DEVELOPMENT OF ROOM-BOOKING VIRTUAL 3D APPLICATIONS AS A PROMOTIONAL MEDIA OF HOTEL PATRA JASA CITY OF BANDUNG

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ABSTRACT

PT Patra Jasa is a company engaged in the field of property and hotel located at JL. IR. h. Juanda N 0.132. One of the most important thing is to continue to increase the value of the company is to improve the process of promotions, media promotions that are used still in the form of print media such as brochures, media is not showing the interior of the room, making sales requires a lot of time to explain. In addition Sales still do manual recording when there is a prospective customer who wants to book a room and led to delays in reporting on reservations to the front office. Therefore to help sales in doing promotion can use 3D Virtual media and doing the recording reservation room-booking. The approach used is the method of Object Oriented Programming (OOP), design and analysis tools include, BPMN, xampp, usecase, activity diagrams, class diagrams, and sequence diagrams. Testing methods used namely testing blackbox, test and interview. Based on the results of research, the existence of the application of 3D virtual room-it can make booking sales promotion unit in the conduct of a hotel room. Moreover, it can facilitate sales in doing the recording room booking.

Keywords: Hotel, Media promotions, Virtual 3D, booking, sales.

1. INTRODUCTION

Hospitality businesses in Indonesia very much, almost all provinces in the country have had the hotel and the hotel can thrive anywhere, both in big cities and small. The hotel has now developed into a reliable industry, being one of the main cantilever in the development of tourism in the country. A very promising prospect of the hotel business very attracting companies and organizations not to miss the hospitality business in the ' join Indonesia.

Based on the results of the interview with Mr. Ozi as the Patra Jasa Hotel Sales Manager stated that competition among one another, the promotion is one of the important factors to achieve the target that the company already specified. One of the most important thing is to continue to increase the value of the company is to improve the process of promotion, but the process of promotion is done by the Patra Jasa Hotel sales proved not optimal, because during this time when sales do promotion 4 times in a month to various companies, Governments, academia and the general public, media promotions that are used still in the form of print media such as brochures, sms blazz, radio broadcasts and websites the promotion, the media can not display the interior rooms and hotel facilities in detail, so that sales requires a lot of time to explain the specifications of the room with detail and can reduce the interest of prospective customer renting hotel. In addition parts Sales still do manual recording when there is a prospective customer who wants to book a room during the process of the promotion of progress and lead to the occurrence of the delay in reporting the room that had been rented to the front office.

Based on the above, the sales manager wanted a Virtual Application 3Dimensi Hotel to complement the media promotion with the logging feature added room booking (booking) with the expectation of application of 3D Virtual room-booking hotels can increase the efficiency of future promotions and can provide information that is fast, prompt, efficient and effective information about the unit and room reservations. Then on the final assignment this author will build an application: "development **APPLICATION of 3D VIRTUAL ROOM-BOOKING AS MEDIA PROMOTION PATRA JASA HOTEL BANDUNG".**

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1.1 Hotel

The hotel is a form of the building, the symbol of, the company or the business entity that provides accommodation services accommodation, food and beverage provider as well as other services, intended for the public, as well as manage commercially[1].

1.2 Promotion

Media promotion is a means of communicating a product or service or a brand or company and others in order to be known to the wider community. The earliest media promotion is word of mouth, this medium is very effective, but less efficient due to the speed of delivery is measured and predicted it could be less[2].

1.3 Virtual Reality

Virtual Reality (VR) or virtual reality is a technology that allows a user can interact with an environment that simulated by the computer (computer-simulated environment), an environment that actually copied or really an environment that exists only in imagination (Sihite, 2013). The concept of VR refers to a system of principles, methods and techniques used to design and create software products for use by the help of some computer system multimedia system with a special device [3]

Virtual reality systems can be divided into several, namely:

1. Immersive VR;
2. Simulasi VR;
3. Teleplesence VR;
4. Augmented Reality VR;
5. Desktop VR

1.4 Luther Sutopo Method

Multimedia development conducted based on 6 stages, namely, concept, design, collecting material, assembly, testing, and distribution. The sixth stage does not have to be sequential in practice. Each stage can mutually exchange position, though once the stage of concept indeed should be the first thing done. Here is a picture of luther sutopo method [4].

