

**SEMANTIC BASED DESIGN AID TOOL FOR E-TAILORING
(FYP PROJECT FOR SINGLE SEMESTER ONLY)**

By

WAN NUR MARINAH BINTI WAN ZAHARI

FINAL PROJECT REPORT

**Submitted to the Information Communication Technology Programme
in Partial Fulfillment of the Requirements
for the Degree
Bachelor of Technology (Hons)
(Information Communication Technology)**

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CERTIFICATION OF APPROVAL

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Wan Nur Marinah Binti Wan Zahari

A project dissertation submitted to the
Information Communication Technology Programme
Universiti Teknologi PETRONAS
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Approved:

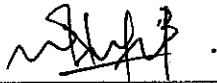
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July 2006

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.



Wan Nur Marinah binti Wan Zahari

ABSTRACT

Website application has been used widely for business purposes. People will always tend to find the simplest way of manipulating the technology. Internet has been widely used as one of the main way to perform businesses. Through the development of websites, companies or businesses can advertise their products, do business transactions and provide services without face to face interactions with the customers. This is popularly known as e-commerce. E-commerce will ease customers to get the service provided without having problem that will benefits by reducing expenses of inventory, employees, purchasing cost and order processing cost and at the same time, they can have access to a wider range of customers. The idea of semantic in a website, which is incorporated in the design aid tool, will ensure a better website service. This project is to develop a website prototype that provides tailoring service with the semantic drag and drop function as the tool for designing custom clothes. Currently, people need to go to a tailor shop to get new clothes to be sewn. Existing websites only provide online buying for their ready made clothes. But with the service provided by the website, customers just need to click and make their order through the Internet and they can also design and order their own clothes the way they want.

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CHAPTER 1

INTRODUCTION

1.1 Background of Study

Most of the people especially women nowadays has been very concern to the way they dress and been very curious about their appearance in front of the public. Relate to that, what the people wearing plays big roles for them to feel comfortable and confident in the public. Some people prefer not to go to the tailor, in fact just go the shopping mall or boutiques to buy the ready made clothes. With this, the design of the clothes is restricted to the way the designer's creation. Meanwhile, there still people that prefer to go to the tailor shop to order their clothes as with this, they can customized their clothes and definitely will fit their figure measurements. In order to obtain comfortable and good clothes sewn, it has to be sewn by a well-known tailor. However, they are not easily reachable and located far from home.

This research project focuses on e-commerce that offers possible solutions to the problem. With e-commerce, custom-designed ordering of clothes can be done online. This should be an effective way to reach the preferred tailors for the customers. In addition, the tailor also can enlarge their market to potential customers.

This research project also focuses on the semantic concept that will be used for the design aid tool to allow the customer to design their own clothes. Semantic concept in design aid tool will help to ease users during the process of designing their clothes online.

1.2 Problem Statement

Most people will definitely go and find a very suitable and comfortable dress or clothes to wear and they do not mind to travel far as to reach for their preferable tailor or to have their clothes sewn. Some jobs and changing jobs require people to relocate to new places. These people might have difficulties to get a new preferred tailor each time they are moving to new places. Some existing tailor or boutiques offer online services but only sell ready made clothes which restrict users to choose from existing collections. These online clothing stores do not allow the customer to order their own custom-designed clothes online.

1.3 Objectives

The objective of the project is to develop an online tailoring service that incorporates a design aid tool to:-

- allow users to order ready made clothes online,
- design and order custom-designed clothes, and
- view the collections of clothes from the stores online.

1.4 Project Scope and Limitations

The primary focus of project is on the development of the designing aid tool for tool to enhance quality service of the existing e-tailors or boutiques. The studies also focus on the applying semantic concept in creating the design aid tool, which based on a drag and drop function. Only 2D visualizations on the designed images is given to the users, so they can only view the static images.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview

The main idea of this project is to provide online tailoring which enable user to order their custom-design clothes online. The discussions divided into two main parts, e-commerce and semantic concepts. These two topics is used for analytical, critical and objectives reviews on the chosen topic and area.

2.2 E-commerce

E-commerce (electronic commerce) can be define by distributing, buying, selling, marketing and servicing of products or services on the Internet and other computer networks, especially the World Wide Web. It typically uses electronics communications technology such as Internet, extranets, e-mail, e-books, databases, catalogues and mobile phones.

2.2.1 Types of e-commerce

According to Queensland Government Website, Department of State Development, there are four main types of e-commerce which are:-

- **B2B (Business-to-Business)**

Companies doing business with each other such as manufacturers selling to distributors and wholesalers selling to retailers. Pricing is based on quantity of order and is often negotiable.

- **B2C(Business-to-Consumer)**

Businesses selling to the general public typically through catalogs utilizing shopping cart software. The business can be in different fields but may reach the customer within minutes and without human interactions. For example, the book selling business can reach the same customers who purchase airplane tickets at the same time.

- **C2B(Consumer-to-Business)**

In this type of e-commerce, consumer posts his project with a set budget online and within hours companies review the consumer's requirements and bid on the project. The consumer reviews the bids and selects the company that will complete the project. For example, Elance empowers consumers around the world by providing the meeting ground and platform for such transactions.

- **C2C(Consumer-to-Consumer)**

There are many sites offering free classifieds, auctions, and forums where individuals can buy and sell thanks to online payment systems like PayPal where people can send and receive money online with ease. EBay's auction service is a great example of where person-to-person transactions take place everyday since 1995.

To get engaged with e-commerce, there are primary principals that should not be forgotten by the businesses. Those are: - 1) Providing the product or service to be purchased; 2) marketing necessary; 3) the exchange of money for the product or service; 4) a delivery mechanism and 5) customer service and communication. These principals are then modified to suit the e-commerce environment so that the objectives to conduct e-commerce can be achieved and succeeded.

2.2.2 Advantages and Problems of e-commerce

There are lots of advantages of integrating e-commerce. E-commerce offers unlimited market place and business access which extend customer base. As the business runs through Internet, customers are given the opportunity to browse and shop at their places and conveniences. They also can access the services from home, office or even on the road 24 hours a day, 7 days a week. E-commerce can lower the cost of doing business as it will reduce the inventory, employees, purchasing cost, and order processing cost associated with faxing or phone calls. It can also eliminate physical stores, which reduce the costs. With right software, all the business administration tasks can be automatically stored, categorized and updated in real-time, and accessed on demand. E-commerce gives great advantages to small companies business to compete in the business environment. It helps to reduced marketing or advertisement expenses, and competes on equal footing with larger companies. This will shrink the gap between small companies from bigger companies.

However, e-commerce also creates several problems. In order to apply the e-commerce, businesses need to find people who have appropriate Internet experience. Other than that, e-commerce marketing will become more important as there are now thousands of e-commerce website all over the world. So the marketing is necessary in order to ensure people visit the website. E-commerce marketing can be develop starting with knowing the target user. This is like the other marketing plan, the first and major component is to identify the audience that business trying to reach. According to Feig, author of *Streetwise Low-Cost Web Site Promotion* (<http://www.amazon.com/gp/product/>) there are general categories of people on the internet.

- Simplifiers: want ease of access and use
- Surfers: expect evolving content and variety of products and services.
- Newbies: need to be taken by the hand through the site.
- Bargainers: looking for price and product comparison
- Traditionalists: into gathering and validating information
- Sportsters: stay longer on a site that is entertaining
- Information mavens: want experts in the fields, products or services.
- Gamesters and interactions seekers: also prefer entertaining sites. \

Before tackle the site on how to promote, first need to understand the target user and what matters to them. Categories of people that have been recognized to involve in this website are simplifiers, surfers and bargainers. Designing using drag and drop function satisfies the user who wants ease of access and use. For surfers, as they expect evolving content and variety of products and services, the service of having online ordering for custom design clothes would satisfy them. While cutting cost for traveling to reach favorite tailors would give advantages to the bargainers.

