

## Designing a Marketing Information System for Pesona Permata Hijau 2 Housing Using the Waterfall Method

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### ABSTRACT

Housing is an area or region that consists of several residential units or buildings with clear construction regulations and a uniform and synchronized form/pattern without any differentiation. At this time, there are still many housing property companies that promote their properties manually. One of the property companies that still promotes their marketing manually is The Housing Pesona Permata Hijau 2. Pesona Permata Hijau Housing 2 is one of the housing estates located near Jalan Raya Cibogo, Subang Regency In the process of marketing Housing Pesona Permata Hijau 2 is still done manually, namely by distributing brochures, placing banners, and promoting at major events. Technological advances are currently widely used by various industries, one of which is used as a property marketing medium such as housing. As a use of information technology that exists at this time, the right solution to overcome the above problems is to build a Housing Marketing Information System Pesona Permata Hijau 2 using the Waterfall method. The stages of the Waterfall method carried out in the development of this software consist of analysis, design, coding, and testing. With this system, it is hoped that it can facilitate the marketing process of the marketing division, and prospective buyers can easily get detailed information about the housing. Result in this research Based on the development of the Pesona Permata Hijau 2 Housing Marketing Information System that has been carried out, with the construction of the Pesona Hijau 2 Housing Marketing Information System, it is hoped that it can facilitate prospective buyers in finding information about the housing. The marketing Information System for Pesona Permata Hijau 2 Housing was built with the aim of increasing the efficiency of the promotion process by utilizing technology.

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## 1. INTRODUCTION

In 2022, approximately 77 percent of Indonesia's population already uses the internet[1]. The use of the internet can be utilized as a property marketing medium such as housing. Pesona Permata Hijau 2 Housing is one of the housing estates located near Jalan Raya Cibogo, Subang Regency. In the marketing process, Pesona Permata Hijau 2 Housing is still done manually, namely by distributing

brochures, installing banners, and conducting promotions at large events, this is considered less effective because information about the housing is difficult to obtain by prospective buyers who are looking for information about the housing. In addition, to find out more information, prospective buyers must come directly to the housing marketing office.

Before this research was conducted, there were several references to research that had been done before. In the Web-Based Taman Kurnia Djaja Housing Marketing Information System Using PHP and Mysql, it is concluded that the housing marketing information system can be used as a tool to display housing information needed by the customer[2], while in the Web-Based Home Marketing Information System at Graha Permata Surya Mijen Semarang, where from his research it can be concluded that the housing marketing information system made prioritizes potential customers who will buy a house by way of KPR (Public Housing Credit)[3].

The purpose of this research is to build a Marketing Information System for Pesona Permata Hijau 2 Housing using the waterfall method to overcome these problems. Where in the system will contain things that are needed by prospective buyers who need information about housing, so they don't need to come directly or visit the marketing office of Permata Hijau 2 housing. With this system, it is hoped that it can facilitate the marketing process of the marketing division, and prospective buyers can easily get detailed information about the housing. The difference in previous research with the research conducted is that the system built contains housing information which can also place housing orders through the system.

The benefits of this research are that this research is expected to expand the reach of marketing, especially with the use of information systems technology, with this marketing can be done effectively and efficiently, and it is hoped that the presentation of information about the green gem 2 pesona housing can make it easier for customers to find information about the housing.

## 2. METHOD

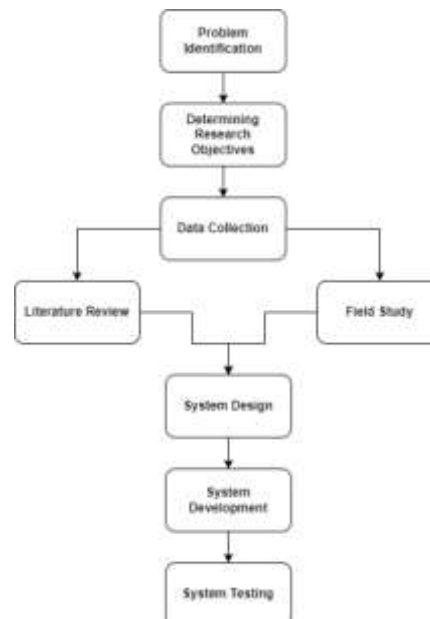


Figure 1. Research flowchart

### 2.1 Data Collection Method

The research was conducted at Pesona Permata Hijau 2 Housing which is located near Jalan Raya Cibogo, Subang Regency. The data collection stage consists of 2 stages including:

1. Literatur study

Literature study is a basic stage to obtain references that are in accordance with the research to be carried out, so that the research carried out can be scientifically accounted for. Literature study contains collecting references such as journals related to the object of research to support research[4].

