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JUDUL: 3D HALL INTERIOR DESIGN

SESI PENGAJIAN: 2005/2006

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[^] Tesis dimaksudkan sebagai Laporan Projek Sarjana Muda (PSM)

3D Hall Interior Design

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**This report submitted in partial fulfillment of the requirement for the Bachelor of
Computer Science
(Interactive Media)**

**FACULTY OF COMPUTER SCIENCE
KOLEJ UNIVERSITI TEKNIKAL KEBANGSAAN MALAYSIA
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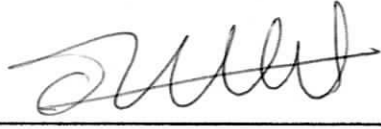
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I wish all of you success in your future undertakings. May Allah bless all of you.

ABSTRACT

I am the one of the student in Faculty Information and Communication Technology (majoring in interactive media) do a Project Sarjana Muda I (PSM I) is a compulsory subject for the final year Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM) student to develop an individual project that related to the industry problem. This project is about how to decorate the living room based on own ideas. When users clicked on sofa button, all set of sofa appeared in same interface with the empty hall. So users allow selecting what type of furniture they want. After finish users must drag it and drop at anywhere they want. The same action happens if users click on any button in menu interface. The others button menu including lamps, carpets, desks, cabinets and trees fans and lamp and others. The methodology of ADDIE has been used for development process. The ADDIE model is a generic and simplified instructional systems design (ISD) model. ADDIE is short for Analyze, Design, Develop, Implement, and Evaluate. Each one of the process have a different task and specific activities. This project developed using related software. 3D Studio Max used to modeling the interior material. Eon Studio used as a platform for this project which all the interactions conducted using this software. Testing is a phase where all the error and mistake will detect and the percentage of the error also could be properly found. This phase divided in two major ways which is test plan and test strategy. This project produces as a single application in CDs.

ABSTRAK

Saya merupakan salah seorang pelajar Fakulti Teknologi Maklumat dan Komunikasi pengkhususan dalam media interaktif telah menduduki PSM I dan II memandangkan ia merupakan subjek wajib di KUTKM dan harus lulus dengan jayanya. Projek ini adalah berkenaan dengan bagaimana untuk mengubahsuai kediaman rumah terutama untuk ruang tamu. Apabila aplikasi ini digunakan antaramuka pertama yang akan keluar adalah butang-butang menu yang telah disediakan ditepi sebelah kiri antaramuka. Sebagai contoh, apabila pengguna klik pada butang sofa, kesemua set sofa akan dipaparkan bersama-sama dengan ruang tamu yang kosong. Pengguna boleh memilih set sofa yang disukai kemudian terus boleh menggunakan teknik "drag and drop". Aktiviti yang sama juga berlaku untuk butang-butang yang lain. Butang-butang menu ini termasuklah lampu, karpet, meja, pokok dan lain-lain. Projek ini telah menggunakan metodologi ADDIE dalam proses pembangunan. ADDIE adalah mewakili aktiviti seperti Analyze, Design, Develop, Implement, and Evaluate. Setiap proses adalah berlainan dari segi aktiviti dan keperluannya. Projek ini dibina menggunakan perisian yang sesuai untuk menghasilkan hasil yang berkualiti. 3D Studio Max digunakan untuk mereka model-model hiasan dalaman. Eon Studio pula lebih kepada menghasilkan interaksi dalam projek ini. Fasa pengujian adalah untuk mengenalpasti kelemahan dan kekuatan yang wujud dalam projek. Pengujian telah dibahagikan kepada dua iaitu ujian perancangan dan ujian strategi. Projek ini dibina sebagai aplikasi persendirian dan dikeluarkan dalam bentuk CD.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	ACKNOWLEDGEMENT	iii
	ABSTRACT	iv
	ABSTRAK	v
	TABLE OF CONTENTS	vi
	LIST OF FIGURES	x
	LIST OF TABLES	xi
	LIST OF ABBREVIATIONS	xii
	LIST OF APPENDICES	xiii
CHAPTER 1	INTRODUCTION	1
	1.1 Project Background	1
	1.2 Problem Statement	2
	1.3 Objectives	3
	1.4 Scope	4
	1.5 Project Significance	5
	1.6 Conclusion	5

CHAPTER 2	LITERATURE REVIEW	7
2.1	Introduction	7
2.2	Fact and Finding	8
2.3	Project Methodology	12
2.4	Project Requirement	15
2.4.1	Software Requirement	15
2.4.2	Hardware Requirement	16
2.5	Project Schedule and Milestone	17
2.6	Conclusion	17
CHAPTER 3	ANALYSIS	18
3.1	Introduction	18
3.2	Problem Analysis	19
3.2.1	Observation	19
3.2.2	Research	23
3.3	Requirement Analysis	26
3.3.1	Content Analysis	26
3.3.2	Resources	28
3.3.3	Delivery Platform	35
3.4	Conclusion	36
CHAPTER 4	DESIGN	37
4.1	Introduction	37
4.2	System Architecture	38
4.3	Preliminary Design	38
4.4	User Interface Design	40
4.5	Conclusion	41

