occasion.[5] These three websites offer a valuable resource for cooks of all levels, providing access to a wide variety of recipes, cooking tips, and other resources. In the following sections, we will provide a more detailed overview of each website, including its features and benefits.

Table 1 *Comparison Existing Related System*

Module	Kuali	Resepi CheNom	Yummly	Proposed System
Login and Signup	√	*X*	√	√
Multimedia Support	√	√	√	√
Recipe Management	√	√	√	Paid
Search Engine	Paid	√	√	√
Payment	√	*X*	√	√

3. Methodology

Agile methodology is a software development approach that prioritizes efficiency, adaptability, and teamwork to produce excellent software solutions on schedule and within budget. It is an iterative method of developing software that divides tasks into multiple dynamic periods, or sprints. Agile technique is used because it enables teams to swiftly adjust to shifting consumer demands, market conditions, and technological advancements.[6] Agile model enables teams to swiftly adapt to changing needs and generates incremental, usable software components that allow for continuous feedback and improvements. Teams can produce greater results by monitoring the project continuously throughout its duration.

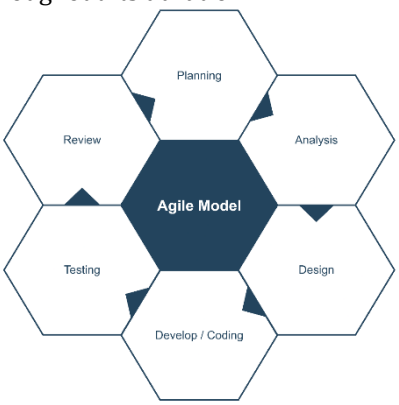

Fig. 1 *Agile Model*

There are six stages in the Agile model that is plan phase, design phase, develop phase, testing phase, deploy phase and review phase. Figure 3.1 showing the agile model for the system.

Table 2: *Agile model activity*

Phase	Input	Output
Planning	Surveyed 5 home cooks to gather information	Project title and scope document
	Identified modules	Gantt chart
	Selecting Framework	List of modules and features
	Created project timeline.	Framework selected
Analysis	Compared ResepiCheNom, Kuali, and Yummly.	Feature comparison table.
	Identified gaps in features.	Functional and Non-functional requirements.
	Defined functional or non-functional requirements.	
	Analyzed system needs.	Initial software and hardware requirement list.
Design	Created UI wireframes using Figma.	Wireframes for all user roles.
	Designed database schema and ERD.	ERD, DFD Level 0 & 1.
	Sketched flowcharts and DFDs for processes.	User flow and flowcharts.
Coding	Built frontend using React.js.	Working alpha version of the system.
	Developed backend API with Node.js & Express.js.	Complete frontend and backend modules.
	Integrated image upload with Cloudinary.	
	Implemented Stripe payment.	
Testing	Manual testing by 5 users.	Test cases and test report.
	Bug fixing and refinement.	Fixed bug list.
		Functional beta version.
Review	Conducted feedback sessions.	User feedback summary
	Demonstrated system features.	Final project improvements list
	Applied improvements.	Final version of the system

4. System Analysis and Design

Applied Information Technology and Computer Science Vol. 6 No. 1 (2025) p. 1838-1855

System analysis and design (SAD) is a systematic process that consists of several stages, such as planning, analysing requirements, development, design, and testing. [7] The goal of system analysis is to gain an understanding of the needs of users and the system in use, while the goal of system design is to create a design that meets these needs. [8] System analysis and design is essential to create a working system with all the required features and functions.

4.1 Context Diagram

Figure 2 show Perwira Chronicles Foodies System is a web application that allows users to recipes. The system also allows pro recipe creators to sell premium recipes. The system interacts with the following external entities: users, admin, pro recipe, recipe management. The system is responsible for storing and managing recipes, processing recipe searches and ratings, managing user accounts, and managing pro recipe sales.

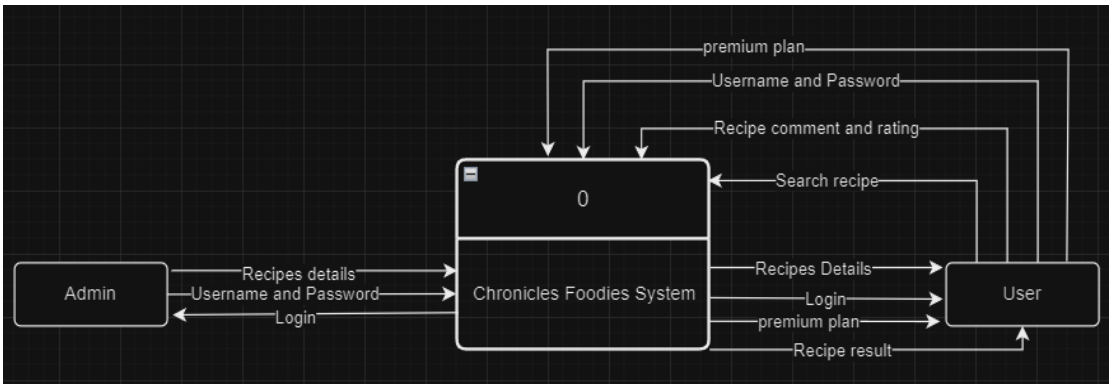

Fig. 2 *Context Diagram*

4.2 Data Flow Diagram (DFD) Level 0

Data Flow Diagram (DFD) is a graphical representation of the flow of data or input from an entity through a process, which then generates output either to another entity or stored in data storage. DFD shows each input and output for each entity and process. Figure 3 shows the Level 0 Data Flow Diagram (DFD 0) of the developed system.

