E-ISSN: 2962-6110
P-ISSN: 2964-7843
JSRET
jsret.knpub.com
Journal of Scientific Research, Education, and Technology

Utilization of Flutter Framework in Developing an Android-Based Cooking Recipe Application

Saniah Evatri Algadrie, Enny Itje Sela
Informatics, Yogyakarta University of Technology

ABSTRACT

Cooking has become a common activity in everyday life. Cooking activities require recipes that are used as a guide in processing food ingredients into a dish. The collection of recipes in print media has not been able to meet the needs of users with a dynamic lifestyle. Therefore, researchers developed an android mobile-based cooking recipe application which is a solution to make it easier for users to find and practice recipes efficiently. This research uses a design process using the System Development Life Cycle (SDLC) approach. And in making this application, researchers used the Flutter framework with the Dart programming language which is designed for fast, efficient, and high-performance application development. Later this application will relate to the API (Application Programming Interface) of TheMealDB which provides recipe data. The result of this research is an application that is able to display innovative cooking recipes so that users can easily find and implement cooking recipes and support the improvement of cooking skills and creativity.

Keywords: *Application Programming Interface, Cooking recipes, flutter, mobile application, System Development Life Cycle.*

Corresponding author
Name: Saniah Evatri Algadrie
Email: algadriesania@gmail.com

INTRODUCTION

The rapid advancement of technology in today's digital era has had a significant impact on various aspects of human life. One of them is the world of cooking, which requires cooking recipes as a guide in processing food ingredients into a delicious dish.

A recipe is a guide that contains complete information about the name of the dish, a list of ingredients used, seasonings, steps in the cooking process, and how to serve the dish. In addition, food recipes not only include details of ingredients and cooking methods, but are also often accompanied by photos as a visual display that illustrates the final result of the dish (Nurlaelatul Maulidah, Sri Diantika, Hiya Nalatissifa, Ahmad Fauzi, & Riki Supriyadi, 2024)

Recipes that were used in the past are still in the form of printed media such as magazines and newspapers. Searching for recipes through printed media takes a lot of time and is less effective for finding food according to your wants and needs.

Based on this background, the purpose of this research is to design an application designed to facilitate users in carrying out various cooking activities, from finding recipes, preparing ingredients, to serving dishes. The presence of an Android-based cooking recipe application is an innovation that makes it easier for people to get cooking recipes quickly and efficiently, according to the wants and needs of each user.

In designing this application, researchers used the Flutter framework as an editor in making applications and used API (Application Programming Interface) from TheMealDB to get recipe data.

Flutter, released by Google in 2018, is an open-source user interface (UI) software development kit (SDK) that allows developers to build beautiful and high-performance cross-platform mobile applications from a single code base. By using the Dart programming language, Flutter offers a unique approach to application development with a hot reload feature that allows developers to see live changes in the application without the need to restart the entire application (Rasid & Suartana, 2024).

The Flutter framework is one of the modern application development technologies known for its ability to deliver high performance and attractive interfaces. By using Flutter, developers can create cross-platform applications that are compatible with Android, iOS, and the web, making the development process more efficient. Another advantage is its dynamic nature, allowing each code component to be flexibly customized, both in terms of design and function. This makes the resulting application more attractive, user-friendly, and able to adjust to user needs without looking rigid or monotonous (Putri, Eviyanti, & Hindarto, 2023).

As a data source for recipes in this application, TheMealDB is an open-source database that provides various recipes from various parts of the world, making it a very useful source for finding cooking ideas. This database can be accessed through the provided API (Application Programming Interface), which allows users to send an HTTPS request to a predefined base URL, which is https://www.themealdb.com/api/json/v1/1/. This URL can be customized with various parameters according to the user's needs, to search for recipes based on certain categories, ingredients, or other types of dishes. Being open source, TheMealDB allows anyone to contribute to using and developing this database (Mulyawan & Lestari, 2019).

This research is expected to produce an innovative, efficient, and easy-to-use mobile application solution by integrating the Flutter framework that excels in cross-platform application development and TheMealDB API (Application Programming Interface) as a rich data source for recipe information.

