

DESIGN AND IMPLEMENTATION OF A COMPUTERIZED DIGITAL VIDEO LIBRARY INFORMATION SYSTEM

**CASE STUDY: MOVIE LAND ENTERTAINMENT LIMITED,
UGANDA**

BY

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DECLARATION

I **Abdalla Feiswal Abdalla** declare that the contents of this research project titled **Digital Video Library Information System**, submitted to the School of Post Graduate Studies, Kampala International University for the award of Master's Degree of Science in software System Engineering, is my own original work and has never been presented to any other institution of learning for any academic award.

Signed 

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Date 20/10/08

APPROVAL

certify that this research project titled **Digital Video Library Information System** is the original work of **Abdalla Feiswal Abdalla** for the partial fulfillment of Master's degree of Science in software System Engineering.

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DEDICATION

Dedicate this Project to My Lovely Parents Mr. Feisal Abdalla and Zeina Khamis for their support and encouragement, my wife Hanan Mohammed and My son Feisal Abdalla for their love.

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ACRONYMS

SION	Video Indexing for Searching Over Networks
3IC	Query by image and video content
4IL	Synchronized Multimedia Integration Language
3C	World Wide Web Consortium
CD	Video Compact Disc
VD	Digital Video Disc
YSQL	Structured Query Language
VLIS	Digital Video Library Information System
HP	Hypertext Reprocessor
AMP	Windows/Apache/MySQL/PHP, Python, (and/or) PERL
BMS	Database Management system

ABSTRACT

The advances in the data capturing, storage, and communication technologies have made vast amounts of video data available to consumer and enterprise applications. However, interacting with multimedia data, and video in particular, requires more than connecting with data banks and delivering data via networks to customers' homes or offices. Still there are limited tools and applications to describe, organize, and manage video data. The fundamental approach is to index video data and make it a structured media. Manually generating video content description is time consuming—and thus more costly—to the point that it's almost impossible. Moreover, when available, it's subjective, inaccurate, and incomplete.

This research sought out to design a system for MovieLand Entertainment Limited to computerize the manual based system currently in place. The system would be able to offer automatic content-based indexing of videos in the company and will act as data repository for easing the renting process.

The research used Object Oriented methodology to conduct the research. Data collection was done through interview, observation and questionnaire, the data was analyzed to come up with the required information to develop the system. The research used PHP and Dreamweaver to design the interface and MySQL to design the database.

The research came up with a full operational model rental system which can be implemented by MovieLand Entertainment Limited for a computerized system.

The researcher recommends that the system be implemented and the users of the system be trained so that they can operate efficiently and further upgrade of the system so that it can interact with clients and able to contain digital movies online.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Movie land entertainment Limited has a main branch in Kampala District, located in Kampala Road, 1 Kilometer from the city Center. The company has 20 branches in Uganda, the company deals with the rental of movies in form of VCDs and DVDs to the clients, it has more than 1000 clients in Uganda and need to increase its marketplace, currently the company operates in manual generating video content description which is time consuming and it's very costly to maintain.

According to Hoffman and O'Gorman, (1993); Lesk, (1991) the advances in the data capturing, storage, and communication technologies have made vast amounts of video data available to consumer and enterprise applications. However, interacting with multimedia data, and video in particular, requires more than connecting with data links and delivering data via networks to customers' homes or offices. We still have limited tools and applications to describe, organize, and manage video data. The fundamental approach is to index video data and make it a structured media. Manually generating video content description is time consuming—and thus more costly—to the point that it's almost impossible. Moreover, when available, it's subjective, inaccurate, and incomplete.

Currently, Movie land Entertainment limited operates the rental store in such a way a client goes to the store pay a membership fee and after that a client can borrow a movie by paying a rental fee and given one week to return it back. If the customer exceed the period given, he should either come to the company and renew the period or he will pay late fee charge. The company records all the details in a book of records

aining the name of client, date borrowed, return date and movie title borrowed.
en the client return the movie they crosscheck their names and the movie borrowed
remark as returned.

conundrum has attracted researchers from various disciplines, each with their own
rithms and systems. In addition, the MPEG group recently issued MPEG-7 as a
dard to provide normative framework for multimedia content description. However,
ontrast, there are few convincing stories we can tell about successful applications of
research results. It seems that the excitement enjoyed by many researchers from
n academia and industries has yet to generate significant impact in the marketplace.

Problem Statement

ing to the large volumes of movie VCDs and DVDs on the manual managed
pany, it has been a burden for the Movie Land Entertainment Limited running Video
tal services using the manual system currently in place. The system does not provide
a security and movies cannot be easily accessed and this results into time wastage
earching, and retrieving video information. The system therefore aimed at solving
above problem.

Objectives

2.1 General Objective

investigate the current system, design and implement a computerized Digital Video
rary Information system for the Movie Land Entertainment Limited.

2.2 Specific Objectives

a) To investigate current system which is in place at the case study.

- b) To design a database that will act as video data repository, or record keeping containing details of videos in the company.
- c) To develop automatic content-based indexing of videos that will significantly improve the users' ability to access specific video information of interest
- d) To implement and test the model of digital video library system suitable for storing, indexing, searching, and retrieving video and audio information and providing that information across to its client.

3 Scope of the Study

The scope of the study was subdivided into two

3.1 Geographical Scope

The scope covered the Movie Land Entertainment Limited Kampala Branch which is located in Kampala road in Kampala District, Uganda.

3.2 System Scope

The system is only limited to keep track of all the rentals, keep history of clients information, generate reports of movies in store, current rentals and inventory on the movies rented. When rentals are returned, they can easily be entered into the system and any late charges will automatically be recorded.

3.3 Time Scope

The researcher took 3 months to accomplish the research, this was the time scheduled by the school of Post Graduate studies to conduct the research.

4 Significance of the Study

Due to the fact that managing videos in a manual generated file system is cumbersome, the new system will ease the storage, indexing and retrieving of video data.

The designed system will be important to the company through reducing the problem of data redundancy. This is to be done by eliminating the duplication of files, records hence saving time and space.

The customers will benefit as they will quickly search indices for multiple video information to movie of their choice hence more efficient and time saving.

The system will be of benefit the business as it will reduce on the number of workforce the company hence reduces on unnecessary expenditure.

This study is very important to the university in that its future researcher will use it for academic purpose and make their study a bit easier.

5 Limitations of the study

The study was faced with a lot of limitations which retarded the smooth running of the study to be finished in time. The followings are some of the limitations.

- Some of the staff members were absent and other not willing to respond or give right information thus the researcher used various techniques of data collection methods.
- There was lack of materials such as software to design the system which was not installed on the labs and which are expensive to buy.

However, the researcher overcome all the shortcoming by using different data collection methodology to collect the data and to come up with a operational system for the Loveland Entertainment Limited.

CHAPTER TWO

LITERATURE REVIEW

0 Introduction

Literature review is an important chapter in a thesis where its purpose is to provide the background to and justification for the research undertaken by primary Scholarship.

Literature Review uses database reports of primary or original scholarship, and does not report new primary scholarship itself. The primary reports used in the literature may be verbal, but in the vast majority of cases reports are written documents. The types of scholarship may be empirical, theoretical, critical/analytic, or methodological in nature. Second a literature review seeks to describe, summarize, evaluate, clarify and/or integrate the content of primary reports". Its with this view that the researcher viewed literature about related system as posted by previous research.

.1 Information System

According to Date (2001), defines information system as a collection of people, procedures and equipment designed, constructed, operated and maintained to collect, record, process, store, retrieve and display information.

According Flickner, Myron (1995), defines information system as a set of interrelated components working together to collect, retrieve, process, and store and distribute information.

According to the Researcher information system is a set of interrelated components, information resource that retrieve and display information

1.1 Components of an information system

- 1) Input: this is the startup component in which a system operates. It largely determines the nature of output in the system. Unless the input is accurate, the output cannot be expected to be accurate. In most cases, output for one system becomes input for another system.
 - 2) Process: it is defined as an activity that makes possible the transformation of input to output. Machines, functions, operations may act as a processor transformed data into output.
 - 3) Output: is defined as a result of an operation. It's the main objective for which an information system is designed. Though output largely depends upon the input, its nature may be vastly different from those of input.
 - 4) An information systems input data may be numerical in nature but the output may be pictorial diagrams, pie diagrams, bar diagrams e.t.c. in other words, input, process, output are the common elements of a system. They are elements by which all systems are described.
 - 5) People: these are the users of the system. Includes system analysts, programmers, data base administrators, end users.
 - 6) Procedures: are the rules that govern the working of the information system, e.g. how backups are done, levels of security etc.
- (Henry C, 2000)

1.2 Role of information systems in an organization

1. Helps managers with planning, controlling and decision making
2. Enables organization to utilize resources optimally
3. Enables employees to utilize time effectively
4. Acts as a communication tool within the organization and outside environment
5. Helps an organization to produce products and services of high quality through avoiding errors/mistakes.

6. Organizations can keep up with competition or create and conduct business globally, that is, through the internet
 7. Technology allows workers to work from anywhere at any time using functions like video conferencing.
- (Henry C, 2000)

1.3 Categories of information systems

1. Transaction Processing Systems (TPS): - are computer based systems that keep track of the transactions needed to conduct business. Each department of an organization has to have its own transaction processing system.
 2. Management Information System (MIS): - is a computer based information systems that use data recorded by TPS as input into programs that produce routine reports as output.
 3. Decision Support System (DSS): - is a computer based information system that provides a flexible tool for analysis and helps managers focus on the future.
 4. Executive Information System (EIS): - is an Easy-to-Use DSS, made especially for top managers. It specifically supports strategic decisions making.
 5. Expert System (ES): - is a set of interactive computer programs that helps users solve problems that would otherwise require the assistance of a human expert.
- (Henry C, 2000)

2 Database and all its aspects

For any information system to function to the satisfaction of its need it must have a database to enable the storage of data. Therefore basing on this background, it was seen right and fitting to address a brief view of Databases as the information below depicts. Database systems are designed to manage large bodies of information. Management and data involving both defining structures for storage of information. In addition databases ensure safety of information stored, despite system crashes or attempts at unauthorized access since this data is to be shared therefore the system must avoid possible anomalous results.

According to Martin *et al* (1999), a database is a shared collection of logically related data, organized to meet the needs of an organization. A database management system is a support software that is used to create, manage and protect organization data. A DBMS works with the operating system to modify data and make data accessible in a variety of meaningful and authorized ways.

Codd (1995), defines a database as an integrated collection of logically related records or objects. DBMS is a set of computer programs that controls the creation, maintenance and use of databases of an organization and its end-users.

According to Date (2001), states that the database is a collection of persistent data that is used by the application systems of some given enterprise. Enterprise is a convenient generic term for any reasonably self contained commercial, scientific, technical or other organization. An enterprise can be a single individual (with a small data base) or a complete corporation or a supermarket or bank. Any organization must necessarily maintain data about its operations. Such data is referred to as "*persistent data*" as referred above. Therefore among the persistent data we could have sales made, accounts data among others.

2.1 Advantages of Databases

According to Date (2001),

- i. Data can be shared; It might not be possible to satisfy the data requirements of the new applications without having to add new data to the data base
- ii. Redundancy can be reduced; In file based system redundancy is unavoidable, but with the data base files are integrated and this problem is eliminated as long as the data administrator is aware of the data requirements for both applications

- iii. Inconsistency can be avoided in file based. Suppose there is a change in one file means changes have to be made in all other files otherwise data becomes inconsistent but for the data base a change in one record is done automatically to all others as well through a process called *Propagating dates*
- iv. Transaction support is provided. Having a logical unit of work typically involving several database operations in particular, several update operations. Example transferring cash amount from account A to account B clearly two updates are required one to withdraw cash from A and the other to deposit to account B, if the user has stated that the two updates are part of the same transaction then the system can effectively guarantee that either both of them or neither is even (say because of power outage) half way the process
- v. Integrity can be maintained; To ensure that the data in the data base is correct, data is controlled centrally by permitting the data administrator define and the data base administrator implement integrity constraints known as *business rules*
- vi. Security can be enforced. Data access is restricted to those with passwords and proper permissions
- vii. Conflicting requirements can be balanced. Here the data base administrator under the instruction of the data administrator's direction can so structure the system so as to provide an overall service that is "*best for the enterprise*" to avoid the conflicting requirements issue
- viii. Standards can be enforced. Date (2001), states that the data base administrator under the data administrator's instruction ensures that all applicable standards are enforced in the presentation of data. The applicable standards may include any or all of the following departmental installation, international standards. Standardizing data representation is particularly desirable as an instrument to aid interchange or movement between systems.

3 Digital Libraries in General

Technological advances of several kinds are converging to transform the ways in we generate, store, and use information. Digital libraries are being built which store a wide variety of information and information types: page images of technical journal articles (Lesk, 1991); Hoffman and O'Gorman, (1993)], nucleic acid sequence data (Burks, 1991), geographic information (Pissinou, 1993), computer science technical literature (Brune and Cross, 1993) to name a few.

With regular libraries, the user goes to the information. In the digital realm, the information is delivered to the user; requiring easy to use, easy to learn user interfaces (Fox, 1993], and information servers which can interface with a wide range of client technologies (Kahle and Morris, 1993). The ability of users to manipulate retrieved information has fundamentally changed the relationship between the information producer and consumer (Rawlins, 1993), prompting attention to both the legal and social aspects of this process (Garrett & Lyon, 1993).

A recent development is the emerging ability to digitize and manipulate video and audio information. In addition to teleconferencing, this has a wide range of commercial applications. For example, the AP wire service is beginning to transmit digitized video clips as well as text over its existing network (Broadcasting and Cable, 1993). Twentieth century Fox and Sony are digitizing news reels from the thirties and forties (Business Week, 1993), which will be a unique educational resource. Digital video is also being utilized in marketing research firm reports (CD-ROM Professional, 1993) and in marketing products over the ECnet which links manufacturers and suppliers (Computer World, 1993). Finally, digital post production is becoming standard in the film industry, which is continuing to push the state of the art for manipulating video images (Corpette, 1993).

Large scale collections of video data are also getting attention. For example, AT&T divisions a huge digital library storing a wide range of data, including movies for



wing on demand, interactive presentations, educational materials, marketing presentations, and news (Business Week, 1993). To make this dream a reality requires research in the basic technologies necessary to implement digital video libraries. Recent efforts have been made in developing the individual components necessary for handling multimedia data [(Nicolaou, 1990); (Rangan 1993)], and building software systems and operating systems designed to handle multimedia data [(Fox,1991); (Jeffay 1992)].

What is needed is the technology to treat collections of digital video segments as a library which can be automatically indexed and searched based on the contents of the video. Given the limited descriptive ability of current computer vision systems (Haralick and Shapiro, 1992), and the improving accuracy of connected speech recognition systems (Takebayashi, 1991), the most sensible approach for automatically indexing video is to extract textual descriptions of the video directly from the audio track. The Video Mail Retrieval Using Voice project at The University of Cambridge represents one effort in this direction (James, 1994). This group is attempting to extract video indexing terms from the sound track and written contents of video mail.

4 Digital Video Library System

The sixth NSF initiative, The Informedia Digital Video Library Project at Carnegie-Mellon University is the most relevant to this project. They are developing new technologies for creating full-content search and retrieval digital video libraries. (Takebayashi, 1991).

4.1 Automatic / content-based indexing

The following items are representative of current thinking in content-based video indexing. The underlying premise holds that it is possible to not only segment but also effectively index and classify audio and video material through automated analysis of embedded content. This is an approach taken by commercial video application systems

ndors such as Virage (<http://www.virage.com>) and Snap.com (<http://realguide.real.com>) (accessed on 5th April 2008) whereby keyword searching offers the precision of traditional Internet search engines. Research is focussed on pattern recognition, speech feature extraction, and other content-based characteristics that allow for highly specialized querying. An example of such a search might involve finding shots that contain trawlers at sea from a long-form documentary on the Canadian ship building industry.

The interesting research direction involves extracting and presenting high-level abstractions of content so users get an overview of the underlying story and message without having to download entire movies or clips. Certain facets of the automated approach to video indexing are therefore worth monitoring. It is unlikely, however, that a "perfected" automated indexing solution could fully supplant conventional metadata because the former is unlikely to allow for flexible, targeted categorization of resources. Rights management requirements are also unlikely to be fully met by automated means, given the complexity of related issues. The most effective approach will likely emerge, as John R. Smith proposes in "Digital video libraries and the Internet" (1999), from automated techniques for the extraction of certain content-based features complemented by traditional bibliographic data.

According to Irani, Michal and P. Anandan (1998), Presents an approach for efficient access, use, and manipulation of video data. In order to support rapid access to information of interest within a video item, video data can be transformed from its sequential, frame-based representation to a scene-based representation to which each frame is directly related. The indexing methods employed are based on geometric and semantic information contained in the video itself.

According to Flickner, Myron et al (1995), An overview of QBIC, a content-based retrieval system that allows queries of large image and video databases based on example

images, user-constructed sketches and drawings, and selected colour and texture patterns.

According to Gauch, Susan, Wei Li, and John Gauch. (1997), VISION (Video Indexing for Searching Over Networks) project demonstrates the technology necessary for a comprehensive, online digital video library. VISION's approach combines the integrated application of mature image or video processing, information retrieval, speech feature extraction and word-spotting technologies for efficient creation and exploration of video materials.

According to Hall, Wendy (1995), to realize the full potential of hypermedia, links need to be separated from information nodes and then processed as separate entities. Hall suggests a flexible database model that integrates hypermedia, structured databases, and information retrieval.

According to Kobla, Vikrant and David Doermann (1998), Argues that while compression provides tremendous space savings; it can often introduce inefficiencies when compression is required to perform indexing and retrieval. A first consideration in developing automatic processing techniques should be to attempt to enhance access capabilities within existing compression representations.

According to Smith, John R. (1999), In addition to automated techniques for the extraction of metadata from constituent audio, textual, and video features, additional metadata derived from bibliographic information allows for more structured querying. The assignment of subject categories using a classification system also improves retrieval capabilities, and projects such as VisualSEEk automatically filter images and video from the Web into a visual content-specific taxonomy of subject classes.

According to Stone, Harold S (1999), An overview of the state of the art of automated image retrieval. Image search is viewed as a blend of image understanding, descriptor-

ised searching, and pixel-based searching. Future research directions include designing interfaces that are more effective in matching what humans seek to the visual characteristics of the database and developing enhanced ways to derive image descriptors automatically.

According to Turner, James (1994), In discussing appropriate access points for storage and retrieval of individual shots, Turner argues that the presently developing environment of networked resources will require ever-increasing standardization of practices in order to function efficiently. This also encourages greater cooperation among producers of content and managers of information. Much of the labour involved in indexing should also be shared among those responsible for providing access to information.

According to Yeo, Boon-Lock and Minerva M. Yeung (1997), Argues that information retrieval is not just search and indexing techniques but part of the general process of information use. The authors advocate a combination of keyword-based query and visual and audio-based query. Video visualization and browsing involve both extracting and presenting high-level abstraction of the content so users get an overview of the underlying story and message in minimal time. Through these abstractions, a user can quickly browse the content of individual video clips, navigate from one document to another in seconds, select segments of interest, and compose video documents from various sources, all without downloading the full clips, thus saving bandwidth and time.

4.2 Metadata schemes

The inherent properties of digital media resources allow creators to embed processing instructions in the form of metadata. In this way a description of the item is embedded within it. This may have interesting consequences for how metadata is harvested and used in the future. While Dublin Core is widely regarded as the front runner in resource description of networked objects, other descriptive schemes are worth considering on

count of their potential as containers for various types of metadata. MPEG-7, an emerging standard for describing multimedia content is still in the developmental stage. Video indexing experts such as Jane Hunter describe its potential to become a prominent standard. SMIL, a World Wide Web Consortium (W3C) recommendation for the description of multimedia presentations, is also described. Complex digital object architectures, such as those proposed by Lagoze and Payette (1998), suggest that a combination of metadata standards may eventually come to represent digital objects in a networked environment.

According to Hunter, Jane and Frank Nack. An Overview of the MPEG-7 DDL Proposals 1999. [Article online]; accessed 29 March 2008; available from <http://archive.dstc.edu.au/RDU/staff/jane-hunter.html>; Internet. Describes the Description Definition Language (DDL) proposals submitted in response to the MPEG-7 Call for Proposals and the results of their evaluation at the MPEG-7 AHG Test and Evaluation Meeting in Lancaster in February 1999. MPEG-7, often referred to as the Multimedia content description interface, is an emerging metadata standard for describing audio, still images, and video. The design of the DDL forms a core part of the work within MPEG-7. It is designed to provide a solid foundation enabling users to create their own description schemes and descriptors. This is an excellent overview of MPEG-7 functional requirements and a informed discussion of the emergence of XML as a standard DDL syntax.

4.3 Data Models / Metadata interoperability

The relationship between a digital object's structure and the description of its content is important to the development of metadata standards. The requirements for storing and processing various types of media are largely guided by the framework under which a given object falls. Data models contribute to a such a framework by providing a container in which resources of various types can be treated in a relatively uniform fashion. Metadata interoperability is thus facilitated. While metadata schemes are

concerned primarily with the semantics of resource description, the containment architecture of a digital object describes the dynamics between its constituent elements. Although metadata element sets may differ depending on purpose, common data models facilitate mapping from one standard to another.

According to Lagoze, Carl and Sandra Payette. Flexible and extensible digital object repository architecture (FEDORA) 1998. [Online]; accessed 22 March, 2008; available from <http://www.cs.cornell.edu/payette/papers.html>; Internet.

FEDORA addresses the requirements for digital objects and the repository service that provides access to them. FEDORA provides an object-oriented data model for the logical expression of the Warwick Framework, that is, the ability to package multiple distributed metadata sets with any form of digital content. Digital objects in the FEDORA context are conceptualized as having: a structural kernel, which encapsulates content as discreet and opaque byte stream packages; and an interface or behaviour layer that gives contextual meaning to the data in the digital object.