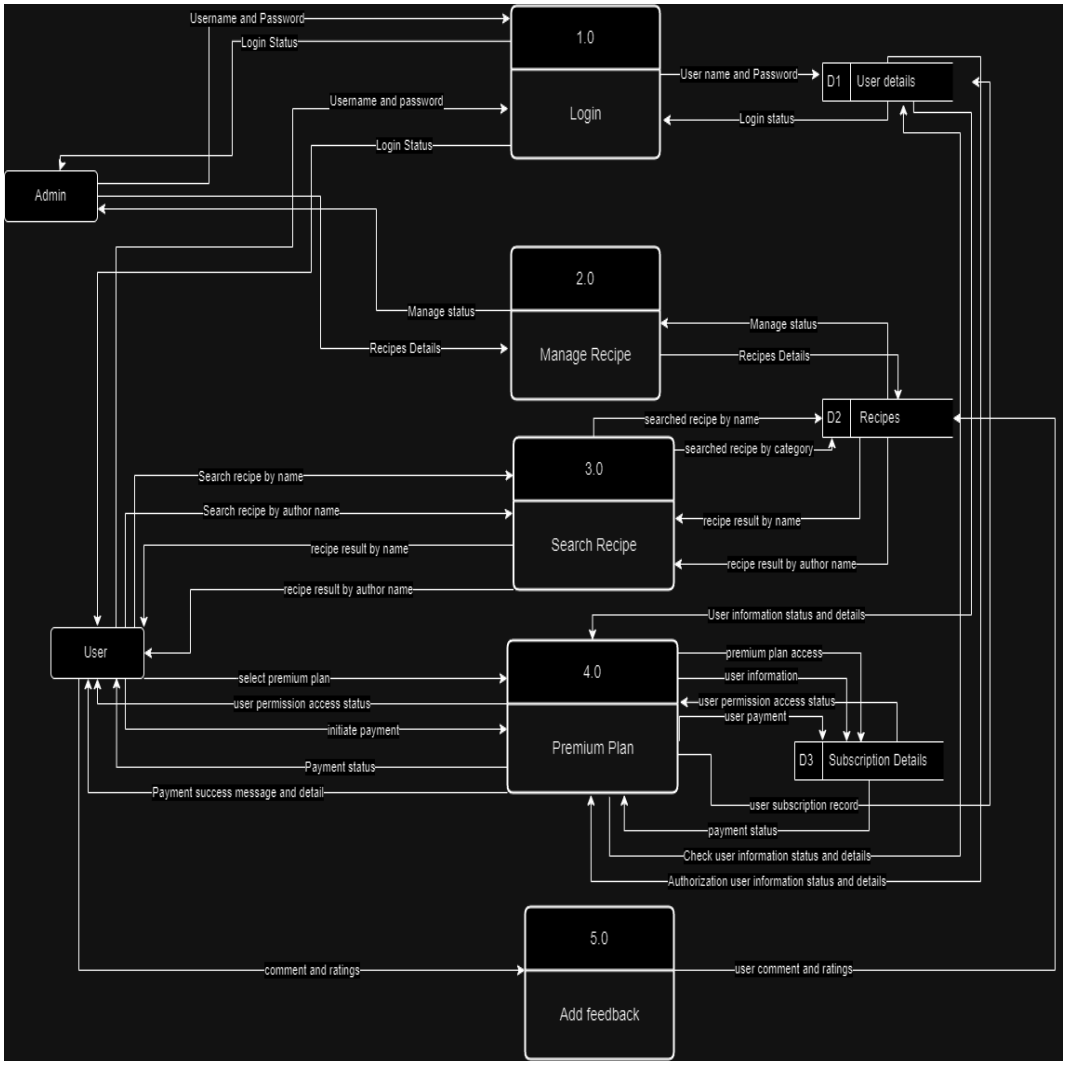

Fig. 3 *Data Flow Diagram Level 0*

4.3 Data Flow Diagram (DFD) Level 1

DFD level 1 is the more detailed compare to DFD level 0. It breaks down main process into subprocesses so explain the process in more specific way.

i) Process 2.0 Recipe Management

Process 2.0 recipe management is the process that describe recipe management that admin can add, update and delete recipe. Figure 4 show the specification process for recipe management.

Applied Information Technology and Computer Science Vol. 6 No. 1 (2025) p. 1838-1855

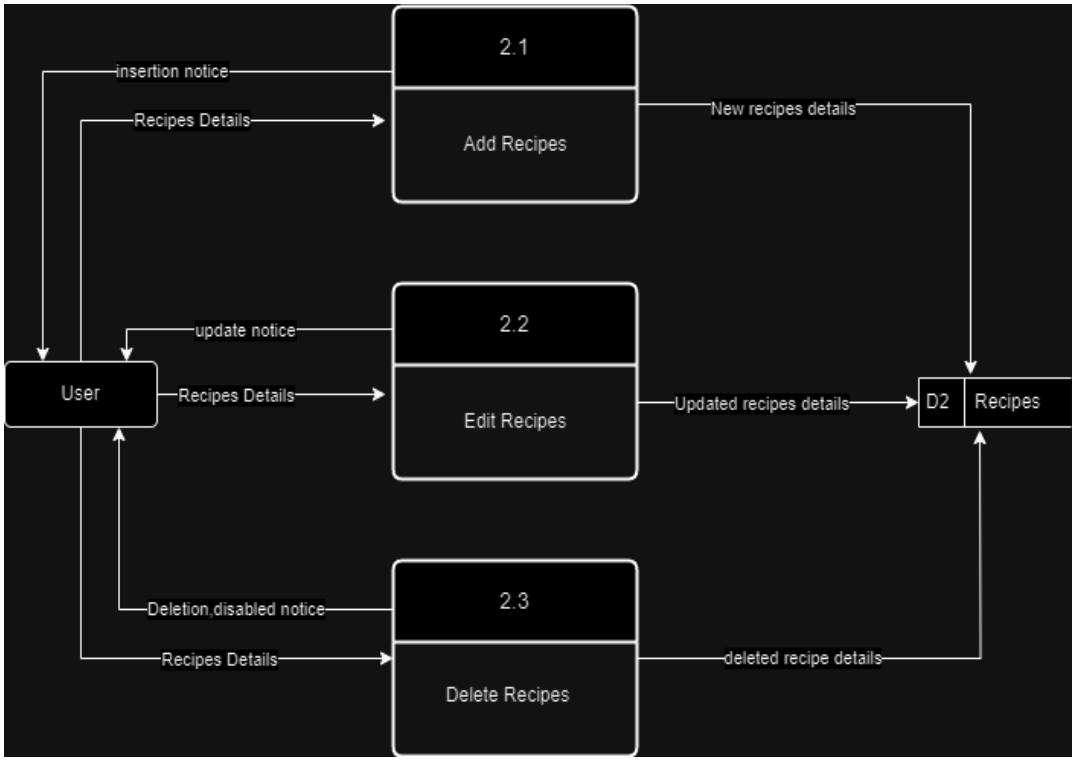

Fig. 4 *Data Flow Diagram Level 1 Recipe Management*

4.4 Entity Relationship Diagram (ERD)

An Entity Relationship Diagram (ERD) is a technique for structuring data and designing database systems. It is a model that describes how tables or data in a database relate to each other based on entities or relationships.[9] ERD is widely used in the design of management information systems and relational databases, and many academic sources reveal its syntax and semantics for data modelling. [10]

