

Design and Development of Web-Based Information Systems in Apartment Rental Management (Case Study: Mediterania Gajah Mada Apartments)

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Abstract:

Developments in the field of information technology have made many companies in the apartment sector begin to develop their administrative systems using information technology. One way is to use a web-based application. The web-based rental information system that will be created at Mediterania Gajah Mada Apartments is used to manage unit rental data, both check-in and checkout processes as well as reservation and payment reports. The research was developed with the waterfall model research method, and with the type of qualitative research and data collection techniques through observation, interviews and literature study. The system was built using the programming languages PHP and MySQL as the RDBMS. The results of the research obtained are that the information system provides an easy impact in recording apartment rental transactions for the managing and organizing the availability of data for the better for its users.

Keywords — Apartments, Information Systems, Leasing, Management.

I. INTRODUCTION

A place to live is something that everyone must have, whether it's in the form of a house or an apartment, everything is needed. However, along with the rapid population growth in big cities, there is less land to make housing, but there is a solution to this, namely a rental apartment that allows a number of people to live in densely populated urban areas [1].

A lease is a transaction contract process carried out by two parties using a legal agreement agreed by both parties and creates rights and obligations between the lessee and the lessee [2].

The apartment itself is a residence that can be rented or purchased in a multi-storey building composed of several rooms or rooms equipped with a number of private and public facilities and has one access that is guarded by local security, usually the

apartment is used for residential, but now there are several that converted as an office as well [3].

In this era of globalization, the very rapid development of technology has made the need for information systems even higher and growing. An information system can be defined technically as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization [4].

Mediterania Gajah Mada Apartment, located in the West Jakarta area, is an apartment managed by PT. PPPSRS Mediterania Gajah Mada which is developing and continues to strive to improve service and quality standards for apartments from various sides, including the use of information technology.

So far, the Rental Management system at Mediterania Gajah Mada Apartments still uses a manual system, namely the data collection process of tenants with ms.excel which takes a long time because they have to enter data and record several books that will be stored as archives. After the transaction process is complete, an archive report will be generated. Current reports at Apartemen Mediterania Gajah Mada are based on advance invoices and invoices.

Based on the information above, the authors are interested in changing the conventional ordering system to be technology-based so that it becomes more practical and effective for customers, in addition to making the apartment rental process

better and minimizing errors when processing data and information so that it becomes more effective and efficient, and produce information more quickly, precisely and accurately.

II. RESEARCH METHOD

The data techniques used in this research process are as follows:

A. Data Collection Method

1. Observation

The author conducted research by means of observation or direct review of the object of research in the customer service section and the Mediterania Gajah Mada Residence Apartment. JL Gajah Mada No. 174 Ex. The majesty of Taman Sari Subdistrict, West Jakarta.

2. Interview

The author collects data and information by conducting direct questions and answers with the management at Mediterania Gajah Mada Apartment.

3. Literature study

Collecting data from various books and journals that serve as references and searching on the internet to obtain additional data in order to complete thesis writing.

B. Research Method

The research method used is qualitative research. Qualitative research is a method that focuses on in-depth research, This method is used to examine the conditions of natural objects. Therefore, the use of

qualitative methods in research can result in a more comprehensive study of a phenomenon.

III. DESIGN ANALYSIS

Here is the running business process

At the Gajah Mada Mediterranean Apartment:

A. Analysis of Current Process

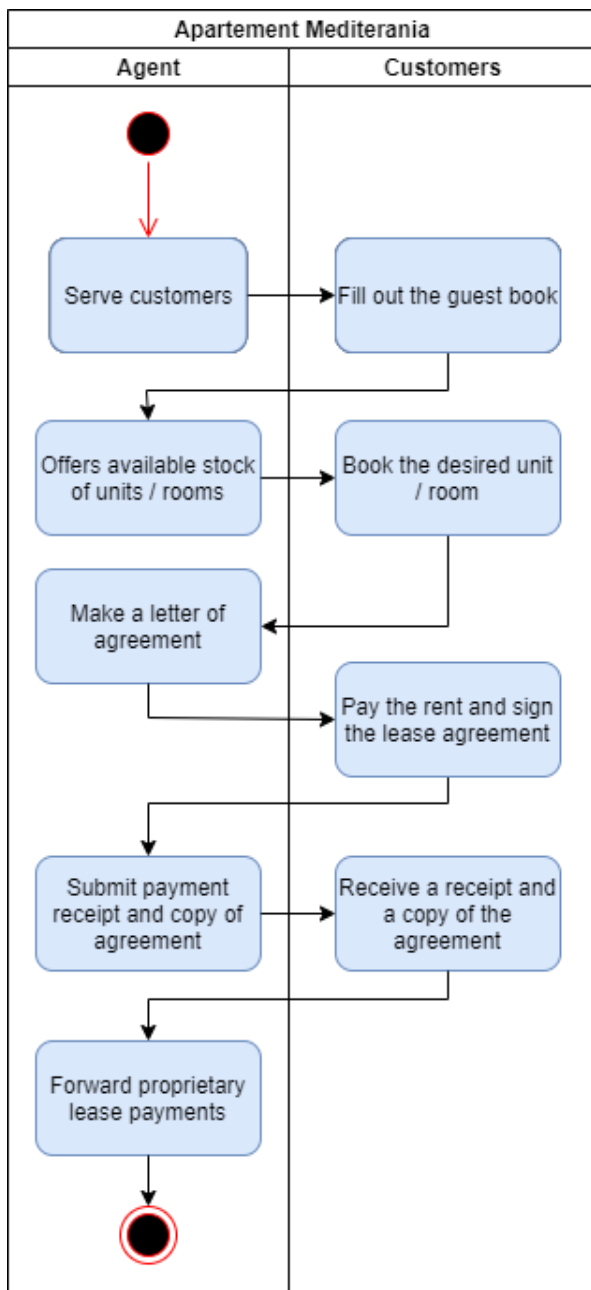


Figure 1. Analysis of Current Process

B. Problem Analysis

The development strategy is carried out through the SWOT Matrix by formulating several existing strategies on a combination of internal and external factors. The SWOT matrix aims to provide alternative strategies including S-O (Strength-Opportunity), W-O (Weakness-Opportunity), S-T (Strength-Threat), W-T (Weakness Threat) strategies.

Table I
Analysis Internal

Key Success Factor	Internal Analysis of Competitors	Strength or Weakness
Location: Has a strategic location with downtown economic activities.	There are still competitors who do not have a strategic location in the city center.	Strength: Strategic location
Marketing: Rental prices are relatively cheaper and affordable	The condition of the building is not modern compared to competitors.	Strength: Prices are comparable in quality
Promotion: Through digital media, the internet, websites and social media that are easily accessible to everyone.	The creation of ease of dissemination of information related to apartment rental business via the internet.	Strength: Utilizing digital website and social media technology
Labor: In terms of customer service starting from acceptance of the rental agreement process, it is carried out by the agent alone.	The limited number of agents who handle each customer who comes or extends the lease.	Weakness: Lack of manstrength.Piling up all work to one agent
Lease Process: It does not require a lot of paperwork and convoluted bureaucracy but is still manual	Rental requirements are not many and it is easy to complete with assistance from the agent as well.	Strength: Have easy rules and an experienced agent.
		Weakness: There is no recording system, all processes are still manual.

