TempatGawe: Rent A Space for Your Office and Coworking Needs

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Abstract— **Finding suitable office space and coworking space can be challenging, especially considering the diverse user preferences. There are three types of coworking spaces available, catering to different needs and preferences. For individuals or businesses with limited budgets or those who prefer a temporary arrangement, office space rentals offer flexibility by allowing them to choose a location for an indefinite period. This makes coworking spaces an optimal and preferred choice for many users. Unlike traditional offices, office space and virtual offices provide a more flexible arrangement, allowing for adaptable workspaces. However, searching for the right office space or coworking space may involve physically visiting multiple locations, and the ideal fit may not always be found. It is crucial to consider not only the physical aspects but also the psychological needs of users, including factors such as interaction, stimulation, privacy, and security. With the introduction of TempatGawe, individuals can easily discover a comfortable and suitable workspace that maximizes their productivity. Additionally, coworking spaces often offer additional facilities, reducing operational costs for visitors. In summary, coworking spaces can be viewed as carefully curated workspaces designed to meet the specific needs and preferences of users. The development of TempatGawe utilizes technology such as Android, Flutter SDK, Algolia Search, and incorporates the waterfall methodology for an efficient and structured development process.**

Keywords- *B2B, office space, flexibility, user preferences, productivity, android, flutter, waterfall methodology, algolia search.*

I. INTRODUCTION

The fourth wave of the economic era, known as the time of the creative economy, has introduced a new era in the world of work. This has led to the emergence of numerous startups in Indonesia, indicating the growth of pioneering companies aiming to discover profitable business models. However, the increasing number of startups has resulted in complex impacts on various aspects of life, including the availability and price of land, particularly in DKI Jakarta. The limited availability of land and the rising prices have made it challenging for founders with limited capital to find suitable land for their companies.

As a solution to this problem, the office rental and coworking business has gained popularity among pioneering companies with limited funds. However, another challenge arises as these companies struggle to find workspaces that meet their specific criteria in terms of location and price. This often leads to time-consuming searches for suitable office spaces.

To address these challenges, an application called 'TempatGawe' has been developed to facilitate the process of finding a suitable workplace for company pioneers, employees, freelancers, and the general public. TempatGawe provides various facilities and features, including detailed information about available buildings, sorting options based on price and distance, and direct payment capabilities. With TempatGawe, individuals can easily find a comfortable workplace that meets their needs, allowing them to maximize their productivity.

The aim of this project is to create a mobile-based application that is user-friendly and efficient, enabling individuals to easily find a suitable workplace that meets their specific criteria, all accessible through their mobile devices. With that, the project encompasses the following scopes:

- The coverage area for office spaces is limited to the DKI Jakarta region. It should be noted that this application is a concept/prototype and does not encompass the entire country.
- The application serves as a valuable resource for users seeking office and co-working spaces, enabling them to choose based on their preferences.
- The application exclusively presents the available office spaces to users, showcasing the offerings.
- This mobile application is specifically developed for the Android operating system.

Users have the capability to search and apply filters for location and price of the office spaces through the application.

Prior to renting office space, users are required to review and comprehend the terms and conditions outlined in the application.

By implementing this project, users will experience enhanced convenience in finding and booking their office space requirements. The TempatGawe application leverages the capabilities of smartphones to facilitate the search for offices and coworking spaces that align with the user's criteria. The aim is to provide a seamless and user-friendly experience for workers, business actors, and freelancers to benefit from the outcomes of this project.

This paper structured as follows: The second chapter is the Literature Review, which consists of a case study and a comparative analysis between the existing system and the proposed system. The third chapter discusses the chosen System Methodology for executing the project. In the fourth chapter, the Analysis Design section presents the design considerations, interface development, and database implementation. Lastly, the fifth and final chapter focuses on the Implementation and Testing phase, covering the coding process and comprehensive testing of the developed application.

II. LITERATURE REVIEW

The influence of human resources on a company's survival cannot be underestimated, as they play a vital role in all organizational activities. Creating an appropriate work environment that enhances employee productivity and performance is crucial for companies to succeed in a competitive business environment.

