SUPERVISOR'S DECLARATION

"I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of the Degree in Computer Science (Graphic and Multimedia Technology)"

Signature   : ....

Supervisor   : Abbas Saliimi Bin Lokman

Position   :

Date   : ....

STUDENT'S DECLARATION

I declare that this thesis entitled "3D Bedroom Decoration" is the result of my own research except as cited in the references. The report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature   : ....

Name   : Nurazma Bt Ariffin

ID Number   :

Date   : ....

DEDICATION

In the Name of Allah, the Most Beneficent, the Most Merciful
To My Beloved Father and Mother:
Ariffin Bin Daud
Napisah Binti Jaafar
…Your Love and Sacrifice Will Be Always In My Mind…

To My Beloved Family Members:
Aris, Amran, Azman,Azuhar,
Asmawi, Alias, Hasliza.
May Allah Bless You All…

To My Supervisor And My Acedemic Advisor:
Abbas Saliimi Bin Lokman
…Thank A Lot for Support, Encouragement and Guidance…

To All My Friends and My Roomate:
Especially Nurul Mahaya, Nurul Ain, Nurafidah, Nur Bashirah, Siti Sarah
…Thank You So Such for Your Supporting Teaching and Sharing Knowledge.

Sincerely
Nurazma Binti Ariffin

ACKNOWLEDGEMENT

ABSTRACT

Bedroom is important to everyone where people usually sleep for the night or relax during the day. About one third our live are spent sleeping and most of the time we are sleep, we are sleeping in a bedroom. So, environment in the bedroom will affect people become more relax. This system uses the 3D model to make so that it becomes more interesting to use it. The objectives to develop the applications are: (1) To develop a prototype of bedroom decoration that allows user to decorate their room.(2) To apply 3D modelling technique to the system This system also have made the users task become easier and faster than before. They can view the 3D model in this system. Besides that, this system also provides a great 3D perspective of the bedroom decoration. It makes it possible to create 3D graphic.

ABSTRAK

Bilik tidur sangat penting kepada semua orang dimana mereka biasanya tidur pada waktu malam dan berehat pada waktu siang. Lebih kuarng satu per tiga kehidupan seharian kita luangkan masa untuk tidur. Sistem ini menggunakan 3D model dan ini membuatkan ianya lebih menarik untuk digunakan. Objektif untuk membuat sistem ini adalah: (1) Untuk membagunkan satu prototaip untuk pengguna menghias bilik tidur. (2) Untuk menggunakkan teknik pemodelan 3D. Mereka boleh melihat model 3D didalam ssistem ini dengan lancar. Selain it, aplikasi ini juga memberikan perspektif yang hebat 3D hiasa bilik tidur. Ini tidak mustahil untuk menbuat grafik 3D yang boleh di kemas kini dalam masa yang cepat dalam browser.

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3D   - Three Dimension

SDLC   - Software Development Life Cycle

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

3D (three dimensional) space is a geometric three parameters model of the physical universe (without considering time) in which we live. These three dimensions are commonly called length, width, and depth (or height), although any three directions can be chosen, provided that they do not lie in the same plane [1]. 3D is better than 2D because 2D only have two dimension and if we turn to the side it become a line. Different from 3D because 3D has the third axis that is z axis so, it allows for rotation. Therefore, when we use the 3D to build the virtual home it looks more lifelike model.

3D bedroom decoration is the system that can be use to decorate the bedroom follow the user wants. It's also allows the user imagination to run and very useful interior design, it is also a lot of fun, allowing user to mix and match furniture with ease. This system we use the 3D model and will be rendering in this website so for the current application cannot visualize all part of the room it just can view the main part.

Some additional for this application is it use in the Unity. Unity is a game development tool that has been designed to let we focus on creating amazing games. This software also uses Java Programming language that has a capability to allow it to generate 3D graphics within any compatible web browser. This will make the application become more interesting because this system just like a game where user just plays change the colour, furniture in the room.

This project is proposed to improve the current implementation of 3D Bedroom Decoration that we design it to make the user feel fun when they use it. User just clicks the button that will provide in the system and automatically change the colour, furniture follows the user want. Once the user selected the colour, the next step is the layout of the room, i.e. the dimensions of the bedroom. This step helps them figure out which one the furniture should be placed. Finally the system will display and user can view all part of the bedroom to make sure the changes that they made is satisfied if not satisfied they will make it again follow the steps that they do before this.

1.2 PROBLEM STATEMENT

There are few problems that need to be concern. One of the problems is when user wants to decorate their room their imagination limited to imagine what they should do to make sure their room look beautiful.

Besides that, user needs to hire the architecture to decorate their room but sometime user feel not satisfied with the result. So they will complain or just ignore it although they not like it.

1.3 OBJECTIVES

The objectives of this project are:
  i.   To develop a prototype of bedroom decoration that allows user to decorate their room.
  ii.   To apply 3D modelling technique to the system.

1.4 SCOPE

The scopes of the project that have been identified are:
  i.   This system had been developed for the user who needs to decorate their bedroom.
  ii.   This system had been run on web site so that user easy to use it.
  iii. This system had been developed using 3D modelling technique comprises of texture and shading.

1.5 THESIS ORGANIZATION

This thesis consists of six chapters. Chapter one is explanation of introduction to system and research. This chapter will discuss about introduction, objectives, problem statements, and scope of the project.

Chapter two will discuss about the research for project that has been chosen. The researches divide into two that are for current system or case study and research for technique that will be used to develop current system.

For Chapter three will be discuss on approach and overall work load to develop this system. The content consists of the approach and framework for the project that used in this system.

Implementation of process that is involved during development of this system is explained in detail in Chapter four.

The result that obtained from the implementation of the system is discussed thoroughly in Chapter five. The constraints of this project are also stated clearly in Chapter five.

Last chapter in this thesis is a conclusion which describe summary on the overall system.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter briefly describes the review on existing techniques related with 3D bedroom decoration that will be developed later. This chapter comprises two sections: The first section describes the comprehensive review on existing related systems. The second section describes the review on method, equipment, and technology previously used in the same domain.

2.2 EXISTING SYSTEM

There is some system which shares similarity with this application. Below the example of the online system that is exist at the internet Armstrong Design a Room and KB Home.

