

Online Batik Designing Tool

by

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CERTIFICATION OF APPROVAL

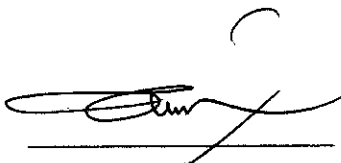
“ONLINE BATIK DESIGNING TOOL”

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A project dissertation submitted to the
Information and Communication Technology Programme
Universiti Teknologi PETRONAS
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January 2008

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.

A handwritten signature in black ink, consisting of a stylized circular symbol followed by a horizontal line.

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ABSTRACT

“ONLINE BATIK DESIGNING TOOL”

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The development of this project will focus on developing a tool to allow the potential customer to have their own ideas on how they want their Batik design to look like online. The objective is to do study on how the current scenario of Batik industry in Malaysia and to develop a tool that can help to improve the Batik industry in Malaysia. In this way, it can help to mount the attraction on the Batik industry and indirectly will help to enforce the E-Tourism industry development in Malaysia. It is to ensure that the system satisfied both boutique or manufacturer and customer, to add more user experience in the designing process of Batik. The problem with the current process is that only the artists themselves design the Batik not the customer themselves. Due to lack of communication with the customer, the Batik design sold usually both not up to the customer needs or demand and at the same time highly priced. This can lead to poor sales of Batik both to the local and globally. Another advantage of this system it will also indirectly promote the boutiques, dealers and manufacturers involved in the Batik industry. The methodology selected for the system is Prototyping-based Model. ‘Online Batik Designing Tool’ is developed to vary the designing process of Batik.

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I would like to convey my appreciation to my friends, who went through all the sleepless nights with me in order to complete this project. Their assistance whether tangible or not, makes a lot of difference to the outcome of the project. I am very lucky to have been surrounded by such amazing and supportive friends.

Last, but not least, I would also would like to give my special thanks to my family for their great support; mentally, physically, financially, and to not to stop having faith in me to complete this project.

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CHAPTER 1

INTRODUCTION

1.1 Background

Batik is generally the art of decorating a cloth using wax and dye. It is a tradition craft which is originated mainly from Asia. *Unlike textile printing technology, which has advanced rapidly and enjoys modern technological capabilities in most of the production processes, the Batik industry has changed little in the past few decades. Although the rapid technological advancement in this decade has influenced the Malaysian Batik industry to adopt new technology in some of the processes, there are many more processes which are still highly labour intensive.* [S. Morris, I. Elamvazuthi, 1999]

In Malaysia, there are two most common ways of creating Batik pattern and design, which is “Lukis” or “Terap”. “Batik Lukis” literally means the artist would draw the pattern onto the material of choice. And “Batik Terap” means that the patterns are made by stamping method using blocks of design.

In 1994, SIRIM had designed an automated tjanting (or is more known as chanting) system to assist local Batik manufacturers in response to the difficulties in mass production of Batik. [June Ngo, 1999] This system is being called Integrated Computer Aided Tjanting System (ICATS M1.0-1). However, this system only allows the artists themselves to design the Batik and imply it to the machine; not the customer themselves. Knowing that by allowing the customer themselves to design their own

patterns and design will make the system more interactive and increase customer attractions, a new system called “Online Batik Design System” is to be developed as it will let the customers to be more in control of their wants and needs.

1.2 Problem Statement

Batik industry in Malaysia is lacking of publicity. Although Batik is worn by people from various culture; Malay, Indian, Chinese, etc, it is only worn during occasions or important events. Thus Batik is not been produced vastly even though the current technology allows it to. Despite of its reputation, Batik is not highly demanded and does not become a strong niche of Malaysia tourism industry attraction. It requires improvement to meet the demand and taste of clients to enable locally produced Batik to compete with Batiks produced elsewhere.

1.2.1 Research Questions

There are several different research areas to be covered in throughout this project. The questions that lead to the research:

1. What are the techniques to produce Batik design?
2. What is the current technology involved in Batik industry in Malaysia?
3. What is the importance of implementing this system to the current process?
4. Why is it vital to go online?
5. What is the suitable technique and method to implement this system?
6. What are the limitations foreseen in this project?

1.2.2 Significant / Relevancy of the Project

This project focuses on developing a tool to allow the potential customer to have their own ideas on how they want their Batik design to look like online. In this way, it can help to mount the attraction on the Batik industry and indirectly will help to enforce the E-Tourism industry development in Malaysia.

1.3 Objective

The objective is to study on how the current scenarios of Batik industry in Malaysia and to develop a tool that can help improve the Batik industry in Malaysia.

1.4 Scope of Study

1. To analyze the current scenario of Batik Industry in Malaysia.
2. To study on the techniques of Batik designing process.
3. To develop a prototype which enabling user to design their own batik.

CHAPTER 2

LITERATURE REVIEW

2.1 Ecotourism vs. Cultural Tourism

“Tourism is defined as the interrelated system that includes tourists and the associated services that are provided and utilized.” [A. Fennell, 1999]

David in his book also explained tourist is a person traveling for pleasure with the purpose of the visit or engaging in activities for remuneration in places visited. There are many reason of why a tourist would come to a place. The most common reason is because of the natural attraction a place has. This type of tourism is called ecotourism.

“Ecotourism is a sustainable form of natural resource-based tourism ... typically occurs in natural areas and should contribute to the conservation and preservation of such areas.” [A. Fennell, 1999]

Another type of tourism is called cultural tourism. For this type of tourism a tourist is more attracted in the ethnicity or customs of a place. This type of tourism focus more on the tourist experience as a local of a place hey visited.

“Travel for essentially cultural motivations, which may include travel for specific purposes, for example, to attend festivals or to visit sites or monuments, or may be more broadly motivated by the desire to experience cultural diversity or to immerse oneself in the culture of a region.” [Lennon, 2001]

Batik as one of the unique attribute and as one of the attraction for tourism in Malaysia fall in the cultural tourism. *“To some tourist culture is the primary attraction; to others it is merely a secondary feature of all the overall experience”* [A. Fennell, 1999] Thus, more effort should be taken to improve and to expose the strength of the culture attractions (in this case, Batik) in tourism.