The work environment, as defined by Satyendra (2019), encompasses tools, materials, the surrounding environment, and work methods and arrangements at both individual and group levels. Figure 1 illustrates the factors that influence employees' performance in the workplace.
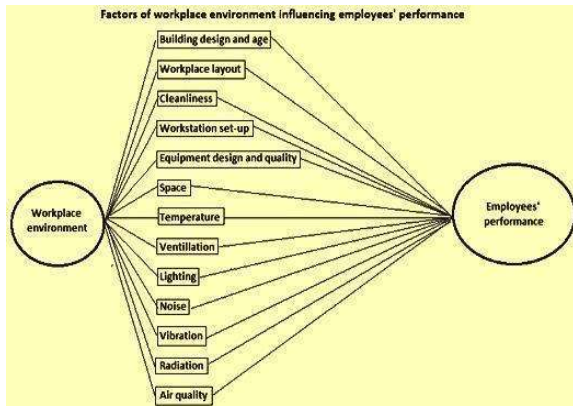

Figure 1. Factors of Workplace Environment Influencing Employees' performance (Satyendra, 2019)

To gain a deeper understanding of user requirements, selected correspondents were interviewed. Before answering the questions, the correspondents were instructed to visit the www.sewa-kantor.net and explore its features. Conclude all of the answer, correspondents expressed a preference for a dynamic application with a modern design and an appealing layout.

Moreover, to gain more understanding. Several similar systems to TempatGawe be picked. These systems serve as references for our project, providing insights into system functionalities. We can analyze and modify them to align with our project's objectives.

Feature	LiquidSpace	Spaces	Qdesq	TempatGawe
Platform	Mobile-based	Mobile-based	Mobile-based	Mobile-based
Term and Condition	Yes	Yes	Yes	Yes
Detailed Information	Yes	No	No	Yes
Price Sorting	Yes	No	Yes	Yes
Location Sorting	Yes	No	Yes	Yes
Chat Support Service	Yes	No	No	Yes
Consultation	No	No	No	Yes

Figure 2. Comparison of Existing Systems

In order to ensure a smooth development of the TempatGawe system, it is imperative to utilize appropriate technologies and tools. Consequently, the TempatGawe system is constructed using a range of technologies.

Software	Description
Android Studio	Facilitates the running of app debugging and performance analysis tools.
Flutter SDK	An open-source framework from Google for creating Android-based application systems.
Atom	Text editor that aids in writing and editing application code.
Draw.io	Web-based diagramming tool utilized for creating various types of diagrams.
Adobe XD	Designing and prototyping user experiences for web and mobile.
Firebase	BaaS (Backend as a Service) service from Google that offers authentication and database functionalities.
Algolia Search	Powerful and customizable search platform delivering fast and relevant results for users.
Stripe Payment	Secure and seamless online payment processing for businesses and customers.
SendGrid API	API for SNMP for email delivery with the SendGrid API integration.

Figure3. Technology Used in Project

III. SYSTEM METHODOLOGY

The development model employed in this project adheres to the waterfall methodology, which follows a sequential and linear approach to software development. Figure 4 illustrates the waterfall methodology, visually depicting its distinct phases and their interconnected nature in a structured manner.
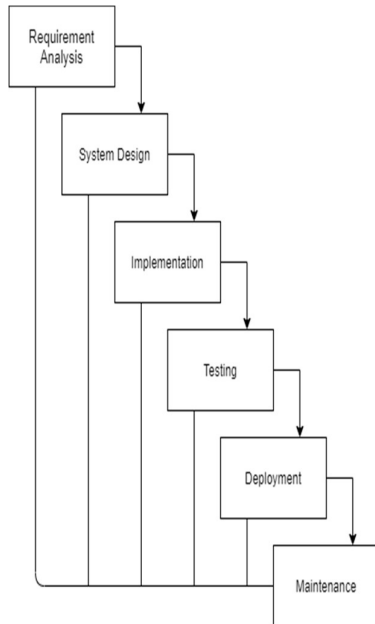

Figure 4. Waterfall Methodology

These phases encompass requirements gathering, system design, implementation, testing, and deployment. The waterfall methodology emphasizes the significance of a well-defined and meticulously planned project scope, with each phase depending on the successful completion of the previous phase. This approach ensures a comprehensive and well-organized development process.