2.2.1 Armstrong Design a Room

Armstrong World Industries, Inc. is a global leader in the design and manufacture of floors, ceilings and cabinets. This system also can decorate the bedroom. What make this application is more interesting are they have many types of floors. Besides that, the heart of the Armstrong brand is our commitment to helping their customers get the right flooring for their home. Armstrong design has been pursuing this with beautiful, durable and innovative flooring for every room of the home on hardwood, vinyl sheet, luxury vinyl plank and tile. The Armstrong brand is trusted quality.

Armstrong markets the most extensive portfolio of residential and commercial floor products available - hardwood, laminate, linoleum, vinyl sheet and tile, ceramic and BioBased Tile® – under the brand names Armstrong®, Bruce® and Robbins®. The company's global acoustical ceiling and suspension systems business is 90 percent commercial – offices, healthcare, education, retail, transportation and other segments – and 10 percent residential. Armstrong makes cabinetry for single-family and multi-family builders and remodelers in the U.S. [3]
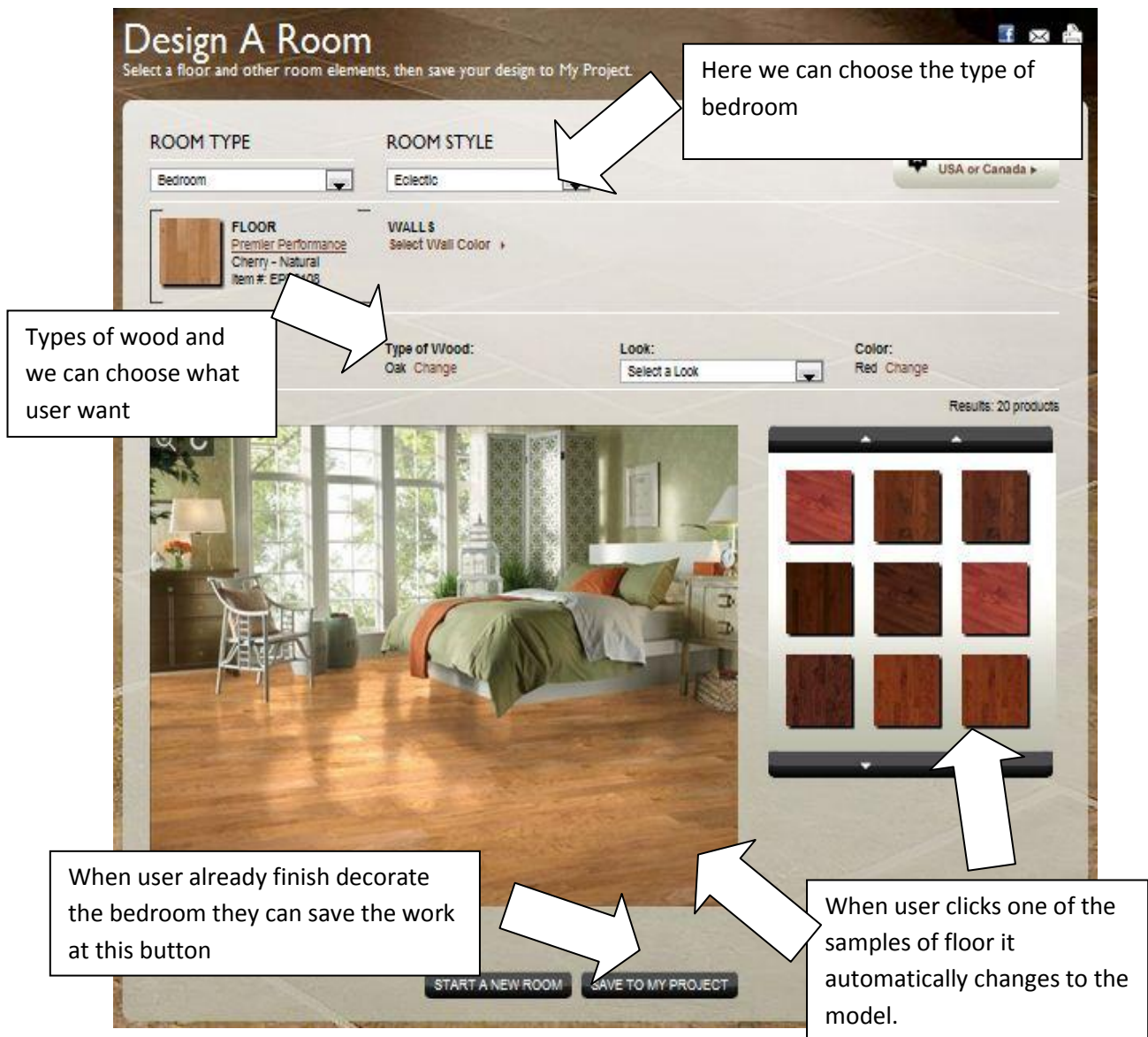
Figure 2.1 Example interface for the decoration for bedroom

Figure 2.1 shows the application for user to make some decision to choose room type for the bedroom and also can choose room style like classic, casual or traditional. Types of wood and colour also will be select follow the user wants.

2.2.2 KB Home

KB Home makes it easy to design your own home. The interactive personalization tool allows user to select KB Home Studio options and preview the choices directly on your computer screen. As you make selections from the options menu the picture changes to reflect your choices.