RESEARCH METHODS

Data collection method

In this research, the author collected data through the literature study method. This literature study process is carried out by collecting various references that will be used as a basis or foundation in research. These references were obtained through various sources, including by reading books, conference papers, and scientific journals both from within and outside the country. In addition, internet searches were also conducted to obtain relevant information and support this research (Putri et al., 2023). This approach provides a strong theoretical foundation in designing Android-based cooking recipe applications. By using the theoretical foundations obtained through literature studies, this research can build application concepts and structures that are in accordance with user needs.

System development method

In developing this application, the method applied is the System Development Life Cycle (SDLC), which is a process used to understand how an information system can meet business needs. This process includes the stages of system design, system development or construction, to the delivery of the finished system to users (Rahadani, Arifin, & Sumarya, 2021).

SDLC (System Development Life Cycle) consists of four main stages, namely planning, analysis, design, and implementation, each of which has an important role in effective system development. The following is an explanation of these stages:

1. Planning

   At this stage the researcher designs the entire development process to provide a basis for identifying, knowing the purpose of the application, and the data required in formulating and implementing solutions (Deni Murdiani & Muhamad Sobirin, 2022).
2. Analysis

   The analysis stage is carried out to collect data relevant to the research needs (Wijaya & Susanto, 2021). The data obtained is processed and analyzed thoroughly to recognize the fundamental problems faced by users as well as the specific needs that must be provided by the application. The analysis process ensures that the application designed is able to meet user needs and provide maximum user experience.
3. Design

   The next stage is to design the application interface to be developed. This design is made with reference to the needs that have been identified and analyzed in the previous stage, namely the analysis stage (Nagara, Oetari, Apriliani, & Sutabri, 2023). This stage includes designing data structures using MySQL as a base for storing member information and related data. In making this application to visualize the system, UML diagrams such as Use Case, Class, and Activity are used (Saputra, Rahim, & Suryawan, 2024).

4. Implementation

   The implementation stage is the stage for implementing the system design and features in the application according to the design in the previous stage (Hardiansyah & Munir, 2020). This stage is included in the user interface development and API integration stage (Abiyyu & Tawakal, 2021). The design that has been designed previously begins to be realized into a form that can function, researchers use the Flutter framework and Dart as a layout forming language to create a navigation structure and retrieve movie data from JSON files found at https://www.themealdb.com.

RESULTS AND DISCUSSION

Problem analysis

The results showed that the researchers analyzed the existing problems, namely the cooking process which still uses recipes in the form of printed media. Recipes on printed media only have a limited variety of recipes, so that the existing recipe choices look less and do not meet the needs of their users.

Alternative solutions

The alternative solution that researchers propose is to create a cooking recipe application. This application is expected to provide convenience for its users in finding recipes that suit their needs anywhere and anytime by using applications on smartphones. This mobile-based cooking recipe application is expected to facilitate users in the cooking process, making it faster and more efficient.

Application implementation

1. Application system design

In this section, it is explained about the Unified Modeling Language (UML) of the cooking recipe application that will be designed by researchers. Unified Modeling Language (UML) is an image-based language used to visualize, specify, build, and document object-based software development systems. UML is not a programming language, but the resulting models can relate directly to various programming languages, allowing direct mapping from UML models to various object-oriented programming languages, such as Java (Sutrisno & Karnadi, 2021).