The step of Waterfall model can be described below:

A. Requirements Analysis

The requirement gathering process involves analyzing and collecting data related to the system's development. This data is obtained through interviews, literature reviews, observations, or direct research. For this project, data collected during PSM1 served as a reference to initiate the project. A case study was compiled, comparing existing applications and determining the technology to be used.

B. System Design

In the design phase, the application's design was developed. This included creating a use case diagram to identify user actions and establishing a suitable database structure. The application's interface design was created using Adobe XD.

C. Implementation

During the implementation phase, significant progress was made in developing the TempatGawe project using Flutter. The Flutter programming language enabled the completion of essential tasks to enhance functionality and user experience. Backend infrastructure was also established using Firebase. This involved creating database schemas, implementing data models through appropriate APIs and libraries. Lastly, integrated Algolia Search, SendGrid API and Stripe to support the app to complete all the requirement feature.

D. Testing

Thorough testing is crucial to assess the application's functionality and identify and resolve any issues or defects. Comprehensive testing practices with Black box testing ensure a high standard of quality, enabling prompt troubleshooting and improvement for a reliable user experience.

E. Deployment and Maintenance

After the application's release, it enters the deployment and maintenance phase. Ongoing maintenance and updates are essential to ensure proper functioning, bug-free operation, and user feedback incorporation.

IV. RESULT AND APPLICATIONS

Based on the use of waterfall methodology in this project, here is the flow of the application of each of these stages:

A. Stage of Project Initiation

In this first stage, a meeting was conducted between the supervisor to discuss the project, during which valuable insights were provided into the necessary preparations, including the selection of tools and technologies to be employed. As a result of this initial stage, a comprehensive understanding of the tasks and responsibilities ahead was achieved. Additionally, diligent efforts were made to compile and gather all pertinent data from PSM1, which will serve as a foundation for the current PSM2 project.

B. Stage of Project Planning

During this stage, a Gantt chart was generated to effectively manage time constraints and ensure timely project completion. The Gantt chart, collaboratively developed by the team, outlines the project schedule. Figure 5 presents a visual representation of the created Gantt chart.

GANTT CHART PSM 2 PROJECT
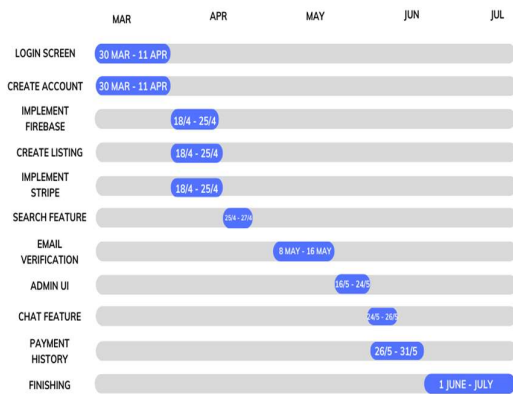
Figure 5 – Gantt Chart of the Project

C. Stage of Project Analysis

During this stage, the analysis of the system to be developed is initiated. The analysis reveals the presence of two key actors responsible for operating the system: the User and the Administrator.
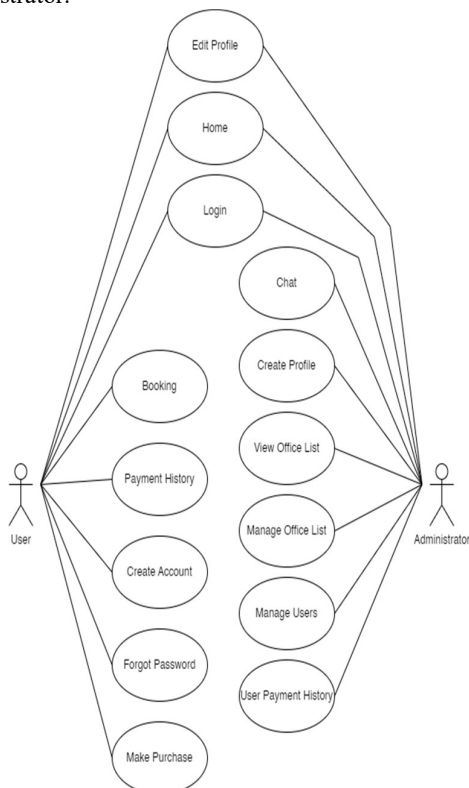

