Criterion B: Design document

Overview

Subprograms and corresponding modules

Subprograms	Modules in success criteria
Sign in & Login interface	Function User system Interface
Database	Function
Baidu API[1]	Function
Crawler	Function
Main interface	Function User system Interface
Configuration	User system
User input	User system
Information display	Function
Open hyperlink	Function
History	Function Interface
Verifications	Interface

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[1] Appendix F
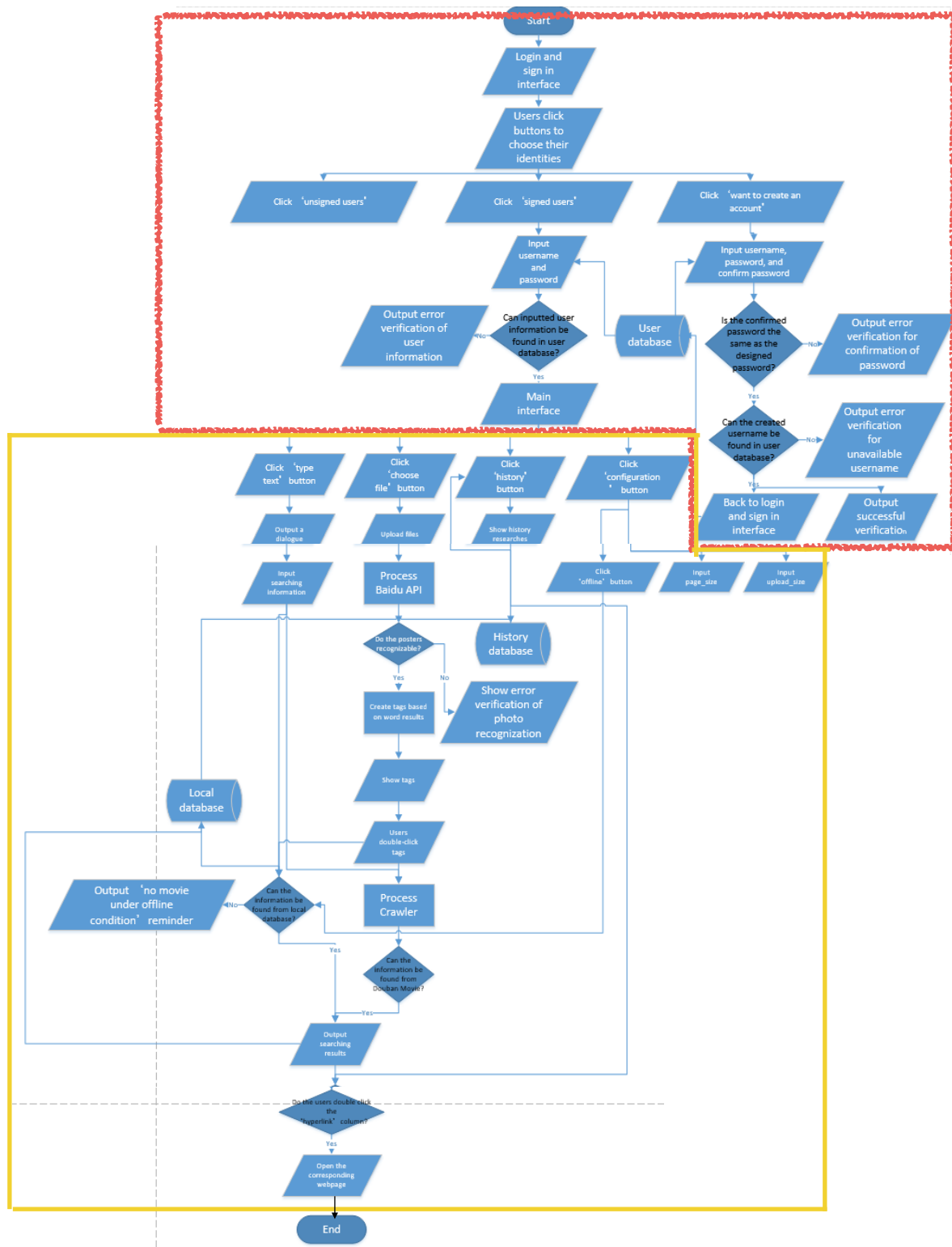
System design overview

1. System flowchart

Figure 1: System flowchart of the application

Bounded with red line: Registration process
Bounded with yellow line: Main system
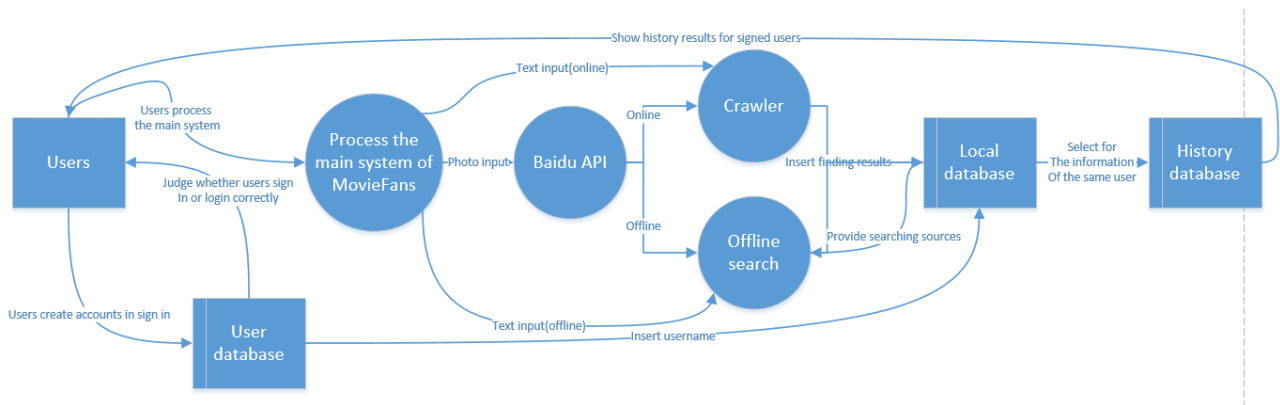
2. Data flow diagram

Figure 2: Diagram of data inflows and outflows

Database

User database

Table 1: Brief illustration of user database

Item name	Username	Password
Format	varchar(50)	varchar(50)
Description	Stores the encrypted user nicknames in Hash md5 format	Stores the encrypted user passwords in Hash md5 format

Local database

Local database stores the movie lists accessed by all users for the use of offline searching.

Table 2: Brief illustration of local database

Item name	Username	Local time	Poster path	Tag	Movie name	Movie score	Character	Movie date	Movie description
Format	varchar (100)	varchar (100)	varchar (100)	varchar (100)	varchar (100)	varchar (100)	varchar (100)	varchar (100)	varchar (100)
Description	Store the encrypted usernames in Hash md5 format	Stores the searching time	Stores the local path of selected photos	Stores the clicked tags	Stores relevant movie names	Stores correspon-ding movie scores	Stores directors, actors, actresses, etc of the displayed movies	Stores the published dates of each movie	Stores the brief description of each movie

History database

Each user has his/her own history database storing his/her previously browsing results.

