Development of Multi-Developer Housing Marketing Information System Using Rational Unified Process Method

Dede Kurniadi[1)*], Ridwan Setiawan[2)], Alfian Akmal Adiwangsa[3)], Lindayani[4)]
[1,2,3)] Teknik Informatika, Jurusan Ilmu Komputer, Institut Teknologi Garut, Indonesia
[4)] Fakultas Kewirausahaan, Universitas Garut, Indonesia
[1)]dede.kurniadi@itg.ac.id, [2)]ridwan.setiawan@itg.ac.id, [3)]1806061@itg.ac.id, [4)]linda@uniga.ac.id

Abstract: Rumah Garut is a company engaged in selling property to several housing developers. In the housing marketing process, it is still carried out offline, where the developer carries out the registration process with marketing company, then makes brochures and markets them at exhibitions. This method is considered inappropriate, given the large number of housing units registered by the developer, as it would delay the marketing or sale of the house. This research aims to develop an online marketing information system that can be carried out with multiple developers so that each developer can manage and inform their housing effectively and efficiently. The system design method is the Rational Unified Process (RUP), which consists of the stages of inception, elaboration, construction, and transition. The results of this study are in the form of a multi-developer housing marketing information system that can assist housing developers in managing and users in accessing housing information and ordering online. Meanwhile, based on the results of black box testing, it shows that the features developed are in accordance with the specified system functional scenarios, and testing the results of beta testing produces a score of 93.7%, which means that the housing marketing system meets user needs.

Keywords: Housing Marketing, Information System, Multi-Developer, Rational Unified Process.

INTRODUCTION

Housing is a group of residences that function as residential areas equipped with complete infrastructure to support the needs of consumers (Wahyuni et al., 2020). Choosing housing or houses that suit your needs is not an easy thing, especially in big cities that have many housing complexes in all corners of the area (Eduardus & Sitanggang, 2018). Competition in the housing marketing business is currently increasing rapidly. Housing marketing companies continue to compete for consumers by making various efforts, including implementing information systems to find consumers online (Wahyuni et al., 2020). The need to get information quickly and precisely at this time is very important for the community (Sallaby & Kanedi, 2020). Rumah Garut is a property company that markets housing from several developers in order to make it easier for people to buy and sell dream homes in Garut Regency. However, the housing marketing process is currently still being carried out offline, where developers register their housing with Rumah Garut, then brochures are made and marketed in exhibition activities. Marketing like this is an obstacle for developers because, with the large number of housing units proposed by developers, it hampers the dissemination of information because it needs to be accepted first by Rumah Garut before developers can make flyers or upload them to social media. Based on these problems, a solution is needed that can produce an information system where the housing marketing is carried out directly by the developer so that it can overcome the problems faced by Rumah Garut regarding the marketing process registered by the developers.

Several previous studies have discussed the use of technology in providing information or housing marketing, such as research (Mincarti & Mulyono, 2019) which discusses conducting analysis as well as designing housing marketing information systems to assist companies in marketing, with the goal of providing opportunities to expand the marketing network by designing systems using the Unified Modeling Language (UML) methodology. Then the second research by Pratama (Pratama & Purwidayanta, 2018), which discusses housing marketing at Akila Residence, Serang city, uses the SWOT analysis method to produce a housing

*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]

marketing information system that can be accessed online to help company marketing. Then for the third research reference (Aulia & Suhendi, 2020) discusses the creation of the Bumi Elok Cikoneng housing information system to simplify and expand marketing reach with the waterfall method. The results of this study are in the form of a system that is intended to be used in housing marketing by this property company. Furthermore, the fourth study by (Asiyah et al., 2021) discusses information technology in order to facilitate companies in terms of the housing marketing process using the waterfall method, in which this study produces a system to help order property units that can be accessed quickly. The fifth study was conducted by (Eduardus & Sitanggang, 2018) who used the waterfall method to design a housing information system to expand the marketing system. The results of this study are web-based systems that are useful in housing marketing, making it easier for them to promote or market housing at Meranti Estate.

Many research methods and system creations are applied to the housing marketing and sales process, as was done by (Aulia & Suhendi, 2020) with the waterfall method, producing applications that are used for housing marketing in Bumi Elok Cikoneng. Based on the background described above, the purpose of this study is to apply the multi-developer housing marketing concept to Rumah Garut, so that the Rational Unified Process method is chosen, Based on the background described, the purpose of this study is to apply the Multi-Developer Housing Marketing Concept to Rumah Garut, so the Rational Unified Process method was chosen, because according to (Siregar et al., 2021) the Rational Unified Process is a method of software development that is carried out repeatedly, and according to (Supriadi & Hardian, 2019) in system development, the Rational Unified Process can be implemented to produce a system that fits the needs of companies that contains 4 stages, namely inception, elaboration, construction, and transition, so that the results of this development can assist companies in managing housing orders online. With this system, users can access products and place orders online without having to come directly to the office.

