MONASH University

FIT5032 Design Report (assignment 2)

smallwood

Website

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Contents **Page**

1. Overview

This application is designed as a gateway website for **smallwood** community. Smallwood is a free, open community serving as a platform for all kinds of IT developers. On this website, users are encouraged to share their development experience and help others to solve painful technical problems. There are also some valuable tips / tricks in software / website development either shared by the website author or by other developers. To serve the objectives of smallwood community, this application is created to offer following functionalities:

- Introduce the background and principles of smallwood community to users
- Provide basic user registration and user authentication to differentiate user's access to site resources
- Enable basic user management, including viewing user information, searching for users and sending emails to users
- Notify users about upcoming events
- Render useful IT learning resources to users

At this stage, the deliverable is only a prototype in order to verify the design and technical feasibility. Further development will be undertaken upon the review on this prototype.

2. Functional diagram

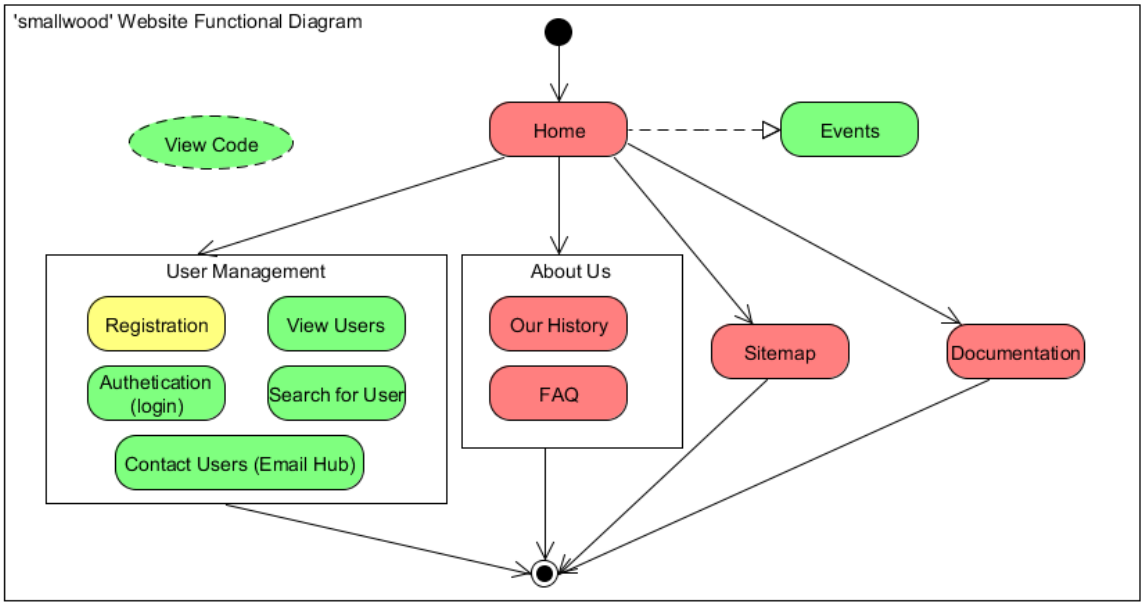

Figure 1: Functional Diagram (Green: new; yellow: updated)

There are seven main functional division in this application (See Figure 1).

1) **Home**: as the first page users will see when they are directed to our website, this page will welcome our users. It also displays a series of advertisements introducing useful external resources. Users can continue to browse other pages using links.

2) **User Management:**

- **Registration**: this page will accept user registration. Personal details (like name, contact numbers, email address etc.) are collected for future use. Such information will be stored into our user database.
- **Login**: resources in this application is divided into two categories: public and registered-user-only. Users must login before they can continue to browse registered-user-only resources.
- **View users:** enable certain users (like administrators) to view the information of current registered users. Note: user role is not implemented at this stage.
- **Search for users:** enable certain users (like administrators) to search specific users based on partial information (email address, first name and last name).
- **Email hub:** support sending emails to selected registered users.

3) **About us**: there are two subparts in this function. Our history gives some background information about the community and website. FAQ (Frequently Asked Questions) includes the knowledge in which our previous users are interested.

4) **Sitemap**: show the structure of the website pages.

5) **Documentation**: this page is purely for assignment use.

6) **Event**: Our site maintains a series of IT-related events. Every time users come, this application will automatically check events stored in our event database. Once there are events occurring today, their details will be displayed below the calendar. Days with events will also be highlighted in the calendar.

7) **Code view:** users can view code files behind each page. This function is purely for assignment use.

