

Construction of Website based Boarding House and Homestay Management System using the Spiral Model Method

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ABSTRACT

This research is based on the problem of how to manage data on residents and residents of homestay boarding houses who are nomadic and like to move around and provide information on boarding houses and homestays that suit user needs without having to worry that these boarding houses and homestays do not suit user needs and help service providers boarding houses and homestays in disseminating information on their boarding houses and homestays. This system uses the spiral method of an evolutionary software process model that assembles the iterative nature of the prototype by means of the control and systematic aspects of the linear sequential model. This model has the potential for the development of rapidly incremental versions of software that focus on functionality and usability. Users of this system include boarding and homestay managers, boarding and homestay residents, and local government. The system is designed to receive data input from residents related to administration. Furthermore, data verification is carried out by the local government so that he can monitor the updated population data. This study aims to implement a boarding and homestay management information system that utilizes Web mobile technology for ease of service. Based on system testing and training carried out, this system is feasible to develop and allows development for other regions.

General Terms

Management System, Website.

Keywords

Admin, User, Spectator, Boarding House and Homestay.

1. INTRODUCTION

Yogyakarta is a province in Indonesia that is known as a student city. According to Pegipegi[9]. Uncle, almost 20% of Yogyakarta residents are students, and there are around 137 universities in the area. Campuses in Yogyakarta are also equipped with facilities that support student activities, and many graduates from these campuses have been successful both at home and abroad. Therefore, many parents want their children to study in Yogyakarta. For students from outside Yogyakarta, where they live is an important factor in studying[3].

Yogyakarta is not only known as a student city but also as a cultural city. There are more than 515 cultural heritage buildings in 13 cultural heritage areas in Yogyakarta. In addition, Yogyakarta has 30 museums[2], including the Ullen Sentalu Museum and the Sonobudoyo Museum, which are expected to become international museums. According to Republika[10]. o. d., on May 29, 2018, Yogyakarta will be designated as an ASEAN cultural city for the next two years at the ASEAN Culture Ministerial Meeting. Because of the many historical sites in Yogyakarta, this city attracts local and

international tourists who want to explore the culture in this city and find a place to stay to rest.

Yogyakarta residents make it a place to stay for students and tourists on a limited budget. Monthly boarding houses for students and daily homestays for tourists are created to make it easier for them to study or travel. However, boarding house and homestay managers face difficulties in managing data because data is constantly coming in and out. Residents' data is very important for managers because they are responsible as guardians for students and hosts for tourists[1]. Resident data is also important for local governments to collect on local residents.

That's why the author wants to build a system that can make it easier for boarding house service providers to manage data on boarding house residents, both in terms of personal data and administrative data, and make it easier for local and regional governments to collect population data.

2. LITERATURE REVIEW

Several research results that have been carried out by previous researchers have the same field and theme as the research to be carried out.

According to Rachmawati, A. (2019), one of the problems that arises in looking for a boarding house for someone or a student is the difficulty in finding information about how empty a boarding house is. In this research, researchers have succeeded in creating a website-based application using the PHP programming language and the bootstrap framework to build the system. Researchers use the RAD (Rapid Application Development) system development method, which is an incremental software system development process model, especially for short processing times. The application that has been created by researchers can provide information about available boarding houses. However, in this application, there are still several shortcomings, such as the lack of boarding area or location features and no order notifications received by boarding house owners[5].

According to Budiman, A. et al. (2019), there are still people who have not utilised information technology to search for and book boarding houses. Usually, boarding house seekers have to ask friends or directly to boarding house owners to compare facilities and prices. Meanwhile, boarding house owners still use a promotion system by posting pamphlets or writing "accept boarding house" on the board. Therefore, researchers want to build a web-based boarding house search and order information system in Bandar Lampung City. Researchers use the PHP programming language to build website-based applications and MySQL to design databases. Apart from that, researchers use UML (Unified Modelling Language) to describe the system to be created. The research was tested with

aspects of functionality and usability, where the functionality results showed that all functions in the system ran correctly, while the usability results reached 88.36%. However, this system still has a drawback, namely the lack of a map feature[4].