By segregating structure from interfaces, FEDORA makes it possible for digital objects to accommodate extreme structural variation to present themselves to clients in a normalized manner. The FEDORA architecture makes a number of contributions in the areas of extensibility and interoperability for digital objects and repositories.

The architecture separates the structure and raw data stored in a digital object from the semantically meaningful content types that are manipulated by clients; and it permits the creation and storage of any computable rights management mechanism and the association of these mechanisms with the disseminations defined for a digital object.

Web based application

A Web Based Application is an application that is accessed via web browser over a network such as the Internet or an intranet. It is also a computer software application

at is coded in a browser-supported language (such as HTML, JavaScript, Java, etc.)
d reliant on a common web browser to render the application executable.

eb applications are popular due to the ubiquity of a client, sometimes called a thin
ent. The ability to update and maintain web applications without distributing and
talling software on potentially thousands of client computers is a key reason for their
pularity. Common web applications include webmail, online retail sales, online
ctions, wikis, discussion boards, weblogs, massively multiplayer online role-playing
nes and many other functions. Retrieved from "<http://en.wikipedia.org/wiki/web-application>" on 31st august 2008

design a system that can be accessed from different locations, it calls for putting
veral issues into consideration. There is a point of control (Server) and the access
nt by users (Client). The server and the client need to smoothly and efficiently
mmunicate so that to provide the needed information. The server can reside in one
ation and the multiple clients can be positioned wherever. The architecture of final
ducts look as shown in figure below:

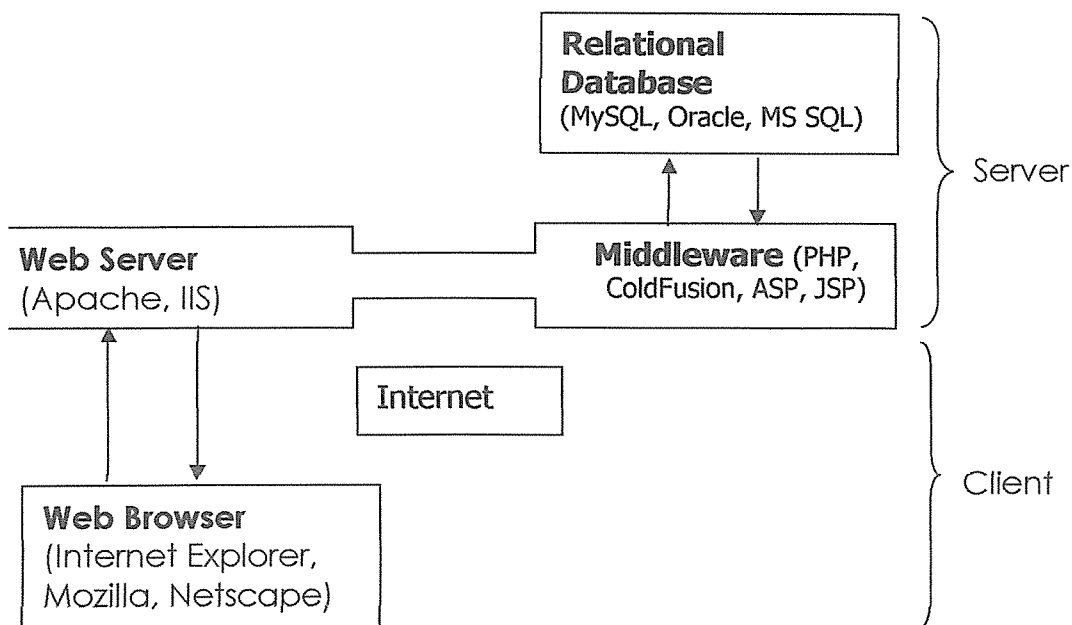


Figure 2. 1: Architecture of web based application
Source: http://en.wikipedia.org/wiki/Architecture_webbased_application

ough many variations are possible, a web application is commonly structured as a three-tiered application. In its most common form, a web browser is the first tier (presentation), an engine using some dynamic Web content technology (such as ASP, ASP.NET, CGI, ColdFusion, JSP/Java, PHP, embPerl, Python, or Ruby on Rails) is the middle tier (application logic), and a database is the third tier (storage). The web browser sends requests to the middle tier, which services them by making queries and updates against the database and generates a user interface.

5.1 Benefits of Web based application

Browser applications typically require little or no disk space on the client, upgrade automatically with new features, integrate easily into other web procedures, such as mail and searching. They also provide cross-platform compatibility (i.e., Mac or Windows) because they operate within a web browser window.

Standards compliance is an issue with any non-typical office document creator, which poses problems when file sharing and collaboration becomes critical. Also, browser applications rely on application files accessed on remote servers through the Internet. Therefore, when connection is interrupted, the application is no longer usable. Google Gears is a platform to ameliorate this issue and improve the usability of browser applications

Rental system

Rental shop is a business that allows a consumer to temporarily obtain a reusable good or product for a specified period of time in exchange for payment, a process known as renting. Typically, a rental shop will conduct business with customers under conditions and terms agreed upon in a rental agreement or contract, which may be implied, verbal, or written.

Typically, a customer must sign up for an account with the shop and give billing information like a credit card number. If items are returned late, the shop usually charges late fees, which typically accumulate day by day. Some shops now have policies where instead of late fees, they will treat overdue items as a sale after a certain date, and charge a price equivalent to a standard sale of that object (with appropriate deductions for the rental fee already paid and for its pre-opened condition).

The most common type of rental shop are video rental outlets, offering primarily movies. Many such rental shops also offer music or computer games as well. Some video rental outlets use a kiosk or vending machine to dispense and collect rentals. Other types of rental shops include car and truck rentals, construction and heavy equipment rentals, sporting goods and recreational rentals, television and domestic appliance rentals, and costume rentals.

Many motion pictures that do not perform well in movie theatres depend on the rental market for success, and some movies are released direct-to-video. Until 1998, movies were released in three phases: theater, rental, retail. There would typically be a two to three month delay between the time a movie was available for rental, and when the movie could be purchased by the consumer. (In reality, the video was available, but priced between \$75 and \$125). This started changing with the advent of movie release on DVD. Blockbuster video refused to use the VHS strategy for DVD, so the studios began releasing DVDs at an initially lower price. During 1998, retailers would have the DVD version of a film available for sale the same day the VHS version was available for rent. This later changed, with release dates for VHS and DVD coinciding. *Retrieved from http://en.wikipedia.org/wiki/Rental_shop" on 31st august 2008*

7 Types of digital Video Library projects

Carnegie-Mellon.

The Informedia digital video library. "The Informedia (tm) Digital Video Library project will establish a large, on-line digital video library by developing intelligent, automatic mechanisms to populate the library and allow for full-content and knowledge-based search and retrieval via desktop computer and metropolitan area networks. Initially, the library will be populated with 1000 hours of raw and edited video drawn from video sets of WQED/Pittsburgh, Fairfax County (VA) Public Schools, and the Open University (U.K.).

Columbia University.

Enlarged Colour Images Digitization Project. "this project, under contract to the Commission on Preservation and Access, to identify the most acceptable preservation and access techniques available for oversize, color images associated with text. Five strips from brittle volumes have been scanned, as have single-frame color microfiche of maps (produced during an earlier Commission-sponsored project) and 4 x 5 color transparencies. Paper printouts have been made from each digital version."

Studies of research have been done concerning rental systems but cannot be acquired easily as they cost highly and have lots of features which are irrelevant to MovieLand Entertainment, thus the researcher went ahead and designed a customized system for the company for the cost they can afford.



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CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the various methods and methodology were used to collect data for the research. Object-Oriented methodology was used to come up with operational web-based system.

This involved collection of data about the existing system and analyzed it with an intention of understanding how to meet the current need for a new system to be implemented. Analysis is a problem solving technique that decomposes a system into component pieces for the purpose of studying how well those component parts work and interact to accomplish their purpose (Bentley Kevin C. Dittman, 2000)

3.2 Area of Study and Population

The investigation was carried out at Movie Land Entertainment Limited Kampala branch located in Kampala District. In accordance with (S.Gupta 2003) a sample should be in a position to wholly represent a population in every aspect. Thus our research was based on the branch in Kampala District which mainly constitutes large number of Movies, staffs and workforce. Currently the company has 20 branches in Uganda, Kampala branch be the main branch which constitute 20 employees and over 1000 movies in the library.

3.3 Samples

The research used random sampling method to obtain relevant data. A total of 10 employees of the MovieLand Entertainment Limited of Kampala Branch were selected to

able the research to select a sample, through this method the researcher selected employees who work with clients and the current system and the from the manager and some of clients of the company to collect data of currently system in place.

3 Data Collection Tools

Fact-finding techniques, also referred to as Data-collection techniques, were used to gather information. These techniques allowed the systems analyst to systematically collect information about the objects of study (people, objects, phenomena) and about the settings in which they occur. The researcher had to be systematic in the collection of data since, if data are collected haphazardly, it would be difficult to come up with required operational software. The following data collection methods were used to help the problem investigation.

3.1 Interview Method

The researcher carried out a direct conversation with manager of Video Rental of Movie Land Entertainment Limited and answers were recorded. Also the researcher interviews the workers of the company and the members of the company to get information of the existing system.

The interview was carried out to get the respondent's view on how the existing system is working and its problems. It was the most significant and productive fact finding method, it was used to obtain information from the manager of Movie Land Entertainment Limited

In the case of Digital Video Library Information System, the structured interview method was used. Structured interview is a method where the interviewer had a specific set of questions to ask the interviewee. Depending on the interviewee's responses, the interviewer directed additional questions to obtain clarification or amplification.

structured interview was used because of the following reasons

1. The interviewer obtain supplementary information.
2. It allowed the interviewer to ask questions that may reveal additional information useful for making a selection decision
3. With this approach, the interview could be modified as needed to gather important information.
4. Enable the interviewer to rephrase question to each individual who will be interviewed
5. It allowed observation of non-verbal communication and study attitudes.

3.2 Observation

this technique, the researcher was involved in systematically selecting, watching and recording behavior and characteristics of people and objects at Movieland Premises. This technique was used in cases where the validity of data collected through other methods was in question or when the complexity of certain aspects of the system prevented a clear explanation by the end-users. The type of observation used was the *non-participant observation*: in this method, the observer watches the situation, openly concealed, but does not participate.

Observation was used for the following reasons

It helped in checking the validity of data obtained through other methods. This increase reliability of the data/information gathered.

The researcher was able to see exactly what is being done. Complex tasks was sometimes difficult to clearly explain in words. Through observation, the researcher identified tasks that had been missed or inaccurately described by other fact-finding techniques.

Observation is relatively inexpensive compared with other fact-finding techniques.

Observation allowed the researcher to do work measurements.

- . It is a very useful fact-finding method when qualitative data is sought.
- . It is also useful where the data users didn't give correct information.

3.3 Questionnaire Method

This method was used by distributing the questionnaire to the 10 workers of Movie and entertainment limited in Kampala Branch. The questions were asked and distributed in form of paper sheets and recorded after being filled by the respondents. Out of 10 workers who were given questionnaire, 8 workers filled the questionnaire and the information was analyzed to come up with requirements for the new system.

CHAPTER FOUR

SYSTEM ANALYSIS AND DESIGN

1 Introduction

Systems analysis is a problem-solving technique that decomposes a system into its component pieces for the purpose of studying how well those component parts work and interact to accomplish their purpose. It is driven by the business concerns of system owners and system users. Hence, it addresses the Data, Process and interface building blocks from system owners' and system users' perspectives.

System analysis was part of preliminary investigation of the previous system. A detailed study of the previous system was done in order to find out the difficulties and problems of that system, the user requirements, the inputs to the system, the outputs generated.

System analysis and design was done because it helped in pinpointing the problem, aided in setting system goals and helped to determine the boundary of the project by bringing into consideration the limitations of the available resources.

Requirement Analysis

An investigation was carried out to establish how the existing system functions and what its problems were. This led to a definition of a set of options from which the users could choose their required system. In carrying out an investigation, information about the current system was collected and by recording the problems and requirements described by the users of the current system, a picture of the required system was built. The requirements come with functional requirements, non functional and system requirements. All were identified and used to come up with the operational system.

.1 Functional Requirement

system should react to a particular inputs and how the system should behave in a particular situation. The system should allow users to input information of the movie the clients. The system will maintain, validate, insert, delete and modifies records ed in database. The functional requirement of the system have five tables, of Movie ail, clients details, rentals details renew movies and the revenue of the company.

.2 Non-Functional Requirement

on-functional requirement is a description of features, characteristics and constraints define a satisfactory system.

re are constraints on the services/functions offered by the system such as timing straints, reliability, response time, constraint on the development process, usability, and feel, security standards etc.

.3 System Requirement

rosoft windows XP was chosen because it is compatible with most software and er for networked environment therefore, fewer problems are encountered during running of the system. The antivirus is also needed to detect virus in the system would affect the running of the software or slow down the system. Because it's a based application, Internet Explorer or any other browser can work effectively.

Hardware (H/W) requirements. This describes the minimum hardware irements for the development of the new system. The following are the minimum ware requirements.

Hardware	Requirements
Computer	Compatible Pentium IV
Memory (RAM)	128 MB recommended. Additional memory may be required depending on operating system requirements.
Hard disk	40 GB recommended.
Monitor	VGA with the resolution of 800X600.
Input device	PS/2 mouse and keyboard.
CD-ROM	256X
Processor speed	1000 recommended
Generator	Any compatible
Jps power stabilizer	600w capacity

le 4. 1: Hardware Requirement for the MovieLand Entertainment Limited

14. Requirements of the Proposed System

er data collection and analyzing, the researcher came up with the requirements of new system. The system, after completion was expected to:

Process and provide management with information about the Movies in store and the ones with clients hence providing them with meaningful reports for decision making.

To identify and display any outstanding video rental with amount due on each video and total amount due.

To provide Information System access to all necessary personnel (data entry, update and deletion).

To provide a full range of reports that will satisfy informational requirements which include viewing customer rental history, video rental history, titles by category, items by status, overdue videos by customers and outstanding balances by customers.

To document the Video Library information System within the Standards and Procedures Manual.

To provide training to personnel responsible for supporting the Digital Video Library information System.

Keep track of client's information about the movies they possess and currently in the stock.

Provides central information sources, which can be used to attend to problem requests, provide detailed information that can be used for decision making quickly and accurately.

Produce timely professional looking and summarized reports that can intern be used for decision making by the organization.

1). Improve Employee service and satisfaction levels through faster response times and multi-channel communication.

2). Provide a good interface not only for the expert user but also for the novice user who knows little about the retrieval mechanism.

1.5 Benefits of the Proposed System

The proposed system led to the following benefits to the Movie Land Entertainment limited:

1. Proper maintenance of records for future reference.
2. Improves employee productivity and resource allocation.
3. Easy report generation
4. Easy backups incase records are damaged
5. Retrieval of the exact information required to assist a user as quickly and as easily as possible.
6. Reduces costs by reducing the time taken to find content through integrated search.
7. Prevent loss of important data.

.2 System Design

System design involved the specification or construction of a technical, computer based solution for the business requirements identified in a system analysis. Whereas system analysis emphasized on the business problem, system design focused on the technical implementation concerns of the system. It was driven by the technical concerns of the system designer. System design was looked at from three perspectives:

- 1. Logical Design
- 2. Physical Design
- 3. Database Design

2.1 Logical Design

Logical design (logical models) depicts what a system is or what a system must do but not how the system will be implemented. They are implementation independent, that is, they depict the system independent of any technical implementation.

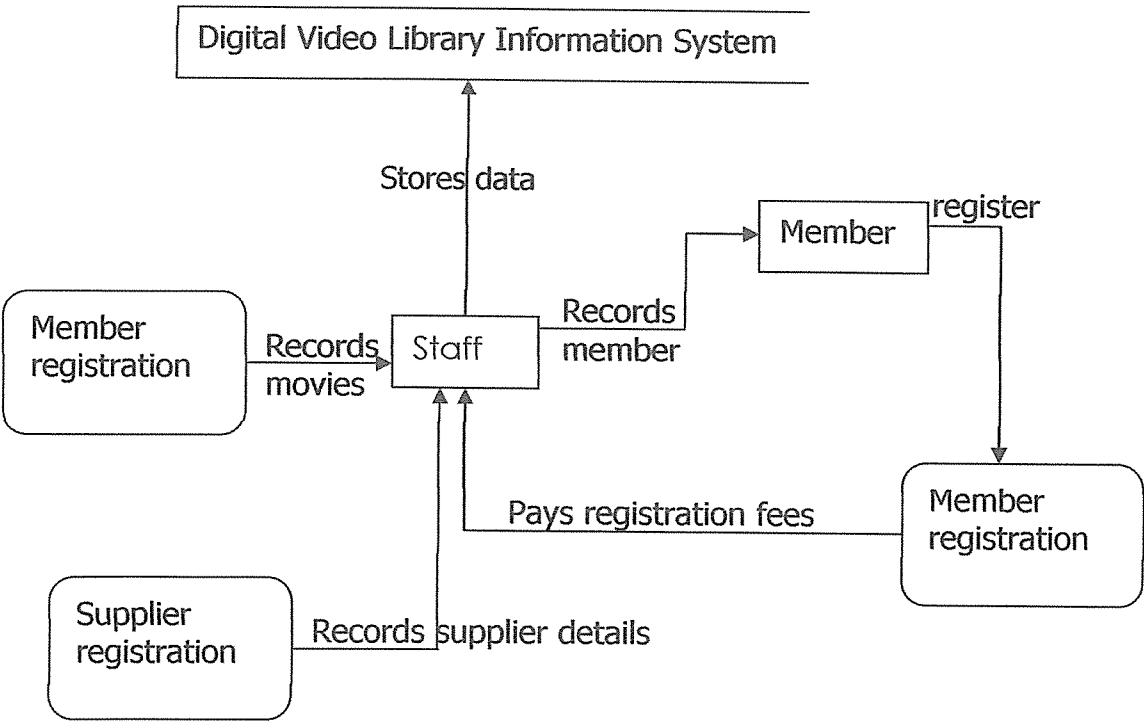


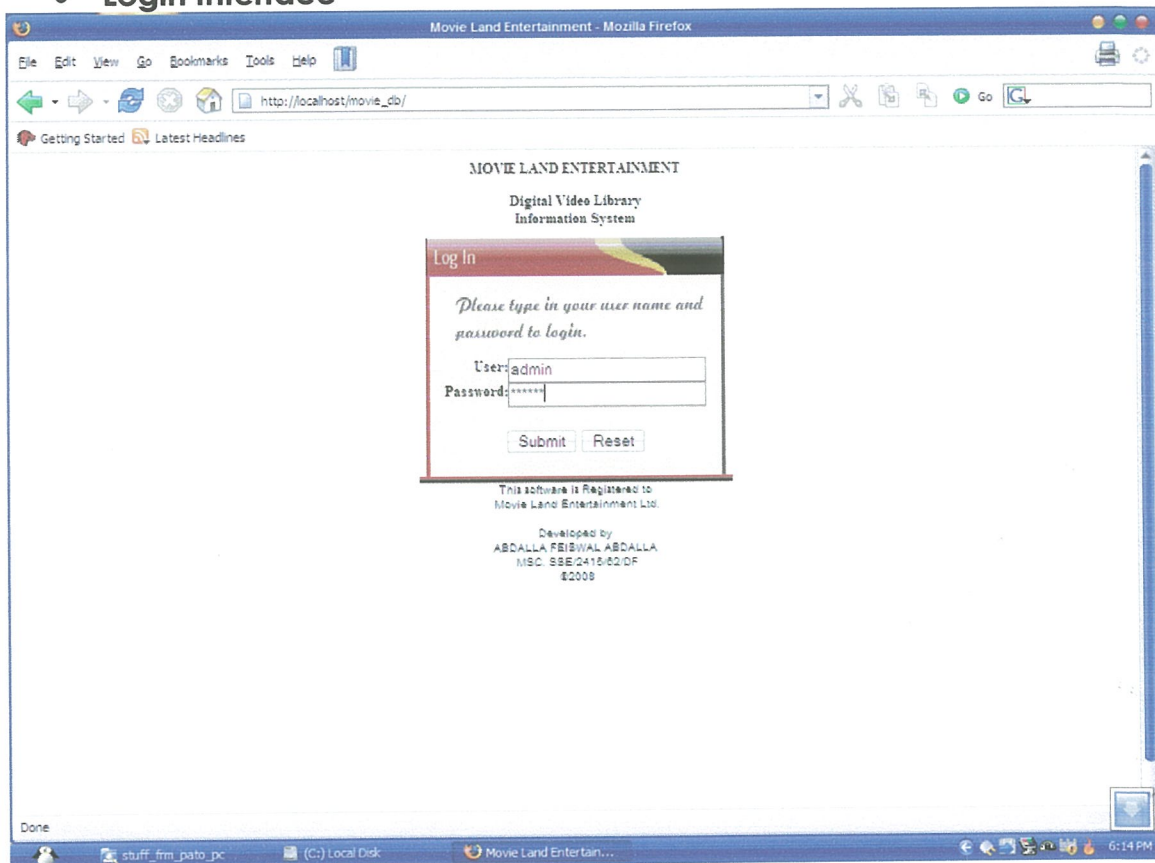
Figure 4. 1: Data flow diagram of a new system

4.2.2 Physical Design

4.2.2.1 User Interface Design

Interface models were used to depict the external inputs and outputs to and from the system and their sources and destination. Example of interface which was designed by PHP and Dreamweaver 8.0, the login interface authenticate the user by username and password to login to the system as in the figure 4.2.