3. Core program functionality

There are twelve functional pages in the website as followings:

1) Home (Index)

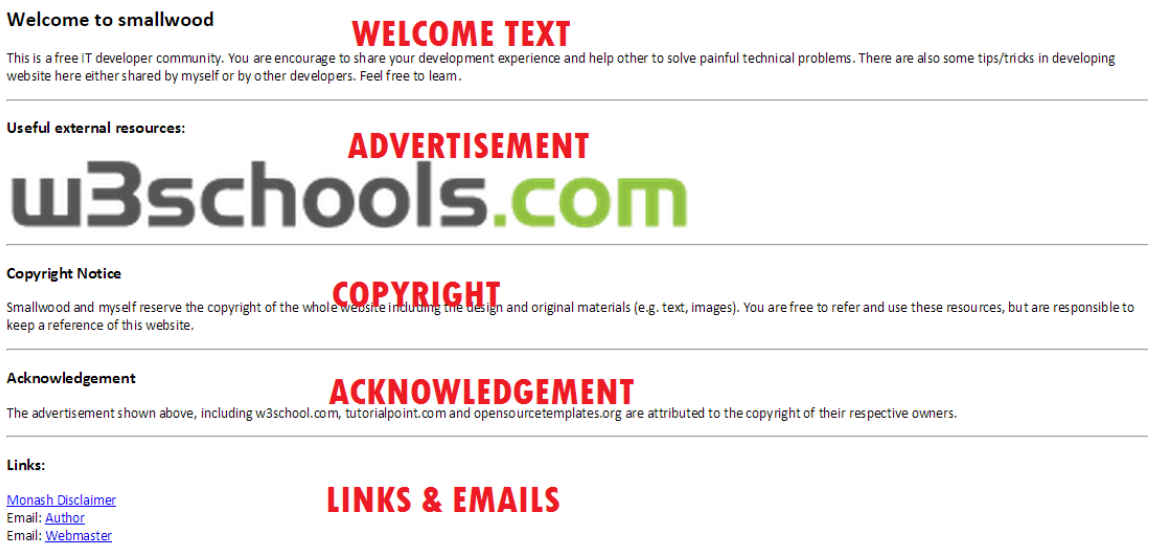

Figure 2: Home page

Home page contains the following sections (See Figure 2):

- Some text to welcome the users
- An advertisement area to display useful links of external resources. In my design, one AdRotator control will be used to show multiple advertisements defines in an XML file. An AJAX update panel is used to fetch advertisement items and refresh display without whole page postback.
- Copyright notice to announce copyright of website resources.
- Acknowledge states the sources of external resources.
- Some useful links

2) Registration

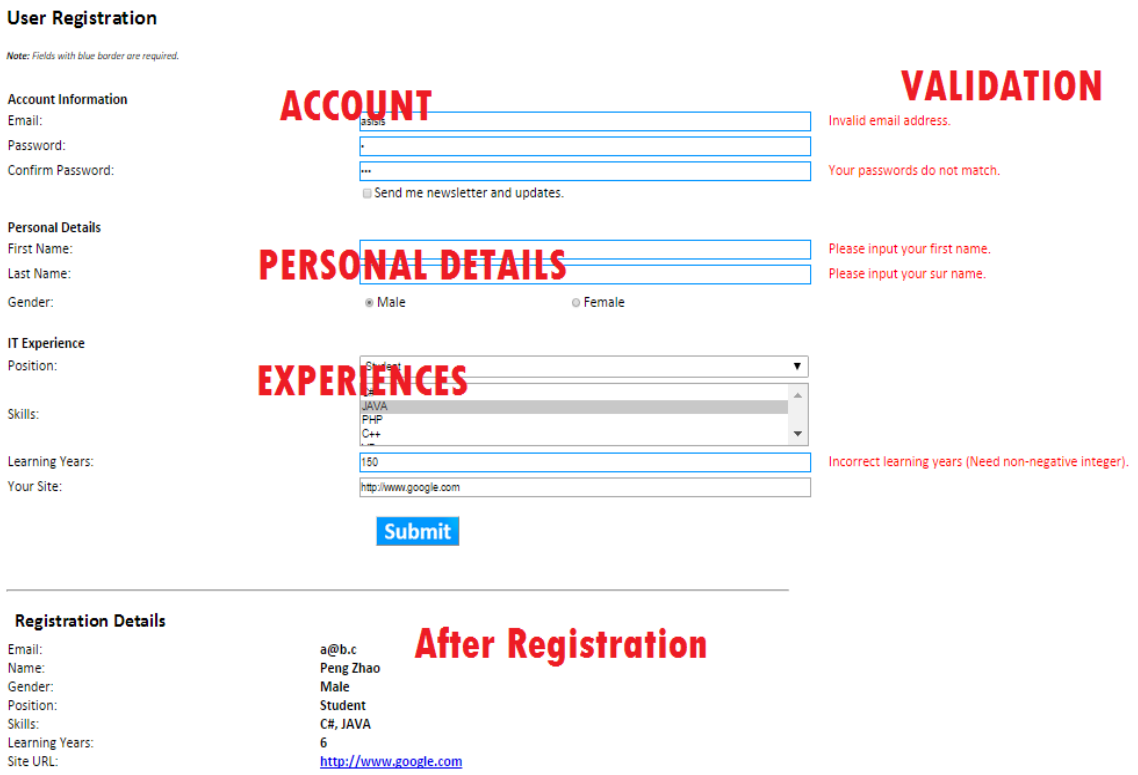

Figure 3: Registration Page

Registration page is used to collect user information in order to enable user management in future. There are mainly three parts of information collected in this page:

- **Account related**: email address, password and password confirmation, whether to send updates and notification.
- **Personal details**: name and gender
- **IT Experience**: current position, skills, learning years and a website link.