2.2 Why Batik is Chosen as the Key Element?

According to Fiona Thames & Hudson (2004) *“Batik's world-wide influence on textile art is unprecedented: no other cloth in Asia has so much symbolism and meaning.”* Thus Batik is chosen as the key element of the project. The reputation it has in the west, proved that Batik is highly recognized for its uniqueness. To prove this, there are a lot of books regarding on how to design Batik, classes of curriculum in popular high institutions based on Batik, and articles produced by westerns. Hence, it is a waste for such art craft to be faded away by times and revolution.

2.3 Venturing Batik Industry Online: Reasons for Going Online

“E-Business is about using the convenience, availability and world-wide reach to enhance existing business or creating a new virtual businesses.” [D. Amor, 2000]

With rapid growth of the Internet and the World Wide Web, almost every other organizations, companies, sectors or industry has gone online, grabbing the utmost opportunity of reaching the customers all over the world in just seconds. And this is not a new scene in tourism industry in Malaysia. There are lot of traveling agencies and websites promoting Malaysia online.

In comparison to in-store travel agency shopping, two main advantages: (a)*E-hopping offers consumers a higher level of convenience* [Licata C.M, D. Buhalis and P. Richer, 2001] (b) *“ Online reservation save consumer time ”* [O'Connor P. and A Frew, 2001]

Other reasons to go online are “(1) *Expanding market reach*; (2) *Generating visibility*; (3) *Strengthening business relationships*; (4) *Responsiveness*; (5) *Cost reduction*.” [D. Amor, 2000]

Thus, it is a feasible prospect to make this project online with the reasons discussed.

2.4 Integrated Computer Aided Tjanting System (ICATS M1.0-1)

Integrated Computer Aided Tjanting System or ICATS M1.0-1 has been designed by SIRIM in 1994 but only being implemented installed late 1996 at the Malaysian Handicraft Development Centre (PKMM) in Melaka as the pioneer in the use of a computerised batik manufacturing machine, costing up to RM 2.5 million.

A research has been done by June Ngo Siok Kheng (1999) on Malaysian Batik Industry; Issues and Challenges which also touches on the latest technology in Batik industry. According to her, ICATS is developed to improve the speed of the tjanting process. The custom drawing software enables batik artist the freedom to design freely with little restrictions. The software reads the batik patterns by following the drawing process of the batik artist.

The advantage of using ICATS M1.0-1:

1. The tjanting line is finer and consistent throughout the fabric.
2. The working condition of the batik area is fume free creating a healthy and environmentally friendly atmosphere.
3. The tjanting speed of ICATS is 7-8 times faster than the hand-drawn tjanting process.
4. The custom drawing software gives drawing flexibility to batik artists and enables them to create any batik design freely.

The limitation of using ICATS M1.0-1:

1. The breakage of wax line due to the joining of two tjanting lines. This problem is partly due to the custom drawing program, which cannot detect disconnected drawing lines on screen.
2. The cost to purchase the ICATS is very high because of the specially designed automated system and the type of material used to construct the machine.

Although ICATS comes with custom drawing software that allow the artist to freely design the Batik design, the designing process would be much more interesting if the customers can fully contribute in designing the patterns themselves. This will lead to a more interactive designing process that will attract the customer to indulge in.

CHAPTER 3

METHODOLOGY

3.1 Spiral Methodology Model and Prototyping Methodology Model

Taking advantage of the fact that development projects work best when they are both incremental and iterative, where the developer is able to start small and benefit from enlightened trial and error along the way, the Prototyping Development methodology is the most suitable methodology to be used as shown in figure 1.

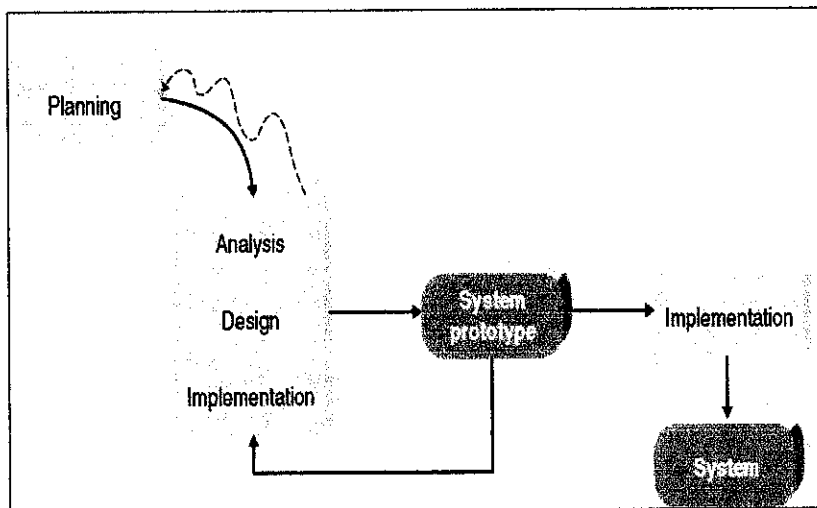


Figure 1: Prototyping-based methodology model

According to Boehm (1986 and 1988), focus is on risk assessment and on minimizing project risk by breaking a project into smaller segments and providing more ease-of-change during the development process, as well as providing the opportunity to evaluate risks and weigh consideration of project continuation throughout the life cycle.

This methodology is chosen as the author being able to do backtracking in the cycle of the system development and the fact that this model combines both linear and iterative approach which is implemented in the Waterfall model and Prototyping model respectively. The author will adopt the step-by-step approach in the Waterfall model to move from one phase to another. And the author will adopt the prototyping-based model by performing the analysis, design and implementation phases concurrently, and all three phases are performed repeatedly in a cycle until the system is completed.

With these methodologies, the basic of analysis and design are performed, and work immediately begins on a system prototype that provides a minimal amount of features. The first prototype is usually the first part of the system that the user will use. This is shown to the users and project sponsor who provides comments, which are used to re-analyze, re-design, and re-implement a second prototype that provides a few more features. This process continues in a cycle until the analysts, users, and sponsor agree that the prototype provides enough functionality to be installed and used in the organization. After the prototype (now called the system) is installed, refinement occurs until it is accepted as the new system.

By using this type of methodology, the advantage is that it very quickly provides a system for the users to interact with, even if it is not ready for widespread organization use at first. It reassures the users that there are no long delays in which the users see little progress and helps to more quickly ferine real requirements. Rather than attempting to understand what it can and cannot do.