- **Login Interface**



The screenshot shows a web browser window titled "Movie Land Entertainment - Mozilla Firefox". The address bar displays "http://localhost/movie_db/". The main content area features a login form titled "Log In" with a red header. Below the title, it says "Please type in your user name and password to login." The form has two input fields: "User:" with the text "admin" and "Password:" with masked characters "*****". There are "Submit" and "Reset" buttons below the fields. Above the form, the text "MOVIE LAND ENTERTAINMENT" and "Digital Video Library Information System" is displayed. Below the form, a registration notice states: "This software is Registered to Movie Land Entertainment Ltd. Developed by ABDALLA FEISWAL ABDALLA MSC SSE/2415/02/DF ©2008". The browser's status bar at the bottom shows "Done" and the taskbar includes icons for "stuff_fm_pato_pc", "(C:) Local Disk", and "Movie Land Entertain...", with the time "6:14 PM".

Figure 4. 2: Login Interface

This is a form for login to the system, which has two levels, one is administrator who has full privileges of the system and another one is Clerk who is limited to data entry but can't delete. Thus the system provides security of the data.

4.2.2.2 Input Interfaces

The study came up with Input interfaces where the user can input data into the system. Some of the input interfaces are as in figures below:

- **New movie entry interface**

The screenshot displays a web browser window with the title "Movie Land Entertainment Digital Video Library - Mozilla Firefox". The address bar shows the URL "http://localhost/movie_rentals/movies_search.php". The page content includes a navigation menu on the left with links like "Rent", "Return", "Movie Search", "Reviews", and "Inventory". The main area is titled "Movie Database" and contains a form with the following fields: "movie_id", "title", "rating", "genre", and "quantity". The browser's status bar at the bottom indicates the page is "Done" and shows the Windows taskbar with various open applications and the system time "9:38 PM".

Figure 4. 3: New movie entry form

This interface act as input for the new movie to the system.

- -

Rent Movie Interface

The screenshot shows a web browser window titled "Movie Land Entertainment Digital Video Library - Mozilla Firefox". The address bar displays "http://localhost/movie_rentals/home.php". The browser's status bar indicates a "Problem loading page".

The web application interface features a top navigation bar with the following links: [Log In](#), [Reports](#), [Admin](#), [Rent Items](#), [Clients](#), [Log Off](#), and [Help](#). A sidebar on the left contains the following menu items: [Rent](#), [Return](#), [Movie Search](#), [Renew](#), [Inventory](#), and a section titled "Movie Land Entertainment Digital Video Library INFORMATION SYSTEM".

The main content area is titled "Rent a Movie" and includes links for [Index Page](#) and [Next Record](#). Below these links is a form with the following fields:

rent_day	<input type="text"/>
rent_month	<input type="text"/>
rent_year	<input type="text"/>
return_day	<input type="text"/>
return_month	<input type="text"/>
return_year	<input type="text"/>
renew_day	<input type="text"/>
renew_month	<input type="text"/>
renew_year	<input type="text"/>
quantity_rented	<input type="text"/>

The Windows taskbar at the bottom shows the Start button, a taskbar with icons for SQL, Solitaire, Document1, Movie Land, C:\wamp\ww..., and Document2, and a system tray with a clock showing 9:36 PM.

Figure 4. 4: Rent Movie interface

- **Return movie interface**

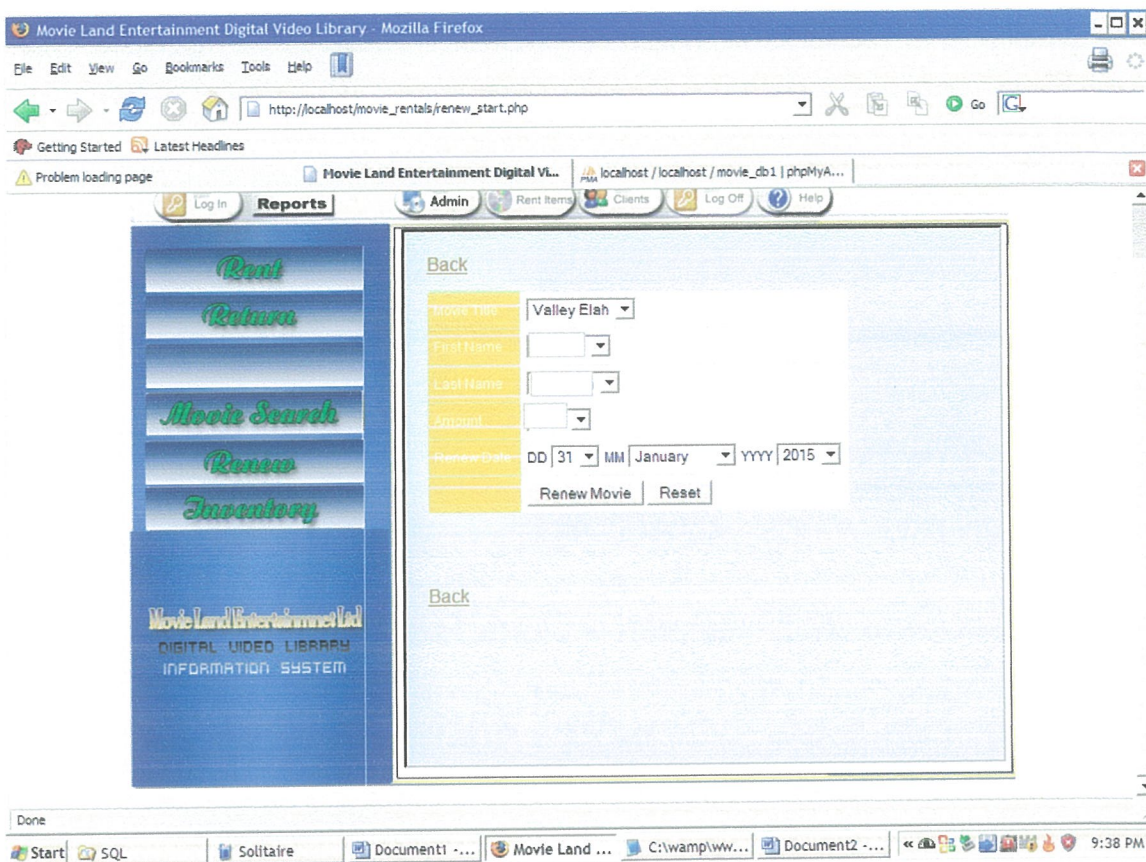


Figure 4. 5: Return Movie interface

4.2.2.3 Output Interface

The study came up with interface for outputting the information to the user.

- **List of Movies interface**

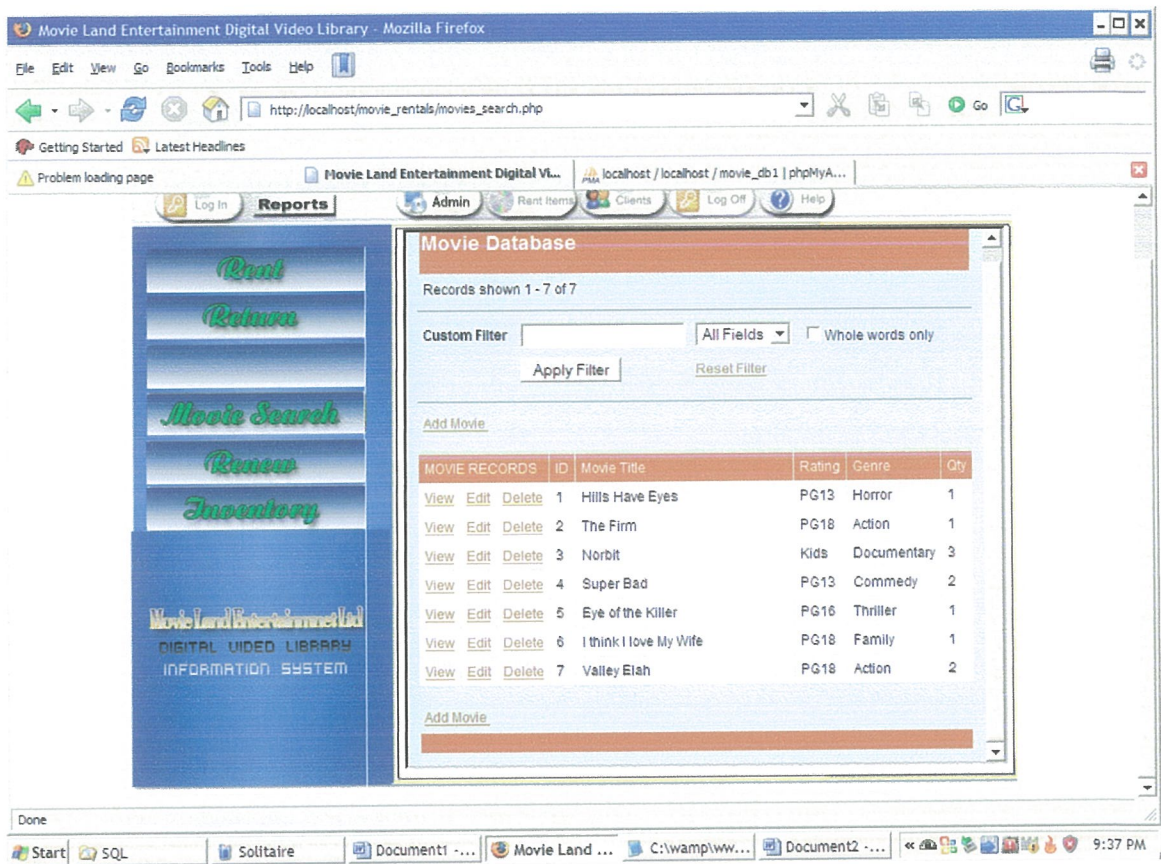


Figure 4. 6: List of Movies output interface

4.2.3 Database Design

Digital Video Library Information system is based on Relational Database management systems whereby the study used MySQL to design the database. This kind of database implements data in a series of two-dimensional tables that are related to one another via foreign keys. Each table consists of named columns and rows.

The name of the database that will contain the files for the Video information system is **Digital Video Library Information System (DVLIS)**

Examples of database tables containing in DVLIS

System user table

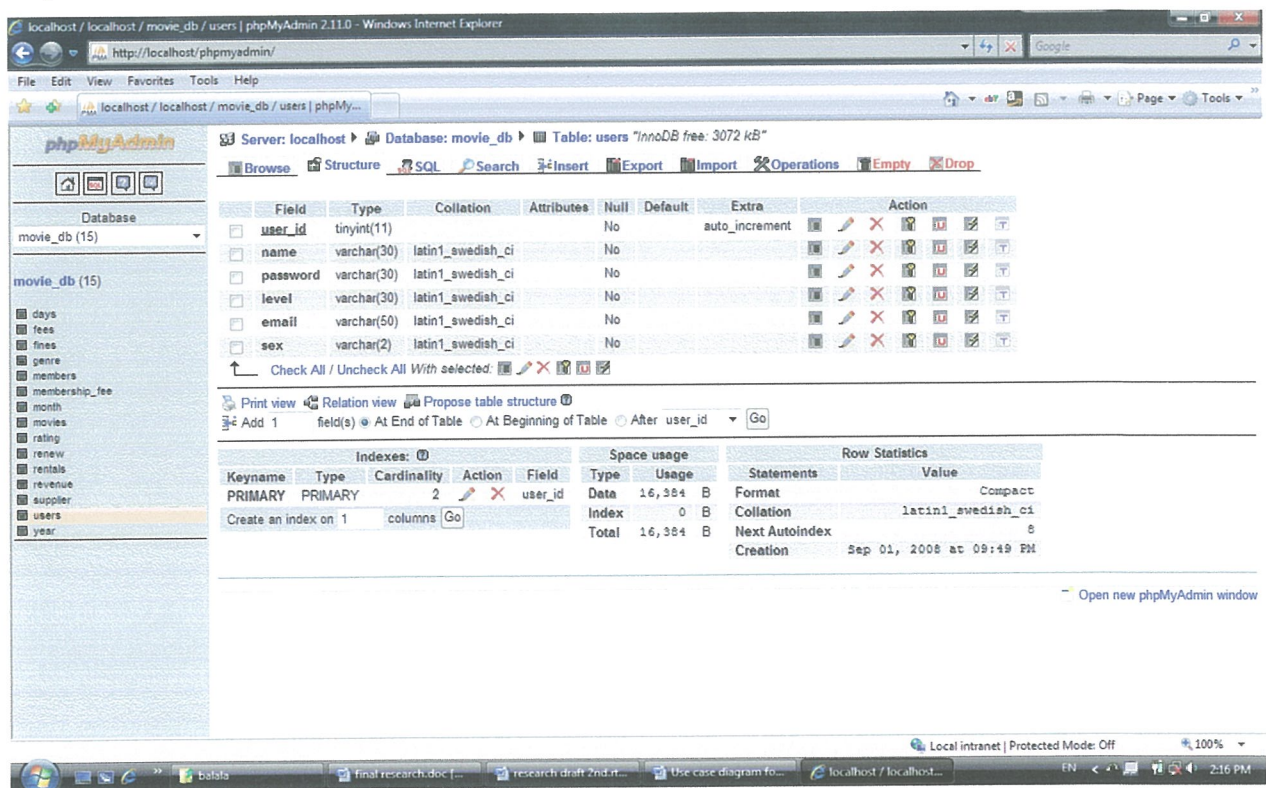


Figure 4. 7: system user table

This stores the details of the users of the system, which currently is design to have two levels, one of Administrator who has full privilege of the system and other of clerk who

does not have full privilege of the system and is restricted on some other features of the system.

Table structure for table `users` using the MySQL code.

```
CREATE TABLE `users` (  
  `user_id` tinyint(11) NOT NULL auto_increment,  
  `name` varchar(30) NOT NULL,  
  `password` varchar(30) NOT NULL,  
  `level` varchar(30) NOT NULL,  
  `email` varchar(50) NOT NULL,  
  `sex` varchar(2) NOT NULL,  
  PRIMARY KEY (`user_id`)  
) ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

This table will act as the first page to appear so that can authenticate the user of the system. This will ensure data security and integrity of the data.

Members table

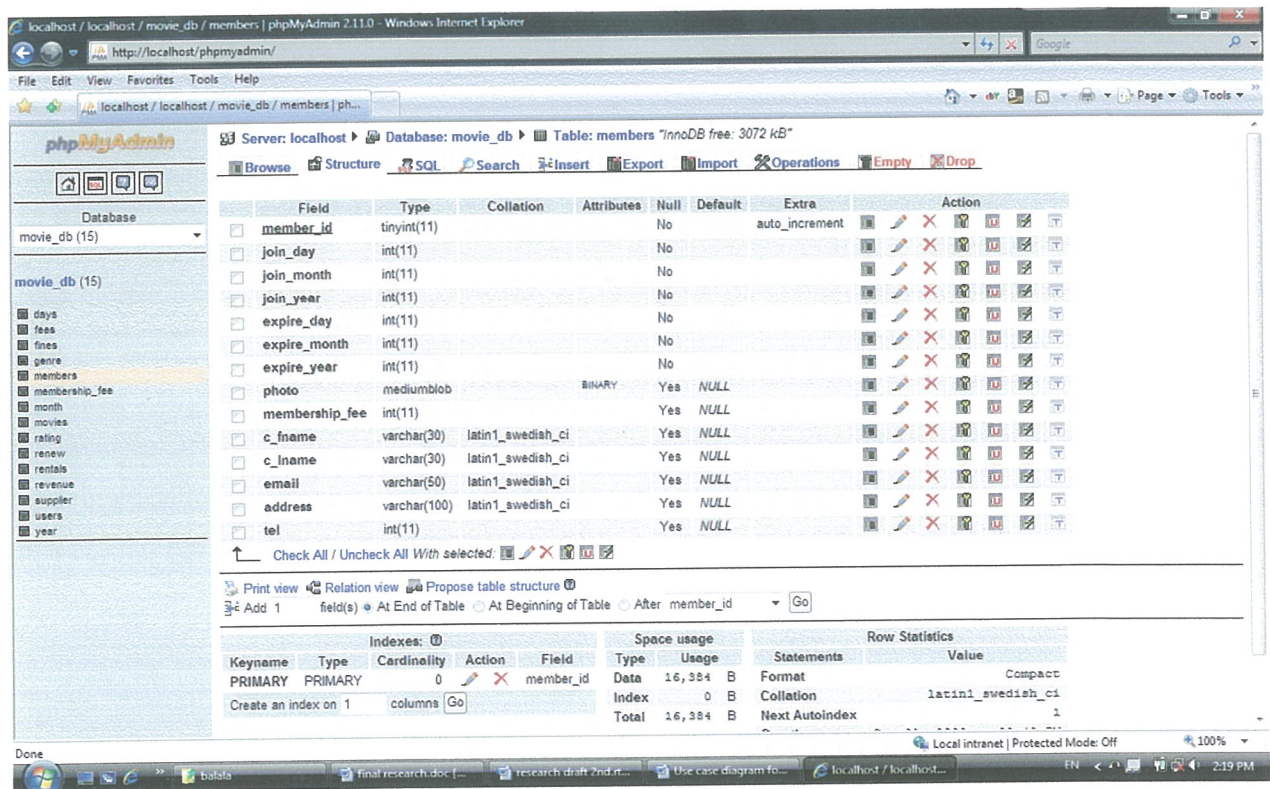


Figure 4. 8: Members table

This is a table of members which shows all details of members, it will be able to store the members in the system with all their details. The system only allow rental to the members who have registered in the system and paid the membership fee, this is because to act like security when the member do not return back the movie rented.

Table structure for table `members`

```
CREATE TABLE `members` (  
  `member_id` tinyint(11) NOT NULL auto_increment,  
  `photo` blob,  
  `membership_fee` int(11) default NULL,  
  `join_date` date default NULL,  
  `expire_date` date default NULL,  
  `c_fname` varchar(30) default NULL,  
  `c_lname` varchar(30) default NULL,  
  `email` varchar(50) default NULL,  
  `address` varchar(100) default NULL,  
  `tel` int(15) default NULL,  
  PRIMARY KEY (`member_id`)  
) ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```


Movies table

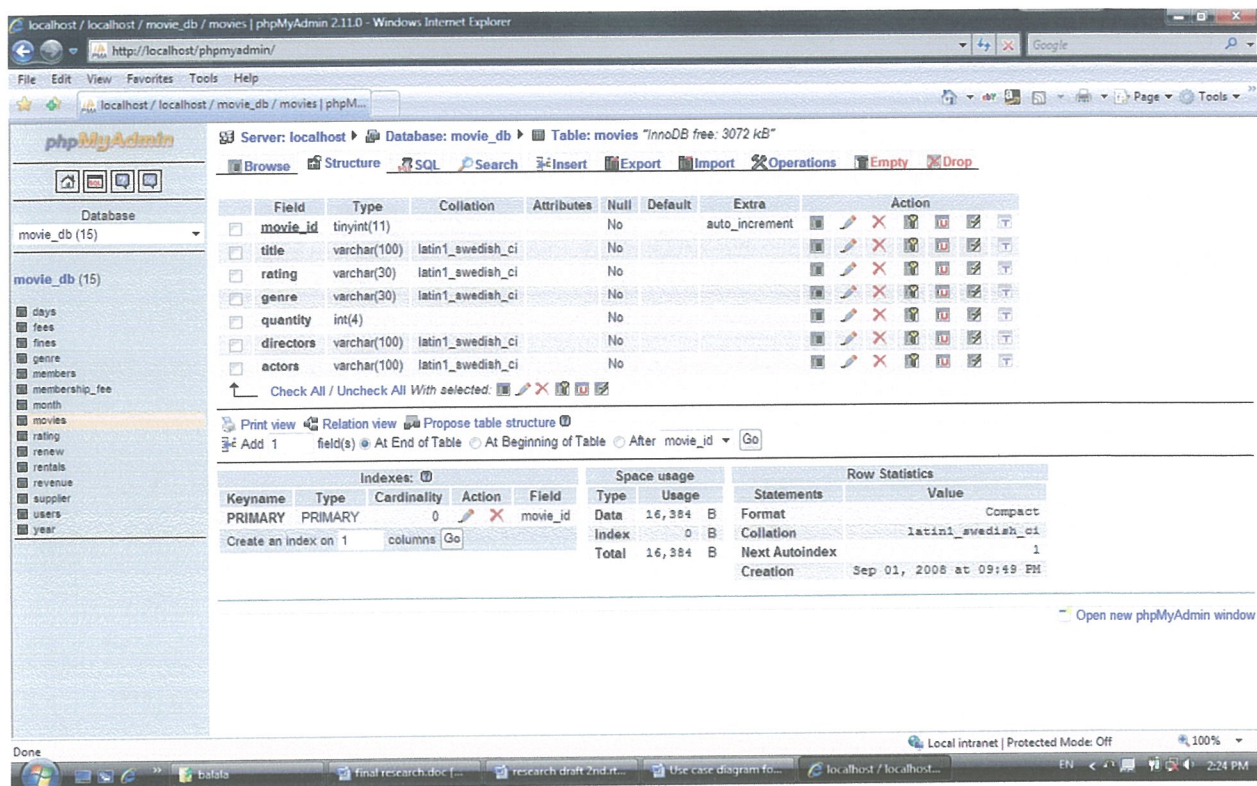


Figure 4. 9: Movie table

This is a table which stores all details of movies currently in the company. When the movies are rented out, the quantity of the movies in this list will reduce and therefore showing list of available movies in the system.