To ensure data integrity, following validation controls are used:

- **Required field validation** for: email address, password, name and learning years. To effectively notify the users about these required fields, these control borders are marked as blue.
- **Comparison validation** for: password confirmation to ensure correct password and avoid user misspell.
- **Regular Expression validation** for: email address to ensure correct email format.
- **Range validation** for: learning year to ensure valid year number.
- **Customized validation** for: password to make sure user password complying with password rules (8-15 numbers, letters and special characters; each type at least once)

After the information entered is validated to be correct, the details collected will be displayed at the bottom of the page Meanwhile, these information will be further stored into our user database.

3) Login

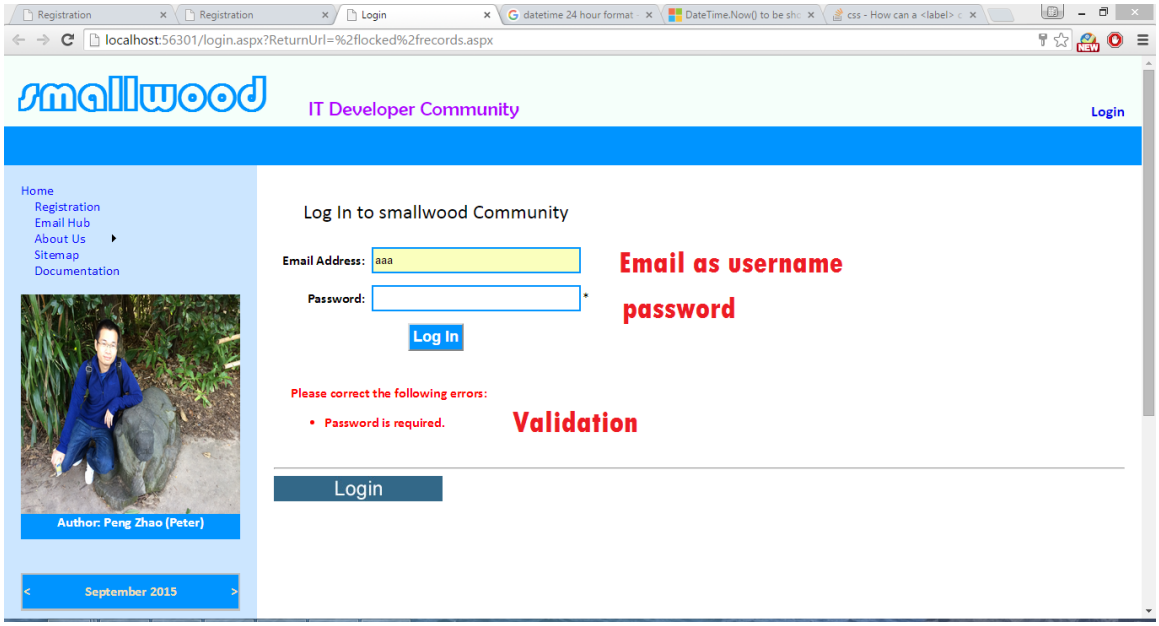

Figure 4: Login Page

The website implements user authentication to differentiate accessibility for registered and anonymous users.

The following functional pages are viewable for all users:

- Home (Index) page
- Login page
- Registration page: smallwood allows users to freely register, so this page should be exposed to all users.

All other functional pages are only accessible for registered users. Anonymous users can go to registration page to become a registered user. The site uses email address as user identity. After logged in, there is a login view at the top right corner of any page to show user's status.