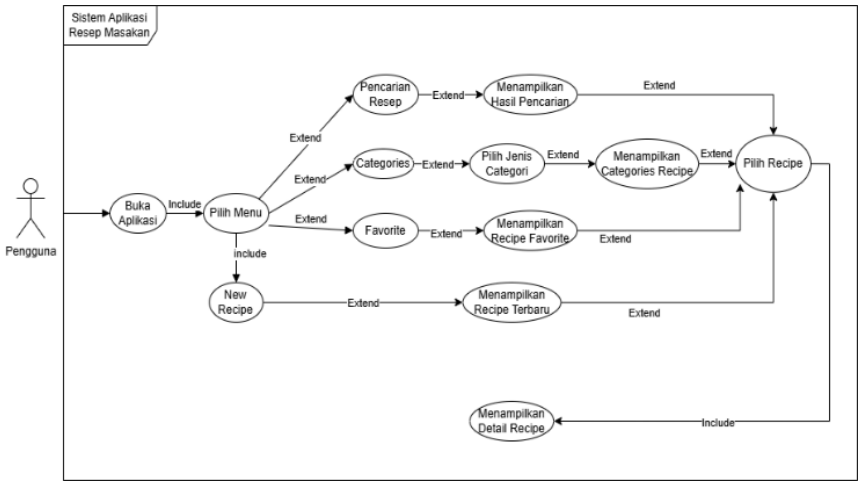

Figure 1. Use Case Diagram

Usecase diagram is one type of diagram found in the Unified Modeling Language (UML). Use case diagrams are visual representations of various components, such as actors, use cases, and relationships between components. Various symbols or notations are used to describe system functionality in usecase diagrams. This diagram is used to explain the system design to users and design all the features in the system to be developed (Siska Narulita, Ahmad Nugroho, & M. Zakki Abdillah, 2024). Figure 1. Shows the Use Case diagram of the cooking recipe application, there are actors, namely application users who can open the application and select various application features and see all available recipes.

2. Application display

This section presents the implementation results of the development of the cooking recipe application, which aims to facilitate users in finding various cooking recipes quickly and practically, anytime and anywhere, through their smartphone devices. This application is designed not only to meet the information needs of users, but also to offer an interesting and interactive experience through its interface.

The following is a detailed description of each interface and feature that has been implemented in the recipe application.

A. Home Page Display

Figure 2. shows the display when users open the application, they will be directed to the home page display. At the top of the page, there is an application logo that becomes its visual identity. Below the logo, there is a search bar that allows users to search for recipes based on specific ingredients, as well as category buttons such as Pork, Vegetarian, Beef, and Pasta to filter recipes according to food type. Furthermore, the app displays a list of recent recipes complete with pictures and names of dishes to give users ideas or inspiration. The bottom navigation section provides easy access to the main page, the list of favorite recipes, and the option to exit the app.

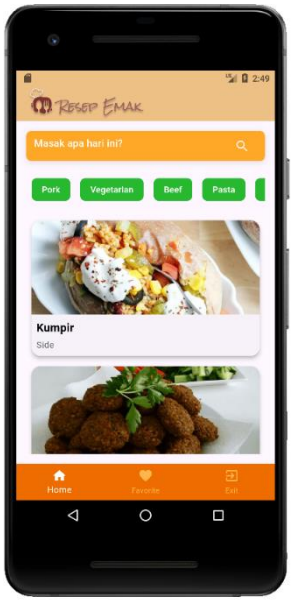

Figure 2. Home Page Display

B. Search Bar & category result display

The search results page of this app is shown in Figure 3. It displays a list of recipes that match the keywords entered in the search bar, such as “egg”. At the top, there is text confirming the search results based on the keyword. Each result is displayed with a picture of the dish, recipe name, and food category, making it easy for users to find recipes that suit their needs.

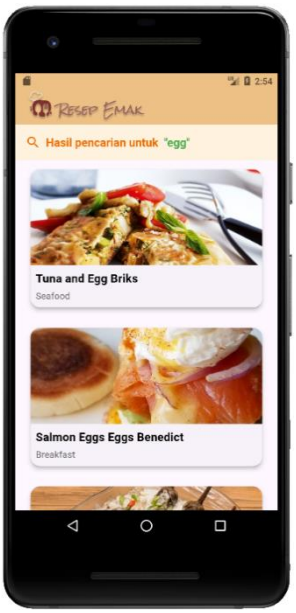

Figure 3. Display of Search Bar & Category Results

C. Recipe Detail Display

The recipe detail page is designed to provide complete information about a recipe. This page displays a recipe image at the top as the main visual, with a button on the top right to add the recipe to the favorites list seen in Figure 4. and Figure 3. Which shows the change in appearance when the favorite button is pressed. Underneath, there is the name of the recipe, the category of the dish, a list of ingredients needed, as well as clearly structured steps to make it easier for users to follow the cooking guide. This display prioritizes comfort and clarity for users.

