

**Web Based Product Directory System for Video and Music
Store**

by

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Dissertation submitted in partial fulfillment of
the requirements for the
Bachelor of Technology (Hons)
(Business Information System)

JANUARY 2008

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CERTIFICATION OF APPROVAL

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**A project dissertation submitted to the
Business and Information System Programme
Universiti Teknologi PETRONAS
In partial fulfillment of the requirement for the
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(BUSINESS INFORMATION SYSTEM)**

Approved by,



(Ms. Emy Elyanee Mustapha)

**UNIVERSITI TEKNOLOGI PETRONAS
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June 2009

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

MUHAMMAD HAFIDZ BIN MUSTAPHA

ABSTRACT

Self service system has been widely used to improve business process. In the environment of music and video stores the usage of self service system are still minimal as customer's need of access to the product's information been neglected. Therefore this project is about building a usable self service system with improved functionality in purpose to improve customer service. The scope of study for this project is focus on the implementation of self service system in Malaysian video and music store environment which covers its usability and functionality. The methodology for this project is focused on delivering the most efficient system's design and content to the user. The result proves that users are critical about the system's content while prefer the design that easy to navigate, quick in information access, simple, and consistent.

ACKNOWLEDGEMENT

First and foremost, I would like to thank God for His guidance and help, for it is through His blessing that I am able to complete this Final Year Project. Thank you for guiding me towards completing this project.

Next I would like to express my heartfelt gratitude to my supervisor, Ms. Emy Elyanee Mustapha. She has done a tremendous job in monitoring and guiding me throughout the project. Thank you for giving me a chance to involve myself in the final year project under her supervision.

I also want to thank the following parties:

Those lecturers who have given their advice regarding the project

Universiti Teknologi PETRONAS (UTP), especially to Businee and Information System Department.

This deepest appreciation also dedicated to my supportive family and friends who have been giving me strength towards completing this project and to all individual and parties that have directly or indirectly involved in this final year project

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Self service is the practice of serving oneself, usually when purchasing items. Common examples include many gas stations, where the customer pumps their own gas rather than have an attendant do it. Automatic Teller Machines (ATMs) in the banking world have also revolutionized how people withdraw and deposit funds or at buffet-style restaurants, where the customer serves their own plate of food from a large, central selection. Self service is also used on the phone, web and email to facilitate customer service interactions using automation.

Retail business has starts implementing self service system. This development does affect the environment of music and video retail stores as they also begin using self service system to support their business process. They use this kind of system usually to provide the samples of their product or in other word as the electronic catalog for their products. Basically they provide segment from the track for the music product while trailer (preview) for movie or video product. There are also stores that use self service features to automate retail transaction with their customers. This method help them to boost the promotion of selected product while improve their customer satisfaction.

1.2 PROBLEM STATEMENT

Self service system has been widely used to improve business process. This type of system could simplify and quicken business transaction if been implemented correctly. In the environment of music and video stores the implementation of self service system is still minimal. Providing samples are done but only on selected products, normally on latest products which means customer could not reach to the same extent for other products. In addition they also neglect the customer's need of information about the

product such as the price, year of published and background of the artist while these information can persuasively increase the selling of particular product. It is also noticeable that the application of this kiosk like system could boost store and product promotion if being accessible from the internet.

1.3 OBJECTIVE AND SCOPE OF STUDY

The objective of the project is to build a web based product directory system for music and video store. The system will provides customer with information, samples, and other relevant subjects of store products which are music albums, and movie or series DVDs.

The scope of study for this project will focus on the implementation of product directory web sites and kiosk for video and music store in Malaysia. This will cover the usability and functionality of the system in this retailing environment.

CHAPTER 2

LITERATURE REVIEW AND THEORY

2.1 SELF SERVICE SYSTEM (KIOSK)

The self-service system (or kiosk) rose with the development of the ATM and adoption by consumers coupled with advanced technologies such as touch-screens. Self-service kiosks are hardware devices that work in combination with self service software, allowing users to perform any number of possible transactions. The method of input is usually keyboard, touch-screen, or both. Some kiosks include card readers, ticket and receipt printers, bill and coin depositors, and other more complex devices. The benefit of these machines is intended for both consumers and business industries. Consumer benefits includes ease of access, reduced transaction time, access to information and the ability to perform multiple transactions while for business benefits includes reduction in staff and real estate requirements since one employee can monitor multiple self service kiosks, unattended operation with extended service hours and off site locations, and boosting customer satisfaction by providing more enjoyable experience.

Self-service system allows people to secure answers to their inquiries or needs through an automated interview fashion instead of traditional search approaches. When customers can quickly and easily find answers to their questions around-the-clock without the need for agent assistance their satisfaction goes up and business costs go down. That's why it's so important to business to provide unbeatable online customer self-service.

2.1.1 Kiosk in Retail

The use of kiosk in retail stores provides various ways to improve customer experience and facilitate the sales process. Retailers use kiosks to provide customers in their stores

with access to a wider product selection on their websites. Generally, kiosks can be used in retail environments to:

- Promote and provide access to store website
- Provide access to far more products than physical store can stock
- Enable online transactions through store website
- Gathering feedback and suggestions
- Enroll customers in loyalty programs
- Act as a store/merchandise directory
- Allow access to gift registries
- Promote other store locations

2.1.2 Kiosk in E-Government

Kiosks in E-Government generally aim to facilitate the flow of information between government and the public. The use of kiosks in Government to deliver information to the public is one way in which central and local governments can bridge this divide. Kiosks in E-Government:

- Provide controlled access to e-Government portals/websites
- Deliver cost savings by allowing users to perform transactions on-line services
- Publicize new government websites or initiatives
- Provide local tourist information
- Act as a public, physical embodiment of government technology expenditures
- Help bridging the digital divide

2.1.3 Kiosk as Interactive Directory

Kiosk technology provides an ideal way to deliver building directory information to guests or employees. Unlike a traditional static directory, fully customizable kiosk-based interactive directory is searchable, easily updatable and scalable. Moreover, interactive directories on kiosks could:

- Issue photo visitor passes to guests
- Provide directions
- Give access to floor plans
- Links to companies' websites
- Check availability and presence of particular employee
- Provide access to online policies & practices

2.1.4 Kiosk in Corporate and Human Resource

Increasingly, human resource departments are delivering information via corporate intranets. Interactive kiosks in corporate environment help extend these efforts, as well as offer compliance and bridge the digital divide for employees who lack computer access, such as those in manufacturing or production environments. When placed in high-traffic areas like cafeterias, kiosks allow HR departments to:

- Provide access to a company's Intranet
- Publicize corporate events & activities
- Provide access to online policies & practices
- Allow employees to easily change their personal information
- Highlight internal job postings/openings
- Improve overall internal customer service
- Ensure that no employees get left behind
- Offer compliance for equal opportunities issues