Table structure for table `movies`

```
CREATE TABLE `movies` (
  `movie_id` tinyint(11) NOT NULL auto_increment,
  `title` varchar(100) NOT NULL,
  `rating` varchar(30) NOT NULL,
  `genre` varchar(30) NOT NULL,
  `quantity` tinyint(4) NOT NULL,
  `directors` varchar(100) NOT NULL,
  `star_actors` varchar(100) NOT NULL,
  PRIMARY KEY (`movie_id`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

Rental table

Server: localhost Database: movie_db Table: rentals "InnoDB free: 3072 kB"

Field	Type	Collation	Attributes	Null	Default	Extra	Action
<input checked="" type="checkbox"/> rentals_id	tinyint(11)			No		auto_increment	
<input type="checkbox"/> rent_day	int(3)			No			
<input type="checkbox"/> rent_month	int(3)			No			
<input type="checkbox"/> rent_year	int(5)			No			
<input type="checkbox"/> return_day	int(3)			Yes	NULL		
<input type="checkbox"/> return_month	int(3)			Yes	NULL		
<input type="checkbox"/> return_year	int(4)			Yes	NULL		
<input type="checkbox"/> renew_day	int(3)			Yes	NULL		
<input type="checkbox"/> renew_month	int(3)			Yes	NULL		
<input type="checkbox"/> renew_year	int(4)			Yes	NULL		
<input type="checkbox"/> quantity_rented	int(10)			No			
<input type="checkbox"/> title	varchar(100)	latin1_swedish_ci		No			
<input type="checkbox"/> c_fname	varchar(50)	latin1_swedish_ci		No			
<input type="checkbox"/> c_lname	varchar(50)	latin1_swedish_ci		No			
<input type="checkbox"/> member_id	varchar(11)	latin1_swedish_ci		No			
<input type="checkbox"/> rent_amount	int(11)			No			
<input type="checkbox"/> renew_amount	int(11)			Yes	NULL		
<input type="checkbox"/> amount_paid	int(11)			No			
<input type="checkbox"/> late_fee	int(11)			Yes	NULL		

Figure 4. 10: Rental table

This is a table design to store the rentals, it contain the movie rented, return date amount and client details, when a client borrows movies it will be recorded in this table and its due date. This table will be also used to query the revenue earned from renting.

Table structure for table `rental`

```
CREATE TABLE `rental` (
  `rentals_id` tinyint(11) NOT NULL auto_increment,
  `member_id` tinyint(11) NOT NULL,
  `movie_id` tinyint(11) NOT NULL,
  `quantity_rented` varchar(10) NOT NULL,
  `title` varchar(100) NOT NULL,
  `c_fname` varchar(50) NOT NULL,
  `c_lname` varchar(50) NOT NULL,
  `rent_date` date NOT NULL,
```



```

`return_date` date NOT NULL,
`renew_date` date NOT NULL,
`rent_amount` int(11) NOT NULL,
`amount_paid` int(11) NOT NULL,
`late_fee` int(11) NOT NULL,
PRIMARY KEY (`member_id`, `movie_id`)
)

```

Revenue table

Server: localhost Database: movie_db Table: revenue "InnoDB free: 3072 kB"

Field	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/> revenue_id	tinyint(11)			No		auto_increment	
<input type="checkbox"/> rentals_amount	int(11)			Yes	NULL		
<input type="checkbox"/> renew_amount	int(11)			Yes	NULL		
<input type="checkbox"/> membership_fee	int(11)			No			

Check All / Uncheck All With selected

Print view Relation view Propose table structure

Add 1 field(s) At End of Table At Beginning of Table After revenue_id Go

Indexes: 0				Space usage		Row Statistics	
Keyname	Type	Cardinality	Action	Type	Usage	Statements	Value
PRIMARY	PRIMARY	0		Data	16,384 B	Format	Compact
Create an index on 1 columns Go				Index	0 B	Collation	latin1_swedish_ci
				Total	16,384 B	Next Autoindex	1
						Creation	Sep 01, 2008 at 09:49 PM

Open new phpMyAdmin window

Figure 4. 11: Revenue table

This table store the revenue of the company. The revenue will be the amount earned for rental, renewal and the membership fee. This information will be kept for the future auditing of the system.

Table structure for table `revenue`

```

CREATE TABLE `revenue` (
  `membership_fee` int(11) default NULL,
  `rentals_amount` int(11) default NULL,
  `late_fee` int(11) default NULL,
  `renew_amount` int(11) default NULL,
)

```

Supplier table

Server: localhost Database: movie_db Table: supplier "InnoDB free: 3072 kB"

Fields:

Field	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/> supplier_id	tinyint(11)			No		auto_increment	
<input type="checkbox"/> name	varchar(255)	latin1_swedish_ci		No			
<input type="checkbox"/> address	varchar(255)	latin1_swedish_ci		No			

Indexes:

Keyname	Type	Cardinality	Action	Field	Type	Usage	Statements	Value
PRIMARY	PRIMARY	0		supplier_id	Data	16,384 B	Format	Compact
					Index	0 B	Collation	latin1_swedish_ci
					Total	16,384 B	Next Autoindex	1
							Creation	Sep 01, 2008 at 09:49 PM

Figure 4. 12: Suppliers table

This is a table which store details of the suppliers of the movies in the company. This table acts as address contact of the supplier.

Table structure for table `supplier`

```
CREATE TABLE `supplier` (
  `supplier_id` tinyint(11) NOT NULL auto_increment,
  `name` varchar(50) NOT NULL,
  `address` varchar(50) NOT NULL,
  PRIMARY KEY (`supplier_id`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

ther supporting tables for the system are

st of days of the month

Field	Type	Null	Default
	tinyint(11)	No	
ys	int(11)	No	

ble 4. 2: List of days of the month

is table stores the days of the month. Ie. From 1st to 31.

st of the month of the year

Field	Type	Null	Default
	tinyint(11)	No	
onth	int(15)	No	

ole 4. 3: month of the year

s table is used to store all the month of the year that is from January to December that the user of the system does not type manually.

t of years

Field	Type	Null	Default
	tinyint(11)	No	
rs	int(4)	No	

le 4. 4: List of years

: of fees

Field	Type	Null	Default
	tinyint(11)	No	
s	int(5)	No	

le 4. 5: List of fees

; table is used to store the fees chargeable to members of the company

of fines

Field	Type	Null	Default
	tinyint(11)	No	
s	int(11)	No	

e 4. 6: List of fines

table stores list of amount should be charged to clients.

Table of genre

Field	Type	Null	Default
genre	varchar(15)	No	
	tinyint(11)	Yes	NULL

Table 4. 7: List of genre

This table stores the genre of the movies so that to have a drop down menu for genre.

Table of rating

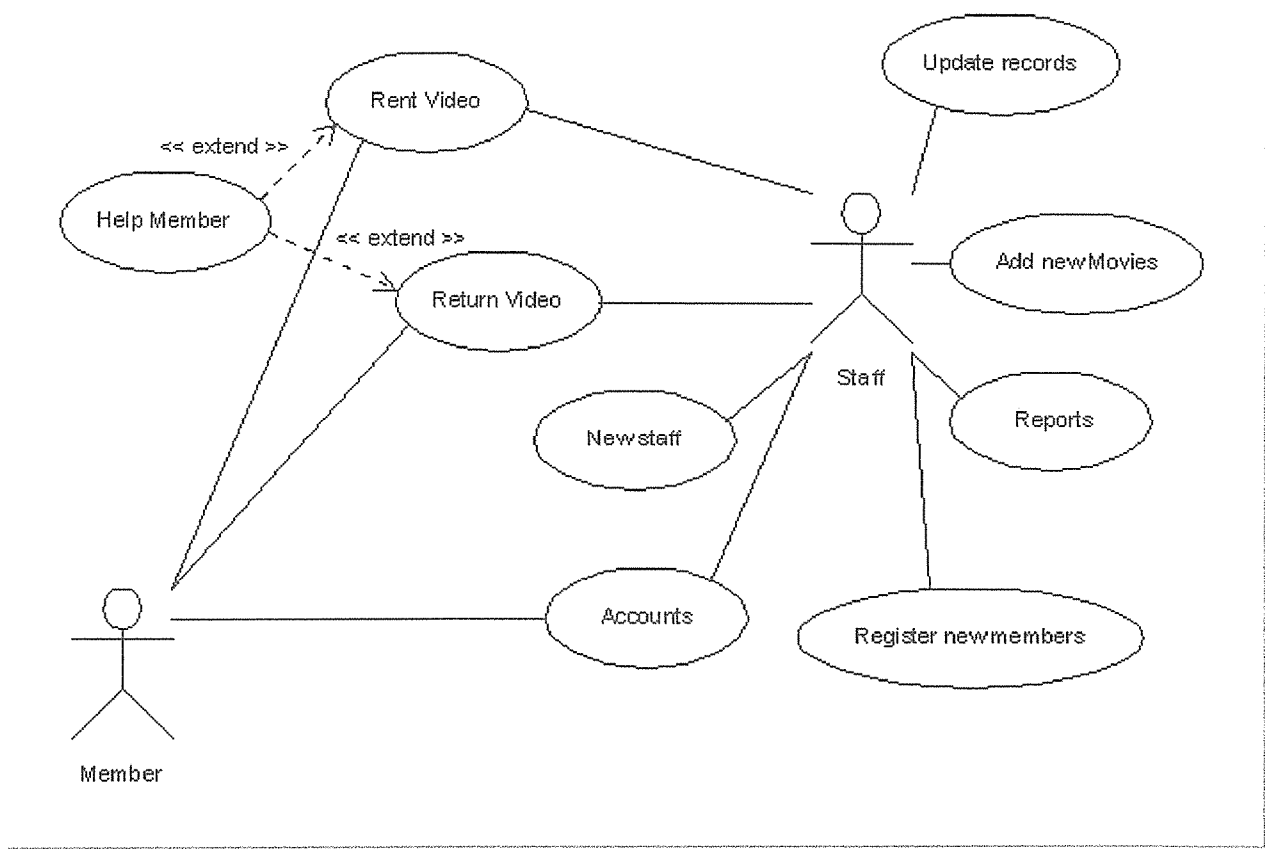
Field	Type	Null	Default
	tinyint(11)	No	
rating	varchar(5)	No	

Table 4. 8: List of rating

This table stores the list of rating of the movies.

se case diagram for Digital Video Library Information System (DVLIS)

Use Case Diagram for Movie Land DVLIS



Created with Poseidon for UML Community Edition. Not for Commercial Use.

Figure 4. 13: Use Case diagram for Digital Video Library Information System(DVLIS)

Actors	Use Case
Member	Rent Video
	Return Video
Staff	Reports
	Add new movies
	Accounts
	Register new members
	Add new staff
	Update records

Class diagram of a Digital Video Library System

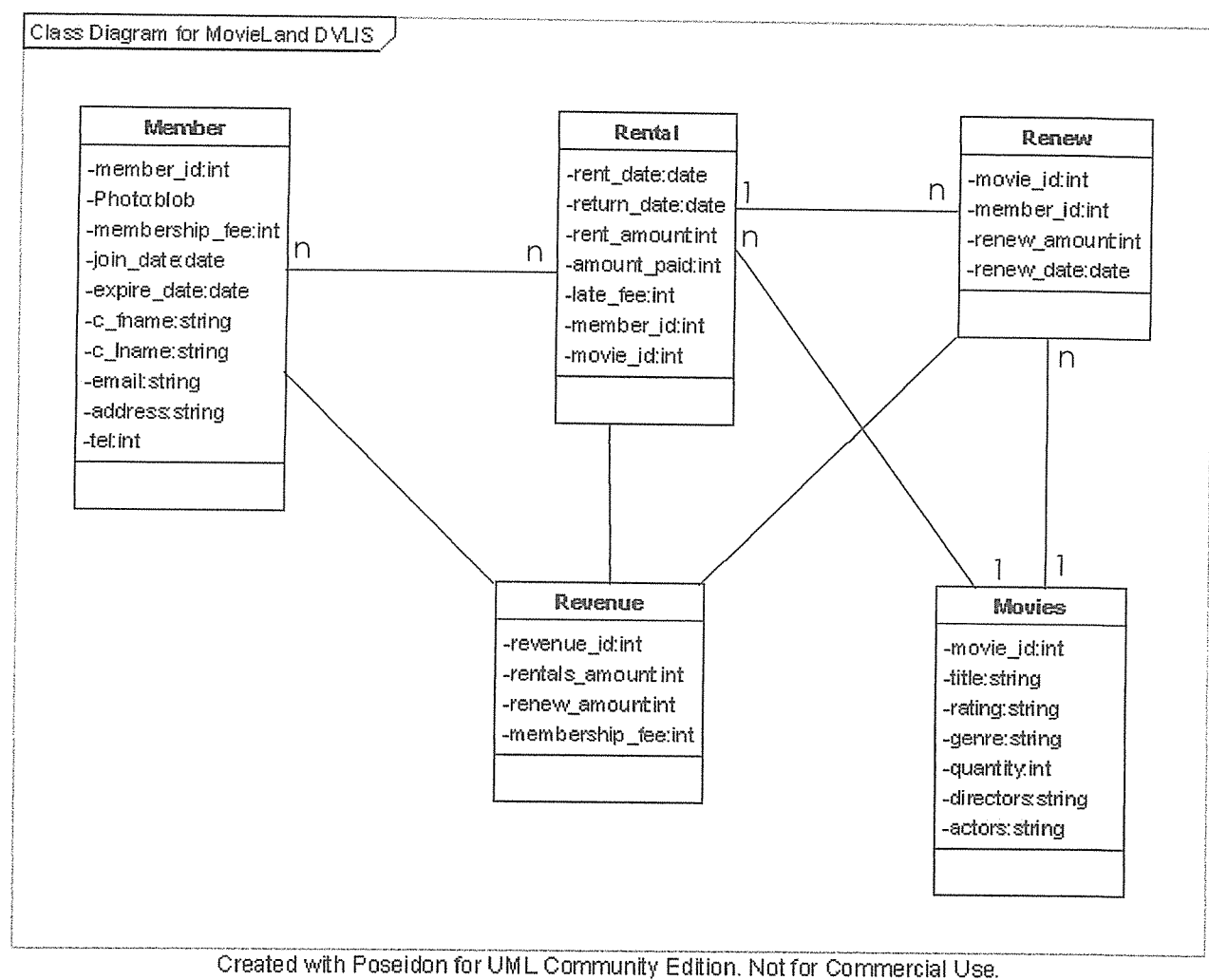


Figure 4. 14: Class diagram of a Digital Video Library Information System

The class diagram above shows the different entity with the attributes and the relationship between the classes. Member class is used to capture the details of the members in the system. The Movie class stores details of the current movies in the company. Rental class act as a middle class between the member and the Movie class. The rental items can be renewed and its details will be stored in the Renew class which contains the details of the item renewed. Revenue class stores details concerning financial records obtained from rentals and membership fees.

Sequence diagram showing new member registration in Digital Library Information System

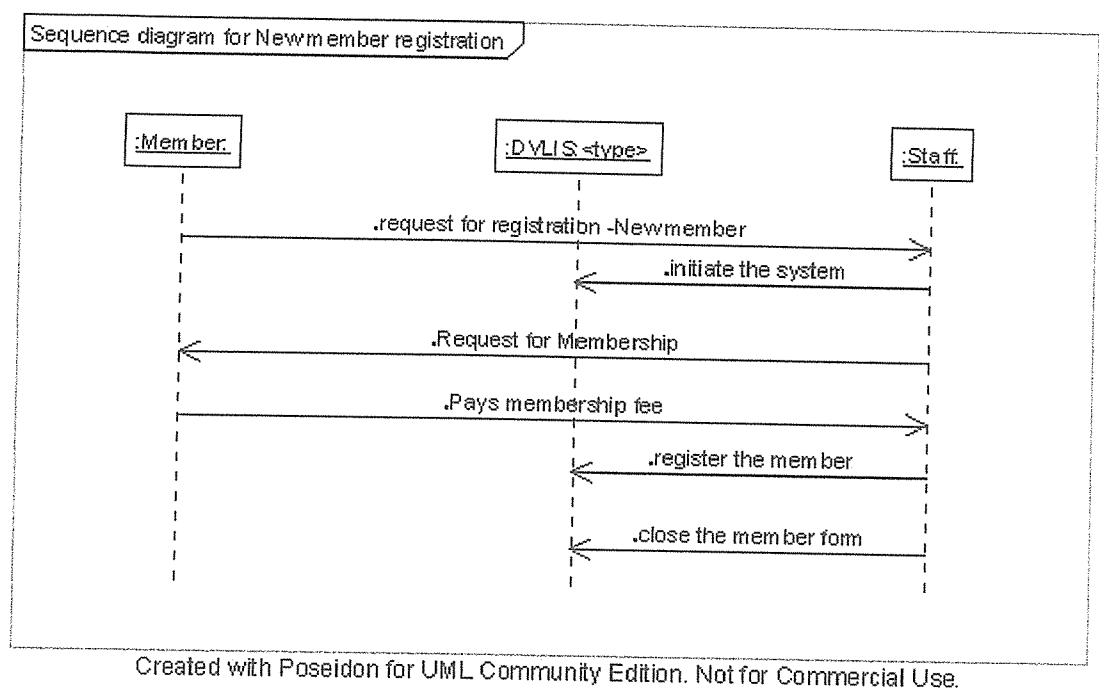


Figure 4. 15: sequence diagram for registering new members

The sequence diagram above shows the flow of process for registration. When new members come to the company they will request for registration, whereby they will pay membership fee and they can be able to rent a movie in the company.

Sequence diagram showing renting process

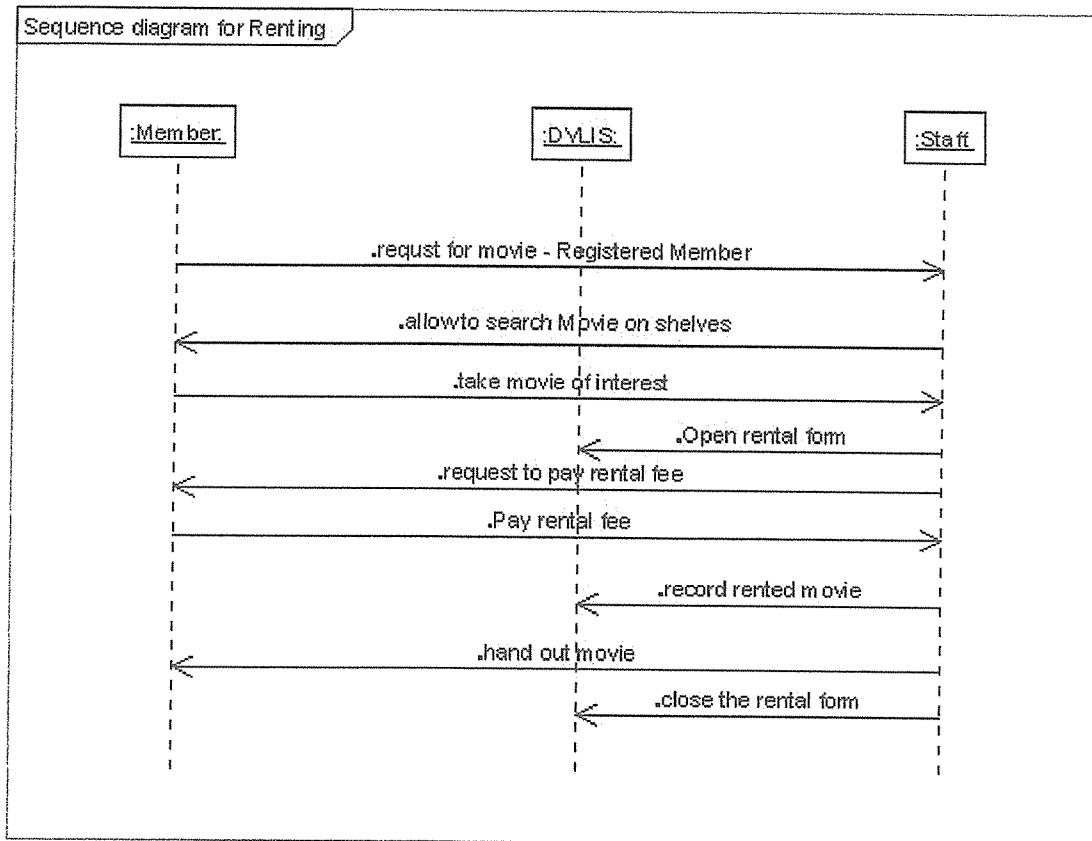


Figure 4. 16: Sequence diagram for renting Movies

The above diagrams shows the interaction between the member, System and the staff for a registered member to rent a movie. The diagram illustrates the processes till the member got the movie.

Sequence diagram for returning a movie

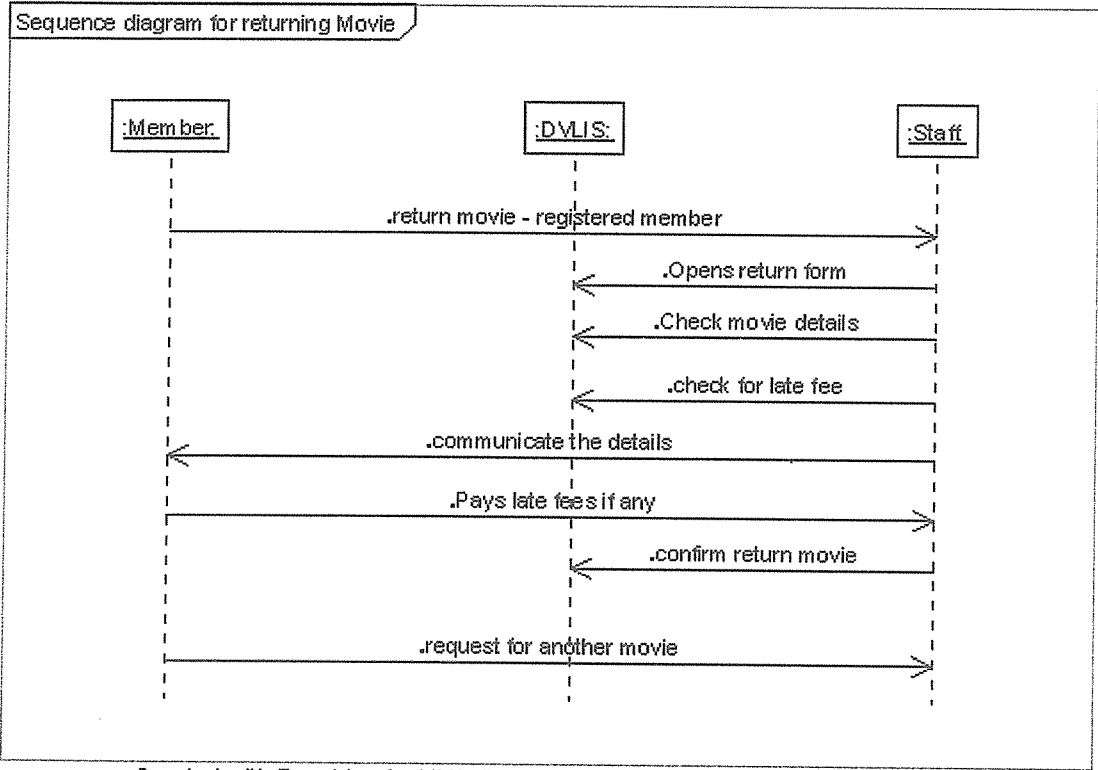


Figure 4. 17: Sequence diagram for returning a movie

The sequence diagram above shows the process for a registered member to return the rented movie. It illustrate the interaction between the staff and the system and between the member and the staff.

