

# INTERACTIVE VCD RENTAL MANAGEMENT SYSTEM

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Interactive VCD Rental Management System

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This project is submitted in partial fulfillment of the requirements for the degree of Bachelor of Computer Science with Honours (Multimedia Computing)

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#### ABSRACT

Interactive VCD Rental Management System is used to replace the manual system. With the computerized system, manpower and time can be saved. This interactive VCD rental management system provides solution for the rental of entertainment media, a variety product that divided into category satisfied the demands of customers. This system also provides security control to ensure that unauthorized people does not access the private and confidential data. Useful information is extracted from database to generate report for marketing and analysis business performance purposes. Therefore the intent of this thesis is to describe an overview of Interactive VCD Rental Management System analysis, design, implementation and testing to implement this project successfully.

7

#### ABSTRAK

Sistem Pengurusan Sewa VCD Interaktif digunakan untuk menggantikan sistem manual. Dengan adanya sisyem pengkomputeran, tenaga manusia dan masa dapat dijimatkan. Sistem pegurusan sewa VCD interaktif ini menyediakan penyelesaian kepada media hiburan sewa, pelbagai produk yang dibahagi kepada kategori dapat memenuhi permintaan pelanggan. Sistem ini juga menyediakan kawalan keselamatan untuk memastikan orang yang tanpa kebenaran tidak berpeluang melihat data peribadi dan sulit. Maklumat yang berguna diambil daripada pangkalan data untuk menyediakan laporan untuk tujuan pemasaran dan menganalisis prestasi perniagaan. Oleh itu, kandugan tesis ini adalah untuk menerangkan keseluruhan analisis, rekaan, pelaksaan, dan menguji Sistem Pengurusan sewa VCD interaktif yang dijalankan untuk menjayakan projek ini.

7

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## LIST OF CONTENTS

ACKNOWLEDGEMENT	i
ABSTRACT	ii
ABSTRAK	iii
LIST OF CONTENTS	iv-vii
LIST OF TABLES	viii
LIST OF FIGURES	viii-ix

## **CHAPTER 1: INTRODUCTION**

1.1	Introduction	1-2
1.2	Problem Statement	3
1.3	Project Objectives	3
1.4	Project Scope	4
1.5	Methodology	4-6
1.6	Significant of Project	6
1.7	Expected Outcome	6
1.8	Chapter Flow	7-8

## **CHAPTER 2: BACKGROUND**

2.1	Introd	uction		9
2.2	An Ov	An Overview of Manual Video Rental System		
2.3	An Ov	verview of	Video Rental System	10
	2.3.1	VCD Re	ental System	10-11
	2.3.2	IL Duce	Rental System	12
	2.3.3	REJA V	ersion 1.00 Video Rental Application	13
2.4	Discus	ssion of Re	eviewed System	14
	2.4.1	Compari	ison on the Functionality	14
		2.4.1.1	Database Used	14
		2.4.1.2	Programming Language Used	14
		2.4.1.3	System Features	14-15
		2.4.1.4	System Interface	15

2.5	Propos	sed System	15
	2.5.1	Improvement of Current System	15-16
	2.5.2	Database Used	16
	2.5.3	Programming Language Used	16
	2.5.4	System Features	16-17
	2.5.5	System Interface	17
2.6	Conclu	usion	18

## CHAPTER 3: REQUIREMENT ANALYSIS AND DESIGN

3.1	Introd	uction			19
	3.1.1	Intervie	w		19
		3.1.1.1	Summary	of Interview	19
			3.1.1.1.1	With Managers and Sales Assistant	19-20
			3.1.1.1.2	With CEO of the Company	20-21
	3.1.2	Observa	ition		21
3.2	Questi	ionnaire			22
	3.2.1	Question	n		22
	3.2.2	Reaction	n Scale		23
	3.2.3	Demogr	aphic		23
	3.2.4	Interview	w		24
3.3	Result	and Discu	ussion		24
	3.3.1	Result			24
	3.3.2	Discussi	ion		25
3.4	Design	n			26-27
3.5	System	n Architec	ture		28
3.5	Entity	Relations	hip Diagram		29
3.6	Conte	xt Diagran	n		30
3.7	Data F	low Diag	ram(Level 0	)	31-32
3.8	Data F	low Diag	ram(Level 1	)	33-38

## **CHAPTER 4: IMPLEMENTATION AND TESTING**

39

4.2	Main	Screen			39
4.3	Logir	1			40
4.4	Mem	ber Sectio	n		41
	4.4.1	Membe	er Profile		41-42
		4.4.1.1	Edit Pro	file	42
		4.4.1.2	Change	Password	43
	4.4.2	Movie	Search		44
		4.4.2.1	View		45
			4.4.2.1.1	Play Movie Trailer	45-46
	4.4.3	Rental	Records		46
4.5	Staff	Menu			47
	4.5.1	Membe	er Profile		48
		4.5.1.1	Search N	1ember	48
		4.5.1.2	New Me	mber	49
		4.5.1.3	Edit Mer	nber	50
		4.5.1.4	Delete M	lember	51
		4.5.1.5	Change I	Password	51
		4.5.1.6	View		52
	4.5.2	Movie I	nventory		52
		4.5.2.1	Search M	ovie	52-53
		4.5.2.2	New Mov	rie	53
			4.5.2.2.1	Upload Movie Cover	54
			4.5.2.2.2	Save Movie Cover	54
			4.5.2.2.3	Delete Movie Cover	54
			4.5.2.2.4	Play Movie Trailer	55
			4.5.2.2.5	Upload Movie Trailer	55
			4.5.2.2.6	Save Movie Trailer	55
			4.5.2.2.7	Delete Movie Trailer	56
	4.5.3	Transact	ion		56
		4.5.3.1	Member F	Records	57
		4.5.3.2	New recon	rds for Rent	57
		4.5.3.3	New Reco	ords for Return	57-58

	151	Donalta		50
	4.5.4	Penalty		59
	4.5.5	Report		60
		4.5.5.1	Penalty	60
		4.5.5.2	Rental	61
		4.5.5.3	Movie	61
		4.5.5.4	Top 10 Members	62
		4.5.5.5	Top 10 Movies	62-63
	4.5.6	Daily Sa	ale	63
1.6	Usabi	ility Testin	ıg	64
1.7	Overa	all Result		65
1.8	Discu	ssion fron	n Usability Testing	66

## **CHAPTER 5: CONCLUSION AND FURTHER WORK**

C1 1. 1. ....

REFERENCES

5.1	Introduction	67
5.2	Conclusion of Research	67-68
5.3	Main Findings	69
5.4	Implication	70
5.5	Limitation	70
5.6	Future Works	71
5.7	Conclusion	71

72

APPENDIX A	COMPARISON ON FUNCTIONALITY OF	
	DIFFERENT SYSTEMS	
APPENDIX B	HEURISTIC EVALUATION RESULT	
APPENDIX C	USER STUDY QUESTIONNAIRE	
APPENDIX D	SYSTEM TESTING QUESTIONNAIRE	

## LISTS OF TABLES

## TABLE

4.1 Usability testing result

PAGE 65

## LISTS OF FIGURES

FIGURE		PAGE
2.1	Snapshot of the VCD rental system	11
2.2	Snapshot of the IL Duce Rental System	12
2.3	Snapshot of the REJA Version 1.00 video rental application	13
3.1	Management Domain Menu Structure	26
3.2	Member Domain Menu Structure	27
3.3	System Architecture	28
3.4	Entity Relationship Diagrams (ERD)	29
3.5	Context Diagram	30
3.6	Data Flow Diagram (Level 0)	31
3.7	Data Flow Diagram Level 1 (Register New Member)	33
3.8	Data Flow Diagram Level 1 (View member personal information)	34
3.9	Data Flow Diagram Level 1 (Edit member personal information)	34
3.10	Data Flow Diagram Level 1 (Search and view movie information)	35
3.11	Data Flow Diagram Level 1 (Rent movie)	35
3.12	Data Flow Diagram Level 1 (Return movie)	36
3.13	Data Flow Diagram Level 1 (Identify overdue rental)	37
3.14	Data Flow Diagram Level 1 (Add new movie)	38
3.15	Data Flow Diagram Level 1 (Edit movie information)	38
4.1	Main Screen	39
4.2	Login	40
4.3	Member Menu	41
4.4	Member Profile	41
4.5	Edit Profile	42

4.6	Change Password	43
4.7	Movie search	44
4.8	Movie details	45
4.9	Play Movie Trailer	46
4.10	Rental records	46
4.11	Staff menu	47
4.12	Member profile access by staff	48
4.13	Add new member profile	49
4.14	Staff browses for the member's photo from the computer	50
4.15	Delete member	51
4.16	Movie Inventory	52
4.17	Add new movie	53
4.18	Browse for movie cover to upload	54
4.19	Upload movie trailer	55
4.20	Transaction page	57
4.21	Penalty table	59
4.22	Report Menu	60
4.23	Rental report	61
4.24	Top 10 members report	62
4.25	Top 10 movies report	63
4.26	Daily sale report	63

## **Chapter 1: Introduction**

#### 1.1 Introduction

During the 1960s, computer technology was still subject by scientific and accounting applications. Data was stored on paper tape or cards, on magnetic tapes and large magnetic disks, and there was slight direct interaction with the computer. Cards were sent to the computer centre to process and the results were returned after a few days (Benyon, Turner & Turner, 2005).