2.1.5 Kiosk in Banking and Finance

Over the past few years, many banks and other financial institutions have deployed interactive kiosks in their lobbies and branches. Kiosks in banking and finance environment can handle some of the customers' transaction needs, and provide customers with information about bank products & services, especially e-banking options. In such a setting, kiosks enable banks to:

- Promote a bank's website
- Provide demonstrations of electronic banking
- Answer frequently-asked customer questions
- Highlight banking products, services, interest & loan rates, etc.
- Offer self-service facility for selected operations
- Capitalize on existing systems & increase effective technology deployment

2.2 USER CENTERED DESIGN (UCD)

A User-centered design (UCD) is a philosophy and a process. It is a philosophy that places the person as opposed to the 'thing' at the center; it is a process that focuses on cognitive factors such as perception, memory, learning, and problem-solving as they come into play during peoples' interactions with things. The needs, wants, and limitations of the end user of an interface or document are given extensive attention at each stage of the design process. User-centered design can be characterized as a multi-stage problem solving process that not only requires designers to analyze and foresee how users are likely to use an interface, but to test the validity of their assumptions with regards to user behaviors in real world. Such testing is necessary as it is often very difficult for the designers of an interface to understand intuitively what a first-time user of their design experiences, and what each user's learning curve may look like.

UCD seeks to answer questions about users and their tasks and goals, and then use the findings to drive development and design (Katz-Haas). An effective UCD is essential for any high functioning web page. The importance of a UCD lies within its ability to communicate with the user in a way that allows a thorough and simple presentation of the sites content and navigation conventions. The most obvious difference from other interface design philosophies is that user-centered design tries to optimize the user interface around how people can, want, or need to work, rather than forcing the users to change how they work to accommodate the system or function.

Here are 6 most important principle conventions or techniques to create an effective UCD that will work in conjunction with each other. Obviously there are many more UCD techniques that been used and referred, but these six should get any designer on the right track. These principles main concern is to create design integrity and functional stability (Lynch and Horton 2002).

2.2.1 Navigation Aids

The first principle that all Web design should understand when they are creating an effective web based UCD is navigation aids that are clear and consistent. All users are expected to navigate through cyber space via Hyperlink. Lynch and Horton, authors of The Web Style Guide believe that the most problematic design issue when it comes to navigation aids is users who lack a sense of where they are within the hierarchy of a site.

To counteract lost visitors, the style guide suggests that the designer can use clear, consistent icons, graphics, and identity schemes (Lynch and Horton 2002). Professor James R. Grunwald suggests that if a web site is going to be useful, it must be easy to navigate. Navigation occurs at two levels; within a particular web site and between web sites. Menus are often used to aid navigation within a web site (Grunwald 1997). The site design should always allow users to easily return to the home page and other upper

level pages. The links that accomplish this should be placed in a consistent position on every page.

2.2.2 Simplicity and Consistency

The second principle is in direct relation to the first, and it deals with simple, consistent, conventional design. Users do not appreciate an over-designed site. The average website should follow all conventions of layout and navigation because users are already familiar with them. A website should be consistent and predictable (Lynch and Horton 2002). For maximum functionality and legibility, page and site design should be built on a consistent pattern of modular units that all share the same basic layout grids, graphic themes, editorial conventions, and hierarchies of organization (Lynch and Horton 2002). To be more specific, Grunwald suggests that designers keep page lengths short, use appropriate text fonts and styles, and use color appropriately (Grunwald 1997). These are all important concepts to keep in mind when building a UCD because certain colors and fonts have specific rhetorical effects on an audience and a long page length is an immediate deterrent. Conventional design lends the user some automatic familiarity which will directly affect whether or not the user has a good feeling about the website.

2.2.3 Dead Links

The third principle to keep in mind deals with dead links. Designer should always be aware of all links to, from, and within the site. Most web pages do not begin with a preface explaining where, within the hierarchy, a page lies (Lynch and Horton 2002). So, it is important that if users are directed directly to a subsection of a website that they are not restricted to that page and others lower in the hierarchical scheme. Designers should place working links on every page that allow the users to go to the homepage and other main pages within the site. Grunwald points out that one way to enhance the navigability within a site is to include navigation aids such as "return to home page", "previous page", and "next page" links on each web page. This not only

increases the navigability within your site, but allows users who enter your site on a page other than your home page, to easily find their way around. While you don't have control over other sites, you do have control over the links from your sites to other sites. (Grunwald 1997)

2.2.4 Direct Access to Information

The fourth principle that is important to an intelligent UCD is obtaining the sought after information in the fewest number of clicks. Direct access requires the designer to create a very efficient hierarchy of content in order to decrease the number of steps it takes a user to find what they are looking for. Studies have shown that users prefer menus that present 5 to 7 links and that they prefer a few very dense screens of choices to many layers of simplified menus. The Design hierarchy should allow for real content to be only a click or two away from the site's main pages (Lynch and Horton 2002). A UCD needs to communicate clearly with the intended user. In order to communicate clearly, a user interface should be well organized and structured. (Grunwald 1997) Should the user have trouble finding the information they are looking for in a reasonable amount of time, the particular site they are visiting will forever have made an unfavorable first impression.

2.2.5 Visual Confirmation

The fifth principle involved with creating an effective web based UCD accomplishes visual confirmation of the user's location within a site (Lynch and Horton 2002). Whether it is through links, titles and headings or a breadcrumb trail, the user should always have visual feedback from the site as to their position within the site. This gives the user a frame from which to work from. Knowing a relative or concrete position within a site lets the user feel comfortable and open to the message of the site, it also lends ethos to the site.

The Web site designer should also allow for dialog with the users. When the design process begins, the web site designer should have a good idea of the intended audience, but through dialog with the user, the designer can make helpful changes to the UCD based on the information gathered from and about the sites users. Providing an email address and other contact information lets the users establish contact with the webmaster (Lynch and Horton 2002).

2.2.6 Connection Speed

The sixth and final principle needed in order to create an effective web based UCD is a technical issue. Not everyone accesses the web via a high speed connection. Designers should be aware of this and construct a site that can be handled by a slower internet connection. All users get frustrated when they have to wait on a page to load. Web page designs that are not well suited to connection speed of the average user will probably lose traffic. Research has shown that for most computing tasks the threshold of frustration is about ten seconds (Lynch and Horton 2002). Designers should be conservative with the number of large graphics because not all users have a high speed connection, and although some do, they still value a fast loading page.

2.3 THE CURRENT SYSTEM

In Malaysia video and music stores environment, it is noticeable that only big stores use kiosk or web based system to support business process. Some of the examples are Tower Records, Video Ezy, and hypermarket music and video department. Kiosk application normally to provide new released product samples. Store's web sites normally build to enable customer make purchase through the internet.