CHAPTER FIVE

IMPLEMENTATION AND EVALUATION

5.0 Introduction

This chapter discussed the implementation of the new system its sample test data and the presentation of the software.

5.1 Program Implementation

5.1.1 Program Language

The research used the MySql to design the database and the PHP and Dreamweaver 8.0 to design the interfaces of the form.

5.1.2 Class features and workability

The system contain seven major tables with other supporting tables are shown in figure 4.3, The entity and attributes of the system are as below.

1. Member table which will be able to store the details of the clients in the system. The table have following information; member_id, photo, membership_fee, join_date, c_fname, c_lastname, email, address and telephone for the client. The information of client stored into the system can later be altered and edited and new member can be added into the system and can be deleted by the administrator only.

2. Movies table which have all the details of the movies currently in the system. It ncludes the attributes movie_id, title, rating, genre, quantity, directors of the movie and actors in the movie. This table will store all the movies in the company and they can be altered by editing, deleting and new movie can be entered into the system.

3. Rental table, this table is capable of holding all the details of the movies and members who rented the movies, the attributes include; member_id, Movie_id, rent_date, return_date, renew_date, rent_amount, amount_paid and late_fee.

4. Revenue table which will deal on the amount the company will have earn on the rental business. The table have the following properties; rentals_amount, renew_amount and the membership_fee. This table will be used to get the report on the financial benefit of the business.

5. Supplier table which acts as a contact address to the client of the business. It will be able to store all the details of the supplier and can be contacted when the company needs to restock. It has the attributes, supplier_id, name and address.

6. User table which contains information on all the users of the system, in this case the user are of two levels, one with administrative privilege and other with no full privilege the system. This table have the following attributes; user_id, name, password, level, email and sex.

5.1.3 Program flowchart

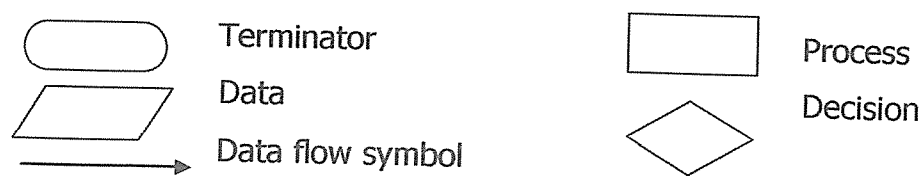
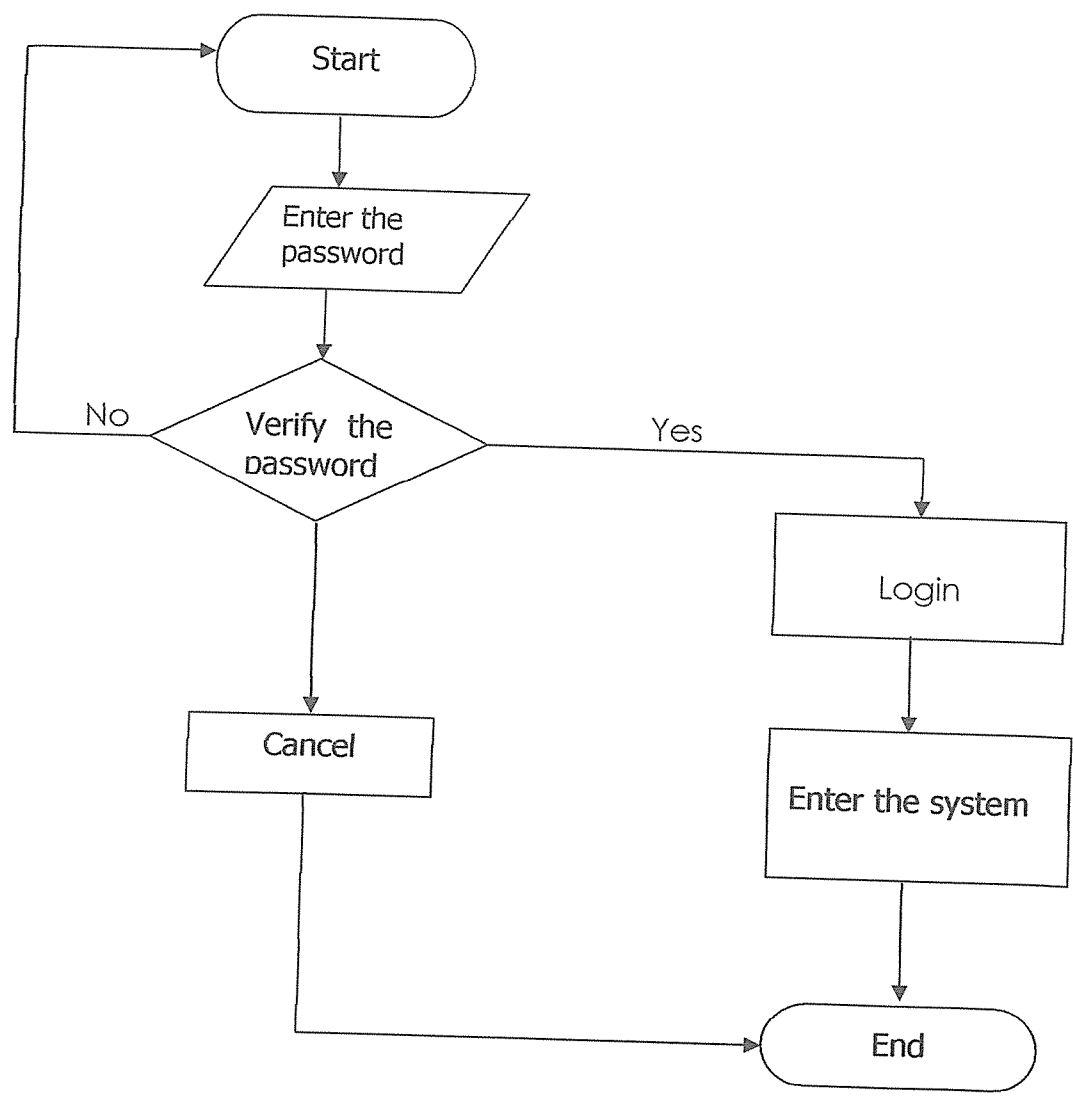


Figure 5. 1: Program Flowchart

5.1.4 Program Testing

Testing was done to determine whether the program produces the desired results and whether it satisfies the user's requirements.

System testing was done in two stages as explained below..

Unit testing. This is the first stage of testing that was done by using written test plan shown in table 5.1 and prepared test data. All the forms that are on the system were tested against the test plan and the conditions. The database was also tested and all the validation rules were checked to see their effectiveness and efficiency.

System testing. In system testing all parts of the system were linked together and the organizational data were used to test the system in order to prove if all parts work together. Both incorrect and realistic data was used to ensure that all the system programs are error free and to guarantee that the end users can successfully interact with the system.

1.4.1 Test Plan

Test Case	Module	Purpose	Test Data	Expected Results
	Password	To check if password gives access to the system	"Video"	Access to the system is granted.
	Password	The check if password gives access to the system	Any other character other than "video"	A message box is displayed stating "invalid password"
	Page Menus	To check if page menus displays sub-menus of all the page in the system	Click on the page menu	All the submenus will be displayed.
	Customer page Menu	To check if the customer page menu displays the customer page on the screen	Click on the customer page sub-menu.	front page appears.

5	Rental page Menu	To check if the rental page menu displays the rental form on the screen	Click rental form sub-menu	rental page appears.
9	Report menu	To check if the report menu displays the sub-menus of all the reports in the system	Click on the report menu	The reports submenus appear.
10	Help menu	To check if help contents are displayed	Click on the contents submenu	The electronic help manual appears.

Table 5. 1: Systems Test Plan

5.1.5 Sample test Data

Report interface page

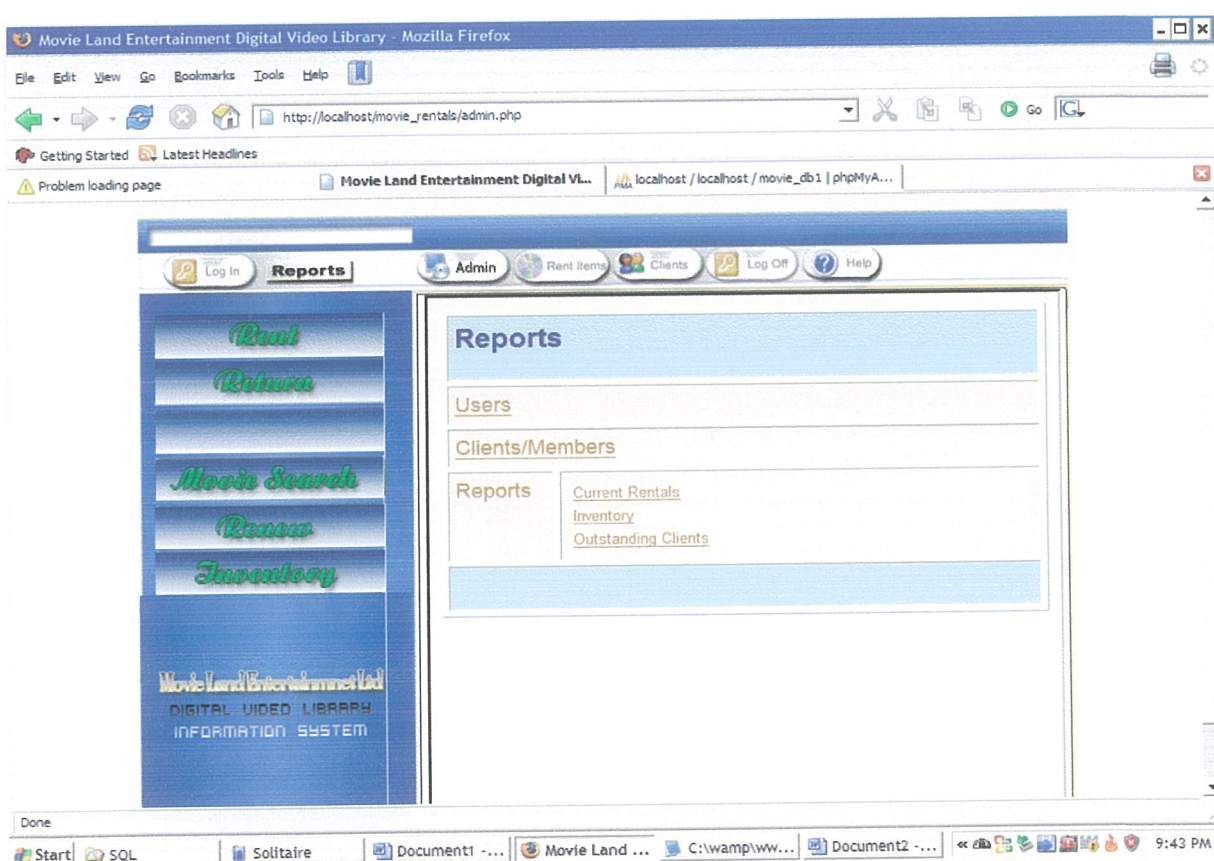


Figure 5. 2: Report interface page

This page shows the reports which can be query from the system, it include current rentals, inventory of the company revenue gotten from the rental charges, membership fee and late charges. The administrator has full privileges to view the clients, delete print out reports and add or delete users of the system.

Clients report

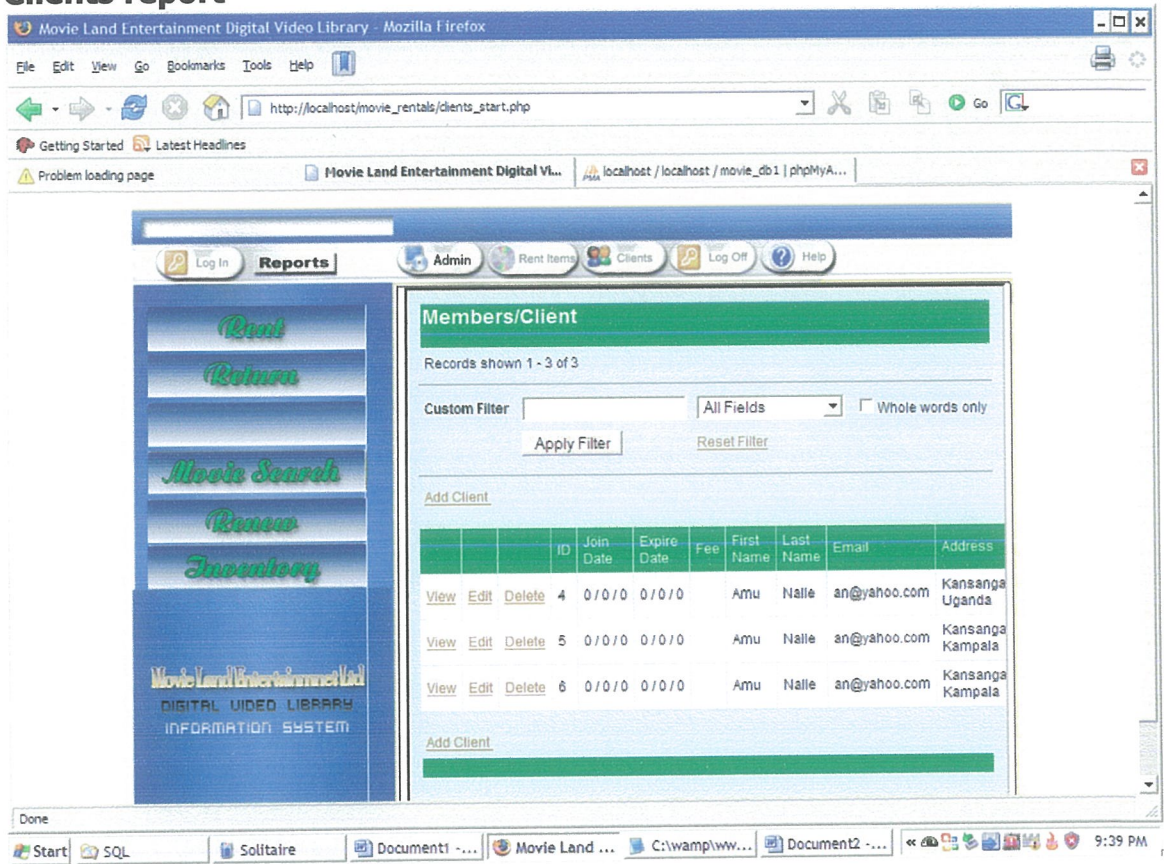


Figure 5. 3: Members report

This is a report showing all the records of the members registered in the system. The system is able to show the clients/members detail.

Rentals report

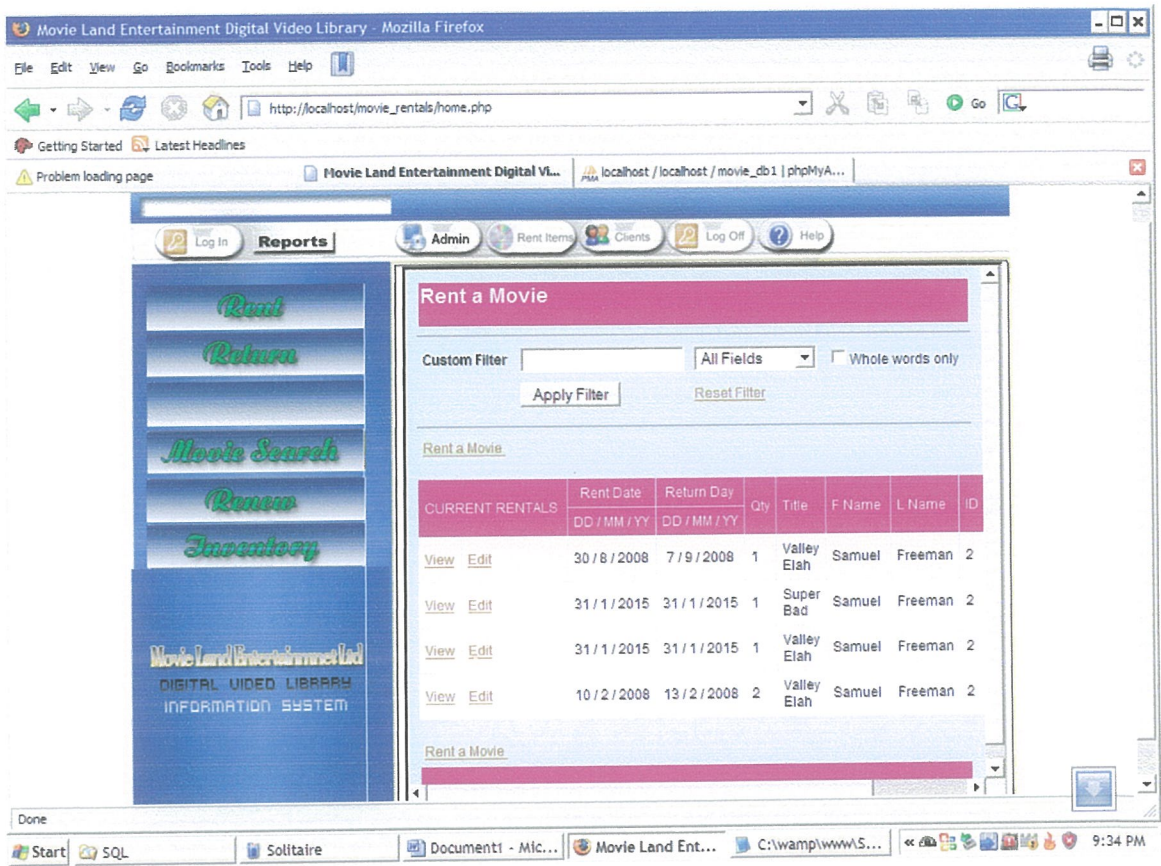


Figure 5. 4: Rentals report

This report shows the list of movies rented out to the client. The report shows the details of the members, rented date, return date and the details of movie borrowed.

5.2 System Implementation

After testing phase, a Digital Video Library Information system was ready to be implemented. Implementation involves conversion from the old system to the new system. Since the system were still in its early stage, parallel implementation was implemented it involves running both the old system and the new system simultaneously for a certain period time but later direct conversion is to be implemented.

5.2.1 System flowchart

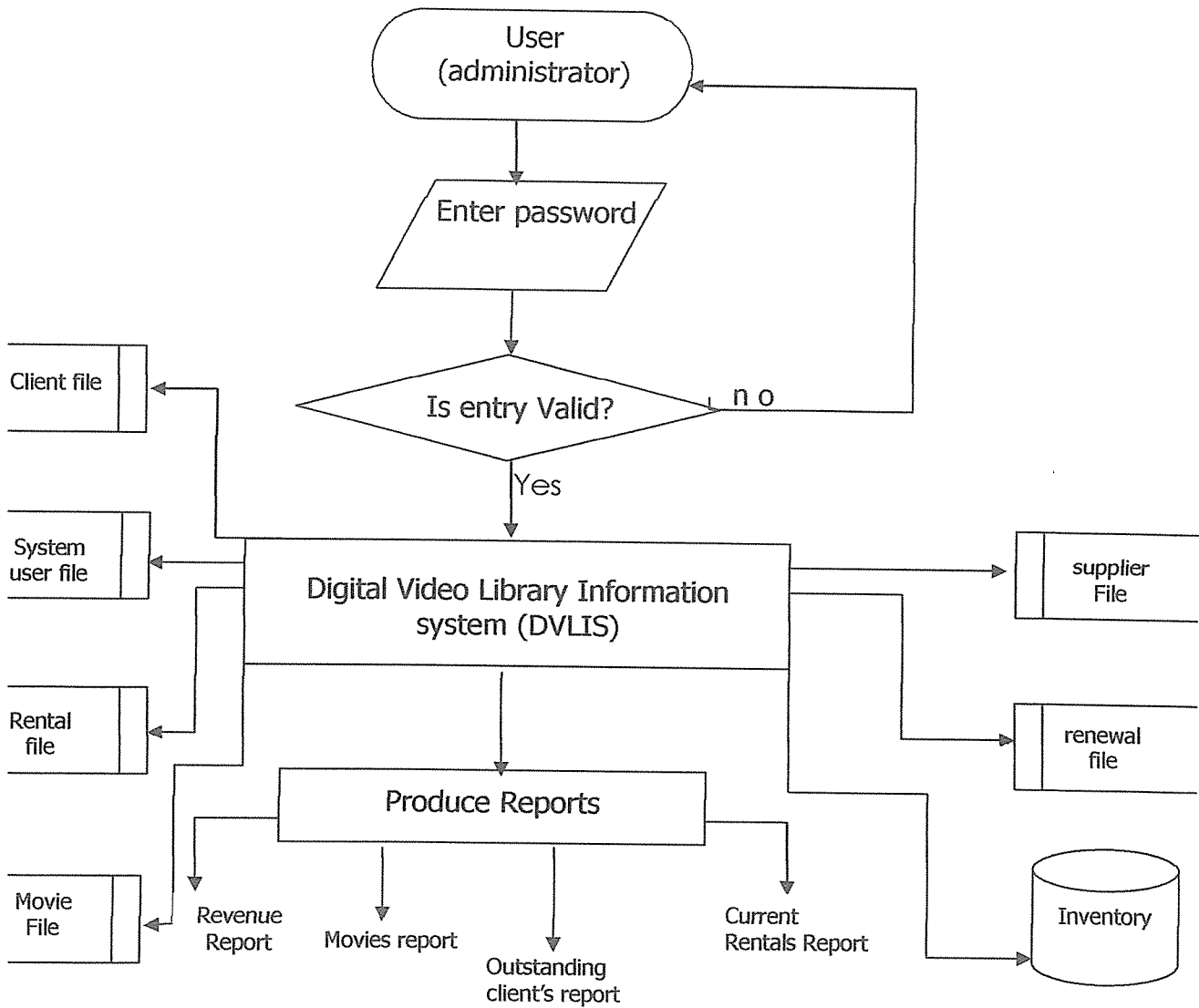


Figure 5. 5: System flowchart

5.2.3 Converting to the new system.

The old system was converted to new system by use of parallel method. It involves the following.