2.2.3 Existing clothing store websites

There are several e-commerce on clothing available on the Internet and they are served in several ways such as using photo gallery website, forum website or official website to display all the collections of clothes.

For example, clothing stores that using photo gallery website to perform their business is available at <http://ctredzuan.fotopages.com>. Siti, one of the users of www.fotopages.com is using the website to display collections from her clothing stores.

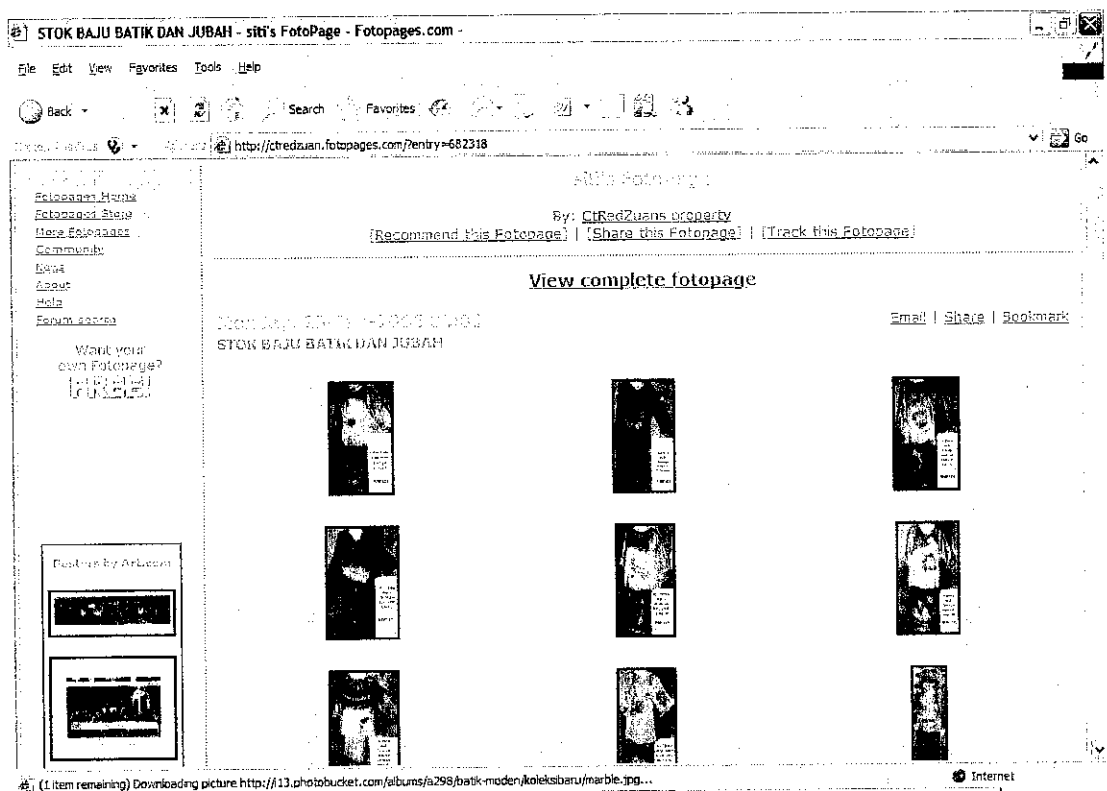


Figure 1 Screenshot of Existing E-commerce – Siti's Fotopages

There are also available business owners using forum on a website to promote their collections. For example the author with the username “eriksatria” is using a forum on the <http://www.bangsar.net.my> to do online business. According to the page, it clearly see that there was error on the displaying the images. With this method, business owner does not have the own control of the images and activities on the marketing. It all depends on the website system on how the displays would appear.

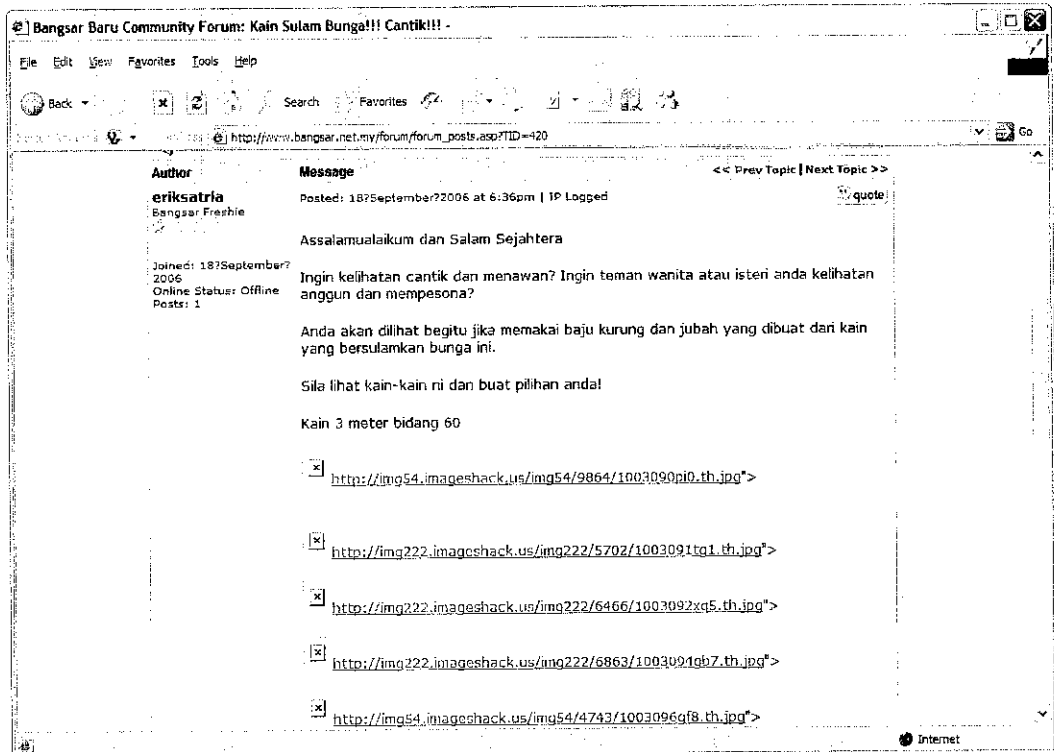


Figure 2 Screenshot of Existing E-commerce – www.bangsar.net.my/forum

Having one's own website is most suitable for marketing the products such as clothes. All the designs and commerce activities are under control and it is easier to manage the site.

Below are two examples of official clothing stores website.