Table 3: Brief illustration of user history database

Item name	Username	Local time	Poster path	Tag	Movie name	Movie url(can be accessed)
Format	varchar(100)	varchar(100)	varchar(100)	varchar(100)	varchar(100)	varchar(100)
Description	Stores the usernames encrypted by Hash md5 * The username is the same as the one inputted during login process	Stores the searching time	Stores the local path of selected photos	Stores the clicked tags	Stores relevant movie names	Stores movie hyperlinks for users to get more detailed information or watching address

Since local database mainly stores the information for offline users to search, and given that offline users cannot access to hyperlinks, it does not store movie url.

Safety concerns

Since my program is designed to obtain and store user information, I have also considered several ways to ensure data security. Besides the authentication process aiming to prevent information leakage caused by other users, I will also use Hash to encrypt the information to avoid usernames and passwords being seen in the background.

User system

Registration

When users click 'want to create an account' button, they will go through registration process.
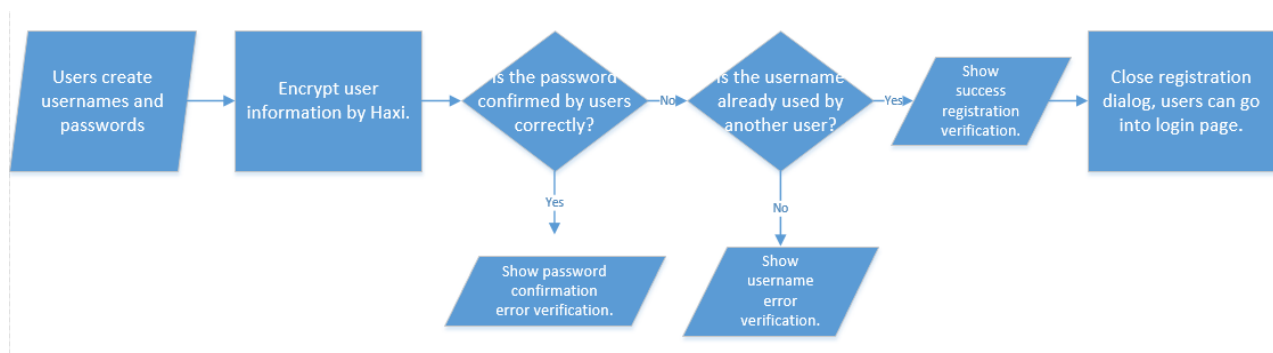

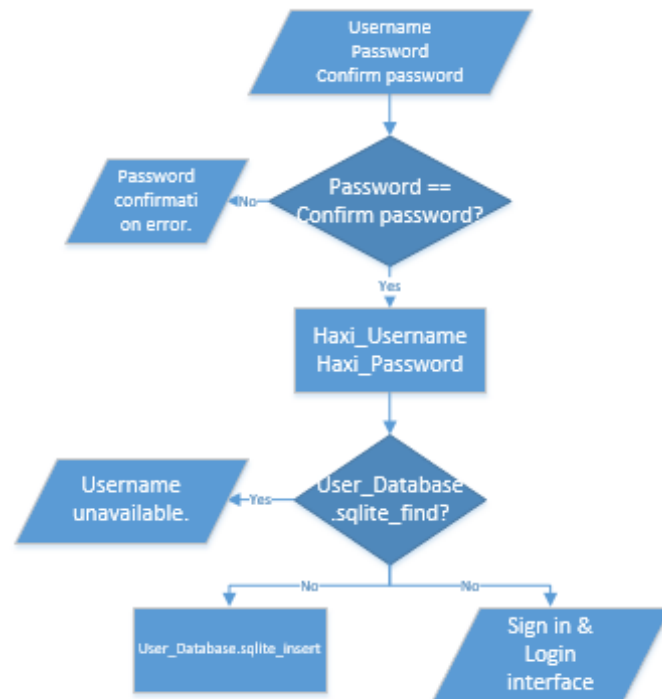Figure 3: The registration process flowchart

Figure 4: The algorithm flowchart of registration process

Login

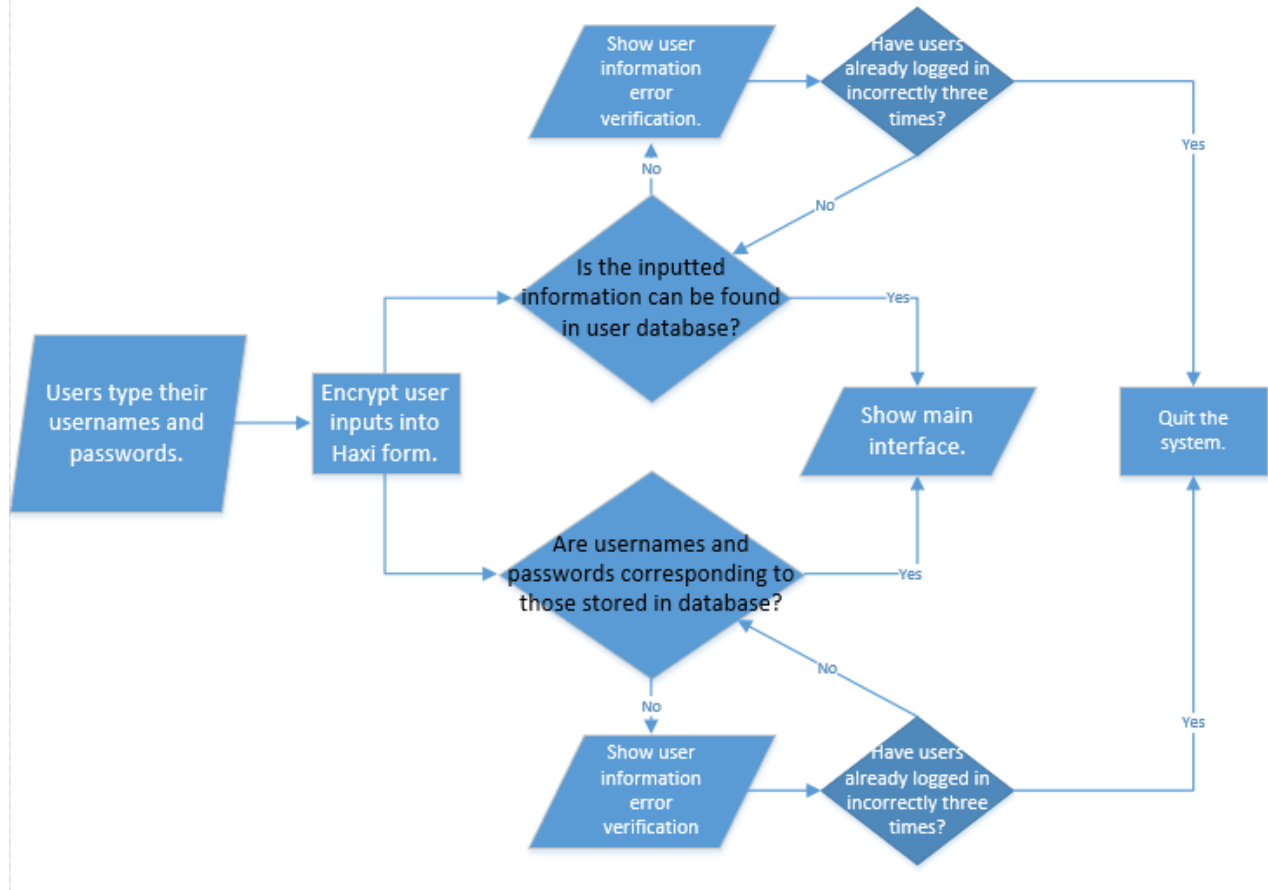When users click 'signed user' button, they will go through login process.
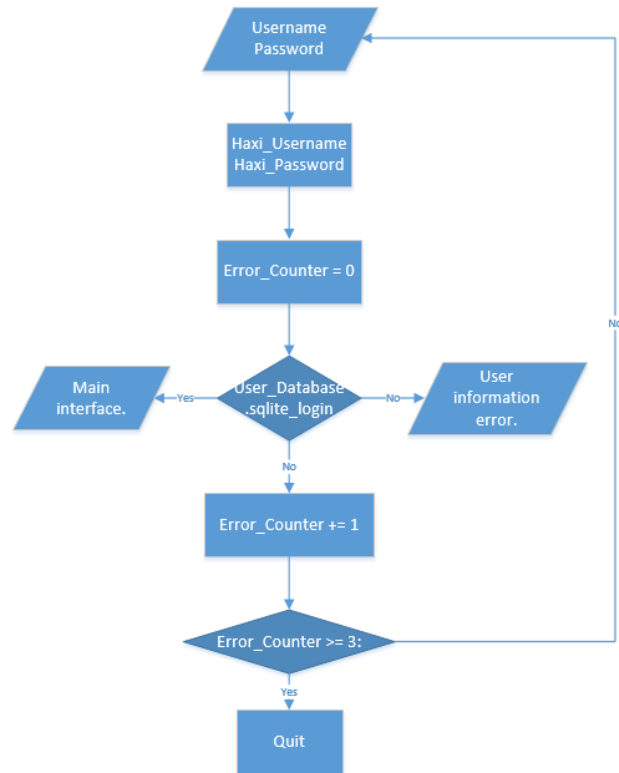