Table II
Analysis Eksternal

Changes in Industrial Structure	Impact on Business	Opportunities or Threats That Come Up
Competition: Competition is very high and tight because it is surrounded by hotels and competitors of its kind	The existence of price competition, facilities and conveniences.	Threat: The increase in rental prices reduces the interest in extending customer rentals. Opportunities: Applying a price that is relatively cheap compared to competitors.
Consumer Purchasing Power: The purchasing power of consumers decreases as the building ages, consumers find it easy to find apartments with modern nuances	Reducing customer satisfaction with services	Threat: Increased building repair costs. Opportunities: Create a brand and feel of your own building style that is different from the others.

distinct feel of a different building style from the rest.	unit stock management features.	d. Payment and deposit recording features were created for fast payment processing and guarantees.
THREAT (T)	STRATEGI S – T	STRATEGI W – T
1. The increase in rental prices reduces the interest in extending customer rentals.	a. Maintain good relationships with customers. b. Conduct education related to the advantages of Mediterranean apartments	a. Conduct training for employees to be skilled b. Maintain customer trust. c. An information system is made to support agent activities
2. Increased building repair costs.	c. Trying to make the rental process easier	

Table III
Matriks S.W.O.T

	STRENGTH (S)	WEAKNESS (W)
	1. Strategic Location 2. Good use of marketing technology 3. Flexibility of apartment rental 4. Prices are comparable to quality	1. Lack of human resources 2. There is no system for recording all processes are still manual 3. Assignment of tasks to one agent
OPPORTUNITY (O)	STRATEGI S – O	STRATEGI W – O
1. Applying a price that is relatively cheap compared to competitors. 2. Creating a brand and	a. Maximizing service to old and new customers. b. Make special price offers to old and new customers c. Build owner, tenant, and	a. Training for human resources to be more skilled b. Evaluating work procedures c. The visitor data feature is made, so that ordering is fast in the rental process.

In analyzing the system development design, the author uses the Unified Modeling Language (UML). Diagrams in UML are defined as information in various forms that are used or produced in the software development process. Based on the perspective in object-oriented process Analysis and design with UML, there are several main UML diagrams that can be used, namely:

1. Use Case Diagram.

Describes the expected functionality of a system and describes the workflow.

2. Activity Diagram.

The analytical model used or describes process activities.

3. Sequence Diagram.

Describes the objects in the use case and the messages that are executed in the use case.

4. Class Diagram.

Describes a number of classes and the relationships between classes in the system [5].

The following is the proposed design in the form of UML which is described below.