Figure 4. Display of Recipe Detail Page

Figure 5. Favorite Button Display when pressed

D. Favorite Page View

Figure 6. shows the Favorite page which displays a list of favorite recipes, with each recipe clickable to view more details. If there are no favorite recipes, the message “No favorite recipes yet” will appear.

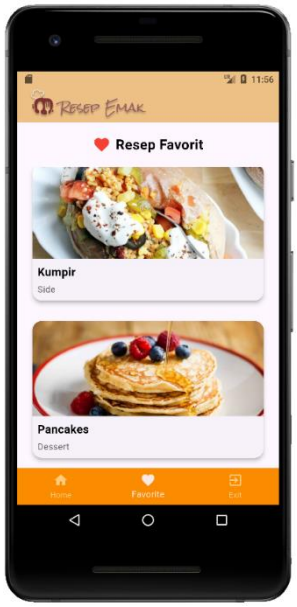

Figure 6. Favorite Recipe Page Display

E. Exit Page

When the user selects the Exit option, a confirmation dialog will appear asking if they are sure they want to exit the application. If the user selects “Exit”, the application will be closed as shown in Figure 7.

Figure 7. Exit Page Display

Application system testing

System testing is a method for examining and evaluating a system to ensure that it functions according to predetermined specifications. This process includes various types of testing to identify deficiencies, errors, or weaknesses in the system. The main purpose of system testing is to ensure that the developed system is safe, reliable, and functions as it should before it is launched or used in a production environment (’Hajizah, 2024). The results of table 1 show the testing of the cooking recipe application system carried out by the blackbox testing method. Black box testing is a testing method that only examines the outer aspects of the software. This technique focuses on testing software functions based on predefined requirements specifications (Pratama, Lasimin, & Dadaprawira, 2023).

Table 1. System Testing of the Cuisine Recipe Application

No	Page Tested	Test Case	Test Result	Description
1	Home page	Search bar	Search bar works	Success
		Button	Button works	Success
		Displays the recipe list	Recipe list displayed	Success
2	Detail Recipe	Display recipe details	Recipe details displayed	Success
		Button favorite	Button favorite works	Success
3	Search Result	Display a list of search result recipes	List of search result recipes displayed	Success
4	Favorite	Display favorite recipes	Favorite recipe displayed	Success
5	Exit	Button exit the application	Button exit the application works	Success

CONCLUSION

Based The Android-based cooking recipe application was successfully developed using the Flutter framework and the Dart programming language. This application offers an efficient solution for users to search and try recipes, by utilizing API integration from TheMealDB to provide dynamic access to various recipes. The application of the System Development Life Cycle (SDLC) method in application development allows the creation of quality and functional applications. The test results show that all application features work well and in accordance with the application

design. With an interactively designed interface, this application not only helps improve the user's cooking skills, but also provides a fun and user-friendly experience.

REFERENCES

Abiyyu, I. F., & Tawakal, H. A. (2021). Pengembangan Aplikasi Pendeteksi Kematangan Buah Melon: Studi Kasus Aplikasi Melonku. *Jurnal Informatika Terpadu*, *7*(1), 27–32. https://doi.org/10.54914/jit.v7i1.331

Deni Murdiani, & Muhamad Sobirin. (2022). PERBANDINGAN METODOLOGI WATERFALL DAN RAD (RAPID APPLICATION DEVELOPMENT) DALAM PENGEMBANGAN SISTEM INFORMASI. *Jurnal Informatika Teknologi Dan Sains*, *4*(4), 302–306. https://doi.org/10.51401/jinteks.v4i4.2008

'Hajizah, A. (2024). Penerapan User Experience Dalam Permodelan Sistem Informasi Keuangan. *Journal of Information Technology, Software Engineering and Computer Science (ITSECS)*, *2*(2), 1–11.