Figure 5: The flowchart of login process

Figure 6: The algorithm flowchart of login process

Main system

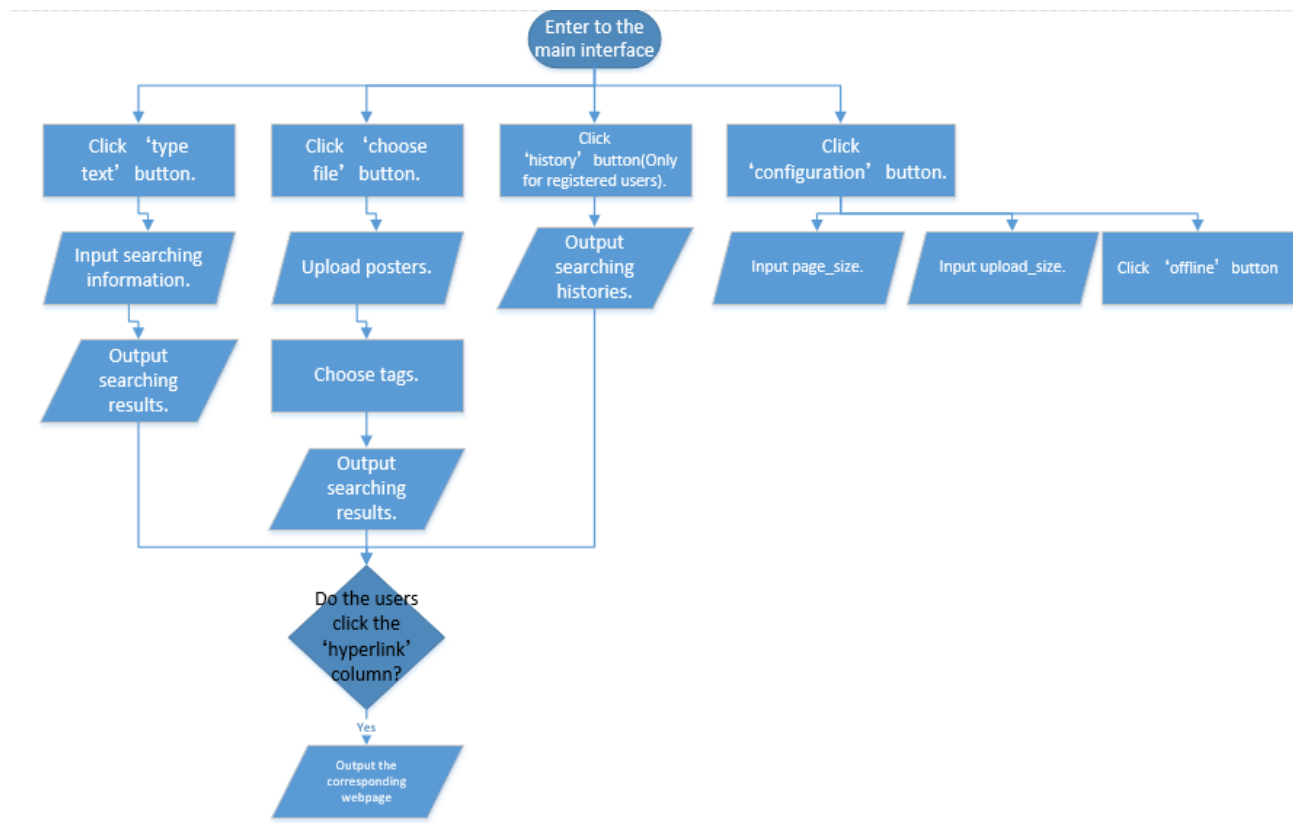This part illustrates different choices and outcomes users might face on main interface.