3.2 Project Activities

3.2.1 Planning

In proposition to the prototyping methodology, the author will do the planning process first. In this phase, the author determines objectives, alternatives and constraints of the system. All these factors are as being discussed in *Chapter 1: Introduction* and in *Chapter 2: Literature Review*. The work plan is as shown in Table 1.

Table 1: Project Workplan

Task Number	Task Name	Duration (weeks)	Dependency	Status
1	Choosing the project subject	1		Complete
1.1	Consultation with supervisor			Complete
2	Do a research on the project subject	1		Complete
2.1	Finding the literature review on the subject		2	Complete
2.2	Consultation with supervisor		2.1	Complete
3	A research on appropriate system requirements of the project	1	2.2	Complete
3.1	Determine the tool, technique and programming languages			Complete
4	Understanding current business	1	2.2	Complete
4.1	Research on batik designing process			Complete
4.2	Research on the similar application			Complete
4.3	Consultation with supervisor			Complete
5	Study the need of a new system	1	4	Complete
6	Planning the system	2	4	Complete
6.1	The system methodology			Complete
7	Analysis the system			
7.1	Identify the business requirements			Complete
7.2	Analysis the risk of the project			Complete
8	Design the system			Complete
8.1	Data model design			Complete
8.2	Interface design			Complete
9	Review the system design	1	6	Complete
10	Develop the first prototype	4	4	Complete
10.1	The basic layout of the system.			Complete
10.2	A web page on Batik.			Complete
10.3	A web page introducing the tool.			Complete
10.4	Preparing the basic templates for the Batik design or patterns			Complete
11	Evaluate the first prototype	1	4	Complete
12	Develop the second prototype	4	4	Complete
12.1	Drag and drop function			Complete
12.2	Resizing function			Complete
13	Evaluate the second prototype	1	4	Complete
14	Develop the third prototype			Complete
14.1	Coloring function			Complete
15	Evaluate the third prototype	1	4	Complete
16	System review	1		Complete
17	System testing	2	4	Complete
18	System review	1		Complete

3.2.2 Analysis

In this phase, the author, assess the requirement and the risk of the system which are very crucial in determining that the final product will meet all requirements and would have exceptionally low risk when implemented.

3.2.2.1 Business requirement

Business requirement can be defined as business capabilities that the system will provide some business requirement had been identified. They are:

1. The system should be able to provide online access for the entire customer from anywhere and on anytime.
2. The system should allow users to customize a pattern or choose the pattern from templates to create their own design.
3. The system should allow users to customize the pattern color to create their own design.
4. The system should allow the users to view submitted design.
5. The system should be able to show a demo on how to use the designing tool.
6. The system should be able to work on any Web browser.

3.2.2.1 Risk Analysis

RISK #1

The development of this system will be slow because the author is not well trained using the program languages as they are out of current syllabus of the course.

Likelihood of risk:

High

Potential impact on the project: This risk will make the time of the project expand 30% from the actual time schedule.

Ways to address this risk:

To overcome this problem, the developer will have to improve the knowledge on the respective languages, tools and technique that will be use in this project by doing research and gather all information and skills. Time consumer and resources should be put up front in this project as it will affect the timeline of the project.

RISK #2

The development of this system lack of resources as there are not many resources available on batik design. And in this project, the author will have to design different batik pattern to allow the user to have more options to choose from.

Likelihood of risk:

Medium

Potential impact on the project: This risk will make the time of the project expand 15% from the actual time schedule.

Ways to address this risk:

To overcome this problem, the developer will have to more resource on the batik designing field by going to the manufacturers to be able to understand more on the designing process and the business flow of the industry.

3.3 System Requirements

3.3.1 Programming languages:

1. HTML
 - HTML scripting used to create the user interface of the website
2. JAVA, JAVAscript
 - To make a color slider to color the canvas
3. PHP
 - Server side scripting

3.3.2 Graphics Tool

1. Adobe Photoshop
 - Graphics editor
2. Adobe Illustrator
 - To draw and create the patterns

3.3.3 Technique involved

1. Ajax
 - Create a function to drag and drop the pattern from the palette to the canvas.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Design

It is important that the design of the user interface and architecture fits the user requirements and at the same time. This chapter will conclude all the findings and research that has been done. Most of the findings were gathered through internet and reference books, which have given great inputs and outputs to further the projects.

4.1.1 Data Model Design

Process Flow Diagram

In the designing phase, the author, gather all information and resources needed for system and create a preliminary design of the system by doing researches on the similar application online. The process flow is as shown in figure 2.

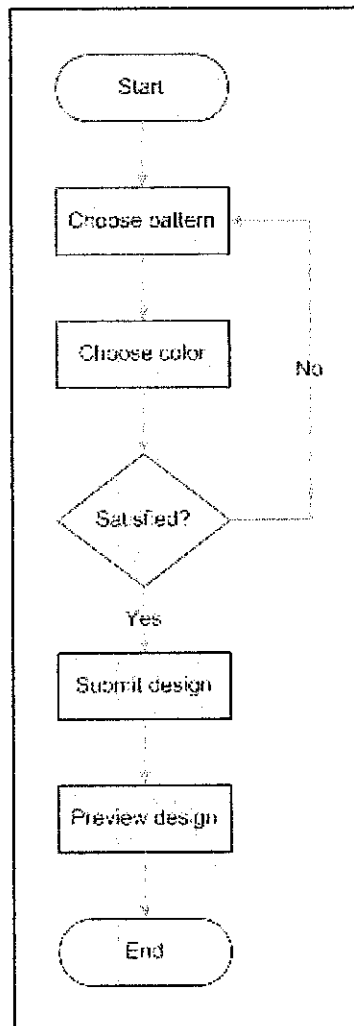


Figure 2: Process flow diagram of the Designing System

The user will be able to choose the pattern from the template or customize their own pattern by choosing the different basic shapes and create a pattern. Then the user will be able to color the pattern created using the colors provided. After user is satisfied with the design, they can submit the design to preview it. If else, they can always continue to edit their design until it achieved the desired requirement.

Use Case Diagram

To better understand the functionality of the system design, the author creates a use case diagram. The diagram is as shown in figure 3.