Here we can choose type of the room that we want to decorate. So, for example we choose a kitchen. In the kitchen user can choose among the various countertop choices, customize the look of cabinets and choose between Whirlpool or Kitchen aid appliances. Decide if user wants a stand-up or tub shower in the bath. In the family room, differentiate between various window treatments and light fixtures and whether or not to include a fireplace. [4]
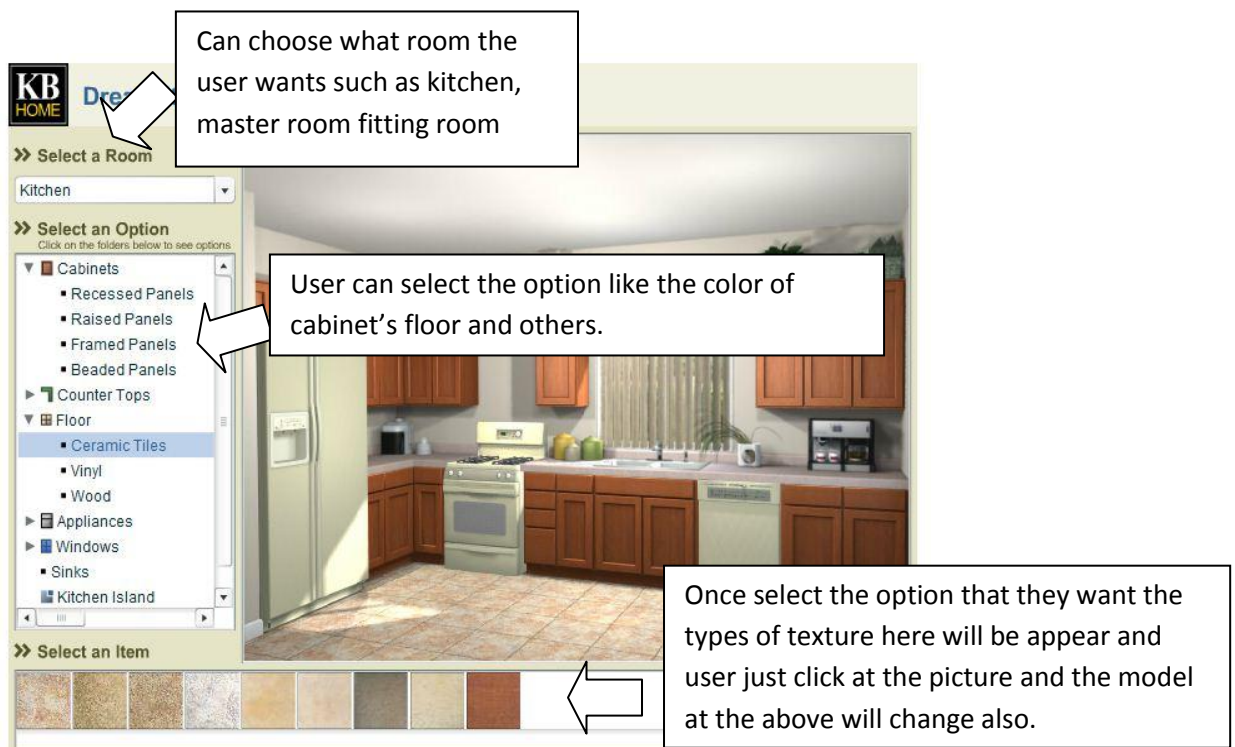
Figure 2.2 Model of house

2.2.3 Comparisons between Armstrong Design a Room, and KB Home

The entire website shown at the above has similarities in many ways. All the application has the same function that is to decorate the room It can see that they also use the same way to show the properties to make user easily to know how to decorate or use the system. So, user can create or build by themselves to decorate their bedroom. They can try and see how it look if satisfied with their decoration they can use it for their own bedroom.

But all the system also have a different way to determine the concept that every application has apply like way to make the system more interactive, more interesting and others. Every application there is a weakness for example Armstrong Design and KB Home. This application use 2D model and make this system not really interesting but still interactive because can change the floor, wall and others

Besides that, KB Home make the properties is more detail than Armstrong Design a Room. So user can have more option to choose the decoration in their room. The interactive personalization tool allows user to select KB Home Studio options and preview the choices directly on user computer screen. As user make selections from the options menu the picture changes to reflect your choices. In the kitchen at figure 2.2 users can choose among the various countertop choices, customize the look of cabinets and choose between Whirlpool or Kitchen aid appliances. While the Armstrong Design a Room actually not really different between the KB Home Studio and the properties that have in the application is much. User just can change the floor and colour of wall only. So, user doesn't have many options to choose to decorate their bedroom.

2.3 Studies on Technique

Computer graphics are graphics created using computers and more generally, the representation and manipulation of image data by a computer with help from specialized software and hardware. The development of computer graphics has made computers easier to interact with, and better for understanding and interpreting many types of data. Developments in computer graphics have had a profound impact on many

types of media and have revolution animation, movie and the video game industry. There are many kind of technique in computer graphic such as:

i. Implementation
   a) Rendering
ii. Development
   a) 3D Model
      + 3D Modelling
      + Lighting
      + Texture mapping

2.3.1   Implementation - Rendering

Rendering is the process of generating an image from a model and it called scene. A scene file contains objects in a strictly defined language or data structure; it would contain geometry, viewpoint, texture, lighting, and shading information as a description of the virtual scene. [5] The data contained in the scene file is then passed to a rendering program to be processed and output to a digital image or raster graphics image file. Rendering converts a model into image either by simulating light transport to get photorealistic images, or by applying some kind of style as in non photorealistic rendering. The two basic operations in realistic rendering are transport that is how much light gets from one place to another and scattering is how the surface interacts with light. This step is usually performed using 3D computer graphics software or a 3D API. The process of altering the scene into a suitable form for rendering also involves 3D projection which allows a three-dimensional image to be viewed in two dimensions.

2.3.2   Development – 3D Model

2.3.2.1   3D Modelling

3D modelling can view two dimensional images through 3D rendering process. So it can make us easy to see the model through the perspective view for example view from the top, right, left, and bottom. Besides that, when we use

3D modelling to create the model it looks like a real scene and make it more interesting. Bellow is the example of 3D model. [6]

Figure 2.3 3D Model

2.3.2.2 Lighting

Lighting is important part to make the 3D bedroom Decoration look more real because it gives a practical or aesthetic effect. Lightning is includes both artificial light sources such as lamps and natural illumination by capturing daylight using window, skylight, and others. [7]

Figure 2.4 example light source

2.3.2.3   Texture Mapping

Texture mapping is a method for adding detail surface (a bit map or raster image), or colour to a computer generated graphic was pioneered by Dr Edwin Catmull in his Ph.D. thesis of 1994. [8]

A texture map is applied (mapped) to the surface of a shape or polygon. This process a skin to applying patterned paper to a plain white box. Texture mapping is a method to make the surface look more interesting and colourful with the texture. This process to apply a pattern of the 3D texture based on a three dimensional position and also can model in any object.

2.4   Development Tools

Software Approach is a description about the software that used during the development process 3D Bedroom Decoration. The software needed to develop application is Blender or Autodesk Maya for create the 3D model and Dreamweaver to create the interface. The system built using the Java scripting Language. There the brief explanations about the software that used in this system:

I)   Blender and Autodesk Maya

Blender and Autodesk Maya have the same function that can build the 3D object. In my opinion Autodesk Maya is easier than Blender. Blender is computer graphic software that to creating the model for example makes the 3D objects like furniture, wall and others decoration that will be use in the project. This software can make the interactive 3D application and make the user can view in other perspective view. In this software also we can make the texturing, give a shape, editing, colouring and others.