Figure 7: The flowchart of the process of operating the main system

Function

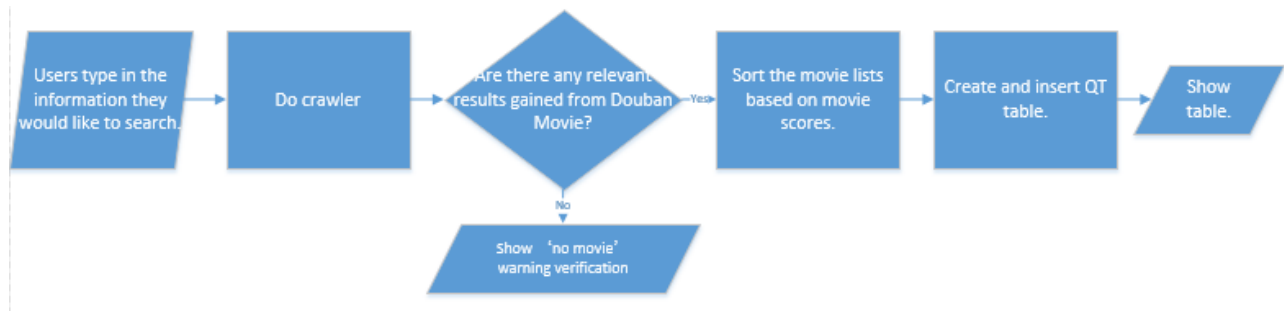## Result display_Online_Text input

Figure 8: The flowchart of the process of using 'text input' function
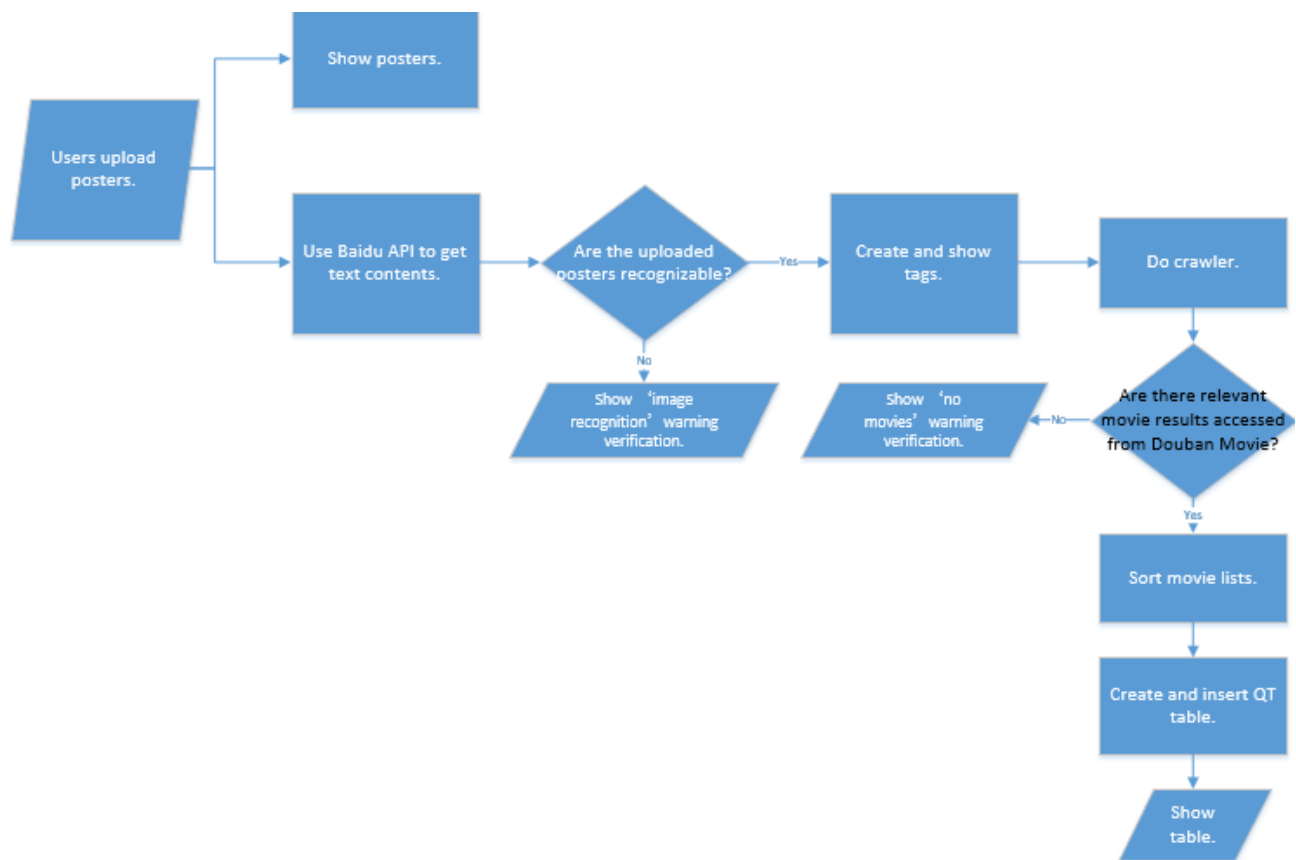
Result display_Online_Photo input

Figure 9: The flowchart of the process of using 'poster input' function

Local_Database_Search

For offline users, they can only get searching results from local database instead of crawler. The following diagram will represent the process from inserting information to the database to displaying the results.
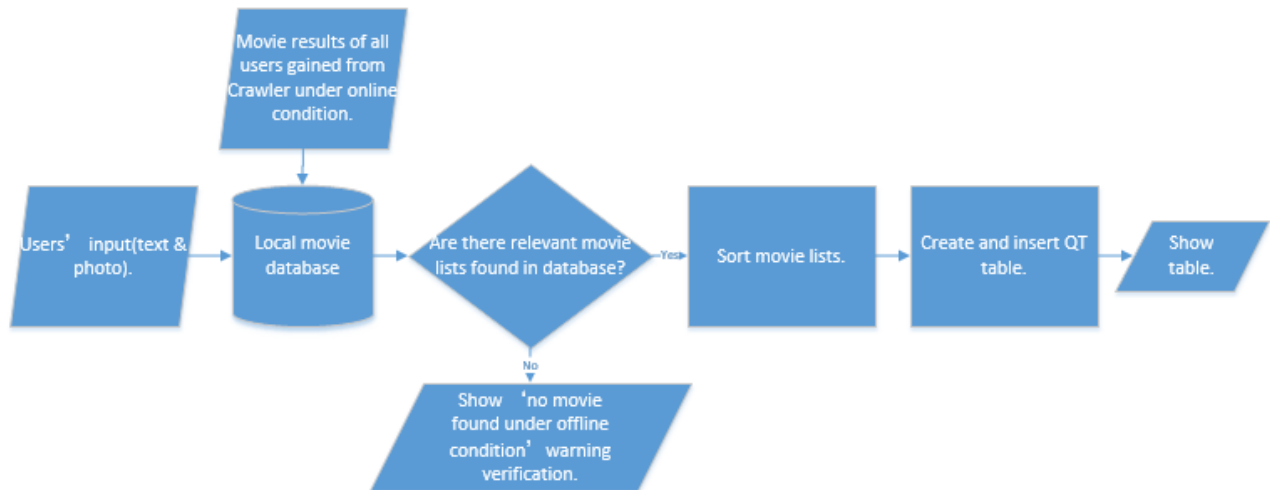

Figure 10: The flowchart of the process of doing local database search for offline users
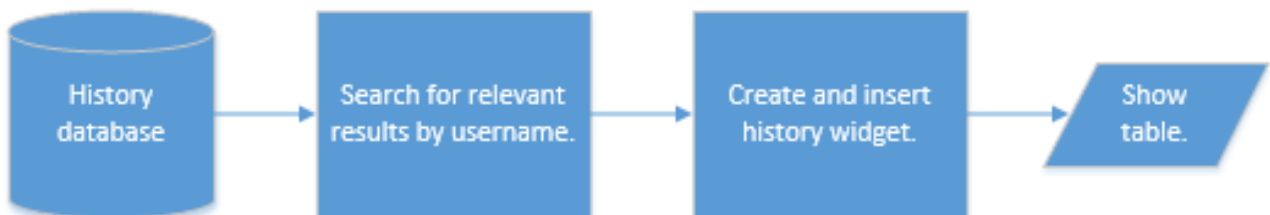
History display

Figure 11: The flowchart of the process of displaying searching histories

Interface

Sign in & Login interface

Registered users can click this button to go into login dialog.

