Apartment Rental Management System for Real-Time Transaction and Task Organization

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ABSTRACT: The study focuses mainly on providing Celso with an Apartment Rental Management System for Real-Time Transaction and Task Organization. The system is a solution to the issue of inaccurate and disorganized data management within Celso's apartment complexes. To address this challenge, the Apartment Rental Management System for Real-Time Transaction and Task Organization is designed to cater specifically to the needs of lessors, offering a comprehensive system. By implementing the Apartment Rental Management System for Real-Time Transaction and Task Organization, this study seeks to alleviate conflicts between lessors and how to manage the properties while concurrently enhancing the efficiency of property management operations. The researchers will use the developmental method of research and the Rapid Application Development Approach Model as the Software Development Life Cycle (SDLC). The implementation of the system was successful and generated a positive outcome. Therefore, the lessors, and property managers of the Celso Apartment, consider and accept the implementation of the developed system as a promising solution to the multifaceted challenges encountered in apartment rental management.

I. INTRODUCTION

Background of the Study

The management of apartment rentals is confronted with a multitude of challenges, particularly stemming from the absence of efficient and organized data management systems. Issues such as tracking pending and paid bills across rental units, missed payment deadlines, and reliance on informal, paper-based records hinder operational efficiency and exacerbate conflicts between lessors and lessees. In response to these challenges, there is a growing recognition of the need for innovative solutions tailored to the specific needs of lessors, aimed at streamlining transaction management and task organization in real-time within apartment complexes.

The rise of Internet-of-Things (IoT) technology has garnered considerable attention from scholars and policymakers due to its potential to revolutionize various sectors, including real estate management. Le et al. (2019) emphasize the significance of IoT-based platforms in enhancing managerial efficiency and providing emotional comfort for network operators and end-users. Furthermore, Yuan et al. (2019) highlight the importance of meticulous measurement of operational performance in Public-Private Partnerships (PPPs) for the development of Public Rental Housing (PRH) projects. Their study employs the FuzzyAnalytic Hierarchy Process (AHP) Comprehensive Evaluation method to assess the performance levels of PRH PPP projects.

Additionally, advancements in blockchain technology have opened up new possibilities for improving efficiency and transparency in real estate management. Kim and Huh (2020) introduce Autochain, an expert automatic algorithm blockchain technology designed to integrate seamlessly into existing businesses within the Fourth Industrial Revolution, thereby enhancing productivity, competitiveness, and profitability. Moreover, Gill et al. (2021) explore tenant satisfaction in rental apartments, highlighting the influence of amenities and services on rental pricing.

Efforts to address the challenges in apartment rental management have also led to the development of innovative technological solutions. Ikuomola, Isewon, and Eze (2020) present a secure cloud-based house rental management system aimed at simplifying the process of finding housing and enhancing communication between landlords and tenants. Santos et al. (2021) propose the development of an Internet-of-Things (IoT)-based monitoring system for power and water meters, aimed at enhancing transparency in utility usage and encouraging conservation efforts. Additionally, Sidhu et al. (2021) suggest a collaborative application utilizing smart bins and predictive technology to efficiently manage household plastic waste.

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In light of these advancements and the persistent challenges faced in apartment rental management, there is a compelling need for a comprehensive solution that integrates cuttingedge technologies to streamline transaction management and task organization in realtime. The following study introduces the Apartment Rental Management System for RealTime Transaction and Task Organization, designed to address these challenges and enhance the efficiency and effectiveness of property management operations within apartment complexes.

Through a detailed examination of its objectives, methodologies, and findings, this study aims to shed light on the potential impact of the Apartment Rental Management System for Real-Time Transaction and Task Organization on property management practices and its broader implications for the real estate industry.

Objective of the Study

The objectives of this study are to provide Celso with an Apartment Rental Management System for Real-Time Transaction and Task Organization, aiming to improve data management within Celso's apartment complexes. Additionally, it seeks to alleviate conflicts between lessors and lessees while enhancing property management efficiency through the implementation of the developed system. Create a system that can quickly generate a monthly billing statement and easily track billing transactions for the tenants.

Scope and Limitation

The Apartment Rental Management System for Real-Time Transaction and Task
Organization for Celso is a study conducted in the Celso Apartment, Pacencia Compound,
Manunggal Street, Mandaue City, Cebu. Apartment Rental Management System for Real-Time Transaction and Task Organization can compute the total monthly bills, track billing transactions, and generate a billing statement for each unit in Celso Apartment.

This study is a solution to the issue of inaccurate and disorganized data management within Celso's apartment complexes only.