Autodesk® Maya® 3D animation software delivers a comprehensive creative feature set with tools for animation, modelling, simulation, rendering, match moving, and compositing on a highly extensible production platform. For

visual effects, game development, post production, or other 3D animation projects, Maya offers toolsets to help meet demanding production requirements. Maya 2013 adds tools that help facilitate parallel workflows and complexity handling; powerful new creative toolsets; and productivity enhancements to help you create higher quality content quickly. [9]

II)   Unity

Unity is an integrated authoring tool for creating 3D video games or other interactive content such as architectural visualizations or real-time 3D animations. Use unity to make it function so that the model and the other object in the interface will connect with each other. It just like a game because unity is a software to make a game and this application we just use the button for the user to click and change the properties in the system. So is easy for the first user to use it.

 It can also produce browser games that use the Unity web player plug-in, supported on Mac and Windows but not Linux. The web player is also used for deployment as Mac widgets. Unity also has the ability to export games to Adobe's Stage 3D functionality in Flash, but certain features that the web player supports are not usable due to limitations in Flash. [10]

III)   JavaScript

JavaScript is a client side or prototype-based scripting language. It is designed to add interactivity system to the user. Although Unity's JavaScript tries to follow the ECMAScript standard closely, it varies in many ways from other implementations of JavaScript that are based on the same standard. It is perhaps most similar to Microsoft's JScript especially in that both are .NET languages. However, Unity's version was developed independently and there are a number of differences between the two. submitted to a server. Detect the visitor's browser by load another page specifically designed for that browser.

2.5   CONCLUSION

This Chapter explained the literature review on similarity system since it would be the guidance in this system. In order to develop this system, macromedia Blender or Autodesk Maya will be used as to create the model. For the interface, Unit has been chosen to build the interface platform since it is suitable for my system. The Java programming language that is being used to make the items in the model link into the button.

CHAPTER 3

METHODOLOGY

3.1   INTRODUCTION

This chapter explains the methodology that is the software process to manage better the system development. The methodology that applied in this development process is Software Development Life Cycle (SDLC) method. From the beginning, this project will be developed based on the methodology choose.

3.2   SOFTWARE DEVELOPMENT CYCLE (SDLC) METHOD

Software Development Life Cycle (SDLC) is a methodology that is typically used to develop, maintain and replace information systems for improving the quality of the software design and development process. The typical phases are analysis, estimation, design, development, integration and testing and implementation. The success of software largely depends on proper analysis, estimation, design and testing before the same is implemented. [12]

Life cycle of software development is a gradual process followed in software development. It is also called the software life cycle. The sooner of the process is primarily on the developer. Today, SDLC involves teams of experts in various fields such as analysts, testers, architects, programmers, and even end users. Cycle of software development is important because it provides a plan to bring together various aspects of software development. Without these two dies or is exercising it against the standards set or expected.

SDLC also allowed variation among it phases. Additional information is made available to the development team that requires changes in the outputs of previous stages. In this case, the development effort is usually suspended until the changes can be reconciled with the current design, and the new results are passed down the waterfall until the project reaches the point where it was suspended.

In this project, there are five phases in the Software Development Life Cycle (SDLC) that will use for solving the problem that contain. Figure 3.1 shows the flow of the SDLC methodology. The phases are involved in this methodology are:

    i.   Identification Phase
    ii.   Planning Phase
    iii.   Analysis Phase
    iv.   Design Phase
    v.   Implementation Phase
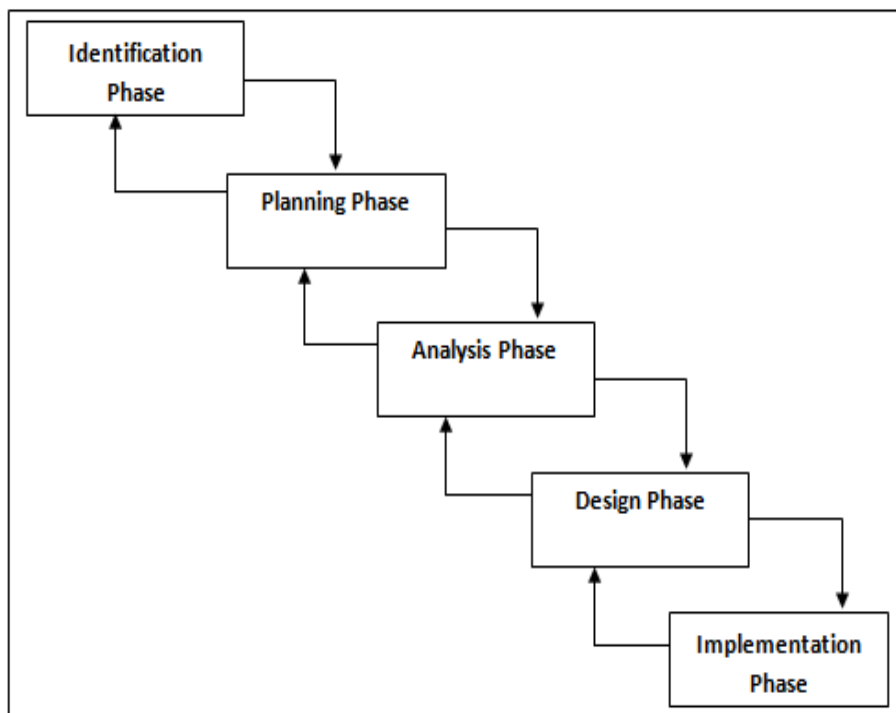
Figure 3.1: Flow of Software Development Life Cycle (SDLC)

3.2.1 Identification phase

In order of the project identification phase, a few activities involve such as to identify what the system will develop and recognize the problem that face by current application based on case study taken from current process. Besides that, this phase also to identify the technique that approach. It is also to identify the problem that release in the current process according to the case study.

To identify the real problem that needs to be concern that is when user wants to decorate their room their imagination limited to imagine what they should do to make sure their room look beautiful. Besides that, user needs to hire the architecture to decorate their room but sometime user feel not satisfied with the result. So they will complain or just ignore it although they not like it.