## 2. Field study

Field study is a method carried out by researchers by direct observation of activities carried out by the company, where the field study consists of:

### a. Observation

Observation is the observation of an object under study either directly or indirectly to obtain data that must be collected in research, the object of research in this study is the marketing office of pesona permata hijau 2 housing, and also prospective buyers[5].

### b. Interview

Interview is a method of collecting data by asking questions freely both structured and unstructured with the aim of obtaining broad information about the object of research[4], at this stage a question and answer process is carried out regarding the object that will be the problem, namely the marketing of the green gem 2 pesona housing and also prospective buyers, so that the needs of users and solutions to these problems are known.

## 2.2 Development Method

The development method carried out on the Pesona Permata Hijau 2 Housing Information System uses the waterfall development method. The waterfall method is a sequential device development process, where progress is seen as continuing to flow downward (like a waterfall) through the phases of planning, modeling, implementation (construction), and testing[6]. The stages of developing the Pesona Permata Hijau 2 Housing Marketing Information System using the waterfall method include:

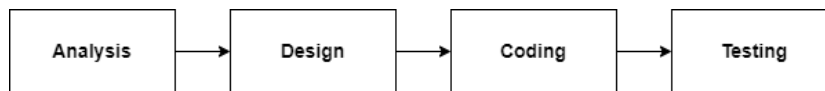


Figure 2. Stages of the Waterfall Method

### 1. Analysis

This stage is the initial stage carried out in the system development process using the waterfall method. At this stage contains an analysis of software requirements which consists of collecting user requirements. The analysis process is carried out by conducting observations and interviews with related parties, namely the marketing division of the green gem 2 charm housing which is carried out to find out what problems occur in the field and find solutions to these problems so that it can be understood what kind of system is needed by the user.[7]

### 2. Design

At the design stage of the development of the Marketing Information System for the Pesona Green Gem 2 housing complex, it consists of modeling the system by making UML modeling which includes making usecase diagrams, activity diagrams, class diagrams, and sequence diagrams. In addition, at this stage, ERD design is modeling the database needed in the system to be built, and designing the interface / interface of the system to be built.

### 3. Coding

The coding or implementation stage is a stage that turns the design design into a running system. At this stage includes the coding process carried out by the researcher. In the development of the Pesona Permata Hiaju 2 Housing Information System using the Laravel 8 Framework. The Laravel framework was developed using the PHP programming language and

additional CSS and HTML. This framework uses the MVC concept, which makes it easier for researchers to build the system.

#### 4. Testing

The testing stage is a testing stage of the system being built. This stage aims to find out whether the system built is in accordance with the planning that has been done before or not. This test focuses on the functionality of the system being built and ensures that all parts have been tested. This is done to minimize errors and ensure the resulting output is as desired.[8]

At the testing stage, the development of the Pesona Permata Hijau 2 Housing Information System uses the Black Box testing method. The Black Box testing method is a software testing method that focuses on the functionality side, especially on the input and output of the system being built. Testing strategies in testing this system include determining the items to be tested and testing these items so that the criteria for success or failure of the system can be determined.

### 3. RESULT AND DISCUSSION

In this section, it is explained the results of research and at the same time is given the comprehensive discussion. Results can be presented in figures, graphs, tables and others that make the reader understand easily. One of the most important resources for human life is land. Land serves as a base of operations as well as a place to generate income, erect structures, and store valuable goods. Land rights are often acquired by the purchasing and sale of said rights.[9] The discussion can be made in several sub-sections, which covers carrying out analysis as well as creating housing marketing information systems to help businesses advertise, with the objective of supplying chances to broaden the marketing network by creating systems utilizing the Unified Modeling Language (UML) approach.[10] to make Eny Convection's marketing more professional in order to advertise products and make it simpler for buyers to access product information on the company's website.[11]

#### 3.1. System Design Analysis

Based on the data collection process carried out previously, the result of the analysis of this research is to design the Marketing Information System for Pesona Permata Hijau Housing 2. The process of analyzing the design of the system to be built is carried out using UML (Unified Modeling Language). UML is one of the language standards that is widely used in the industrial world to define requirements, make analysis and design. The UML depiction is done using a usecase diagram, and a class diagram which is described as follows.