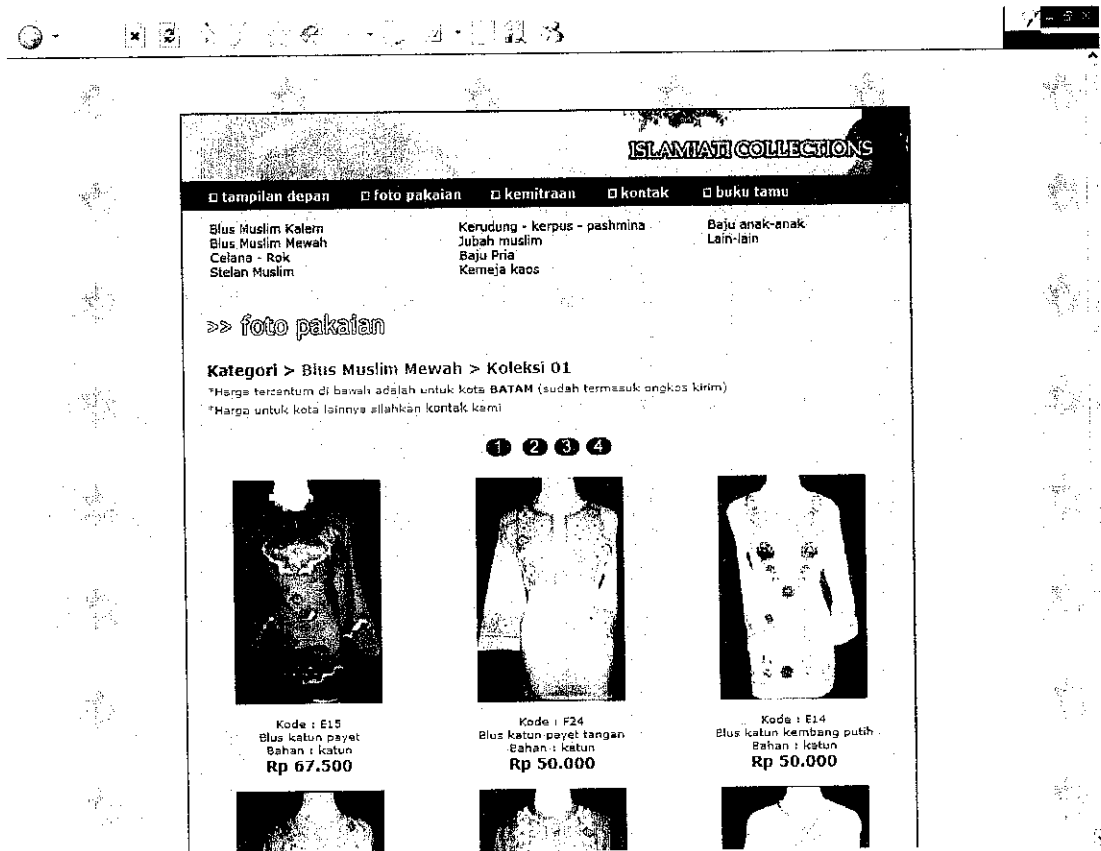


Figure 3 Screenshot of Existing E-commerce – www.islamiati.com

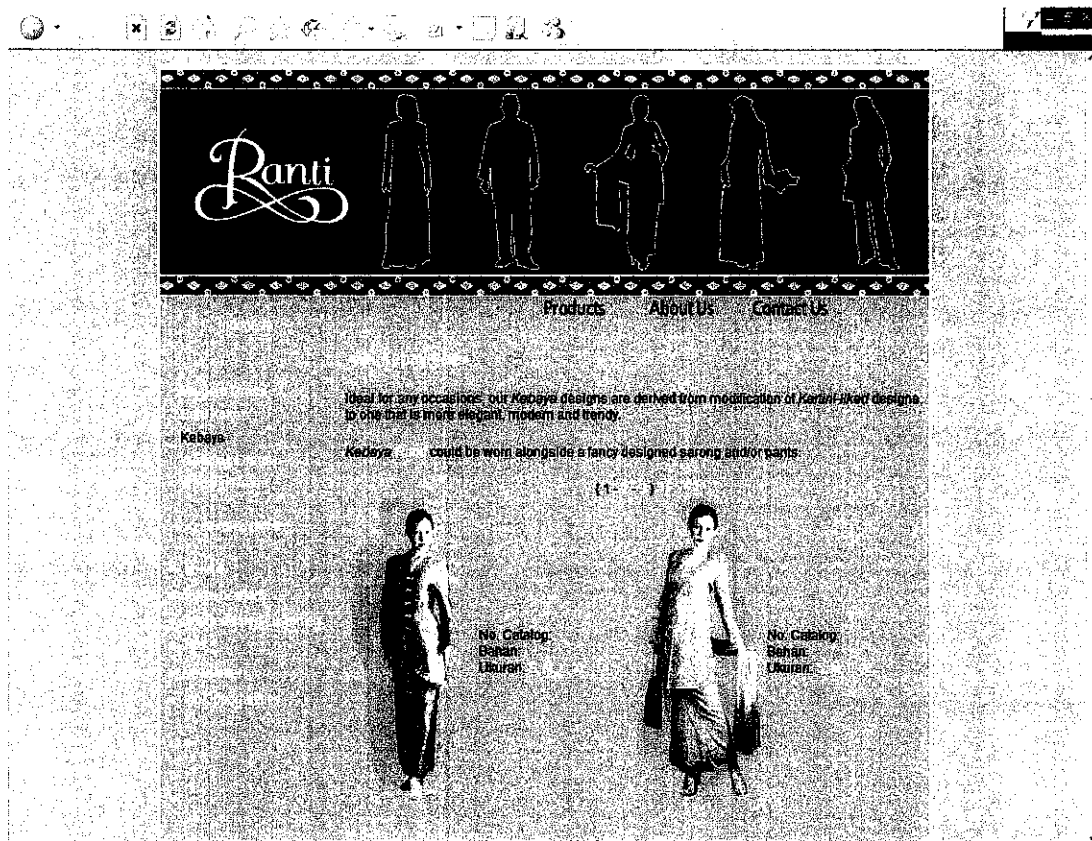


Figure 4 Screenshot of Existing E-commerce – www.ranti.com

Both Islamiati.com and Ranti.com provides online clothing stores where customers can order clothes online. Those clothes are ready made clothes which user pick from the catalog on the website. These collections are categorized to its type of design and the target user of the design. For example, in Islamiati Website, it has collections under categories of Muslims blouse, tudung, and also robes. However, these both websites only sell ready-made clothes to the customer not custom-designed clothes.

None of the reviewed online clothing stores provide a custom-designed clothes ordering online.

2.3 Semantic Concepts

In English, the word *semantic* means "of or relating to meaning." In the science of linguistics, semantics is more explicit: It's the study of meaning based on the historical and psychological significance of words and terms. Semantic is concerned with the meaning of an element, and how that element describes the content it contains (Holzschlag, 2005).

Semantic is the intelligence of the system that will ease the user. Semantic technologies offer a new way to integrate data and applications. A formal mapping of the meaning of terms from different information sources is developed and a knowledge model of the relationships among these terms is created. Built on top of the first two levels, this lets you move data in and out of systems while ensuring that the data is referring to the same thing. In computer system, computer will find the meaning of semantic data by following hyperlinks to definitions of key terms and rules for logically reasoning about data.

Semantic concept is can be use in the design tool as to produce a tool that ease the user. For example, JOME (Java OpenMath Editor), a Software Component for Interactive and Distributed Mathematics is using semantic concept for its tool. JOME is a self-contained software component written in Java (as a Java bean) dedicated to the visualization and manipulation of mathematical formulae. JOME has some support for manipulating formulas with semantic drag and drop (the selection can be moved from one side of an operator to the other with a relevant mathematical transformation performed). This makes it easy to add different kind of representations for a formula and to provide different ways of editing it. This also makes using JOME to display or edit formulas in another Java application extremely simple (in an environment such as Symantec Visual Café or IBM Visual Age, the integration work can be carried out completely through the graphical interface).