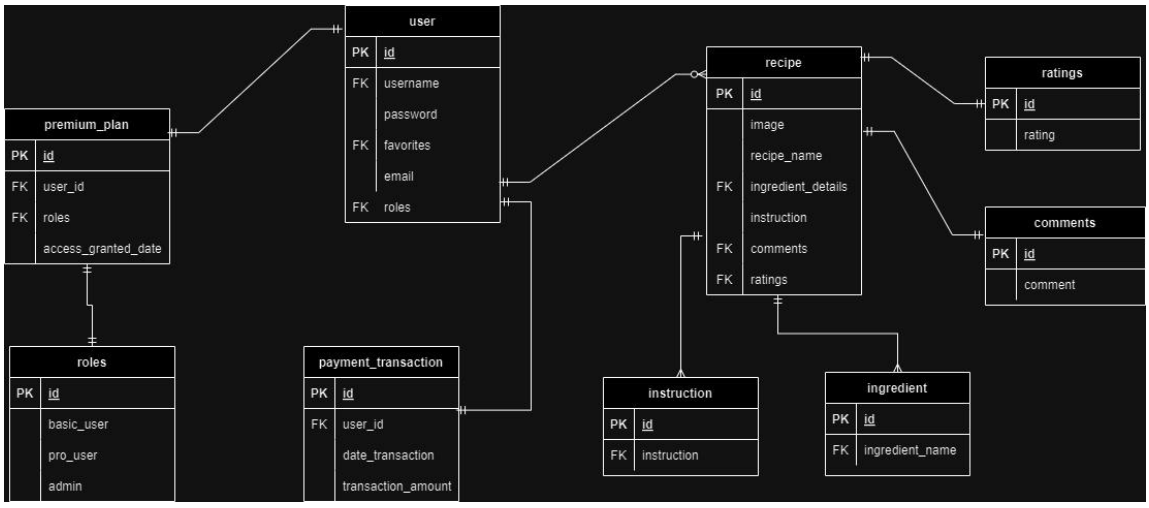

Fig. 5 *Entity Relationship Diagram*

4.5 Flowchart

A flowchart is a type of diagram that represents a workflow or process. A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task. In this section, the system has 3 different flowcharts. It is for basic user, pro user and admin.

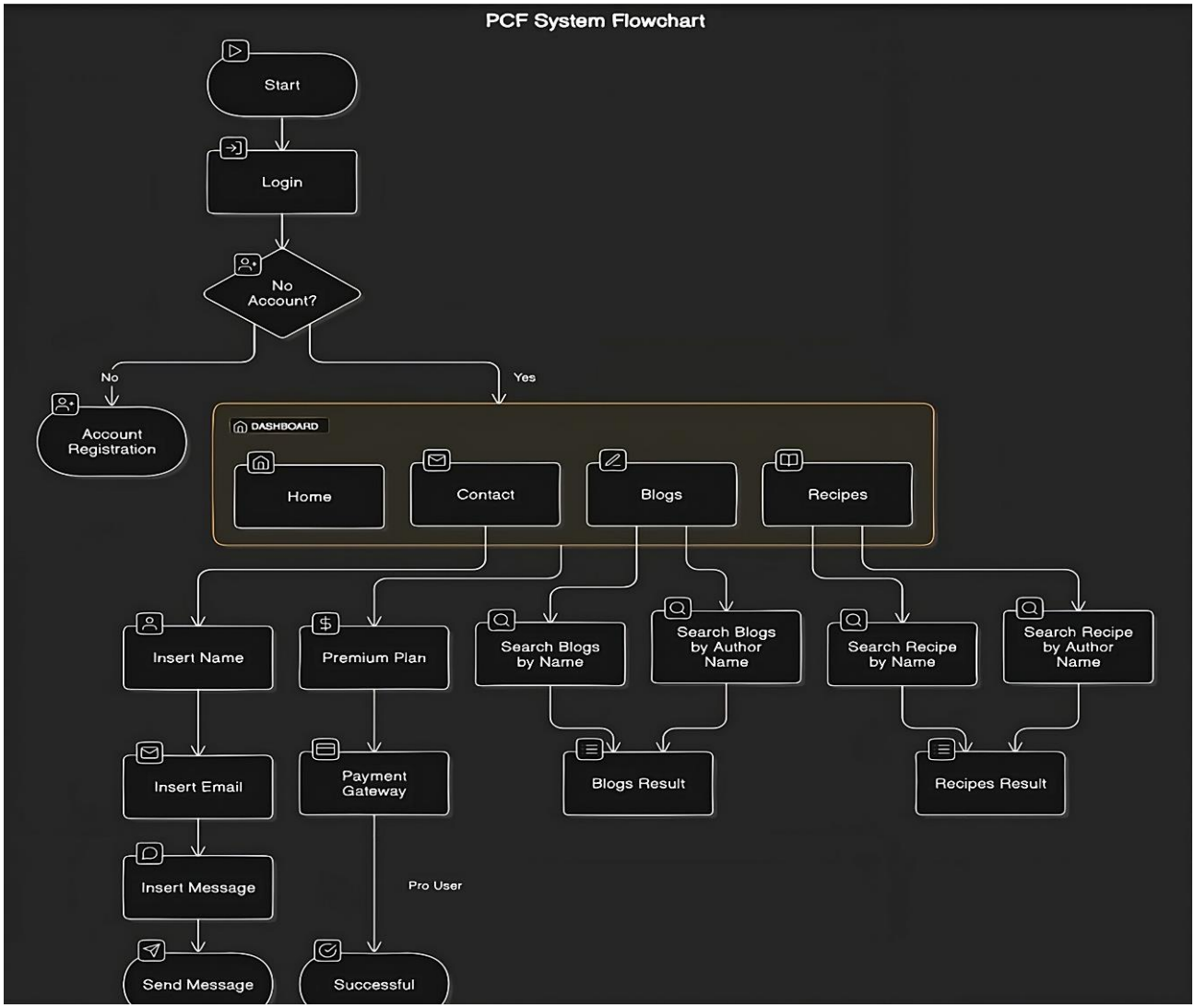

Fig. 6 *Flowchart for basic user*

Applied Information Technology and Computer Science Vol. 6 No. 1 (2025) p. 1838-1855