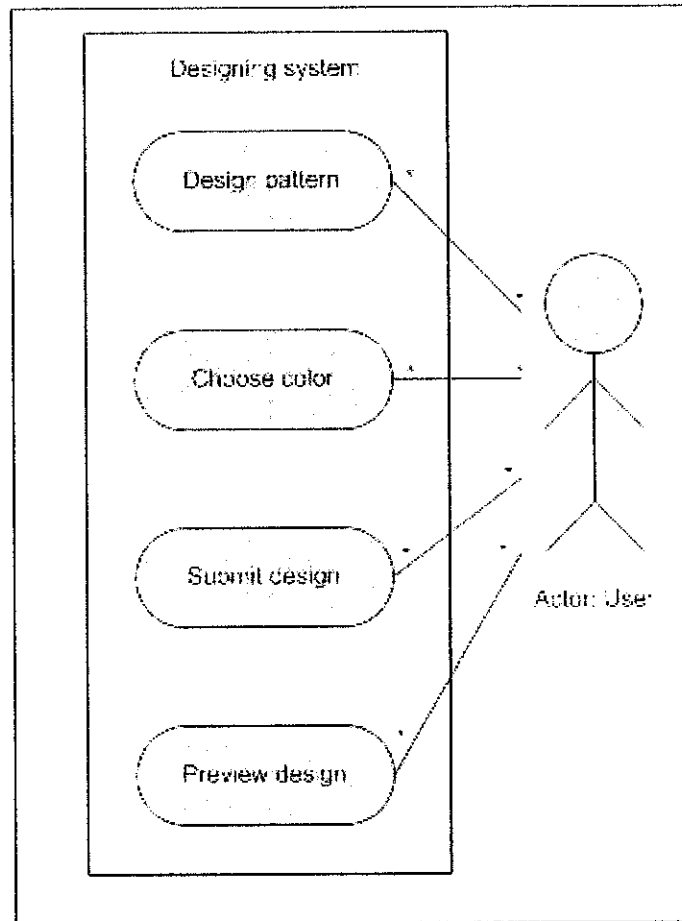


Figure 3: Use case diagram of the Designing System

There is only one actor involve in the system that is, the user who is as external entities of the system. And the user can perform four basic functions of the system, that are; (1) Designing the pattern; (2) Choosing the color to color the pattern; (3) Submit the design; (4) Preview submitted design.

Dataflow Diagram

The flow of the data in the system is represented in the dataflow diagram as shown in figure 4. It shows how the system interacts with the external entity of the system which in this case is the user and how the data flows from one component to another.

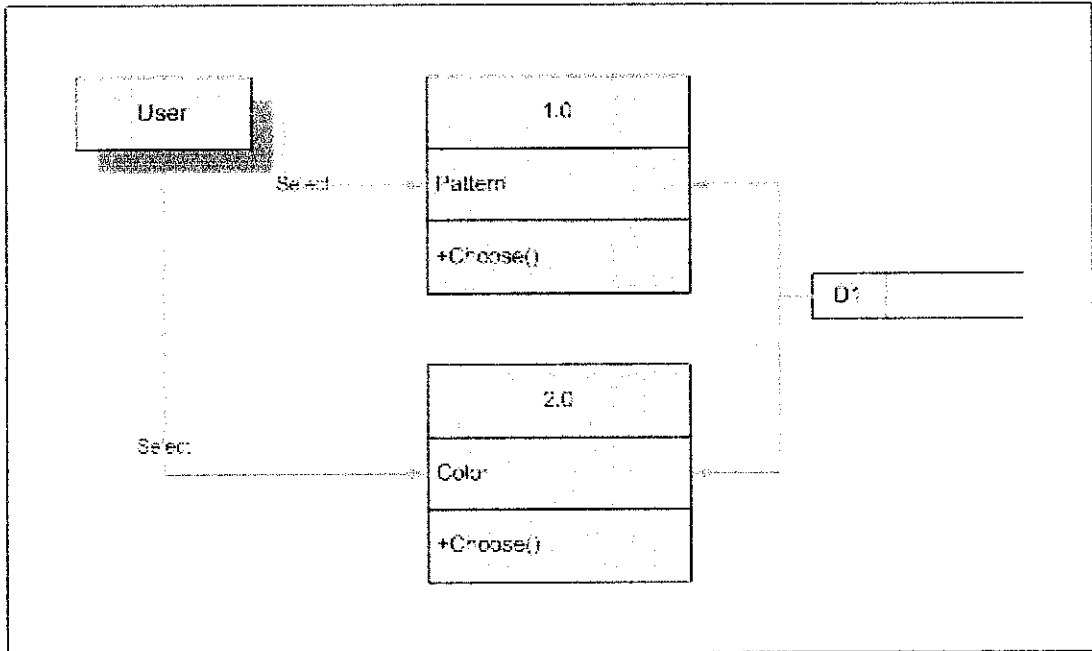


Figure 4: Dataflow diagram of the Designing System

System Framework

The system consists of an external entity of a user, a web interface system and a database to store all the data and functions. To show how the component of the interaction with each other, the user create a system framework diagram as shown in figure 5. In the designing system, the user will make use a web interface to interact with the system to create designs.