Figure 6 – Use Case Diagram

The user perspective encompasses 8 distinct use cases, while the administrator perspective involves 9 use cases, as illustrated in Figure 6 above.

The analysis stage yielded 30 user interface designs, which serve as a means to present system views to users. Figure 7 showcases an example of a user interface, specifically the home page interface utilized by users. Additionally, Figure 8 displays the user interface design of the login page, facilitating user authentication within the TempatGawe application.
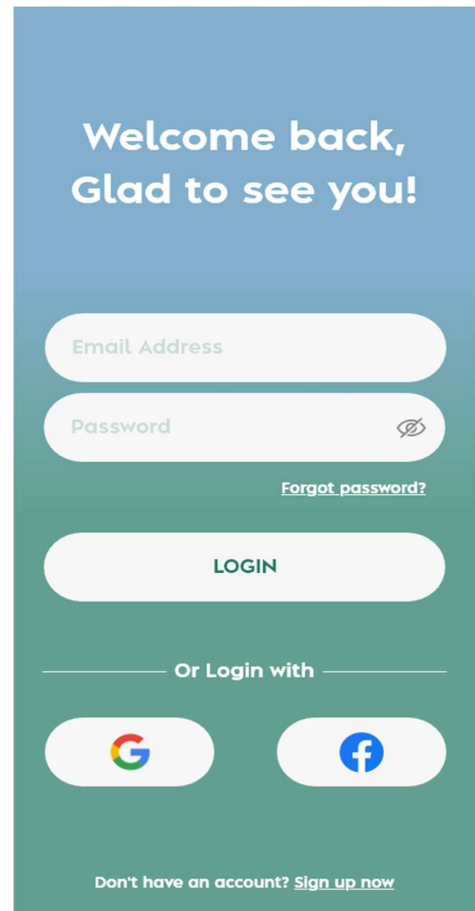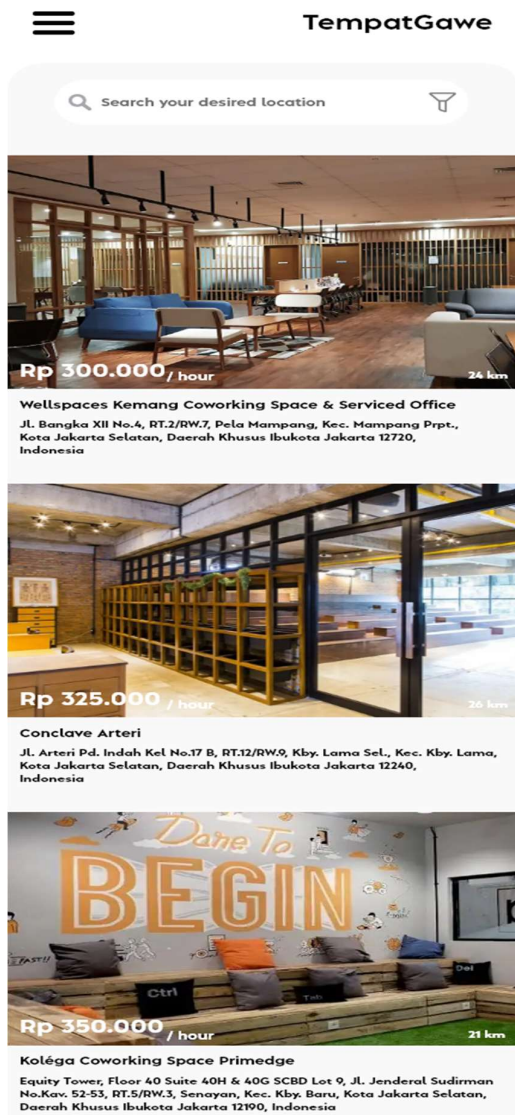