In the 1980s, computers were primarily still in the hands of software engineering. Human computer interaction established itself as an important area of study in the early 1980s. User interfaces became tangible, gradable and immediate and software systems had to be engaging as well as functional. A generation later, computers are enveloping everywhere and in the hands of everyone (Benyon, Turner & Turner, 2005). The rapidly increasing power and rapidly decreasing costs of computers are making it economical to use them for a growing number of business functions.

Interactive system is the term use to describe the technologies such as, components, devices, products and software systems, that interactive system designer's work with. Interactive systems are things that deal with the transmission, display, storage or transformation of information that people can perceive (Benyon, Turner & Turner, 2005).

Rental or release of equipment is a common practice in modern business. In today's competitive marketplace, customers demand greater convenience. As a rental agent, it has to respond rapidly to the needs of their customers. It is important for the equipment availability

to match customer demand patterns. Interactive VCD rental system is now available on the market with variety of usage. Interactive VCD rental system will be able to influence the industries to provide better customers services and improve the management of the business process.

Even though interactive system is now common to most people, the design of those interactive systems is a bit dull and boring. These systems will usually provide certain functions to manage the people works. If these kinds of less interesting and less attractive interaction VCD rental systems are to populate in the market, it is afraid that the effectiveness of the interactive system will be slowed down.

So, there is a need to develop a new interactive VCD rental management system. This interactive VCD rental management system is developed to replace the manual system. With the computerized system, manpower and time can be saved. This interactive VCD rental management system provides solution for the rental and sale of entertainment media, a profitable product category that satisfied the demands of customers. This system can also provide security control to ensure that unauthorized people does not access the private and confidential data. The user control function provides the ability to log onto and off of the system. In addition, this system can provide a quick search to find customer, movie or sales details.

## 1.2 Problem Statement

Insufficient manual system is more time-consuming, insufficient and ineffective. A large number of items or high-volume turnover can cause major errors in tracking inventory. Errors in inventory control can result in lost sales and in the maintenance of unnecessarily high quantities of slow-moving products. With computerized system all works seen easier, such as adding new record, searching and updating data. Therefore, manpower and time can be saved.

In addition, the manual system is Insufficient in VCD penalty tracking. It is hard to keep track of which VCD is due as records are manually kept. Therefore, some DVD movies are not returned without further action on customers.

Beside that, insufficient information can be provided to customers when using the manual system. For example, to know about certain movie, customers can only read the short story description provided by the VCD cover. However, with movie preview, customers can get an overall story in better understanding.

## 1.3 Project Objectives

The objectives for develop the Interactive VCD rental management system includes:

- To generate report by extract useful information from database (data mining) for marketing purposes.
- To provide multiple and flexible pricing and late fee structure.
- To develop an interactive computerized VCD rental system that replaces manual system, with movie preview.

### 1.4 Project Scope

This system is developed for Standalone Company only. The system will be in English, as English is the international language that mostly speaks all around the world. User can only use the system or retrieve the data in the VCD rental company.

The system is enhanced by audio, video, graphics and movies. The customer has to pay cash to the cashier, as this system does not support credit card payment.

#### 1.5 Methodology

Object Oriented Software Development (OOSD) will be adopted for the project of Interactive VCD rental management system. This methodology consists of four main phases. The phases are Analysis, Design, Coding, and Testing.

#### Phase 1: Analysis

Analysis is the first stage of the development process. This chapter concerned with the analysis of current system and its problems and then an analysis of ways to design new system. Besides that, survey or research is done to analysis the whole manual system and the existing system's problem. The existing system is analysis in terms of database used, programming language used, system features, and system interface. After analysis the existing system, improvement can be done the proposed system. The end of this chapter identifies the whole user interface, the hardware and software requirement specification of the proposed system. In addition to the information about what the proposed system is going to do, the software requirement specification also specify planned limitations of the system will not do.

#### Phase 2: Design

During this stage, physical design, architecture design, interface design, data storage design, fact will be identified, and program design of the system is prepared. Various data flow charts are drawn and analyzed to illustrate how the system flow will work that includes the flow of information in the system, the users that will use the information and system the process that takes place.

In this stage, DFD or EDR diagrams will be drawn. Technical specifications for screens, menus, and other devices are identified that might be used to help make the system more efficient information generator.

### Phase 3: Coding

In this stage involves involve a cycle of coding, testing, debugging, until it is ready to be delivered. After coding, the system will undergo a series of testing. The data of customers and movies are inserting into database, and the system will be tested on how it will run. System will be test on rental process, search function, tracking late return, and ability to generate business report. Any bugs in this phase will be corrected. The outcome of this stage is the run able system.

### Phase 4: Testing

Testing the implemented system is mainly for quality assurance purpose. This phase activity involves the correction of errors in the system, which is discovered after release and the revision of the system services to satisfy requirements that were not realized during previous development. Any changes that can make the system easier to use or additional functions that are needed are identified and the proposed system will be enhance. The outcome of this stage will be a final run able system.

## 1.6 Significance of Project

The implementation of interactive VCD rental management system is used by the VCD renting company's staff and customers. Since most of the company still using manual system, this project takes it a step further and provides interactivity system with multimedia enhancement. The project therefore, is expected to bring benefits to these two groups of user.

### 1.7 Expected Outcomes

An interactive computerized VCD rental system that provides efficiency and makes users' work easier is developed. Besides that, customers needs of previewing movie to get movie of interest before renting it is fulfilled.

## 1.8 Chapter Flow

This report is divided into five chapters.

#### **Chapter 1: Introduction**

This chapter gives an overview of the project. It includes background of the system; briefly explanation of functionalities provided and benefits gain by customers and staffs. Programming language and methodology used for developing the system also stated here.

#### Chapter 2: Background

This chapter is concerned with presenting the background to the area of investigation and establishing the context of the problem. The various review are conducted include the reviews on existing similar system, tools and technology required in the development of this project as well as other reviews.

#### **Chapter 3: Requirement Analysis and Design**

This chapter defines the detailed requirements of the project by analysis and design. These requirements are obtained from interviews, market analysis, customer, and literature sources. The design includes both the logical and physical design. Logical design focuses on the flows of activities or processes in the project whereas the physical design focuses on the design for user interface.

#### **Chapter 4: Implementation and Testing**

This chapter describes the implementation issues involved in the development of the Interactive VCD rental management system. It shows how the interface and the various modules in the system are developed and implemented. On the other hand, testing focuses on the importance of testing, types of testing, evaluation approach and how they should be performed. Furthermore, this chapter also discusses the result of testing and evaluation done throughout the development processes of this project.

#### Chapter 5: Conclusion & Further Work

This chapter summarizes up the whole project development, from the planning phase to the maintenance and support phase. This system is reviewed if it full fills the scope of the project and the benefits it bring to the business company. The evaluation together with new ideas will lead to further work that would improve this project.

## **Chapter 2: Background**

#### 2.1 Introduction

Movie rental business is widely open in market, there are different kinds of movie rental system available all over the world. Study about the current movie rental system, which available in the market has been carried out. This chapter focused on the functionalities, processes and components of the reviewed movie rental systems that are available on the market. Each of the movie rental system is designed and built in such a way to meet its respective requirement. So, they are created with different interaction system application programming languages, multimedia elements and so on. Some of them may provide an attractive interface to impress customers but with less function to work with and vice versa. The technology used and the functionalities provided by the system are the main consideration when selecting system for system review and comparison among the selected systems. So, before designing the proposed system, different comparison is made in order to retain the strengths of current system and at the same time improve them to meet the new requirement by applying the new technologies. This is the target that will be achieved by the proposed system.

2.2 An Overview of Manual Video Rental System (Diamond video Company, 2005) Before a computerize rental system is built, it is important to understanding and analysis the current system used now. According to the survey, the client company still was using manually VCD rental management system. The company records their business information in a logbook and keeps in files. This company has to provide at least five categories of files.

details such as, name, phone number, address, member expiration date, and identity number.

There are customer, stock, sales, and penalty files. The company staff records the customer's

9

Under stock file, the details recorded are, movie name, movie identity number, date purchase, cost and condition. While sales file record the customer identity number, cost, date rent, and due date. On the other hand, penalty file record about the customer identity number, date rent, date return, amount of penalty, and condition of VCD. From this, we can see that manual system is time-consuming, insufficient and ineffective. Computerized system will makes works easier, such as adding new record, searching and updating data. Most importantly manpower and time can be saved. Beside that, unauthorized people can easily access manually filed data.

#### 2.3 An Overview of Video Rental System

There are many types of movie rental system available in the market nowadays. From the examples found, three systems were selected for review; they are VCD rental system, IL Duce Rental System and REJA Version 1.00 video rental application. Those systems were chosen based upon the functions provided, components used and the overall processes involved.

### 2.3.1 VCD Rental System (2005)

This existing computerize VCD rental system is available from the website http://www.Planet-Source-

Code.com/vb/scripts/ShowCode.asp?txtCodeId=59871&lngWId=1. This VCD rental system can be run with any personal computer with 64MB RAM or higher, with Windows 95/98/Me/NT and together with any models of printer. Mainly this system is developed to bandle all the video renting aspects. This system provides security control to ensure that the private and confidential company and customers' data will not accessed by unauthorized people. In addition, with the search engine provided, user can find customer and employee detail by enter their name. On the other hand, video can search by alphabets, or enter search criteria, such as by title, actor, or classification. User can track inventory history that shows complete rental history of each rental item, customer who rented it, rent date, returned date, and total rent received. The most convenience of the system provides different kinds of reports for marketing purposes. Beside that, this system also provide many other functions such as, profile of employees and customers, video rental, movie return, movie sale, waiting list, print reports, invoices, and inventory. This system allows company staff to keep track of all sales and rental, keep a history of customer information, generate detailed invoices, automatically calculate any taxes due, and waiting list. The instructions or guides for new users on how to use the system to make a search, and rent movies are found in this system. As a conclusion, this existing system is lack of multimedia elements and customers will feel bored or uninteresting on it. This is different in the proposed system because it allows a more fun and interactive way of rental movie for the customers by providing background music and movie preview.