According to Purwantara, A. K. (2019) conducted research to overcome the problems that occur in the city of Semarang, especially for new migrant students or students who want to move to boarding houses. New migrant students have difficulty finding boarding houses available in the city of Semarang, while students who have lived in Semarang for a long time have difficulty finding references for new boarding houses. Looking for boarding house references takes quite a lot of time and money; therefore, researchers built a system using web engineering development methods and the CodeIgniter framework using the Google Maps API. This research went through black box testing and MOS (mean opinion scores) testing stages. In MOS testing, researchers divide it into three areas: application performance testing, application ease testing, and application appearance testing. The test results showed that 83.1% of respondents agreed with system performance, 84.4% agreed with ease of application, and 76.3% agreed with the appearance of the application. In the title of this research, the researcher only researched around the campus and conducted a data survey in Susuk Village, Medan City. Researchers created this application because students who go on study tours or study far from home have to find temporary housing until their studies are completed. Confusion about the city area and a lack of friends were the main factors in creating this system. This research only provides information about boarding houses without any interaction and does not have a location plan for where you can go. If searchers want to visit a boarding house in the system, they must ask the owner of the boarding house via the telephone number listed in the system. This research was built using the PHP programming language and using MySQL to store the database[6].

According to Selviana, R., and Utari, L. D. (2019), this system aims to provide information about temporary residence for people in the Beji sub-district. With the available boarding house information, it is hoped that it will make it easier for boarding house seekers to find temporary housing that suits their needs. Apart from that, boarding house owners can also provide complete information regarding the condition of boarding rooms in this system. Researchers used the PHP programming language, MySql for the database, and Google Maps to show the locations of boarding houses available on the system. Some of the features available in this system include information about boarding rooms (name of boarding house, type of boarding house, boarding house facilities, boarding house rental fees, and location of the boarding house), boarding house reservations, and boarding house lists[7].

According to Baharuddin and Tisnawati, A. (2018), one type of promising investment is providing boarding houses at more affordable costs and rates that can be reached by all groups. However, many boarding house owners experience difficulties in promoting their boarding houses due to high costs and a lack of information about the existence of boarding houses. This makes it difficult for people to find boarding houses, especially for those who have just moved to the area. Therefore, researchers want to create a system that can be used as a forum for promoting boarding houses that can be accessed by everyone. This system uses the PHP and MySQL programming languages as database storage media. Researchers also provide information on the location of boarding houses by using

Google Maps, so that boarding house seekers can immediately find the boarding house they want[8].

3. RESEARCH METHOD

The author uses the spiral model method to develop this system. The spiral model is an evolutionary software process model that combines the iterative nature of prototyping with the control and systematic elements of a linear sequential model[11]. Software is developed in a series of increments in a spiral fashion, which allows the development of incremental versions of the software quickly. Incremental releases can be models or paper prototypes during early iterations. During subsequent iterations, more complete versions of the engineering system are gradually created, as shown in the following figure.

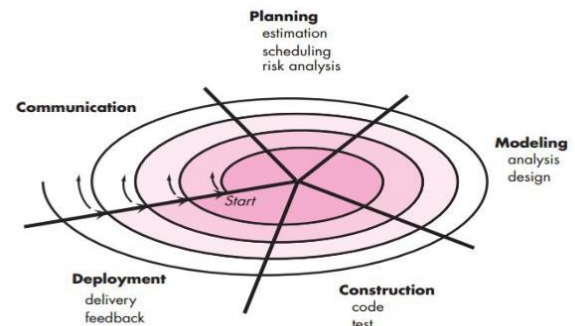


Figure 1: Spiral Model Illustration

1. Communication
Activities needed to build effective communication between developers and users, especially regarding user needs.
2. Planning
This planning activity is needed to determine resources, estimated work time, risk analysis, and other information needed for software development.
3. Modelling
This modelling activity is carried out to analyse the design that will be created.
4. Construction
Activities required to develop software include coding, testing, installation, and providing user support, such as training on software use and documentation such as software usage manuals.
5. Deployment
Activities are required to obtain responses from users based on their evaluations during software representation in the construction phase.