Figure 7 - Home Page Initial User Interface

Figure 8 - Login Page Initial User Interface

Following a meticulous identification of the use cases within the system, a comprehensive analysis of the data entities and their significance in relation to the system's overall functionality was undertaken. This insightful analysis is effectively conveyed through a meticulously prepared Database diagram, prominently displayed in Figure 9 below, meticulously illustrating the intricate relationships and essential attributes associated with the diverse data entities involved in the system.
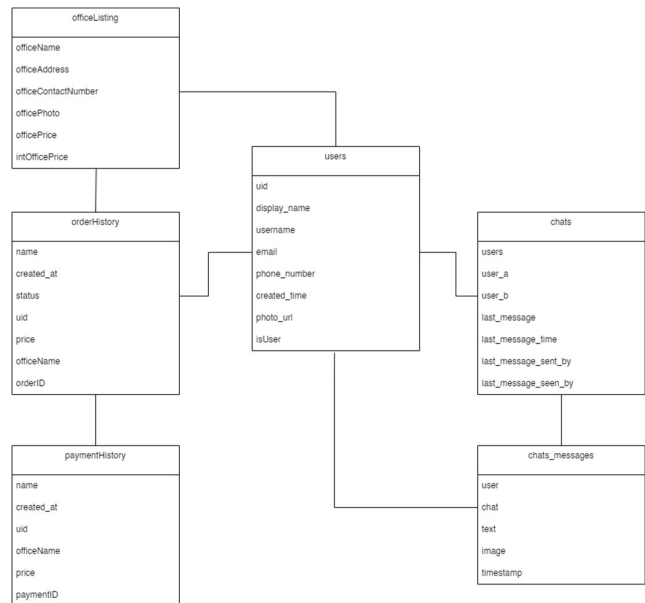

Figure 9 - Database Diagram of TempatGawe

D. Stage of Project Design

During this stage, the focus was on mapping the architecture to be employed in the TempatGawe application, as well as coding its functionality. The chosen architectural pattern for TempatGawe is the Client-server architecture, facilitating communication among the user, the system, and the database. The user interacts directly with the system, which fulfills the user's requests by communicating with the database to retrieve the required datasets. This interaction is depicted in Figure 10.
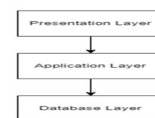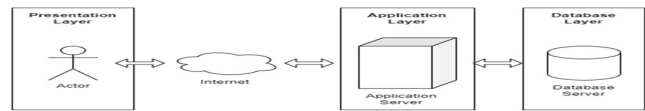

Figure 10 – System Architecture of TempatGawe

Furthermore, notable differences arise in the design compared to the previous analysis stage. These differences stem from the realization that the previously designed interfaces lacked user-friendliness and had the potential to confuse users. In response, new interfaces were developed with a focus on intuitiveness, user-friendliness, and efficiency. These interfaces allow users to input data, access relevant information, and perform system functions seamlessly. By aligning the interfaces with user requirements and preferences, the system aims to enhance the user experience and optimize usability.
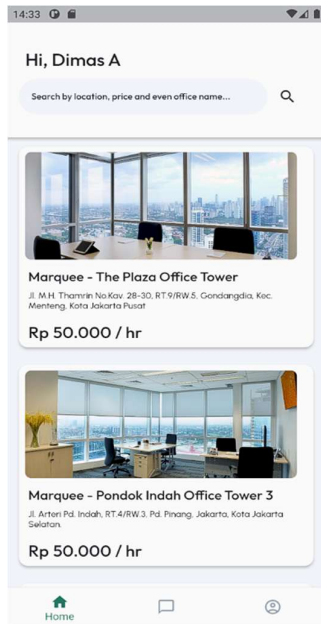
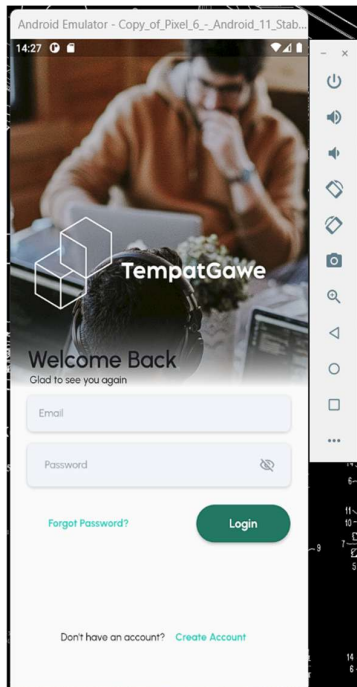Figure 11 – User Interface of the Home Page after coding