Figure 2.1: Snapshot of the VCD rental system

#### 2.3.2 IL Duce Rental System (Robert Dondo, 2005)

This existing computerizes VCD rental system is call IL Duce Rental System. It is available at World Wide Web http://uk.geocities.com/ilducesystems/ilducehome.html. This system can be run with any personal computer with 64MB RAM or higher, with Windows 95/98/Me/NT and together with any models of printer. The system objective is to due with all the video rental business. Similar with the VCD Rental System, this IL Duce Rental System also provides security control to ensure that the private and confidential company and customers data will not accessed by unauthorized people. Furthermore, the system's search engine enable user to find customer detail by their name, surname, and ID. On the other hand, user can also search video by enter title, actor, or actress. Transaction can be search by transaction ID, video ID, and customer ID. This system allows company staff to keep track of all rentals, keep a history of customer information, and search for movie. This system provides less function than the VCD Rental System, it does not has ability to track the customer penalty of late return. This system is lacking some useful functions and excitement for customers.

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Figure 2.2: Snapshot of the IL Duce Rental System

#### 2.3.2 REJA Version 1.00 video rental application (Reja)

This system is available from http://www.programmersheaven.com/zone1/cat377/26787.htm. This system can be run with any personal computer with 64MB RAM or higher, with Windows 95/98/Me/NT. The system objective is to provide a more interactive video rental system. This system allows company staff to keep a history of customer information, and search for movie. This system provides more multimedia function than other system, it has audio and animation that make the system more interesting to use. Similar with the other systems, this system also enquire user to enter passwords to enforce the private and confidential company and customers data control. Furthermore, the system's search engine enable user to find customer and video details. The system has a voice guide to tell the user where categories they in, play background music to user, and a security alarm. Because the system does not provide automatic calculate the taxes due, so it provides a quick access to windows' calculator and notepad for computations and writing notes. Even this system applies the multimedia elements, it is still not very convenience to the customer because the user cannot preview the movies to get better understanding of the movie. The customer can only read the short description of movie provided on the screen and VCD cover.



Figure 2.3: Snapshot of the REJA Version 1.00 video rental application

#### 2.4 Discussion of Reviewed System

#### 2.4.1 Comparison on the Functionality

### 2.4.1.1 Database Used

The database technology used in those three systems is Microsoft Access. Microsoft Access uses a technology that makes the database a poor choice for large amounts of traffic; it is suitable for applying in the systems because the systems do not require a high level of concurrent traffic. In the proposed system, Microsoft Access is chosen to store the system's data because the system is just a prototype and it does not require a large database to keep the information. An Access application can be modified much more quickly as well.

#### 2.4.1.2 Programming Language Used

Three of the systems are developed using the Visual Basic languages. Developing an application in Microsoft Visual Basic can result in a fast-performing application that is tailored to the specific look and feel. Visual Basic's flexibility lends itself to development of applications ranging from large multi-user systems and distributed applications down to single-user applications and small utility programs. Custom reports done in Crystal Reports can be seamlessly integrated into a Visual Basic application.

#### 2.4.1.3 System Features

For the video rental system, it is designed in simple and easy to use system. The main features found in this system are the search function and ability to generate business reports. The search function enables user to find customer and employee detail, video and inventory history. The reports generated can provide company a useful business report for marketing purposes. For the IL Duce Rental System, it is similar to others video rental systems. The main features included security control, and search for movies. As mentioned in the reviewing existing system, the REJA Version 1.00 video rental application provides more multimedia elements for the user. It enables users to use the system with voice guide and background music.

#### 2.4.1.4 System Interface

The three-reviewed systems are designed using text, and 2d images except the REJA Version 1.00 video rental application with additional voice guide and music effect. This audio effect will make the customer enjoy the journey of their rental process. The IL Duce Rental System uses the icon on the system interface. Icon is a graphic used to represent words on the system interface. The icons used there are standardized with the Windows' icons, so that users can identify it easily. For example, a picture of opened folders is the icon where user can click to opened folders from the files required.

The summary of the comparison is listed in table at Appendix A.

#### 2.5 Proposed System

#### 2.5.1 Improvement of Current System

From the section discussion of the reviewed system, several improvements of the current system are found. An additional multimedia elements add in the proposed system is the most obvious improvement of the current system. Furthermore, interaction design in the developing project will makes change to the current selling and renting process found in the existing system. A new look and impression system will rewrite the customers' conventional perception on them. The proposed system not only designed with a good user interface but also concerned with the aspects that relate to the interaction between users and this system.

Consequently, the proposed system will adopt the term human-computer interaction. A good human-computer interaction system enables it get a better chance to succeed in the market place. Moreover, this can improve the reputation of one company.

#### 2.5.2 Database Used

The proposed system will use the Microsoft Access to develop the database. Microsoft Access is chosen because it is suitable for applying in the systems that do not require a high level of concurrent traffic. If we later outgrow our Access database, the data can be converted to a SQL Server database without much trouble.

#### 2.5.3 Programming Language Used

The main language used in the proposed system is VB.NET. The VB.NET Framework takes application development to viewing the Internet as new operating system. Beside that, VB.NET Framework will also allow the creation of new types of applications. Applications will now run using the Common Language Runtime (CLR). In addition, VB.NET Framework has many security features built-in to it to protect your applications. This prevents code from accessing memory locations that it does not have authorization to access.

#### 2.5.4 System Features

In the proposed system, user can preview the movies they would like to rent. In addition, this system will also provide help for the users. Users can click the help button if they got any problem in using this system. In addition, the proposed system will also designed with the security control, store customers' detail, tracking late return and automatically calculate penalty, and generate business reports as well as search features. Beside this, the proposed

system will also has security control to ensure that the private and confidential company and customers data will not accessed by unauthorized people. In addition, user can find customer and employee details, search video and tracking inventory history. This system also provide a very convenience function by generate different kinds of reports for marketing purposes. Beside that, this system also provide many other functions such as, profile of employees and customers, video rental, movie return, movie sale, waiting list, print reports, invoices, and inventory. This system allows company staff to keep track of all sales and rental, keep a history of customer information, generate detailed invoices, automatically calculate any taxes due, and waiting list.

#### 2.5.5 System Interface

The reviewed systems are designed using text, 2D images, animation, and audio. In the proposed system, the system is analogous to these existing systems, the only different of them is additional appropriate sound and video clip will be added in the developing project. The video clip is the short movie preview that enables user to get better understanding of the movie they would rent.

#### 2.6 Conclusion

The background research is an important stage to review and gather information. All the process of study and observation related to the particular topics are examined in this stage. This stage is important to ensure researcher understand the need of their task and not perform the redundant work. In addition, the background research also provide a guideline that enable a task will going to perform is something significant and different. The more research observed in a task, the more understandable for anyone to perform a particular task. So, background research is an important stage before start performing a task.

## **CHAPTER 3: REQUIREMENT ANALYSIS AND DESIGN**

### 3.1 Introduction

There are several methods for requirement analysis and design such as observation, interview, questionnaire, sampling and etc. Requirement analysis and design is needed for gathering all necessary information such as problems faced in current system, system requirements and staff opinions on the new system before develop it. I selected interview, questionnaire and observation as my requirement analysis and design methods.

#### 3.1.1 Interview

Interview was conducted in one session. In the session, I interviewed managers and selected sales assistants to collect information on how the daily management operations and business operations being carried out. Another interview was conducted with the CEO of the company. In that interview session, the information that I had gained were mainly about the requirements on how the system will be developed.

## 3.1.1.1 Summary of Interviews

#### 3.1.1.1.1 With managers and sales assistants

Normally potential customers will get price list from sales assistant and ask for further information of the movies they want to rent. Sales assistant will answers customer's enquiries and consults them. If customer decides to rent the product, invoice will be issued once payment is received.

They comment that are facing problems in current manual system. The problems include bad handwriting of record. Serious problems include delay of penalty processing that causing customer complaint, misplace or lost of files, pricelist and information not updated and duplication of records that lead to wrong decision making.

From the interviews, I found out the problems of current system. One of the problems is most transactions are handled manually such as penalty processing and sales processing.

#### 3.1.1.1.2 With CEO of the company

CEO of the company thinks that current manual system that they are having is not efficient to handle business. High cost is spent to manage the business as there is no sufficient way to store all the account log books.

To cut off operational cost and increase profits, CEO of the company suggest that the new system had to be developed should provide following requirements:

All the transactions are updated to a single database that stored in office. Hence office can evaluate business performance and staff performance at anytime as needed just by accessing the single and integrated database.

There must be certain level of security to be implemented on the system such as access control using login validation. As it is interactive system, some functionality for customers such as viewing personal details, product details, price list and others must be included to improve customer interaction. The system must provide certain input validation to avoid staff entering wrong information during processing. Besides that, the system must be ease to use and user-friendly.

#### 3.1.3 Observation

I was having observation on the current manual system when I was visiting the company for conducting interviews and collecting information using questionnaires. This allows me to observe the working environment and business thoroughly and accurately.

I noticed that during peak time, some customers have to wait to be serviced. There are some customers that are not be able to wait for long time, thus after they get pricing brochures, they leave. These brought to business inefficiency and lost of business opportunities.