2.3.1 Tower Records

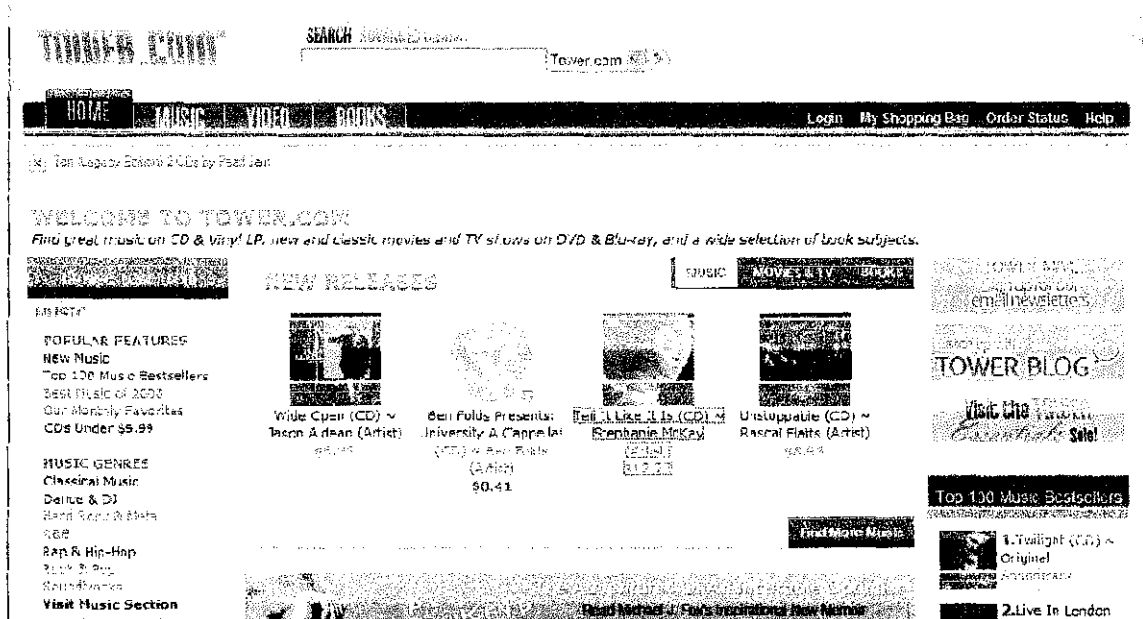


Figure 2.1: Tower Records web based retail system

Tower Records is a chain of stores which main business is selling music and video products. This web based system is used by Tower Record as product directory and online retail system. This system provides complete product samples and information plus enable user to make online purchase.

2.3.2 Video Ezy Malaysia



Figure 2.2: Video Ezy web based retail system

Video Ezy Malaysia is a branch of video store from Australia with focus on selling video products. This web based system is used by Video Ezy Malaysia as product directory and online retail system. This system only provides product information while also enable user to make online purchase. Samples providing for each product can be considered to improve user satisfaction.

CHAPTER 3

METHODOLOGY

Figure 3.1 below shows the phases in the project development life cycle.

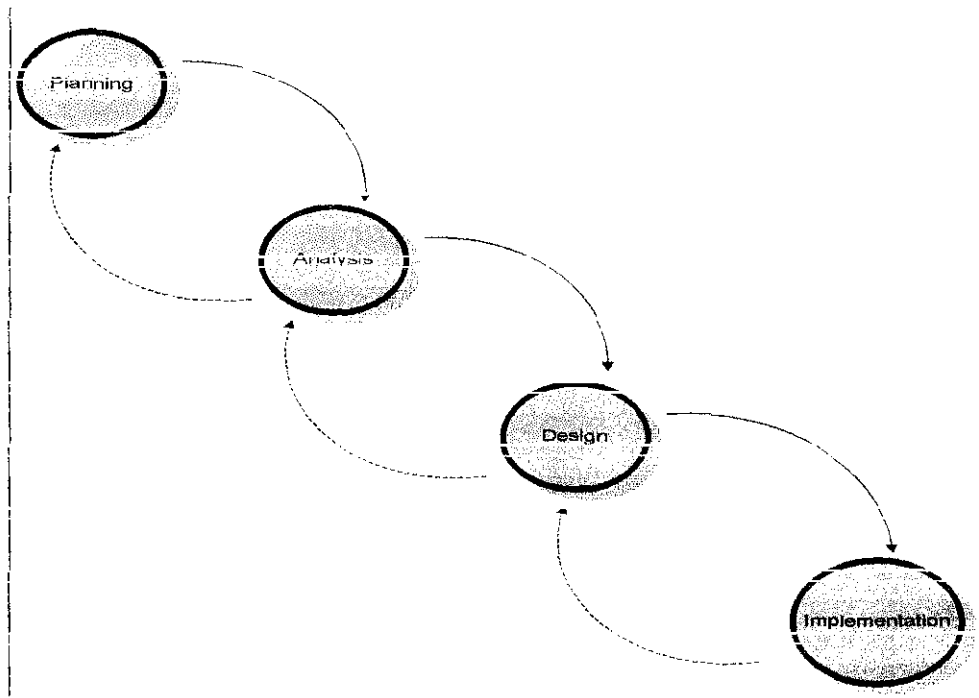


Figure 3.1

3.1 PLANNING

The planning phase has two sections which are project initiation and project management. During project initiation the project's value is been identified which determine how the project can improve the business upon its implementation. The project's main value is to improve customer service and satisfaction which is one of the most essential factors in affecting business growth. Besides, this project could increase store's marketing and advertising edges.

During project management, work plan and key milestones been identified. Tables below show the processes being presented in Gantt chart:

Table 3.1: Project work plan part 1

Activity	Activity Name	Week													
		4	5	6	7	8	9	10	11	12	13	14	15		
1	Research on Self Service System and Kiosk	█	█	█	█	█	█								
2	Research on current system and process in video and music retail store					█	█	█	█	█					
3	Research on User Centered Design									█	█	█	█	█	





Estimated Progress 
 Actual Progress 

Table 3.2: Project work plan part 2

No. of Activity	Activity Name	Week											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Data gathering and analysis	█	█	█	█	█							
2	Project design and construction					█	█	█	█	█	█	█	█

Estimated Progress 
 Actual Progress 

3.2 ANALYSIS

The analysis phase has two sections which are requirement definition and functional modeling. The requirement definition is the stage on determining that who will use the system, what the system will do, and where and when it will be used. During this stage investigation on current system, identification of improvement opportunities and system concept been developed. The requirement gathering techniques been used for this section are document analysis, observation and user surveys.

The system functions mainly as store's product directory for the customer to view. The system provides users with store's product samples in the form of music tracks, movie trailer or any relevant type of media. From the gathering techniques used, the major user requirements for the system to provide are store's contact information, product details, and product samples that are not selective. Besides, the system interface also required to have good navigability, simplicity and consistency, and easy access to information.

As it is been build in web based form, the system could act as store's web site beside also can be used in store's kiosk. These will increase the system availability in term of location and time. Other function of the system is to provide customer with access to store's information and events.

During functional modeling, the use case diagrams of the project being prepared. Use case diagram is a graphical overview of the set of use cases contained in the system. They illustrate the main functionality of a system and the actors that interact with the system. This diagram is important to increases understandability of the functionality of the system at analyst level.