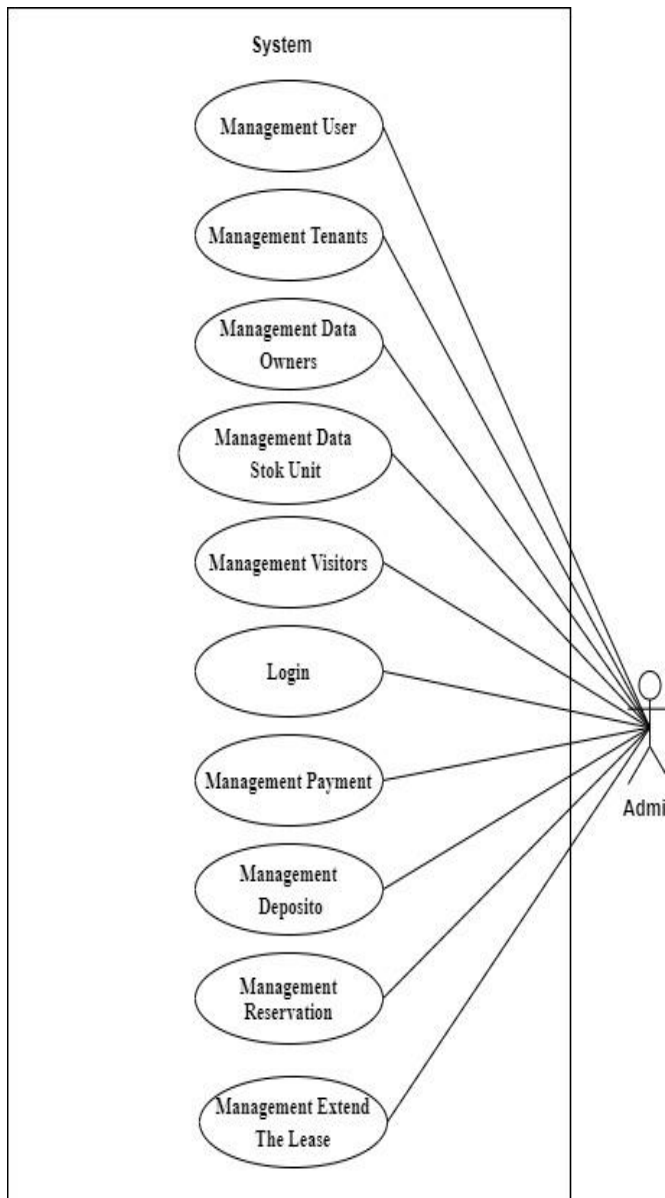


Figure 2. Use Case Diagram

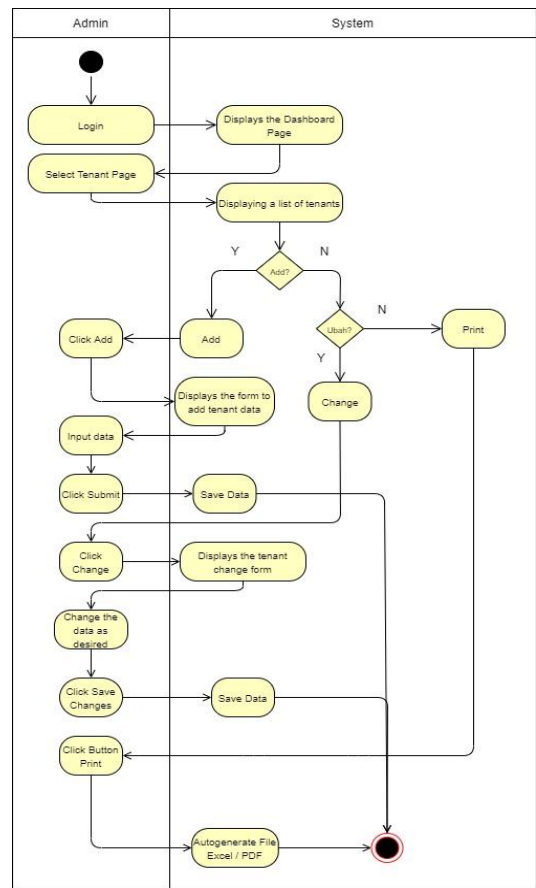


Figure 3. Activity Diagram Management Tenant

The Activity Diagram above explains user activity in managing tenant data on the system.

1. Admin login and select the tenant menu
2. The system will display a list of users and 3 menus, namely add, change and print
3. If added, the admin will fill in the new tenant form and the system will store it in the database
4. If you change, the system will display a form to change the tenant's data and the admin will change the data to be changed and save it in the database
5. If Print, the system will print based on the list of tenants in Excel / PDF format.

Table V
Table portal_owner

No.	Field Name	Type of Data	Length	Remarks
1	n_pemilik_id	int	10	Primary Key, autoincrement
2	n_no_ktp	bigint	20	Number KTP Owners
3	c_nama	varchar	50	Owners Name
4	c_pekerjaan	varchar	30	Type of owner's job
5	c_alamat	text	250	Owner's address
6	c_no_telp	varchar	15	Owner's Number telephone
7	c_type_name	varchar	50	Foreign Key name file
8	d_created_date	timestamp	18	Date time entry system {Format: YYYY-MM-DD hh:mm:ss }
9	n_created_by	int	10	Author id Account
10	d_updated_date	datetime	18	Date time changed {Format: YYYY-MM-DD hh:mm:ss }
11	n_updated_by	int	10	Author id Account
TOTAL			466	