For management side, employees have to serve incoming calls for enquiries and customers at the same time. During peak time, they are not able to handle all the enquiries. This is time consuming and insufficient.

#### 3.2 Questionnaire

An experimental study is conducted to get a better understanding of the three movie rental system from the aspect of transaction usability, efficiency, ease of use, interactivity and attractiveness. This study was conducted on 20 users from University Malaysia Sarawak.

The participants were chosen randomly and were asked to use the three movie rental system, which are VCD rental system, IL Duce Rental System and REJA Version 1.00 video rental application. They were then asked to give feedback by filling in the questionnaire consists of eight questions with five levels to choose from.

#### 3.2.1 Question

Total number of question that was asked is 8 questions. The 20 students were given two tasks to complete before they evaluate the system/ the tasks are used for them to test on the system. The description of the task is as below:

 Assuming that you want to search for particular movie that is recently showed in cinema. Search from the system for the movie's details.

(ii) Assuming that a customer come and ask for the particular movie name "Titanic" is available or not. Use the system to help the customer to rent the system. The customer gives his member ID 'CUST100004' to you.

#### 3.2.2 Reaction Scale

Each question has five options answer to choose from that are the strongly disagree, disagree, moderate, agree and strongly agree options. The five options ranks from disagree to strongly agree which those selected users can give their rank based on their own judgments.

#### 3.2.3 Demographic

Beside the question given, there is also a section where the users need to fill in their demographic particular. The demographic section includes gender, age, experience in using computer in years and average hours of using computer per week. The demographic section is important as it gives extra information for the study.

The participants need to write down their age on the questionnaire. Age can affect the study result as age can determine ones knowledge and also experience in using IT system. In this study is just focus to the university user group age.

For the experience of using computer, the participants need to fill in their year of experience in using the computer into the questionnaire. Novice users might find the task given difficult to perform, as they are still new to the system. Meanwhile for the expert users, they will find the task given easy to complete.

For the average hours in using the computer per week, the user needs to fill in their roughly estimated hours of using computer per week. This is important because the hours spent per week on the computer determine the experience in using the computer.

#### 3.2.4 Interview

Some of the students will be choose randomly for the interview section. About 5 students out of 20 students will be choosing for interview. They were interviewed while collecting the questionnaire back from them. The interview section is just a casual conversation with the users which take around 5 minutes.

During the interview section, their opinion about the system is listed. Their opinion about the system is very important as this can not be described by only seeing the result collected from the questionnaire. Any suggestion about the system also been listed down. The suggestion collected can be a key to improve the usability of the system.

## 3.3 Results and Discussions

The study, we compared means and the standard deviation of the VCD rental system, IL Duce Rental System and REJA Version 1.00 video rental application on transaction usability, efficiency, eases of use, interactivity and attractiveness.

#### 3.3.1 Result

All the data collected were converted into the mean and the standard deviation for the study. The result of the calculation for mean and standard deviation can be seeing from the Appendix A Table 3.1.

#### 3.3.2 Discussion

Overall the results show that the VCD Rental System has the highest level of match between system and the real world with the mean of 4.00. VCD Rental System let user to search for movie and rent for it. Every step of searching and renting is easy. Only a few steps are taken in order for the user to searching and rent the movie. User can easily use the system to perform task even though they are using it for first time. On the other hand, there is too much scroll bar for the REJA Version 1.00 Video Rental System Application that user has to scroll to vie the movie details, this may confuse the user.

REJA Version 1.00 Video Rental Application gets the highest mean of 3.20 for visibility of system status, because it does show a clear feedback and highlight the important message that allows user to be aware of what is going on.

Beside that, consistency and standard is also very important, the VCD Rental system gets the highest mean for this section with 3.50. The design of the interface was very standard as they use blue background for the entire screen and the form size is the same. In addition, the placement of date, time, help and exit is the same through out the screen.

For IL Duce Rental, they design their screen layout just like any Microsoft Office System with the icon at the top of the form. This will make the user use it more convenience because majority of the respondents do use Microsoft Office Product such as Microsoft Word.

From the result, we can see clearly only REJA Version 1.00 Video Rental Application provides multimedia elements such as, background music and sound that greet user while they interacting with the system.
#### 3.4 Design

The proposed system is the interactive VCD rental management system to replace the manual system. With the computerized system, manpower and time can be saved. This system can also provide security control to ensure that unauthorized people does not access the private and confidential data. In addition, this system can provide a quick search to find customer, movie or sales details.

After observing how daily operations are performed and identifying available problems, I came out with the functionalities specification that implemented on the system. There are two main users of the system, management and customer. The functionalities provided by interactive VCD rental management system for different users can be accessed under following menu:

Management domain menu:



Figure 3.1: Management Domain Menu Structure

\*\* Remark: staffs will be able to view, create, update and delete records from database.

## Member domain menu:



Figure 3.2: Member Domain Menu Structure

\*\* Remark: Customers will be able to view or access only the product details, personal claims details and software from the database. But, they can create their customer account and create new topic title in forum.

#### 3.5 System Architecture



Figure 3.3: System Architecture

The system is having 3-tier architecture model, Presentation, Logic and Data Tier.

Presentation tier is the user interface that displayed on user computer screen. Different user interfaces will be displayed to different user according to their login such as either management staff or customer login.

Logic tier is implemented by VB.NET files that stored in server that connects users with the backend database. The logics reside inside VB.NET files will perform some processing and manipulate database (select, insert, update or delete) and return requested response when a request is received from user browser.

Meanwhile Microsoft Access is in the Data tier that stores all data for running the system.

#### 3.6 Entity Relationship Diagrams



Figure 3.4: Entity Relationship Diagrams (ERD)

Figure 3.4 shows the relationship between the customers who rent movie and the administration that manages and supplies the receipt. This entity relationship diagram shows how the database of the system works.

The customer can has none rental or many rentals when he or she wants to use the system. Each of the rentals must have one customer assigned to it so that to keep track of the rental. Each rental can request at least one or many movies depending on the user preference. Customer can preview many movies trailer.

Each of the rental must has at least one receipt or it can has many rental printed in a single receipt. The receipt must also have to be supplied or control by administrator. At a time, one receipt can only be issued by one administrator.

#### 3.7 Context Diagram



Figure 3.5: Context Diagram

Figure 3.5 shows the exact functionality of the system. The system is divided into two sides which is the admin side and the client or customer side.

Based on the context diagram, customer and admin is the external entity which they act as and input and receive output from the system. The system will receive new customer information form customer or admin. Member also can edit their own personal information. In addition, customer or admin can search for movie by key-in the keywords in search fields. However, only the admin can add new movie information to the system for the customer to preview and rent. Beside that, admin can add new rental, return record, add new movie, and edit movie information.



Figure 3.6: Data Flow Diagram (Level 0)

A more detail system is shown in the Figure 3.6. A customer can made a rental as long as they already sign up as a member, however only staff can access the rental transaction menu. The system will retrieve the customer profile from the customer master database when the customers want to rent or return the movies.

If the customer does not sign up as a member yet, they can sign up a new account where the system will add the customer record in the customer master database based on the new customer information provided by the customer.

The admin has the power to update and to add new movie information into the system. After the new movie had being confirmed, the system will then save the information in the movie master database for the customer to rent.

After customer had made a rental, the system will check for the movie stock left, rental will success if there is stock for that particular movie. The system will create receipt statement when the customer pays in cash. The system will retrieve the customer information from the customer master database. Then the customer receipt statement will be printed and send to the customer.

#### 3.9 Data Flow Diagram (Level 1)



Figure 3.7: Data Flow Diagram Level 1 (Register New Member)

Figure 3.7 shows the process of register new member. A new customer needs to be registered as a member in order to make a rental. The system will automatic generate the member ID by retrieve from the customer database the last member ID. Then customer needs to enter the customer information and the system will then read the customer information.

Then the system will check whether all the required fields are filled or not. If the retype password did not match the password entered, an error message will be displayed. After the system had validate that the customer information entered is valid, then it will be saved in the customer master database.



Figure 3.8: Data Flow Diagram Level 1 (View member personal information)

Figure 3.8 shows the process of view member personal information. Member must login to their own account before they can view their own personal information. Member ID and password are required to login to the system.



Figure 3.9: Data Flow Diagram Level 1 (Edit member personal information)

Figure 3.9 shows the process of edit member personal information. Member must login to their own account before they can view and edit their own personal information. Member ID and password are required to login to the system.



Figure 3.10: Data Flow Diagram Level 1 (Search and view movie information)

Figure 3.10 shows the process of search and view movie information. Member or admin can search movie by enter the search field like movie ID, title, category, version, or type. If the system finds no match from the movie database, a message will send to the user.



Figure 3.11: Data Flow Diagram Level 1 (Rent movie)

Figure 3.11 shows the process of rent movie. Admin must enter the member ID and movie ID to start the rent process. The system will check the valid member ID and movie ID, and then it will check the movie availability. If the movie is available the rental process will continue and

record all the rental details into database. If there was no stock left, then a message will pop up to notify there was no stock left for that particular movie, and ask if the customer want to reserve for the movie or not. After that, the system will update the movie copies left (by movie copies left -1) for that particular movie in the movie master database.

Beside that, the member's total movie rented also will be updated (by member total movies in hand +10 to the customer master database.



Figure 3.12: Data Flow Diagram Level 1 (Return Movie)

Figure 3.12 shows the data flow diagram at level 1 for the customer return movie process. When the customer returns a movie, the system will validate the member ID. If the movie ID entered was not in the rental database and match with the movie ID customer has rent, then an error will return to customer. If the movie ID is valid, the system will check the rental details from the master rental database for movie return due date. If the movie has not reach its return due date, then the system will proceed to return the movie by updating the movie master database (with movie copies left +1) and update the customer master database (with total movie in hand -1). However, if the system detect the movie has over the due date, then it send data to the process 7, which is identify overdue rental.



