CSCI 3100 Software Engineering Project

Online Bulletin Board

Group 35 - Final Report

Date: May 2013

1. INTRODUCTION

1.1 Project Overview

Project Name:	Online Bulletin Board System
Project Nature:	Multiple-user web application
Project team member:	Ng Yiu Wai
	Member 2 - Hided
	Member 3 - Hided
	Member 4 - Hided

1.2 Objective

Bulletin board is part of our daily life. It is commonly used in making announcements, sharing ideas and organizing information. The objective of our project is to create an online bulletin board system, accessed through web browsers, to overcome the weaknesses of the traditional one.

Traditional bulletin boards are large in size and fixed in place. If users would like to grab information from the board, they have to waste time on copying. An online platform is a solution of this problem since the Internet allows us to access the bulletin board anywhere. Another advantage of online bulletin board system is that now we can also pin multimedia on the digital board within our web application.

There are many existing tools, such as Pinterest, Facebook, To-Do list apps, and many more that improves efficiency with information. However, we believe that a fully interactive online bulletin board would be a better solution than creating lists. It is to many people's interests that information should be organized in a format the user is most comfortable with, instead of browsing through lists of information.

Different organizations with similar nature would post their notes on the same bulletin board. People could compare those notes then decide what to do next. People would like to have a private bulletin board to pin notes and organize their thought too. Therefore our project is aimed to create an online bulletin board which in similar to the traditional one in term of interface.

1.3 Highlights

A. Interactive board:

Bulletin board that allows users create provided object by dragging and dropping them. Delete object is allowed too.

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B. Object Creation Tool bar

Tool bar that allows users create object such as text memo, picture with a clean user-interface.

C. Web service reCAPTCHA

Web service reCAPTCHA is used to prevent spam.

D. KineticJS API

KineticJS API, which is based on Canvas of HTML5, is used to provide variable kinds of interactive function like drag and drop.

1.4 Project statistics

Total number of line of code written by our group: 1462

Number of line of code on User Webpage: 306

Number of line of code on Login System: 291

- Sign Up: 105 lines
- Login: 140 lines
- Logout: 46 lines

Number of line of code on Account Management: 451

- Retrieve account info: 133 lines
- Edit account: 143 lines
- Delete account: 175 lines

Number of line of code on Bulletin Board: 414

- Board: 101 lines
- Toolbar: 40 lines
- Memo: 171 lines
- Picture: 102 lines

Total number of line of code from external resources: 35114

Number of line of code on reCAPTCHA: 277

Number of line of code on CSS files: 903

Number of line of code on KineticJS: 8175

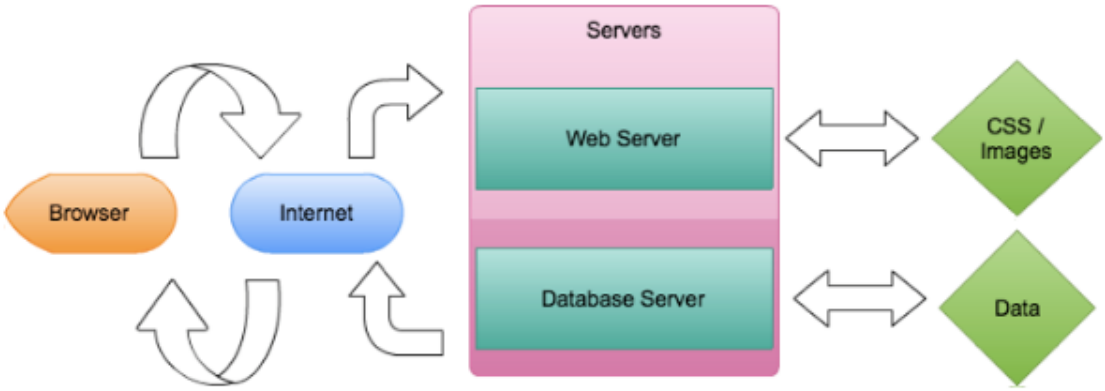
Number of line of code on JQuery: 25759

Total number of line of code of the whole project: 36576

2. SYSTEM ARCHITECTURAL DESIGN

2.1 System Architecture

2.1.1 System Architecture Overview



The browser accesses the website through the Internet, where the different servers will provide different parts of the web application as per the user's request. The website will get required objects, like images, from the Web Server and request data from the Database Server. The browser will then piece together all the parts of the web application and provide services for the user.

System Environments:

- Database Server: MySQL and PHP
- Browser: HTML, JavaScript

2.1.2 Key Components

A. Login System

This component allows the user to create an account and log in to use the Bulletin Board services. Users have to pass reCAPTCHA to create account. This component also provides authentication for the user to use the services in the other two components, Account Management and Bulletin Board.

B. Account Management

This component allows the user to view, edit account information and delete the account. Verification of user is required to access the functions of edit and delete account.

C. Bulletin Board

This component allows the user to edit on the board, including creating and deleting of memos or images. Basically, the user can create a memo at any position on the board and then add the text content on it. To create a picture on the board, the user needs to input the URL of the picture, and then drag the picture to desired position on the board. The complex function of drawing movable objects on HTML5 Canvas is support by KineticJS API.

2.2 System Interface Description

Interactions between components and database are shown in the following data flow diagram.

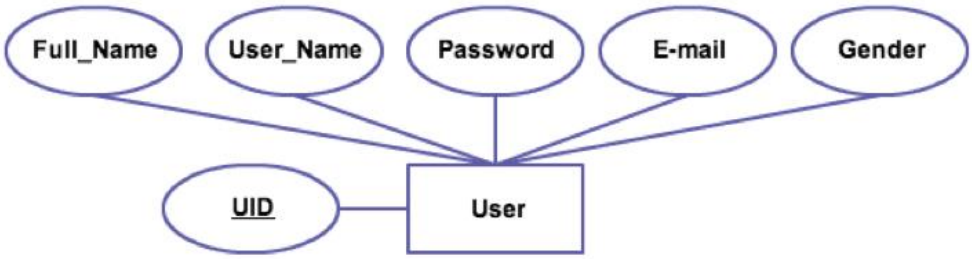
3. DETAIL DESCRIPTION OF COMPONENT

3.1 Login System

3.1.1 Functionality

This component provides basic account management for the user. The user can create an account and log in to use the Bulletin Board services. This provides authentication for the user to use the services in the other two components, Account Management and Bulletin Board.

3.1.2 Structural Diagram



The Login System can create a new user with the information provided by the user, including Full Name, User Name, Password, E-mail and Gender. A unique user ID (UID) is created for each user.

3.1.3 Procedures and functions.

There are 2 procedures in login system.