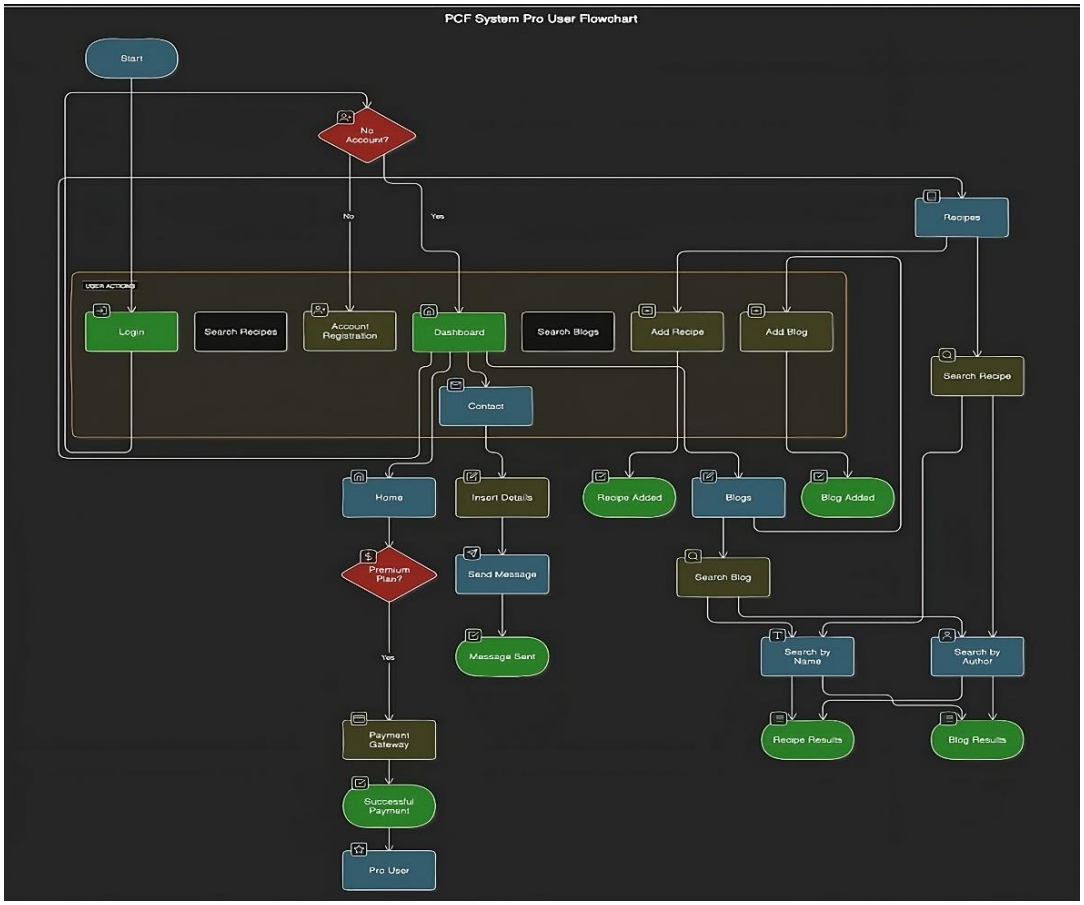

Fig. 7 *Flowchart for pro user*

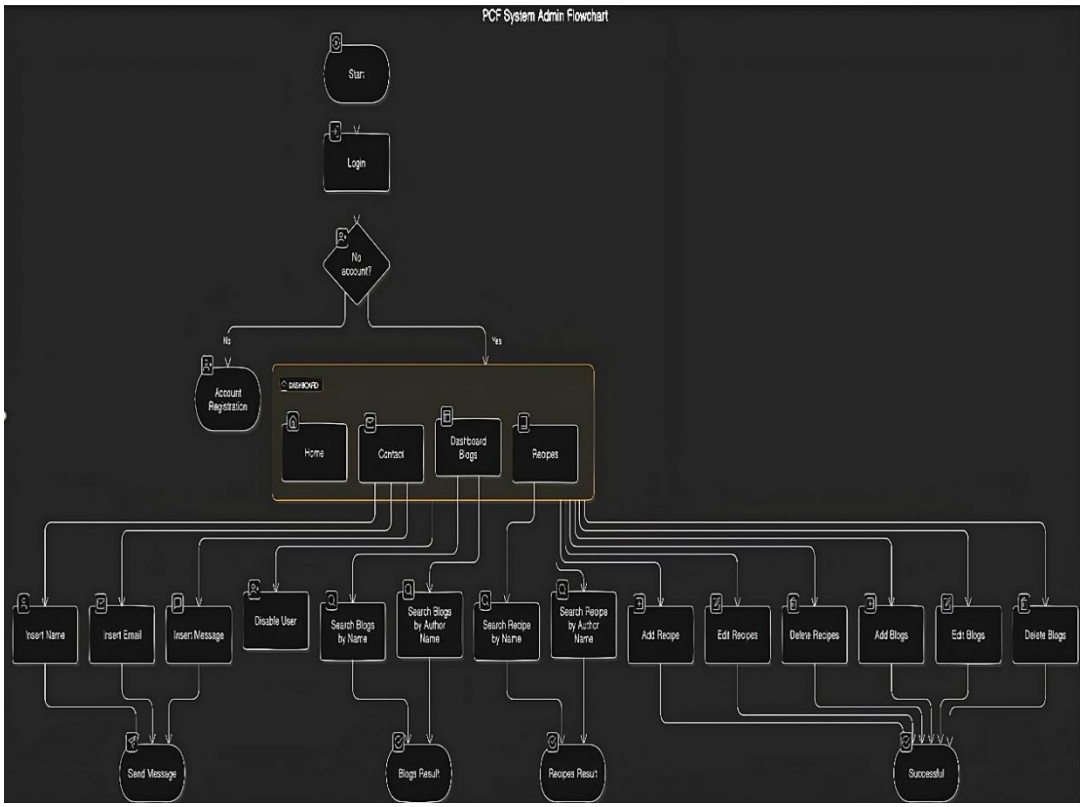

Fig. 8 *Flowchart for admin*

4.6 Wireframe

Wireframing is a way to design a website service at the structural level. A wireframe is commonly used to layout content and functionality on a page which takes into account user needs and user journeys. Wireframes are used early in the development process to establish the basic structure of a page before visual design and content is added.[11]

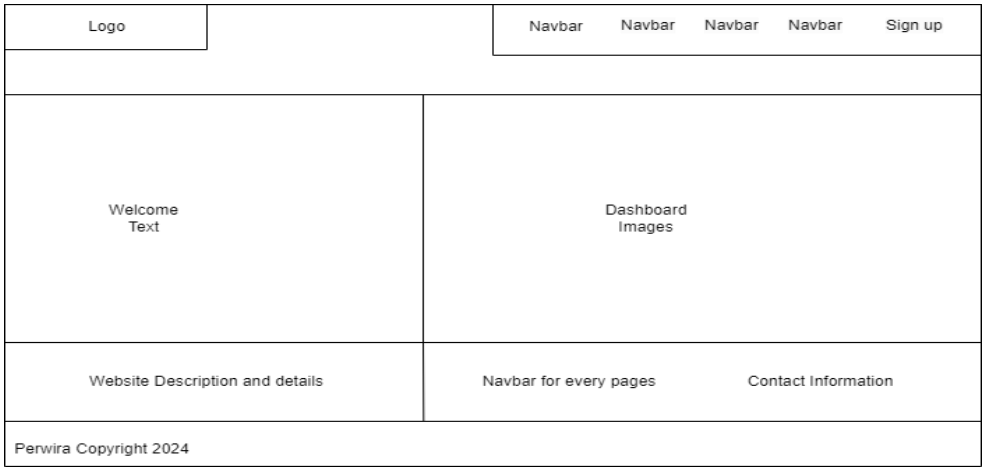

Fig. 8 *Dashboard page interfaces*

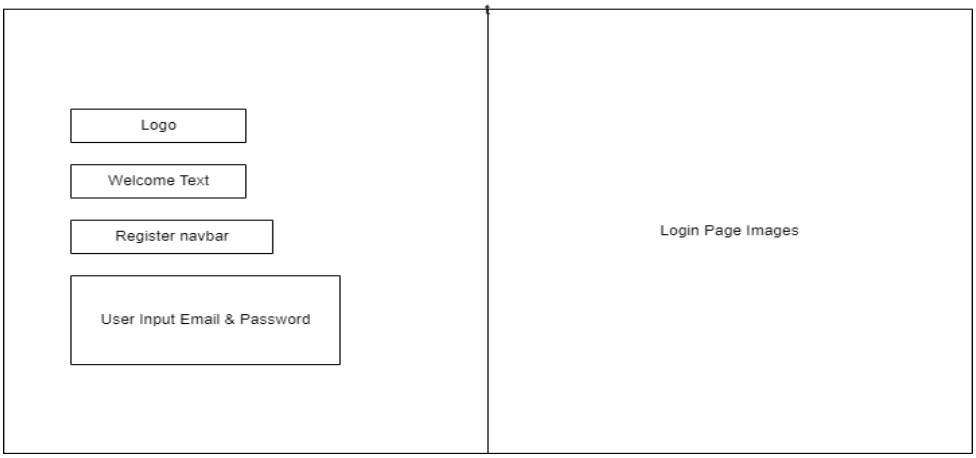

Fig. 9 *Login page interfaces*

5. Result and Discussion

This section will explain the implementation part. There will be a login and registration module, multimedia support module, recipe management module, search engine module and payment module. Then, the section will show the test case how the system work.