Figure 3.2 below shows the use case diagram of this project:

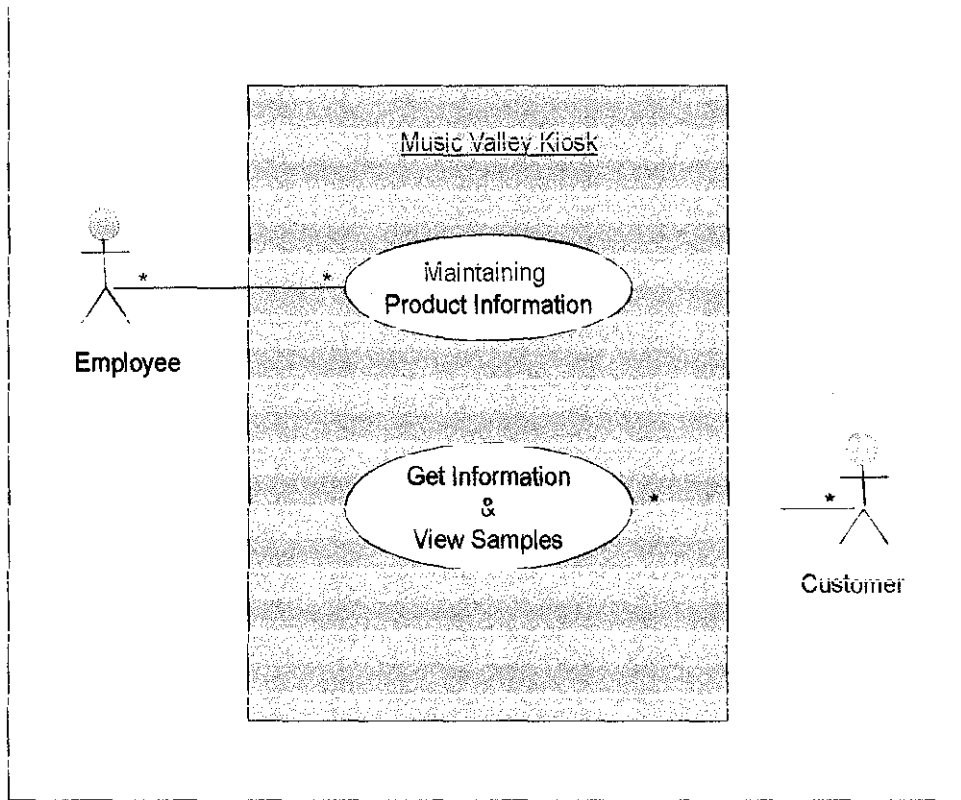


Figure 3.2

3.3 DESIGN

The design phase decides how the system will operate, software, hardware, system interface, database and files that will be needed. The system interface is been developed using combination of internet programming languages which are the 'html' and 'php'. While the database that connected to the interface is been develop using MySQL technology. There are two tables included in the database that represent two types of products the store offered. Here are the tools used in developing the project:

Software : xampp, notepad++

Platform : Microsoft Window XP, Hard Disk, 512MB RAMs

The initial design of system interface has been build to ease the construction of the system in the later stage of the project's development. Figures below show the planned design of the system.



Figure 3.3: Home Page (Design)

Music Album

ARTIST	ALBUM TITLE	LANGUAGE
Beerus	Half	Malay
Hujan	Lebat	Malay
Flanery	Sava	Malay
RHCP	By The Way	English
Gladi	Perdamaian	Indonesia
Dead Jazz	Cebot	Indonesia
AudioSlave	Like A Stone	English
Khayin	Khing	Thailand
Juke	Orange	English

Link

Back

Figure 3.4: Music album product list (Design)

Video

TITLE	YEAR	LANGUAGE
The One	2002	English
Vampire	1998	Thailand
Sense	1999	English
Break The	2001	English
Surf Down	2002	Malay
The Wild	1997	Malay
Circus	2008	English
Godzilla	2005	English
The Jumper	2008	France

Back

Figure 3.5: Video product list (Design)

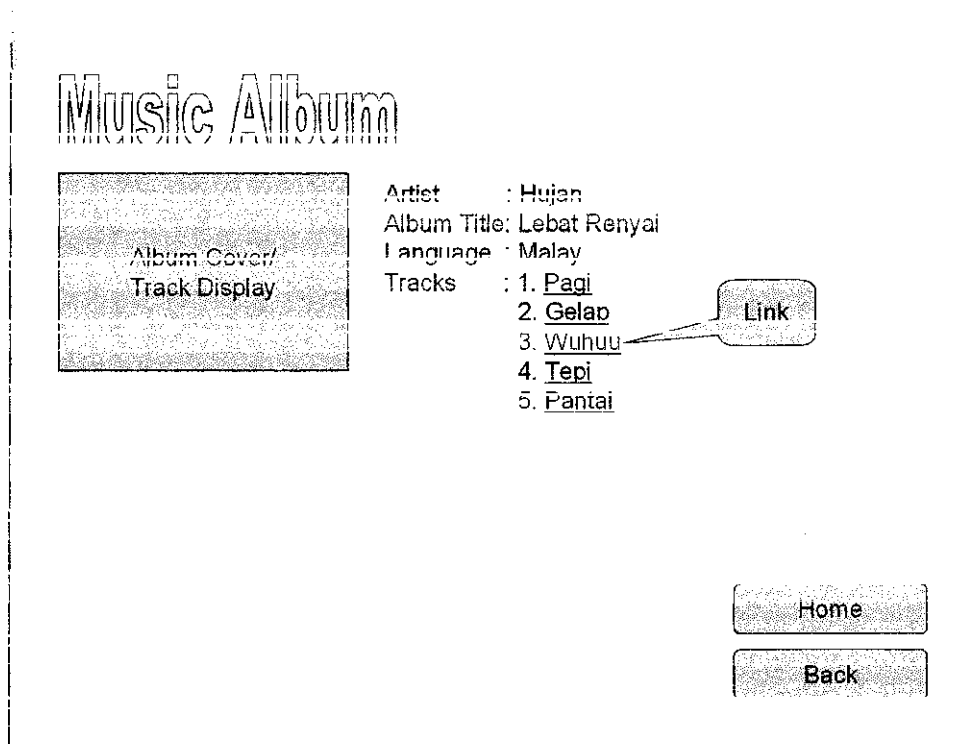


Figure 3.6: Individual product page (Design)

3.4 IMPLEMENTATION

The implementation phase for this project is the construction of the system. The construction is done by following the requirement, operation and design that been identified in the analysis and design phase. The completed system interface might differ from the initial design as the design is been build roughly to picture the main process of the system. The result from this phase will be presented in the next chapter of this report.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 SYSTEM'S USER INTERFACE