A. Void CreateAccount(IN String Name, Gender, Username, Password, Email, reCAPTCHA string, OUT UserID)

Read Name, Gender, Username, Password, Email
Read reCAPTCHA string
Check correctness of reCAPTCHA string
If correct
    Create account in user database according to the information
    Redirect to log in page
Else
    Request for CreateAccount again
End If

B. Void Login (IN String Username, Password)

Read Username and Password

If matched result found in user database

Store corresponding UserID and Password in $_SESSION of php

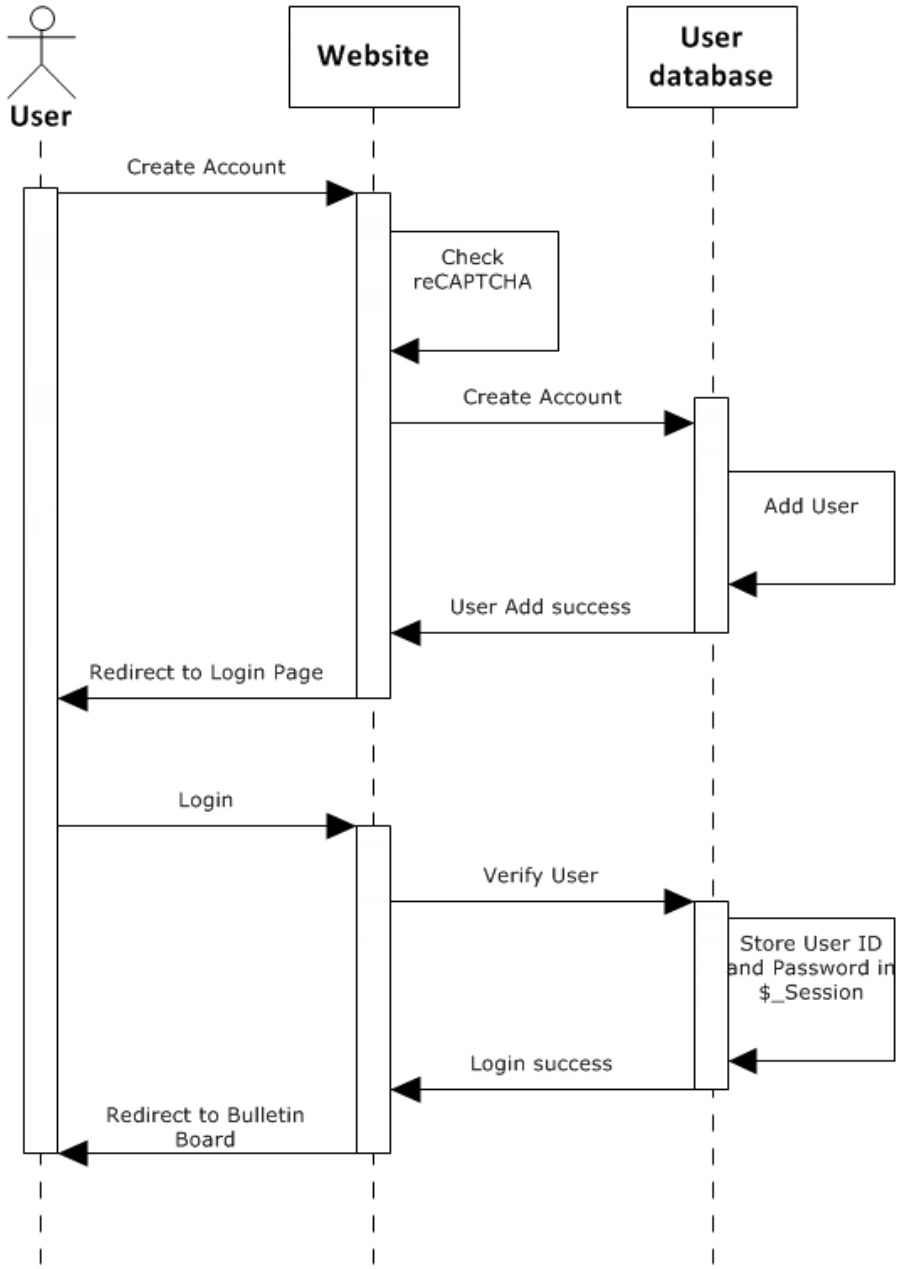
Redirect to bulletin board

Else

Request for login again

End If

The following UML diagram shows a scenario that a user creates an account, and then logins.

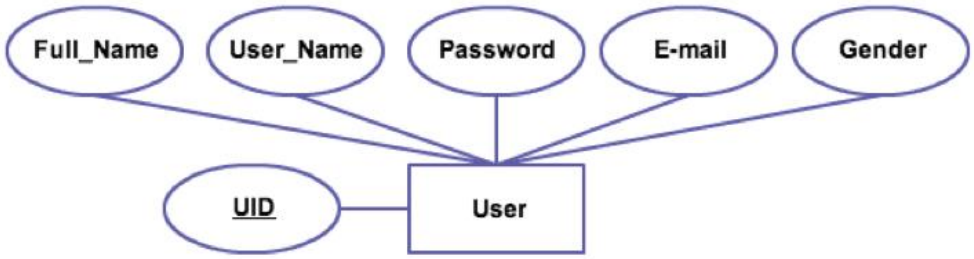


3.2 Account Management

3.2.1 Functionality

This component allows the user to view, edit account information and delete the account. Verification of user is required to access the functions of edit and delete account.

3.1.2 Structural Diagram



The same set of database used by login system is used.

3.1.3 Procedures and functions.

There are 5 procedures in account management.

A. Void ViewAccountInfo (IN String User ID)

Search the account with the UserID in database

Print account information except the password

B. Void EditPassword (IN String UserID, Old password, New password1, New password2)

Check Old password is same as the one in SESSION or not

Check New password1, New password2 are identical or not

If the above 2 criteria are fulfilled

Search the account with the UserID in database

Change the password of this account to New password1

Print change password success

Else

Print change password not success

Redirect to ViewAccountInfo page

End If

C. Void EditEmail (IN String UserID,New Email)

Search the account with the UserID in database

Change the Email of this account to New Email.