5.1 System Module

This section will explain the system module. There are 5 modules used in the system like login and registration module, multimedia support module, recipe management module, search engine module and payment module.

Applied Information Technology and Computer Science Vol. 6 No. 1 (2025) p. 1838-1855

5.1.1 Login and Registration

In Fig. 10, the source code for login and registration is depicted. The 'register' function is responsible for validating user input for name, email, and password. If any information is missing, it returns an error. The function also checks for duplicate emails and provides an alert if any are found. To ensure security, passwords are securely stored using bcrypt hashing. A new user is created and saved in the database upon successful validation, acknowledging the registration process. Fig. 11 shows the login and registration user interface. Generally, the user interface only consists of an input box which takes the email and password input, and two buttons. The register button will execute the code.

```
const register = async (req, res, next) => {
  const { name, email, password } = req.body;

  if (!name || !email || !password) {
    return res.status(400).json({ message: "All inputs are required" });
  }

  const duplicate = await User.findOne({ email });
  if (duplicate) return res.sendStatus(409);

  try {
    const hashedPassword = await bcrypt.hash(password, 10);
    const user = await User({
      ...req.body,
      password: hashedPassword,
    });

    const result = user.save();
    res.status(201).json({ success: "User registered successfully" });
  } catch (error) {
    next(error);
  }
};
```

Fig. 10 *Login and registration source code*

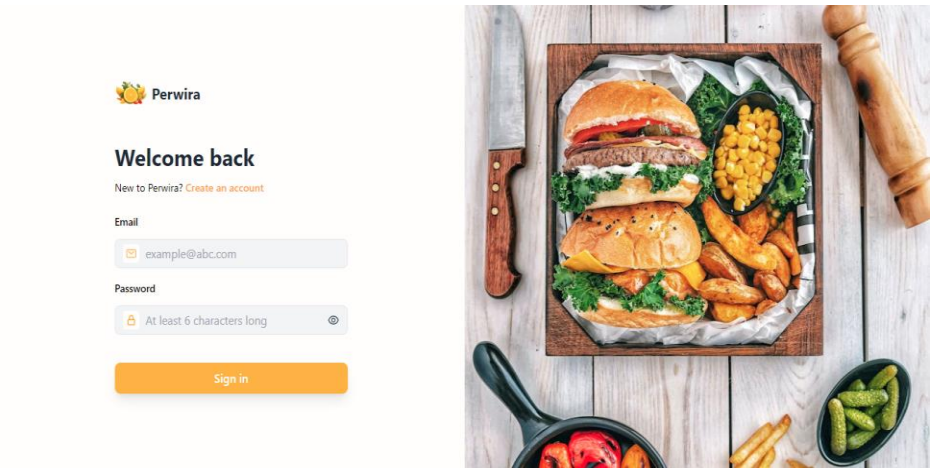

Fig. 11 *Login and registration User Interface*

5.1.2 Multimedia Support Module

Fig. 12 shows the multimedia support source code. The 'uploadImage' function validates and uploads JPEG/PNG images to Cloudinary. It uses Axios to send image data, including Cloudinary config from environment variables. Progress is tracked during upload. Upon success, the image URL is extracted and updated in the associated form. Fig. 13 show the multimedia support user interface, drag and drop functionality allows user to quickly add an image to the website by clicking on the image file in user computer's file explorer and then dragging it to the designated area on the webpage.

```
const uploadImage = async (e, setProgress, setFormDetails, formDetails) => {
  if (
    e.target.files[0].type === "image/jpeg" ||
    e.target.files[0].type === "image/png"
  ) {
    const data = new FormData();
    data.append("file", e.target.files[0]);

    data.append("upload_preset", import.meta.env.VITE_CLOUDINARY_PRESET);

    const config = {
      headers: { "X-Requested-With": "XMLHttpRequest" },
      onUploadProgress: (e) => {
        const { loaded, total } = e;
        setProgress((loaded / total) * 100);
      },
    };

    data.append("cloud_name", import.meta.env.VITE_CLOUDINARY_CLOUD_NAME);

    const {
      data: { url },
    } = await axios.post(
      "https://api.cloudinary.com/v1_1/dcw2ixfwt/upload",
      data,
      config
    );
    setFormDetails({ ...formDetails, [e.target.id]: url });
  } else {
    console.error("Please select an image in jpeg or png format");
  }
};
```