Figure 3.13: Data Flow Diagram Level 1 (Identify overdue rental)

Figure 3.13 shows the process of identify overdue rental. The overdue rental details get from the process 6, which is return movie process. The process will get the rental due date from rental database and calculate the total days the movie has due. The system then will calculate the penalty amount, customer has to pay the penalty by cash.

After customer pay for the penalty, the penalty master database will be update by setting the penalty status to 'Paid'. The system proceeds to update the rental database by setting the rent status to 'Return'.



Figure 3.14: Data Flow Diagram Level 1 (Add new movie)

Figure 3.14 shows the process of adding new movie. Only admin perform this action. After movie information is entered, the system will check whether all the required information is filled, else it will alert a message to the admin. A message will show after a movie is successfully inserted into movie database.



Figure 3.15: Data Flow Diagram Level 1 (Edit movie information)

Figure 3.15 shows the process of edit movie information. Admin must enter movie ID for edit, after enter the new movie information, the system will save the updated data to the movie database.

## **CHAPTER 4: IMPLEMENTATION AND TESTING**

## 4.1 Introduction

In this system implementation chapter will explain in detail how the system is implemented and works. It will explain in detail every function and their roles.

# 4.2 Main Screen

Diamond Ltd. Bhd.	
VCD and DVD Rental System	
Guest Click Here	
Sign Up	
🕃 Ехя	

Figure 4.1: Main Screen

For the main screen, there are four buttons for user to choose. User can click the "Guest Click Here" if they are not member, but interested to know the details for the company products and use the facilities that provided from the company. On the other hand, staff or member can login by clicking the "Staff/Member Login" to access to certain function. The button "Sign Up" is for any customer that is not a member yet, but interested to become a member. Lastly, the button "Exit" is to exit for this system. 4.3 Login

ogin			
Please en	ter your me	ember ID and	password.
Me Me	mber ID :	-	THE PARTY
W Par	ssword ;	[	
Doe	main :		•
		Member Staff OX	Cancer

Figure 4.2: Login

The login page will require the customer or staff to enter their member ID, password and domain. The member will need to enter the member ID provided by the company since they sign up as a member. The domain that can choose from is Member or Staff, where member must choose domain of member to login and staff must choose staff domain to login. This login also provides error checking to enhance the security control and help user to use the system easily.

The part of the coding:

```
If cboDomain.Text = "Member" Then
    userID = txtID.Text
    user = "Member"
    strSQL = "SELECT [Customer ID],Password FROM CUSTOMER WHERE [Customer
ID]='" & txtID.Text & "' And Password = '" & txtPass.Text & "'"
ElseIf cboDomain.Text = "Staff" Then
    userID = txtID.Text
    user = "Staff"
    strSQL = "SELECT [Login Name],Password FROM LOGIN WHERE [Login Name]='"
& txtID.Text & "' And Password = '" & txtPass.Text & "'"
End If
```

Explanation of the coding:

After the user key in all the login data, the system will retrieve the data from the Customer and Admin database to match with the member ID and password.

## 4.4 Member Section

nam menu	Control of the second strength in a	
Weld	come to VCD Rental Syste	m!
	Date :	4/20/2006
Ľ	Member Profile	
	Movie Search	
	Rental Records	
	Lopolf	

Figure 4.3: Member Menu

If the user is the member, after he or she have login to the system, a member menu will come out. Member can choose any button they want to perform their task. Member can click "Member Profile" to view, or edit some information of their own profile. Member can Search for any movie details or preview the movie trailer from the "Movie Search" button. On the other hand, "Rental Records" is where member can view their history of rental details.

## 4.4.1 Member Profile

Marcine (rotes	Member Profile	- 1mm - 4200200
	Merciles III Enclasses Las Las Auror Charl Las Auror Charl Las Auror Charl Las Auror Charl	
	Rentering for Sec And Rent Sec	-

Figure 4.4: Member Profile

From member profile page, member can view or edit some of their personal information and change their login password. From the information shows, member can know the total movie they rented and the total movie that has reach its due date. Member can press "Menu" button to go back to the menu.

 Nomber Profile	
Normer II Coll ( 1996) I of Name Coll Stand St	
Munimentary Data Tana - Munimentary Constant A State Management A Stat	

Figure 4.5: Edit Profile

Member can edit their profile for certain details only. Others details must be retain for record database uses. After member edits their profile, they click ok to confirm their changes. A message will pop out to notify the record has updated.

### Part of the coding:

```
myOleCommand = New OleDbCommand("UPDATE CUSTOMER SET [First Name] = '" &
txtFName.Text & "', [Last Name] = '" & txtLName.Text & "', [IC No] = '" &
txtUserICNo.Text & "', Gender = '" & cboUserGender.Text & "', [Phone No] =
'" & txtUserPhoneNo.Text & "', [Residental Add] = '" &
txtAdd.Text & "' WHERE [Customer ID] = '" & id & "'", Conn)
```

Explanation of the coding:

This coding is to call the Microsoft Access database with table name CUSTOMER and update the certain field with the member ID that same with the member login member ID in the SQL statement.

### 4.4.1.2 Change Password

In addition, customer can change their password, by click the "Change Password" button. After they click the button, another page will come out for member to change their password. Member can also press "Exit" button to exit from the change password task. Then they will go back to the member profile page.

Change Password		
Member ID : Old Password :		
New Password : Confirm Password		
	ок	Exit

Figure 4.6: Change Password

Member will need to enter their current password, new password and retype the new password for confirmation purpose. There error checking is provided to ensure all the field is field correctly.

After member has entered the entire field required, member will need to press "Ok" button. A message will pop out to notify the member that, the password has changed successfully.

## 4.4.2 Movie Search

After member choose the	Movie Sea	arch task,	the movie	search pag	ge will come	out.
	(Construction of the local data		_	-		

		Movie Be	spiros		and the second
Hirri	e Details				0.me : £(20)300.e
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-	-			<	4
Me					
Mos	Name I				
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1					
	Munte IQ	Marris Name	Тура	Varsian	Categoy *
	Monte IQ MOV18881	Mareta Name Reidamaa 2	Type	Versian	Calegoy * Actian
	Monte IQ HOV190681 HOV18062	Marris Name Reideman 2 King Arban	Type MOVIE MOVIE	VCD DVD	Calegay * Actian Actian
•	Movie ID MOV180681 MOV18062 MOV160003	Marris Hame Raidemas 2 King Arthur Around The Wa	Type MOVIE MOVIE MOVIE	VCD DVD VOD	Calegay * Actian Actian Actian
•	Munic ID MOV100001 MOV100002 MOV100003 MOV100004	Marris Name Baidsones 2 King Arbus Around The War The Lord Of The	Type MOVIE MOVIE MOVIE MOVIE	VCD DVD VCD DVD DVD	Calegary * Actian Action Action
	Movie ID HOV190581 MOV160003 MOV160003 MOV160004 MOV180004	Marris Name Rpidamas 2 King Arthar Around The War The Lord Of The Kong Fulloate	Tros MOME MOME MOME MOVIE MOVIE	VCD DVD DVD DVD	Category * Astian Astian Astian Astian Astian
•	Movie ID MOV190391 MOV190391 MOV190003 MOV190004 MOV190008	Marris Name Baidaman 2 King Athar Around The We The Lord Of The Kong Fulloute Ice Age II	Type MOVIE MOVIE MOVIE MOVIE MOVIE	VCD DVD DVD DVD DVD DVD	Cologay * Action Action Action Action Carlonn *
•	Movie ID HOV199881 MOV199882 MOV199803 MOV199805 MOV19985 MOV19985	Mores Name Baidannas 2 King Arthar Around The Wo The Lord Of The Kang Ful fuste Ico Age II	Type MOVIE MOVIE MOVIE MOVIE MOVIE	Versies VCD VCD VCD DVD DVD DVD DVD	Cologay - Autian Autian Autian Autian Cartonn -
•	Munic ID HOY1 99881 MOY1 99892 MOY1 99893 MOY1 99893 MOY1 99895 MOY1 99895	Moving Name Baidannas 2 King Arthur Around The Wo The Lord Of the Kung Fulfuste Ice Aye II	Type MOVIE MOVIE MOVIE MOVIE MOVIE	Versies VCD VCD VCD DVD DVD DVD DVD	Category - Action Action Action Action Carlenn - ,

Figure 4.7: Movie search

Form here, member can choose their searching field, whether search by movie type, version, category, movie ID or movie name. Member can start their searching after enter the searching field and press "Search" button. They can also press "Refresh" button to reload their search. To view into more details for particular search, user can select the tables and click "View" button. User can go back to menu page by press the button "Menu".

After user key in their search field and press button "Search", the search result will come out in the table format, listing all the possible search result. Once again, there is error checking for the search field. A message will pop out to notify user that the particular search is not valid.

#### 4.4.2.1 View

User can view the movie in more details by clicking the "View" button. After clicking the button, the movie detail page will come out as shown in Figure 4.8. User can view the movie details, such as movie ID, title, type, version, category, release date, actor/actress, director, description, copies available, shelf location and picture of the movie. The copies left and shelf location is for convenience for user see if got stock left to rent and to find it at the shelf of the company. User can press "OK" or "Cancel" button to go back to the search movie page.