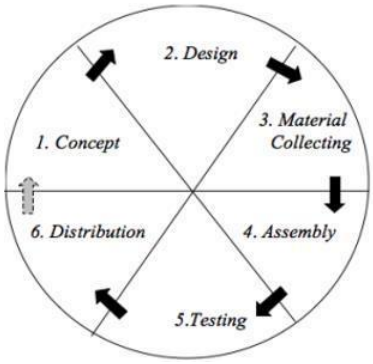


Image 1. Development of multimedia Luther-Sutopo

Penjelasan dari setiap tahapannya adalah sebagai berikut :

a. Concept

The stage concept i.e. determining objectives, including identification of audiences, the kinds of applications (presentations, interactive, and others), the purpose of the application (information, entertainment, training, etc.) and general specifications. Basic rules for the design are also determined at this stage as the size of the application, the target, and others [4].

b. Design

Stage design is to create specifications in detail about the architecture project, style, and material needs for the project. The specifications made quite detailed so that at a later stage, i.e. collecting materials and assembly of the new decision is not required, but using what is already determined at the stage of design [4].

c. Material Collecting

Material Collection can be done in parallel with the stages of assembly. At this stage done gathering ingredients such as clipart Images, animations, audio, here the making of Images, photographs, graphics, audio and other things needed for the next phase [4].

d. Assembly

The assembly stage is a stage where the whole multimedia object is created. The manufacturer of the application based on the storyboards, the flowchart view, the navigation structure, or the diagram object that derives from the stage of design [4].

e. Testing

This stage of testing is done after finishing the stage of manufacture and all data have been entered. First of all carried out testing modular to ensure whether the results as desired [4].

f. Distribution

When a multimedia application will be used with different machines, use of the doubling of floppy disk, CD-ROM, or the distribution network is indispensable. This stage is also the stage where the evaluation of a multimedia product is done. Done with the evaluation, will be developed better system later [4].

1.5 XAMPP

XAMPP installation package is one of the Apache, PHP and MySQL at the instant that we can use to help process the third installation of the product. In addition to the installation package instant XAMPP version 1.6.4 also gives the choice of facilities use PHP4 or PHP5. To switch the version of PHP you want to use is also very easy to do by using the PHP help switches that have been included by XAMPP, XAMPP and most importantly are free or free to be used. The length of XAMPP that is Apache, MySQL, PHP and php MyAdmin. XAMPP is a tool that provides a software package into a single package. By installing XAMPP then no longer need to install and configure Apache web server, PHP and MySQL manually. XAMPP will install and configure it automatically for you or the auto configuration.[5]

1.6 MYSQL

MySQL is an implementation of a relational database management system (RDBMS) that is distributed for free under the GPL (General Public License). Any user can freely use MySQL, but with the limitation that software should not be used as a non-commercial derivative products. MySQL is actually a derivative of one of the main concepts in existing database; SQL (Structured Query Language). SQL is a concept of the operation of a

database, especially for election or selection and data entry, which allows the operation of the data is done automatically with ease. [6]

1.7 UNITY 3D ENGINE

Game Engines such as Unity is a driving force behind the game-the game (games) we know and gemari. Unity is one of the development tools that are widely used and popular choice for game development and is used by everyone from hobbyists to large studios to develop the game-the game (games) as well as providing an interactive experience in web, desktop, mobile, and console. Unity Game Engine is the software used to create video games based in two or three dimensions and can be used free of charge, in addition to creating games, Unity 3D can also be used to create interactive content such as, visual architecture and real-time 3D animation, as well as Unity 3D game engine can also be used as an editor for an existing game. Unity 3D is created by using the perogram C++ language, but users do not need to use the C++ language is difficult, because the Unity 3D supports other programs such as JavaScript, C #, and Boo, Unity has similarities to other game engine, Blender game engine, tools, gamestudio, adapaun excess of Unity 3D, Unity can be operated on Windows and Mac Os platforms and can produce games for Windows , Mac, Linux, Wii, iPad, iPhone, google Android and also browser. For the browser, we need a plugin, namely the Unity Web Player, as with Flash Player in the Browser. Unity 3D gaming also support in making games for the Xbox 360 gaming console and PlayStation. [7]

1.8 GOOGLE SKETCHUP

SketchUp is an application of CAD that allows you to design 3D objects more quickly and easily. Any Sketchup applications are frequently used in the world of work, especially in the sectors of architecture and graphic design.[8]

2. CONTENT OF RESEARCH

2.1 Problem Analysis

From the stage of the analysis of a problem is the first step of the identification process and evaluation regarding the application system is being built. This step aims to find out what are the problems that occur in the system that is running. The following is an elaboration of the existing problems are as follows.