3.1 Data Collection Procedure

Research data is factual information used as a basis for study or analysis in research. Research data can be in the form of numerical statistics or quantitative data, or in other forms that are classified as qualitative data. Data collection in this research is explained in more detail below.

3.1.1 Interview

Interviews are conducted periodically with boarding house managers in the Ngemplak Nganti hamlet, Mlati Krajan, Sendangadi Village, Mlati District, Sleman Regency, and Yogyakarta Special Region Province to find out what problems they experience in managing data on boarding house residents and to find out users' opinions about the effectiveness of the management. boarding house towards the design of website-based boarding and homestay management information system features. Ngemplak Nganti Hamlet was chosen because this

area has good prospects for the boarding house business because it is quite close to Yogyakarta University of Technology campus area 1 and is quite popular with students because it is close to the main road, so it is easy to access and has friendly people.

3.1.2 Literature Study

Literature study is one way of collecting data through literature such as journals or official documentation on the relevant website. In this research, the literature study carried out by the author used several journals and dozens of websites as references for developing website-based boarding and homestay management information.

3.2 System Design Logic

The design of the boarding house and homestay system is planned using a website-based system implementation. The system has features that support the room reservation process and track information easily and efficiently. Apart from that, the system can input data and produce output according to user needs. Therefore, the design of this new system was further developed into a web-based system, especially for room reservation services. Especially in menu ordering services.

3.2.1 Class Diagram

A class diagram is a part of UML that describes the attributes and properties of a system as well as showing methods or functions for manipulating these attributes and properties. Apart from that, class diagrams describe the structure of classes, packages, and objects and their relationships with each other, as explained in the following figure.

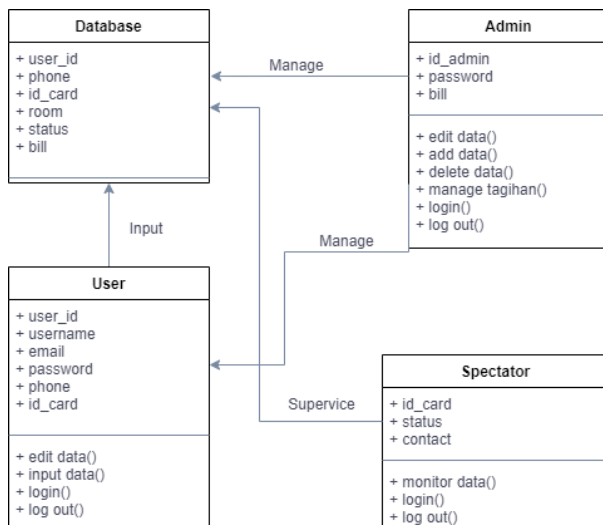


Figure 2: Class Diagram

3.2.2 Entity Relationship Diagram (ERD)

An Entity Relationship Diagram (ERD) is a visual representation of different entities within a system and how they relate to each other. It is a tool used to design and model relational databases, showing the logical structure of the database, as explained in the following figure.