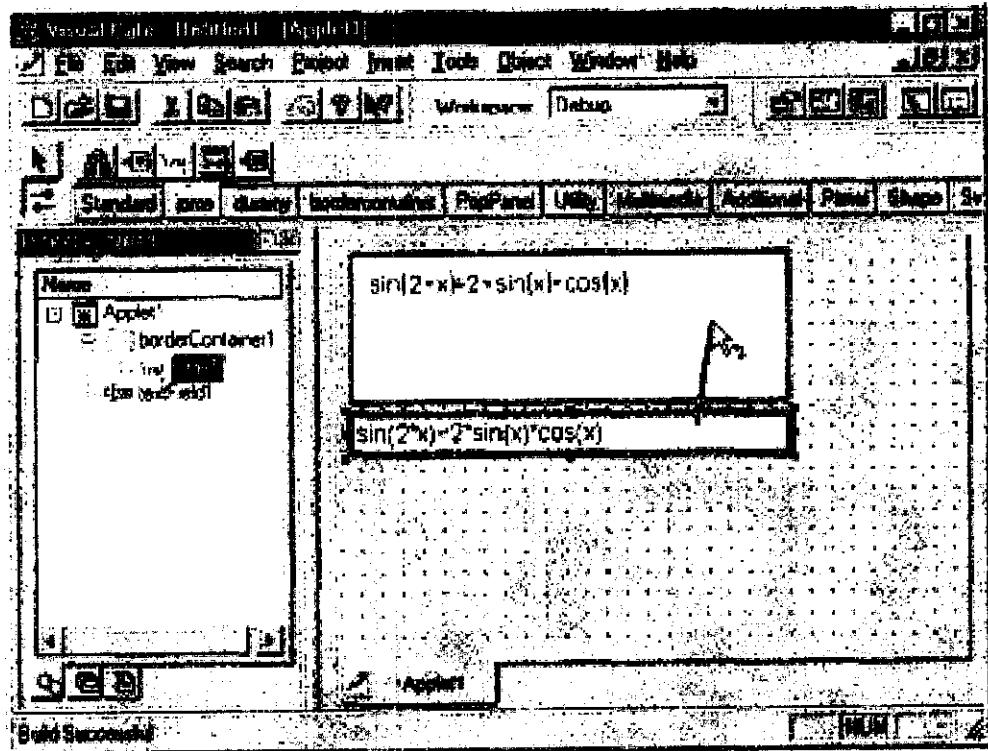


Figure 5 Symantec Visual Cafe

Another example that is using semantic concept in design is on the ERDraw: An XML-based ER-Diagram drawing and translation tool. This tool is developed to support drawing ER-diagrams in a graphical fashion. The tool incorporates object oriented technology, XML and the relational database theory. Semantic drawing tool and verification process guarantee the semantic correctness of ER-diagrams. So, the automatic translation from the ER-diagrams to relational data schemas is practically useful.

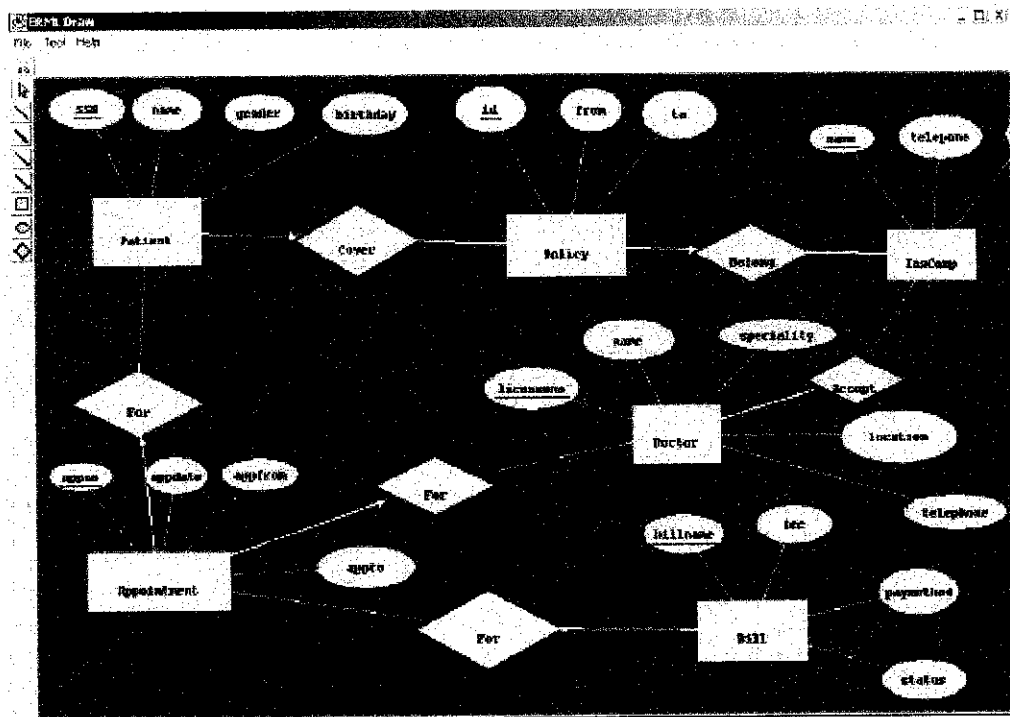


Figure 6 ERDraw

The semantic concept eases the user during the process of using the drawing tool. With this concept the user does not need to properly arrange the objects; these objects are automatically arranged themselves and go to the correct area. Compared to the non-semantic tool, the user will have to carefully place the object to the desired space, whereby using a mouse would take time.

This semantic concept has been very useful in the designing process and this concept is used in the project of designing the clothes.

CHAPTER 3

METHODOLOGY

3.1 Procedure Identification

3.1.1 Designing Methodology

Methodology plays an important role in completing a project. The purpose of having methodology is to maintain and ensure system development life cycle consistency. This methodology applied in developing systems to ensure the system meet their expectations in term of functionality, cost or delivery schedule. There are several models of methodology that usually implemented in developing system such as waterfall model which is the best – known, top-down and bottom up design, prototyping model and re-used based development.

For this project, methodology that is used is the modification of the waterfall model. The methodology is the most applicable to this project requirements and time constraints. The time constraints is the reason to implement this methodology as the project is limited to only eight weeks from the week of project proposal approved. Thus, the project has to be completed within this limited time.

3.2 Development Methodology

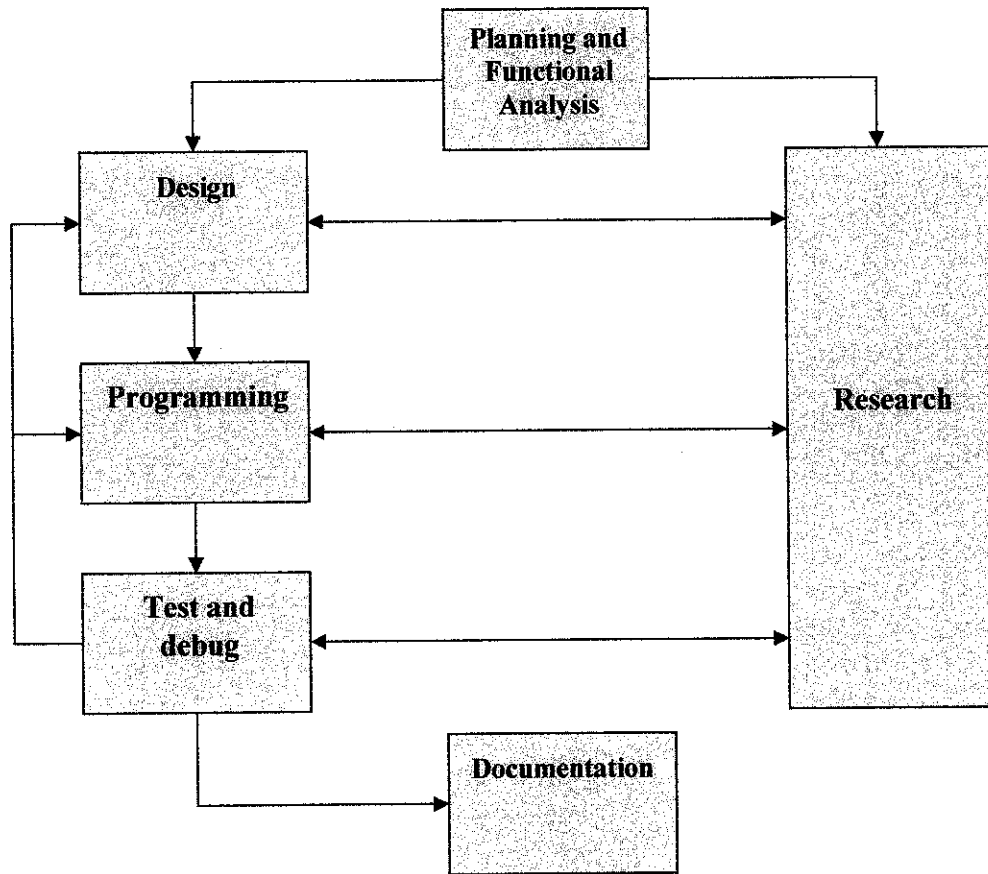


Figure 7 Development Methodology

As shown in Figure 5 above, there are six phases included in this methodology.