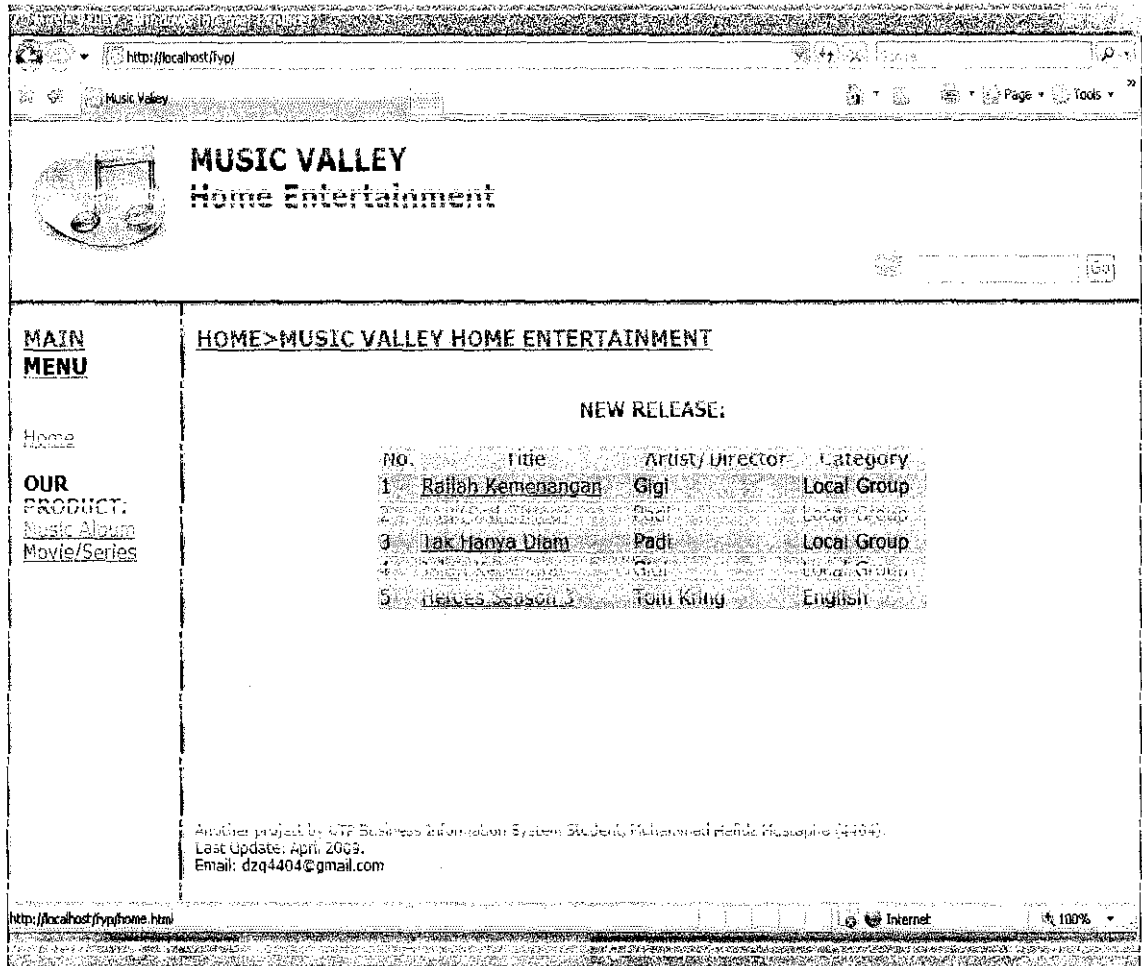


Figure 4.1: Home page

This is the first page that will be displayed when user load the system. It main functions are to display store's contact details and events. The three (3) frames included are menu frame (left), target frame (right), and title frame (top). User can directly search for any

product using the search function provided in the title frame by entering their desired product's title.

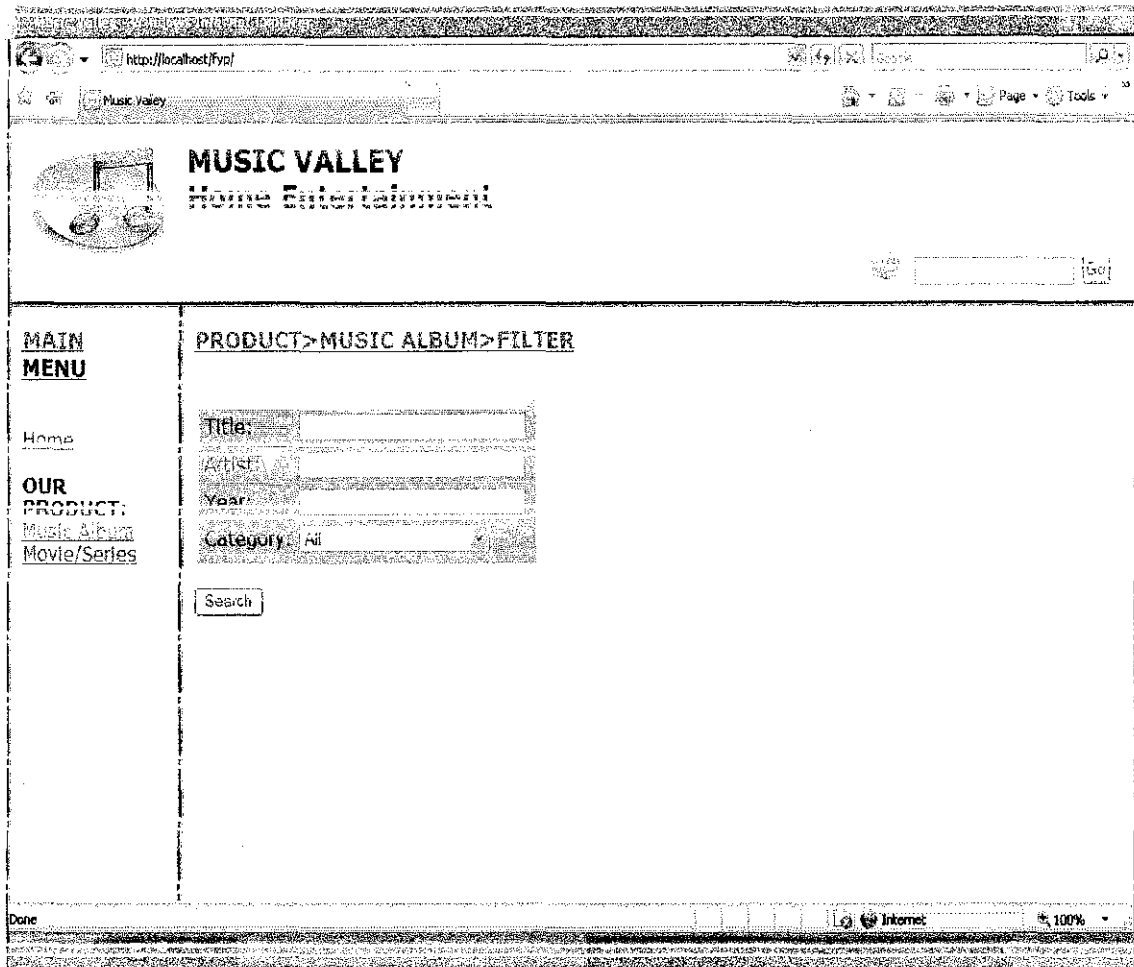


Figure 4.2: Music album search page

The target frame will display the search filter for music album when user clicked the music album link provided in the manu frame. This allow user to customize their product search using the fields provided in the form. The search result will shown after user submit the form by clicking on the 'Search' button. User can decide to not customize their search and this will prompt the system to show all available music album product in system's database.