Hardware conversion. A new computer was installed and other hardware devices were installed such as printers, scanners.

Software conversion. The new system programs was installed and configured on the computer system. It was tested by the researcher to make sure the program works well on the new system.

File and data conversion. Old file that were in large file cabinets were converted to tables in database files. Data from files was entered into database tables without loss of accuracy. For example paper contents from manila folders from accounts was put into the system with scanner.

Therefore the old system and new system were operated side by side until the new system showed reliability then the old system will be abandoned. The parallel implementation is as shown below:

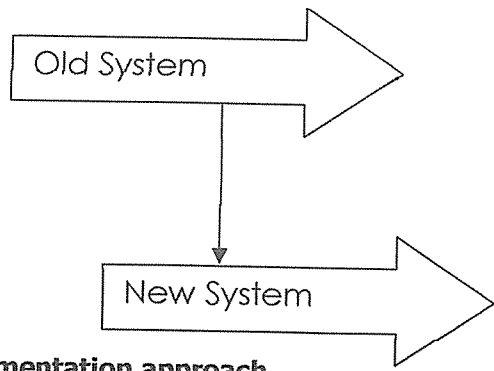


Figure 5. 6: The implementation approach

2.4 User training

The personnel to work on the new system were selected and trained. These are the users of the system. One-on-one side-by-side teacher-student training method was used by the researcher to train the user. And instruction manuals were provided.

Training involved teaching and guiding the users on how to operate and manage the system programs plus interfaces.

3.3 System manual

This gives full information on the forms and features of the new system and how the users of the system can interact with the system to get the required information.

3.3.1 User Interfaces

User interfaces of the system are available to act as methods and devices to accommodate interaction between the machines and human being (users). It consists of buttons, menus, icons that allows users to carry out a given task through by clicking on them.

The user interfaces or forms that were designed for this system have simple buttons and menu whereby the users are supposed to click on them in order for an action to be executed.

Log-in-form

The researcher designed a log-in form, where the user is to enter the correct Username and password in order to be allowed to use the system.

Users will be assigned a username and a password from the system administrator as shown below in the design log-in-form.

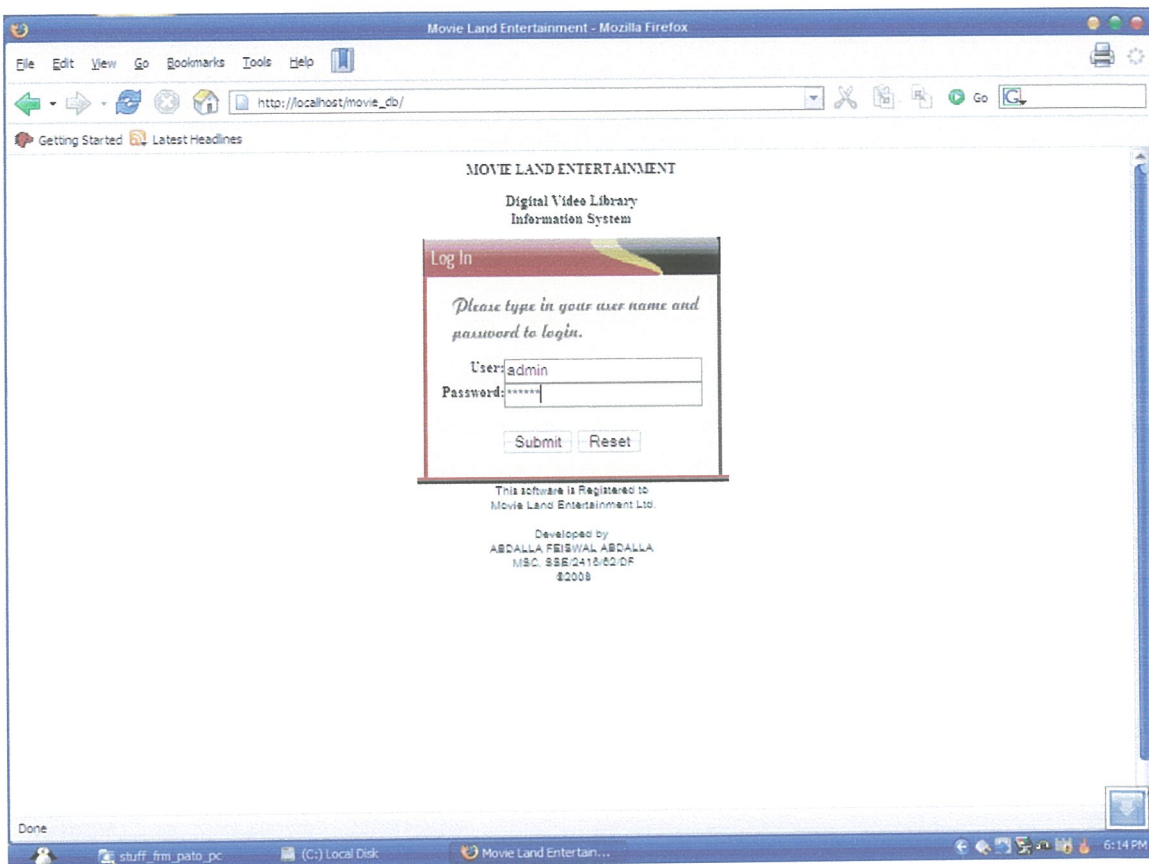


Figure 5. 7: Login page

This is the first page to display when the system starts, this page authenticates the user of the system. There are two levels in which someone can login into the system, one is by the Administrator privilege and the other is of clerk who doesn't have full privilege. Administrator has the full privilege e.g. to view the revenue of the company, deleting records and edit data already existing in the system.

Membership/client registration page

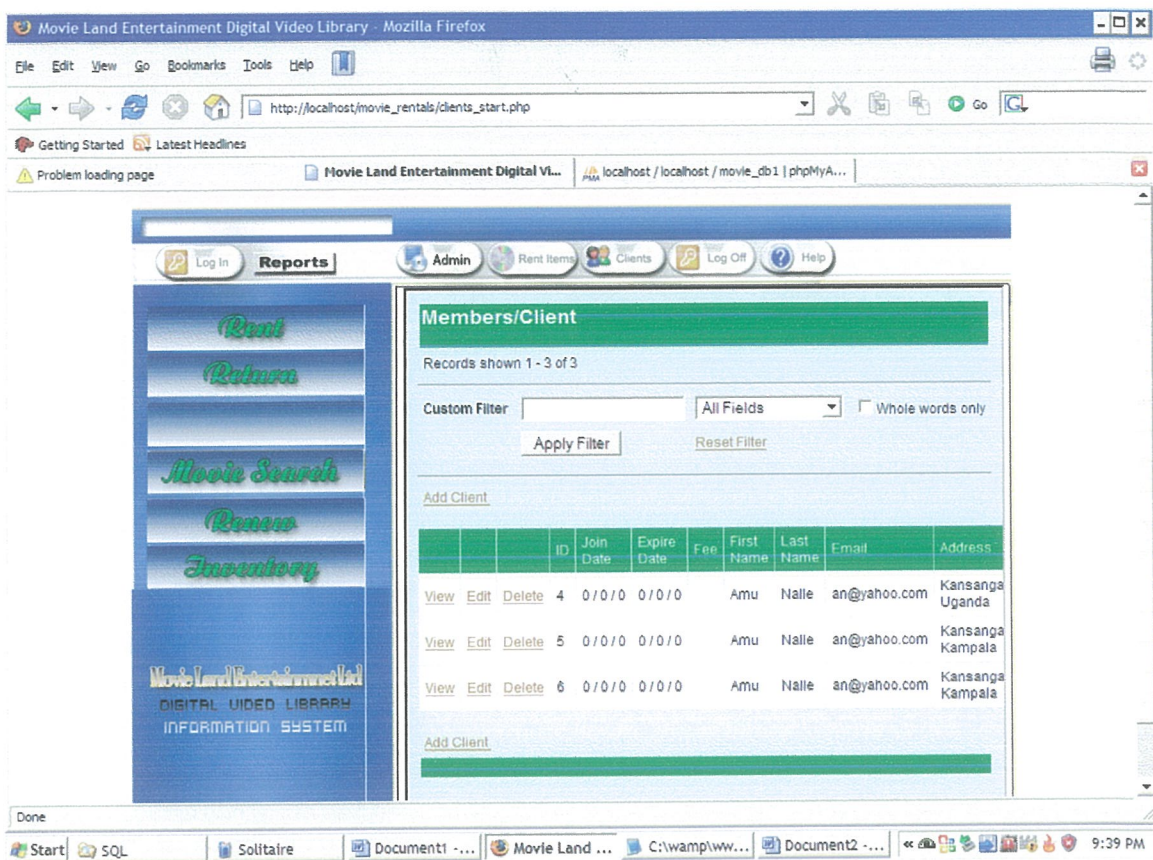


Figure 5. 8: Membership registration form

This is a page which shows the details of the client in the system. Administrator is the person with full privilege to delete the data in this table, the data can be viewed, new member can be added and edited in case there is any problem or change. The system only recognizes clients who have been registered in the system and thus they can be able to rent a movie in the company.

List of Movies in the system

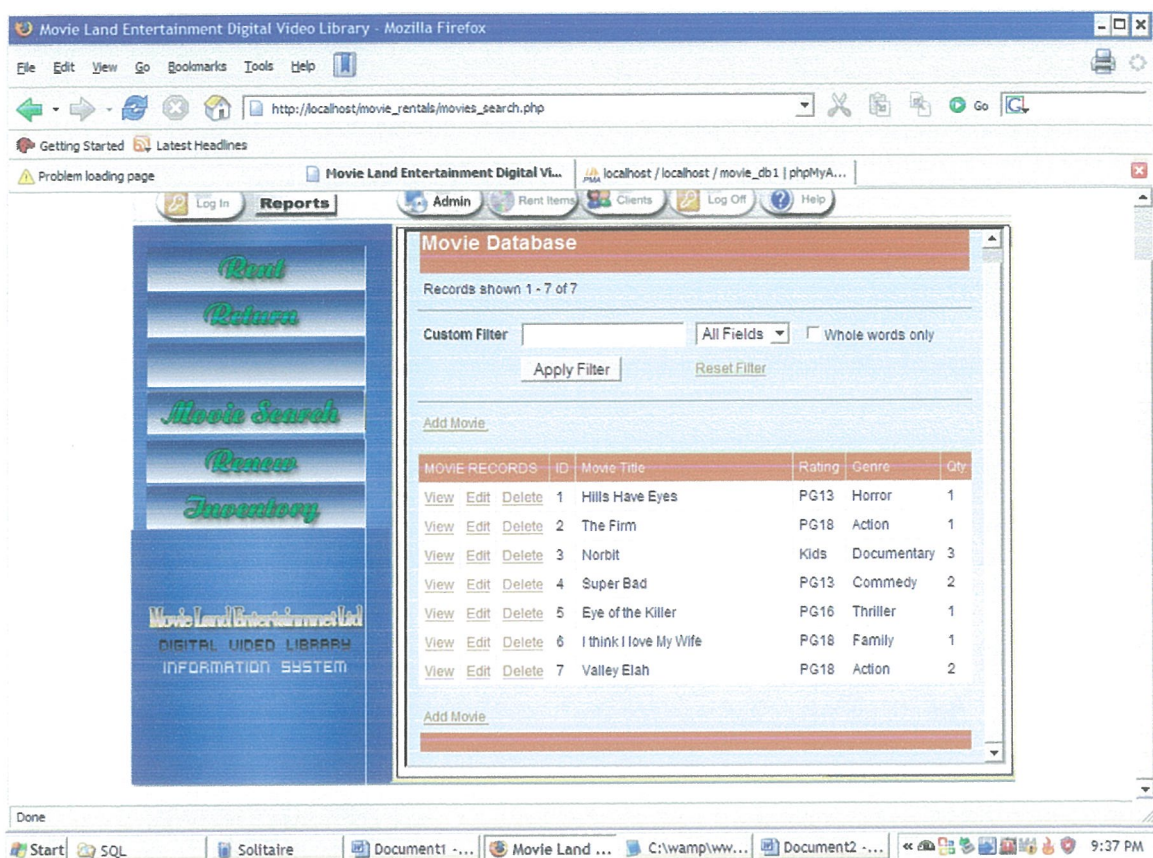


Figure 5. 9: List of movies page

This page which shows the movies currently in the system, the movies can be viewed detailed by clicking on the view, they can be edited or deleted. New movies can also be added by clicking on the Add movie link in the page. This table shows the quantity of movies available in the system, when a movie is rented, the quantity reduced from the movie available in the system. Therefore this table is linked to the table of rentals.

New Movie Entry page

Movie Land Entertainment Digital Video Library - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://localhost/movie_rentals/movies_search.php

Getting Started Latest Headlines

Problem loading page

Movie Land Entertainment Digital V... localhost / localhost / movie_db1 | phpMyA...

Log In Reports Admin Rent Items Clients Log Off Help

Rent Return Movie Search Review Inventory

Movie Land Entertainment Ltd
DIGITAL VIDEO LIBRARY
INFORMATION SYSTEM

Movie Database

Back Next Record

movie_id	1
title	Halls Have Eyes
rating	PG13
genre	Horror
quantity	1

Done

Start SQL Solitaire Document1 ... Movie Land ... C:\wamp\ww... Document2 ... 9:38 PM

Figure 5. 10: New movie entry form

The figure shows a page to enter new movie detail into the database, this privilege is only available to the Administrator of the system; the new movie can be recorded and stored in the system.

Rent movie page

The screenshot shows a web browser window titled "Movie Land Entertainment Digital Video Library - Mozilla Firefox". The address bar shows "http://localhost/movie_rentals/home.php". The browser's status bar indicates a "Problem loading page". The web application has a navigation bar with links: "Log In", "Reports", "Admin", "Rent Items", "Clients", "Log Off", and "Help". A sidebar on the left contains links: "Rent", "Return", "Movie Search", "Renew", "Inventory", and "Movie Land Entertainment Digital Video Library INFORMATION SYSTEM". The main content area is titled "Rent a Movie" and includes links for "Index Page" and "Next Record". Below these links is a form with the following fields:

rent_day	30
rent_month	8
rent_year	2008
return_day	7
return_month	9
return_year	2008
renew_day	
renew_month	
renew_year	
quantity_rented	1

Figure 5. 11: Rent movie to clients form

This is a form for renting movies to clients. The clerk or administrator need to fill the form in order to rent the movie, a client select the movies which are available in the system, the clerk or administrator fill the form which will include the member_id and movie_id. This form will update the rental table and the movie table which will reduce its quantity by the number of quantity rented.

Return movie page

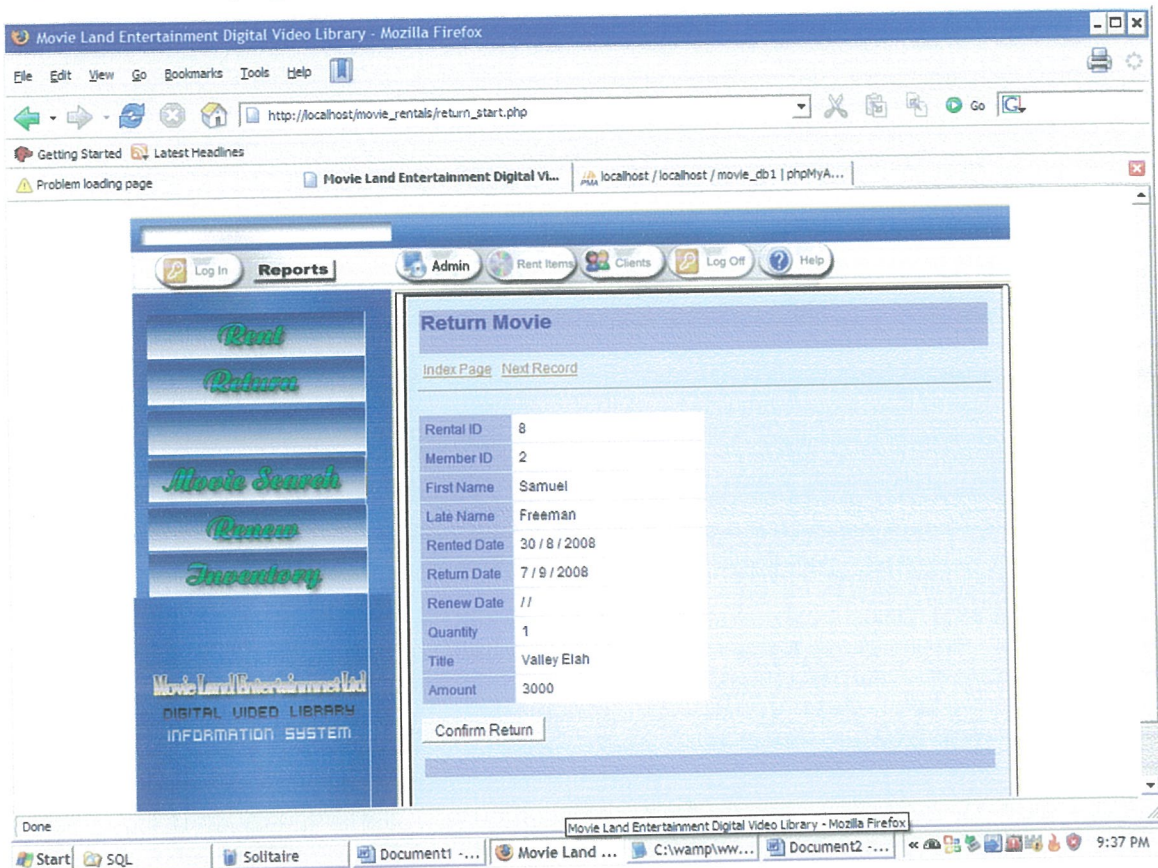


Figure 5. 12: A return page of movie.

The page for a client returning movie to the company. The clerk or administrator will open the rental page which contain all the movies rented out. He will check the member_id and open the link to return the movie page, clicks on the confirm button of return movie which will update the movie table and clear the customer rentals.

Search detail page

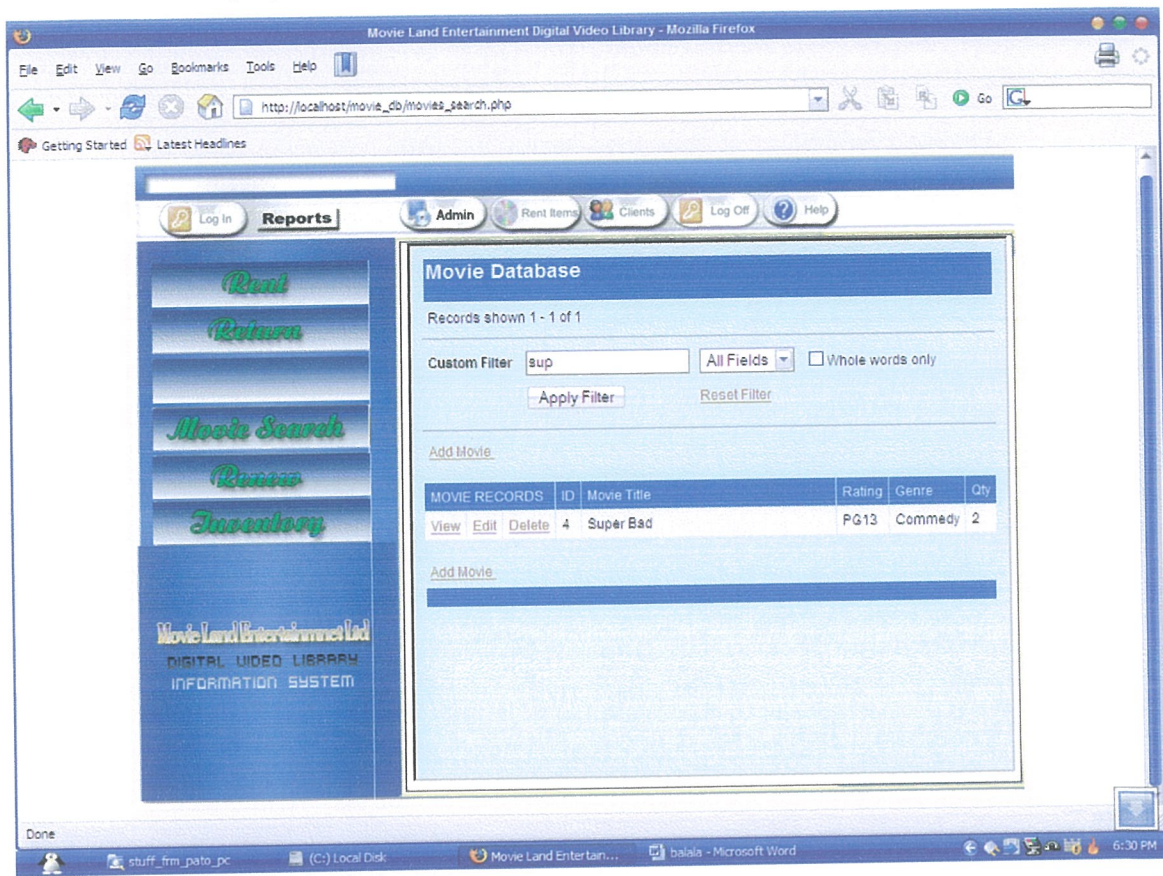


Figure 5. 13: Search page for movies in company

The page shows example of a search wizards which make it possible for quickly filter the details you need. This is a technique which quickly takes user to the record of interest. This is done by writing the field which you want to search. The fields include either by all fields in the table, by movie title, rating, genre or by ID. This feature will enable save time and quickly get the required information from the system.