3.2.1 Planning and functional analysis

This methodology starts with planning and functional analysis. These activities are important since this will affect the whole development of the product. A good requirement planning and analysis will lead to smooth development process and good end product. During this phase, the entire requirements for conducting the project will be defined and analyzed. This phase is then divided into two sections which are doing designing and research phase. These two phases can be completed together because of its related to each other. The phase is about finding the best requirement for the intended project.

3.2.2 Research

Research is continuous phase that need to be done during the whole project development. The research is done on the topic of E-commerce and Semantic concept that is applied to the project development. Mostly, research is done through findings on the Internet.

3.2.3 Design

Design phase is where activities involved including establishing and designing website navigation flow, storyboard and database design.

3.2.3.1 Website navigation flow

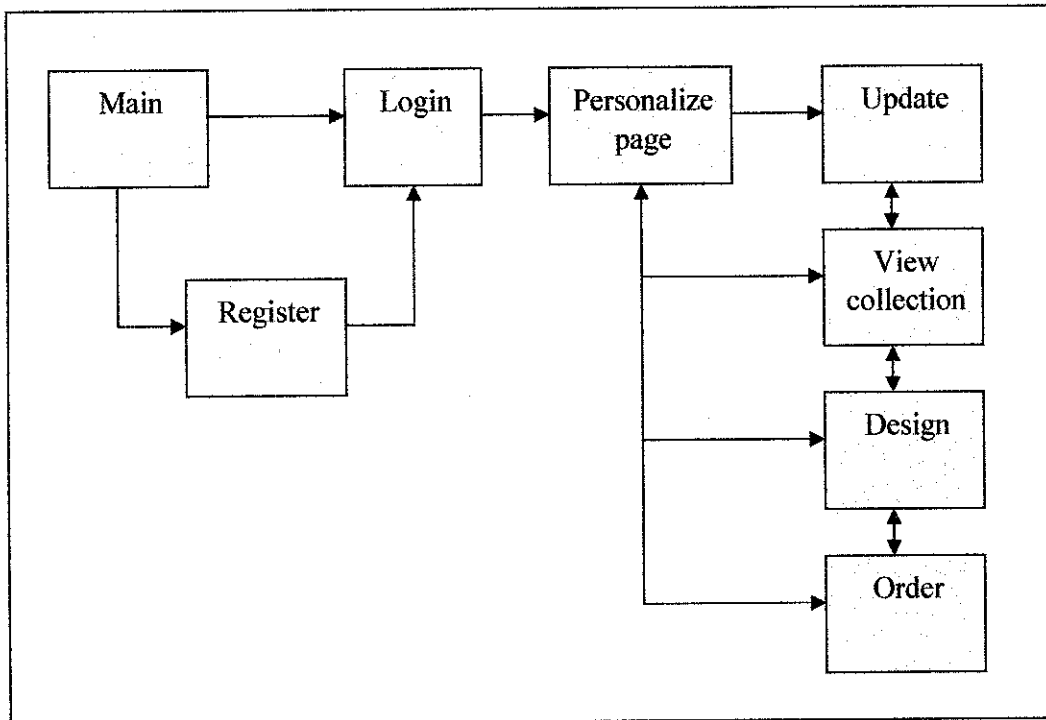


Figure 8 Planned website navigation flow

From the main site of the website, the user need to login or register for the new user. Then it will direct to the personalized page for respective user. From this personalized page, which is the home page for the website, user can update their personal details, view all the collections of clothes available, design their own clothes and finally may order their desired clothes.

3.2.3.2 Storyboard

Storyboard used to illustrate how the interface of the website is going to be look like before it can be developed. Storyboard is designed based on the research that is done on the e-commerce where target user is analyzed. This is to ensure that the design of the website interface will be perfectly match to the target user.

3.2.3.3 Database design

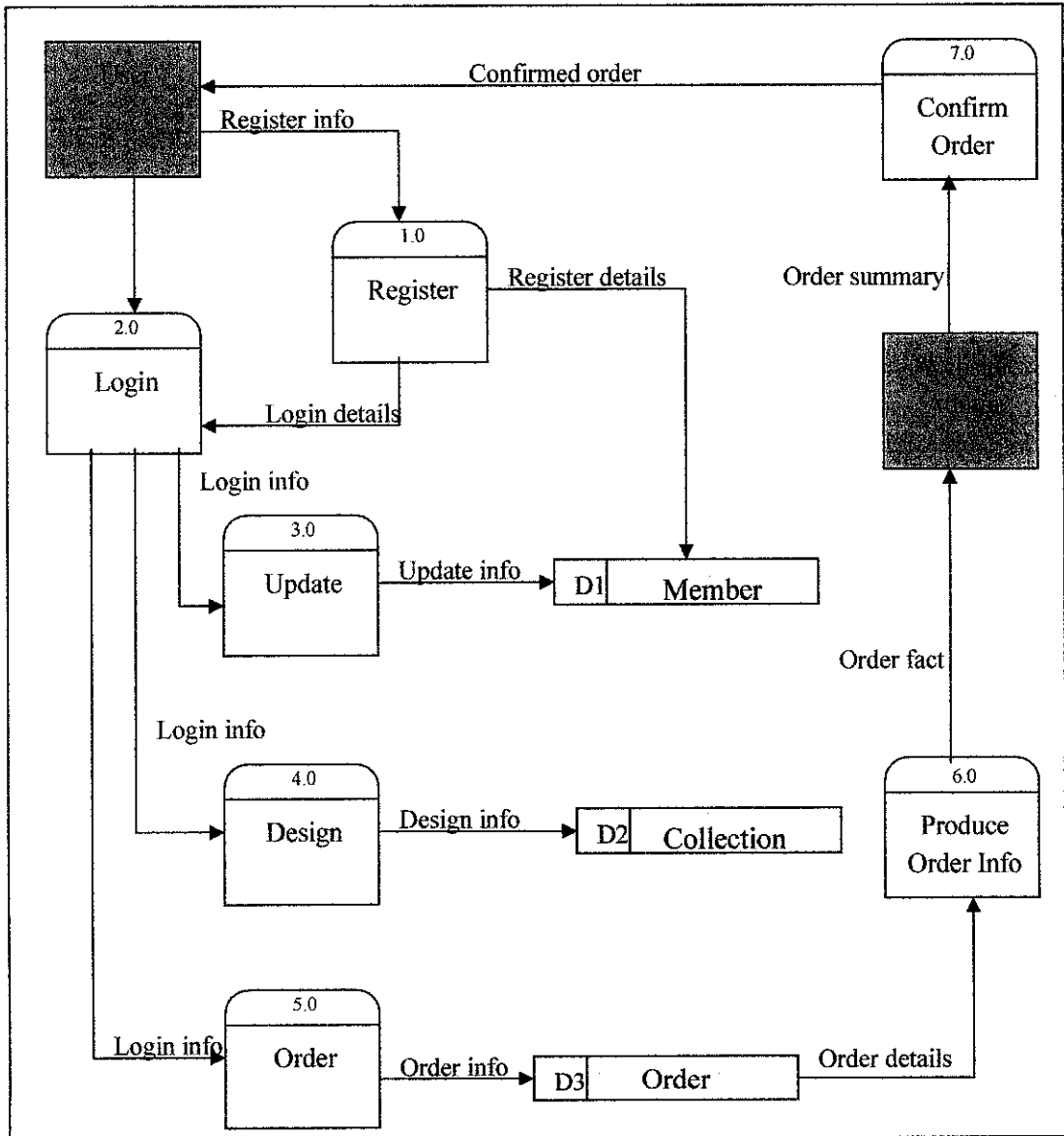


Figure 9 Data Flow Diagram Level 0

For the first time users, they need to register in order to navigate the web pages. For those who have already register, they need to login. After key in the login information, user may update their personal details, design their clothes and make order. All the information will be store into the particular data store.