##### 3.1.1 Usecase Diagram

Usecase diagram is a modeling for the behavior of the information system that will be created[12].

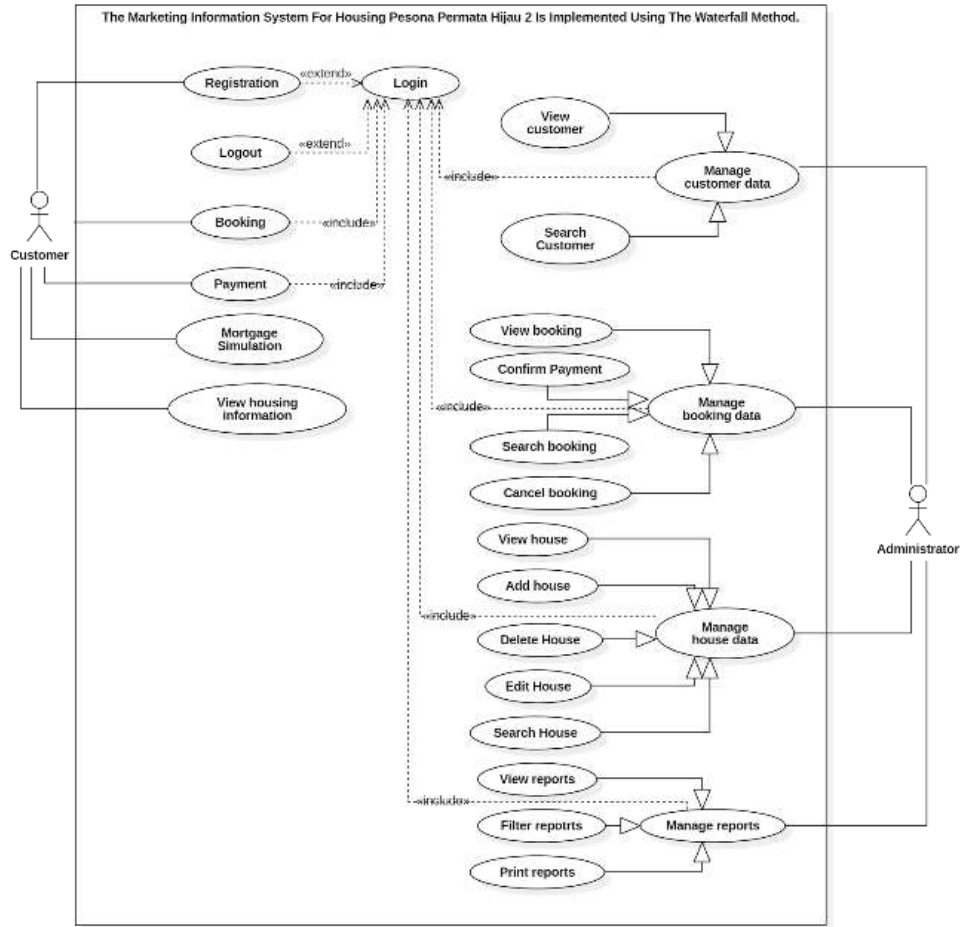


Figure 3. Usecase diagram

### 3.1.2 Class Diagram

Class diagram is one type of diagram in UML which is used to display classes and packages that exist in a system that will be used later [13].



### 3.2.1. Login Interface



Figure 6. Form Login

The login page can be used by admin users and also prospective customer users.

### 3.2.2. Landing Page Interface



Figure 7. Landing Page

On the landing page displays housing information such as our products, facilities, reasons why you should choose Pesona Permata Hijau 2 housing and housing location gallery.

### 3.2.3. Order View Interface

Figure 8. Order View

The order form display is used to make house booking transactions. This process is carried out by users who already have an account to be able to access housing bookings.

### 3.2.4. Payment Form Interface

Figure 9. Payment Form

The payment form is used to input the payment process for the order process that has been carried out.

### 3.2.5. KPR Simulation Interface



Figure 10. KPR Simulation

KPR simulation is used to calculate the estimated KPR payment by filling out the KPR simulation form.