	MOV	rie Details	
	Movie Havie ID; Title: Type: Version: Calegory: Release Date: Actor/Actemn Director Description:	MDV100001 Spidemen 2 Kristen Durist, Tobey Maguire Sam Raite	Unite: 4/19/2008
Play Movie Stop Movie	Two years have i challenges at he to befance his du and his life as a c Copies Availab	pessed, and the mid-manneed F viruge/se with "the gift and the of identities as the web-slinging s clegg cludent ar: 4 A	'ster Parker laces new unse," desperately fryng uperhero Spider Man

Figure 4.8: Movie details

### 4.4.2.1.1 Play Movie Trailer

User can press "Play Movie Trailer" to preview the movie. This is very convenience as the customer no needs to go to the counter and ask the staff to play the movie for them. User can press "Stop Movie" to stop playing the movie trailer.



Figure 4.9: Play Movie Trailer

# 4.4.3 Rental Records

ental		R GIIG	al accuru	5	
	40118 ID 4011 00008 4011 00008 4011 00005 4011 00005 4011 00005 4011 00005	Monie Name No Age II Arsund The Wir Bridwmen 2 Kung Fu Hustle Ohloken Little Daredend	Finstal Dues 3/2 erzh05 4/3/2 006 4/4/2 006 4/4/2 006 4/4/2 006 4/2 0/2006 4/2 0/2006	Due Date 4/16/2008 4/1 6/2008 4/1 1/2008 4/1 1/2008 4/1 1/2008 4/1 5/2008 4/2 7/2008	арын Ю Арын Арын Арын Арын Арын Арын Арын
					View



Member can view their rental records at this page. This is for member to check what movie they had rent in case they forget and see the due date of the movie they rent. Member can view into more detail by clicking "View" button.

### 4.5 Staff Menu

Staff Menu		
Welco	me to VCD Rental System	1!
	Date :	4/20/2006
	Member Profile	]
	Movie Inventory	
	Transaction	
	Penalty	
	Report	1.5 2.20
	Daily Sale	
	Locoff	1.000

Figure 4.11: Staff menu

After staff has login, staff menu page will appear. Staff menu has more buttons compare with member menu because staff has more tasks to perform than member. Staff can add, edit, and delete the member profile by pressing "Member Profile" button. "Video Inventory" is where staff can manage the movie stock, such as add, edit, delete, upload movie cover, save movie cover, delete movie cover, upload movie trailer, save movie trailer, and delete movie trailer. On the other hand, "Transaction" is used by staff when they dealing with any movie transaction for example rent or return movie. Meanwhile, staff can keep track of customer late rental charge at "Penalty" button. "Report" button is to access all the useful business report for analysis the business performance. In addition, staff can generate the daily sale report by clicking "Daily Sale" by end of the day. Lastly, staff can press "Exit" to exit from the system.

	M	amber Reco	sh		
		Date :	4/20/2006		
Manhou ID	-				
First Name:					
Last Name			See		Balanta
Lan mana.					
Customer ID	Fest Name	Last Name	ICNO	Gende	
CUST100001	Tan	Chan Sin	820216135160	Female	R. C.
CUST100002	Bong	Siaw Chian	820126135226	Female	6
CUST100003	Tip	Slow Teng	930131016120	Female	
CUST100004	Lee	Chun Chiat	831115136137	Male	
CUST100805	YND	Shing Kong	780921134763	Male	
CUST 100006	Careen	Chue	821115135130	Fernale	
CUST100007	Shiley	Ten	820214135468	Female	2
LUST/00008	Bong	Tae Tae	800429135182	Female	6
CUST100009	Helen	Dong	620424135620	Female	
CUSTINONIO	Tan	SexEn	830210075626	Female	
CUS7100011	Bong	Spe Km	820429134160	Female	
•					
Hew Member	Edit Member	Delete Member	Change Pass	word	View

Figure 4.12: Member profile access by staff

After staff chooses the member profile task, the member details page will come out. Staff can add new member, edit the member profile, delete member, change member password, view member information in more details, and search for particular member. Staff can press "Menu" button to go back to staff menu.

# 4.5.1.1 Search Member

Staff can search for particular member by enter the searching field at the top of the page. They can search by member ID, member first name or member last name.

# 4.5.1.2 New Member

When staff presses the "New Member" button, a blank form like Figure 4.13 below will appear. Staff is required to fill in the new member first name, last name, IC number, gender, phone number, address and password.

	Member Profile	Date : 4/20/2006
Aember Profile		
	Member ID : (1-12/01/12)	
	First Nome :	
	Last Mane !	
	Gender	
	Phone ne.	
	Address :	
	Merisberstap Join Date : 420-2006 • Total Movie rested : Total Movie Dase :	
Password Password	Retype Password	

Figure 4.13: Add new member profile

There is error checking to make sure that the form is filled correctly.

After the staff has filled all the required key and press "Ok" button, a message will come out to notify the staff that the new member record has saved. Staff can press "Back" button to go back to the member profile page.

## 4.5.1.3 Edit Member

Staff can select a member from the table at member profile page to edit. The field that is in darkened is the field that cannot be changed. Beside that, staff can upload the member's photo, save the photo or delete the photo.

Look a	( ISBAPHIC		_	-1	101 CT 21	
My Assert Documents Decembers Detektor My Documents My Computer	<ul> <li>Bulgar</li> <li>Bulgar</li> <li>Bulgar</li> <li>Bulgar</li> <li>Bulgar</li> <li>Bulgar</li> <li>Anneraci fiel</li> <li>Anneraci fiel</li> <li>Anneraci fiel</li> <li>Coladoni</li> <li>Colado</li></ul>	nady npr spectra tab	In form year In form year In the second second Internet Second Second Second Internet Second Second Second Internet Second Second Second Internet Second Second Second Second Internet Second Second Second Second Second Internet Second S	in with in in in in in in in in in in in in in	All May Foo May Foo Market All Paratet All	in Promits weaking f the Ages f the Ages man De er and er and the the the the the the the the the the
My Natures Places	File ruene Files Gi type	1			•	Open

Figure 4.14: Staff browses for the member's photo from the computer

Staff can upload the member's photo by clicking the "Upload Photo" button. Then staff can browses from the photo at computer to upload. After the staff selected the particular photo, they can click "Save Photo" button to save the member's photo that just been uploaded. A message will come out to notify the staff that the photo was successfully saved.

Staff can also delete the member's photo that has been saved by clicking the "Delete Photo" button. A message will come out to notify that the member's photo has been deleted.

## 4.5.1.4 Delete Member

	Mer	nper leco	rds	Date: 4/20/20	60
Hamber ID: First Name Last Name			500	sh Rahas	• 1
Customer ID DUS1100004 CUS1100005 CUS1100007 CUS1100007 CUS1100010 CUS110010 CUS1100112 CUS1100112	Find Name Notice Are you part 199 Tao	Lest Name Dave Dave To delete Custamer No Sare Fan Diwing Mos Ministria	Kine Ner Vuitti 200127 Cancel 100428124156 730025120530 Iscitti 5172124	Gender Male Forcaln Forcaln Forcaln Forcaln Forcaln Forcaln Forcaln Forcaln Forcaln Forcaln Forcaln	
New Member	Last Member	Delete Merido	t Charge Pars	word View	

Figure 4.15: Delete member

Staff can delete certain member from the database by select the customer from the table, then click "Delete Member". A message will come out to ask if the staff really want to delete the selected member. Staff can choose to click "Yes" if he really wants to delete the member else he can click "No" or "Cancel" button if he does not want to delete the selected member.

### 4.5.1.5 Change Password

Staff can also help the member to change their password. The staff just only selects the member from the table and click "Change Password" to change the selected member's password. The procedure to change password is same with the member procedure of changing the password is section 4.4.1.2.

### 4.5.1.6 View

Staff can select the member from the table and click "View" to view into more details about the member. Staff cannot edit the member profile if they click "View", staff can only edit the member profile by "Edit Member".

### 4.5.2 Movie Inventory



Figure 4.16: Movie Inventory

After staff clicks the "Movie Inventory" button, the movie records page will appear. At this page, staff can perform task like, search movie according to certain search field, add new movie, edit movie and delete movie.

### 4.5.2.1 Search Movie

Staff can search for a particular movie same as the task that member can perform. The procedure is same as explain in section 4.4.2. Beside that, staff can use the search result to

connect to the rental page by clicking "Rent" or "Reserve" button that will discuss in detail at transaction section.

### 4.5.2.2 New Movie

Staff can add new movie when they purchase new stock. A blank form will appear for staff to key in the movie details such as, movie title, type, version, category, release date, actor/actress, director, description, copies available, shelf location, upload movie cover and upload movie trailer.

	Mov	ie Details	Dates	1000000
	Movie		trate :	4/20/2000
	Novie10:	MOV100613		
	Title:			
	Туре		here, enter HERE	
	Version:	- 1101	hars, enter HERE:	
	Colegory:	- 10	hars, enterHERE:	
	Rolease Date	Thursday April	20.2006 *	
Ipland Movie Cover	Actor/Actors			
Save Mavie Cover	40000			
Selete Movie Coves	Director			
Play Movie Trailer	Description			
Stop Movie				
pto an Movie 11 allor				
Save Movie Trador				
Delete Movie Traffor	Copies Availab	let.		
	Shell Location	I FILL	Reserve	Rent

Figure 4.17: Add new movie

Error checking is provided to ensure that the staff key in the correct information for the particular field. A message will prompt out to the staff to ask the staff enter the field required.

After the staff key in all the movie details, he has to press "OK" button to save the record into database. A message will pop out to show that the record has inserted into the database.