4) View users

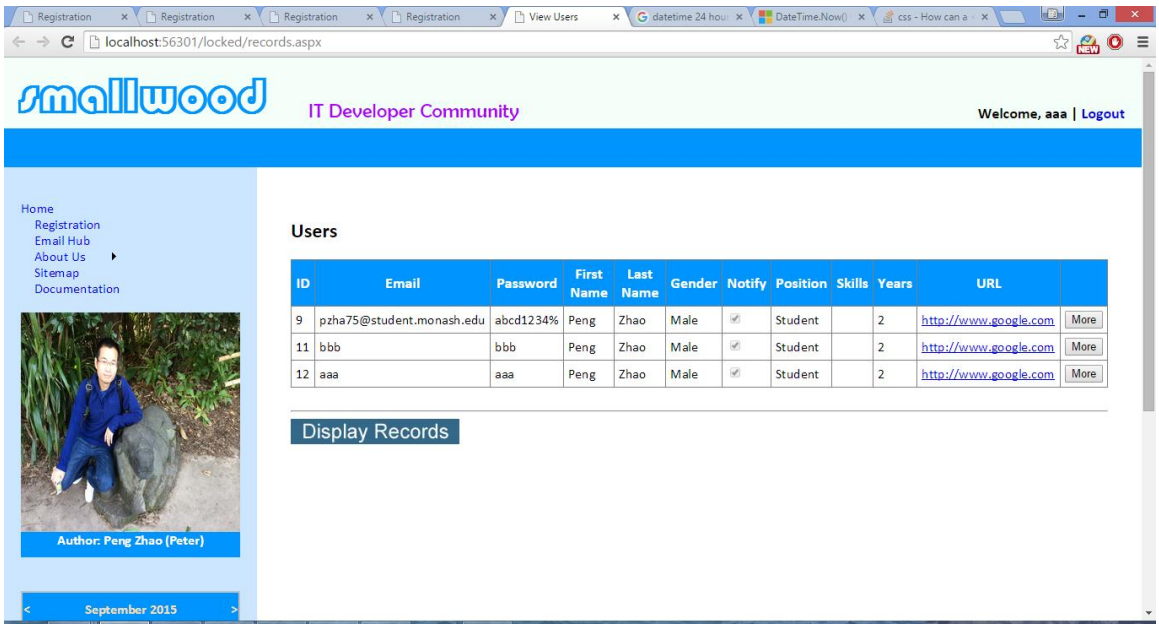

Figure 5: View users

View users page displays information of current registered users stored in database. Users can view another formatted details by clicking 'More' button. AJAX is used to avoid unnecessary postback.

5) Search for users

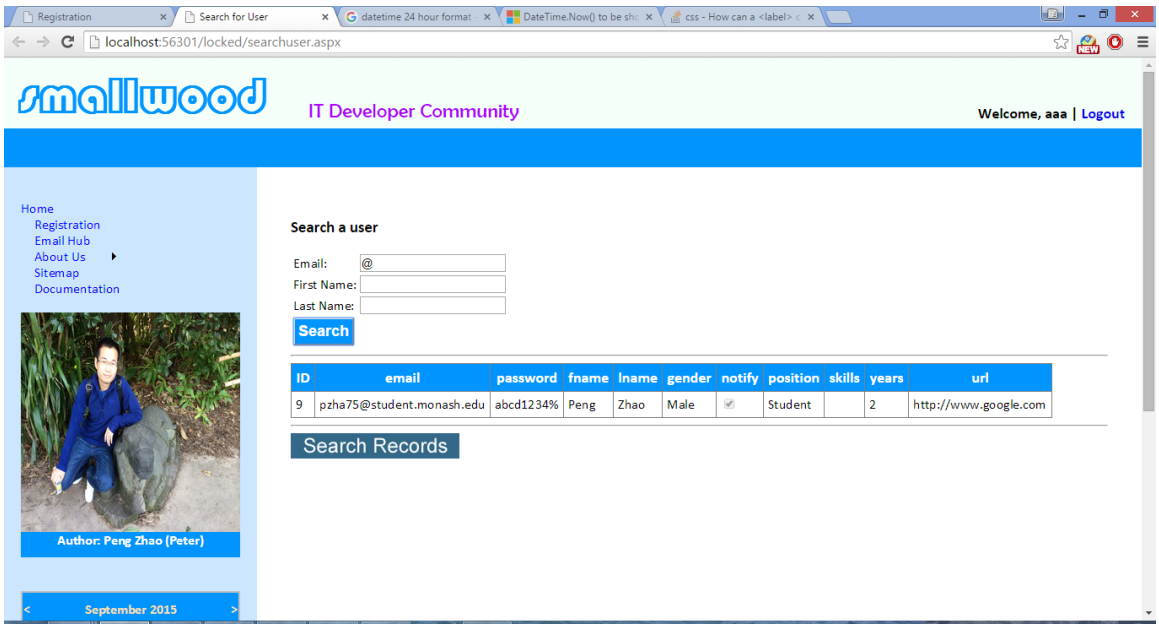

Figure 6: Search for users

Search user page provides a portal to find interested user records. Initially all the records will be displayed. By specifying a combination of email, first name or last name, only matched records will stay. Fuzzy search is supported to improve user experience. When no matched records existing, a message will show to inform users.