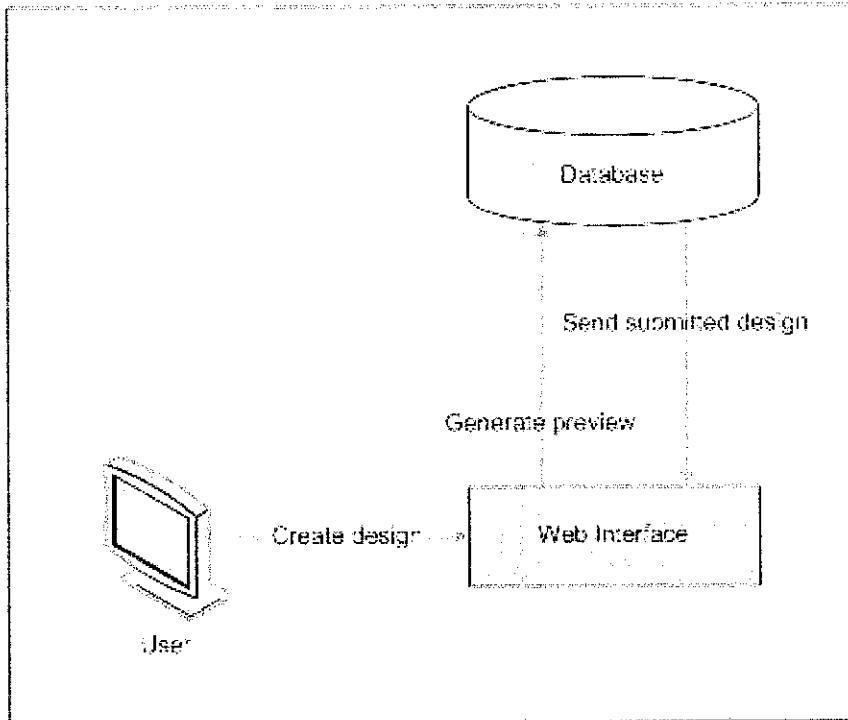


Figure 5: System framework

4.1.2 Interface Design

According to A. Dennis, B. H Wixom and D. Tegarden (2005), interface design goal is to make the design pleasing to the eye and simple to use, while minimizing the effort the users to accomplish their work. The prototype should include:

- a. Batik
- b. Design Tool
- c. Gallery

Figure 6, 7 and 8 show the basic layout of the prototype.