Print change Email success

D. Void DeleteAccount (IN User ID, Password)

Check Password is same as the one in SESSION or not

If it is the same

Search the account with the UserID in database

Delete the account with this UserID

Print delete account success

Call procedure **Logout**

Else

Print delete account not success

Redirect to ViewAccountInfo page

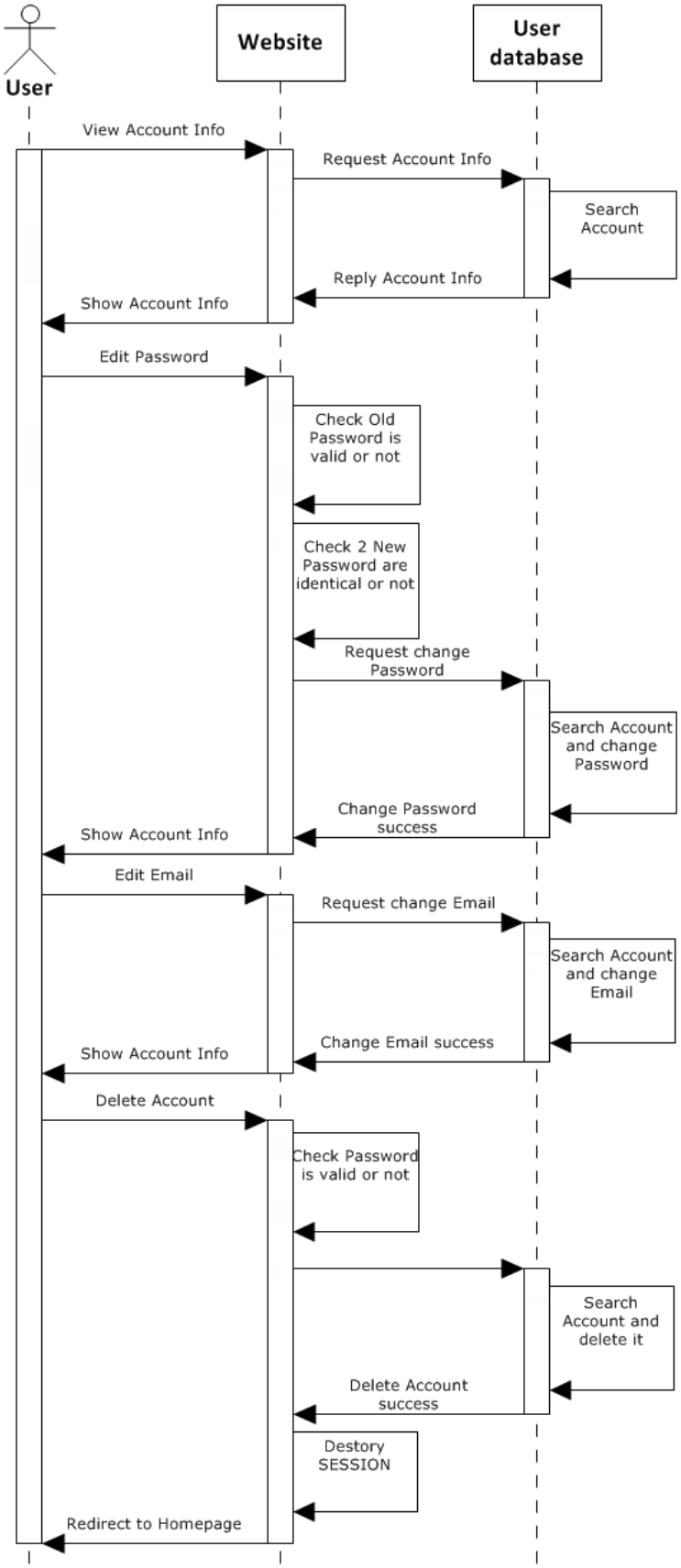
End If

E. Void Logout

Destory data in SESSION

Redirect to Homepage

The following UML diagram shows a scenario that a user view an account information, edit password and email then delete account.



3.3 Bulletin Board

3.3.1 Functionality

This component provides board-editing functionalities for the user. The user can edit on the board, i.e. adding or removing board objects. These board objects include memo and picture. Basically, the user can create a memo at any position on the board and add the text content on it. To create a picture on the board, the user needs to input the URL then the picture can be displayed at the desired position on the board.

3.1.2 Procedures and functions.

There are 4 objects in Bulletin Board

Notices Layer of KineticJS is draggable.

A. Board

Void ShowBoard()

Set the canvas as container in KineticJS

Set background of canvas as a board

B. Toolbar

Void MemoButton

Pop a window out and ask for information

Read title and content of memo

Call **Memo.create(IN string title, string content)**

Void PictureButton

Pop a window and ask for information

Read URL of image

Call **Picture.create(IN string URL)**

C. Memo

Void Memo.create(IN string title, string content)

Create a layer as **Kinetic.Layer**

Create a rectangular box as **Kinetic.Rect**

Set Title as **Kinetic.Text** and adjust font format

Set Content as **Kinetic.Text** and adjust font format

Add rectangular box to layer

Add Title to layer

Add Content to layer

Function Memo.delete(Double click to activate)

Pop a window and ask for delete or not

If answer is yes, delete the layer

D. Picture

Void Picture.create(IN string URL)

Create a layer as **Kinetic.Layer**

Create Image as **Kinetic.Image** and set image as the one in URL

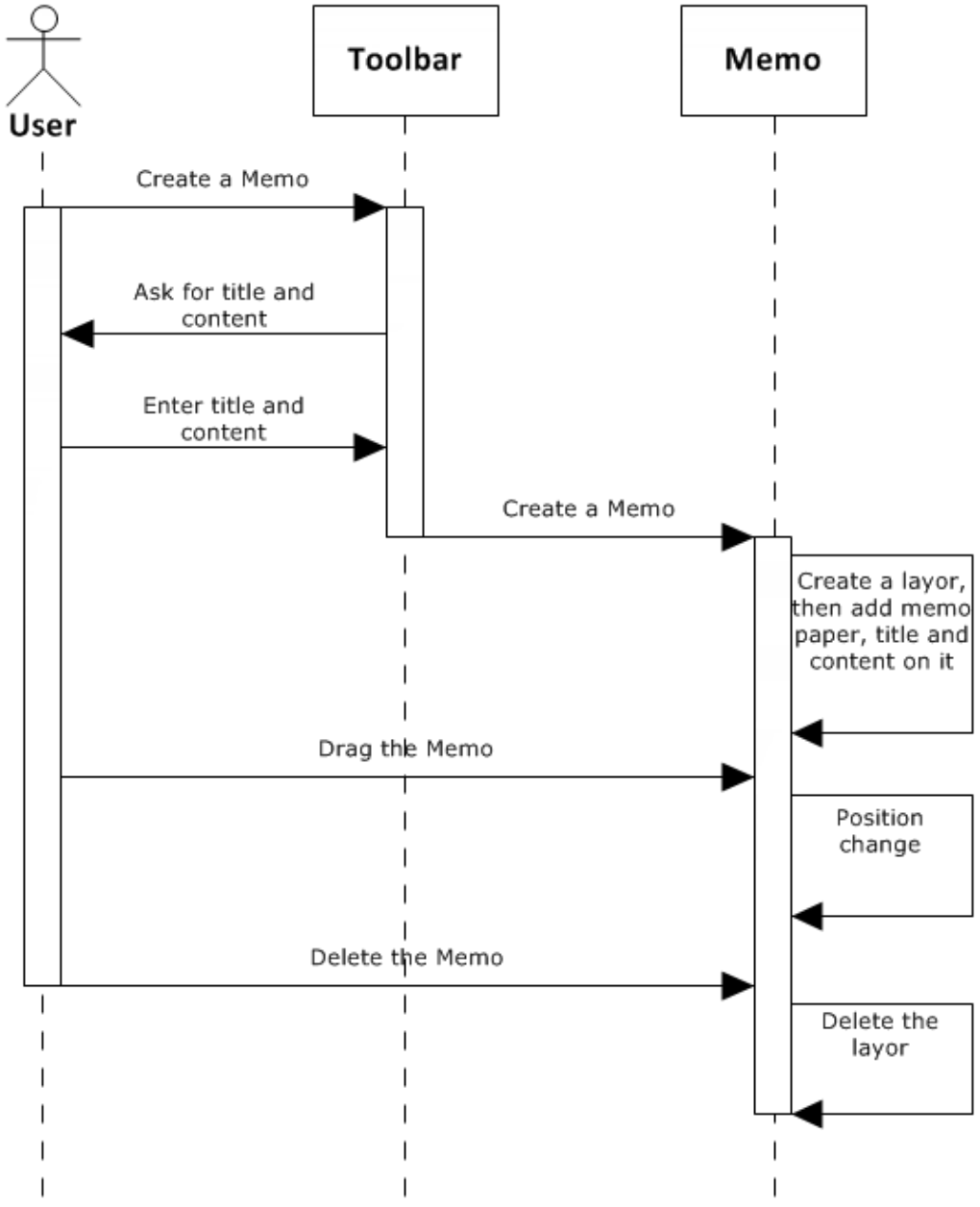
Add Image to layer

Function Picture.delete(Double click to activate)

