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Design and Development of an Estate Management System for Griya Gardenia Indah

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Abstract

This research introduces an innovative solution, an Estate Management System, tailored for Griya Gardenia Indah, a subsidiary of Cipta Harmoni Lestari. Facing multifaceted challenges in estate management, this study aims to develop a centralized and intuitive web application utilizing modern technologies such as Vue.js, Strapi, MySQL, HTML, CSS, JS, and PHP. The system targets streamlined estate processes, improved data accessibility, and efficient communication channels between administrators and residents across four real estate projects. By employing an iterative development approach, stakeholder engagement, and rigorous testing, this research aims to transform estate management practices, enhance operational efficiency, and elevate resident satisfaction. The study navigates through an organization profile, literature review, methodology, results, and recommendations, culminating in a comprehensive solution poised to revolutionize estate administration practices at Griya Gardenia Indah.

Keywords: Management System; Website; Estate; MySQL; PHP.

1 Introduction

This research is to design and develop an Estate Management System uniquely tailored for Griya Gardenia Indah. Utilizing modern web technologies-such as Vue.js, Strapi, MySQL, Hypertext Markup Language (HTML) , Cascading Style Sheet (CSS) , JavaScript (JS) , and PHP-this system aims to help GGI's estate management by providing an intuitive, user-friendly web application accessible to both residents and estate administrators (Agarwal, 2023).

A centralized and intuitive Estate Management System effectively cater to the unique needs of Griya Gardenia Indah, considering its multifaceted estate management challenges and What features and functionalities should be prioritized in the administrative and customer panels to optimize estate management and significantly enhance resident satisfaction.

PT Griya Gardenia Indah (GGI), a subsidiary of PT Cipta Harmoni Lestari (CHL), functions as an estate management company overseeing various projects under CHL's side. However, this evolving real estate development company faces a multitude of challenges in effectively managing its estates in regards to Customer Services. These challenges span diverse areas, including: Maintenance Monitoring for Pre-Handover Residents and Environment: This encompasses the need to oversee and manage a range of maintenance tasks within the estates. These tasks might include regular upkeep, repairs, landscaping, infrastructure maintenance, and other property-related services and Efficient monitoring involves not only tracking the tasks but also ensuring they are executed timely and effectively. Challenges might arise in scheduling, prioritizing, and coordinating various maintenance activities across different properties (Hamid, Kamaruzzaman, Ghani, & Ibrahim, 2022).

Communication with Residents: Facilitating seamless and effective communication channels between the management and residents is crucial for a harmonious living environment and Challenges could involve the lack of a centralized platform for communication. Leading to fragmented or delayed messages. This might result in difficulties in addressing residents' concerns, disseminating important information, or receiving feedback slowly. Resource Allocations: Optimally allocating resources properly ensures that the right

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resources- be it manpower, materials, or finances- are allocated appropriately across the different projects managed by CHL and Challenges might stem from inefficiencies in resource distribution, leading to either overallocation or underutilization of resources, which can impact project timelines, quality and overall efficiency. Record Management: Ensuring effective organization and management of estate records for operational efficiency , legal compliance, and informed decision-making and Challenges might arise from maintaining, updating, and accessing records stored in different formats or locations since they are a physical copy as of right now and the estates are each in a different location. This can lead to data redundancy, errors, or difficulties in retrieving information when needed, impacting the efficiency of administrative processes and decision-making (Albuali, 2021).

Indonesia's rapid development has highlighted the necessity for technological advancements across various sectors (Jakus, Jekovec, Tomazic, & Sodnik, 2023). However, PT Cipta Harmoni Lestari has predominantly managed these estates using antiquated methods reliant on manual processes involving pen and paper and having the customers print their own forms, go to the offices and wait a few days for it to be processed to the main HQ. This reliance on outdated methodologies has presented inefficiencies in the management of estates and has become a significant hindrance to the company's optimal operation and growth in an increasingly digital era.

2 Analysis

Software engineers often focus solely on the technical aspects of a project, such as software development and coding. However, in today's world where projects are becoming more complex, engineers must also possess the knowledge and skills to create software efficiently. This necessitates engaging in higher-order thinking to evaluate how the design and development of a system in a specific method might either facilitate or impede efficient engineering practices. Software developers can enhance their productivity and cost-efficiency by adhering to well recognized and clearly defined software development techniques. Software development approaches encompass a fusion of practices and values (Jakus, Jekovec, Tomazic, & Sodnik, 2023).

The practices will serve as a framework to direct the developers on their objectives and deadlines. The values function as a straightforward moral framework that software engineers ought to adhere to. Therefore, it is crucial to comprehend the fundamental software development processes (Moore, 2023).

The methodologies that will be thoroughly examined are the Waterfall Model, the Spiral Model, Agile, Scrum, Kanban, and Extreme Programming approaches. While there is ongoing discussion regarding the classification of the methods mentioned earlier as methodologies, this literature study will refer to them as frameworks and methodologies (Lemke, 2018).

Frameworks are commonly seen as streamlined approaches, although there is a lot of discussion in the field of project management on the appropriate criteria for distinguishing between frameworks and methodologies, and whether this distinction is significant or merely a matter of semantics. To enhance the clarity of this paper, the Waterfall Model, the Spiral Model, Agile, Scrum, Kanban, and Extreme Programming will be grouped as both frameworks and methodologies (Karaivanov, 2024).