LITERATURE REVIEW

The system is a collection of interconnected data or components. Information means data that has been managed and processed to provide meaning and improve decision-making processes (Sallaby & Kanedi, 2020) ,while information systems are ways that are organized to collect, enter, process, and store data and to store, manage, control, and report news in such a way that an organization can achieve its stated goals. The development of information systems has various methods, ranging from structural methods to object-based (Triandini et al., 2019).

Housing is a group of residences that function as a residential or residential environment equipped with environmental infrastructure, namely the basic physical equipment of the environment such as the provision of drinking water, garbage collection, availability of electricity, telephones, and roads, which allows the residential environment to function as it should. In a broad sense, a house is not only a dwelling but also a place of residence that fulfills decent living conditions in terms of social life (Pratama & Purwidayanta, 2018).

Marketing (marketing) is concerned with how to meet or satisfy the needs of consumers through various exclusive distribution channels using the products that can be offered to them, so marketing is more concerned with consumer orientation (consumer oriented). As a result, marketing is always concerned with how to create goods and services that can convey satisfaction values so that consumers want to purchase the products on the market (Darussalam, 2019).

METHOD

Methods in the development of housing marketing information systems use the Rational Unified Process (RUP) method approach (Sukamto & Shalahuddin, 2019). As for the research framework of thought and its stages, see Fig 1. Rational Unified Process is a research method that uses the concept of object oriented, with activities that focus on model development using the Unified Model Language (UML) (Hulu et al., 2020). RUP is a process framework method that can be adapted or implemented by software development companies or organizations and consists of inception, elaboration, construction, and transition (Siregar et al., 2021).

According to Fig. 1, the stages of research conducted in the development of a housing marketing information system are as follows :

Inception
This stage focuses on the activities carried out, starting with identifying business processes, determining system specifications, and identifying actors. Identification of business processes obtained from the results of interviews, observations, and documents conducted by Rumah Garut;

Elaboration
At this stage, the activities carried out are designing use case diagrams, activity diagrams, sequence diagrams, and class diagrams;

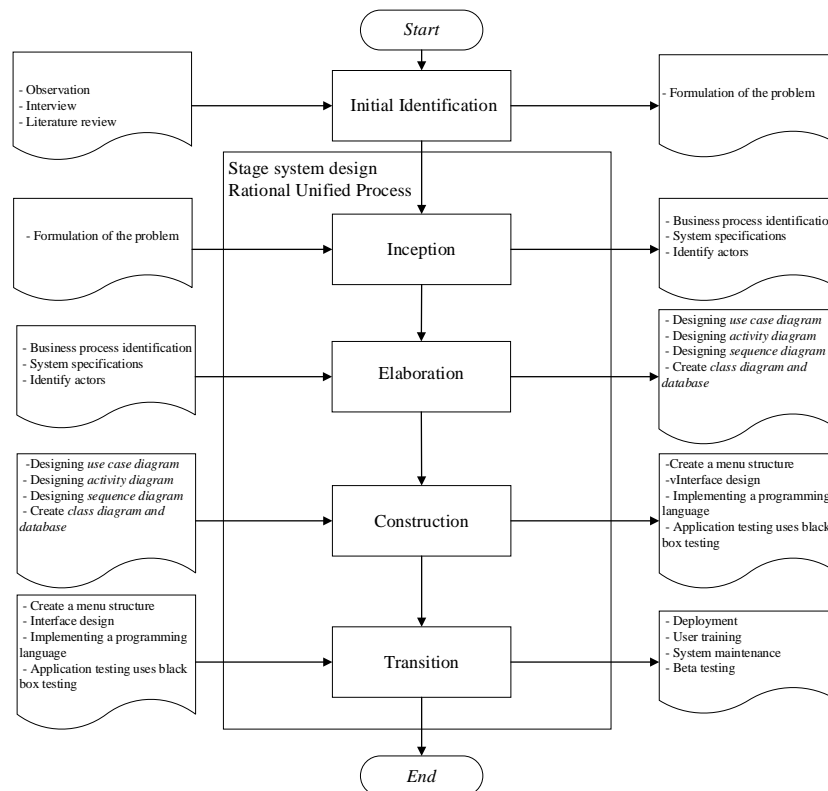*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]

Fig 1. Research Framework

Construction
At this stage, creating menu structures, designing interfaces, implementing them in programming languages, and testing them using black box testing The programming language uses PHP with the CodeIgniter framework;

Transition
This last stage is the deployment stage, followed by user training, system maintenance, and beta testing.

RESULT

Research on housing marketing information system development with the application of the Rational Unified Process method is described as follows :

Inception

In the inception stage, the steps carried out aim to understand system design, namely the business processes required by the system (business modeling), determine the actors involved in the system, and then process it at a further stage (elaboration) to make use of case diagram designs, activity diagrams, sequence diagrams, and class diagrams. The following is a description of the results of the inception stage :

1. Business process identification, at this stage, the researcher made observations for Rumah Garut to identify ongoing business processes. The results of the identification of business processes that run with Rumah Garut are actually housing marketing at Rumah Garut, which is currently being carried out offline, where the developer registers his housing with Rumah Garut, then brochures are made and marketed in exhibition activities. Marketing like this is an obstacle for developers because, with the large number of housing proposals made by developers, it hampers the dissemination of information because it needs to be accepted first by Rumah Garut in order to make flyers or upload them to social media.