CHAPTER 5	IMPLEMENTATION	43
5.1	Introduction	43
5.2	Production and Implementation	44
5.2.1	Production of Text	44
5.2.2	Production of Graphics	44
5.2.3	Production of Models	48
5.2.4	Production of Audio	52
5.2.5	Production of Animation	53
5.2.6	Process of Integration	53
5.3	Implementation Status	54
5.4	Conclusion	56
CHAPTER 6	TESTING	57
6.1	Introduction	57
6.2	Test Plan	58
6.2.1	Test Organization	58
6.2.2	Test Environment	59
6.2.3	Test Schedule	59
6.3	Test Strategy	60
6.3.1	Classes of Test	60
6.3.1.1	Technical Testing	60
6.3.1.2	User Acceptance Testing	61
6.4	Test Design	61
6.4.1	Test Description	61
6.4.1.1	Technical Testing	62
6.4.1.2	User Acceptance Testing	62
6.5	Test Result and Analysis	63
6.5.1	Interaction	63
6.5.1.1	Result	63
6.5.1.2	Analysis	63

6.5.2	Human Computer Interaction (HCI)	64
6.5.2.1	Result	64
6.5.2.2	Analysis	64
6.5.3	Deliverability	65
6.5.3.1	Result	65
6.5.3.2	Analysis	65
6.6	Conclusion	65
CHAPTER 7	PROJECT CONCLUSION	67
7.1	Observation on Weakness and Strengths	67
7.2	Proposition of Improvement	68
7.3	Contribution	69
7.4	Conclusion	69
REFERENCES		70
APPENDICES		71

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
Figure 2.1:	Project Methodology	12
Figure 3.1:	Punch! Super Home Suite Application Interface	21
Figure 3.2:	MyHouse Application Interface	23
Figure 3.3:	MyHouse Application; House Design	24

LIST OF TABLES

TABLE NO.	TITLE	PAGE
Table 5.1:	Description on the Graphic Production	46
Table 5.2:	Description of the Project's Models	49
Table 6.1:	Technical Testing and User Acceptance	59

LIST OF ABBREVIATIONS

PSM	-	Project Sarjana Muda
KUTKM Malaysia	-	Kolej Universiti Teknikal Kebangsaan Malaysia
FTMK	-	Fakulti Teknologi Maklumat dan Komunikasi
CD	-	Compact Disc
PC	-	Personal Computer
3D	-	3 Dimension
VR	-	Virtual Reality
HMD	-	Head Mounted Display
OpenGL	-	Open Graphic Language
HCI	-	Human Computer Interaction

LIST OF ATTACHMENTS

ATTACHMENT	TITLE
1.1	Gantt Chart (developing process)
1.2	Storyboard
1.3	Questioner

CHAPTER I

INTRODUCTION

1.1 Project Background

Interior design is a multi-faced profession in which creative and technical solutions are applied within a structure to achieve a built interior environment. These solutions are functional, enhance the quality of life and culture of the occupants, and are aesthetically attractive. Designs are created in response to and coordinated with the building shell, and acknowledge the physical location and social context of the project. The interior design process follows a systematic and coordinated methodology, including research, analysis and integration of knowledge into the creative process, whereby the needs and resources of the client are satisfied to produce an interior space that fulfills the project goals. In order to make the interior design jobs more simplify and practical one application will be developed. In other words users will apply their creativities while using this project.

This project will help peoples who want to decorate their house especially for a living room. This application will come into package, which mean peoples did not have to install anything in a PC when they want to use it. In other words this application will be delivered on CDs to simplify user's works and action. This application will use mix and match as a concept and it allow users to drag and drop the furniture to the places that

they think suitable. For the paints colours, users can click on the wall and choose what colors they want. After users satisfied with their choices, they can simply view all over the living room by using the mouse as a device.

1.2 Problem Statement

The major problems are client can't imagine what they have to do to decorate their house if they use interior designer services. This is because interior designer would just explain and do some briefing to their client what they suppose to do to make house more interesting. Client has to wait until all the decoration work finished for viewing the complete decorated living room. All this action will make client to imagine first what of interior designers think and explain to them and it become harder. To solve this kind of problem, my application will allows user's clients to design their own living room based on their creativities but still with guided. Incidentally, users have their first imagine of how hall's looks like. So they can come out with comment if the design doesn't look like what they want.