II. METHODOLOGY

The study employs a developmental research method, focusing on providing Celso with an Apartment Rental Management System for Real-Time Transaction and Task Organization. The system is specifically designed to address the challenge of inaccurate and disorganized data management within Celso's apartment complexes. To achieve this, the researchers adopt the Rapid Application Development Approach Model as the Software Development Life Cycle (SDLC).

Locale of the Study

This study was conducted at Celso Apartment, Pacencia Compound, Manunggal Street, Mandaue City, Cebu.

Figure 1.0 Locale of the Study

Figure 1.0 shows the location map of Celso Apartment which is located at Pacencia Compound, Manunggal Street, Tipolo, Mandaue City, Cebu where the study was conducted.

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Data Collection

In collecting data, the researchers conducted interviews with the lessors and property managers. They must collect relevant data which are needed in the development of the project.

Sampling Method

The population of the study is the lessors and property managers. The researchers used the Purposive Sampling Technique. It represents a group of non-probability techniques and relies on the judgment of the researchers when it comes to selecting the units that are to be studied. Usually, the sample being investigated is quite small, especially when compared with probability sampling techniques.

Table 1.0 Population of the Study

Respondents	No. of Respondents
Lessor	2
Property Manager	3
Total of Respondents	5

Table 1.0 shows the total sample size of respondents.
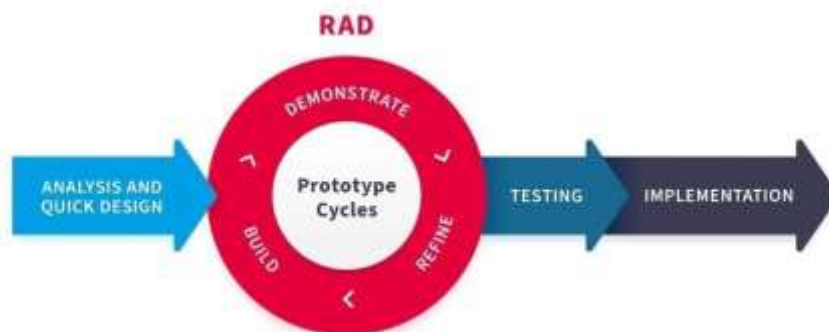
System Design

Figure 2.0 Rapid Application Development Model (RAD)

Figure 2.0 shows the prototype model approach used by the researchers to have a better outcome for developing the system.

Planning and Analysis Phase

This phase included requirements gathering. The researchers conducted verbal interviews with the client to gather data which is necessary to build the system. In this phase, the researchers also planned on what system design should be used.

Architectural Design

Figure 3.0 System Architectural Design

Figure 3.0 shows the flow and connections of the developed systems.

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User Interface Design

Based on the study obtained by the researcher it fulfils the prerequisite needed to implement in the developmental process for the system Apartment Rental Management System for Real-Time Transaction and Task Organization. Visible below is the list of screenshots with their corresponding explanation of how that interface works.
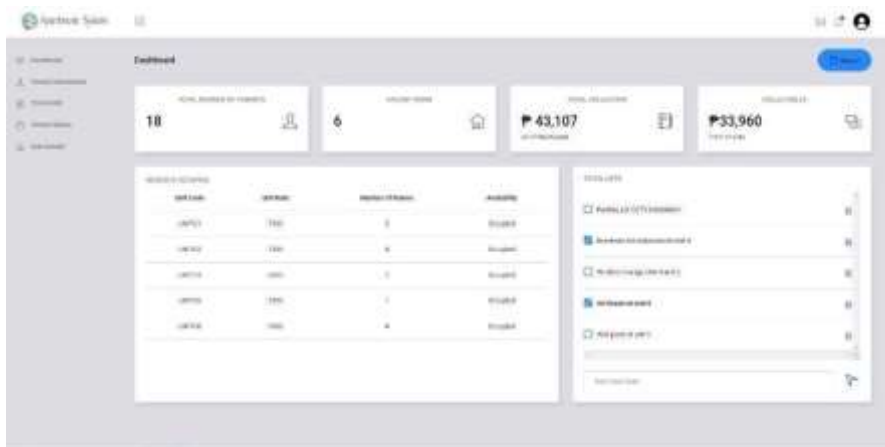