2. Define system specifications, In this research, what are the requirements or requirements that were used to create the current system, so that the system built can later be in accordance with the needs of the user or users (Sutedi & Agarina, 2017). The system specifications can be seen in Table 1 below :

Table 1. System Specifications

Fungsional	Non Fungsional
1. The system can make property purchases	1. Web platform based system
2. The system can login	2. The system uses the php programming language and uses the codeigniter framework,

*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]

Fungsional	Non Fungsional
3. The system can place an order	3. The database system uses mysql
4. The system can make transactions easily	4. Browser can use microsoft edge/google chrome/opera browser, firefox, and other
	5. software and hardware used in terms of manufacture and users at a minimum include:
	a. Manufacturing side Processor AMD ryzen 7, Ram : 8gb, HDD : 500gb, Xampp, visual studio code, browser
	b. The user side with minimum specifications is Processor intel dual core, Ram : 2gb, HDD 500gb

Based on Table 2, the system requirements for non-functional users require a laptop with a minimum specification of 2 GB of RAM and a 500 GB hard drive.

3. Identify system actors, at this stage, the researcher determines what actors are involved in the system and describes the relationship between the user and the system. The results of identifying the actors involved in the housing marketing information system of Rumah Garut can be seen in Table 2 below :

Table 2. Actor Identification

No.	Actor		Activity
1.	Admin	1.	*Login*
		2.	Manage web configuration
		3.	Menage profiles
		4.	Managing housing
		5.	Managing members
		6.	Manage contacts
2.	*User*	1.	*Login*
		2.	Choose a product
		3.	View about
		4.	Fill out the contact form
		5.	Register
		6.	View member

It can be seen in Table 3 that users can log in, select products, view about, fill out contact forms, and view members.

Elaboration

The elaboration stage focuses on planning and designing the system architecture using case diagrams, activity diagrams, sequence diagrams, class diagrams, user interfaces, and the menu structure of Rumah Garut, which relies on the specification of system requirements and actors that have been identified previously. In Fig. 2, there is a use case diagram, which is designed as a figure of the relationship between users using the system as well as the functional requirements of the system being developed.
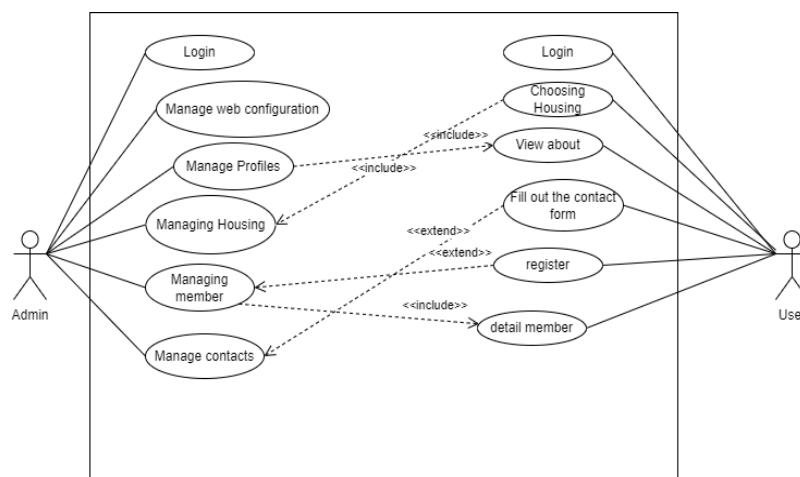

Fig 2. *Use Case Diagram*

It can be seen that the administrator in this system can manage system configuration, profiles, housing, members, and contacts. The scenario use case diagram for managing housing can be seen in Table 3 below :

*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]

Table 3. Scenario Use Case Diagram of Managing Housing

Identification	
Name:	Manage Housing
Destination:	Add, edit, delete housing
Actor:	Admin

Actor	System
1. Accsess the admin page	
	2. Dsiplays the login page
3. Enter username and password	
	4. Check data validation
	5. Displays the dashboard page according to the role of the admin
6. Clicking on the housing menu	
	7. Displays the added housing page added housing page
8 Added hosuing	
	9. Displays the added housing page that has been filled