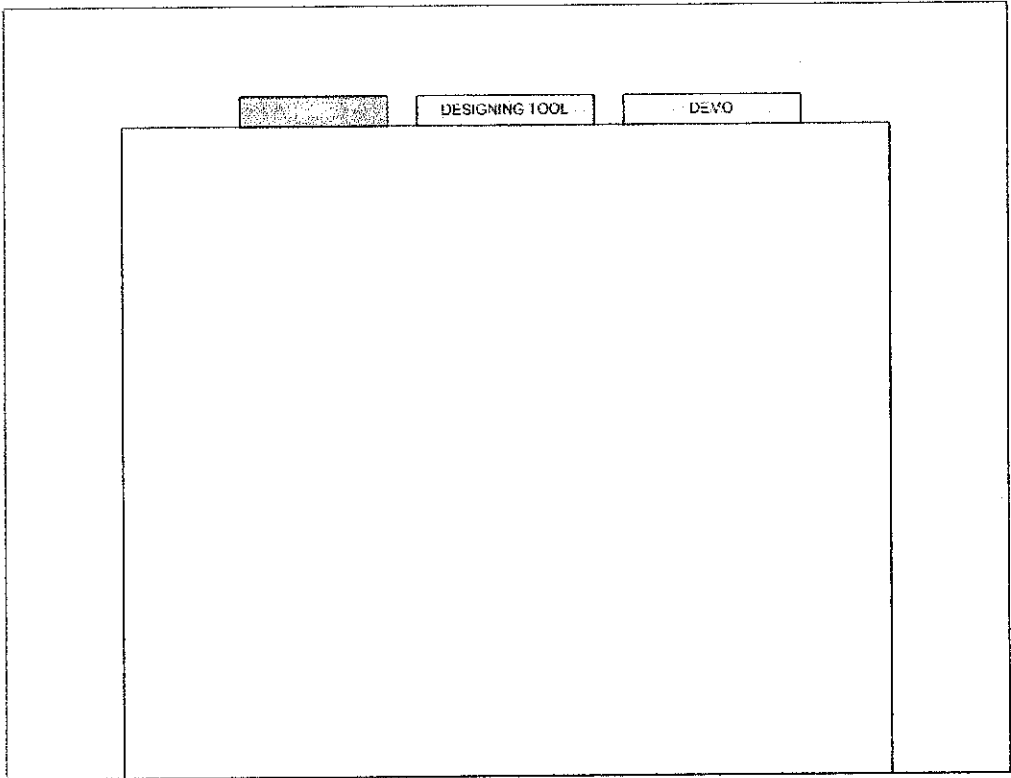


Figure 6: The home page

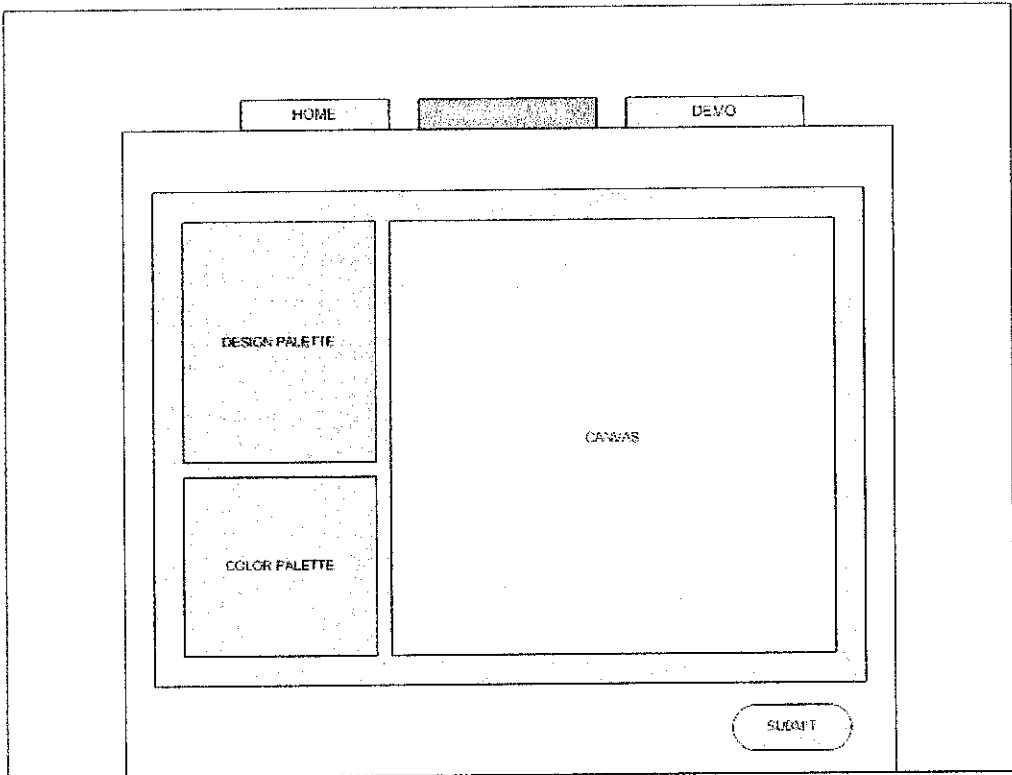


Figure 7: The designing tool

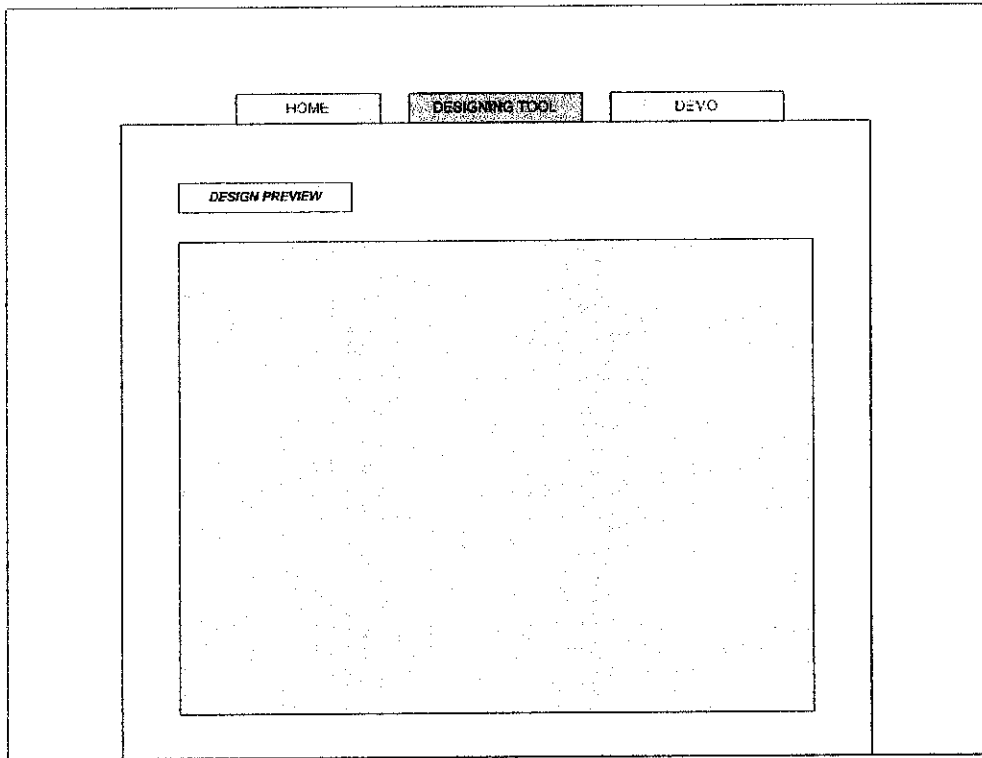


Figure 8: The preview page

4.2 Software Development

4.2.1 Functionality of the prototype

4.2.1.1 Main Page

The main page as shown in figure 9 generally consists of the introduction and a little bit of history about Batik to the user. It is also acts as the main user interface of the whole system which helps the users to navigate from one page to another. The website includes 3 main pages:

- a. Batik
 - a. This page discuss general information about Batik in Malaysia; origin, technique and technology involved or developed for the Batik Industry in Malaysia.

b. Design Tool

a. This page contains the Batik designing tool.

c. Gallery

a. This page consists of list of Batik boutique or Batik dealer all around Malaysia.

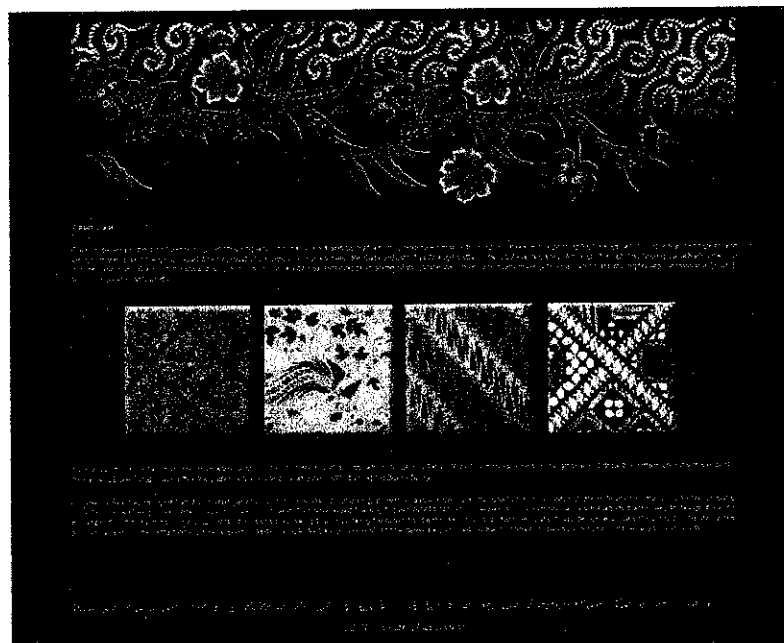
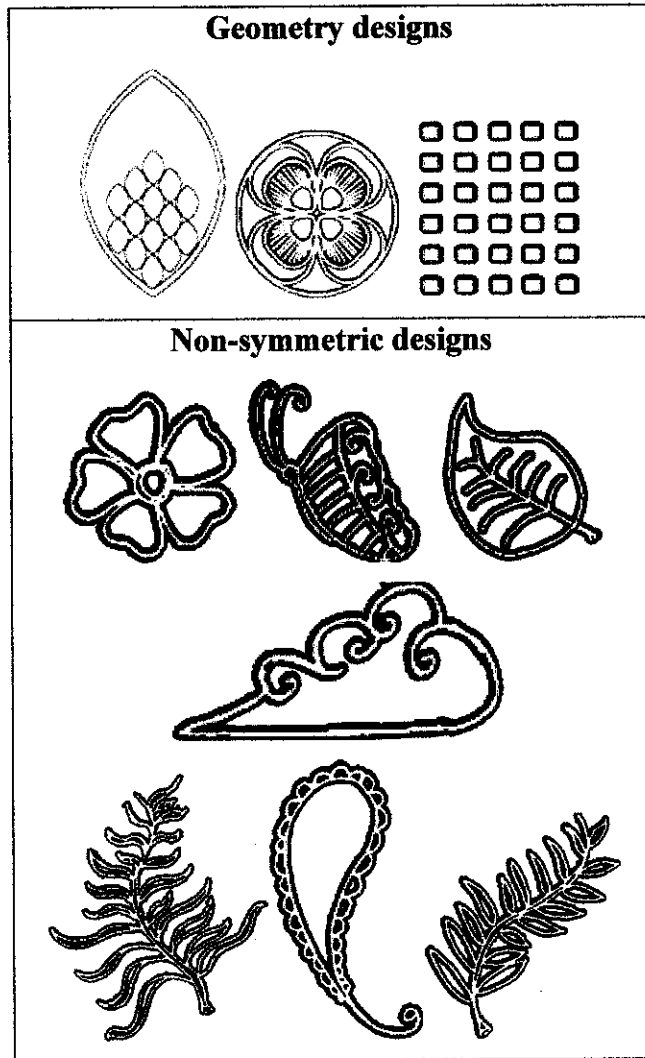