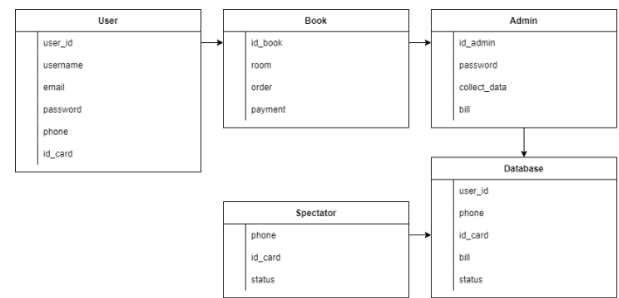


Figure 3: Entity Relationship Diagram

4. RESULT AND DISCUSSION

4.1 Communication

From interviews conducted by the author with several users, business actors in the boarding house and homestay sectors, as well as local governments, several problem points have been concluded, which are compiled in the following pain points[12]:.

Table 1. Pain Point

Number	Pain Point
1	Resident data is not recorded properly
2	Bill payments that are not on time
3	Bill that comes out is not appropriate
4	Residents who disappeared without paying the rent
5	A disaster occurs and the management doesn't know who to contact

4.2 Planning

From several pain points, a problem formulation is formulated which is arranged in a how might we table[12].

Table 2. How Might We

Number	How Might We
1	The system can record citizen data in a structured and updated manner
2	The system can record and send payment bills appropriately and on time
3	Residents' personal data is stored properly and can be used when needed

4.3 Modeling

From the problems that have been summarised in the pain point table and the problem formulation in the How Might table, the author begins to develop a system design model according to the results of observations and literature studies. The system will work in a structured and updated manner, storing and managing resident data that can be monitored by the government within predetermined limits. The system will record resident payment bills, which are monitored directly by management.

4.4 Construction

From the problems that have been summarised in the pain point table, the problem formulation in the How Might We table, and the model that has been prepared, the author begins to design a website-based application system based on the results of

observations and literature studies. The application design plan can be seen in the following figure:.

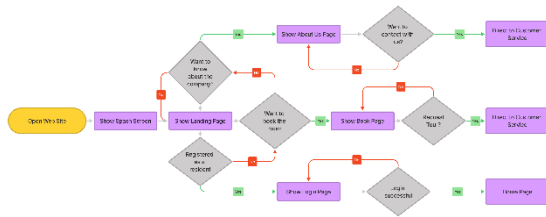


Figure 4: Construction of Application System Design

4.5 Deployment

4.5.1 Splash Screen

A splash screen is a graphical introduction or loading screen that appears briefly when a software application or a website is launched. It typically displays the logo, branding elements, or a brief message related to the application or website. Splash screens serve as an initial visual representation of the application or website, providing users with a preview while the main content loads in the background.



Figure 5: Splash Screen

4.5.2 Landing Page

A landing page is a standalone web page that serves as the entry point for visitors to a website or a specific marketing campaign. It is designed to prompt visitors to take a specific action, such as making a booking, logging in as a user, contacting customer service or checking up our articles.

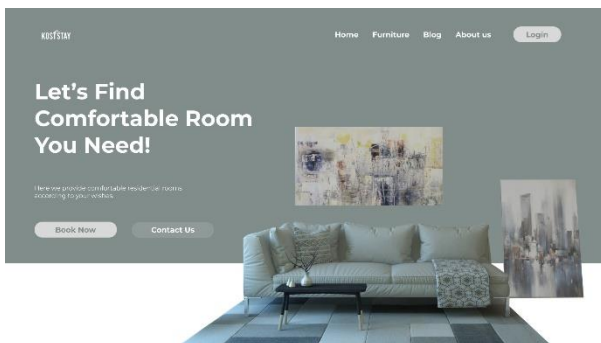


Figure 6: Landing Page

On the landing page, there are several buttons, consisting of a primary button and a secondary button. The primary button marked by the backshape consists of the Book Now, Contact Us, and Login buttons, while the secondary buttons consist of the home, furniture, blog, and About Us buttons. If the Contact

Us button is pressed, it will direct you directly to the WhatsApp platform, which is connected directly to the admin contact.