In fig 3 is an activity diagram for managing housing, the function of the activity diagram is to assign each activity to activities carried out by actors and systems.
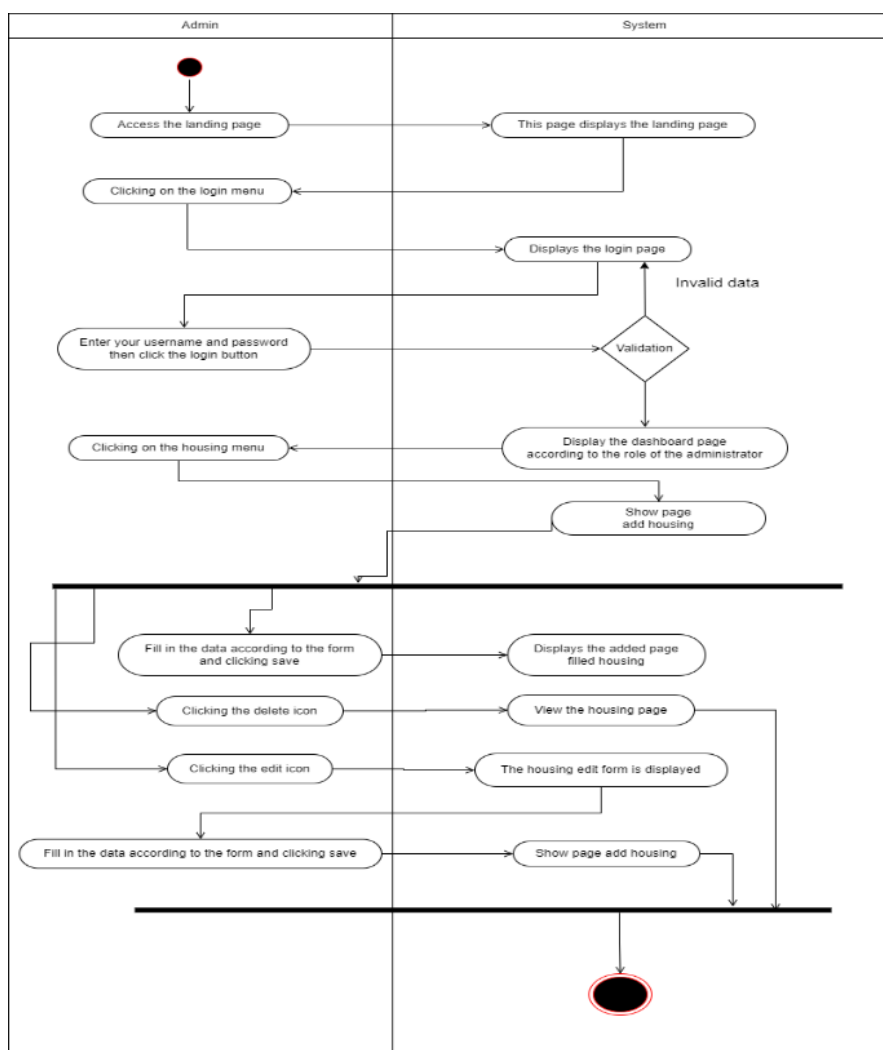

Fig 3. Activity Diagram Managing Housing

The description of housing management activities by the developer in fig 3 is explained in table 4 below :

Table 4. Description Activity Diagram

No.	Activity	Description
1.	Access the landing page page	The admin accesses the landing page
2.	Displays the landing page page	The system displays a landing page
3.	Clicking on the login menu	Admin clicks the login menu on the landing page
4.	Displays the login page	The system displays the login page

*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]
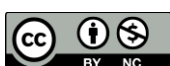
352

No.	Activity	Description
5.	Enter username and password	Admin enter username and password
6.	Displays the main page	The system displays the main page
7.	Clicking on the housing menu	Admin clicks on housing menu
8.	Displays the add housing page	The system will display the added housing page
9.	Fill data according to form provided	Admin enters data according to the form provided
10.	View housing page	The system will display the housing page
11.	Clicking the delete icon	Admin clicks the delete icon to delete housing
12.	Clicking the edit icon	Admin clicks the edit icon to edit housing
13.	Displays the editing form add housing	The system will display housing form you want to edit

Based on Fig 4 (a) the structure of the admin menu can be described and (b) the menu structure for the user which will be implemented in information system development.
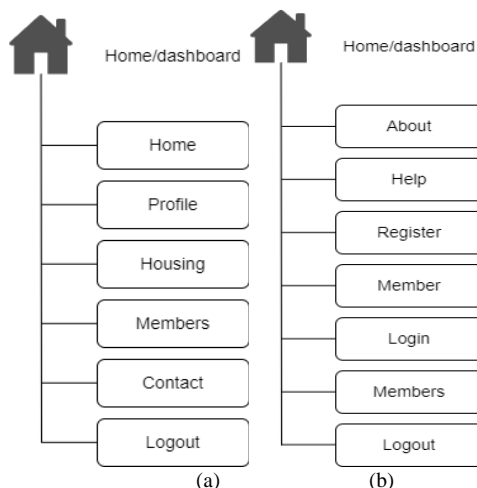

Fig 4. . Menu Structure (a) Admin (b) User

The following is an explanation of the admin and user menu structures, which can be explained in Tables 5 and 6 below :

Table 5. Admin Menu Structure Explanation

No.	Menu Name	Description
1.	Manage home	Displays the form to change the web configuration
2.	manage profiles	Show admin profile. And can be changed
3.	Manage housing	Displays add, edit housing, and delete housing
4.	Manage members	Displays a list of registered members
5.	Manage contacts	Show contacts

Table 6. Explanation of User Menu Structure

No.	Menu Name	Description
1.	Home	Displays housing for sale
2.	About	Displays about the company
3.	Admin	Displays the admin login page
4.	Help	Displays the contact form and also the company address
5.	Login	Displays the user login form
6.	Register	Displays the registration form
	Member	Displays member details and also edit members

In Fig 5 is a database design that is used to characterize the entire system by showing a collection of classes, interfaces and their relationships. to enable this application.