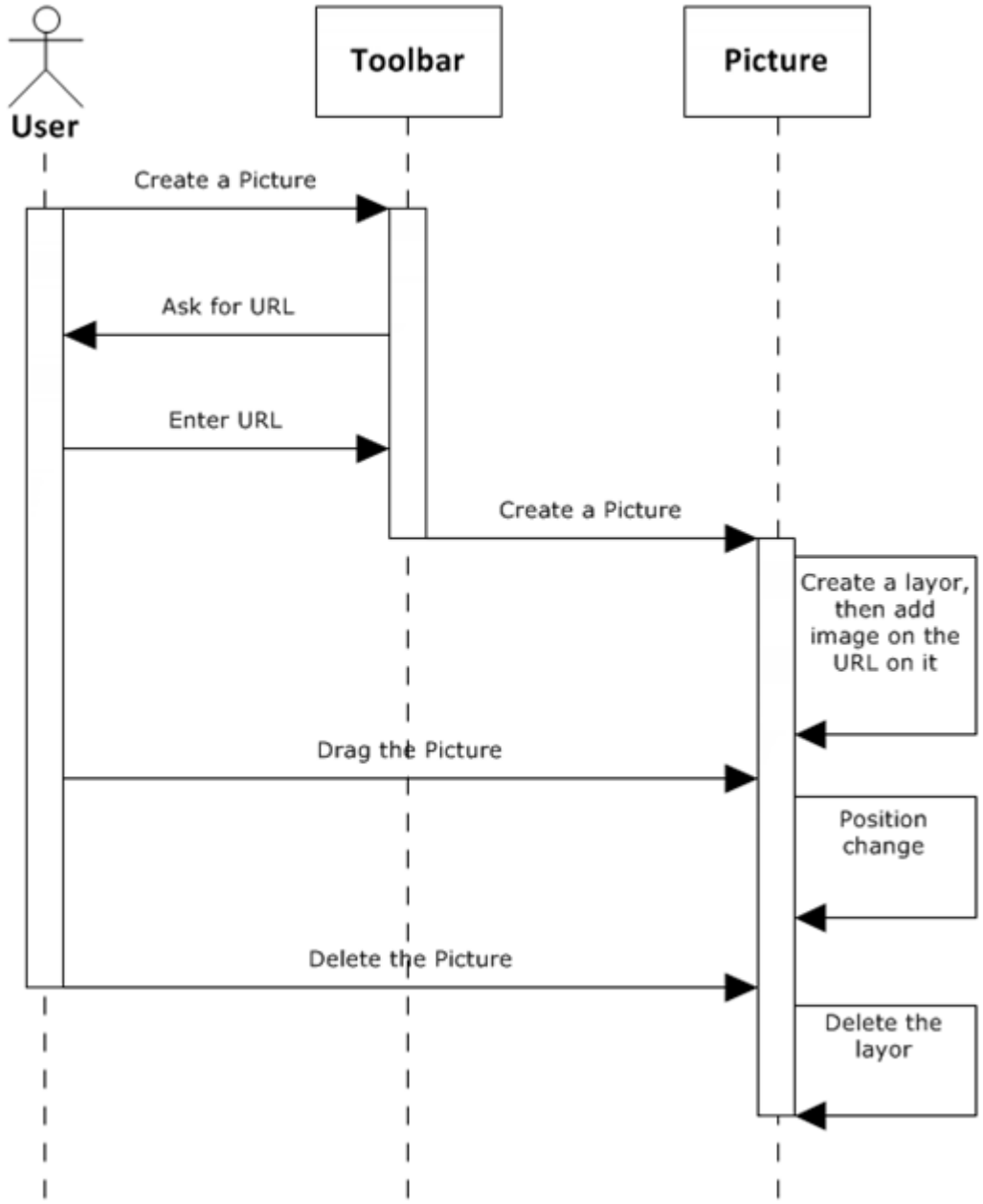
Pop a window and ask for delete or not

If answer is yes, delete the layer

The following UML diagram shows a scenario that a user create a memo ,drag it then delete it.



The following UML diagram shows a scenario that a user create a picture ,drag it then delete it.



4. USER INTERFACE DESIGN

4.1 Description of the User Interface

Clean and user-friendly are the two major principles of our websit development. The website is constructed based on two components: Homepage (Pages before login) and User's Page (Pages after login).

4.2 Screen Images

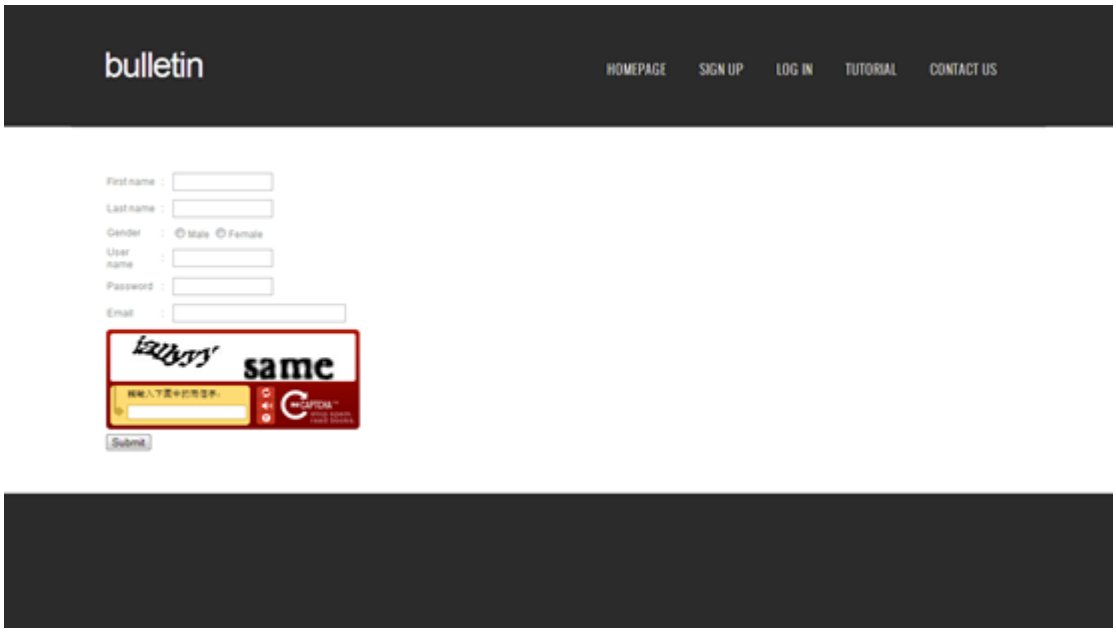
4.2.1 Homepage (Pages before login)

Pages included are HOMEPAGE, SIGNUP, LOG IN, TUTORIAL, and CONTACT US.