Figure 12 – User Interface of the Login Page after coding

E. Stage of Project Implementation

During this phase, the construction and implementation of the application design are initiated, integrating it into the available systems. The development and construction of the TempatGawe application have been successfully completed. Subsequently, the responsibility for rigorously testing the application's features is assumed by the team. The testing process aims to verify that the system aligns with user requirements and functions effectively. To demonstrate the testing process, black box testing is employed, as reflected in the functional requirements of the system. In order to ensure a shared understanding during the testing process, a scenario test was devised. Figure 13 showcases black box testing as a guiding framework for executing the testing procedures.

Test Case ID	Input Data	Expected Result	Actual Result	Pass / Fail
TC003_1	User click the initiate chat icon button to start a conversation with Administrator User click TempatGawe Administrator to start a conversation	After user click TempatGawe Administrator, user will be directed to the chat room to have a conversation with admin	After user click TempatGawe Administrator, user will be directed to the chat room to have a conversation with admin	Pass
TC003_2	User click at the balloon text and can type anything to Admin User click send icon button to send it to recipient	Message will send and recipient will receive the messages	Message has sent and recipient has received the messages	Pass
TC003_3	User click at the camera icon and can send a photo to recipient User click send icon button to send it to recipient	Message will send and recipient will receive the messages	Message has sent and recipient has received the messages	Pass

Figure 13 – Black Box Testing of application

F. Stage of Project Deployment

The deployment stage is the last stage carried out in the analysis and design of this TempatGawe application. After done configuring security measures and ensuring the software's compatibility with the target environment, the application is ready to deploy and run by end user. TempatGawe application database is now running on secure as seen in the Figure 14.
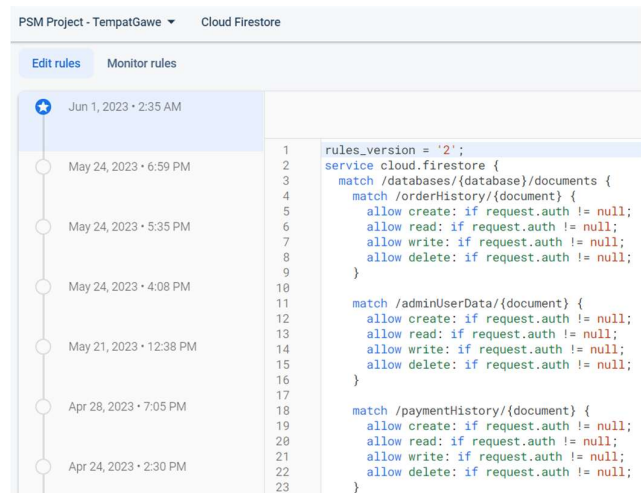

Figure 14 – TempatGawe Database Rules

V. CONCLUSION

Based on the results of the analysis and design that has been done, the TempatGawe project aims to propose the development of an application called 'TempatGawe' to provide a convenient solution for entrepreneurs, employees, freelancers, and the general public in finding suitable workspaces. TempatGawe offers various amenities, including

comprehensive building information, search functionalities for sorting buildings based on price and proximity, and a direct payment feature within the application. With TempatGawe, individuals can easily locate and secure a comfortable workplace, enabling them to maximize productivity and achieve their professional goals.

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