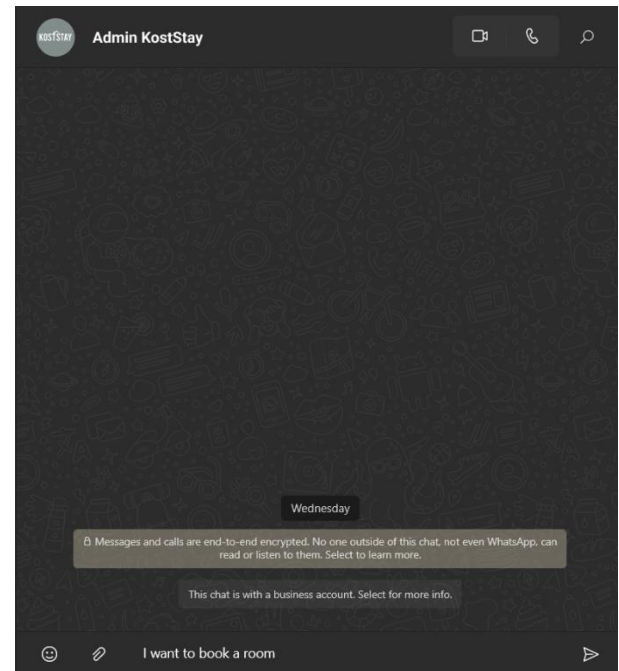


Figure 7: Contact us Direction

4.5.3 Booking Page

A booking page on a website is a special section where users can make reservations, appointments, or bookings for services offered by the website owner. It serves as a user-friendly interface for visitors to select a date, time, preferences, and other relevant details to complete their booking. If the Book Now button on the landing page is pressed, it will redirect to the booking page provided to users to make room reservations.

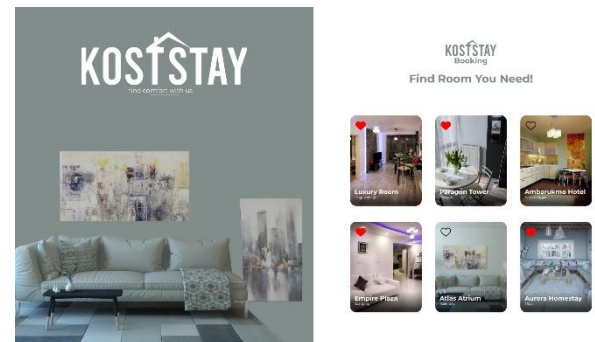


Figure 8: Booking page

4.5.4 Login Page

A login page is a crucial component of a website or application that allows users to access restricted areas or personalised content by entering their credentials. It serves as a gateway for users to authenticate their identity before gaining access to protected resources. If the Login button on the landing page is pressed, it will redirect to the Login page provided for users to log in.

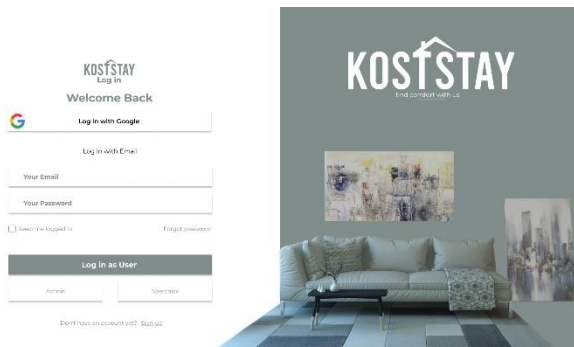


Figure 9: Login Page

5. CONCLUSION

Based on the system design that has been created, it can be concluded that from the prototype design of the Website-Based Boarding House and Homestay Management Information System, it can display a landing page, contact us, Booking page and login page. Users have access rights to log in, check bills, input data and edit data, Admin has access rights to manage data and bills and Spectator has user data access rights with certain limitations. It is hoped that this system can continue to be developed and updated with the latest technology and additional features are needed that can help and improve the appearance to become more modern and simpler based on design trends and developments of the times.

6. REFERENCES

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