6) Email hub

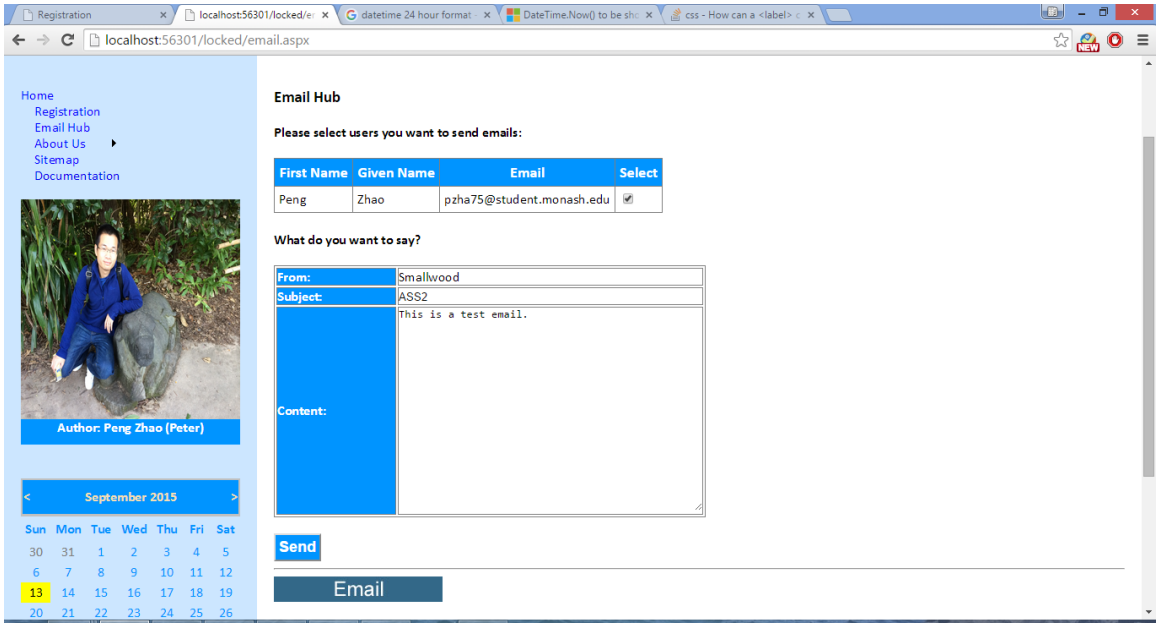

Figure 7: Email hub

The website enables sending email to selected registered users. All users with valid email addresses are listed at the top (test users, like 'aaa', are excluded). A message will display after clicking 'send' button to tell user if the mail is successfully sent.

7) About us

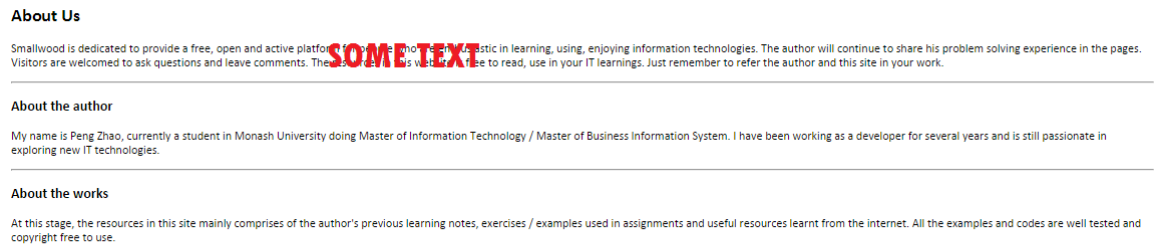

Figure 8: About Us page

About us page conveys background information about both the website and the author.

8) Our history

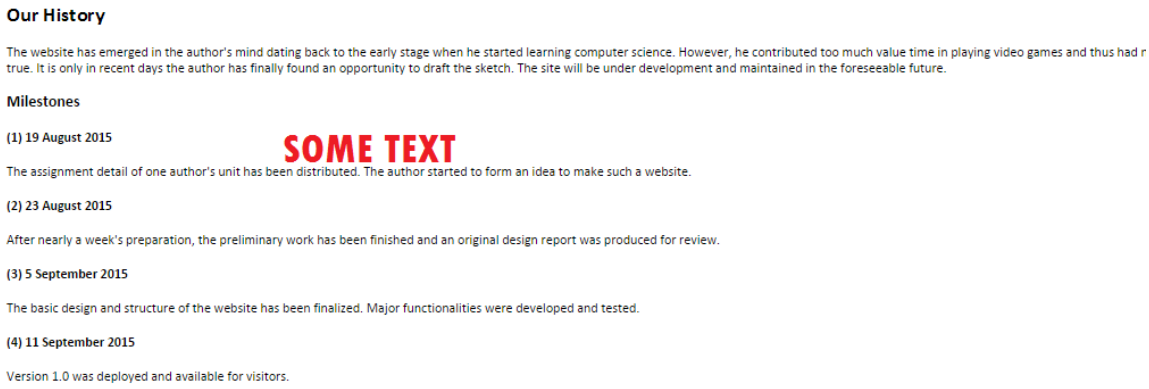

Figure 9: Our History page

History page is used to show a timeline of website development.