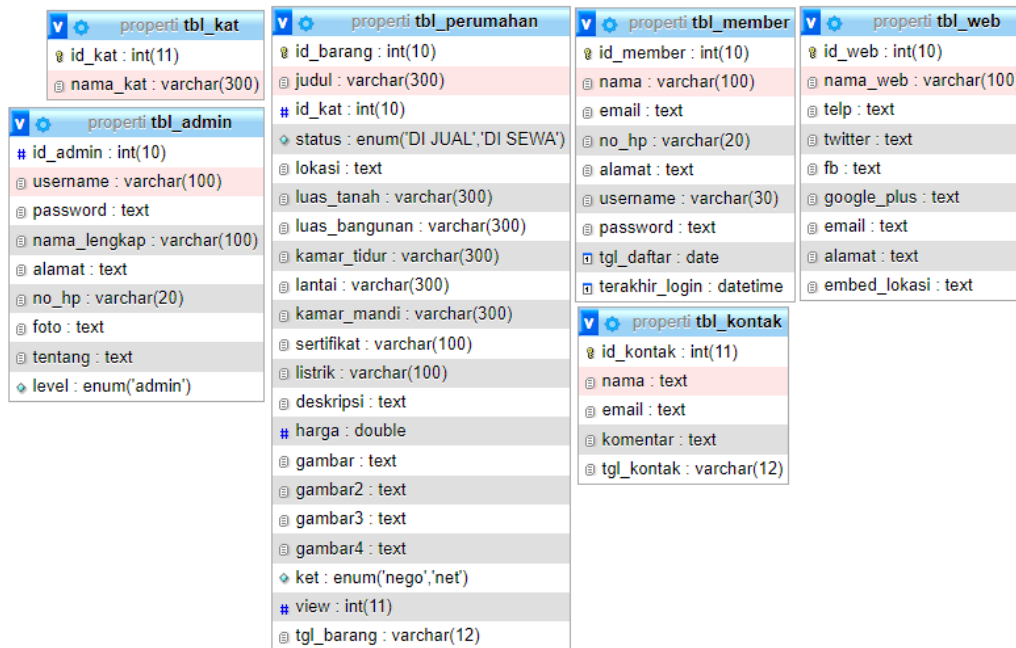*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]

Fig 5. Database Design

It can be seen that to be able to enter the admin system and users are directed to enter via the login page, this is implemented with the aim of user data security, which if someone can enter the admin account, then it is possible to manipulate the data in it. After the menu structure and class diagrams are designed, proceed with designing the interface. In fig 6, the results of the home user interface design are shown, which displays housing figures along with detailed information.
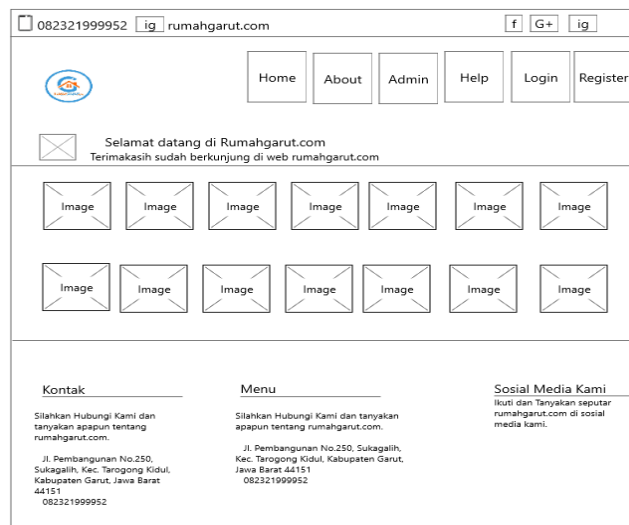

Fig 6. Home User Interface Design

Based on Fig 6, where the home user interface is designed to display housing information sold by each developer after inputting it on the housing management menu.

Construction

The construction phase, the process of developing system features that have been designed in the elaboration stage and then implemented into the program code. The programming language used is Hypertext Preprocessor with the CodeIgniter framework. The database management system uses XAMPP. The text editor uses Visual Studio Code as a means of implementing program code.
The results of the implementation of the programming language can be seen in fig 7 below :