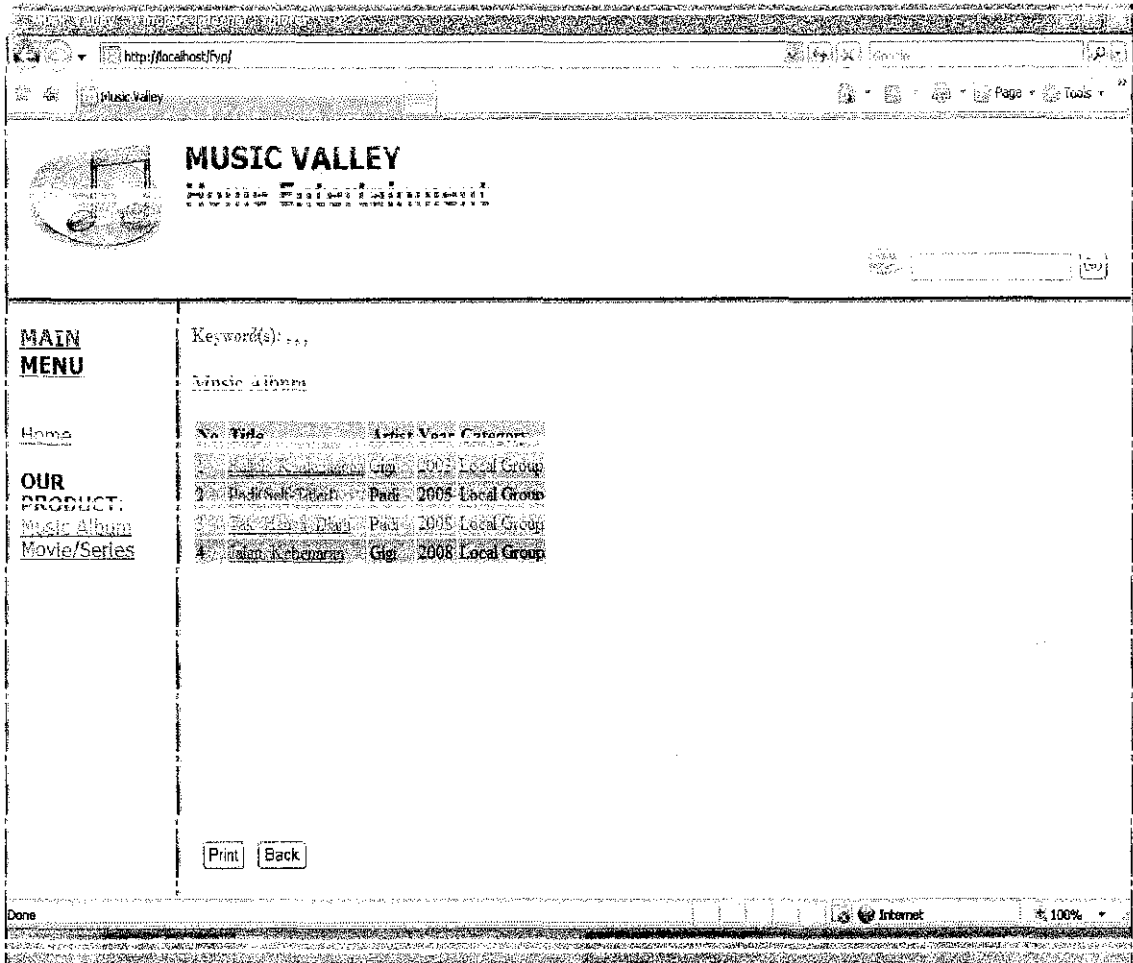


Figure 4.3: Music album search result page

This page displays the result of music album search from the previous page. The result been presented in table form. The keyword(s) area at the top-left side of the page shows user input in each fields of previous search form. User can click on the displayed product title to view product details page.