Table VI
Table portal_payment

No.	Nama Field	Type of Data	Length	Remarks
1	n_pembayaran_id	int	10	Primary Key, autoincrement
3	n_reservasi_id	int	10	Foreign Key, id reservasi
4	n_tagihan	bigint	13	Amount bill
5	n_bayar	bigint	13	Amount payment
6	n_sisa_tagihan	bigint	13	Amount rest of the bill
7	c_keterangan	text	100	Remarks
8	c_type_name	varchar	50	Foreign Key name file
9	d_created_date	timestamp	18	Date time entry system {Format: YYYY-MM-DD hh:mm:ss }
10	n_created_by	int	10	Author id Account
11	d_updated_date	datetime	18	Date time changed {Format: YYYY-MM-DD hh:mm:ss }
12	n_updated_by	int	10	Author id Account
TOTAL			265	

Table VII
Table portal_unit

No.	Nama Field	Type of Data	Length	Remarks
1	n_unit_id	int	10	Primary Key, autoincrement
2	n_pemilik_id	int	10	Foreign Key, Id pemilik unit

3	c_nama	varchar	30	Name Unit
4	c_nomor_unit	varchar	30	Number unit
5	c_type_unit	varchar	50	Type unit apartement
6	c_tower	varchar	20	Tower unit
7	n_lantai	int	11	Floor unit
8	n_luas	int	11	Wide unit m2
9	n_harga_sewa	int	11	Price
10	c_no_akte	varchar	30	Number ownership certificate
11	n_status	tinyint	1	Status unit
12	c_type_name	varchar	50	Foreign Key name file
10	d_created_date	timestamp	18	Date time entry system {Format: YYYY-MM-DD hh:mm:ss }
11	n_created_by	int	10	Author id Account
12	d_updated_date	datetime	18	Date time changed {Format: YYYY-MM-DD hh:mm:ss }
13	n_updated_by	int	10	Author id Account
TOTAL			320	

Table VIII
Table portal_master_menus

No.	Nama Field	Type of Data	Length	Remarks
1	n_menu_id	int	10	Primary Key, autoincrement
2	n_parent_id	int	10	Id induk menu
3	c_name	varchar	50	Name menu
4	c_uri	varchar	100	Segment url
5	c_icon	varchar	25	Icon menu
6	n_seq	tinyint	3	Sequence menu
TOTAL			198	

Table IX
Table portal_user

No.	Nama Field	Type of Data	Length	Remarks
1	n_user_id	int	10	Primary Key, autoincrement
2	c_nik	varchar	30	Employee Number
3	c_email	varchar	50	Email user
4	c_name	varchar	50	Nama user
5	c_password	varchar	250	Password user
6	c_roles	varchar	30	Role dari user
7	e_status	enum	14	Status Account User {Format: Active,Disable }
8	d_last_login	datetime	18	Date time last login {Format: YYYY-MM-DD hh:mm:ss }
9	d_created_date	timestamp	18	Date time entry system {Format: YYYY-MM-DD hh:mm:ss }
10	n_created_by	int	10	Author id Account
11	d_updated_date	datetime	18	Date time changed {Format: YYYY-MM-DD hh:mm:ss }
12	n_updated_by	int	10	Author id Account
TOTAL			508	

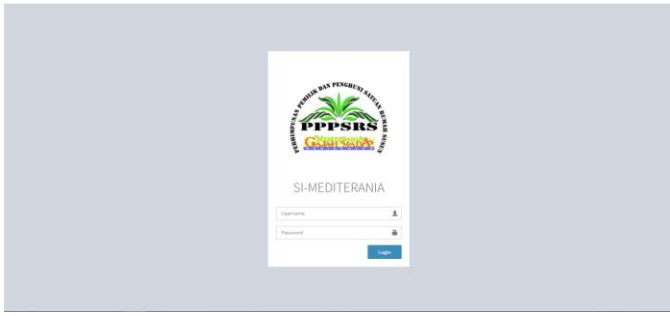


Figure 10. Login Page

Implementation of the log in page display for users who already have an account, the user enters a username and password to be able to enter the application.