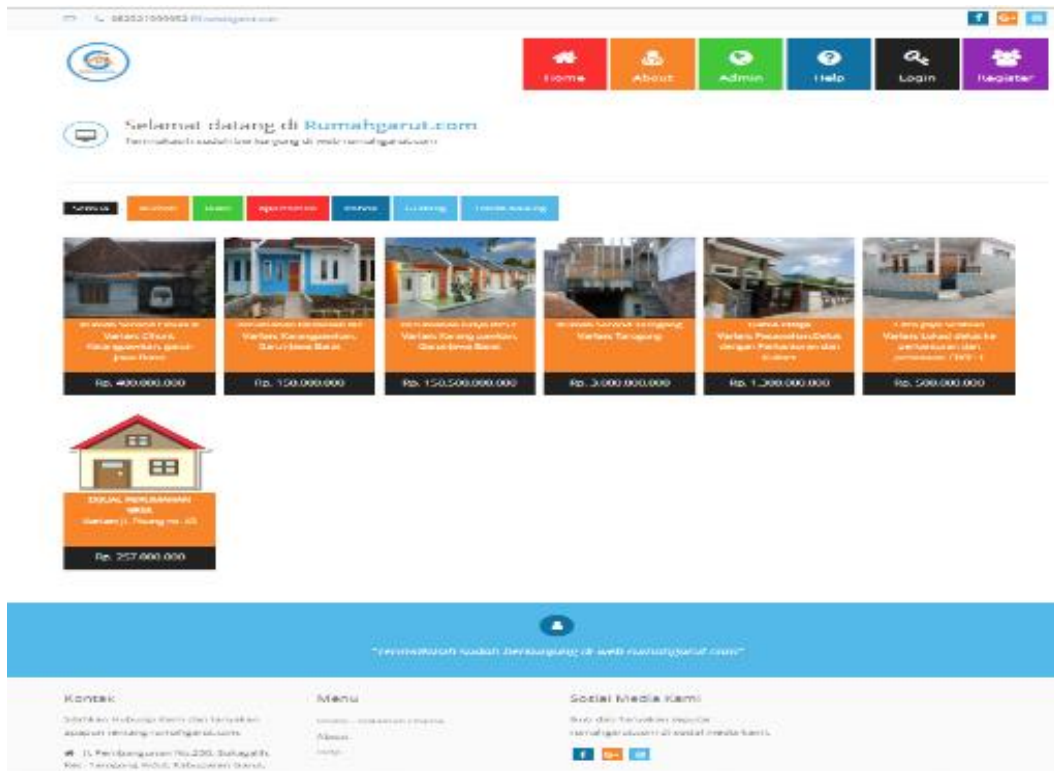*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]
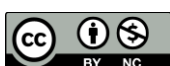
Fig 7. Home User display

Based on Fig 7, the home user displays information about the housing being sold by Rumah Garut, where this information was registered in advance by the developer.

Then to display the process of inputting housing that will be sold by the developer is shown in fig 8 below :

Fig 8. Housing Input Display

Based on Fig 8, the housing input contains a housing data form that needs to be inputted, so that later it will be displayed on the home user. In this system, members or users who will buy are required to enter the system via the login page after registering, to avoid fraud or data manipulation. Display member register can be seen in Fig 9.

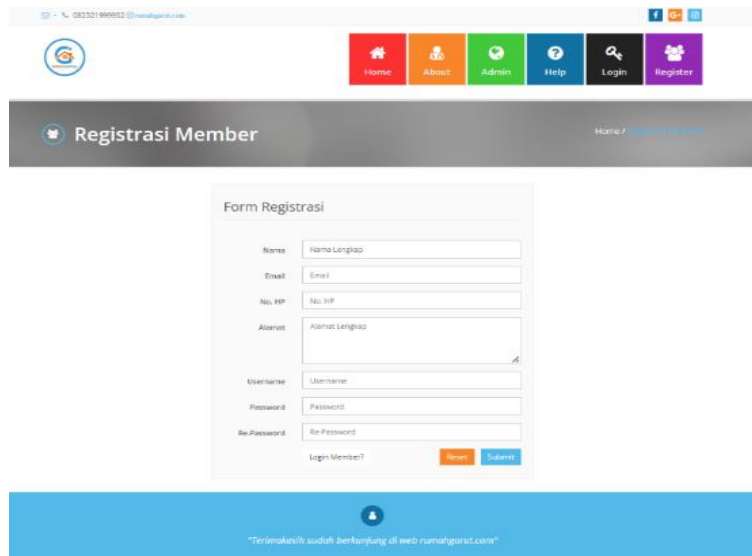*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]

Fig 9. Member Register view

Based on Fig 9, in the register feature, users need to register by entering their name, e-mail, cellphone number and address. Then for a detailed display of housing that can be ordered by users or members can be seen in fig 10 below :

Fig 10. View Housing Spesifics

Based on Figure 10, it can be seen that the user or member will get detailed information on the housing being sold, such as land area, building area, number of rooms and price.

Black box testing is done to find out how the system is running well according to the specified scenario. The test results can be seen in table 7 below :

*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]

Table 7. Black Box Testing

Activity	Test Class	Expected Results	Result
Login	Login User	If login is successful Will be Showing Dashboard whereas if the login fails it will display the login page	**Valid**
About	• Displays information about the user	Displays about the company in the about menu	**Valid**
	• About the author	To display in the user view, manage about on the admin page	**Valid**
Contact	• Make contact with the user	Added a contact form, and the user can also see the addres	**Valid**
	• Contact on admin	Displays the results of the contact form that is on the contact menu in the user	**Valid**
Member	• Display the member page on the user • Member view on admin	Displays member data	**Valid**
Housing	• Added Housing • Removing Housing • Edit Housing	Add housing or properties Deletes the selected housing Edit the selected housing	**Valid**
Home	• Display the homepage to the user	Display the homepage to the user	**Valid**
	• Admin homepage display	Admin homepage display	**Valid**

Black box testing found that all the features implemented worked well in input, output, delete and edit, fig display and others were appropriate and successful.