Figure 9: Main page

4.2.1.2 Pattern Designs

Using Adobe Illustrator CS2 and Adobe Photoshop CS, the patterns were design according to the actual sample of Batik designs. The patterns are as shown in table 2 below.

Table 2: Pattern designs



4.2.1.3 Drag and Drop

To enhance the user experience in the design process, the users can click onto a pattern to insert it on the canvas as shown in figure 10. The pattern can be inserted as many times as possible according to the user preference.

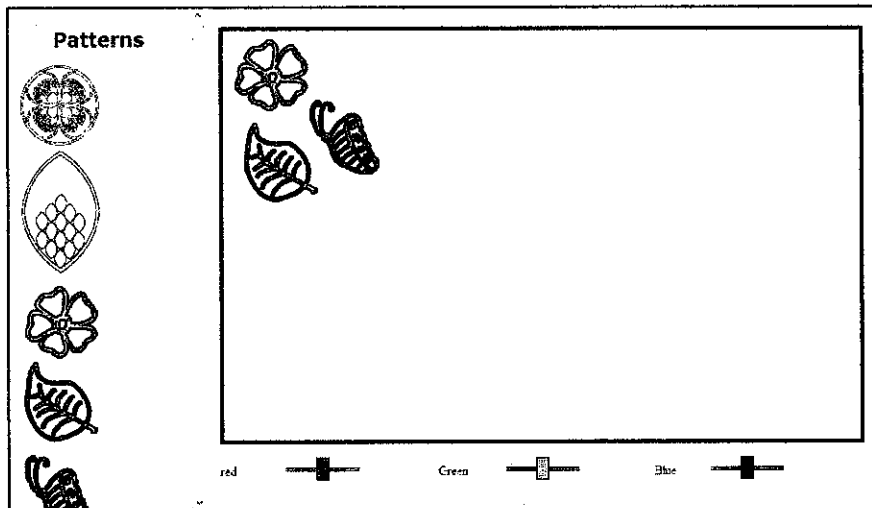


Figure 10: Canvas in the design tool

The user also can resize the pattern according to their preference by holding down the SHIFT key while resizing a particular pattern, as shown in the figure 11 below.

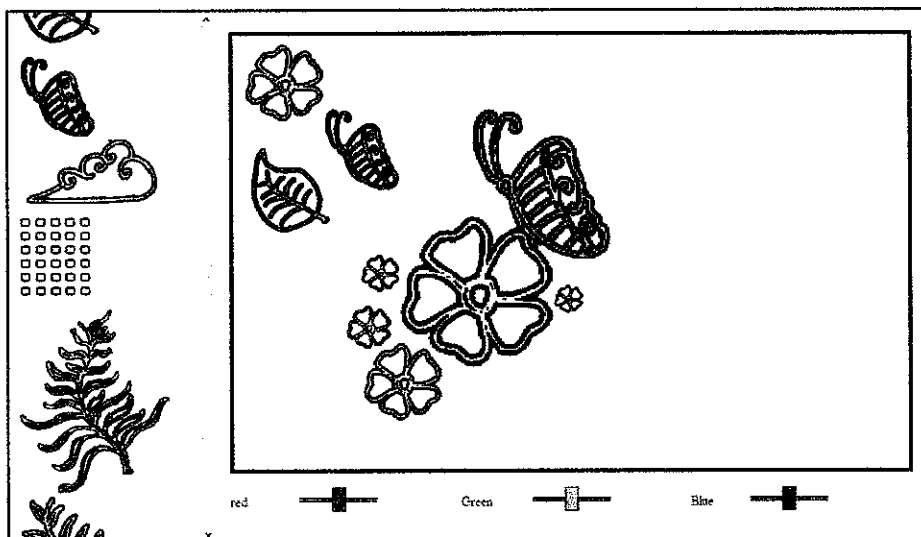


Figure 11: Resizing pattern

4.2.1.4 Background Color Changing

Other than that, the users are able to change the background color of the canvas using the color slider as shown in the figure 12 below. The color sliders consist of three (3) different colors which are red, green and blue. These three (3) sliders will actually control the amount of red, green, blue in the combination.



Figure 12: Color slider

Example of color is as shown in the figure 13 below. Observe that the slider for red, green and blue has been change to obtain the color shown in the canvas. The same process can be done to get different hue or combination of red, green and blue.

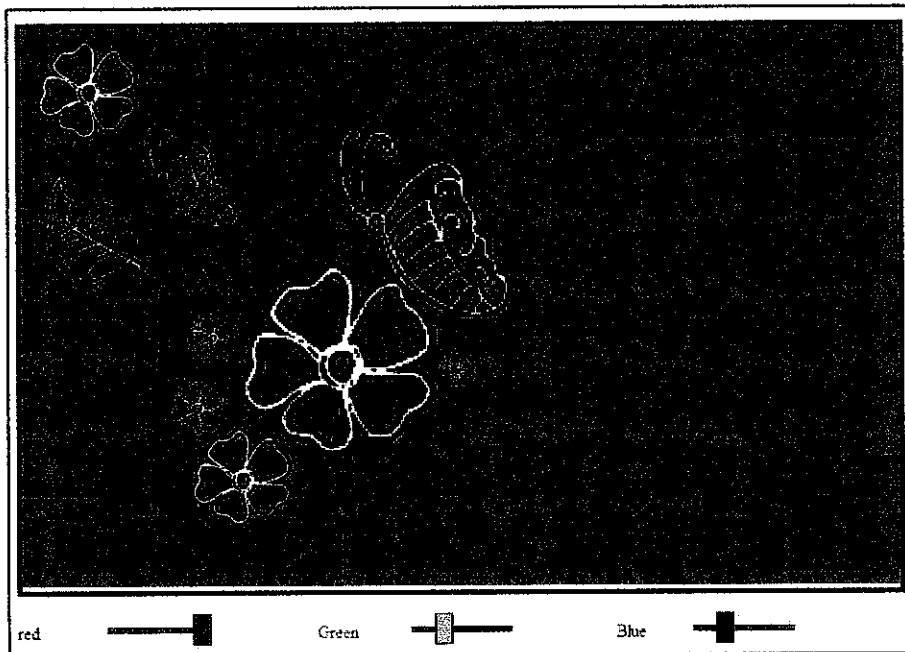


Figure 13: Canvas with color

Possible design that can be generated is as shown in figure 14, 15 and 16.