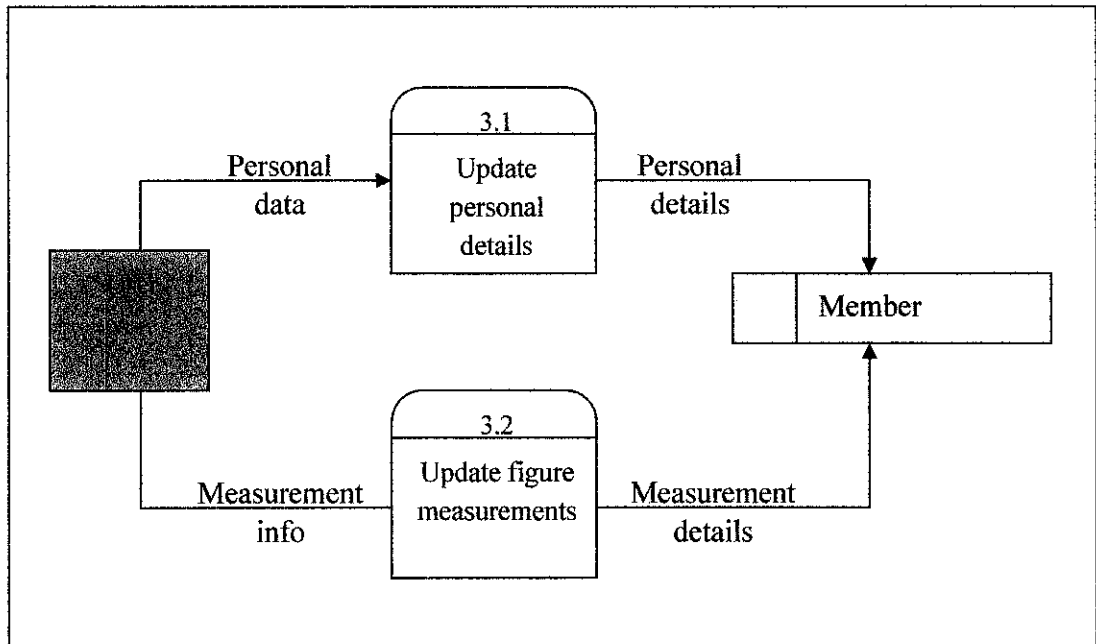


Figure 10 Data Flow Diagram Level 1

In the update process, it is divided into two smaller processes which are update personals details and update figure measurements. The information is stored in the member data store.

3.2.4 Programming

From designing phase, next is programming. For the whole project, this is most crucial part. Programming requires most of time and it need full attention. During this phase, work will carefully monitor to ensure the intended end-product successfully created. All the web flow is followed as what have been designed to ensure the intended end-product. The development of the website is fully coded using DHTML, PHP and JavaScript for the interface and flow of the website. For the database, MySQL is chose as it perfectly matches with PHP, while Apache is chosen as the server and for the development tool, Macromedia Dreamweaver MX is used.

3.2.5 Test and Debug

Test and debug phase is related with programming phase. This is phase where product testing is performed. If there are problems or errors detect, it will be debugged and if needed, it will go back the previous phase. Sometimes, if needed, it can go back the design phase. This to make sure problem will be solves and then test again. Since the testing run for parts by parts of the project, error will be easy to detect and when testing part successfully completed, then the part by part will be integrated into a system.

3.2.6 Documentation

Documentation is the closing phase. At this phase, all documentation related to the project finalizes and presentation will be conducted.

3.3 Tools and requirements required

3.3.1 Software

- i. Windows XP
- ii. Microsoft Office 2003
- iii. Macromedia Dreamweaver MX
- iv. Adobe Photoshop 7.0
- v. Apache
- vi. PHP
- vii. MySQL

3.3.2 Hardware

- i. Notebook with Pentium® M, 1.6 GHz, 512 RAM and 60G HDD**
- ii. Operating System: Microsoft Windows XP Professional Service Pack 2**

CHAPTER 4

RESULT AND DISCUSSION

The website has been developed using Macromedia Dreamweaver MX. Programming language that used are PHP, DHTML and JavaScript. MySQL is used as the database while Apache used as the server. From the research that has been done, there is none of the available websites online provide tailoring service that enable the user to create their own design. Those online clothing stores are only selling their ready-made clothes. With traditional way, customers need to go to tailors to order custom-made clothes, but normally good tailor are often located far from home. So, this website comes up with the capability for the users to create their own design using design aid tool. Having the service provide over the internet will be a cost effective way for the customer to reach the preferred tailors. Online tailoring also give benefit to the tailor as they can obtain for larger market and therefore create greater profits.

E-commerce and semantic concepts are combined together in order to provide a better service of tailoring online. Drag and drop function has been integrated into the system as to ease the user during the process of designing the clothes. This function has been chosen as the design aid tool in order to reduce difficulties for the user to do their design. It is not feasible to draw the design using mouse as it is hard to do and the output design will not be as expected design. With drag and drop function, user just have to choose the style they want and combine them together to create their desired design. However, this function will limit the user creativity in designing the clothes.

4.1 The E-tailoring Website

From the main page of the website, user need to login, or register for the first time user. In the registration page, the input validation is implemented. This is to avoid data entry error which might create problem after registration. If there is any input error, the error message will be displayed and the data has to be change in order to succeed in the registration process.

The screenshot shows a web browser window titled "E-Tailoring with Drawing Tools". The address bar displays "http://localhost/register.php". The page features a decorative header with the text "E-Tailoring" in a stylized font, flanked by butterfly and flower graphics. Below the header is a "Registration" form. The form includes a "cancel" link, a calendar widget for "October, 2006", and several input fields: Username (filled with "mar"), Password (masked with dots), Confirm Password (masked with dots), Name (filled with "marinah"), IC Number (filled with "876521772811" and a "(Waty IC No)" label), Address (filled with "Blok E"), Telephones (filled with "098765432" labeled "(Home)", "123456788" labeled "(Office)", and "09876545" labeled "(Mobile)"), and Email (filled with "email@email.com"). There are "SAVE" and "CLEAR" buttons at the bottom of the form. The browser's status bar at the bottom shows "Done" and "Local intranet".