MovieFans

Signed user

Unsigned user

Want to create an account?

Users can click this button to access to main interface if they do not want to create an account.

Users can click this button to go into sign dialog to create an account.
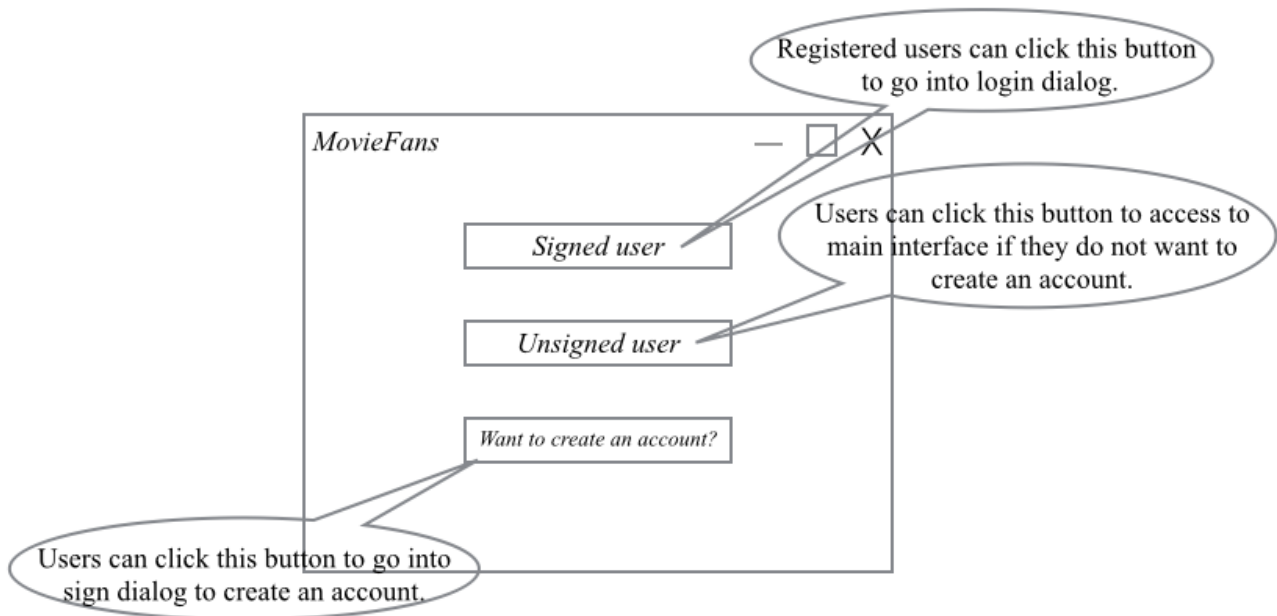
Figure 12: Design of sign in and login interface

Registration dialog

Users can create a username and input into this line.

Sign ?

Username:

Password:

Confirm Password:

OK Cancel

Users can create a password and input into this line.

Users need to confirm their passwords in this line. In order to successfully register, the confirm password should be the same as password.