Figure 4.0 Dashboard

Figure 4.0 shows the dashboard which displays the summary of apartment information including the tenants and units.
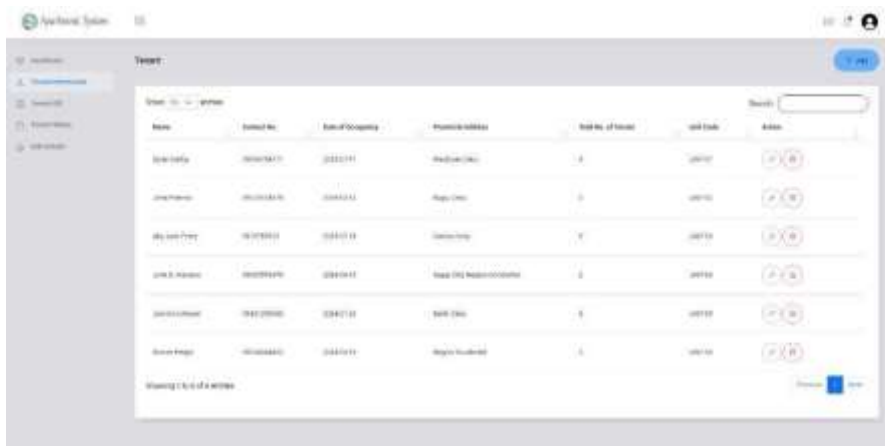

Figure 5.0 Tenant Information
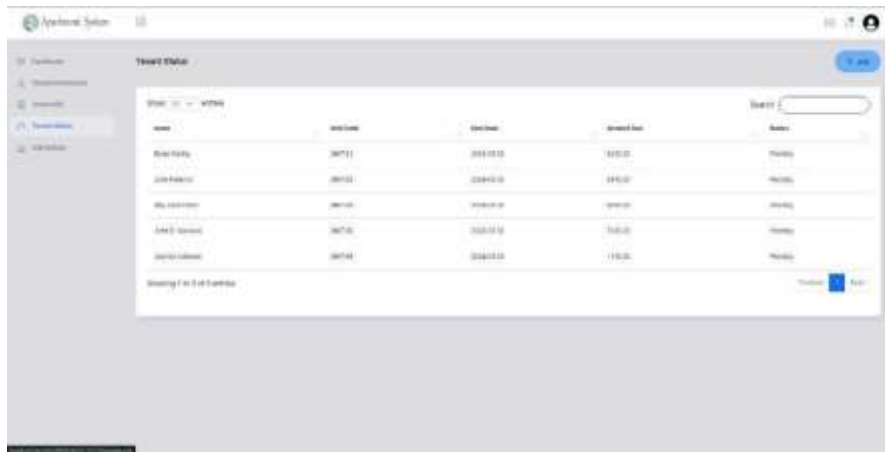
Figure 5.0 shows all tenants' information where can update and delete tenants' information on this page.

Figure 6.0 Tenant Bill

Figure 6.0 shows the tenants' bills which displays all computations and billings for each unit and tenant.
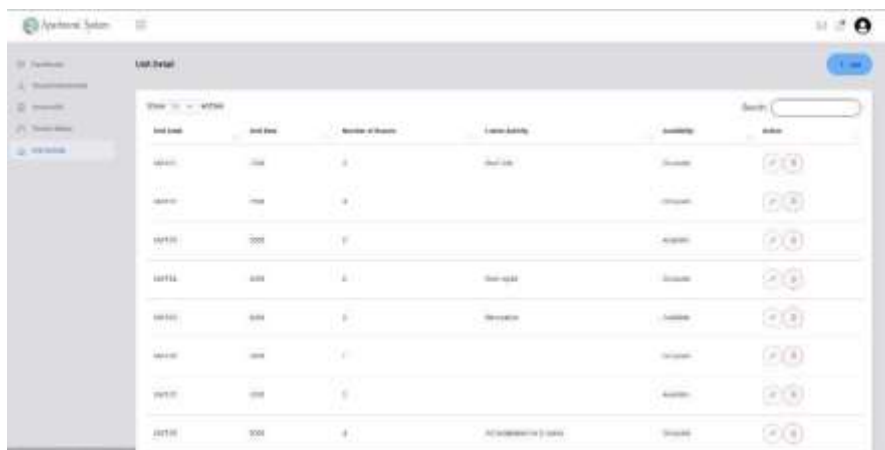
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Figure 7.0 Tenant Status

Figure 7.0 shows the tenant statuses where the amount due, due date, and status of tenants whether paid or pending are displayed.

Figure 8.0 Tenant Status

Figure 8.0 shows the unit information where can update and delete unit details information on this page.

Development Phase

The prerequisites listed below are necessary to construct the system. It consists of the three parts of a computer system: people ware, hardware, and software.