Figure 11 Registration for New User

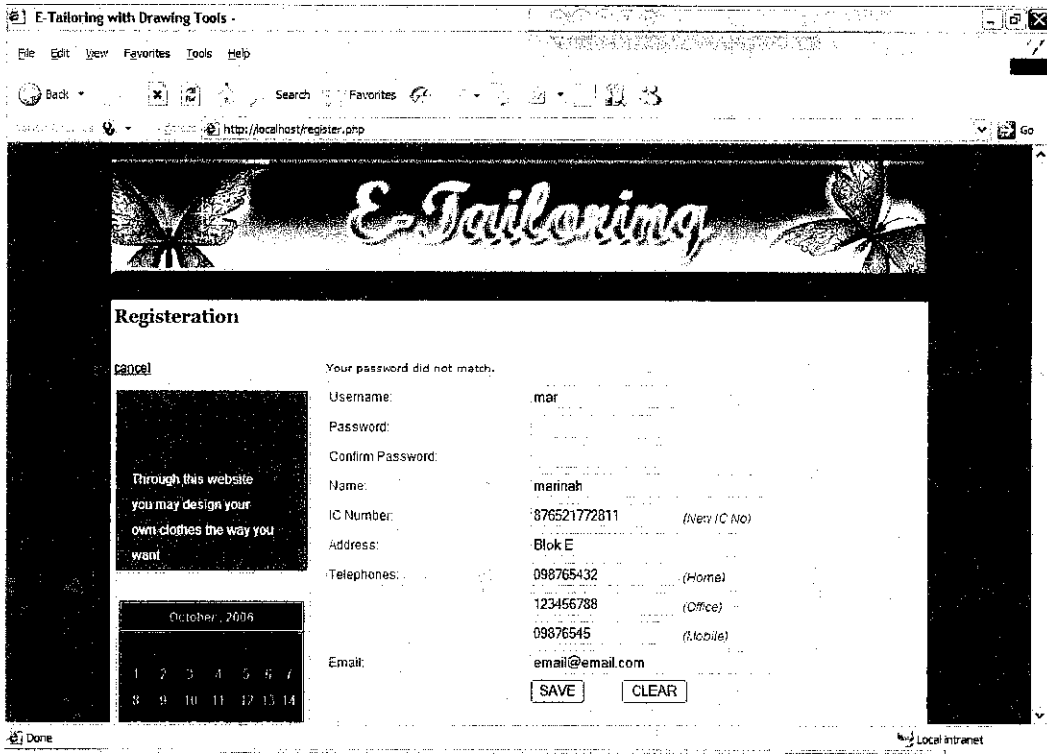


Figure 12 Data entry checking

Once the user have successfully registered, the user need to login and this will direct to the personalized main page. At this page, user may update their personal details; view all the collections available on the server site; create their own design; and perform online ordering for the clothes. For update details, the may update their basic personal information and also can update their figure measurements.

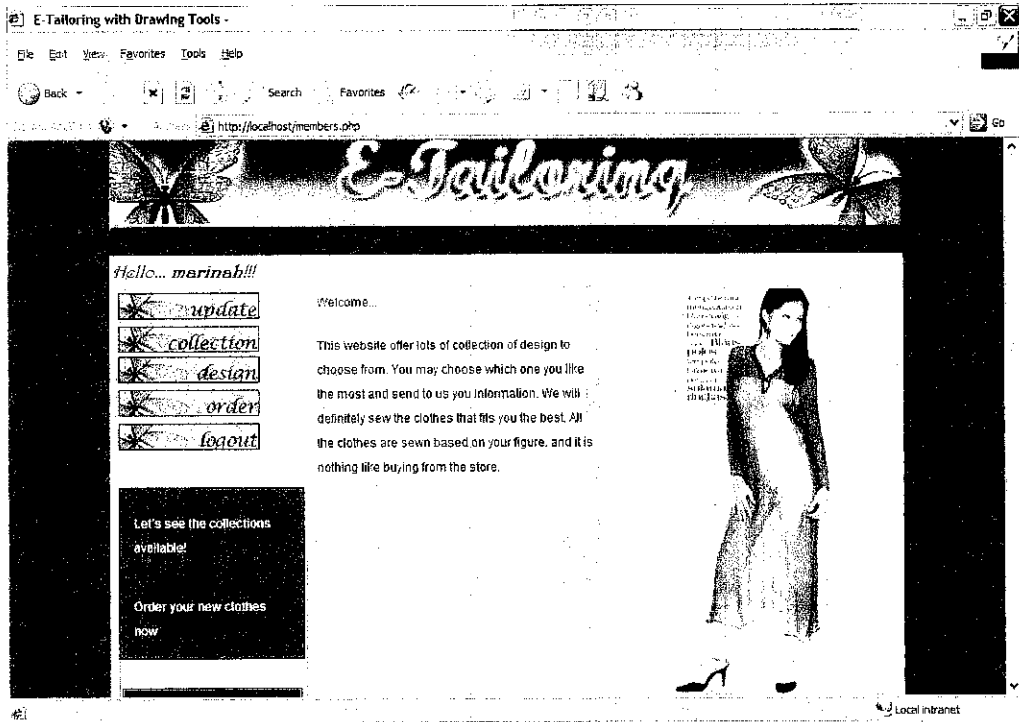


Figure 13 Personalized page

For update figure measurements, this website comes out with the illustrations on how to do the figure measurement. This illustration displayed in a popup window as to make more user-friendly as the user does not need to navigate to another page for the illustration.

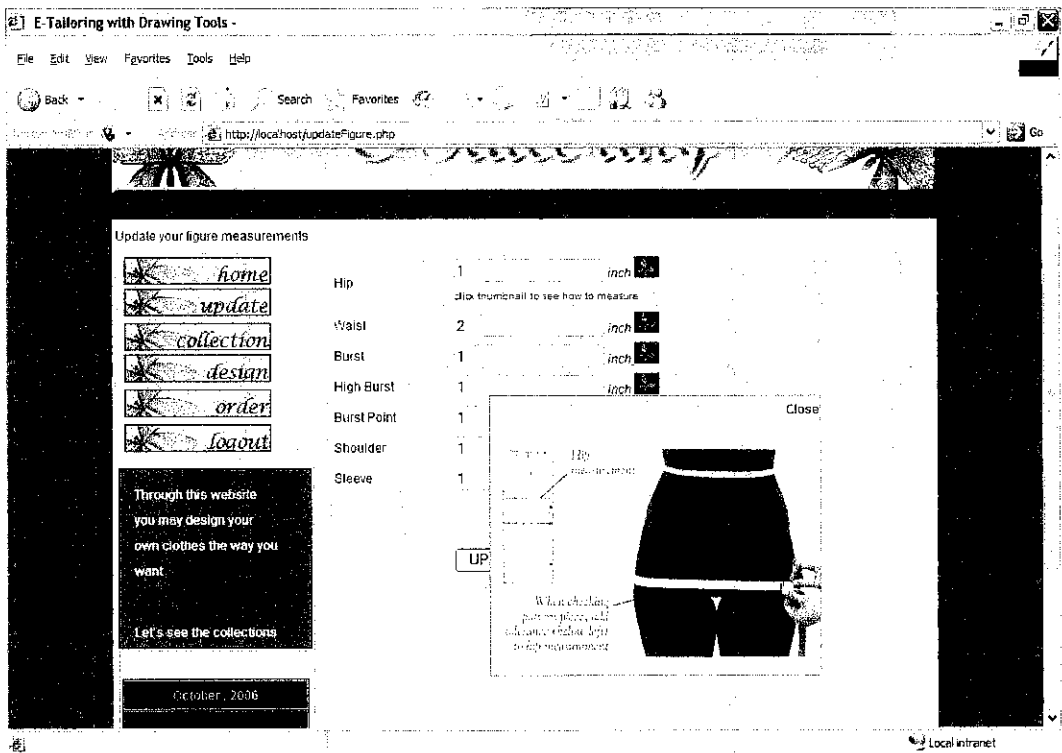


Figure 14 Popup Window for Figure Measurements Illustration

Existing collection of design can be viewed at the collection page. The user has to mouse point on the thumbnail then the larger sized image will be displayed.