3.2.2 Planning Phase

The objective of this phase is to understand the requirement specification in this application. The activities involve such as do a research about a careful of any current application, manual and computerized and also make some research to get specification about the application. The data information was collected based on what related to the application such as learning strategy and best way to develop the application according to the requirement that need in this application. This phase is to determine the application goals that approach for this application and to determine the systematic management to arrange the decoration in the bedroom. Base on case study, all resources and data are getting from internet searching.

3.2.3 Analysis Phase

In this software requirements analysis, firstly analysis requirement is for the proposed system. To understand the nature of the program to built, the system engineer must understand the information domain for the software, as well as required functions, performance and the interfacing. From the available information the system engineer

develops a list of the actors use cases and system level requirement for the project. With the help of key user the list of use case and requirement is reviewed. Refined and updated in an iterative fashion until the user is satisfied that it represents the essence of the proposed system.

3.2.4   Design Phase

Discussion on designing prototype will be carried out after the requirements specification. Design is convert the description of the recommended alternative solution into logical and then physical system specification. This design is divided into three parts such as:

   I.   System Design
  II.   Entity Relational Diagram Design
 III.   Use Case Diagram Design

3.2.4.1 System Design

An activity diagram is use to describe the flow for the system design of 3D Bedroom Decoration. Figure 3.2 explain about the activity diagram of the 3D Bedroom Decoration. When users enter to the system, they can see the model of the bedroom and also can view all part of the bedroom. If user wants to change the furniture, colour of wall and types of floor user just click the model that already prepared in this application. When user feel satisfied with the changes that they make they can view again and see is it suitable or not. If they not satisfied they can make it again until they satisfied.
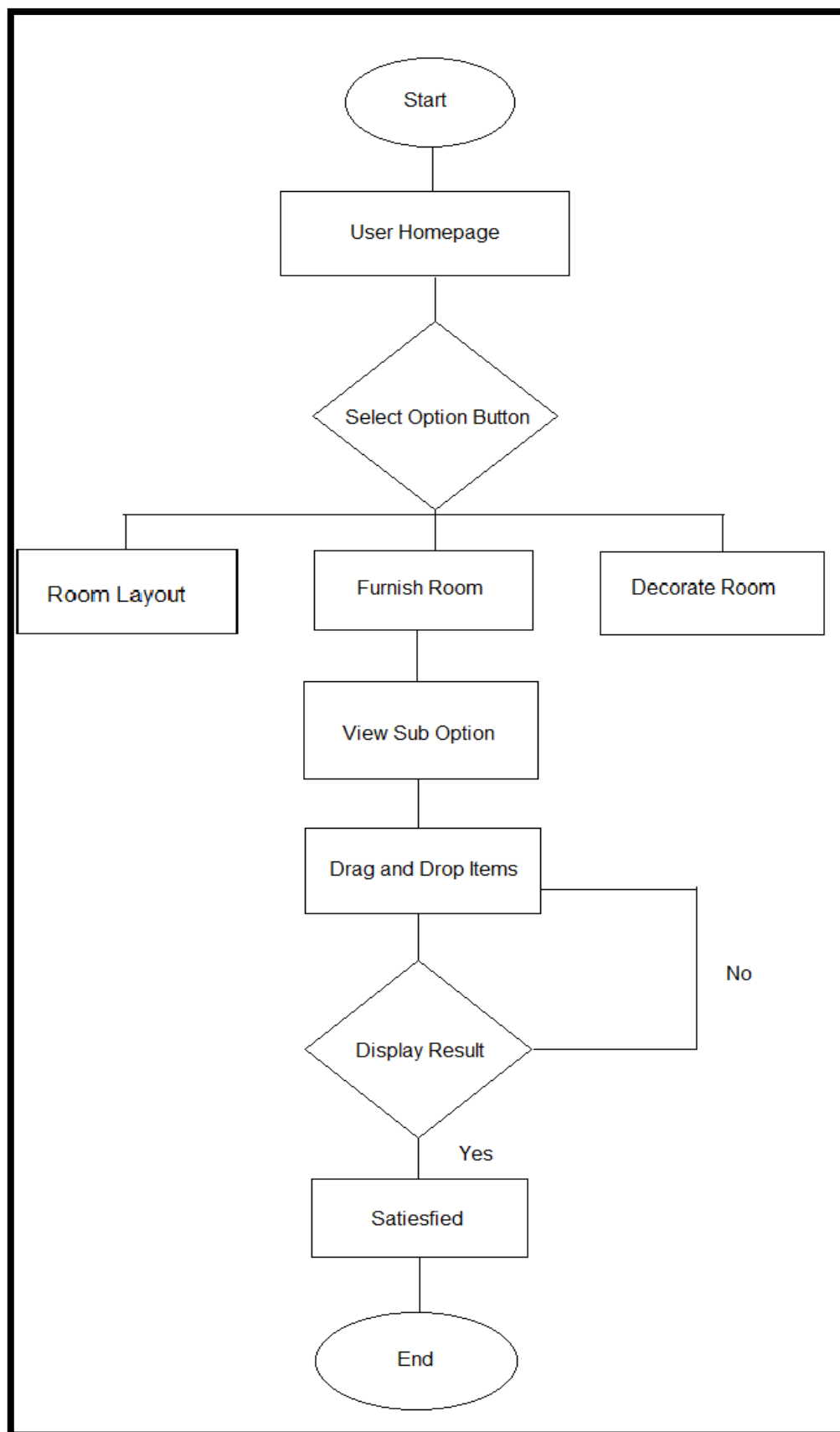
Figure 3.2: the activity diagram of the 3D Bedroom Decoration