HOMEPAGE

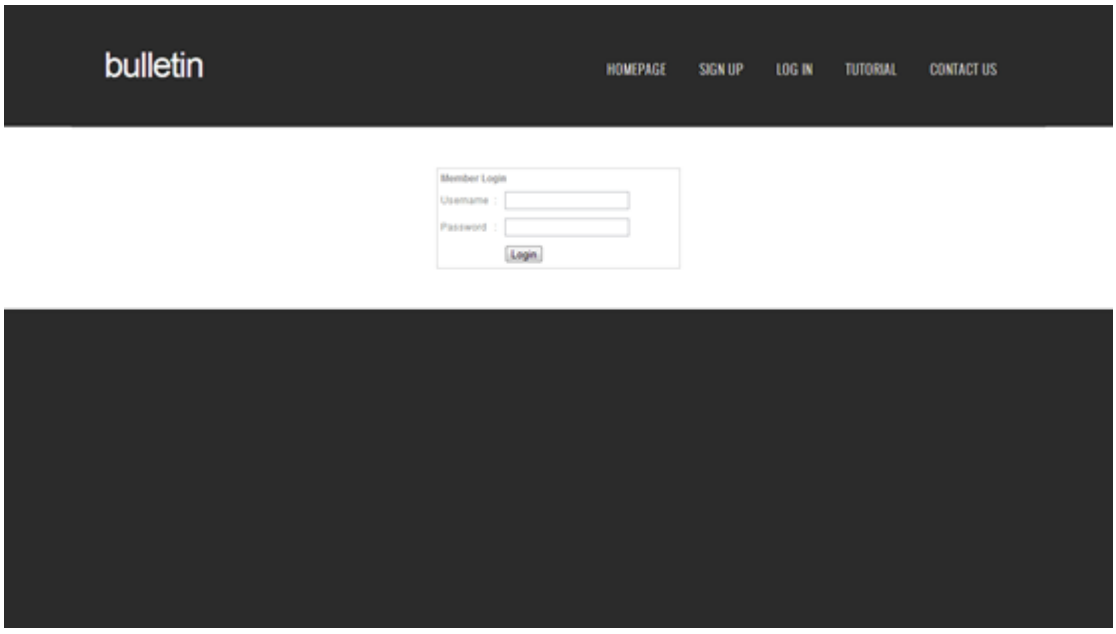
Provides introduction of the website and allow users to further choose functions.

SIGN UP



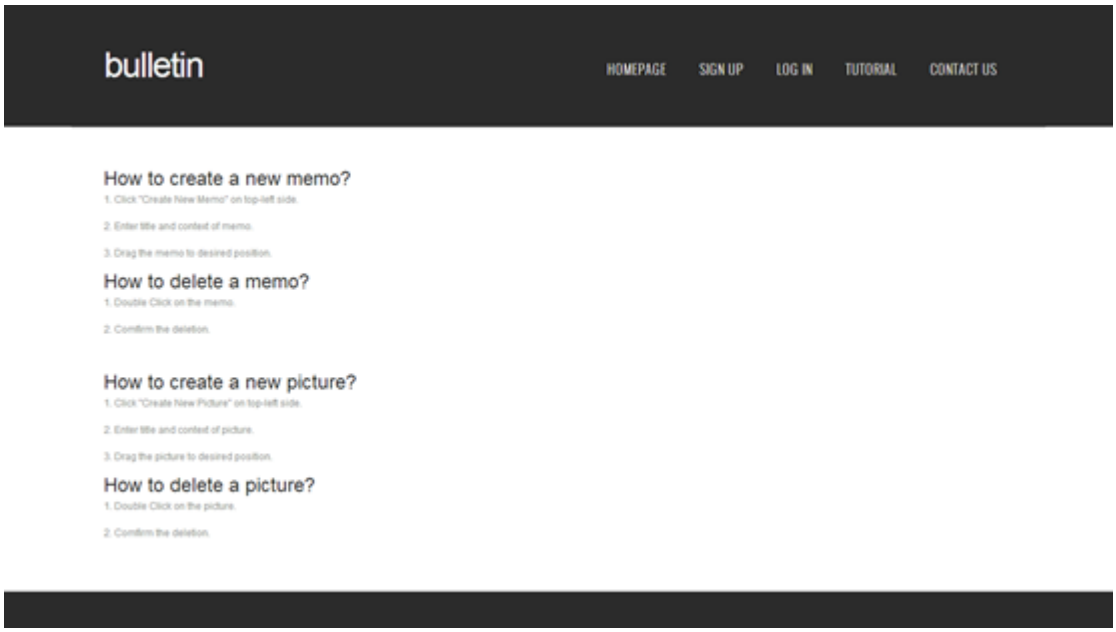
Fill in the information to create an account.

LOGIN



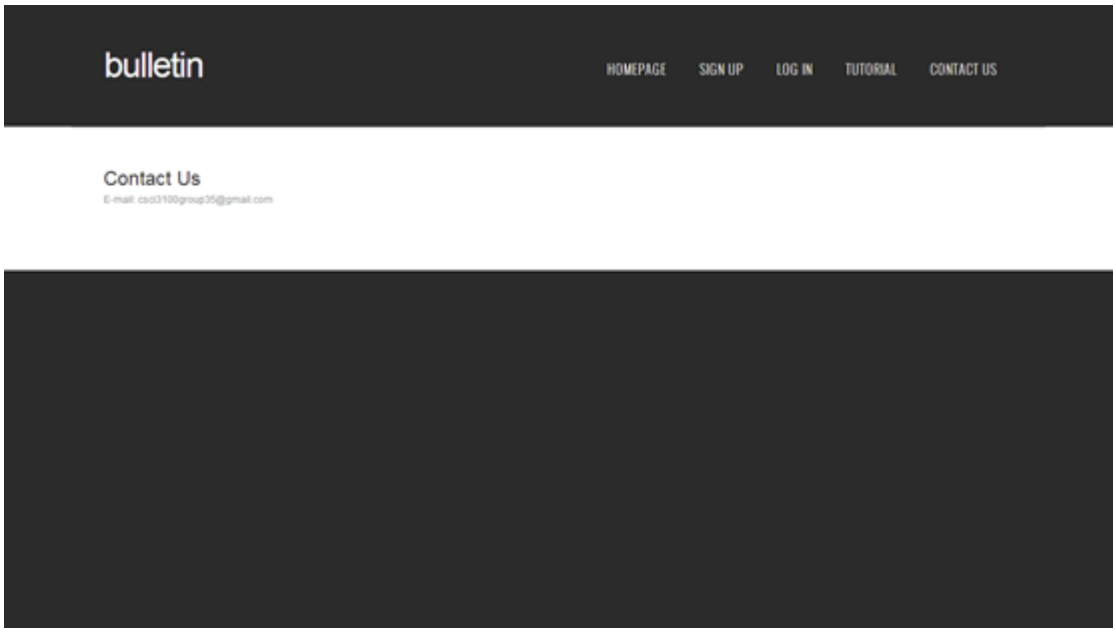
Log in to receive services provided by the website.