Software Specifications

The software requirements for the development of the systems are:

- Windows 10
- PHP
- HTML
- CSS
- Javascript
- Visual Studio Code
- XAMPP

Hardware Specifications

The following is the list of hardware needs for system development. It helped achieve the study goals and functionality of the system:

- Laptop
- Hard Disc (500 GB)
- RAM (4GB minimum)
- Processor (2.66 GHz or more)

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III. RESULTS

Table 2.0 The level of System Acceptability in terms of Usability of the System

Criteria	Mean	Interpretation
1. The system performs its expected function.	5	Strongly Agree
2. The system functions properly based on user requirements.	4	Agree
3. The Apartment Rental Management System for Real-Time Transaction and Task Organization is simple to change and does not interfere with the system's other components.	5	Strongly Agree
4. The Apartment Rental Management System for Real-Time Transaction and Task Organization provides appropriate performance.	4	Agree
5. The Apartment Rental Management System for Real-Time Transaction and Task Organization manages a significant quantity of data.	5	Strongly Agree
6. The Apartment Rental Management System for Real-Time Transaction and Task Organization does not expose the personal information of the tenants.	3.6	Agree
7. The Apartment Rental Management System for Real-Time Transaction and Task Organization provides a mechanism that prevents unauthorized access to data stored on the system.	5	Strongly Agree
8. The Apartment Rental Management System for Real-Time Transaction and Task Organization is user-friendly	4	Agree
9. The Apartment Rental Management System for Real-Time Transaction and Task Organization's user interface features a pleasing and satisfying interaction.	4	Agree
10. The Apartment Rental Management System for Real-Time Transaction and Task Organization meets the needs of the lessors and property managers.	5	Strongly Agree
Grand Mean	**4.46**	**Strongly Agree**

Table 2 shows the features of the mobile app together with the IT expert's input and verbal interpretation. The average rating in the table above is 4.46, which is considered as Strongly Agree.

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Table 3.0 The Quality of the Developed Software Based on
McCall's Software Quality Model

S	Mean	Interpretation
Completeness	3	Average
Communication Commonality	4	Good
Conciseness	3.6	Good
Consistency	5	Very Good
Operability	4	Good
Self-Documentation	5	Very Good
Simplicity	5	Very Good
Software System Independence	5	Very Good
Traceability	3.6	Good
Training	4	Good
Data Commonality	4	Good
Error Tolerance	3.6	Good
Execution Efficiency	5	Very Good
Expandability	5	Very Good
Instrumentation	4	Good
Modularity	4	Good
Grand Mean	**4.2375**	**Good**

Table 3 shows the result of the IT expert's feedback in determining the quality of the developed software in terms of McCall's Software Quality Model. The average shows 4.56 and is considered to be Good.

IV. DISCUSSIONS

The study focuses on the development of the Apartment Rental Management System for Real-Time Transaction and Task Organization. The main objective is to design and implement a system that streamlines property management operations within apartment complexes, enhancing both efficiency and effectiveness. This project specifically aims to assist lessors and property managers in managing rental transactions and organizing tasks in a seamless, fast, and hassle-free manner. Additionally, it provides a convenient way to track billing transactions and payments.

The study highlights the system's ability to significantly improve data management, reducing errors associated with manual processes and facilitating real-time updates and access to information. The researchers employed a developmental research method and the Rapid Application Development Approach Model as the Software Development Life Cycle (SDLC) to ensure a robust and user-friendly system.

The findings of the study reveal that the developed system is highly effective, well-received by end-users, and meets the specific needs of lessors and property managers. The implementation of the Apartment Rental Management System for Real-Time Transaction and Task Organization has been shown to enhance convenience, facilitate report generation, and improve overall property management practices. This project is poised to benefit the real estate industry by replacing manual processes with a comprehensive electronic system, ultimately aiding in the efficient and easy management of apartment rentals.

V. CONCLUSIONS

Based on the findings presented in this study, the following conclusions are drawn:

1. The Apartment Rental Management System for Real-Time Transaction and Task Organization is a high-quality system, well-received by end-users, secure, reliable, fast, and easy to use.

2. Lessors and property managers can greatly benefit from using the developed system, as it significantly enhances convenience and facilitates report generation.

VI. RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations are proposed:

1. Implement SMS support for real-time billing notifications to further enhance ease of use.
2. Develop a mobile application to provide more convenient tracking capabilities.
3. Lessors and property managers should consider adopting the developed system to stay abreast of technological advancements.

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