Figure 11. Dashboard Page

Implementation of the Dashboard page display, users who have logged in first will be directed to the Dashboard page.

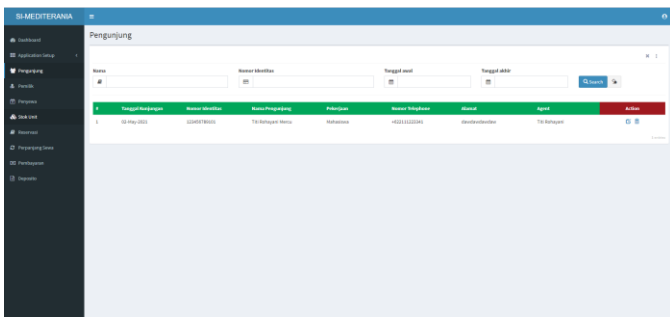


Figure 12. Visitors page

Implementation of the visitor page display, in this application there is a visitor list menu. users can manage visitor data on this page.

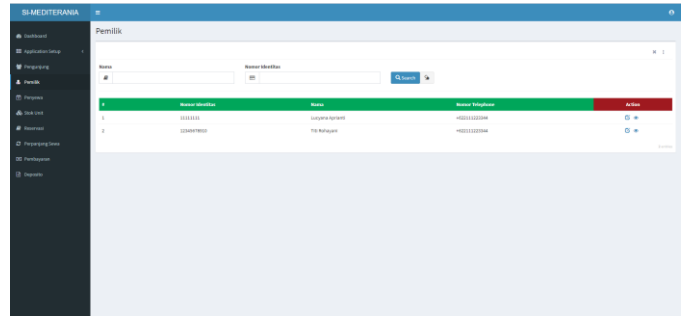


Figure 13. Owners page

Implementation of the Owner page view. User can manage Owner Data on this Page.

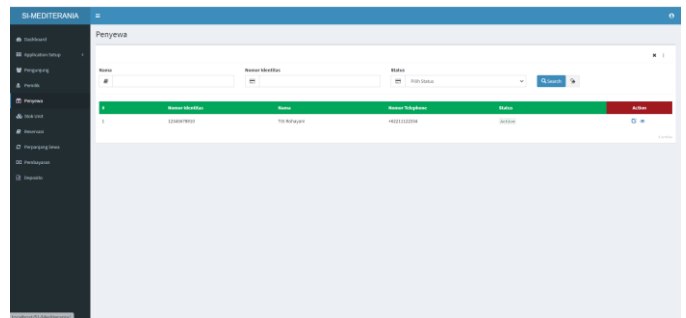


Figure 14. Tenant page

Implementation of the Tenant Page display, on this page users can manage apartment tenant data.

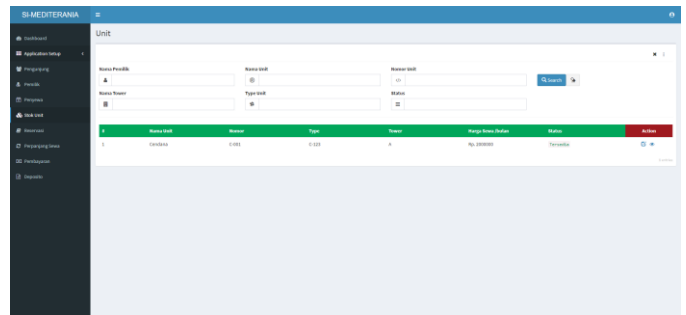


Figure 15. Stock Unit Page

Implementation of the Unit Stock Page display, on this page users can manage apartment unit stock data.