3.2.4.2 Entity Relational Diagram Design

Entity relationship model (ERM) is an abstract and conceptual representation of data. Entity relationship is a database modelling method, used to produce a type of conceptual schema or semantic data model of a system, often a relational database, and its requirements in a top down fashion. Diagram created by this process are called entity relationship diagrams, ER diagrams or ERDs. [13]
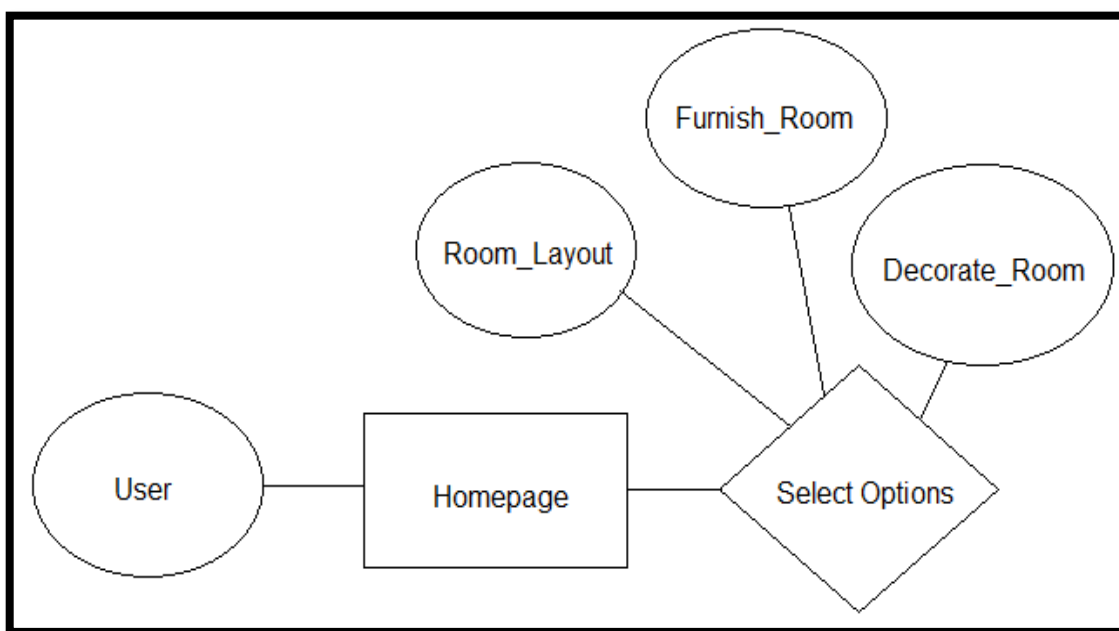
Figure 3.3: two relation entities

3.2.4.3 Use Case Diagram Design

Figure 3.4 shows the use case for the 3D Bedroom Decoration application. In this system, user and admin can interact as below:

I. **User**

User is the people who will use the 3D Bedroom Decoration for the bedroom application.

II. **Admin**

Admin will be control and manage the application, update the data and also all the information in the application.

III.   **Perform properties**

This use case is initialized by user. User will choose any furniture or wall colour and also types of floor in order to change the bedroom follow the user's criteria.

IV.   **View result**

This use case is initialized by user. User can view the result after make the changes.

V.   **Manage data**

This use case is initialized by admin to see the result and update information about the application.
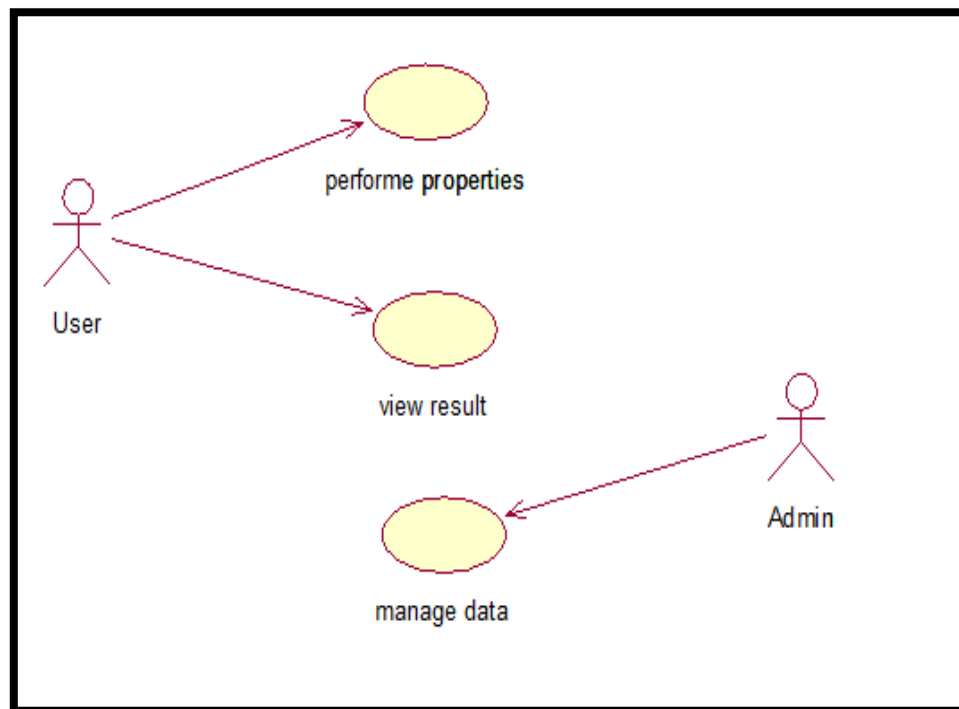
Figure 3.4: Use case of 3D Bedroom Decoration.

Figure 3.4 shows the sequence diagram of 3D Bedroom Decoration Application which describes interaction among object during certain period of time. Interaction between user and the system begin when user view the main page. User can browse through the web page. In the main page user can view the bedroom model. So, users just click the button and automatically change the item in the model. Finally the application will display and user can view all part of the bedroom to make sure the