3 Methodology

As this research is focusing on estate management, there would need a landing page for the customers as well as a customer form input, these two are different because the number of forms that need to be made is quite a lot since there are a total of 4 estate projects each with around 6 forms or more (Lyons, 2023). Due to this, the author plans to focus on three different mini-systems, including the landing page, the user input forms, and the admin panel for the estate admins (Psenak & Tibensky, 2020).

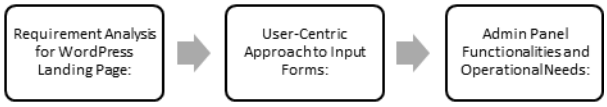

Figure 1. System Project Approach

Requirement Analysis for WordPress Landing Page - The first part of the study looks at the needs for a WordPress landing page (Lyons, 2023). To accomplish this, understanding the desired features, specifically content management, navigation layout, and language localization, is necessary (Rai, 2024). The focus is on using tools like Elementor to make layouts that look good,

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adding external links for more information, and making sure that the site can be translated and used in many languages without any problems (Rauch, 2023).

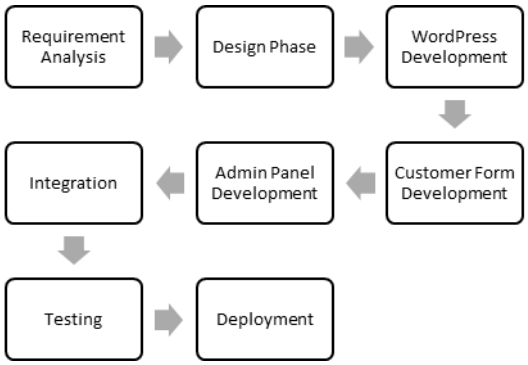

Figure 2. Development Approach Flow

User-Centric Approach to Input Forms - This study looks into how to make input forms that are easy for visitors to use. This part focuses on making sure that the forms are easy to use, that entering data is quick and easy, and that navigating within the forms is clear. The goal is to make it easy for guests to enter the information they need, taking into account things like layout design, input validation, and language flexibility to serve a wide range of users (Risener, 2022).

Admin Panel Functionalities and Operational Needs - At the same time, the admin panel's features are looked at, with Vue.js and Strapi.js being the main drivers (Shiotsu, 2024). The goal of this part is to list and describe the tools and features that are needed for good estate management. Key features include authenticating users, managing data, facilitating user needs, and organising tasks. This makes sure that administrators have a strong system for handling estate-related tasks and data (Jones, 2023). The main goal of this study mindset phase is to make sure that the needs for the WordPress landing page, user input forms, and admin panel functions are all met. The goal is to create an integrated web ecosystem that puts user experience, operational efficiency, and smooth system performance first. This will be done by focusing on user-centered design principles and operational needs (Sharma, 2020).

4 Result

The development process for a project is carefully planned out so that difficult requirements can be broken down into jobs that can be completed. Tasks are usually broken down in this way using tools like Jira by putting them into Epics and Stories. For the most part, these Epics are big groups of functions or features that represent a lot of work on the project. Stories, on the other hand, are made up of smaller, more effective pieces that describe the specific steps that need to be taken to complete Epics (Tran, 2020).

For example, in the case of the planned system, Epics were created to hold together bigger parts of the project and show broad areas of functionality. For example, the "Login Page" Epic was a large piece of work that included things like user registration, designing the login interface, and handling errors (Chiarelli, 2022). Within this Epic, Stories turned into jobs that could be done: "User authentication setup" was created to add authentication features; "Design login UI" was made to make an appealing interface; and "Error handling" was created to handle credentials that were entered incorrectly.

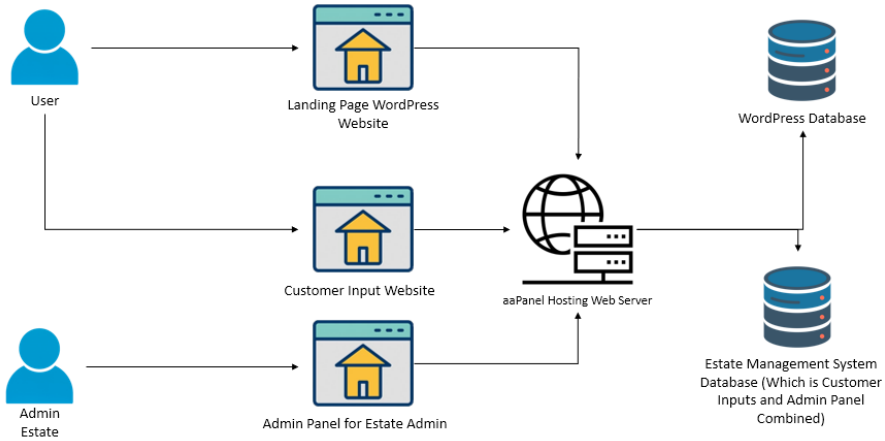

Figure 3. System Architecture for the Estate Management Systems

Figure 4. Home Page

Figure 5. Landing Page

5 Conclusion

From the implementation and testing of the Estate Management System for Griya Gardenia Indah, it can be concluded that.

1. The development of an Estate Management System using modern web technologies has catered to GGI's requirements and its challenges, helping them centralize a process which held many problems that included things such as Record Management, Resource Allocation and Communication with Residents. This System elevated these problems and helped overcome the time-staking process from before.
2. It helps smooth out Form Filling processes as well as reduce the time it takes for accessing data as well as filling out data and boosted operational efficiency for filling out the formulars and printing them out for use.
3. It allowed residents to send, receive and communicate with administrators of each estate with ease and without wasting time. Due to this it promoted better satisfaction and understanding between the two.

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