Figure 13: Design of registration dialog

Login dialog

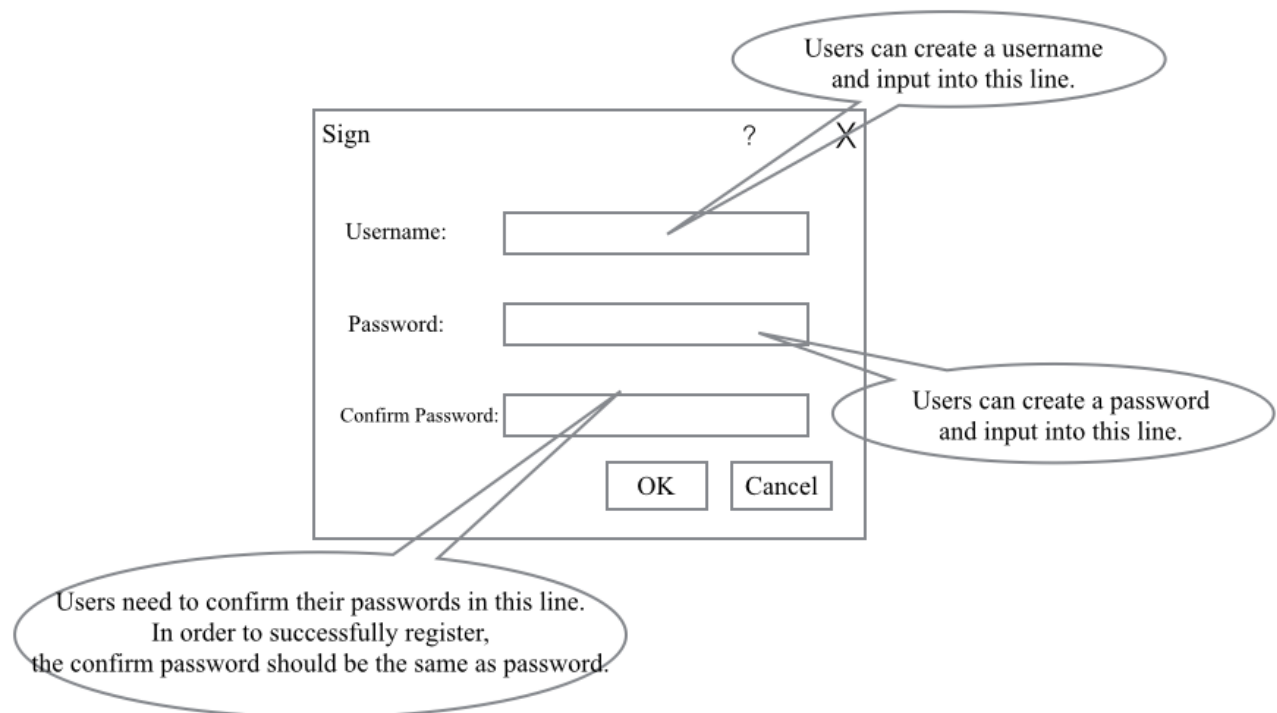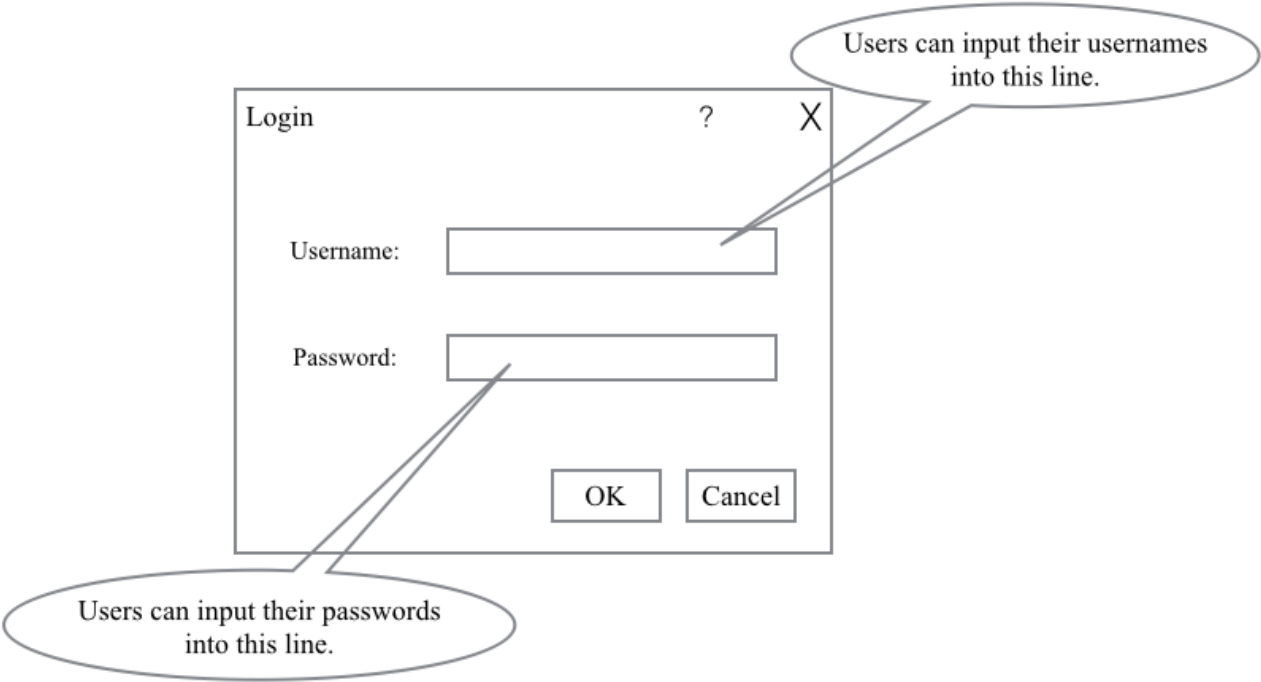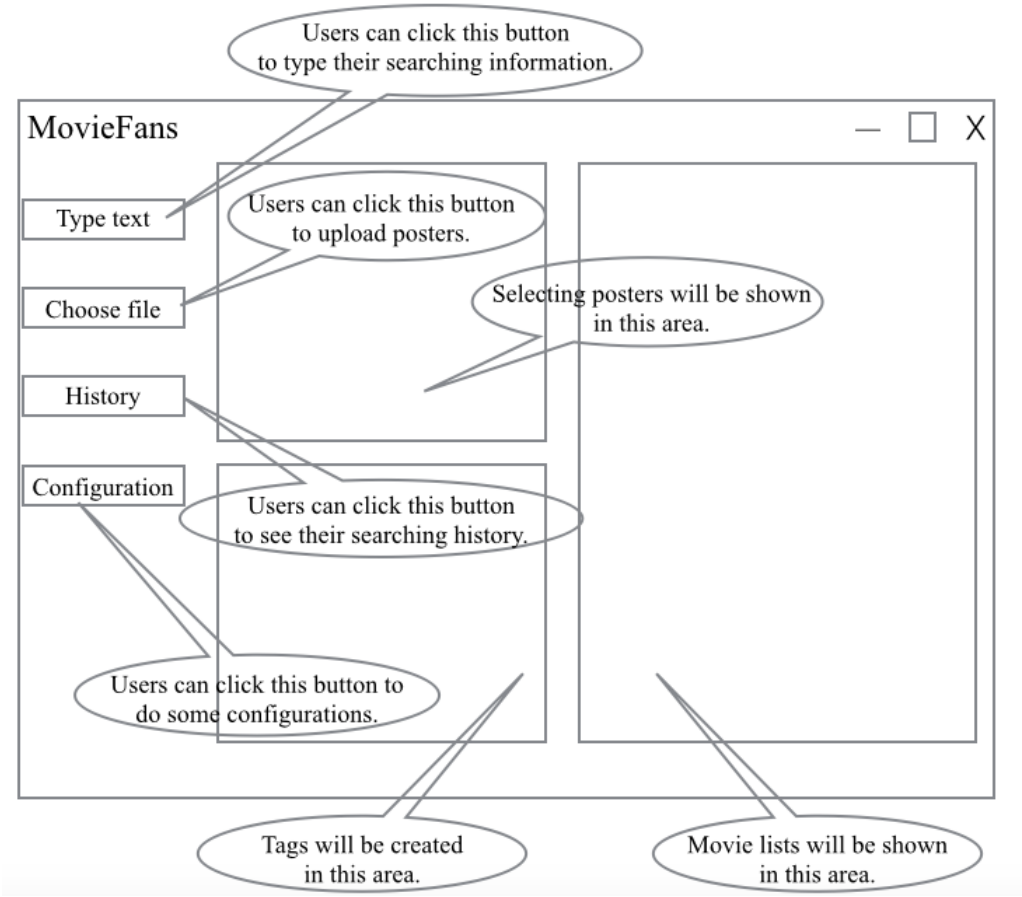Figure 14: Design of login dialog