1. promotional media still uses the 2D shape.
2. Still do manual recording when things are going to be booking rooms

2.2 Anaysis of the running procedure

Analysis of the procedure on the system that runs aim to know more clearly how to work the system, As for the promotion procedure carried out Sales patra jasa hotel Bandung is currently:

1. Manager Sales provide a list and explain the time constraints to the promotion of Sales.
2. Sales received the list and noting the time constraints that already given by the Sales manager.
3. Sales contact the prospective customer to request the permit presentation of patra jasa hotel bandung.
4. the Customer receives the application for the permit.
5. If a party to a prospective customer management permits, then Sales patra jasa will do promotion in place already agreed.
6. If the management does not allow a prospective customer, then Sales will contact prospective target customer to another.

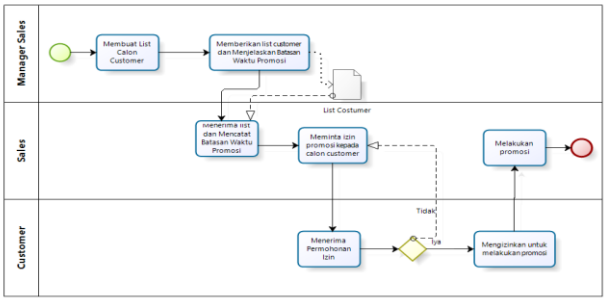


Image 2. BMPN Prosedur Promosi

As for the patra jasa hotel reservation procedures of bandung city conducted by Sales currently are :

1. Sales explains to prospective customer about the room and hotel facilities exist at patra jasa.
2. Prospective customer choose the rooms and hotel facilities.
3. If a prospective customer interested in renting the room and hotel facilities, then the prospective customer should do the booking on rooms and facilities will be rented according to the desired date through Sales that do promotions. If not interested then Sales will explain back to prospective customer to another.
4. Sales contact the Front Office of the Hotel room and asks for a date already booked by the prospective customer.
5. The Front Office will do some checking.
6. If the room is available on the dates already booked, then the Sales create and submit evidence in the form of receipts to the prospective customer who will fill hotel rooms. When rooms are booked is not available, then the prospective consumers looking for rooms and dates still available at patra jasa hotel Bandung.

7. the Customer receives a receipt.

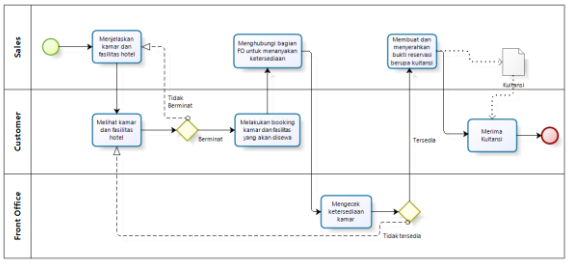


Image 3. BMPN Hotel reservation Procedures

2.3 System Architecture

1. Overall system architecture

The following is from the overall system architecture:

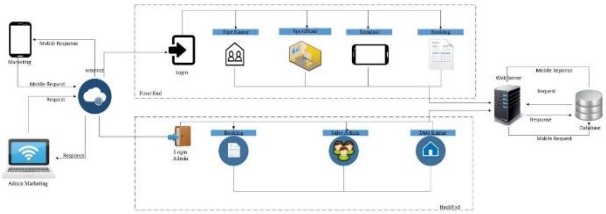


Image 4. Overall System architecture will be built

2. Backend System Architecture

Here is the architecture of the system from the Backend:

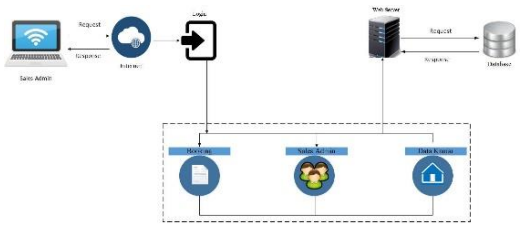


Image 5. Backend system architecture

3. Frontend System Architecture

Here is the system architecture of the Frontend:

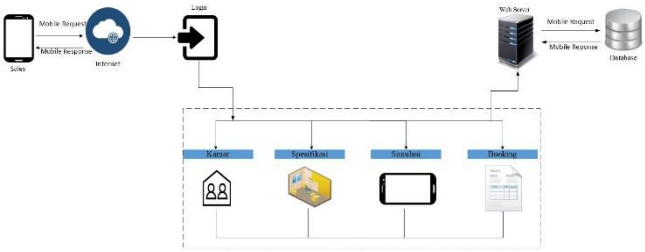


Image 6. Frontend system architecture

3.1 Virtual 3D Analysis

Virtual 3D analysis is necessary to provide ease in doing the submission of specifications to make it more interesting and the hotel can provide information appropriately. The application that will be created is filled with some of the elements, among others:

Table 1. 3d Virtual Components used

No	Picture Element	Name Elemen	Function
1		RTS Camera	to be able to see the object in the specification of the rooms to look more dynamic and informative in conveying the information room specifications
2		Input rotation	to perform the rotation of the object and the rotation of the view from a camera
3		Zoom in + Zoom Out	to approach and avoid objects from a screen.
4		Virtual Joystick	to move the object so that it can perform virtual

3.1.1. RTS Camera

The function of the RTS camera in unity3d tools is to see the object horizontally, so they can see room specifications more clearly, to see objects around the virtual area of the hotel with view 45º and 90º.

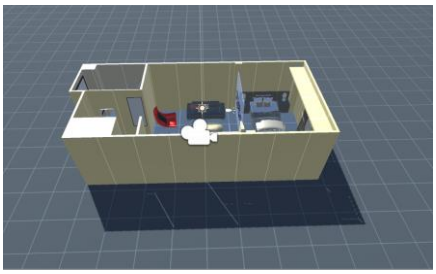


Image 7. RTS Camera

And here is the placement of the transformation of the RTS camera needed to be able to see the view from the hotel room with a position object Y

emphasis is 6.75 and Y, Z Rotation 0 with emphasis is the slope of the point X 90.0.



Image 8. Transformasi RTS Camera

In RTS camera position and rotation is set up it can be ascertained that the RTS camera can perform its role as the Camera that can make the shift, rotation and Zoom in and zoom out.

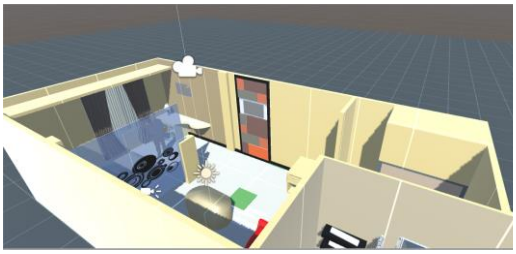


Image 9. implementation of RTS Camera

3.1.2. Input Rotation

Rotation function to perform the rotation of the object or the camera with a different point of view using two fingers on the screen smartphone

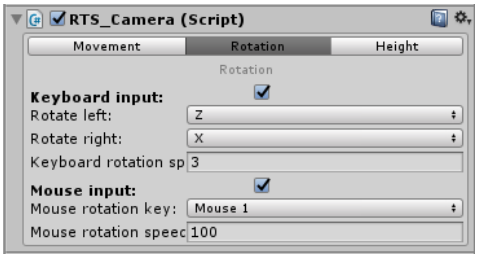


Image 10. Setting Input rotation

3.1.3. Zoom in Zoom Out

The function of Zoom in and Zoom out is to approach and avoid objects or can is said to zoom in and out of the picture.

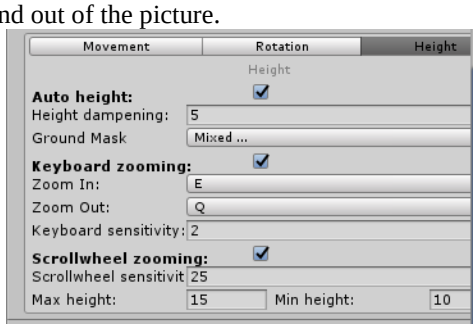


Image 11. Setting Zoom in dan Zoom Out

3.1.4. Virtual Joystick

Virtual Joystick is a button that can move the Character in an object in any direction which features buttons that would regulate the motion of an object in the application.



Image 12. Image Joystick LOOK



Image 13. Image Joystick GO

Figure12 and 13 explain settings to Virtual Joystick can move in accordance with an existing button in display applications.