TUTORIAL



Provide instructions for using the bulletin board.

CONTACT US

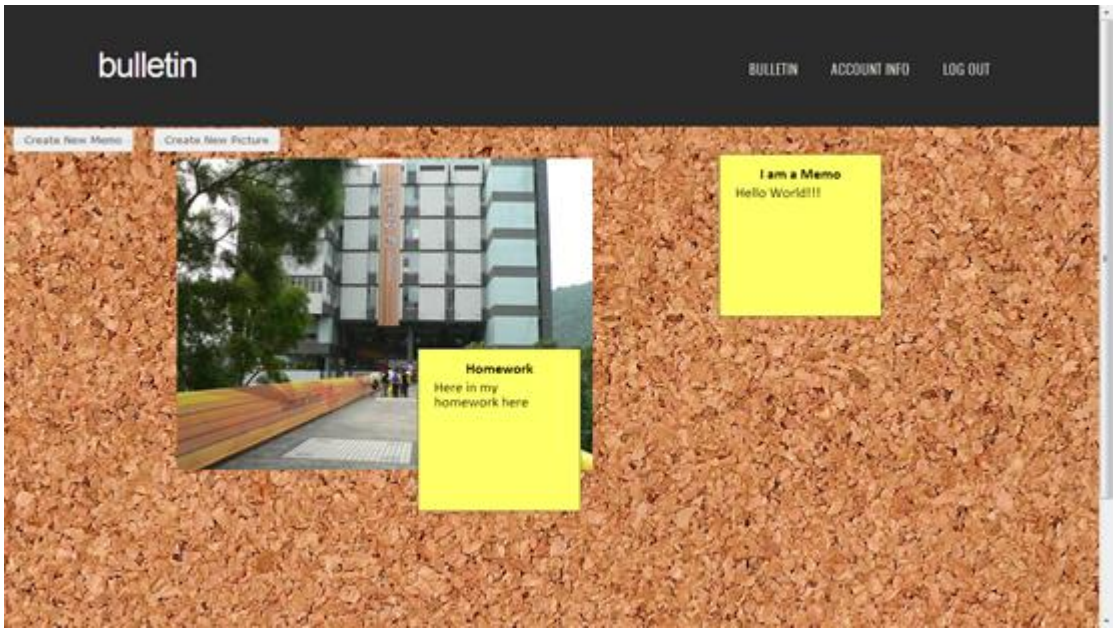


Provide an email address to contact us.

4.2.2 User's Page (Pages after login)

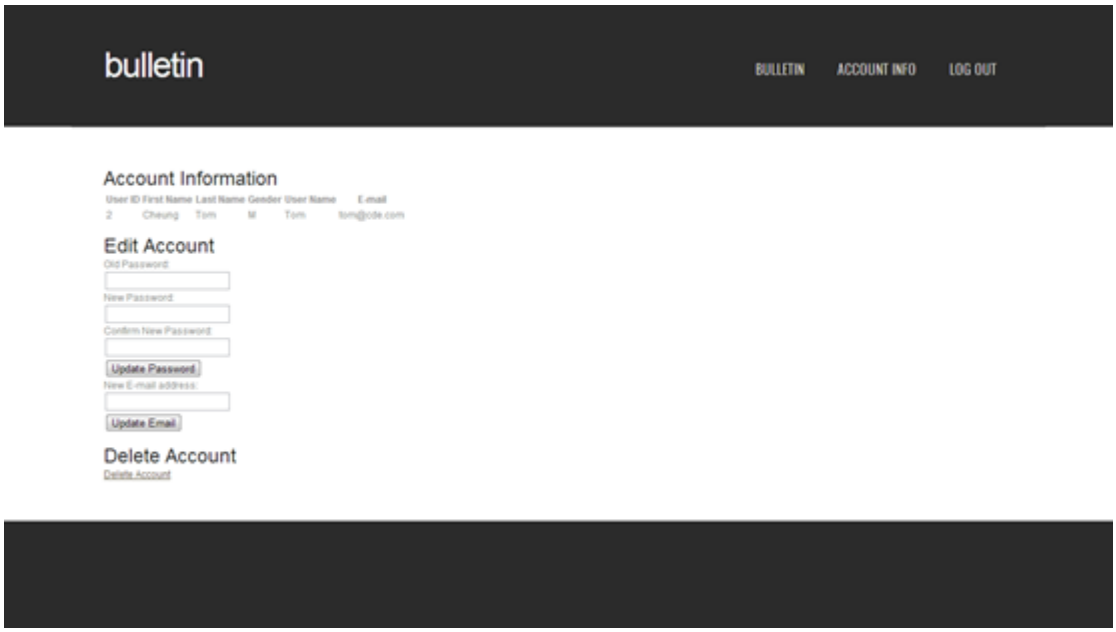
Pages included are BULLETIN and ACCOUNT INFO

BULLETIN



A canvas which allow user to pin memo and picture

ACCOUNT INFO



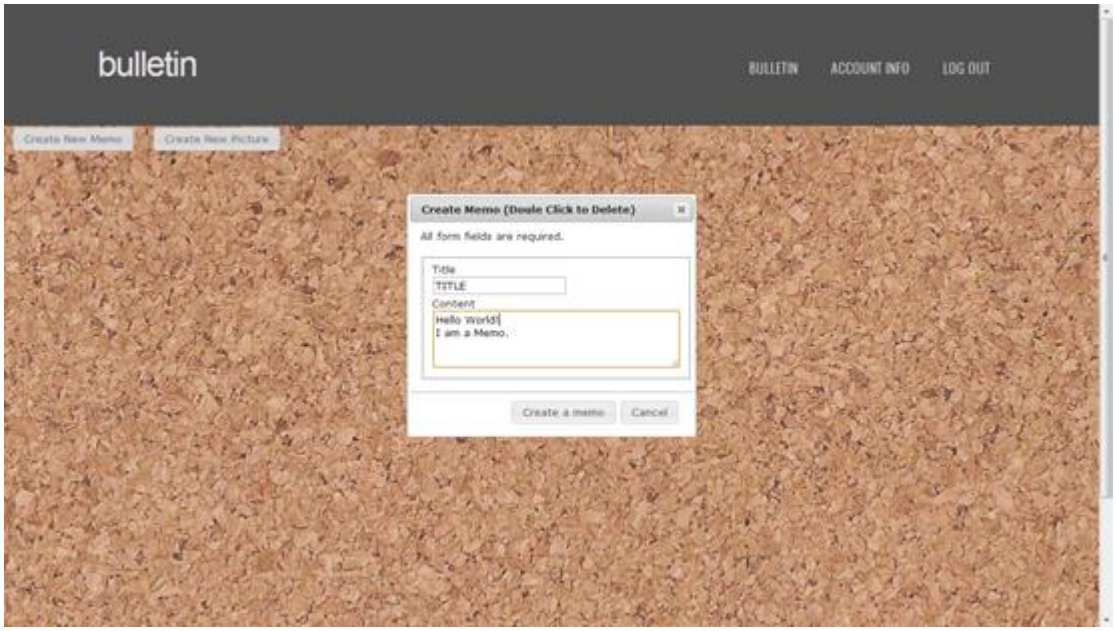
Allow users to view account information, edit or delete account.