changes that they made is satisfied if not satisfied they will make it again follow the steps that they do before this.
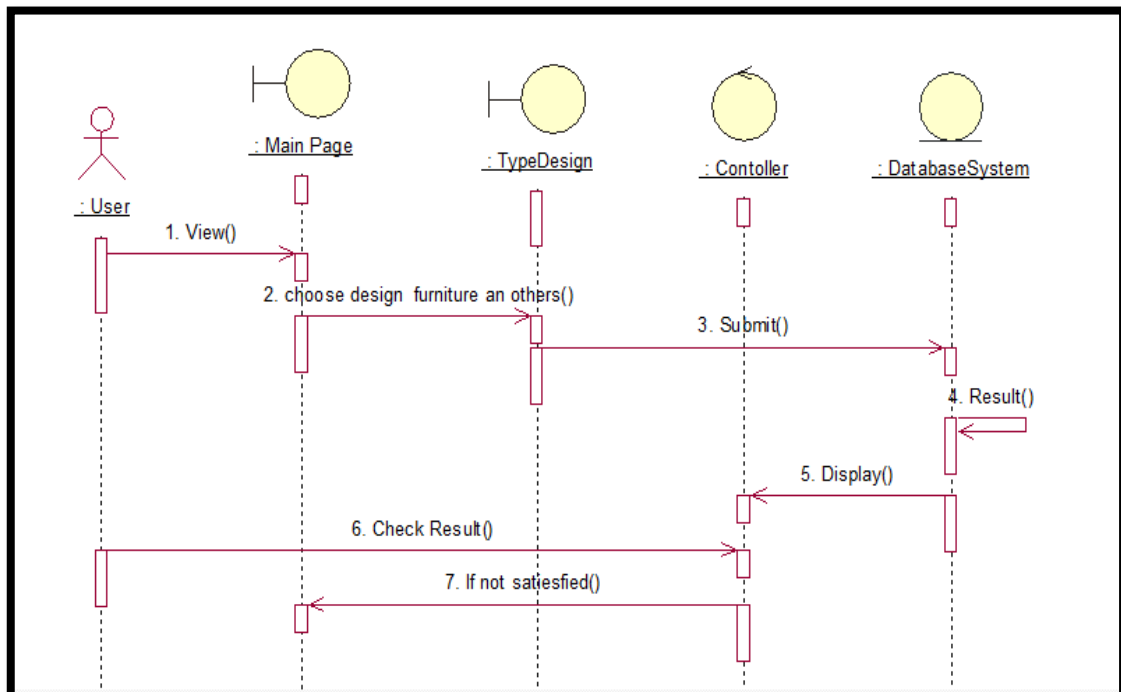
Figure 3.5: Sequence Diagram of 3D Bedroom Decoration.

3.2.5   Implementation Phase

Coding generates in this phase is to implement in the user interface to the executable system. Function of the system will test after the coding generation. Testing is the process of executing a program with the intent of finding errors. After completion of the prototype, testing on the function of the system is necessary to carry on to assure and control the quality of the application before the delivery to the user. This phase will be explaining more detail in chapter 4.

3.2.6   Deploy

During the deploy phase, the system is completed in development and can start deliver the application to the user.

3.3   SOFTWAREAND HARDWARE REQUIREMENTS

There are several software and hardware requirements that used to develop 3D Bedroom Decoration.

3.3.1   Software Requirements

There are software programs that have been used during the development of this application which are as below:

Table 3.6: List of the software used in application

Items	Name	Descriptions
Operating system	Microsoft Window 7	As an operating system
Software	Autodesk Maya 2009	To design the bedroom model
	Unity	To create interface design and development system
	Microsoft Office Word 2007	Documentation
	Microsoft Office PowerPoint 2007	Presentation the project
	Adobe Reader 9.0	To read journal and article from the internet.
	Adobe Photoshop CS3	Edit picture and make texture mapping to model.
	Rational Rose Enterprise Edition	Create use case and sequence diagram

3.3.2   Hardware Requirements

Table 3.7 shown the hardware requirement that acquired for this system as below:

Table 3.7: List of the hardware used in system

Item	Specification	Quantity
Laptop	Intel® Pentium® dual-core	1
	processor T4200	
	q2.00 GHz Processor	
	2.00 GB RAM	
Printer	Canon iP1300	1
Thumb drive	S.l.i.a 2GB	1
Hardisk	Buffalo 500GB	1

CHAPTER 4

IMPLEMENTATION

4.1   INTRODUCTION

The purpose of this chapter is to describe the whole processes in the project development. Implementation in Software Development Life methodology had been conducted after Development phase. Basically, this chapter describes the implementation of the project. The implementation would be on, interface design and source code of the project.

4.2   SYSTEM IMPLEMENTATION

The implementation environment of 3D Bedroom Decoration Application was using window operating system. The system is implemented using Unity because of its compatibility with online environment. The implementation of this system in the window environment enables most of the user to use this system by running it in Mac and Window.

4.2.1   Interface

This Interface consists of eight buttons that is Wall, Bed, Side Table1, Side Table 2, Sofa, Rack, Curtain and flower which enable them to choose the 3D model to click and change into the right decision to decorate their bedroom. Figure 4.1 shows the Main Page for 3D Bedroom Decoration system.

Figure 4.1 shows interface of 3D Bedroom Decoration

This figure show that the interface of the3D Bedroom Decoration. This interface already complete with the furniture, colour of wall and others. User just needs to click the button and change the furniture that they want follow their requirement. User can view the model in this system in any direction either from the top, side and others.

4.2.2 Button

For this project, use button to make the selection for the items to decorate bedroom. It make the user can interact with the system using the button and it easy for user to understand the function of the button that it provided in the system. Figure 4.2 and figure 4.3 will show the button and source code.

Figure 4.2 Button

This Button will display after we render the scene. User can choose type of furniture when they click the arrow button just like in the figure above.

```
//first Button

      if (GUI.Button (Rect (72,40,80,20), "Wall")) {

             Application.LoadLevel (1);

      }

      if (GUI.Button (Rect (35,40,30,20), "<")) {

             Application.LoadLevel (1);

      }

      if (GUI.Button (Rect (160,40,30,20), ">")) {

             Application.LoadLevel (1);

      }
```

Figure 4.3 Source code

4.3   CONCLUSION

This chapter has been discussed about the implementation of the project. The implementation would be on database, interface design and source code of the project. For this project the most important part is Unity because all the 3D model will be render at this software. Result and discussion about this project will be discuss further in the Chapter 5

CHAPTER 5

EXPECTED RESULTS AND CONCLUSION

5.1   INTRODUCTION

In this chapter, all the output of the system will be discussed. Detail about the outcome, assumption and further research about this system also discussed in this chapter. Hopefully, the discussion can bring ideas and more benefits to the future developer in order to upgrade and enhance the performance and functionality of the system in the future.

5.2   RESULT ANALYSIS

The developed application, 3D Bedroom Decoration has met all the objectives of this project, which are:

   i.   To develop a prototype of bedroom decoration that allows user to decorate their room.

  ii.   To apply 3D modelling technique to the application.

5.3   RESULT AND APPLICATION

3D Bedroom Decoration application is a standalone system. This application is generally for user creates living spaces suitable to each unique personality. This application is developed by using Software Development Life Cycle (SDLC) methodology. This application prototype has given the outputs that were expected.