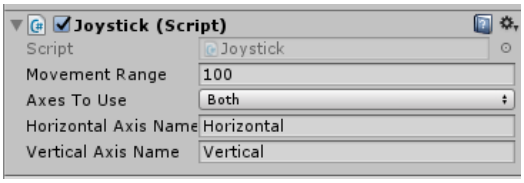


Image 14, setting Joystick move

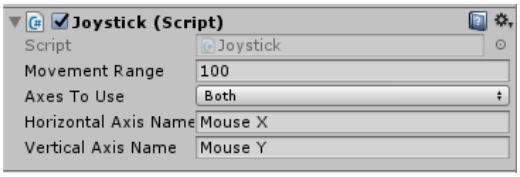


Image 15. setting Joystick look

Cara Kerja Virtual Joystick :

Virtual Joystick is supporting devices for moving characters. The movement of the cursor is controlled by movement of the lever or by pressure on the lever. Left lever for moving the object, and the right lever for moving the camera in character to be able to see the view in 360o



Image 16.implementation of Joystick on the program

2.4 Use Case

Use case diagrams are used to describe a number of external actor with a use case that is contained in the system. Use case diagram this is only describing the State of the system environment which can be seen from the outside by the actor. Use case consists of three parts, namely the definition of actor, definition, and use case use case scenario. Use case contained in the development of this application can be seen in the following Image:

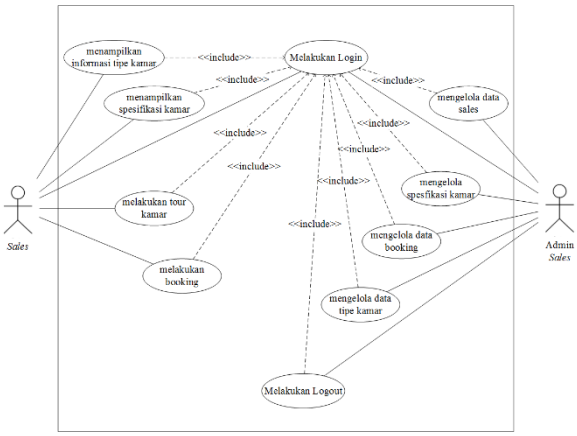


Image 17. Use Case Diagram

2.5 Use Case Senario

Use Case Scenario describes the sequence of steps in the business process that is conducted both actors in the system as well as conducted by the system against the actor. The writing of the Use Case Scenario is referring to the references from the book RPL works Kim Hamilton, Russell Miles.

2.5.1 Login Scenario

The following is a table of the Use Case Scenario Login on the system that is being built, the following table describes the actions of use case Login

Table 2. Requirement A.1

Requirement A.1
The data entered by User Login consists of a Username, password.

Table 3. Use Case Scenario Login

Use Case Name	Login	
Related Requirements	Requirement A.1	
Goal Context	Sales managed to enter in sisem	
Preconditions	-	
Successful End Condition	Featuring an early appearance (home).	
Failed End Condition	Showing error message Login	
Primary Actor	Sales and admin Sales	
Trigger	Sales push of the button Login	
Included Case	-	
Main Flow	Step	Action
	1.	Open the application
	2.	The system displays the Login form
	3.	Sales fill the Login form
	4.	press the button Sales Login
	5.	Verify that the system has been in the inputkan Sales of fom already provided
	6.	The system displays the main menu
Extension	Step	Branching Action
	4.1	error message the Username and Password are not registered

2.6 Diagram Activity

The following is an overview of the use case scenario Login described in an activity diagram Login.

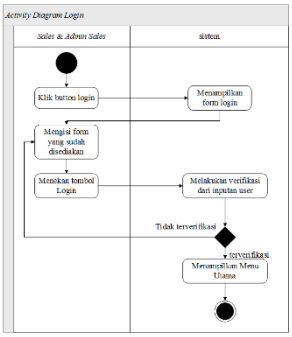


Image 18. Activity Diagram Login

2.7 Class Diagram

The class diagram is a diagram that is used to display some of the classes that exist in the application to be built. Class diagram gives an overview of the application and the relationships that

exist. As for the class diagram in this application are as follows below.