9) FAQ

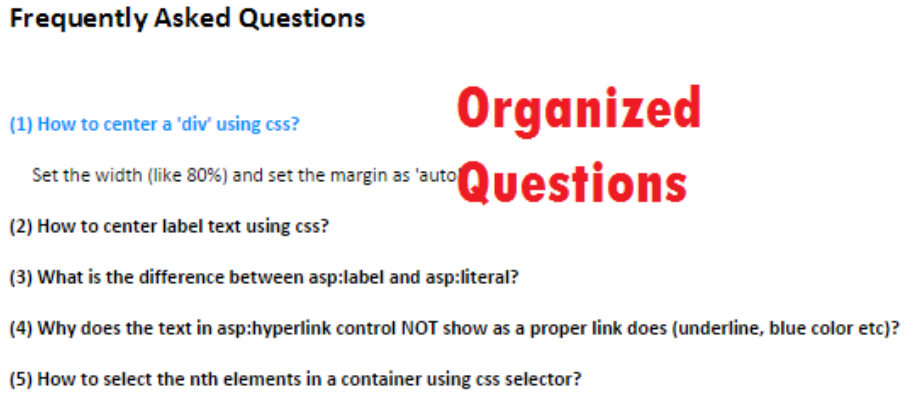

Figure 10: FAQ page

FAQ page is to show some common questions our users may encounter. To clearly display large amount of question & answers, these text are dynamically rendered using JQuery library. Users can choose to expand useful questions and fold others.

10) Sitemap

Sitemap page contains a tree control to represent the structure of the whole website. The content is populated from the sitemap XML file. It provides another navigation method to guide users.

Figure 11: Sitemap page

11) Documentation

Documentation page is purely for assignment use. It displays the information of website author, units and assignment.

Figure 12: Documentation page

12) Code view

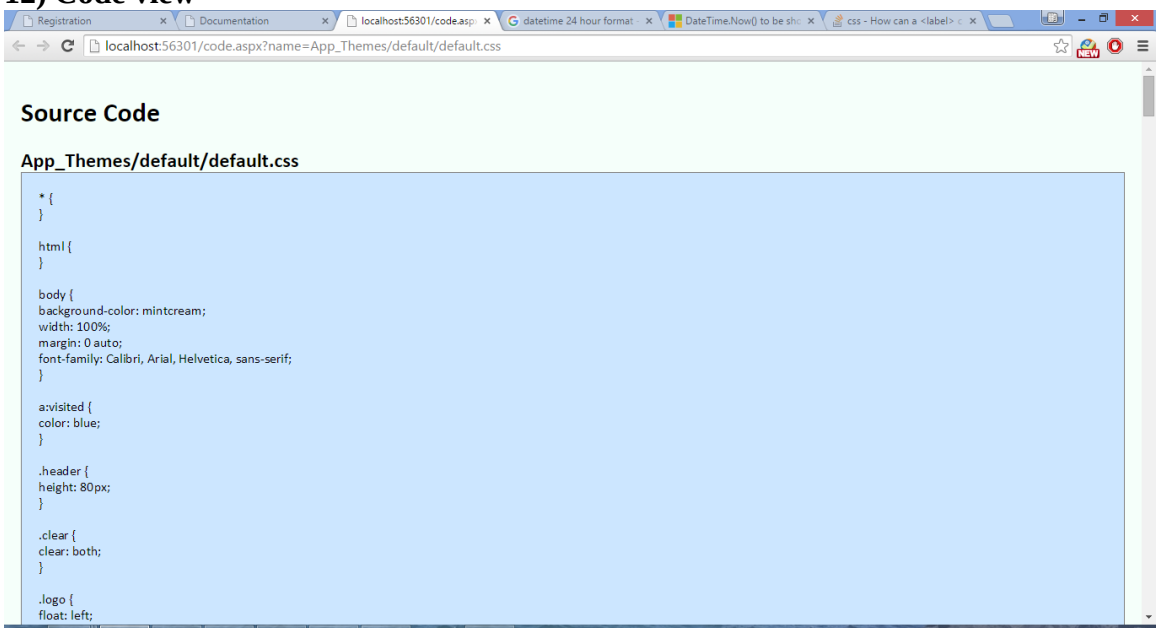

Figure 13: Code view

Code view page is used to display the code of each page. It is solely for assessment use. In my design, I use only one page to implement the code view functionality with page name passed using query strings. It also support displaying multiple page codes in one view.

This application is a multiple-page, dynamic website. To provide a consistent interface, as well as simplify development work, the main frame of these pages will use a master page while the functional pages are hosted in the 'content' part (See *Figure 14*).