Fig. 12 *Multimedia support source code*

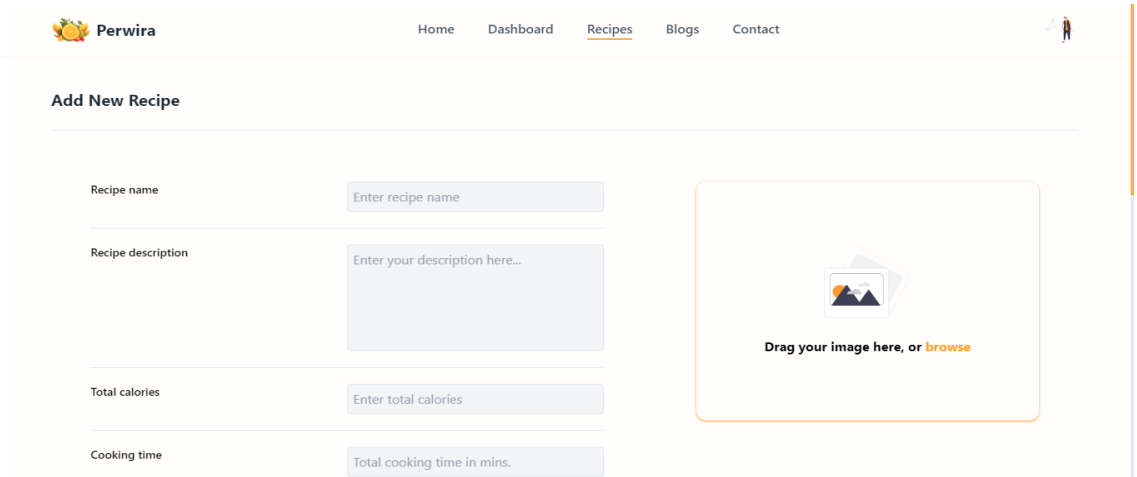

Fig. 13 *Multimedia support user interface*

5.1.3 Recipe Management Module

Fig. 14 shows the add recipe source code. The 'AddRecipe' function utilizes React hooks, including useState, to manage form state for recipe creation. It employs a custom ‘useTitle’ hook to set the document title dynamically. State variables capture form details like title, image, description, and more, including tracking form progress and focused input fields. Fig. 15 shows the add recipe user interface**.** The pages show the recipe form that the user needs to fill in every instruction inside the box required and upload the exact recipe image.

```
const AddRecipe = () => {
  useTitle("Perwira - Add Recipe");

  const [formDetails, setFormDetails] = useState({
    title: "",
    image: "",
    description: "",
    calories: "",
    cookingTime: "",
    ingredients: [],
    instructions: [],
  });
  const [progress, setProgress] = useState(0);
  const [ingredient, setIngredient] = useState("");
  const [instruction, setInstruction] = useState("");
  const [focused, setFocused] = useState({
    title: "",
    calories: "",
    cookingTime: "",
    ingredient: "",
  });
  const [addRecipe, { isLoading }] = useAddRecipeMutation();

  const handleFocus = (e) => {
    setFocused({ ...focused, [e.target.id]: true });
  };
```

Fig. 14 *Add recipe source code*

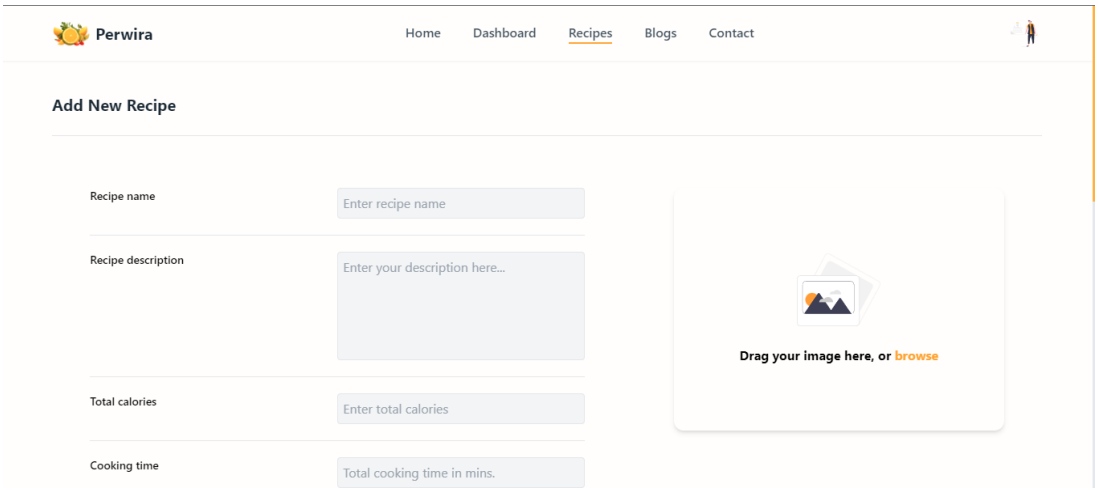

Fig. 15 *Add recipe user interface*

Fig. 16 shows the edit recipe source code**.** The 'EditRecipe' extracts recipe ID from URL parameters via React Router's 'useParams' hook. Utilizes 'useGetRecipeQuery' to fetch recipe data based on ID. State variables, managed by 'useState', handle form details, progress, focused input fields, and individual ingredient and instruction inputs. 'useUpdateRecipeMutation' manages asynchronous updates to the recipe. Fig. 17 show the edit recipe user interface. Users need to click the 3 dots on the right side of the recipe and it will pop up 2 options, edit and delete. If the user clicks Edit, it will be redirected to the Edit webpage.

```
const EditRecipe = () => {
  const { id } = useParams();

  const { data, ...rest } = useGetRecipeQuery(id);
  const [updateRecipe, { isLoading }] = useUpdateRecipeMutation();

  const [formDetails, setFormDetails] = useState({
    title: data?.title || "",
    image: data?.image || "",
    description: data?.description || "",
    calories: data?.calories || "",
    cookingTime: data?.cookingTime || "",
    ingredients: data?.ingredients || [],
    instructions: data?.instructions || [],
});

  const [progress, setProgress] = useState(0);
  const [ingredient, setIngredient] = useState("");
  const [instruction, setInstruction] = useState("");
  const [focused, setFocused] = useState({
    title: "",
    calories: "",
    cookingTime: "",
    ingredient: "",
  });
```

Fig. 16 *Edit recipe source code*

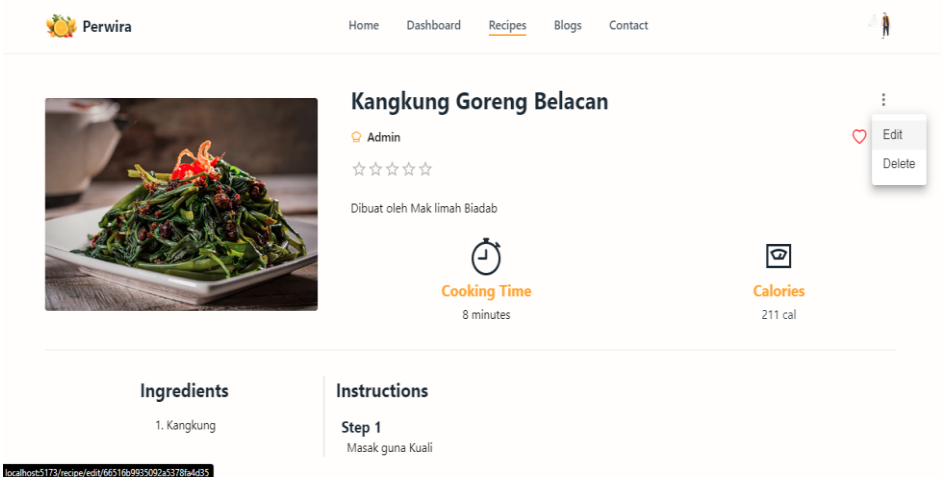

Fig. 17 *Edit recipe user interface*

Applied Information Technology and Computer Science Vol. 6 No. 1 (2025) p. 1838-1855