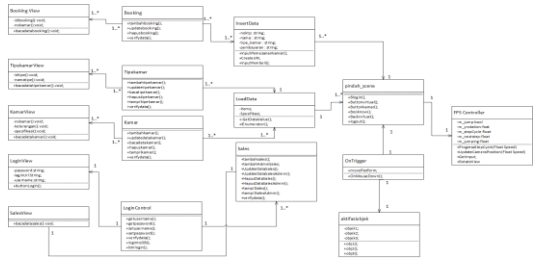


Image 19. Class Diagram

2.8 Sequence Diagram

Sequence diagrams are used to describe the behavior of a scenario. This diagram shows a number of examples of objects in the message (message) which is placed between the objects in the use case.

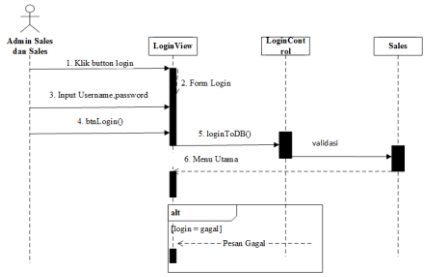


Image 20. Sequence Diagram Login

2.9 Menu Structure Design

The structure of the application menu on the virtual 3D room-booking as media promotion of the patra jasa hotel bandung has 2 main menu i.e. main menu main menu Sales and admin. Here is the structure of the main menu sales and admin sales.

Gambat 21 Menu structure sales

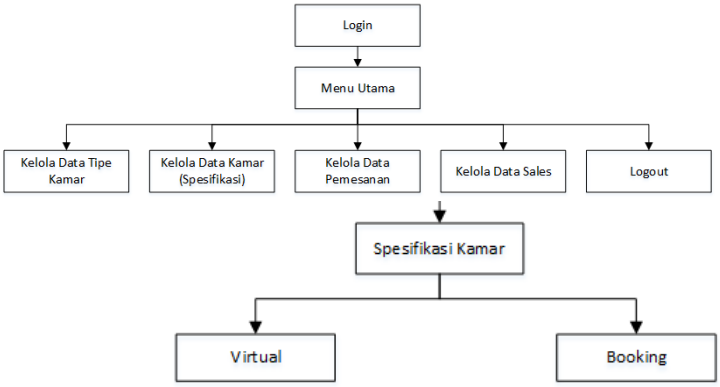


Image 22 Admin Sales design menu

2.10 Implementation of the system

The following is the implementation of device development:

2.10.1 Implementation of the Software

Table 4. Implementation of the software

Developer	Spesifikasi
Admin Sales	Sistem Operasi (Miscrosoft Windows)
	Web Browser (Google Chrome,Mozilla,Internet Explore)
	Unity
Sales	Sistem Operasi (Android Jelly Bean)

2.10.2 Hardware Implementation

Table 5. Hardware Implementation

Developer	Specifications
Admin Sales	Operating System (Miscrosoft Windows)
	Web Browser (Google Chrome,Mozilla,Internet Explore)
	Unity
Sales	Operating System (Android Jelly Bean)

2.11Black Box Testing Plan

Here is the black box testing plan in accordance with the frontend and backend.

2.11.1 Black Box Testing Plan Frontend

Table 6. Black Box Testing Plan Frontend

No	functional Testing	Type Testing	Plan Tested
1	Login	Enter your username and password	Black Box
		Choose the "Login" button	Black Box
2	display the information room	Approached the reception desk	Black Box
		Pressing the button "view"	Black Box
3	display the specifications of the room	Enter 2 fingers in your object	Black Box
		Select the button "booking"	Black Box
		Select the "virtual"	Black Box
		Select the "3D"	Black Box
		Choose the "floorplan"	Black Box
		Display information specifications	Black Box

No	functional Testing	Type Testing	Plan Tested
		Click on the photo	Black Box
4	Do the virtual tour rooms	Approaching object	Black Box
		Press the button rotation	Black Box
		Pressing the forward	Black Box
		Pressing the back button	Black Box
5	Do booking booking	Enter booking data	Black Box
		Pressing the button "Save"	Black Box

2.11.2 Black Box Testing Plan Backend

Table 7. Black Box Testing Plan Backend

No	functional Testing	Type Testing	Plan Tested
6	Managing the sales data	Pressing data sales buttong	Black Box
		Add sales data	Black Box
		Change the sales data	Black Box
		Remove the data sales	Black Box
		Save data sales	Black Box
7	Manage room specifications	Press the room spesifications data button	Black Box
		Add a data room specifications	Black Box
		Change room specs	Black Box
		Delete data room specifications	Black Box
8	Manage the booking data	pressing the booking data	Black Box
		Change your booking	Black Box
		Remove any booking	Black Box
9	manage data room type	pressing the room type button.	Black Box
		Add the room data	Black Box
		Change the data type of the room	Black Box
		Remove any room type	Black Box
10	do a logout	Pressing button "logout"	Black Box