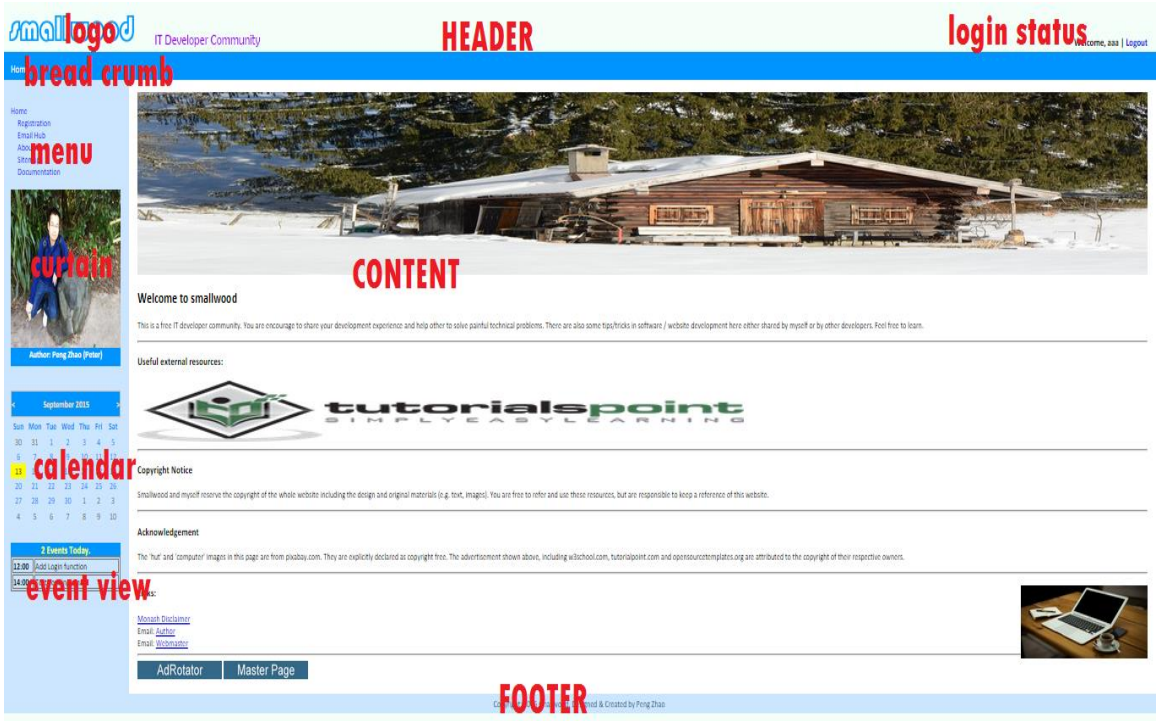

Figure 14: Master Page

There are five major areas in the master pages. The layout would be achieved solely using 'div'.

(a) **Header**: it is like a banner at the top of every pages. Website logo occupies most space. User login status is displayed at the right side. User can choose to login / logout using links in this area. After user logs in, it will also display welcome text.

(b) **Current page path**: right under header, it provides a classical breadcrumb style navigation bar and display a simple string telling users where they are at the time. For example: Home > registration. Users are able to go back to previous pages by simply clicking the links in the bar.

(c) **Side bar**: it displays at the left side of the page. At this stage, it would include three major areas:

- Menu component: provides a standard navigation to enable users to browse over the website in a structural way. The source of the menu is defined in a sitemap file.
- Image area: shows an image of interest. Only a placeholder by now. But it will be used to present profiles of current users or author of article in the website.
- A calendar: displays date related information. All days with events will be highlighted.
- Event: events scheduled today will be displayed just under the calendar. Meanwhile, the cell in calendar representing today will be highlighted.

(d) **Footer**: it is located at the bottom of pages showing copyright information.

(e) **Content**: this is the major work area of the whole page. Other pages, like home, registration, history, FAQ and documentation, will show in this rectangle.

4. Usability Design Review

1) Navigation

This application provides four types of navigation to guide our users.

(a) **Menu**: there is a classic menu component in the main frame of the website. It is always available and well organized corresponding to the site structure.

(b) **Breadcrumb:** a navigation bar is designed right at the top part of the page, continuously informing the users about their current position. It also provide a convenient way to go back to higher-level pages. One click on the links will do that.

(c) **Sitemap:** a dedicated page is designed to present the complete structure of the website.

(d) **Logo:** website logo also serves as a shortcut method to return the home page.

All the above methods refer to one particular sitemap XML file and thus consistent and accuracy navigation is ensured.

2) Familiarity

The design of this application complies with modern website design. The layout, navigation technologies, operation methods, hyperlink behaviors and text display are all carefully checked to deliver a familiar user experience and avoid any strange designs.

3) Consistency

The following development principle are maintained to ensure consistency:

(a) One, and only one, master page is used to deliver consistent appearance through different pages. The layout at top, left and bottom of the pages are fixed. Content pages occurs at a fixed position as well.