### 3.2.6. Admin Dashboard Interface

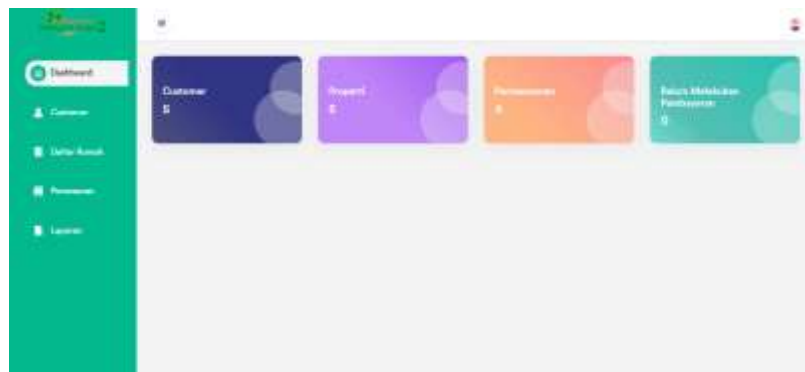


Figure 11. Admin Dashboard

The admin dashboard is the display that is first accessed when the admin accesses the system after logging in. Admins can manage user data, house data, order data, and reports.

### 3.2.7. Manage Order Interface

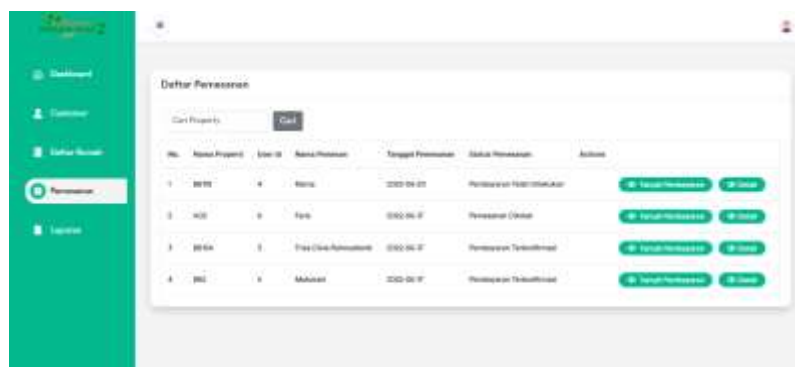


Figure 12. Manage Order

This view is an admin view of managing customer orders, in this view admin data sees payment status and order details.

### 3.2.8. Manage Report Interface

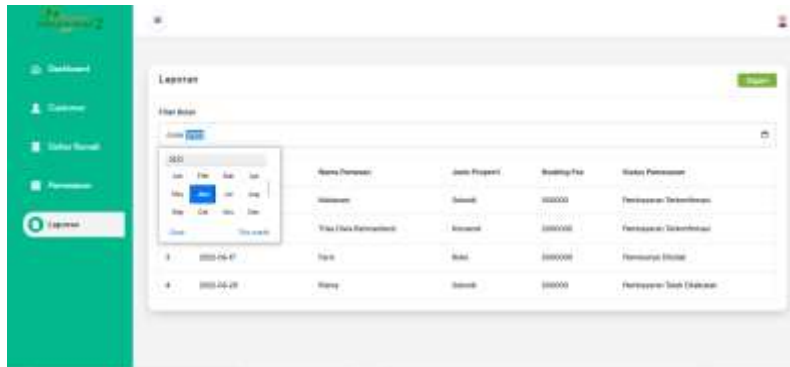


Figure 13. Manage Report

In Manage reports admin can filter reports by month or year period and can also export reports in PDF format.

### 3.3 System Testing

The software testing carried out has the aim of analyzing the existing system conditions with the planned system conditions, In this system test using the Black Box testing method. The Black Box testing method is one of the software testing methods that focuses on the functionality side, especially on the input and output of the system being built. Testing Strategy in testing this system includes determining the items to be tested by setting the criteria for the success or failure of the features on the system. Where the results of system testing are obtained as follows:

Table 1. Test Result

| Date          | Test Results  |
|---------------|---|
| June, 11 2002 | Test Class: 12 classes<br>Test Granules: 29<br>Test Case: 80<br>Total Valid Test Cases: 80<br>Total Invalid Test Cases: 0 |

The testing process is carried out by 2 testers, where each tester tests the entire module in the system, so that it can be seen whether or not there are bugs in the system.

## 4. CONCLUSION

Based on the development of the Pesona Permata Hijau 2 Housing Marketing Information System that has been carried out, the following conclusions are obtained:

1. With the construction of the Pesona Hijau 2 Housing Marketing Information System, it is hoped that it can facilitate prospective buyers in finding information about the housing.
2. Marketing Information System for Pesona Permata Hijau 2 Housing was built with the aim of increasing the efficiency of the promotion process by utilizing technology.

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