### 4.5.2.2.1 Upload Movie Cover

After all the details have been saved, staff can upload movie cover and movie trailer to the database. Staff can upload the movie cover by clicking the "Upload Movie Cover" button. A browser will let the staff to browse for movie cover from the computer.



Figure 4.18: Browse for movie cover to upload

# 4.5.2.2.2 Save Movie Cover

After staff selects the movie cover, they can save the movie cover into database by clicking "Save Movie Cover". A message will pop out to notify that the movie cover has successfully saved.

## 4.5.2.2.3 Delete Movie Cover

Beside that, staff can also delete the movie cover by pressing "Delete Movie Cover" button. After the movie has successfully deleted, a message will pop out to notify the staff.

# 4.5.2.2.4 Play Movie Trailer

This task can also perform by member or guest that using the system as explain in detail during section 4.4.2.1.1.

### 4.5.2.2.5 Upload Movie Trailer

Staff can upload movie trailer for any movie available at the database. A browser will come out to enable user to browse for the movie trailer at computer.

10	-	-			- JM
Dyes	100	and the second second	-		17 2
Line +	O HENRS		. +8		
Mar Francesto Decomposito Demaktory	-				
-					
Hy Computer					
Ny Notarya Placas	File carrier Files of type:	horizon to also		•	figer Carcal
	1	Shoff Liniolium : R	-	Heserve	flavet
				08	Encel

Figure 4.19: Upload movie trailer

## 4.5.2.2.6 Save Movie Trailer

After the staff selects the movie trailer they want to upload. They need to press "Save Movie Trailer" to save the movie to the database. A message will come out to notify staff that the movie has successfully saved to the database.

# 4.5.2.2.7 Delete Movie Trailer

Furthermore, staff can delete movie trailer form database by pressing "Delete Movie Trailer" button. After the movie trailer has successfully deleted, a message will come out to notify the staff that the movie trailer has deleted.

## 4.5.3 Transaction

Staff will get a page like figure below after they click "Transaction" button to perform any transaction that related to transaction such as, rent and return. During this page, staff can search for particular member transaction details, add new transaction, print receipt, update and view into more details the transaction details. Staff can go back to the menu page by pressing "Menu" button.

	Rental and Return	
Transaction	actical and actura	Date: 4/20/2006
100 - 100 - 100 - 100		
Member (D		
Move ID		
Movie Name		
Staff ID		
Now Prast	lecast	Member Records
Naw Scatt	tecangt	Mensber Records
Naw Seat 1	M-Calif.	Henter Records
Now Praid	Heavent .	Member floctards
Naw Svat I	Mecange	Hember Records
Nam Seat 1	Mecange	Member Records
New Prot	urs Datate	Member Textants

Figure 4.20: Transaction page

#### 4.5.3.1.1 Member Records

Staff can search for particular member rental records by clicking the "Member Records". Then the staff can search the member rental records by enter the member ID, then click "Search" button. The search result will be list at the table format. Staff can then select the transaction from the table click "View" to view into more details about that particular transaction.

#### 4.5.3.1.2 New Records for Rent

Staff can add new transaction record by pressing "New" and enter the member ID and movie ID for the member that want to rent a movie. After enter the required details, staff press the "Rent" button if the customer wish to rent the movie. A message will pop out to notify the staff that the rental record has entered.

# 4.5.3.1.3 New Records for Return

Meanwhile, if the member wishes to return the movie that he has rent, staff also need to key in the member ID and movie ID, then press "Return".

If the rental has reached its due date, a message will pop out to notify the staff to ask for penalty payments from member first before the return task can be carry out. After the staff press "OK" from the notice prompt, the member penalty page will appear. This page show the total movie rented by the member, the total movie that was overdue, and total penalty payment. Staff will need to select the penalty details for that movie, then click "Pay" when they received the payment from member.

After the staff click "Pay" button, a message will pop out to notify that the payment record has inserted. The page will then continue to the return page and the staff now can press the "Return" button to return the movie. After the record was successfully inserted a message will pop out to notify staff about the transaction.

### 4.5.4 Penalty

The penalty page will come out after the staff click on the "Penalty" button from the staff menu.

		Pena	HICA RECOLD	15	Date: 4/20/2006
	,	-	_	-	
1	Penaty ID	Customer ID	Movie ID	Due Date	Penalty Amo, +
	PEN100001	CUST100000	M0V100006	4/5/2006	15
	PEN100002	CUST100002	M0V100006	4/5/2008	15
	PEN100007	CUST100003	MOV10000E	4/5/2006	15
	PEN100004	CUST100004	H0v100006	4/5/2008	15
	PEN100005	CUST100005	MOV100006	4/5/2006	15
	PEN100006	CU9T100000	MOVIDOOUN	4/10/2338	10
	PEN100007	CLUST 100003	M0V100005	4/10/2006	10
	FEN100008	CUST100004	MOV100081	4/10/2006	10
	PEN100009	CUST100001	MUV100004	4/11/2006	9
	PEN100010	CUSTIONARY	HOVIDUND	4/11/2006	1
	PEN100011	CUST100004	MEV/100001	4/11/2006	9
	PEN100012	CUST100004	MOV100005	4/11/2008	9
	PEN100013	CUST100005	MOV100003	4/11/2006	9
	PEN100014	CUST100005	MOV100004	4/11/2006	2
	PEN100015	CUST100006	MDV100004	4/11/2006	2
	PEN100016	CUST100006	MOV100005	4/11/2006	
41					145
					-



Staff can select the particular penalty from the table, then click "View" to view into more details for the penalty. Beside that, staff may click "Menu" button to go back to the menu page.

Staff can also choose to pay the penalty first before return the movie. After select the particular member penalty, the member penalty page will enables staff to ask the member to pay penalty. After they received the payment from member and staff press "Pay" button, a message will pop out to notify staff that the penalty payment record has been updated and inserted into database.

### 4.5.5 Report

Another report menu will appear when the staff clicks the "Report" button from the staff menu. There are different types of report that staff can choose to view and print, such as penalty report, rental report, movie report, top 10 members and top 10 movies.

Report			
	Report Menu		
	C	)ate :	4/20/2008
	Penalty	1	
	Rental		
	Movie		
	Top 10 Members		
	Top 10 Movies		
			Menu

Figure 4.22: Report Menu

### 4.5.5.1 Penalty

Staff can view and print the penalty report while they are in the penalty report page. This report is to convenience the business performance records by keep tracks of the member penalty.

#### 4.5.5.2 Rental

Staff can view and print the rental report from this rental report page. This report is to convenience the business performance records. The pie chart shows the business performance according to each month. This is very useful for company CEO to keep track of the business performance and notify the "down session" for the business.



Figure 4.23: Rental report

## 4.5.5.3 Movie

Staff can view and print the movie stock report. This report is useful for staff to do stock checking by the end of the year.
### 4.5.5.4 Top 10 Members

Staff can view and print the top 10 members report. These 10 top members are selected by their active rental records. This report is important for company to significant identify their potential customer.



Figure 4.24: Top 10 members report

### 4.5.5.5 Top 10 Movies

Staff can view and print the top 10 movie report. This reports show the most movie rented by members, which is very useful for company to identify what category of movie members like to rent, and this would help them to purchase for the stock.



Figure 4.25: Top 10 movies report

# 4.5.6 Daily Sale

Staff can print and view their daily sale record by the end of the business hour. With this report they can keep track of the income for the day.

Daily Sale I	Report	
4 20/200		
Costomer ID	Movie ID	Mosis Name
CUNTINNANT		
L'USTIONO(1)	MOV100011	Dorectorial
C1:ST100000	MOV100012	X-Men2
CLNT100001		2
CLST100002		
1/1/ST100802	AREAN LOOPING	The Lord OF The Range The
CUST100002	MOV300003	Aroused The World In 50
CTS1100052		1
CUNT100003		
CUSTIONION:	MOV100002	King Anthur
		The second

Figure 4.26: Daily sale report

### 4.6 Usability Testing

In the usability testing, five employees from Diamond Video Company had been chosen for the evaluation Interactive VCD Rental Management System.

The five employees were given two tasks to complete before they evaluate the system/ the tasks are used for them to test on the system. The description of the task is as below:

- (i) Assuming that you want to search for Ice Age II movie that is recently showed in cinema. Search from the system for the movie's details and preview the movie trailer available.
- (ii) Assuming that a customer come and ask for the Chicken Little movie is available or not. Use the system to check for the movie's stock left. If there were stock left the customer wants to rent it. The customer gives his member ID 'CUST100004' to you.

All the data collected were collected and analysis.

## 4.7 Overall Result

The table below shows the result collected from the testing.

no	Usability heuristic	Mean	Standard deviation
1	Efficiency of current manual system	2.80	0.65
2	Match between system and the real world	4.00	0.63
3	User control freedom	3.40	0.32
4	Visibility of system status	3.20	0.89
5	Consistency and standard	4.00	0.63
6	Recognition rather than recall	2.80	0.65
7	Help users recognize, diagnose and recover from errors	2.80	0.65
8	Help and documentation	3.20	0.65
9	Interactive and attractive	4.60	0.32
10	Changing to interactive computerized system	4.20	0.65

## Table 4.1: Usability testing result

The five employees consist of 2 male and 3 female. This five employees were chosen randomly with the age between 18 to 28 years old and they were asked to rate this system in a 5 point scale for the ten heuristics given. The 5 employees had average experience of using internet 14 hours per week which equivalent to 2 hours per day.