(b) One color scheme is adopted over all pages: blue as the website main theme; cyan as side bar background; white as text background; red to show errors.

(c) One font-family is chosen and used in all pages.

4) Error Prevention

We fully understand that users may encounter some errors in the registration page. To prevent these errors happening,

(a) Various kinds of validation controls are used to check user input.

(b) Required input fields are marked using blue border to inform users. Thus help user avoid errors far before they hit the submit button.

(c) Tooltips are comprehensively used to offer guidance to users

(d) Only available operations are open to users after rigorous tests

5) Feedback

The application will react with each user operation and give feedback to users.

(a) All clickable links will change color when mouse hovers.

(b) When users enter incorrect information, error message will show up.

(c) All operable actions will bring appropriate response, either executing user instruction or showing error messages

6) **Visual Clarity**

Following approaches are used to ensure visual clarity:

(a) High contrast color is used in the website design. The background and fore content can be clearly identified by users.

(b) Important information is highlight using bold font or in bright color.

(c) Use JQuery to dynamically display /hide content according to user's interests (FAQ as an example).

7) Flexibility & Efficiency

(a) To achieve reasonable efficiency, the website only includes necessary content without some fancy, however heavy effects.

(b) We understand that some users may be reluctant to provide some personal details. In user registration, necessary and optional fields are clearly defined. By doing this, the application is able to flexibly handle different users by the information they provide.

5. Checklist of site functionality

1. (Home Page)	**TICK if complete**
Design	✓
Dynamic code display (Master and Home pages)	✓
2. (Registration)	✓
Web form and validation controls	✓
Formatted data entry display	✓
Database update	✓
Display all records using Grid View	✓
Search records	✓
Overall page design	✓
Dynamic code display	✓
3. (About Us)	✓
Dynamic code display (About Us, Our History, FAQ)	✓
4. (Site Map)	
Dynamic code display	✓
5. (Documentation)	✓
Author/assignment details	✓
Style sheet	✓
Skin	✓
6. (Login System)	✓
Implementation and Design	✓
Dynamic code display (login page and web.config)	✓
High Distinction Requirements	
7. (Email)	✓
Alphabetically sorted list	✓
Send email to selected customers	✓
8. (Calendar)	✓
Background colour set	✓
Label displays description and time of todays events	✓
Label displays "No Event" text	✓
Audit	✓

No breaking of copyright	✓

6. User stories

Smallwood is designed to be a community for IT developers. This application will serve as an online platform for them to share, discuss and communicate about IT-related topics. As a result, the design completely takes this background into its consideration.

1) Most of the users are IT developers. So I choose to make the design that is familiar with mainstream IT related websites. There are simple page layout, bright color scheme and clear website structure, just like 'w3school.com' and 'codeproject.com'. The familiar design will make developers fell comfortable.

2) The reasons why users come here are to communicate IT knowledge. So I understand the IT related background is critical part of user profiles. That plays an important role in deciding user information to collect in registration part. With this idea in mind, I choose several fields (skills, position, learning years) which can easily reflect one's IT background. These are very different with other kinds of website. On the other hand, I know that some IT users are pretty sensitive in secure their privacy. So I decide to make some fields optional to host this kind of demand.

3) Registration page is viewable for all users in my design. Instead of a private site where user registration is totally controlled by administrators, users are free to register into the website in smallwood.

4) For the events functionality, all days with events available will be highlighted in the calendar. Apart from solely displaying today's events, smallwood website also show events on users' selected days. It is reasonable for users to check events which are either coming soon or already outdated. It is also convenient for examiners to inspect this functions.

Since most of the designs are clearly defined in the assignment specification, there is not too much space for specific designs. But current prototype can be easily developed into a blog-like platform in future as long as I keep the developers' characteristics in mind.

7. Data dictionary

1) User

Name	Type	Description	Example
ID	Integer (temporary)	Unique identification; Same as Account ID	10001
EMAIL	String	Email address, also	abc@xxx.com

		used as user name in login;	
PASSWORD	String (Store in database after encryption)	Password to login	Abcd1234%
FNAME	String	First name	Peng
LNAME	String	Last name	Zhao
GENDER	Bool	Sex (1 for male, 0 for female)	1- male
NOTIFY	Bool	Whether send notify and update	1-Yes
POSITION	Enumeration	0-Student; 1-Internship; 2-PartTime; 3-FullTime	0-studnent
SKILLS	Collection	C#, JAVA, PHP	C#
YEARS	Integer	Learning years	1
URL	String	Personal URL	http://www.smallwood.com

2) Event

Name	**Type**	**Description**	**Example**
ID	Integer (temporary)	Unique identification;	10001
EDATE	Date	Scheduled date of one event	13/09/2015
ETIME	Time	Scheduled time of one event	12:00
EDESC	String	Plain description of one event	WWDC start.