Renew page

The screenshot shows a web browser window titled "Movie Land Entertainment Digital Video Library - Mozilla Firefox". The address bar shows the URL "http://localhost/movie_rentals/renew_start.php". The browser's status bar at the bottom indicates "Done".

The web application interface includes a navigation menu on the left with links: "Rent", "Return", "Movie Search", "Renew", and "Inventory". Below these links is a logo for "Movie Land Entertainment Ltd. DIGITAL VIDEO LIBRARY INFORMATION SYSTEM".

The main content area is titled "Back" and contains a form for renewing a movie. The form fields are as follows:

Field	Value
Movie Title	Valley Elah
First Name	Samuel
Last Name	Freeman
Amount	3000
Renew Date	DD: 31 MM: January YYYY: 2015

Below the form are two buttons: "Renew Movie" and "Reset".

The browser's taskbar at the bottom shows the Start button, a taskbar with "SQL", "Solitaire", "Document1 ...", "Movie Land ...", "C:\wamp\ww...", and "Document2 ...", and a system tray with a clock showing "9:38 PM".

Figure 5. 14: Renew page

This is a renew form which is used by user to extend the period of movie rented. This is an added feature to clients so that to avoid late charges.

Administrator page

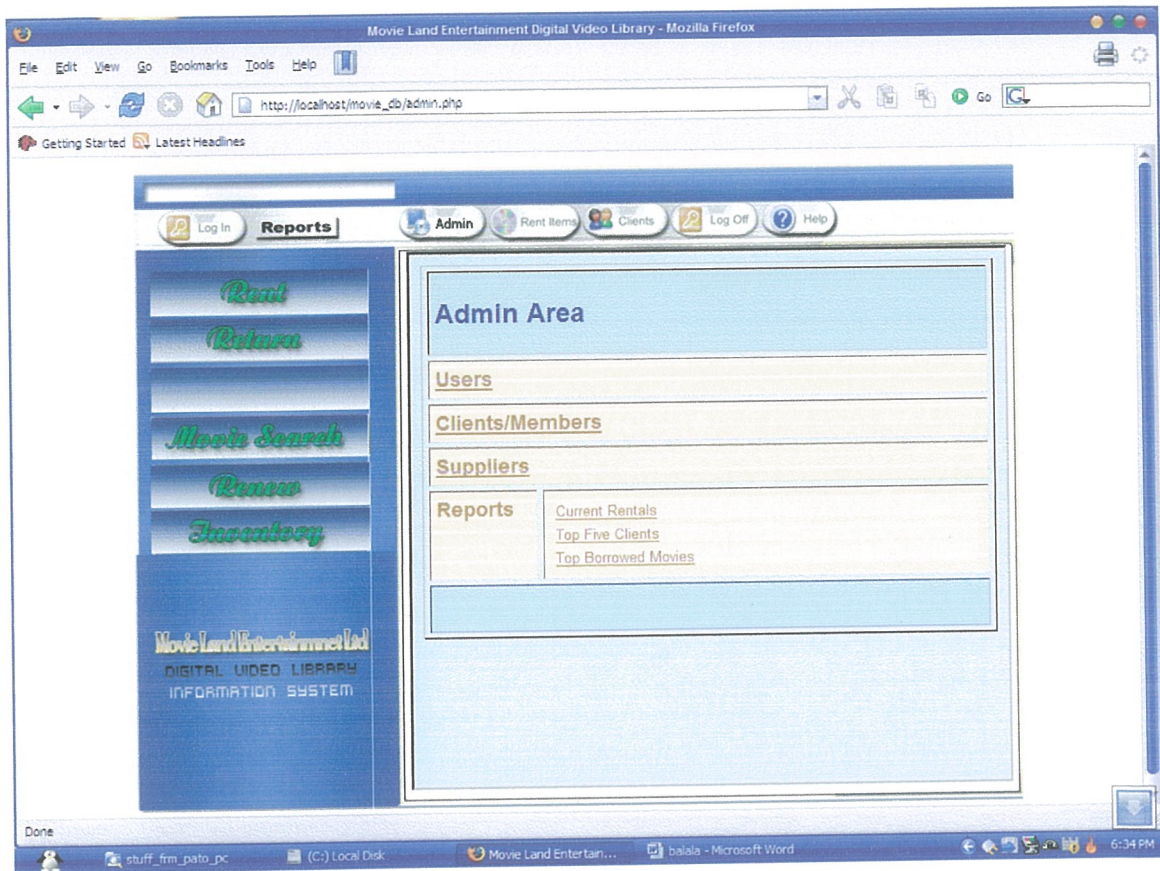


Figure 5. 15: Administrator page

This is a page for a user who has administrative right, which means full privileges of the system. The Administrator will be able to view reports, users, clients and suppliers details in the system. This page is only available to the administrator thus the clerk does not have the right to this services.

List of users of the system

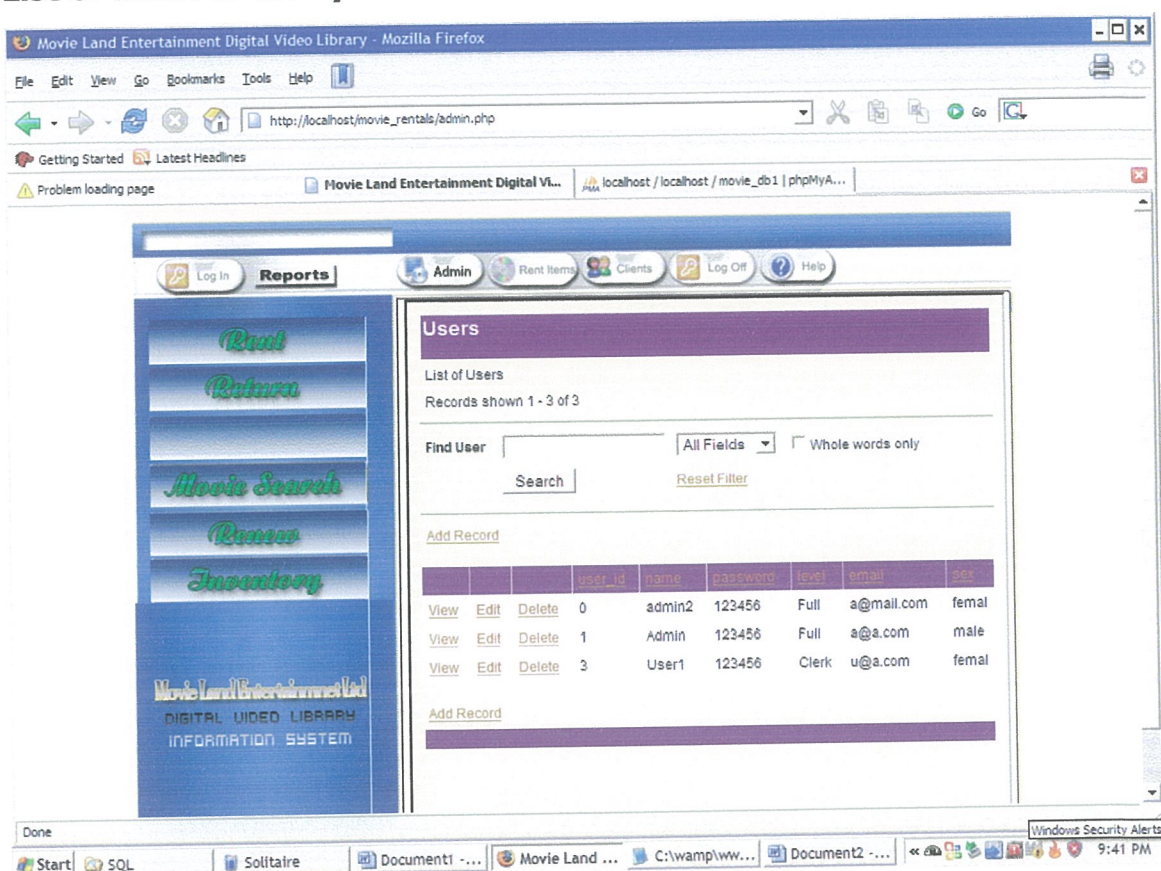


Figure 5. 16: List of users of the system

This page shows list of all users of the system with their full details and passwords and the level of privilege. It is the administrator who has the right and privilege to see the details of the users of the system. A new user can be added by the administrator of the system. The page has a search engine which can be used to quickly go to the user of interest. Administrator can be able to delete users, add users or view details of the users in the system.

Clerk user page

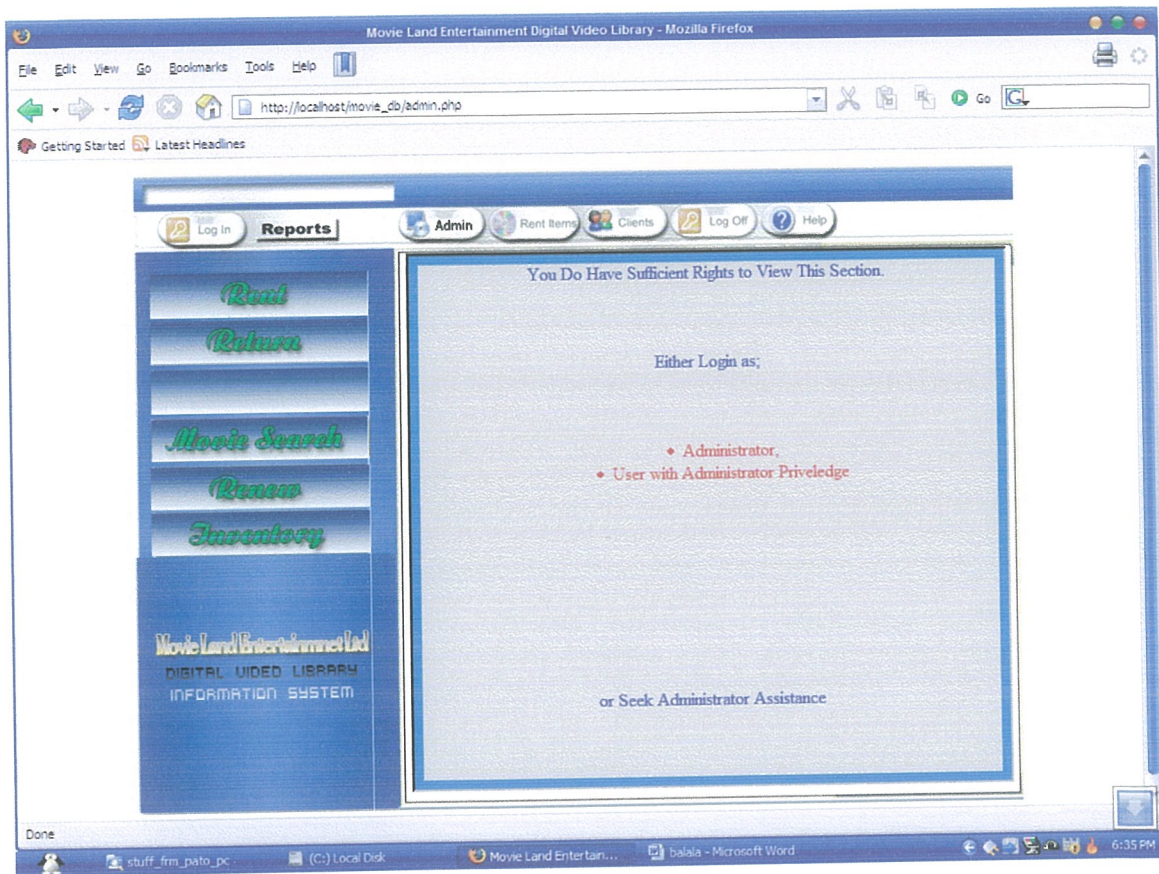


Figure 5. 17: Clerk user page

This page shows restriction and denial of service users without full privileges of the system. A clerk does not have full privilege of the system and it restricted on some other features of the system like accessing administrative area and deleting records in the system.

5.4 System Evaluation

The system was evaluated by testing its output and comparing with user requirements. The Digital Video Library Information System was implemented successfully and the system satisfies the user requirement. The researcher

5.4.1 Validation

Data validation is an attempt to build into the computer program the power to detect whether entries made are correct. The incorrect data items are detected and reported. The validation checks used in this project include:

Range Check

The fields are checked to ensure that they contain the correct number of characters.

Format check

This check ensures that fields are entered using the correct data types, that is, a non numeric field should not have numeric data and vice versa.

4.2 Systems Security

A) Software

- Use of passwords to allow only authorized users to gain access to the systems documents.
- Install anti-virus software that will help detect and clear viruses.
- Take regular backups in case of data loss.
- Diskettes should be checked for viruses before being used.

B) Hardware

- Lock all computer room doors to restrict any physical access.
- Employ watch guards if need be to restrict any physical access.
- Keep all hardware away from fire and water.

CHAPTER SIX

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Discussion

The study found out that different types of digital video information systems were not satisfying the requirement of the MovieLand Entertainment Limited. Therefore the study was conducted so that to satisfy the requirement of organization. The different types video information system were very complex and expensive for the MovieLand Entertainment Limited.

An investigation was carried out to establish how the existing system functions and what its problems were. This led to a definition of a set of options from which the users could choose their required system. In carrying out an investigation, information about the current system was collected and by recording the problems and requirements described by the users of the current system, a picture of the required system was built. To help in investigation, the following fact finding techniques were used:

Structured interview was used because used because of the following reasons:

1. It allowed the interviewer to ask questions that may reveal additional information useful for making a selection decision
2. With this approach, the interview could be modified as needed to gather important information.

Observation was used for the following reasons

1. It helped in checking the validity of data obtained through other methods. This increased reliability of the data/information gathered.
2. The system analyst was able to see exactly what was being done. Complex tasks were sometimes difficult to clearly explain in words. Through observation, the

analyst could identify tasks that had been missed or inaccurately described by other fact-finding techniques.

In designing the system the study defines the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. One could see it as the application of systems theory to product development. The system design was done in three phases. Database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a Data Definition Language, which can then be used to create a database.

Logical Design the designers are focused with the operations of the system basing on how the system will work, without taking too much notice of the choice of technical architecture.

In physical design, all the design decisions were made that are dependent on the physical system architecture. The study specified the technologies to be used to implement the system in terms of Data, Process, Interface and how these components interact and communicate across a network.

2.1 Conclusion

The design and implementation of the new system at MovieLand Entertainment Limited was a very interesting venture although there was unavailability of enough resources but, it was successful as it allows users to store large amount of data and manipulate their data with a minimum of ease compared to the old system. Thus the project objectives were achieved through whereby the new system is to keep all the records of movies in the company, clients details, rentals and revenue of the company very effectively.

The application will save the MovieLand entertainment Limited a lot of manpower and high operational costs, stationery and time.

5.2 Recommendations

The researcher recommends that the application be developed further to include more help files this is because the researcher didn't tackle more of help files which can assist the new users of the system.

The researcher also recommends for further user training, with the introduction of the new system, staff members from the branch are to be trained with a lot of precaution concerned with operation of the system. User training also includes explanation of mode of operation of the new system through system documentation and instruction manuals

The researcher also recommends the further development of the system to include message or mail based record modification where the system users can communicate a local area to minimize on the cost of communication by telephone.

The researcher recommends that purchase subsystem be developed to enable purchasing.

The researcher recommends the system be implemented to other branches of Movie and Entertainment Limited.

3 Further Research Area

Implementation of the online Digital video Library system whereby clients can interact with the system and select and download the video of their choice to their own remote computer via internet. The system should be able for members to register online, and be able to view the contents of the movies available in the system and transfer them to their computer and watch them, this will reduce on time for clients to go to the physical place for borrowing movies. The system should also be connected to a high bandwidth server for fast access by clients.

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APPENDICES

Appendix I: Interview Guide

Question 1

What is the current procedure used to record the Client's Movie Rental? What details are taken at that time?

Question 2

How long does it take for a client to be served? How long does it take to get all the information from the current system?

Question 3

What can you say about the current problem follow-up process of Movies from Client?

Question 4

Approximately how long does it take to come up with urgently needed information from our files?

Question 5

How do you feel about the current system? Do you find any problems in using the current system? If yes, name them.

Question 6

What do you think about development and implementation of a computerized system?

Question 7

What improvements would you like in the new system?

Objective

Include the interview: thank the interviewee

Appendix II: Sample Questionnaire for Knowledge Acquisition

Dear respondent,

I Abdalla Feiswal Abdalla pursuing a Master of Science in Software System Engineering at Kampala International University, carrying out a research on Digital Video Library Information System at MovieLand Entertainment Limited in Kampala. This research is part and partial fulfillment for my Award of Master of Science in Software System Engineering and will help improve on information management of both clients and management.

The questionnaire is designed to investigate how Information management is done in his system. The information sought is for the academic research only and will be treated with confidentiality.

INSTRUCTIONS

Please Put a TICK on the opinion box of your answer and fill out the spaces where necessary.

Age

- | | |
|----------|--------------------------|
| 16-20 | <input type="checkbox"/> |
| 21-25 | <input type="checkbox"/> |
| 26-30 | <input type="checkbox"/> |
| Above 30 | <input type="checkbox"/> |

Educational level

- | | |
|-------------|--------------------------|
| Primary | <input type="checkbox"/> |
| Secondary | <input type="checkbox"/> |
| Certificate | <input type="checkbox"/> |
| Diploma | <input type="checkbox"/> |
| Bachelors | <input type="checkbox"/> |
| Masters | <input type="checkbox"/> |

2. For how long have you worked in this Company?

1 to 3years ☐

3 to 5years ☐

5 to 7years ☐

More than 7 years ☐

3. Approximately how many customers do you receive in a day?

10 to 30 ☐

30 to 50 ☐

50 to 80 ☐

More 86 ☐

How are data of the video records managed?

File based system ☐

Computerized system ☐

Both ☐

Which kind of tools do you use in keeping of these records?

Computers ☐

Using books and pens ☐

Both ☐

Are there any advantages you find in using your current system?

Yes ☐

No ☐

Do you face any problems with your current system?

Yes ☐

No ☐

9. Are you willing to change from your current system to a better one?

Yes ☐

No ☐

10. Would you welcome the introduction of computerized system to the MovieLand entertainment Limited? If a manual system is used

Yes ☐

No ☐

11. What kinds of problems are faced with current system?

.....

.....

.....

12. How are these problems being rectified?

.....

.....

.....

13. What kinds of reports are generated?

.....

.....

14. How often are these reports generated?

.....

.....

Thank you for your time and contribution towards my research.

Appendix III: Introduction letter



KAMPALA
INTERNATIONAL UNIVERSITY

P.O.BOX 20000
KAMPALA- UGANDA.
TEL:-041-266813

**OFFICE OF THE DIRECTOR
SCHOOL OF POSTGRADUATE STUDIES AND RESEARCH**

3rd September, 2008

Dear Sir/Madam,

RE: INTRODUCTION FOR MR. ABDALLA FEISWAL ABDALLA

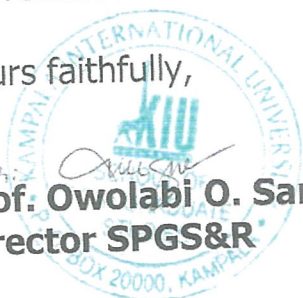
The above named is our registered student in the School of Post Graduate Studies and Research, pursuing a Master of Science in Computer Software Engineering, With registration number Msc SSE/2415/62/DF.

He wishes to carry out a research on **"Digital Video Library Information System. Case study Movie Land Entertainment Limited Kampala, Uganda"**

Any assistance accorded to her regarding research will be highly appreciated.