5.3.1 Generate Result

System should be able to generate result based on the user make the decorations to the bedroom and see the result from what they did at this system. This system also should be able to show the tools that let user begin to make the decoration from all the tools that were provide from this system.

5.3.2 Application Testing

System testing is a process of performing a variety of tests on a system to explore functionality or to identify problems. System testing is a collection of tests designed to verify that a program or system of programs is ready for production. System testing is usually required before and after a system is put in place.

For 3D Bedroom Decoration, this system was tested based on the user requirements and all the functions were run properly.

5.3.3 User Acceptance Testing

User Acceptance Testing is final step before rolling out the system. End users who will be using the system test the system before accepting the system. This type of testing gives the end users the confidence that the system being delivered to them meets their requirements. This testing also helps nail bugs related to usability of the system. [17]

For this system will validate all the data and requirement based on current issue or problem from the website that have been chosen.

5.3.4 Validating Testing

Validation testing is a process of evaluating software at the end of the software development process to ensure compliance with software requirements. The techniques for validation are testing, inspection and reviewing. [18]

For this system will validate all the data and requirement based on current issue or problem from the website that have been chosen.

5.4   PROJECT CONSTRAINT

This section will discussed about the constraint arise during the development of the system. The constraint arises due to process of the designing the model 3D and to make a button that connect with the model to make it change once we click the button. The constraints which are the development constrain.

5.4.1   Development Constraint

For the development the constraints are lack of system source code example using java script that implement the connection between button and the model. The testing of this prototype is important in order to obtain a confirmation from the system either the result will display properly or not. Besides that, the information from the internet about unity is so not enough and not suitable for the system.

5.5   ADVANTAGE OF THE SYSTEM

The advantages of this prototype are:
  i.   Time saving. This application have made the users task become easier and faster than before.
  ii.   This application also can view the model in 3D perspective

5.6   DISADVANTAGE OF THE SYSTEM

The disadvantage of this system are, it can only change the colour and the furniture and cannot change the position of the furniture from the bedroom.

5.7 FUTURE WORK

Although the system already fulfils the objectives, scope and purpose successfully but there are some suggestion for this application:

i.   The model on this application should be more beautiful and more interesting with the texture mapping.

ii.   Need to multiple the types of furniture so that user can make choice

iii.   Make the furniture for each button arranged according to appropriate categories enable the user to make choices.

5.8 DISCUSSION

This Chapter has been discussed about output and detail about the outcome, assumption and further research about this system. Basically, this system has met all the objectives of this project, which are: (1) To develop a prototype of bedroom decoration that allows user to decorate their room. (2) To apply 3D modelling technique to the application. This system have made the users task become easier and faster than before. They can view the 3D model in this application with smoothly. Besides that user can view this application in 3D perspective

5.9 CONCLUSION

This chapter briefly discusses the conclusion of the proposed project. There are five chapters all together in this thesis which is Introduction, followed by Literature Review, Methodology, Expected Result and Discussion and finally Conclusion of the entire system. Each chapter describes the development process of the 3D Bedroom Decoration.

The purpose of this study is to develop a prototype standalone system. The objective of 3D Bedroom Decoration is to help user in making decision to build their bedroom and also to make it easier to open the 3D web content in this page.

This system will be developed using Unity and JavaScript for interface design and programming as it provides a visual development environment for building application rapidly. These projects also use Adobe Photoshop to edit the interface design and make the texture mapping for a model. Software to build this application is Autodesk Maya. This software we use it to build the model.

This application is design using Software Development Life Cycle (SDLC) methodology. There is several phases in this development which is Planning, Iterative Process include analysis, estimation, design, development, integration and testing and implementation.

Hopefully 3D Bedroom Decoration will help user to make their own decision and can choose the suitable decoration of their bedroom and also make user have fun when use this system.

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APPENDIX A

Project Gantt chat
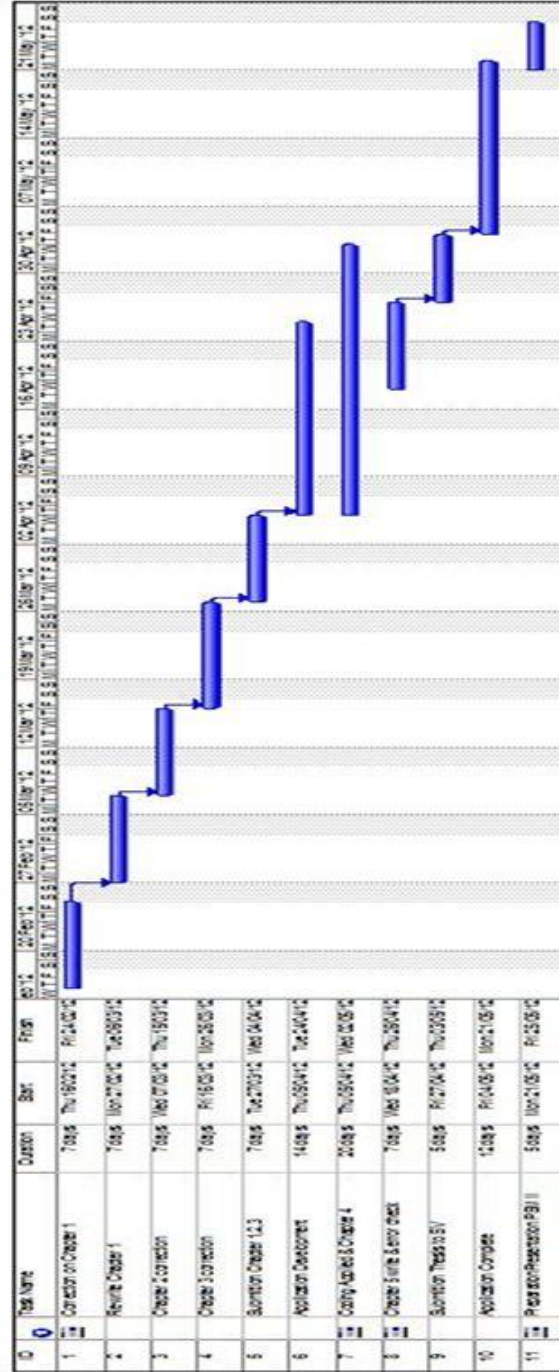
APPENDIX B

Interfaces

Figure 1: Interface