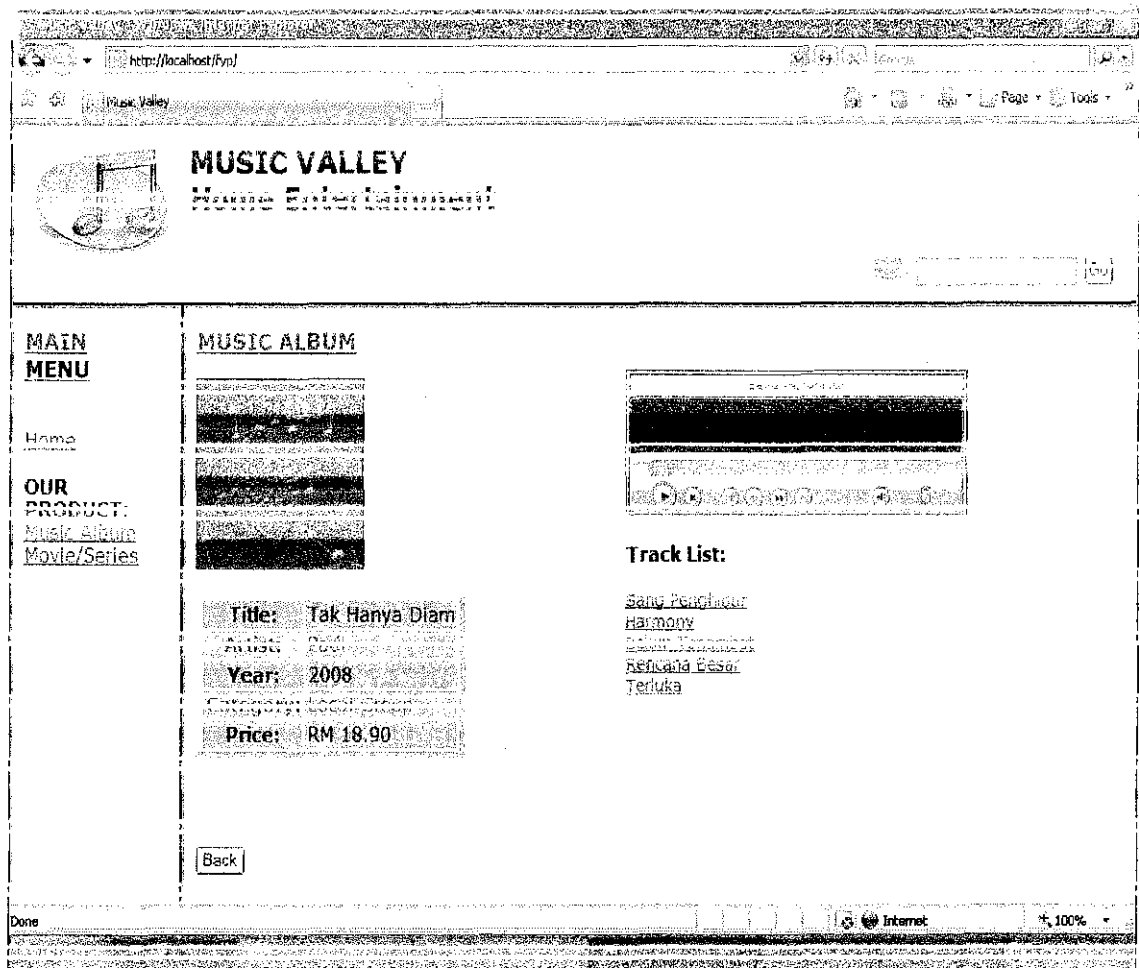


Figure 4.4: Individual music album page

This is an example of individual music album page. The page includes the album cover, product information and list of tracks for user to listen. Tracks title been displayed in links to ease user to navigate between tracks.

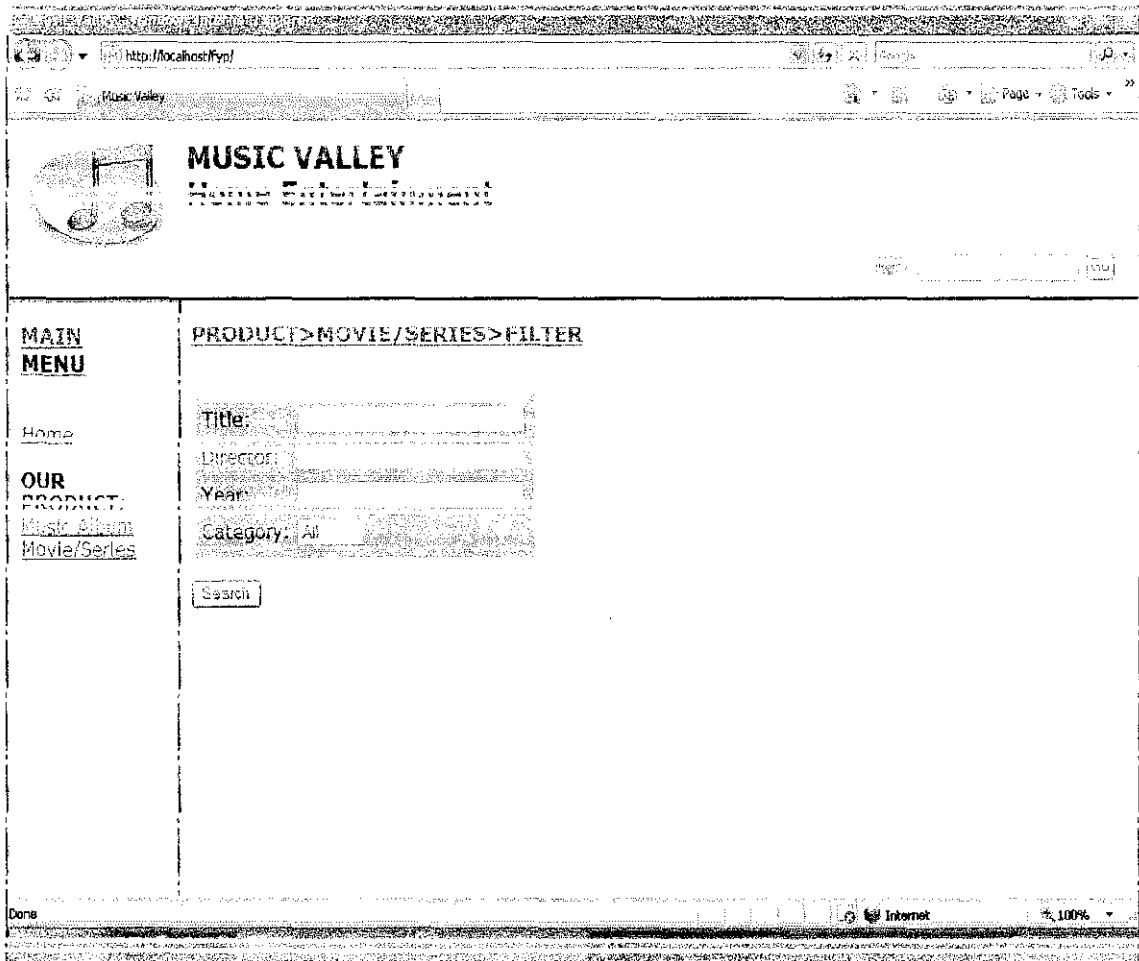


Figure 4.5: Movie/Series search page

The target frame will display the search filter for movie/series when user clicked the music album link provided in the manu frame. This allow user to customize their product search using the fields provided in the form. The search result will shown after user submit the form by clicking on the 'Search' button. User can decide to not customize their search and this will prompt the system to show all available movie/series products in system's database.