Transition

At this stage is the deployment of the system with the aim that the system is understood by the user. Then after the deployment stage, beta testing is carried out with an objective point of view with activities involving the user in the application being developed, to obtain results that are in accordance with the respondents' answers to each question made in the questionnaire that is distributed, so with this a calculation is carried out with a Likert scale to complete this goal (Ahyar et al., 2020).

The following are the results of the assessment of 5 respondents from Rumah Garut employees with 7 questions and the results of the questionnaire.

Table 8. Respondents of Employee Beta Test Results

No	Question	Response				
		5	4	3	2	1
1.	The appearance of this website is attractive	4	1	0	0	0
2.	This website can be used as a medium of information for customers regarding the products available at Rumah Garut	4	1	0	0	0
3.	This website makes it easy to manage orders	3	2	0	0	0
4.	Suitability of product management to user view	5	0	0	0	0
5.	Compliance with the number of housing sales on the dashboard page	4	1	0	0	0
6.	s this website useful?	2	2	1	0	0
7.	Is this website easy to use?	3	2	0	0	0
	Amount	25	9	1	0	0

The results of the information system users' answers are then calculated using the formula I = Total Value / Highest Value x 100% so that the following values are obtained :

Total Value	$=$ (Total Voters x Likert Score)
	$=$ (25x5) + (9x4) + (1x3) + (0x2) + (0x1)
	$=$ 125 + 36 + 3 + 0 + 0
	$=$164
The Highest Score	$=$ (Highest Likert Score x Number Of Questions Number Tester)
	$=$ 5 x 7 x 5
	$=$ 175
The Final Result	$=$ (Total Nilai / Nilai Tertinggi / 100%)
	$=$ 164/175x100%
	$=$ 93.7%

Based on the calculation of the final results, the number is 93.7% where the meaning of this number can be seen in Table 9.

Table 9. Likert Scale

Code	Description	Evaluation
5	Strongly agree	80% - 100%
4	Agree	60% - 79.99%
3	Doubtful	40% - 59.99%
2	Disagree	20% - 39.99%

*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]

1	Don't agree	0% - 19.99%

The results of respondents' assessment of the web-based multi-developer housing marketing information system after conducting beta testing on users resulted in a Likert scale score of 93.7%, which means that the housing marketing system of Rumah Garut is according to user requirements.

Discussion and Results

After this research is carried out, a discussion of the results is needed to determine the suitability of the research carried out,

Based on the research results, a rational unified process can be implemented in a multi-developer housing marketing system, with admin features that can manage housing marketing, web configuration, and members, while members can access housing information for sale or buy and order housing.

Then, based on the results of the research, this research is in harmony with several previous studies, such as research conducted by Mincarti (Mincarti & Mulyono, 2019), and the rational unified process method can also produce websites whose goals are equally focused on the product marketing process. Furthermore, research by Pratama (Pratama & Purwidayanta, 2018), in accordance with this research, shows that websites can be made with a multi-developer marketing process. Then, according to further research by Aulia (Aulia & Suhendi, 2020), in addition to digital marketing information systems, the rational unified process method can also create a multi-developer marketing system. Then, in line with the research conducted by Asiyah (Asiyah et al., 2021) and Eduardus (Eduardus & Sitanggang, 2018), websites can implement a multi-developer marketing process.

Based on the research results, the system can manage orders by developers, and members or customers can access information and order or buy housing sold in the system, as evidenced by the results of black box testing and beta testing, which found that all system features run according to the scenario determined and produced a Likert scale figure of 93.7%, which means that the housing marketing system of Rumah Garut is according to user requirements.

DISCUSSIONS

The results of black box testing and beta testing found that all system features worked according to the specified scenario. Meanwhile, to find out whether the information system features are working well so as to form an information system in terms of processing property unit bookings quickly, a test is carried out on users using a Likert scale. The results of the Likert scale test yield a score of 93.7%, which indicates that the housing marketing system is built according to user needs; this condition is in line with previous research (Asiyah et al., 2021). While the basic differences in the results of the research conducted have added member features (Mincarti et al., 2020), conducted research, which has no member features. Then, the method used by previous researchers in system design used more of the waterfall method (Siska, 2018), (Nasution et al., n.d.), while in this study it used a Rational Unified Process (RUP) method that had not been carried out by previous researchers.

CONCLUSION

Based on the results of the research conducted, the development of a housing marketing information system at Rumah Garut with a rational unified process method produces a multi-developer housing marketing information system that can assist housing developers in managing and users in accessing information and ordering housing online. Meanwhile, based on the results of black box testing, it shows that the features developed are in accordance with the specified system functional scenarios, and testing the results of beta testing yields a score of 93.7%, which means that the housing marketing system of Rumah Garut is according to user requirements.