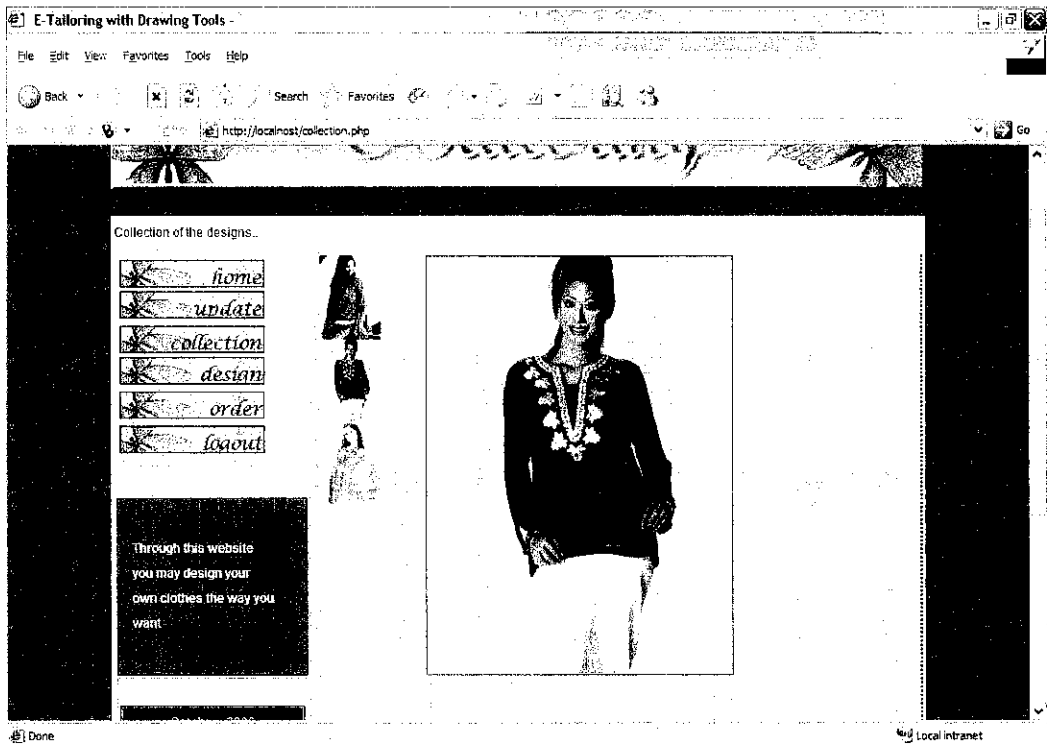


Figure 15 Viewing collection

This is the page where the user can create their own design by select the options of design provided. In this project, only sample images are added. Shown below are the images of the sleeve, neck and body that have been combined together. For this prototype, they are only few designs available for the designing the custom-designed clothes.

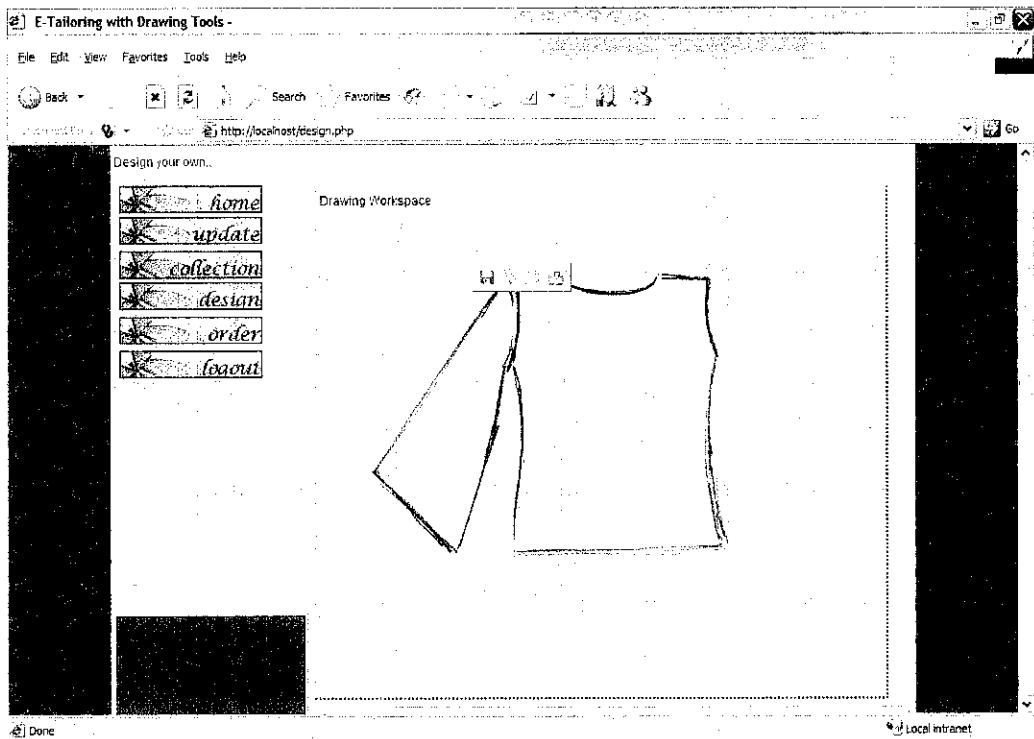


Figure 16 Drag and Drop Design Tool

Finally, the user may perform online ordering system using the order form provided. This order form only contains the drop down menu, where the users need to choose their design, and the amount of the clothes they want. Other information such as date order and the personal information can be retrieved automatically from the database.

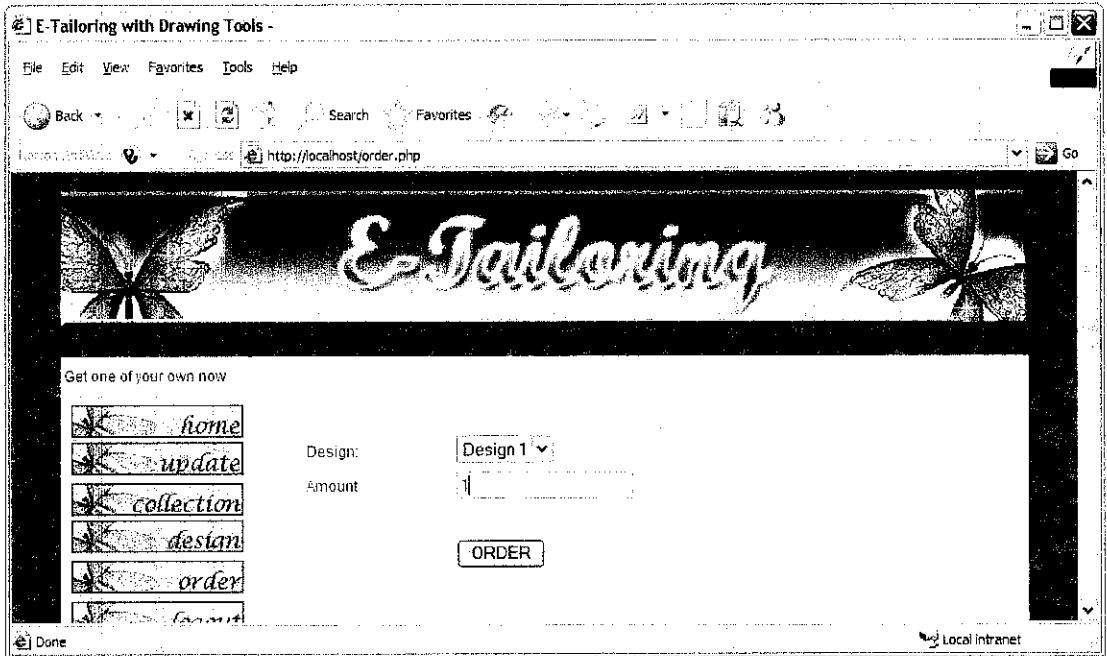


Figure 17 Order Form

4.2 Problems encounter during development

During the process of developing the prototype there are several problems occurred. Due to time constraints, the semantic concept in the drag and drop function is not yet fully functional. More time is needed in order complete the semantic function of drag and drop.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

As the conclusion, this project, tailoring website, offers the users to design and order custom-designed clothes. The drag and drop function is used where users may choose the parts of the clothes and combined them together to create new designed clothes. However the drag and drop function is not fully functional due to time constraints. Semantic concept is not yet implemented to the function. Using the website, user can view the collections of ready made and custom-designed clothes through the internet. The process of tailoring now can be done on the internet instead of going to a tailor shop. This way, it will benefit the customers, as they can reach their favorite tailors wherever they are located. While for the tailors, they can enlarge their market range in the tailoring businesses.

5.2 Recommendation

For further enhancements of the project, 3D illustration for the design and figure measurement illustrations can be integrated to the website. With this, customer may have clearer view on the design the created and may have clearer idea on how to perform the figure measurements. Having more flexible design aid tool can give the user freedom in creating their design, so that, it will not restrict their creativity. Other recommendations includes a software integrated to the website to capture user's picture and create a 3-D model of the user wearing the designed clothes

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