Fig. 18 shows the delete recipe source code**.** The 'deleteRecipe' is a back-end server function, designed for Express.js middleware. Receives req, res, and next parameters. In a try-catch block, it attempts to find a recipe in the database based on the provided ID using Mongoose's 'findById'. Handles various scenarios, including recipe not found and unauthorized access based on the author's identity. Deletes the recipe if authorized, sending appropriate status codes for success or failure. Any errors are passed to the Express error handling middleware through next. Fig. 19 show delete recipe user interface. Users need to click the 3 dots on the right side of the recipe and it will pop-up 2 option, edit and delete. If the user clicks 'Delete, the recipe in the current page will be deleted.

```
const deleteRecipe = async (req, res, next) => {
  try {
    const foundRecipe = await Recipe.findById(req.params.id);
    if (!foundRecipe)
      return res.status(404).json({ message: "Recipe not found" });

    if (foundRecipe.author.toString() !== req.user)
      return res.status(401).json({ message: "Unauthorized" });

    await foundRecipe.deleteOne({ _id: req.params.id });
    res.sendStatus(204);
  } catch (error) {
    next(error);
  }
};
```

Fig. 18 Delete recipe source *code*

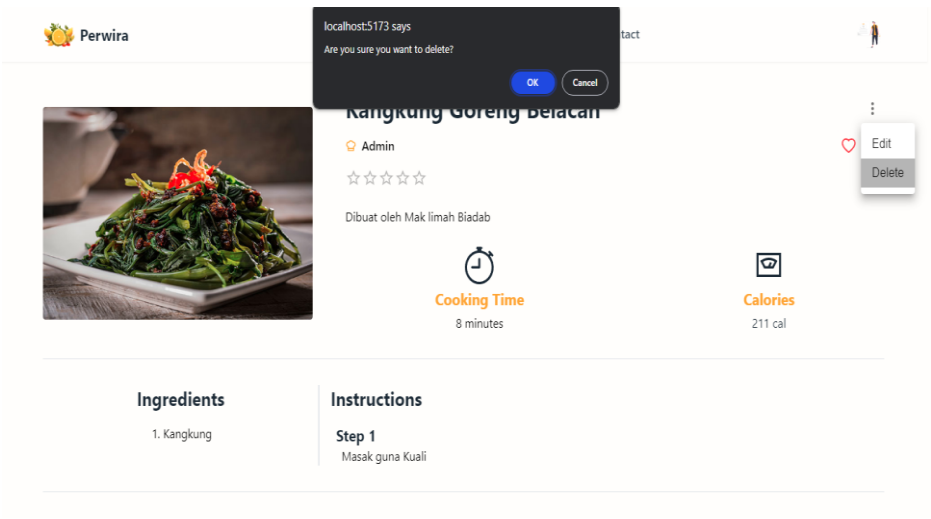

Fig. 19 *Delete recipe user interface*

5.1.4 Search Engine Module

Fig. 21 shows the search engine user interface. This Express.js route handler for retrieving a specific recipe by ID queries the database using Mongoose's 'findOne' method. It populates certain fields of the retrieved recipe document, such as the author's name and comments' user names and profile pictures. If the recipe is found, it responds with a status code of 200 and the recipe document. If not found, it returns a 404 status with an error message. Fig. 21 shows the search engine user interface. It consists of a text box where users can type in their search queries, likely recipe names or author names. Inside the box, often displays "Recipes" or "Search Recipes," to clarify its purpose. This search function helps users quickly find specific recipes on the website.

```
const getRecipe = async (req, res, next) => {
  try {
    const recipe = await Recipe.findOne({ _id: req.params.id })
      .populate("author", "name")
      .populate("comments.user", ["name", "profilePicture"]);

    if (!recipe) ret
                    any
                    es.status(404).json({ message: "Recipe not found" });

    res.status(200).send(recipe);
  } catch (error) {
    next(error);
  }
};
```

Fig. 20 *Search engine source code*

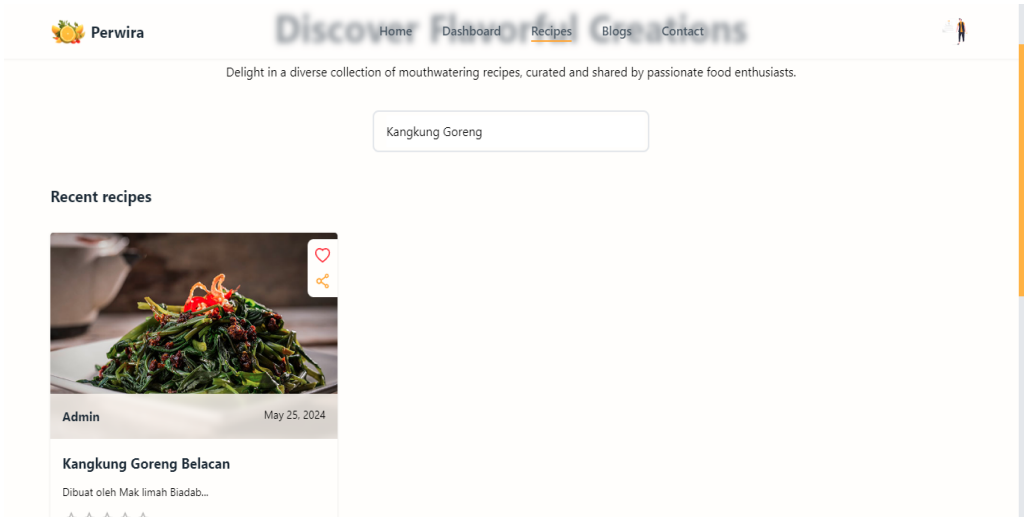

Fig. 21 *Search engine user interface*

Applied Information Technology and Computer Science Vol. 6 No. 1 (2025) p. 1838-1855

5.1.5 Payment Module

Fig. 23 show the stripe payment source code. The code initializes a Stripe client using the provided API key, then defines an async function subscribe. This function creates a customer and initiates a checkout session using Stripe's API, specifying line items, customer ID, payment method, and success/cancel URLs. Fig. 23 shows the stripe payment user interface. The user needs to enter their email address, password, credit card information, and country of origin. They also have the option to save their information for future purchases securely. There is also a button to pay with Google Pay or with a link. The total cost of the premium plan is MYR 2.00.

```
const stripe = Stripe(process.env.STRIPE_KEY);

const subscribe = async (req, res, next) => {
  try {
    const customer = await stripe.customers.create({
      metadata: {
        userId: req.user,
      },
    });

    const session = await stripe.checkout.sessions.create({
      line_items: [
        {
          price: process.env.STRIPE_PRICE_ID,
          quantity: 1,
        },
      ],
      customer: customer.id,
      mode: "payment",
      success_url: `${process.env.CLIENT_BASE_URL}/payment-success`,
      cancel_url: `${process.env.CLIENT_BASE_URL}/payment-failed`,
    });
```