#### 4.8 Discussion from user testing

Based on the table above, results are compared to see the strength and weakness of the system. The respondents commented this system provides easy and simple language that enables user easy to use the system follows the user language, follow the real-world conventions and making the information appear in a natural and logical order. User can perform their task with the system even they are first time using the system.

Most of the participants often can choose the correct button to perform particular actions. This shows that the system provides a clear navigation through the system. Beside that, the system also provides some feedback to user to enables user to be aware of what is going on.

Participants feel that more information should be provided to the user so that they can minimize the mistake they will make. Beside the tool tips are used to show what user should do, there is also undo button provided, in case user makes any errors.

Majority of the user get interested more for the system ability to play movie trailer from the database, where is make the staff and member work easy, where member does not need to go to counter to ask the staff play the movie trailer to them. Beside that, a dull business report is enhanced by the colorful pie chart that makes the report interesting to read and analyze.

Majority of the respondents choose to use the interactive computerized system rather than the current manual system. This is because they trust the system and would not make mistake like human being. There are no bad handwriting of record, delay of penalty processing, misplace or lost of files, pricelist and information not updated and duplication of records.

### **Chapter 5: Conclusion and Further Work**

#### 5.1 Introduction

In this chapter, conclusion was made for the work that had being carried out. Beside that, this chapter also includes the limitation of the studies and also the future work. Looking onto the over helming of computerized system in the office environment, it is very important that every system must look onto the usability of the system. Usability is the major reasons hidden behind one successful system.

### 5.2 Conclusions of Research

A quick overview of the methodology used to develop a usability site is as follow:

- 1. Analysis
- 2. Designing system
- 3. Coding
- 4. Usability testing

The first task being carried out was to analyze the usability of the computerized rental system. Research made by knowing how user interacts with system. This is useful in order to analyze how usability of system is.

When designing the prototype, the guidelines for usability site being look through. These guidelines were used to provide a better interface and functionality for the user to use. The functionality for the site is being defined at first. After that, the steps each functionality is

defined. The functionality of the site is actually divided into two sections that are admin area and customer area.

After designing stage is the implementation stage. At this stage, each function in the customer side is developed. This involves programming part using the VB.Net programming language with Microsoft Access as the database. Ever implementation of the function involves iterative testing to ensure that the functionality works. The iterative testing also helps to ensure that every error and bug is fixed in the earlier stage so that implementation of the later function will not be affected.

After the implementation of the customer side, the implementation goes to the admin side. The main focus of the admin side is the security, where password is required to login. Each function in the admin area is being implemented. Every implementation of the function involves iterative testing to ensure that the functionality works. The iterative design involves ensuring that the function can run smoothly and help to detect bugs and errors at the earlier stage.

The final stage is the usability testing. The usability testing involves 5 participants which will determine the usability of the site that being implemented. This testing will involves set of questionnaire which results will be used to evaluate the usability of the system.

68

#### 5.3 Main Findings

From the research made, ease of use is the main effect that causes the user to proceed using the system. A clear instruction on how to use the system means a lot to the user. A clear shortcut for achieving the user goals can helps a lot in providing system ease of use. Simplicity always the best where user does not have to waste their time trying all the buttons available that they do not interested with.

System transaction usability is very important when user making transaction. Steps to make transaction must be clear. User trust is important in system transaction usability. So the simple and clearer steps are, the user will feel that the system is trustable.

System efficiency is also another important aspect that needs to be taken into consideration. All functionality of the system should be kept out from error. A simple system is often better than a complicated system. User may give out to use complicated system because if confuse them and make their performance slower. A system error should also be eliminated by conducting usability testing and also continues testing.

System attractiveness is another ways to attract more users to use the system. User like attractive system compare to a dull system. The first thing to do is to attract user to come to the company before persuading user to use the system. Embedding multimedia in the system which allow user interact with the site easily. With multimedia element in the system, user can have interactive communication with the system.

#### 5.4 Implication

Most of the user intention in movie rental system is to rent movie. Some may only view the information of the movie that they might want to see. So it is important that design of the system should include an indicator, which is the status bar. Status bar shows the user to locate at what transaction they are at the moment.

A receipt also provided for the user proof of rental. Without receipt, user might feel that they being cheated after making the payment. The system must have the print functionality for proof of rental.

#### 5.5 Limitation

The scope of the present study is narrow. In the study, it is developed for Standalone Company only. User can only use the system or retrieve the data in the movie rental company, as it is not a web-base system.

The system will be in English, as English is the international language that mostly speaks all around the world. The system is enhanced by audio, video, graphics and movies. The customer has to pay cash to the cashier, as this system does not support credit card payment.

#### 5.6 Future works

The future research can include making the system as attractive as possible. Attractiveness of a system is very important as it is the main factor that will determine whether user will continue using the system. Beside that, future research also can include credit card or member prepaid card payment.

#### 5.7 Conclusion

As a conclusion, usability is a very important aspect to make user to use the system. However it is impossible to include all the guidelines when designing the system because there are many guidelines to improve the system usability. Not every usability guidelines will bring advantages to the system design because every usability guidelines have the pro and contras.

Choosing the best guideline that suit the system will bring advantages. So it is essential to know the purpose of the system that will be designed matching with the usability guidelines. This is because the guidelines able to bring the maximum advantages out of it.

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# **APPENDIX A**

# COMPARISON ON FUNCTIONALITY OF DIFFERENT SYSTEMS

Descriptions	VCD rental system	IL Duce Rental System	REJA Version 1.00 video rental application
Database Used			
Microsoft Access	V	V	V
Programming language U	sed		
Visual Basic language	N	N	V
System Features			
Store customers' details	N	V	V
Store employees' details	N		
Store videos' details	N	N	V
Search customers' details	V	V	
Search employees' details	V		
Search videos' details	$\checkmark$	N	
Search transactions' details	V	V	
Video rental		N	V
Video return	V	V	Ň
Video sale	V		
Reservation list	V	N	
Edit and delete function	V	N	$\checkmark$
Print reports	$\checkmark$	N	
Generate and print invoices	V		
Print inventory	V		3
Calculate taxes due	V		
Calculator	States and states		$\checkmark$
Audio			V
Interface			
Icons		V	
Animation			V

# APPENDIX B

# HEURISTIC EVALUATION RESULT

System Name		tem Name VCD Rental System			uce Rental System	REJA Version 1.00 video rental application				
no	Usability heuristic	ity Mean tic		Mean	Standard deviation	Mean	Standard deviation			
1	Match between system and the real world	4.00	0.63	3.80	0.65	3.60	1.00			
2	User control freedom	3.40	0.70	3.60	1.00	3.40	0.74			
3	Visibility of system status	3.00	0.63	3.15	0.64	3.20	0.65			
4	Consistency and standard	3.50	0.74	3.45	1.00	3.35	1.00			
5	Recognition rather than recall	3.10	0.64	3.65	1.00	3.20	1.00			
6	Help users recognize, diagnose and recover from errors	3.00	0.64	3.15	0.63	3.00	0.65			
7	Help and documentation	3.40	0.70	3.45	1.00	3.55	1.00			
8	Interactive multimedia	1.80	0.65	1.60	0.70	4.30	0.67			

# APPENDIX C

## USER STUDY QUESTIONNAIRE

 Age:
 Gender: M / F

 Experience of using computer: since
 years ago.

 Average/Frequently using computer:
 (hours/per week)

Reaction Scale:

1	2	3	4	5
Strongly Disagree	Disagree	Moderate	Agree	Strongly Agree

## Please circle the appropriate scale:

No	Heuristic	V sy	VCD rental system System				ntal	RI 1.0 ren ap	EJA Version .00 video ental pplication							
1	The system use users' language, with words, phrases and concepts familiar to the user. Follow real-world transaction and in logical order.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
2	User control freedom, where user often choose the correct button to perform particular actions. Support undo and redo.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
3	The system always keeps users informed about what is going on, through appropriate feedback.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
4	The system's design and words used is consistent and standards.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
5	The instructions for use of the system is visible or easily retrieved whenever appropriate.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
6	Error message is expressed in plain language, indicate the problem, and suggest a solution.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
7	The system does provide help document for using the system	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
8	The system does provide interactive multimedia for user such as music, or movie.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

Thank you for your cooperation.

# APPENDIX D

# SYSTEM TESTING QUESTIONNAIRE

 Age:
 Gender: M / F

 Experience of using computer: since
 years ago.

 Average/Frequently using computer:
 (hours/per week)

 Experience using movie rental system? Y / N

Reaction Scale:

1	2	3	4	5
Strongly Disagree	Disagree	Moderate	Agree	Strongly Agree

Please circle the appropriate scale:

No	Heuristic	Vi sy	CD ster	ren m	ntal	
1	The current manual system for daily business operation is very effective.	1	2	3	4	5
2	The computerized system use users' language, with words, phrases and concepts familiar to the user. Follow real-world transaction and in logical order.	1	2	3	4	5
3	User control and freedom, where user often chooses the correct button to perform particular actions and can exit whenever to leave the unwanted state.	1	2	3	4	5
4	The system always keeps users informed about what is going on, through appropriate feedback.	1	2	3	4	5
5	The system's design and language used is consistent and standards.	1	2	3	4	5
6	The user no needs to remember information from one part of the dialogue to another. The instructions for use of the system is visible or easily retrieved whenever appropriate.	1	2	3	4	5
7	Error message is expressed in plain language, indicate the problem, and suggest a solution.	1	2	3	4	5
8	The system does provide help document for using the system	1	2	3	4	5
9	The system does provide interactive multimedia for user such as music, or movie.	1	2	3	4	5
10	Do you agree to change over current system to interactive computerized system?	1	2	3	4	5

Thank you for your cooperation.