REFERENCES

Ahyar, H., Maret, U. S., Andriani, H., Sukmana, D. J., Mada, U. G., Hardani, S.Pd., M. S., Nur Hikmatul Auliya, G. C. B., Helmina Andriani, M. S., Fardani, R. A., Ustiawaty, J., Utami, E. F., Sukmana, D. J., & Istiqomah, R. R. (2020). *Buku Metode Penelitian Kualitatif & Kuantitatif* (Issue March).

Asiyah, M. N., Fadillah, H., Irfiani, E., & Dafa, M. (2021). Sistem Informasi Pemesanan Unit Properti Berbasis Web Pada PT. Haakon Inti Perkasa Depok. *Jurnal INSAN (Journal of Information System Management Innovation*, *1*(1). http://jurnal.bsi.ac.id/index.php/jinsan

Aulia, D., & Suhendi, H. (2020). *Sistem Informasi Digital Marketing Perumahan Bumi Elok Cikoneng Dengan Berbasis Web* (Vol. 1, Issue 1). https://eprosiding.ars.ac.id/index.php/pti

Darussalam, A. (2019). *Perbandingan Akurasi Metode Clustering Algoritma K-Means Dengan Algoritma K-Medoids Dalam Pengelompokan Data Mahasiswa Baru Untuk Strategi Promosi Program Studi Teknik Informatika Unisnu Jepara*. *3*, 1–9.

Eduardus, J., & Sitanggang, F. (2018). Perancangan Sistem Informasi Perumahan Di Kota Jambi Berbasis Web (Studi Kasus : Meranti Estate). *Jurnal Ilmiah Media Sisfo*, *12*(1), 1026–1035.

Hulu, Y., Simbolon, N., Venta, E., Tarigan, B., Bunawolo, M., & Turnip, M. (2020). Aplikasi Sistem Informasi

*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]

Manajemen Sekolah Terintegrasi dengan Pendekatan Rational Unified Process. *JIKOMSI Jurnal Ilmu Komputer Dan Sistem Informasi*, *3*(2), 11–17.

Mincarti, I., & Mulyono, H. (2019). Analisis Dan Perancangan Sistem Informasi Persediaan Produk Berbasis Web Pada Pt Ai. *Sistemasi*, *8*(1), 70.

Mincarti, I., Mulyono, H., Sistem Informasi, M., Dinamika Bangsa, S., & Jl Jend Sudirman Thehok-Jambi, J. (2020). *Analisis Dan Perancangan Sistem Informasi Pemasaran Perumahan Syariah Berbasis Web Pada PT. Lestari Berkah Abadi* (Vol. 5, Issue 4).

Nasution, N., Devega, M., & Saputri, R. (n.d.). Sistem Informasi Perumahan Pada PT. Mahkota Hutama Properti Berbasis Web. In *Jurnal Sistem Informasi* (Vol. 1, Issue 1).

Pratama, I. A., & Purwidayanta, S. (2018). Sistem Informasi Geografis Lokasi Perumahan Di Kabupaten Tasikmalaya Berbasis Web. *Jurnal Manajemen Dan Teknik Informatika*, *02*(01), 51–60.

Sallaby, A. F., & Kanedi, I. (2020). Perancangan Sistem Informasi Jadwal Dokter Menggunakan Framework Codeigniter. *Jurnal Media Infotama*, *16*(1), 48–53. https://doi.org/10.37676/jmi.v16i1.1121

Siregar, R. R., Nasution, K., & Haramaini, T. (2021). Aplikasi Ujian Online Untuk Siswa Sekolah Menengah Pertama Dengan Menggunakan Metode Rational Unified Process (RUP). *Jurnal Minfo Polgan*, *10*(1), 33–41. https://doi.org/10.33395/jmp.v10i1.10953

Siska, S. T. (2018). Sistem Informasi Pemasaran Perumahan Dan Pembayaran Konsumen Pada Cv Mandiri Utama Cabang Payakumbuh Menggunakan Visual Basic 6.0. *Rang Teknik Journal*, *I*(2). http://joernal.umsb.ac.id/index.php/RANGTEKNIKJOURNAL

Sukamto, & Shalahuddin, M. (2019). *Rekayasa Perangkat Lunak Terstruktur dan Berorientasi Objek*. Informatika.

Supriadi, F., & Hardian, R. (2019). Penereapan Metode Rational Unified Process Pada Perancangan Sistem PEngolah Data Arisankita. *Jurnal Infotekmesin*, *10*(02).

Sutedi, & Agarina, M. (2017). Implementasi Rational Unified Process Dalam Rancang Bangun Sistem Informasi Penjualan Hasil Bumi Berbasis Web Pada Cv. Aneka Mandiri Lestari Bandar Lampung. *Jurnal Sistem Informasi Dan Telematika*, *8*(2), 181–187.

Triandini, E., Jayanatha, S., Indrawan, A., Werla Putra, G., & Iswara, B. (2019). Systematic Literature Review Method for Identifying Platforms and Methods for Information System Development in Indonesia. *Indonesian Journal of Information Systems*, *1*(2), 63.

Wahyuni, N., Siddik, M., & Dalimunthe, R. A. (2020). *Pemasaran Perumahan Pt . Permata Indah*. *12*, 1–6.

*Corresponding author: Dede Kurniadi [dede.kurniadi@itg.ac.id]