Fig. 22 *Payment source code*

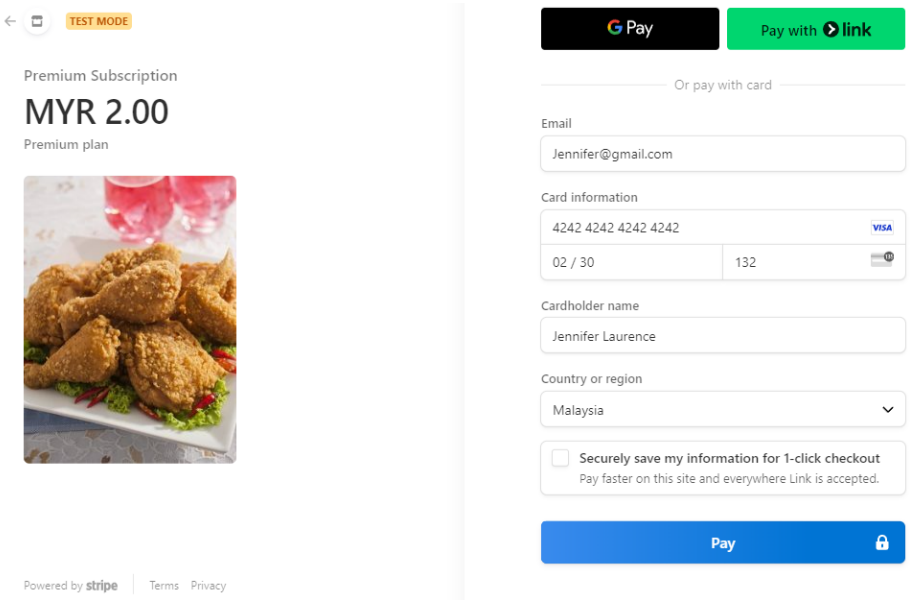

Fig. 23 *Payment user interface*

5.2 Test Case

Table 3 shows the test case for the Perwira Chronicles Foodies system. These tests will include module testing, expected results, and Actual results.

Table 3: Test Case Result

No	Module	Test Case	Test Steps	Expected Result	Actual Result	Status
1	Login & Registration	Empty input fields	Leave name, email, or password blank and click register	Error message: *"Please input details"*	Error message displayed	Pass
2	Login & Registration	Incorrect login credentials	Input unregistered email/password and click login	Error message: *"Incorrect credentials"*	Error message displayed	Pass
3	Login & Registration	Duplicate email registration	Register using an already registered email	Error message: *"Email already exists"*	Error message displayed	Pass
4	Login & Registration	Successful registration and login	Input valid email and password	Redirect to homepage/dashboard	User logged in successfully	Pass
5	Multimedia Support	Upload image file (.jpg, .png)	Drag & drop a valid image to upload section	Image is uploaded and previewed	Image displayed	Pass
6	Multimedia Support	Upload unsupported file format	Try uploading a .pdf or .docx file	Error message: *"Unsupported file format"*	Error message displayed	Pass
7	Recipe Management	Add recipe with all fields completed	Fill all required fields and click submit	Recipe saved and displayed in recipe list	Recipe displayed successfully	Pass
8	Recipe Management	Edit existing recipe	Click on the edit icon, change data, and save	Recipe updated in database and UI	Changes reflected correctly	Pass
9	Recipe Management	Delete existing recipe	Click delete icon and confirm	Recipe removed from recipe list	Recipe no longer displayed	Pass
10	Search Engine	Search recipe by name	Type part of the recipe name in search bar	Matching recipes are displayed	Recipes filtered correctly	Pass
11	Search Engine	Search with no results	Search for a non-existent keyword	Message: *"No recipes found"*	Message displayed correctly	Pass
12	Payment Module	Valid card details	Enter valid card number and submit	Payment successful, redirect to success page	Redirected with success message	Pass
13	Payment Module	Invalid card details	Enter fake or expired card number	Error message: *"Invalid card number"*	Error message displayed	Pass
14	Payment Module	Cancel payment	Click "Cancel" on Stripe payment page	Redirect to cancellation page or remain on payment page	Handled correctly	Pass

6. Conclusion

The Perwira Chronicles Foodies System promises to revolutionize home cooking and culinary learning. This system acts as a comprehensive recipe library, offering a treasure trove of diverse dishes for both home cooker and professional chefs. By storing recipes in a central database, the system ensures accuracy, efficiency, and easy access to a world of culinary delights. Users can not only discover new flavors and techniques, but also hone their skills through detailed instructions and engaging features. However, the system's true potential lies in fostering a vibrant community of food enthusiasts. Through recipe sharing, discussions, and reviews, the platform can become a breeding ground for culinary creativity and cultural exchange. By focusing on user experience, content quality, and fostering a passionate community, Perwira Chronicles Foodies System has the potential to redefine the way we learn, share, and ultimately, enjoy food.

Acknowledgment

The authors would like to thank the Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia for its support.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Raffael Lawrenzier, Mohd Amin Mohd Yunus; **data collection:** Raffael Lawrenzier; **analysis and interpretation of results:** Raffael Lawrenzier, Mohd Amin Mohd Yunus; **draft manuscript preparation:** Raffael Lawrenzier, Mohd Amin Mohd Yunus. All authors reviewed the results and approved the final version of the manuscript.

References

[1] The, "The Culinary Pro," The Culinary Pro, 2014. https://www.theculinarypro.com/about-recipes#:~:text=A%20recipe%20is%20a%20formula,costs%20in%20a%20foodservice%20operation. accessed Dec. 10, 2023.

[2] The, "The Culinary Pro," The Culinary Pro, 2014. https://www.theculinarypro.com/about-recipes#:~:text=A%20recipe%20is%20a%20formula,costs%20in%20a%20foodservice%20operation. accessed Dec. 10, 2023.

[3] "Yummly: Personalized Recipe Recommendations and Search," Yummly.com, 2023. https://www.yummly.com/. accessed Dec. 10, 2023.

[4] A. Dairy, "Kuali.com - Recipes, Food and Restaurant Reviews, Cooking Hacks...," Kuali, May 15, 2019. https://www.kuali.com/ (accessed Dec. 10, 2023).

[5] Che Nom, "ResepiCheNom - Homepage," Resepichenom.com, 2022. https://resepichenom.com/ (accessed Dec. 10, 2023).

[6] "What Is Agile Methodology? (A Beginner's Guide) [2023] • Asana." Accessed: Dec. 14, 2023. [Online]. Available: https://asana.com/resources/agile-methodology

[7] "System Analysis vs System Design - What are the Differences?" Accessed: Dec. 14, 2023. [Online]. Available: https://www.geeksforgeeks.org/system-analysis-vs-system-design/

[8] "System Analysis and Design - Overview." Accessed: Dec. 14, 2023. [Online]. Available: https://www.tutorialspoint.com/system_analysis_and_design/system_analysis_and_design_overview.htm

[9] V. C. Storey, "Relational database Entity-Relationship design based on the model*."

[10] I.-Y. Song, E. K. Park, M. Evans, and U. E. K. Park, "A Comparative Analysis of Entity-Relationship Diagrams A Comparative Analysis of Entity-Relationship Diagrams 1," 1995. [Online]. Available: https://www.researchgate.net/publication/243781001

[11] What is wireframing | Experience UX, "What is wireframing | Experience UX," Experience UX, 2015. https://www.experienceux.co.uk/faqs/what-is-wireframing/ (accessed Dec. 16, 2023).