Miscommunications usually happen between client and interior designer during the decoration work. Means, designs are not of what client want. This might be happens because interior designer did not very sure about what exactly client wants or in other word miscommunication happen. As a result wasting time maybe exist because client want to redesign their living room based on what they want. So when these projects develop, these problems surely can be reducing. This project will show exactly what client wants to decorate their house. So miscommunication will be not happen again.

Most of the related software exist currently were developed on their company's website. So when client want to decorate house, they have to surf to the related website that produce the same application. Why might be happen if client's house did not have internet service? So in order to manage this probability, my project will develop in CDs which interior designer can bring it where ever they want if clients want their services.

Software that currently exists are normally provided and uploaded in the internet. When the application only available via internet services, it's occur a lot of work to do order to manage the applications. For example, plug-in of the application must be install correctly in the computer to make it available to use. The application will not be able to use if the correct plug-in are not been install. It will become harder to users to manage this kind of application and become worse.

1.3 Objective

The objectives of this project are as follows:

- **Provide a living room interior designing software**
The main objective of this project is to provide the interior designing software. This project will be focus on living room design. The space of living room will be prepared and users allow placing any decoration material to the space provided.
- **Deliver a project on CDs**
Another objective of this project is it will be deliver on CDs. After all of implementation process has been done, this project will be delivering on CDs. The reason of why this project deliver on CDs is because it easy to bring at anyplace, anytime and anywhere.
- **Designing through “drag and drop” technique**
Since this project is an interactive application, the technique of interactivity must be choosing properly in order to provide the effectiveness. The technique that has been used for this application is a drag and drop. This technique will apply when users starting design their living room.

1.4 Scope

This project will be deliverable as an application and known as 3D Hall Interior Design. This project provided just only for a part of houses which is a hall. This application will be provided as a package which means any installations are not required. When users run this application, a montage will appeared at first and appeared for about 10 to 15 second. The content of a montage is about the introducing of interior design. Interface with 3D empty hall will appear with a menu prepared besides, are the main interface. The empty hall will allow users viewed in every angle which can give opportunity to users plan where are suitable part to place the furniture and others thing.

When users clicked on sofa button, all set of sofa appeared in same interface with the empty hall. So users allow selecting what type of furniture they want. After finish users must drag it and drop at anywhere they want. The same action happens if users click on any button in menu interface. The others button menu including lamps, carpets, desks, cabinets and trees fans and lamp and others. This project is decided to provide for the interior designer. This application used during the designing task. Means, interior designer will bring this application and ask for a people who wanted their services to design a hall based on their creativities.

This application will provide in a very user friendly and just a basic knowledge to handle. This project provides to simplify target users jobs, so it should gather to produce this project based on that purpose. And it's exactly having a simple interaction between users and this application. Users just do a simple mouse action such as clicked, drag and drop. The interfaces would be very simple but interesting which are suitable for target users.

1.5 Project Significance

There are a lot of benefits existed when this project completely finish. As a mention before, the main objective of this project is to simplify target user's task. So when this application exists, it certainly can provide a lot of benefits. Simplify the target user's task contain to help societies life be more organize and practical. Its can be happen when users used this application as a part of their jobs. Currently, when interior designer give an explanation, users just listen to them what they should do and did not imagine what interior designer want is.

The briefly explanation will be in draft on piece of paper and certainly not practical. So this application will allow interior designer client's to decorate their hall by themselves but still with guided. People can show exactly what they want, and interior designer jobs just guide them with expertises.

Provided of this project might not taken many cost. It just simply develops in CDs and come by packages which mean that any installations are not required. So it did not have any problems for people in order to manage it.

1.6 Conclusion

As a whole, this project would offer a lot of benefits especially for users. This project will help users do their jobs perfectly. In order to do that, it must have some alternative way of increasing works qualities. Because of that, this project would be one of the alternative ways. Beside can simplifies user's works it's also can organizes a society lives. The entire occurred problems would be settled when users used this project as one of their jobs. In other words, this project will achieve what of the objectives. The next phase is about a literature review and project methodology.

Literature review means searching, collecting, analyzing and drawing conclusion from all debates and issues raised in relevant body of literature. The next task is about research, collecting all related data and makes a conclusion about it. Project methodology means how to complete the project. And project methodology can be qualitative and quantitative methods and combination of these methods.

CHAPTER II

THE LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

In this chapter, a details description of every part will be prepared which contains fact and finding, project methodology, project requirement, project schedule and milestone. For subtopic of fact and finding its have to mention what research that has been done about my projects. Researching all these things including analyze related data through all references such as books, person or internet as well. The types of project such as a virtual reality, animation or walkthrough also must be mention properly instead of having good information about the project.

Project methodology topic is to describe for every part of your work, usage technique, and to manage the project. These project methodologies are useful as a guideline during development process. The methods of multimedia project basically just have a few types such as ADDIE and production methods. These two methods are divided into function and method usage. The ADDIE method are available to use for the application project such as courseware, software and any related things. The production method is suitable to use for developing a video or animation project.