4.3 Objects and Actions

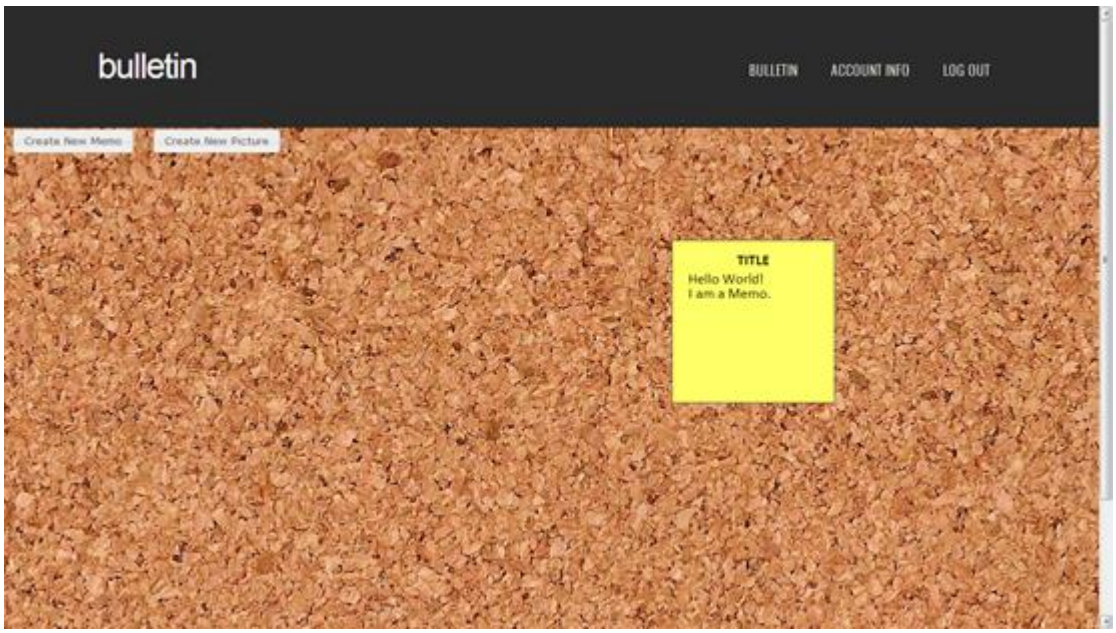
Mainly the object Memo and Picture and interact with user. Here is an example on using Memo and Picture.

4.3.1 Memo

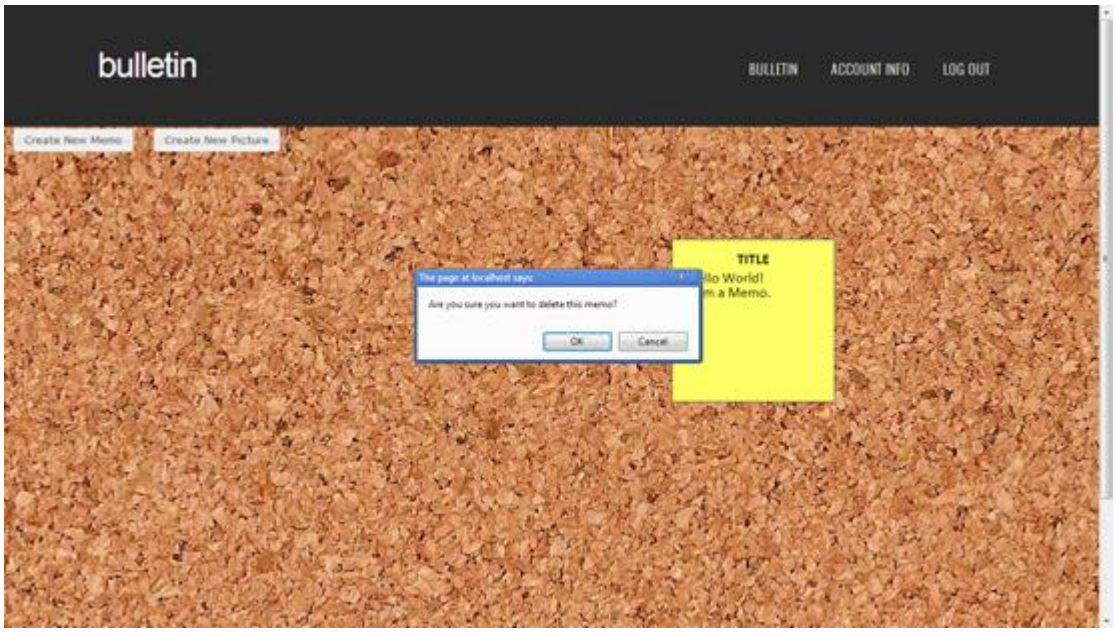
Click “Create New Memo” to create Memo.



A draggable Memo is created.

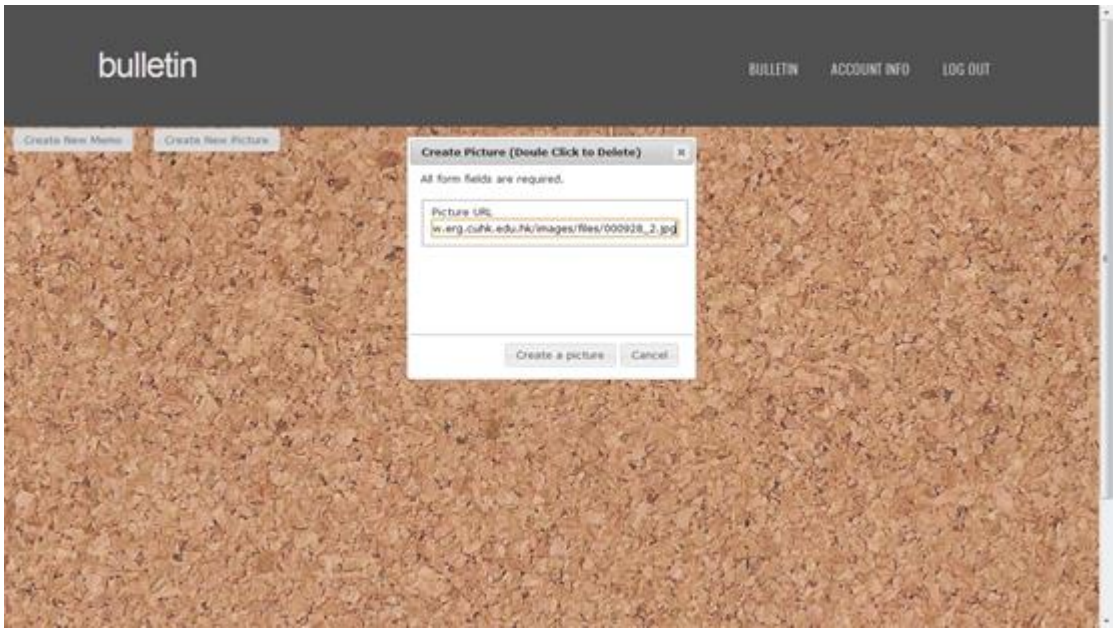


Double click the Memo to delete it.