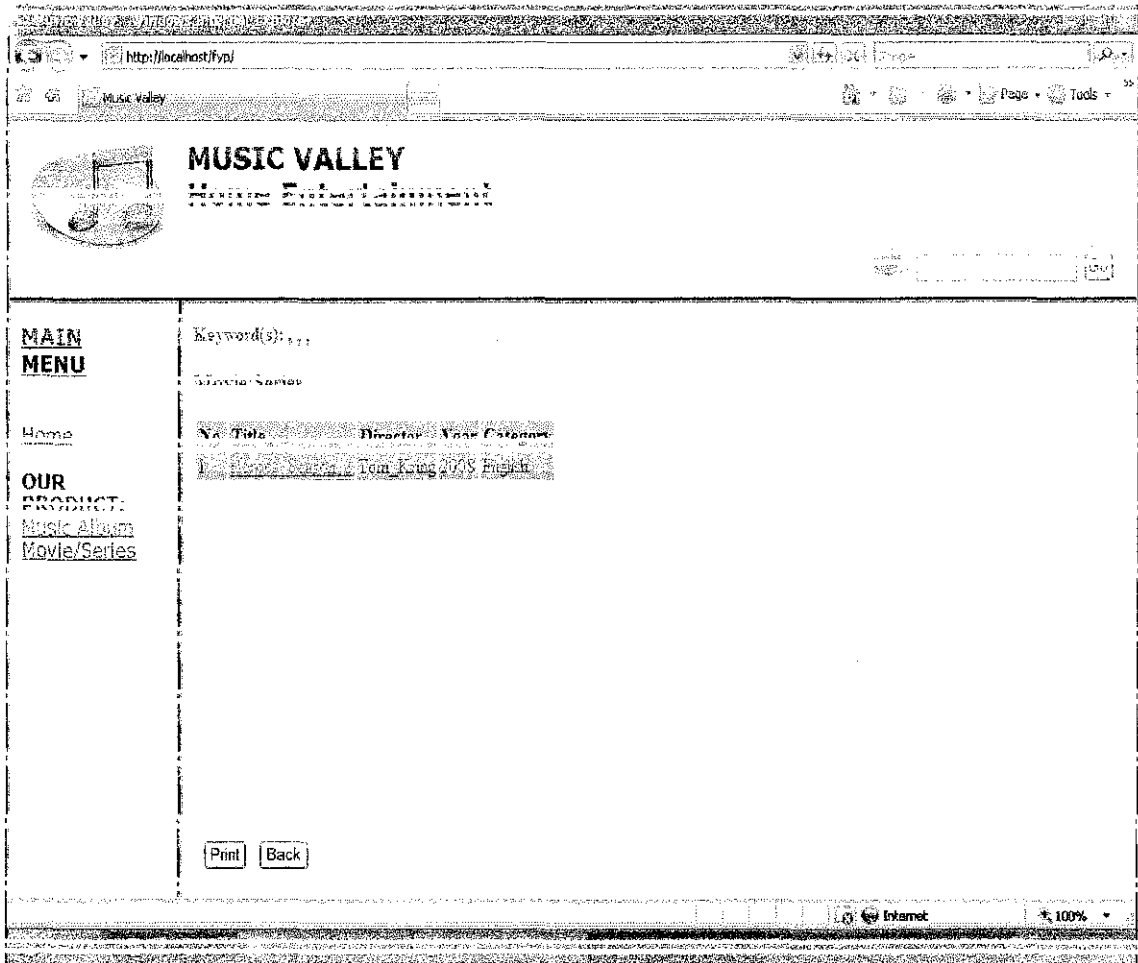


Figure 4.6: Movie/Series search result page

This page displays the result of movie/series search from the previous page. The result has been presented in table form. The keyword(s) area at the top-left side of the page shows user input in each field of the previous search form. User can click on the displayed product title to view product details page.

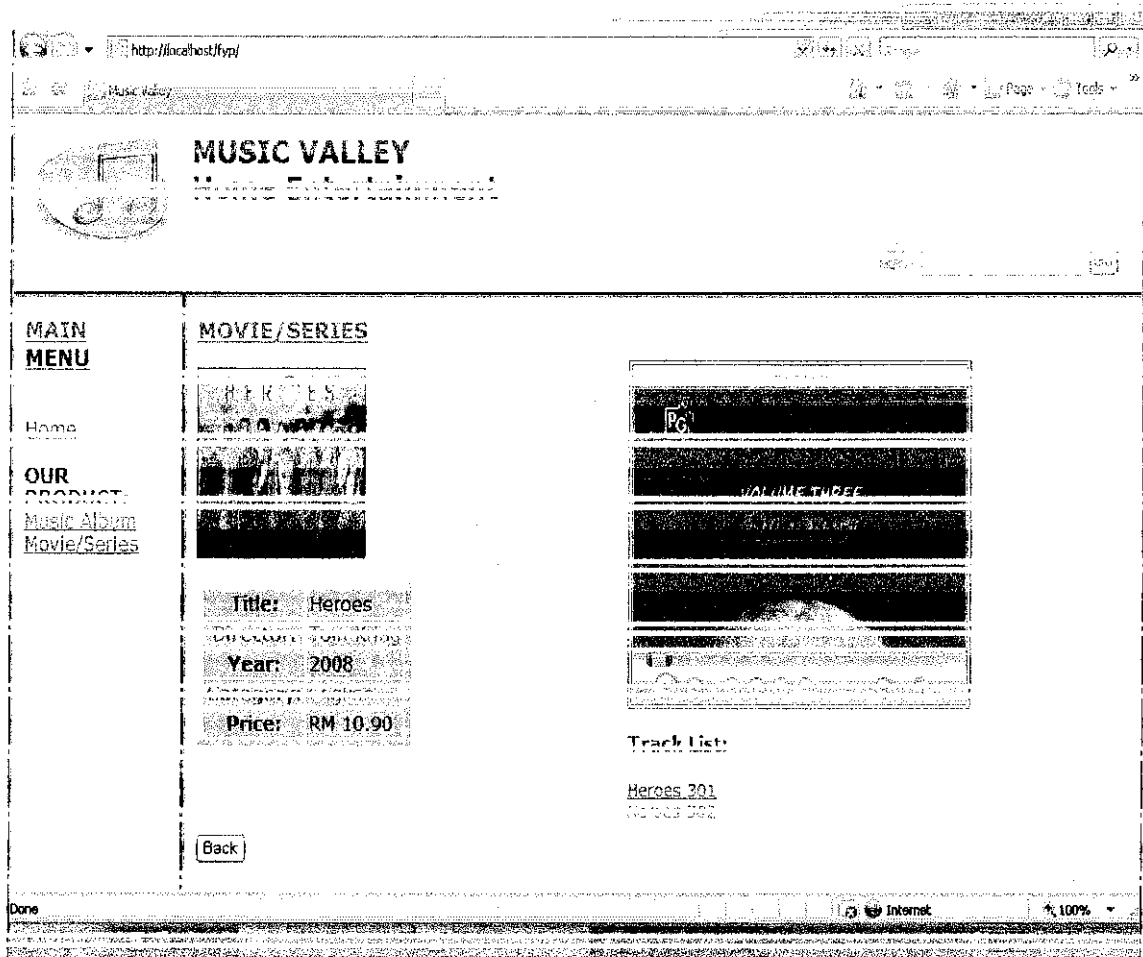


Figure 4.7: Individual movie/series page

This is an example of individual movie/series page. The page includes the product cover, product information and trailer (and/or other relevant media) for user to watch. The product's media will play if user clicked on the linked product title.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

While user-centered design is often viewed as being focused on the development of computer and paper interfaces, the field has a much wider application. The design philosophy has been applied to a diverse range of user interactions, from car dashboards to service processes such as the end-to-end experience of visiting a restaurant, including interactions such as being seated, choosing a meal, ordering food, paying the bill etc.

When user-centered design is applied to more than single user interactions, it is often referred to as user experience. A user experience comprises a number of separate interfaces, human-to-human contacts, transactions and conceptual architectures. The restaurant example is an example of this - ordering a meal or paying the bill are two user interactions, but they are a part of the "user experience" called dining out. It is not enough to have the separate interactions that comprise an experience being usable. The goal is that each interaction should integrate with every other interaction that forms a part of a single experience. In this way, the experience as a whole is rendered usable.

In product design, this is sometimes referred to as the "out of the box experience," referring to all tasks the user must complete from first opening the box the product is shipped in, through unpacking, reading the directions, assembly, first use and continuing use.

Functionally it is clear that this project act as a self service electronic merchandise directory for a store. If there are any improvement to be done to this project it must be the functions of completing the whole retail process which are selling and buying processes.

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Store**

by

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**Dissertation submitted in partial fulfillment of
the requirements for the
Bachelor of Technology (Hons)
(Business Information System)**

JANUARY 2008

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