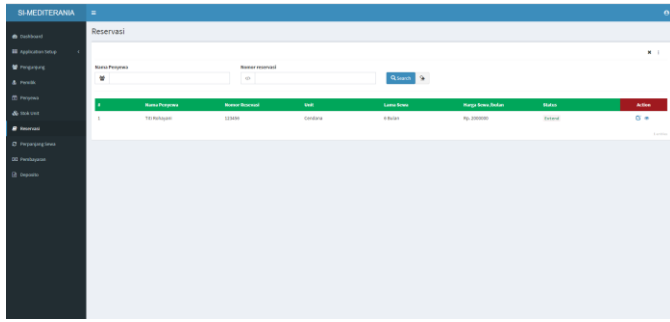


Figure 16. Reservation Page

Implementation of the Reservation Page display, on this page users can manage Apartment Reservation data.

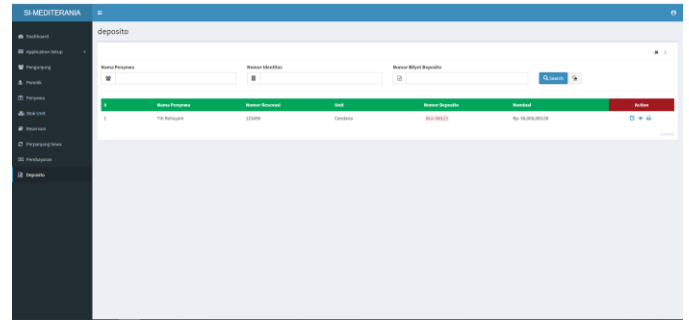


Figure 19. Deposito Page

Implementation of the Deposit Page display, on this page users can manage Deposit data in Apartments.

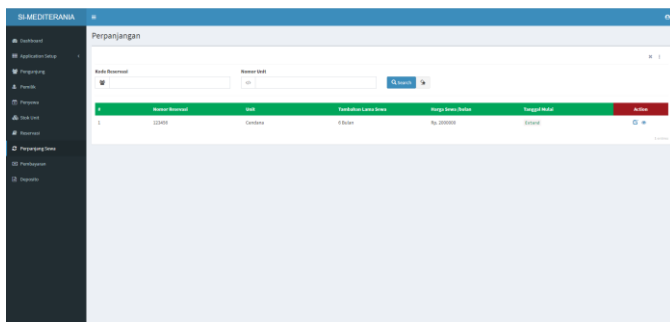


Figure 17. Extend Lease page

Implementation of the Extension Page view, on this page users can manage Apartment extension data as needed.

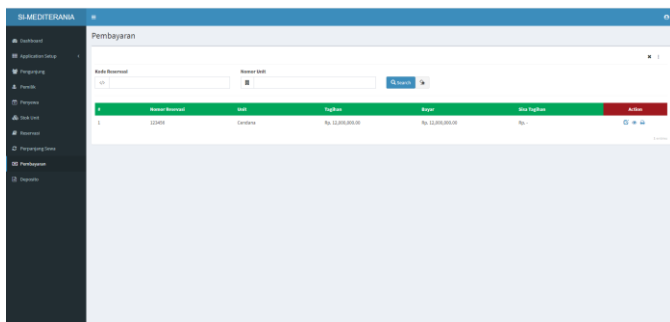


Figure 18. Payment Page

Implementation of the Payment page display, on this page users can manage apartment payment data.

V. CONCLUSIONS

Based on the research conducted, the conclusions are:

1. To design a Mediterania apartment rental management information system, a running business process information is needed and is analyzed using the SWOT method (Strength, Weakness, Opportunity, Threat) according to business needs and then designed using the UML (Unified Modeling Language) method and a system is made to facilitate business processes. existing data is even better in terms of data availability, accuracy of data information and ease of leasing transaction services.
2. With this apartment rental management information system, it can improve the quality of service to customers through the ease and speed of rental transactions as well as the accuracy of data about the availability of apartment units available for lease.

3. Information systems can manage tenant data because all data is stored and well organized in the database so that the information recording checks can be seen quickly.
4. The unit stock module can make it easier for the apartment to check the availability of units that are still available for rent or those that are being rented, this can be a reference for unit offers to prospective tenants regarding unit information.

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