Main interface

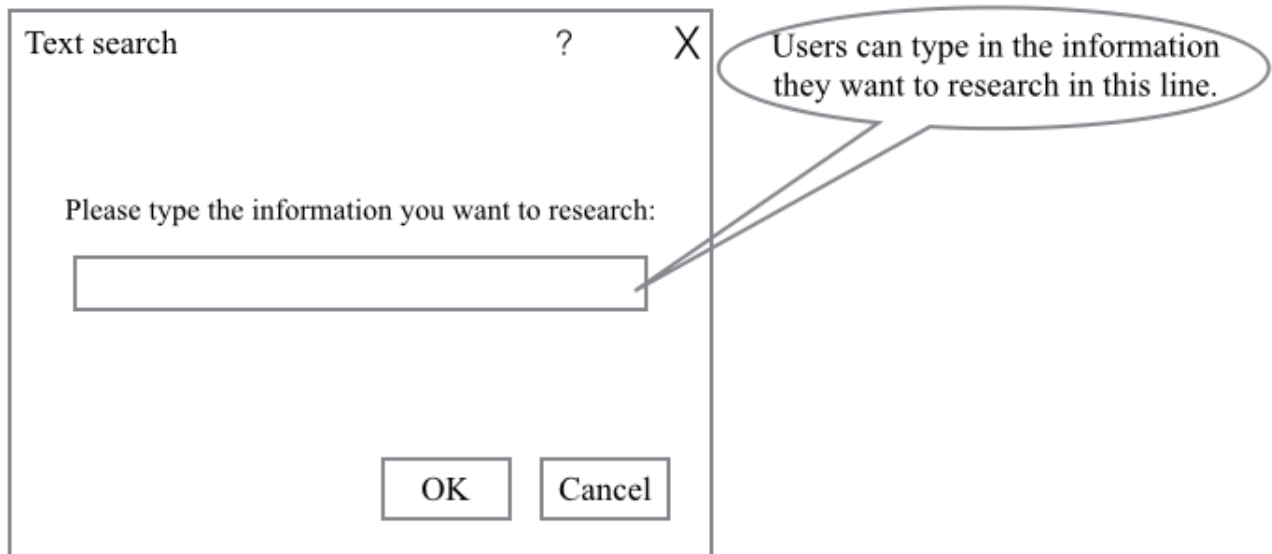Figure 15: Design of main interface

Type text dialog

Figure 16: Design of 'text input' dialog

Choose file dialog
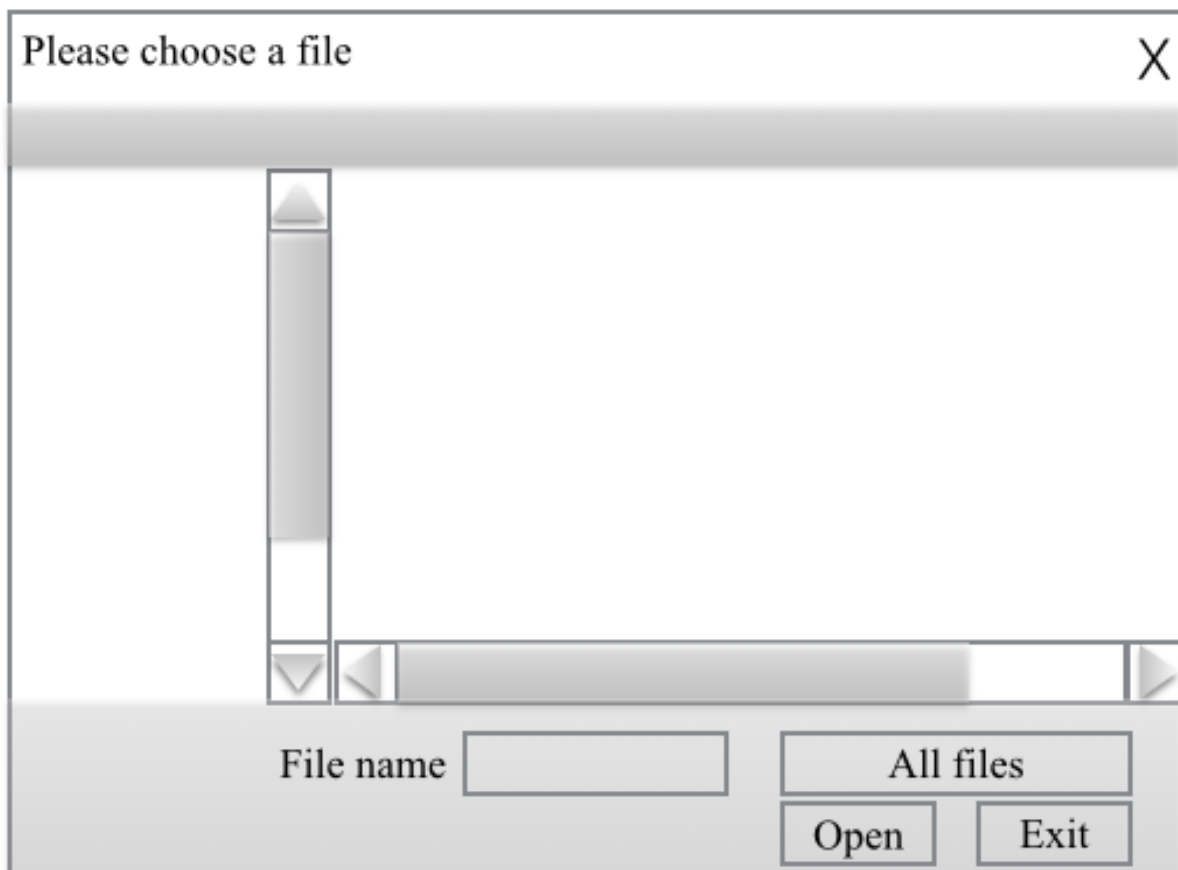
Figure 17: Design of 'photo input' dialog

Configuration dialog

Users can choose the number of results they want to show in this line.
If they type n, the maximum of 15*n results will be shown.
e.g. if they type '1', maximum of 15 results will be displayed.

Configuration   ?   X

Please type the number of results you want to see:

Please type the number of photos you want to upload:

Users can choose the number of posters they want to upload in once in this line.

Offline

OK   Cancel

Users can click this point to be under offline condition.

Figure 18: Design of configuration dialog

History interface

History searching results will be shown in this area.
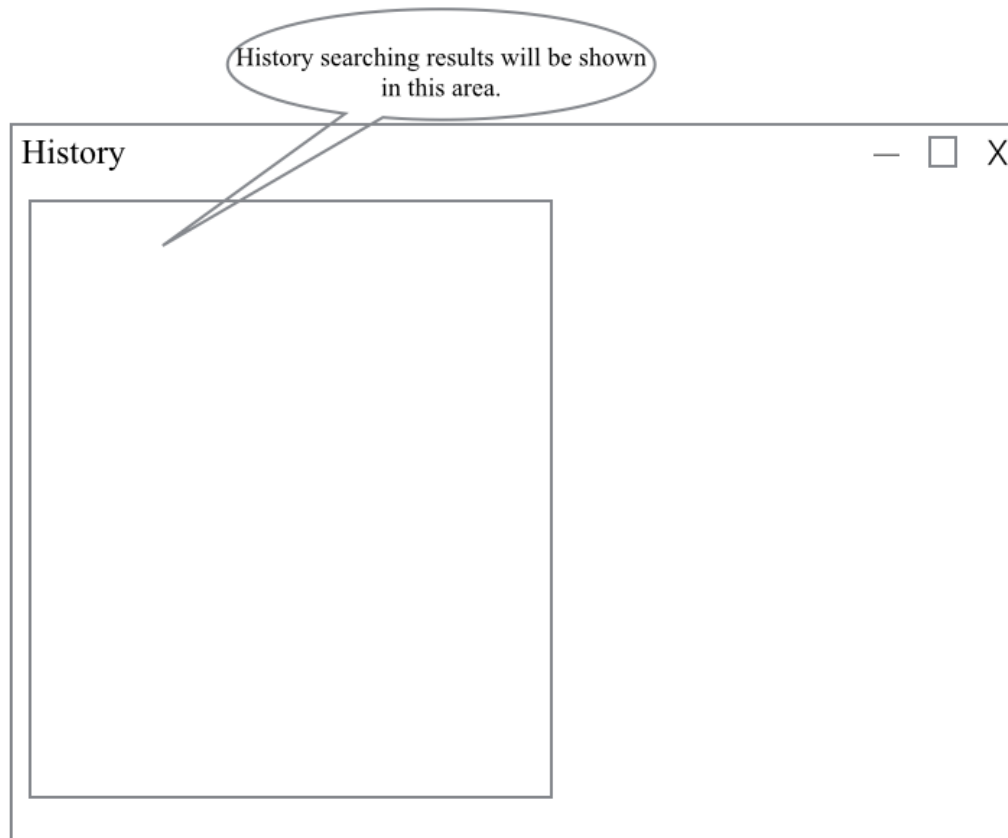
History   — □ X