Hardiansyah, R., & Munir, S. (2020). Analisis dan Pengembangan Sistem Reservasi Online untuk Wisata berbasis Website Studi Kasus Pulau Harapan Kepulauan Seribu. *Jurnal Informatika Terpadu*, *6*(1), 45–52. https://doi.org/10.54914/jit.v6i1.268

Mulyawan, Y. R., & Lestari, C. C. (2019). RANCANG BANGUN SISTEM REKOMENDASI RESEP MASAKAN BERDASARKAN BAHAN BAKU DENGAN MENGGUNAKAN ALGORITMA PENYARINGAN BERBASIS KONTEN. *JUTI: Jurnal Ilmiah Teknologi Informasi*, *17*(2), 94. https://doi.org/10.12962/j24068535.v17i2.a791

Nagara, B. S., Oetari, D., Apriliani, Z., & Sutabri, T. (2023). Penerapan Metode SDLC (System Development Life Cycle) Waterfall Pada Perancangan Aplikasi Belanja Online Berbasis Android Pada CV Widi Agro. *INTECOMS: Journal of Information Technology and Computer Science*, *6*(2), 1202–1210. https://doi.org/10.31539/intecoms.v6i2.8244

Nurlaelatul Maulidah, Sri Diantika, Hiya Nalatissifa, Ahmad Fauzi, & Riki Supriyadi. (2024). Penerapan Extreme Programming dan Flutter Dalam Mobile Application Jago Masak Sebagai Sistem Pencarian Resep Masakan. *JEKIN - Jurnal Teknik Informatika*, *4*(2), 244–253. https://doi.org/10.58794/jekin.v4i2.718

Pratama, S. D., Lasimin, L., & Dadaprawira, M. N. (2023). Pengujian Black Box Testing Pada Aplikasi Edu Digital Berbasis Website Menggunakan Metode Equivalence Dan Boundary Value. *J-SISKO TECH (Jurnal Teknologi Sistem Informasi Dan Sistem Komputer TGD)*, *6*(2), 560. https://doi.org/10.53513/jsk.v6i2.8166

Putri, A. S., Eviyanti, A., & Hindarto, H. (2023). Rancang Bangun Aplikasi E-Commerce Berbasis Android Pada Toko Suryamart Menggunakan Framework Flutter.

Jurnal Teknologi Dan Sistem Informasi Bisnis, *5*(3), 257–265. https://doi.org/10.47233/jteksis.v5i3.851

Rahadani, S. R., Arifin, Z., & Sumarya, E. (2021). ANALISA DAN DESAIN SISTEM INFORMASI MANAJEMEN DENGAN METODE SDLC (SYSTEM DEVELOPMENT LIFE CYCLE) GUNA MENGURANGI WAKTU KERUSAKAN MESIN WELDING. *PROFISIENSI: Jurnal Program Studi Teknik Industri*, *9*(2), 291–297. https://doi.org/10.33373/profis.v9i2.3698

Rasid, & Suartana, I. M. (2024). Perbandingan Jetpack Compose dan Flutter dalam Pengembangan dan Penggunaan Resource pada Aplikasi Link D Law. *Journal of Informatics and Computer Science*, *6*(2).

Saputra, M. R., Rahim, A., & Suryawan, S. H. (2024). Pengembangan Aplikasi Pendaftaran Anggota Perpustakaan Berbasis Android menggunakan Model Waterfall pada Dinas Perpustakaan Kota Samarinda. *Jurnal Informatika Terpadu*, *10*(2), 101–111. https://doi.org/10.54914/jit.v10i2.1281

Siska Narulita, Ahmad Nugroho, & M. Zakki Abdillah. (2024). Diagram Unified Modelling Language (UML) untuk Perancangan Sistem Informasi Manajemen Penelitian dan Pengabdian Masyarakat (SIMLITABMAS). *Bridge : Jurnal Publikasi Sistem Informasi Dan Telekomunikasi*, *2*(3), 244–256. https://doi.org/10.62951/bridge.v2i3.174

Sutrisno, J., & Karnadi, V. (2021). APLIKASI PENDUKUNG PEMBELAJARAN BAHASA INGGRIS MENGGUNAKAN MEDIA LAGU BERBASIS ANDROID. *JURNAL COMASIE*, *04*(06).

Wijaya, W. W. W., & Susanto, E. (2021). New Normal: Pengembangan Sistem Informasi Penjualan Menggunakan Metode SDLC (System Development Life Cycle). *Jurnal Sustainable: Jurnal Hasil Penelitian Dan Industri Terapan*, *10*(1), 1–9. https://doi.org/10.31629/sustainable.v10i1.3190