Yours faithfully,


Prof. Owolabi O. Samuel
Director SPGS&R



Appendix IV: Sample code

MySQL Code for the Database design

-- Database: `movie_db`

-- Table structure for table `rentals`

```
CREATE TABLE `rentals` (  
  `rentals_id` tinyint(11) NOT NULL auto_increment,  
  `quantity_rented` varchar(255) NOT NULL,  
  `title` varchar(100) NOT NULL,  
  `c_fname` varchar(30) NOT NULL,  
  `c_lname` varchar(30) NOT NULL,  
  `member_id` varchar(11) NOT NULL,  
  `rent_date` date NOT NULL,  
  `return_date` date NOT NULL,  
  `renew_date` date NOT NULL,  
  `renew_due_date` date NOT NULL,  
  `rent_amount` int(11) NOT NULL,  
  `renew_amount` int(11) NOT NULL,  
  `amount_paid` int(11) NOT NULL,  
  `late_fee` int(11) NOT NULL,  
  PRIMARY KEY (`rentals_id`)  
ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

Table structure for table `members`

```
CREATE TABLE `members` (  
  `member_id` tinyint(11) NOT NULL auto_increment,  
  `photo` blob,  
  `membership_fee` int(11) default NULL,  
  `join_date` date default NULL,  
  `expire_date` date default NULL,  
  `c_fname` varchar(30) default NULL,  
  `c_lname` varchar(30) default NULL,  
  `email` varchar(50) default NULL,  
  `address` varchar(100) default NULL,  
  `tel` int(11) default NULL,  
  PRIMARY KEY (`member_id`)  
ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

-- Table structure for table `renew`

```
CREATE TABLE `renew` (  
  `renew_id` tinyint(11) NOT NULL auto_increment,  
  `title` varchar(100) default NULL,  
  `c_fname` varchar(30) default NULL,  
  `c_lname` varchar(30) default NULL,  
  `amount` int(11) default NULL,  
  `renew_date` date default NULL,  
  PRIMARY KEY (`renew_id`)  
  ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

- Table structure for table `revenue`

```
CREATE TABLE `revenue` (  
  `revenue_id` tinyint(11) NOT NULL auto_increment,  
  `rentals_amount` varchar(100) default NULL,  
  `renew_amount` varchar(100) default NULL,  
  PRIMARY KEY (`revenue_id`)  
  ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

Table structure for table `users`

```
CREATE TABLE `users` (  
  `user_id` tinyint(11) NOT NULL auto_increment,  
  `name` varchar(30) NOT NULL,  
  `password` varchar(30) NOT NULL,  
  `level` varchar(30) NOT NULL,  
  `email` varchar(100) NOT NULL,  
  `sex` varchar(2) NOT NULL,  
  PRIMARY KEY (`user_id`)  
  ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

Table structure for table `genre`

```
CREATE TABLE `genre` (  
  `id` tinyint(11) NOT NULL auto_increment,  
  `genre` varchar(15) NOT NULL,  
  PRIMARY KEY (`id`)  
  ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

- Table structure for table `membership_fee`

```
CREATE TABLE `membership_fee` (  
  `id` tinyint(11) NOT NULL auto_increment,  
  `fee` tinyint(4) NOT NULL,  
  PRIMARY KEY (`id`)  
  ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

- Table structure for table `user_level`

```
CREATE TABLE `user_level` (  
  `id` tinyint(11) NOT NULL auto_increment,  
  `level` varchar(10) NOT NULL,  
  PRIMARY KEY (`id`)  
  ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

Table structure for table `rating`

```
CREATE TABLE `rating` (  
  `id` tinyint(11) NOT NULL auto_increment,  
  `rating` varchar(5) NOT NULL,  
  PRIMARY KEY (`id`)  
  ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

Table structure for table `supplier`

```
CREATE TABLE `supplier` (  
  `supplier_id` tinyint(11) NOT NULL auto_increment,  
  `name` varchar(255) NOT NULL,  
  `address` varchar(255) NOT NULL,  
  PRIMARY KEY (`supplier_id`)  
  ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;
```

Table structure for table `movies`

```
CREATE TABLE `movies` (  
  `movie_id` tinyint(11) NOT NULL auto_increment,  
  `title` varchar(255) NOT NULL,  
  `rating` varchar(255) NOT NULL,  
  `genre` varchar(255) NOT NULL,
```



```

`quantity` tinyint(4) NOT NULL,
`directors` varchar(100) NOT NULL,
`actors` varchar(100) NOT NULL,
PRIMARY KEY (`movie_id`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1 AUTO_INCREMENT=1 ;

```

PHP and Dreamweaver Sample Code

PHP Code for connection to Database

```

<?php
# FileName="Connection_php_mysql.htm"
# Type="MYSQL"
# HTTP="true"
$hostname_movieDB = "localhost";
$dbname_movieDB = "movie_db";
$username_movieDB = "movie_db";
$password_movieDB = "123456";
$movieDB = mysql_pconnect($hostname_movieDB, $username_movieDB,
password_movieDB) or trigger_error(mysql_error(),E_USER_ERROR);
>

```

Sample code for Dreamweaver

Movie code

```

<?php
if (!isset($_SESSION)) {
session_start();

MM_authoredUsers = "";
MM_donotCheckaccess = "true";

*** Restrict Access To Page: Grant or deny access to this page
function isAuthorized($strUsers, $strGroups, $UserName, $UserGroup) {
// For security, start by assuming the visitor is NOT authorized.
$isValid = False;

// When a visitor has logged into this site, the Session variable MM_Username set
equal to their username.
// Therefore, we know that a user is NOT logged in if that Session variable is blank.
if (!empty($UserName)) {
// Besides being logged in, you may restrict access to only certain users based on an
established when they login.

```

```

// Parse the strings into arrays.
$arrUsers = Explode(",", $strUsers);
$arrGroups = Explode(",", $strGroups);
if (in_array($UserName, $arrUsers)) {
    $isValid = true;
}
// Or, you may restrict access to only certain users based on their username.
if (in_array($UserGroup, $arrGroups)) {
    $isValid = true;
}
if (($strUsers == "") && true) {
    $isValid = true;
}
}
return $isValid;

```

```

MM_restrictGoTo = "messages/error_login.php";
if (!((isset($_SESSION['MM_Username'])) && (isAuthorized("", $MM_authorizedUsers,
$_SESSION['MM_Username'], $_SESSION['MM_UserGroup'])))) {
    $MM_qsChar = "?";
    $MM_referrer = $_SERVER['PHP_SELF'];
    if (strpos($MM_restrictGoTo, "?") $MM_qsChar = "&";
    if (isset($_QUERY_STRING) && strlen($_QUERY_STRING) > 0)
        $MM_referrer .= "?" . $_QUERY_STRING;
    $MM_restrictGoTo = $MM_restrictGoTo. $MM_qsChar . "accesscheck=" .
    urlencode($MM_referrer);
    header("Location: ". $MM_restrictGoTo);
    exit;
}

```

```

>
?php session_start();
if (isset($_GET["order"])) $order = @$_GET["order"];
if (isset($_GET["type"])) $ordtype = @$_GET["type"];

if (isset($_POST["filter"])) $filter = @$_POST["filter"];
if (isset($_POST["filter_field"])) $filterfield = @$_POST["filter_field"];
$wholeonly = false;
if (isset($_POST["wholeonly"])) $wholeonly = @$_POST["wholeonly"];

if (!isset($order) && isset($_SESSION["order"])) $order = $_SESSION["order"];
if (!isset($ordtype) && isset($_SESSION["type"])) $ordtype = $_SESSION["type"];
if (!isset($filter) && isset($_SESSION["filter"])) $filter = $_SESSION["filter"];

```

```

    if (!isset($filterfield) && isset($_SESSION["filter_field"])) $filterfield =
$_SESSION["filter_field"];

?>
<link href="css_movies.css" rel="stylesheet" type="text/css">
<table class="bd" width="100%"><tr><td class="hr"><h2>Movie Database
</h2></td></tr></table>
<?php
    $conn = connect();
    $showrecs = 20;
    $pagerange = 10;

    $a = @$_GET["a"];
    $recid = @$_GET["recid"];
    $page = @$_GET["page"];
    if (!isset($page)) $page = 1;

    $sql = @$_POST["sql"];

switch ($sql) {
    case "insert":
        sql_insert();
        break;
    case "update":
        sql_update();
        break;
    case "delete":
        sql_delete();
        break;
}

switch ($a) {
    case "add":
        addrec();
        break;
    case "view":
        viewrec($recid);
        break;
    case "edit":
        editrec($recid);
        break;
    case "del":
        deleterec($recid);
        break;
}

```

```

default:
    select();
    break;
}

if (isset($order)) $_SESSION["order"] = $order;
if (isset($ordtype)) $_SESSION["type"] = $ordtype;
if (isset($filter)) $_SESSION["filter"] = $filter;
if (isset($filterfield)) $_SESSION["filter_field"] = $filterfield;
if (isset($wholeonly)) $_SESSION["wholeonly"] = $wholeonly;

mysql_close($conn);
>
<table class="bd" width="100%"><tr><td class="hr">&nbsp;</td>
</tr></table>

```

```

?php function select()
{
global $a;
global $showrecs;
global $page;
global $filter;
global $filterfield;
global $wholeonly;
global $order;
global $ordtype;

```

```

if ($a == "reset") {
    $filter = "";
    $filterfield = "";
    $wholeonly = "";
    $order = "";
    $ordtype = "";

```

```

    checkstr = "";
    ($wholeonly) $checkstr = " checked";
    ($ordtype == "asc") { $ordtypestr = "desc"; } else { $ordtypestr = "asc"; }
    $res = sql_select();
    $count = sql_getrecordcount();
    ($count % $showrecs != 0) {
    $pagecount = intval($count / $showrecs) + 1;

```

```

}
else {
    $pagecount = intval($count / $showrecs);
}
$startrec = $showrecs * ($page - 1);
if ($startrec < $count) {mysql_data_seek($res, $startrec);}
$reccount = min($showrecs * $page, $count);
>





```

```

<td class="hr">Rating</td>
<td class="hr">Genre</td>
<td class="hr">Qty</td>
</tr>
<?php
    for ($i = $startrec; $i < $reccount; $i++)
    {
        $row = mysql_fetch_assoc($res);
        $style = "dr";
        if ($i % 2 != 0) {
            $style = "sr";
        }
    }
?>
<tr>
<td width="7%" nowrap class="<?php echo $style ?>"><a
href="movies_start.php?a=view&recid=<?php echo $i ?>">View</a></td>
<td width="6%" nowrap class="<?php echo $style ?>"><a
href="movies_start.php?a=edit&recid=<?php echo $i ?>">Edit</a></td>
<td width="10%" nowrap class="<?php echo $style ?>"><a
href="movies_start.php?a=del&recid=<?php echo $i ?>">Delete</a></td>
<td width="5%" nowrap class="<?php echo $style ?>"><?php echo
htmlspecialchars($row["movie_id"]) ?></td>
<td width="54%" class="<?php echo $style ?>"><?php echo
htmlspecialchars($row["title"]) ?></td>
<td width="6%" nowrap class="<?php echo $style ?>"><?php echo
htmlspecialchars($row["rating"]) ?></td>
<td width="7%" nowrap class="<?php echo $style ?>"><?php echo
htmlspecialchars($row["genre"]) ?></td>
<td width="5%" nowrap class="<?php echo $style ?>"><?php echo
htmlspecialchars($row["quantity"]) ?></td>
</tr>
?php
}
mysql_free_result($res);
>
</table>
<br>
?php showpagenav($page, $pagecount); ?>
?php } ?>

?php function showrow($row, $recid)
{
>
<table class="tbl" border="0" cellspacing="1" cellpadding="5"width="50%">

```

```

<tr>
<td width="14%" nowrap class="hr">Movie ID </td>
<td width="86%" class="dr"><?php echo htmlspecialchars($row["movie_id"])
?></td>
</tr>
<tr>
<td nowrap class="hr">Movie Title </td>
<td class="dr"><?php echo htmlspecialchars($row["title"]) ?></td>
</tr>
<tr>
<td nowrap class="hr">Rating</td>
<td class="dr"><?php echo htmlspecialchars($row["rating"]) ?></td>
</tr>
<tr>
<td nowrap class="hr">Genre</td>
<td class="dr"><?php echo htmlspecialchars($row["genre"]) ?></td>
</tr>
<tr>
<td nowrap class="hr">Quantity</td>
<td class="dr"><?php echo htmlspecialchars($row["quantity"]) ?></td>
</tr>
<tr>
<td nowrap class="hr">Directors</td>
<td class="dr"><?php echo htmlspecialchars($row["directors"]) ?></td>
</tr>
<tr>
<td nowrap class="hr">Actors</td>
<td class="dr"><?php echo htmlspecialchars($row["actors"]) ?></td>
</tr>
</table>
?php } ?>

```

```

?php function showroweditor($row, $iseditmode)
{
global $conn;
>
table class="tbl" border="0" cellspacing="1" cellpadding="5"width="50%">
tr>
td class="hr"><?php echo htmlspecialchars("movie_id")."&nbsp;" ?></td>
td class="dr"><input type="text" name="movie_id" value="<?php echo
$_replace('","', '&quot;', trim($row["movie_id"])) ?>"></td>
tr>
tr>
td class="hr"><?php echo htmlspecialchars("title")."&nbsp;" ?></td>

```



```

<td class="dr"><textarea cols="35" rows="4" name="title" maxlength="255"><?php
echo str_replace("", '&quot;', trim($row["title"])) ?></textarea></td>
</tr>
<tr>
<td class="hr"><?php echo htmlspecialchars("rating")."&nbsp;" ?></td>
<td class="dr"><textarea cols="35" rows="4" name="rating"
maxlength="255"><?php echo str_replace("", '&quot;', trim($row["rating"]))
?></textarea></td>
</tr>
<tr>
<td class="hr"><?php echo htmlspecialchars("genre")."&nbsp;" ?></td>
<td class="dr"><textarea cols="35" rows="4" name="genre"
maxlength="255"><?php echo str_replace("", '&quot;', trim($row["genre"]))
?></textarea></td>
</tr>
<tr>
<td class="hr"><?php echo htmlspecialchars("quantity")."&nbsp;" ?></td>
<td class="dr"><input type="text" name="quantity" value="<?php echo
str_replace("", '&quot;', trim($row["quantity"])) ?>"></td>
</tr>
<tr>
<td class="hr"><?php echo htmlspecialchars("directors")."&nbsp;" ?></td>
<td class="dr"><textarea cols="35" rows="4" name="directors"
maxlength="255"><?php echo str_replace("", '&quot;', trim($row["directors"]))
?></textarea></td>
</tr>
<tr>
<td class="hr"><?php echo htmlspecialchars("actors")."&nbsp;" ?></td>
<td class="dr"><textarea cols="35" rows="4" name="actors"
maxlength="255"><?php echo str_replace("", '&quot;', trim($row["actors"]))
?></textarea></td>
</tr>
</table>
<?php } ?>

```

```

<?php function showpagenav($page, $pagecount)

```

```

<table class="bd" border="0" cellspacing="1" cellpadding="4">
<tr>
<td nowrap><a href="enter_movie.php">Add Movie </a>&nbsp;</td>
<?php if ($page > 1) { ?>
<td nowrap><a href="movies_start.php?page=<?php echo $page - 1
">&lt;&lt;&nbsp;</a>&nbsp;</td>

```

```

<?php } ?>
<?php
    global $pagerange;

    if ($pagecount > 1) {

    if ($pagecount % $pagerange != 0) {
        $rangelcount = intval($pagecount / $pagerange) + 1;
    }
    else {
        $rangelcount = intval($pagecount / $pagerange);
    }
    for ($i = 1; $i < $rangelcount + 1; $i++) {
        $startpage = (($i - 1) * $pagerange) + 1;
        $count = min($i * $pagerange, $pagecount);

        if (((($page >= $startpage) && ($page <= ($i * $pagerange)))) {
            for ($j = $startpage; $j < $count + 1; $j++) {
                if ($j == $page) {
                    >
  |
```

```

php function showreclnav($a, $recid, $count)

```

```

table class="bd" border="0" cellspacing="1" cellpadding="4">
>
l nowrap><a href="movies_start.php">Back</a></td>
php if ($recid > 0) { ?>

```

```

<td nowrap><a href="movies_start.php?a=<?php echo $a ?>&recid=<?php echo
$recid - 1 ?>">Prior Record</a></td>
<?php } if ($recid < $count - 1) { ?>
<td nowrap><a href="movies_start.php?a=<?php echo $a ?>&recid=<?php echo
$recid + 1 ?>">Next Record</a></td>
<?php } ?>
</tr>
</table>
<hr size="1" noshade>
<?php } ?>

```

```

<?php function addrec()

```

```

>
<table class="bd" border="0" cellspacing="1" cellpadding="4">
<tr>
<td><a href="movies_start.php">Back</a></td>
</tr>
</table>
<hr size="1" noshade>
<form enctype="multipart/form-data" action="movies_start.php" method="post">
<p><input type="hidden" name="sql" value="insert"></p>
<?php
$row = array(
'movie_id' => "",
'title' => "",
'rating' => "",
'genre' => "",
'quantity' => "",
'directors' => "",
'actors' => "");
owroweditor($row, false);
<p><input type="submit" name="action" value="Insert">
</p>
</form>
<?php } ?>

```

```

<?php function viewrec($recid)

```

```

$res = sql_select();
$count = sql_getrecordcount();
mysql_data_seek($res, $recid);
$row = mysql_fetch_assoc($res);

```

```

    showrecrenav("view", $recid, $count);
?><br>
<?php showrow($row, $recid) ?>
<br>
<hr size="1" noshade>
<table class="bd" border="0" cellspacing="1" cellpadding="4">
<tr><td><a href="enter_movie.php">Add Movie </a></td>
<td><a href="movies_start.php?a=edit&recid=<?php echo $recid ?>">Edit Movie
</a></td>
<td><a href="movies_start.php?a=del&recid=<?php echo $recid ?>">Delete Movie
</a></td>
</tr></table>
<?php
    mysql_free_result($res);
. ?>
<?php function editrec($recid)

$res = sql_select();
$count = sql_getrecordcount();
mysql_data_seek($res, $recid);
$row = mysql_fetch_assoc($res);
showrecrenav("edit", $recid, $count);
>
<br>
<form enctype="multipart/form-data" action="movies_start.php" method="post">
<input type="hidden" name="sql" value="update">
<input type="hidden" name="xmovie_id" value="<?php echo $row["movie_id"] ?>">
<?php showroweditor($row, true); ?>
<p><input type="submit" name="action" value="Insert">
</p>
</form>
<?php
    mysql_free_result($res);
?>
<?php function deleterec($recid)

$res = sql_select();
$count = sql_getrecordcount();
mysql_data_seek($res, $recid);
$row = mysql_fetch_assoc($res);
showrecrenav("del", $recid, $count);
.
<br>
<form action="movies_start.php" method="post">

```

```

<input type="hidden" name="sql" value="delete">
<input type="hidden" name="xmovie_id" value="<?php echo $row["movie_id"] ?>">
<?php showrow($row, $recid) ?>
<p><input type="submit" name="action" value="Confirm"> </p>
</form>
<?php
    mysql_free_result($res);
} ?>
<?php function connect()
{
    $conn = mysql_connect("localhost", "movie_db", "123456");
    mysql_select_db("movie_db");
    return $conn;
}

function sqlvalue($val, $quote)
{
    if ($quote)
        $tmp = sqlstr($val);
    else
        $tmp = $val;
    if ($tmp == "")
        $tmp = "NULL";
    elseif ($quote)
        $tmp = "".$tmp."";
    return $tmp;
}

function sqlstr($val)
{
    return str_replace("'", "''", $val);
}

function sql_select()
{
    global $conn;
    global $order;
    global $ordtype;
    global $filter;
    global $filterfield;
    global $wholeonly;

    $filterstr = sqlstr($filter);
    if (!$wholeonly && isset($wholeonly) && $filterstr!="") $filterstr = "%".$filterstr."%";

```

```

$sql = "SELECT `movie_id`, `title`, `rating`, `genre`, `quantity`, `directors`,
actors` FROM `movies`";
if (isset($filterstr) && $filterstr!=" && isset($filterfield) && $filterfield!=") {
    $sql .= " where " .sqlstr($filterfield) . " like '" . $filterstr . "'";
} elseif (isset($filterstr) && $filterstr!=") {
    $sql .= " where (`movie_id` like '" . $filterstr . "') or (`title` like '" . $filterstr . "') or
`rating` like '" . $filterstr . "') or (`genre` like '" . $filterstr . "') or (`quantity` like '"
$filterstr . "') or (`directors` like '" . $filterstr . "') or (`actors` like '" . $filterstr . "')";
}
if (isset($order) && $order!=") $sql .= " order by `" .sqlstr($order) . "`";
if (isset($ordtype) && $ordtype!=") $sql .= " " .sqlstr($ordtype);
$res = mysql_query($sql, $conn) or die(mysql_error());
return $res;

```

function sql_getrecordcount()

```

global $conn;
global $order;
global $ordtype;
global $filter;
global $filterfield;
global $wholeonly;

$filterstr = sqlstr($filter);
if (!$wholeonly && isset($wholeonly) && $filterstr!=") $filterstr = "%" . $filterstr . "%";
$sql = "SELECT COUNT(*) FROM `movies`";
if (isset($filterstr) && $filterstr!=" && isset($filterfield) && $filterfield!=") {
    $sql .= " where " .sqlstr($filterfield) . " like '" . $filterstr . "'";
} elseif (isset($filterstr) && $filterstr!=") {
    $sql .= " where (`movie_id` like '" . $filterstr . "') or (`title` like '" . $filterstr . "') or
`rating` like '" . $filterstr . "') or (`genre` like '" . $filterstr . "') or (`quantity` like '"
$filterstr . "') or (`directors` like '" . $filterstr . "') or (`actors` like '" . $filterstr . "')";
}

$res = mysql_query($sql, $conn) or die(mysql_error());
$row = mysql_fetch_assoc($res);
return $row;

```

function sql_insert()

```

global $conn;
global $_POST;

```



```

$sql = "insert into `movies` (`movie_id`, `title`, `rating`, `genre`, `quantity`,
`directors`, `actors`) values (" .sqlvalue(@$_POST["movie_id"], false).", "
.sqlvalue(@$_POST["title"], true).", " .sqlvalue(@$_POST["rating"], true).", "
.sqlvalue(@$_POST["genre"], true).", " .sqlvalue(@$_POST["quantity"], false).", "
.sqlvalue(@$_POST["directors"], true).", " .sqlvalue(@$_POST["actors"], true).)";
mysql_query($sql, $conn) or die(mysql_error());
}

```

```

function sql_update()

```

```

{
    global $conn;
    global $_POST;

```

```

    $sql = "update `movies` set `movie_id`=" .sqlvalue(@$_POST["movie_id"], false).",
`title`=" .sqlvalue(@$_POST["title"], true).", `rating`=" .sqlvalue(@$_POST["rating"],
true).", `genre`=" .sqlvalue(@$_POST["genre"], true).", `quantity`="
.sqlvalue(@$_POST["quantity"], false).", `directors`=" .sqlvalue(@$_POST["directors"],
true).", `actors`=" .sqlvalue(@$_POST["actors"], true) ." where "
.primarykeycondition();
    mysql_query($sql, $conn) or die(mysql_error());
}

```

```

function sql_delete()

```

```

{
    global $conn;

```

```

    $sql = "delete from `movies` where " .primarykeycondition();
    mysql_query($sql, $conn) or die(mysql_error());
}

```

```

function primarykeycondition()

```

```

{
    global $_POST;
    $pk = "";
    $pk .= "(`movie_id`";
    if (@$_POST["xmovie_id"] == "") {
        $pk .= " IS NULL";
    }else{
        $pk .= " = " .sqlvalue(@$_POST["xmovie_id"], false);
    };
    $pk .= ")";
    return $pk;
}
?>

```



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