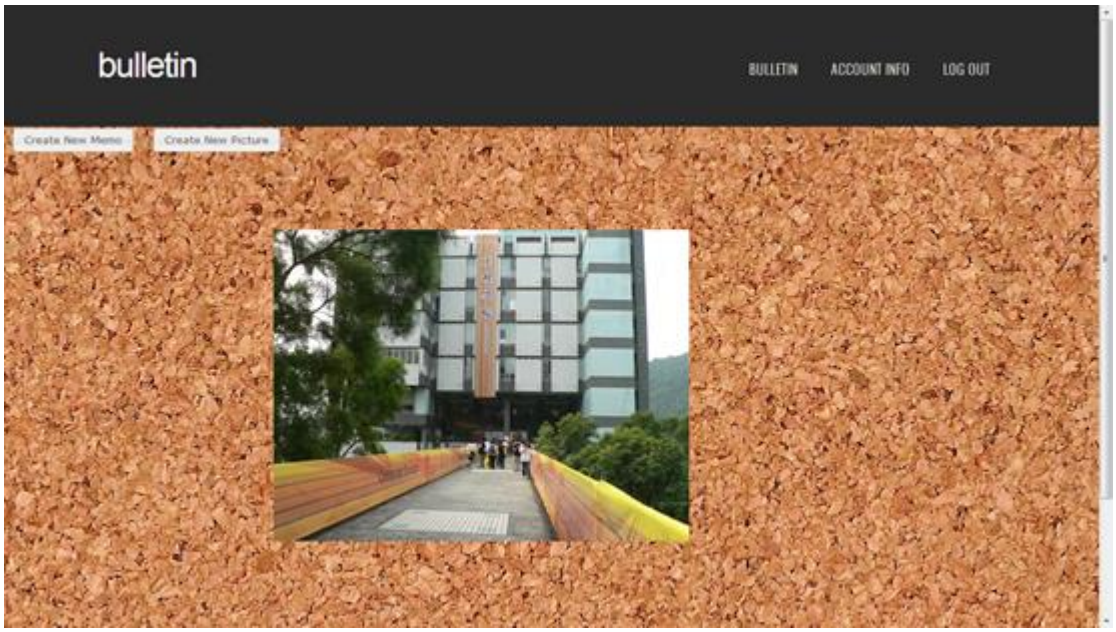


4.3.1 Picture

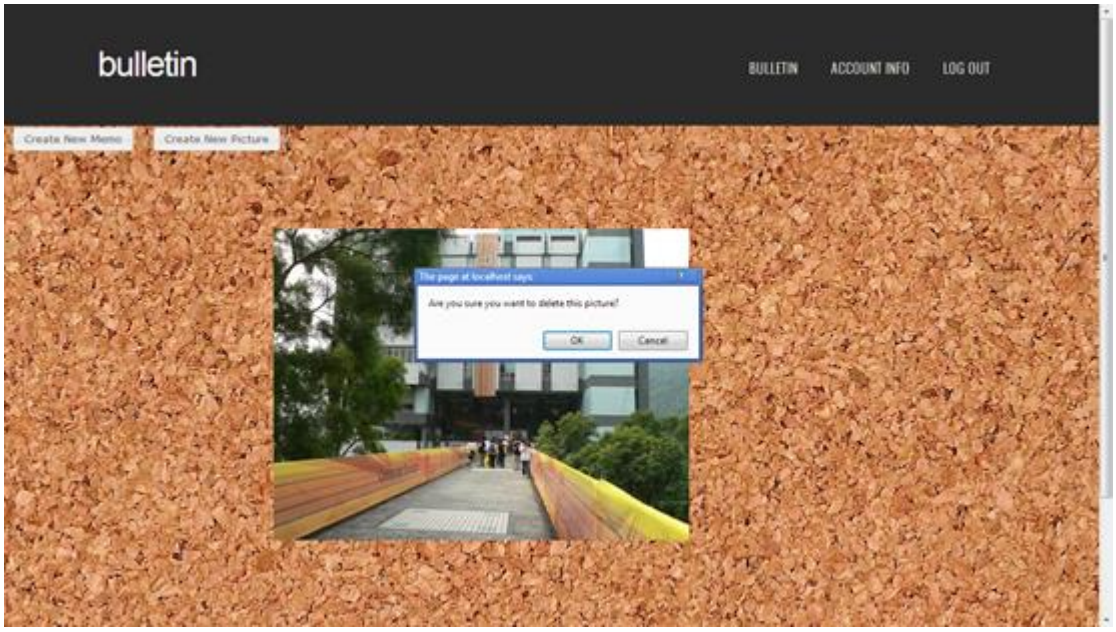
Click “Create New Picture” to create Picture.



A draggable Picture is created.



Double click the Picture to delete it.



5. TEST

5.1 Test Overview

Test Environment: Client side: Google Chrome, Windows 7
Server side: XAMPP, Windows 7
Feature to be test: Memo and Picture creation function
Test approach: Input unexpected data

5.2 Case: Unsuitable Input for Memo

5.2.1 Purpose

Test the program's reaction if user carelessly type in unexpected input.

5.2.2 Input

{ <Empty title and content>, <Empty title only>, <Empty content only>}

5.2.3 Expected Output & Pass/Fail criteria & coverage

Expected Output: Empty memo and program will not be terminated.
Result: Same as expectation. Pass.

5.3 Case: Unsuitable Input for Picture

5.3.1 Purpose

Test the program's reaction if user carelessly type in unexpected input.

5.3.2 Input

{ <Empty URL>, <Invalid URL>}

5.3.3 Expected Output & Pass/Fail criteria & coverage

Expected Output: No output and program will not be terminated.
Result: Same as expectation. Pass.

5.4 Case: Unsuitable Input for Sign Up, Login, Edit and Delete Account

5.4.1 Purpose

Test the program's reaction if user input invalid data.

5.4.2 Input

{ <Empty>} for different columns.

5.4.3 Expected Output & Pass/Fail criteria & coverage

Expected Output: Redirect to suitable pages

Result: Same as expectation. Pass.

For Sign Up, Empty in Username and Password are not acceptable. User may empty other spaces.

For Login, Empty will redirect user to other page.

For Edit Password, Empty will redirect user to other page.

For Edit Email, Empty is acceptable as user may clear Email column.

For Delete Account, Empty will redirect user to other page.

----------END OF FINAL REPORT----------