Figure 14: Sample design

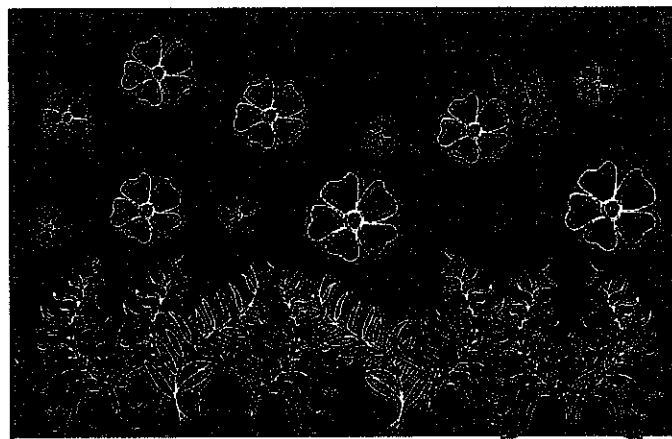


Figure 15: Sample design

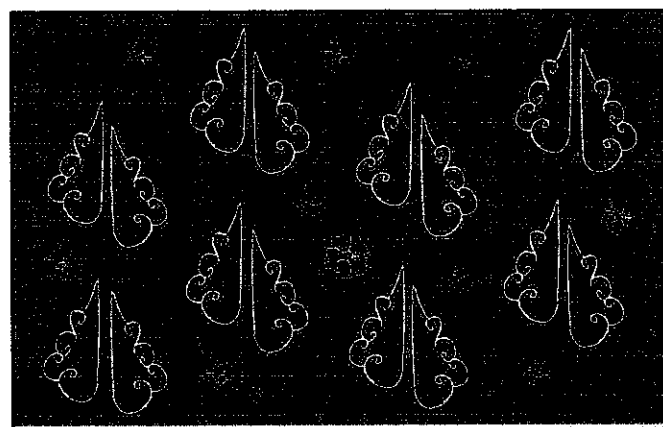


Figure 16: Sample design

4.3 Limitation Foreseen

There are several limitations of the project identified during the research. This project mainly focuses on developing a designing tool for Batik design online with the reasons as discussed in section 2.3 *Venturing Batik Industry Online: Reasons for Going Online*. Thus, the business process of designing the Batik is not being discussed in this project, which includes:

1. Cost evaluation of the design.
2. Material of choice to make the Batik.
3. Method of payment.
4. Transportation options of the design order.
5. Batik manufacturers or dealers involvement.
6. Customer personal details essentials.

This is because this project is not made specifically for a company, boutique or manufacturer. Thus, the limitations will not become the disadvantages but opportunities for the same initiative or idea can be implemented on other similar product that will require customer input in the designing process.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

“Online Batik Designing Tool” is specially developed to develop a designing tool online that can help to improve the Batik industry in Malaysia. It is hope that by using this system the user experience in Batik making will increase and indirectly promoting Batik globally on the web. The functions consisted in the system are easy to use and user friendly, it is fun to be used by anyone. Successful development of the system will add to a new way of promoting our very own Batik industry to the world.

5.2 Recommendations

For future upgrade and expansion:

- i) The author should integrate the use of database in the system so that a user login session can be established and that the design created can be saved.
- ii) The author should consider adding more function to the design customization such as enabling the users to color the patterns on the canvas and not the canvas alone.
- iii) Another interesting feature that can be added is a function to rotate the design on the canvas.
- iv) To allow users to upload their own design on their respective design to allow more creativity from the users and the variety of designs.

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APPENDICES

APPENDIX A: CODING

```
<script language = "javascript">
  var XMLHttpRequestObject = false;

  if (window.XMLHttpRequest) {
    XMLHttpRequestObject = new XMLHttpRequest();
  } else if (window.ActiveXObject) {
    XMLHttpRequestObject = new ActiveXObject("Microsoft.XMLHTTP");
  }

  function getData(dataSource, divID)
  {
    if(XMLHttpRequestObject) {
      var obj = document.getElementById(divID);
      XMLHttpRequestObject.open("GET", dataSource);

      XMLHttpRequestObject.onreadystatechange = function()
      {
        if (XMLHttpRequestObject.readyState == 4 &&
            XMLHttpRequestObject.status == 200) {
          obj.innerHTML = XMLHttpRequestObject.responseText;
        }
      }

      XMLHttpRequestObject.send(null);
    }
  }
</script>
```

```
function menu_onclick (n_id) {
  var o_item = this.a_index[n_id];
  var s_link = o_item.a_config[1];
  if (!s_link)
    return true;
  if (String(s_link).toLowerCase().indexOf('javascript:') == 0)
    return eval(s_link);
  if (o_item.a_config[2] && o_item.a_config[2]['tw'])
    getData(s_link, 'targetDiv');

  return true;
}
```



```
var MENU_ITEMS = [
  ['BATIK', 'batik.html',{'tw' : 'targetDiv'}],
  ['DESIGN TOOL', 'dtool.html',{'tw' : 'targetDiv'}],
  ['GALLERY', 'gallery.html',{'tw' : 'targetDiv'}],
];
```

```
var MENU_TPL = [
{
  'height': 30,
  'width': 90,

  'block_top': 210,
  'block_left': 180,

  'top': 0,
  'left': 100,

  'hide_delay': 200,

  'expd_delay': 200,

  'css' : {
    'outer' : ['m010out', 'm010cover'],
    'inner' : ['m010iout', 'm010iover']
  }
},
```