Project requirement is about hardware and software that you used to develop the project. The entire software that will be used along development process must be mention briefly. Project schedule and milestone are the most important things in developing project. These project schedule and milestone will let you to plan your work and can monitor project progress from the beginning.

2.2 Fact and Finding

Interior design is a multi-faceted profession in which creative and technical solutions are applied within a structure to achieve a built interior environment. These solutions are functional; enhance the quality of life and culture of the occupants, and aesthetically attractive. In part of decorating the house especially for living room, the most important thing in decorates is the colour.

According to article by *Rosemary Leake (1995)* mention that colour, texture, and shape are the necessary in interior designing. Colours are only occur if its have a light reflection off onto the eyes. Texture is also known as a surface of an object. Shape is the basic makeup of the object reflected visually. The combination of texture colour and shape comes into very harmonious atmospheres. *Mike Yeager (1996)* in article of *Interior Design Simply Means Personalizing Your Interior Environment* simply explains that interior design should reflect our needs. Means, all the design must relate with the decoration needed.

According to *Adrienne Chinn Design Company Ltd*, colour is the biggest influence in state of human mind. Colour is use to influence a behavior and people's mood who used places such as hospital rooms, classroom, restaurant and many mores. To use any colour as a right choice, the first things that should do is to understand the physiological effects it has on us. Red is known to stimulate the appetite, so it's an

excellent color for dining rooms or something like that. Both blue and green are fresh and calming and it's a color of nature so could be popular choices for bedrooms. Yellow and orange are also known as energizing and it's perhaps can be used for rooms where energies are boosting like kitchen. This article mentions that strong colors are best confined to the rooms that have less usage. But, based on *feng shui design guideline*, a balance and harmonics for any environment is the most important out of ten. This is because all the furniture and object may contain different elements. The combination of all furniture must be suitable and correct in order to have a harmonics element.

Beside colour, the spaces of rooms are also important in interior design. Nowadays, most of the people simply changing their furniture without consider the space of rooms. The 1960s and 1970s gave us plastic and metal shelving units, open on both sides and over out across our living rooms. The style has moved on but the principle is still useable, except today we would use fabric panels, glass bricks, chrome retail shelving, or folding bamboo screens to achieve the same result. For example, if we have a straightforward square space try to decorate it as interesting as you think and prepared some space for comfortable. And when the room is high enough, might consider building a platform which allows us to use for something like reading, sleeping or what necessities.

Once all the requirement needed were developed, the next thing that we should do in order to develop an interactive application is make sure all the interaction activities must related with project's title. This is important in order to accomplish users necessary. For example, once you have developed an interactive application make sure that all the interactions are suitable for target users. Means, interactions must be up to standard with who are your target users. *Hartson and Hix*, (1993) in article of *What is Interaction Design*, a major part of the developer's job is also concerned with setting measurable usability specifications, evaluating interaction designs with users, and redesigning based on analysis of users' evaluations of an interface. Definition of interaction from Dix et al. represent, interaction mean of any communication between a user and computer, is a direct or indirect. Direct interaction involves a dialog with

feedback and control throughout the performance of the task. Indirect interaction may involve background or batch processing. The important thing is that the user is interacting with the computer in order to accomplish something. In other words, interaction is an important to fulfill what the purpose of our project.

In the article of *Virtual Reality for Education* by Dr. Piet A.M. Kommers, University of Twente had mention that virtual reality is a desired technology for those applications in which reality itself does not exist (yet), cannot be accessed, or is too dangerous or expensive to betray. The article of *What is Virtual Reality* by Jerry in (1998) mention that virtual reality is a way for humans to visualize, manipulate and interact with computers and extremely complex data. As a conclusion, virtual reality can be mention as a technology that been used to visualize, manipulate and interact with computer which represented a condition of not exist, cannot be accessed, too dangerous or expensive to betray.

The technology of virtual reality only begins in the past few years. But, in late of 1950s, the ideas of way people interacted with computer and possible VR had occur by traces of McCarthyism and the sound of Elvis. In early 1960s, communication technology was intersecting with computing and graphics technology and the first computer based on transistors rather than vacuum tubes became available. Computer experts began restructuring with an aircraft modeling complete with graphical display, or model, air flow data. One of the most influential antecedents of virtual reality was the flight simulator. Following World War II and through the 1990s, the military and industrial complex pumped millions of dollars into technology to simulate flying airplanes (and later driving tanks and steering ships). Today, virtual reality is poised to change the way we interact with and control computers. Like the introduction of computers more than 50 years ago, its impacts are unknown. About the only thing that does seem certain about VR is that it will grow and develop. And as the technology matures, it will become better, cheaper, and more accessible. Furthermore, the networks that link computers will expand, making it possible for VR to weave its way into our daily lives.