2.12 Conslusion of alpha testing

Based on the results of testing a black box has done with cases that have been tested, then it can be inferred that in the application of the virtual 3d room-booking as media promotion of patra jasa hotel bandung can be run well and there are no errors on the existing functional process i.e. login, display information room, display room specifications, conduct virtual, booking, manage data sales room specifications, administer, manage booking data, manage the data room and do logout running in accordance with the desired

2.13 Interview Result

Following are the results of the interview that has been inferred from 5 persons sales and 1 person admin sales.

Goal 1: Assist Sales in doing promotion to potential customer using 3D Virtual media

1. According to you, is to apply existing hotel object can represent an existing hotel units at patra jasa?

   Answer:

   According to the sales object hotels made already in accordance with the floor plan that is in the hotel.
2. Using virtual 3D features, this application becomes more interesting?

   Answer:

   According to sales using the 3d features can make the process of promotion is becoming more beautiful, interesting and detail.
3. Is the photo room, can ease the process of promotion?

   Answer:

   According to sales is very easy, because it earns with the photo shows the atmosphere of the room through the Image.
4. According to you, does this app provides the hotel with good specifications?

   Answer:

   According to sales good enough specification provided, because it can help sales when conveying information room specifications.

Goal 2:

Assist Sales in doing the recording reservation when booking room-promotion lasts.

5. According to you, are the components required in the reservation form reservation is in compliance with the existing system?

   Answer:

According to sales, reservation form components has been very fit with a frequently used form the hotel.

6. Do you think, does the reservation process that is in the application's been good?

   Answer:

   According to sales, reservation process is already good.

7. According to you, whether the reservation feature in the application can help activities reservation?

   Answer:

   According to sales, with the reservation feature is very helpful when things are going to book a room, because of the existence of this feature can condense the time and without the need to restart into the paper noted

8. What are the features available on the backend application is in compliance to manage promotions and activities reservation?

   Answer:

   According to sales, existing features on admin sales already match what is required when managing promotional activities and reservation

9. According to you, what is the frontend application promotion of the hotel is worth to use?

   Answer:

   According to sales, fronted hotel promotion is enough worth to do promotions, because of the existence of this application can make it easier when explained to prospective consumers.

10. According to you, whether the application backend to manage promotional activities have been worthy to use?

    Answer:

    According to sales, application backend to manage all promotional activities already worth

2.14 Conclusion of the result interview

From the results of the interviews have been conducted with a live interview on the users i.e. 4 people and 1 sales person sales admin then it can be inferred:

Goal 1: get answers about promotion to potential customer using 3D Virtual media. The conclusion is this application is quite helpful in doing promotion, especially there is a 3d feature can make the process of promotion is becoming more beautiful, interesting and detailed, in addition the application not to forget the previous promotion process that is able to exhibit photos.

Goal 2: get answers in doing the recording reservation when booking room-promotion lasts. The conclusion is by having the reservation feature is very helpful when things are going to book a room, besides the reservation form components has been very fit with a frequently used form the hotel.

Based on answers from interviews with sales and admin sales against the questions asked, then it can be drawn the conclusion that the systems that are built can help the pro1.1 1cess of promotion and booking.

4. CLOSING

4.1 Conclusion

Based on the results of the research, analysis, design and implementation and testing of the system, then the obtained conclusions against the application "application development Virtual 3D Room-Booking as Media promotion of the Patra Jasa Hotel Bandung city" is as follows:

1. Application Media promotion patra jasa hotel can provide information that is informative and interesting.
2. Application Media promotion patra jasa hotel can perform the recording of transactions to help the patra jasa hotel sales..

B. Suggestions

Patra Jasa hotel promotions application with 3D virtual technology is still a lot of shortcomings. Therefore it needs to be done to further development and refinement. Based on the conclusions above, then the advice that can be expressed in the future in order to be an improvement and considerations are as follows:

1. Using the camera object to give 3600 which looks more photorealistic.
2. Call/Display object from the database so that the hotel is more dynamic.

So the author can give suggestions, hopefully these suggestions can be used as input material that can be useful for authors in particular and for developers in General.

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