Figure 20: Design of history interface

Verifications

User system_Registration_Success verification
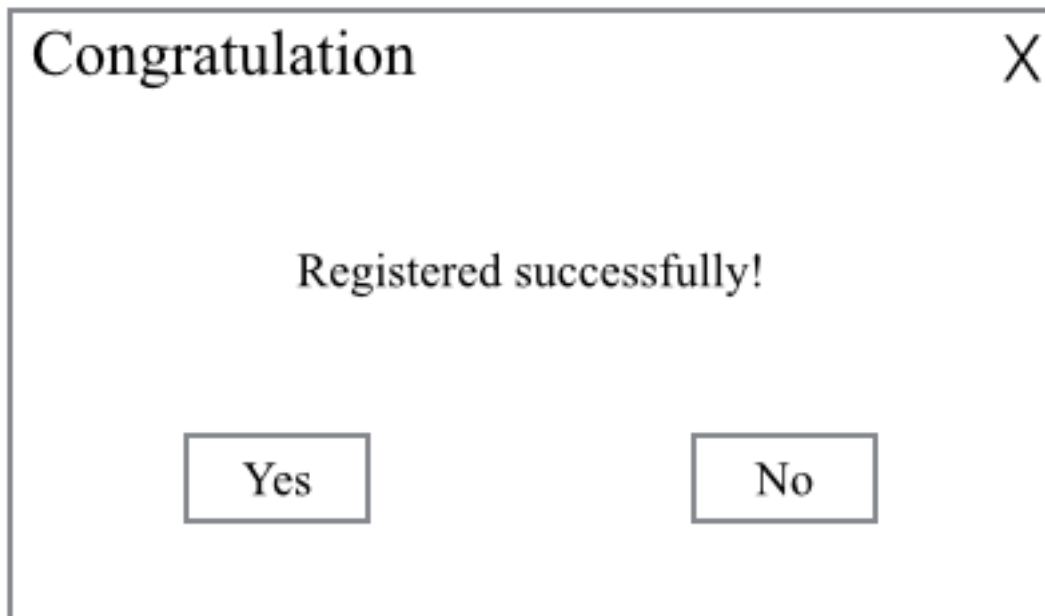
Figure 21: Design of successful registration verification

User system_Registration_Username error
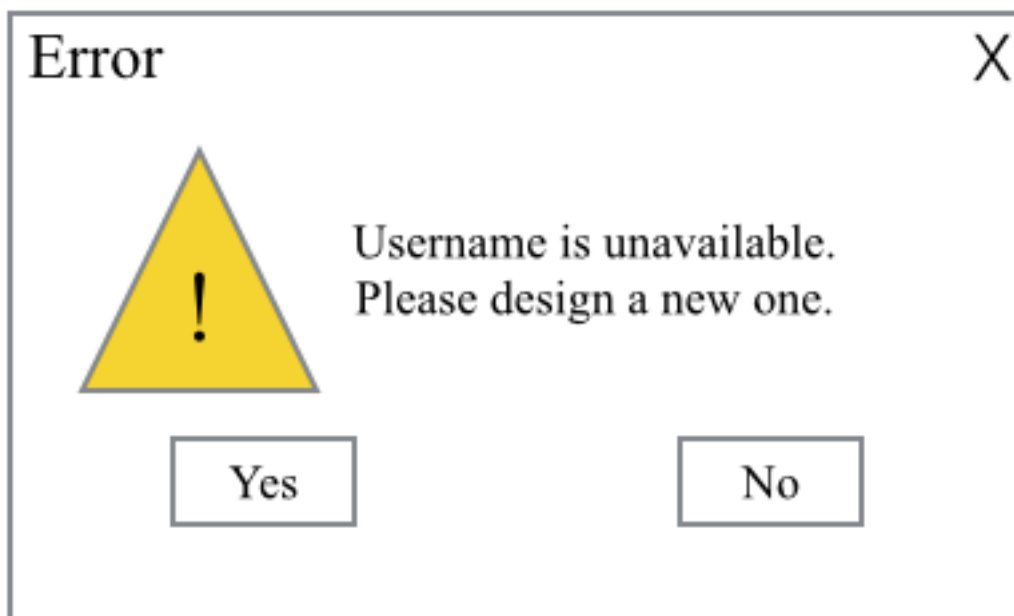
Figure 22: Design of username error verification

User system_Registration_Password confirmation error
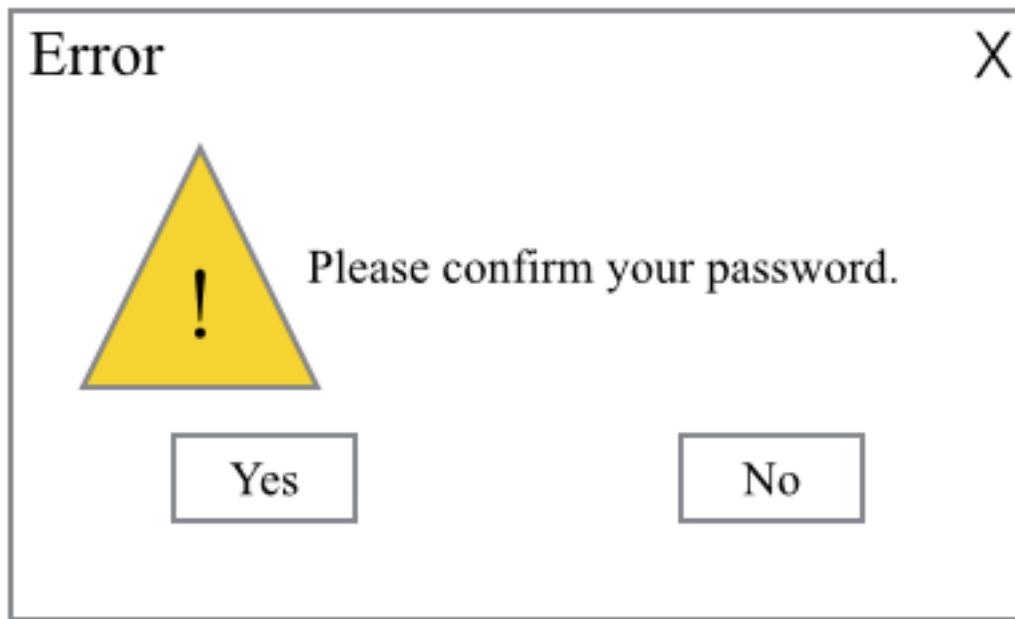
Figure 23: Design of password confirmation error verification

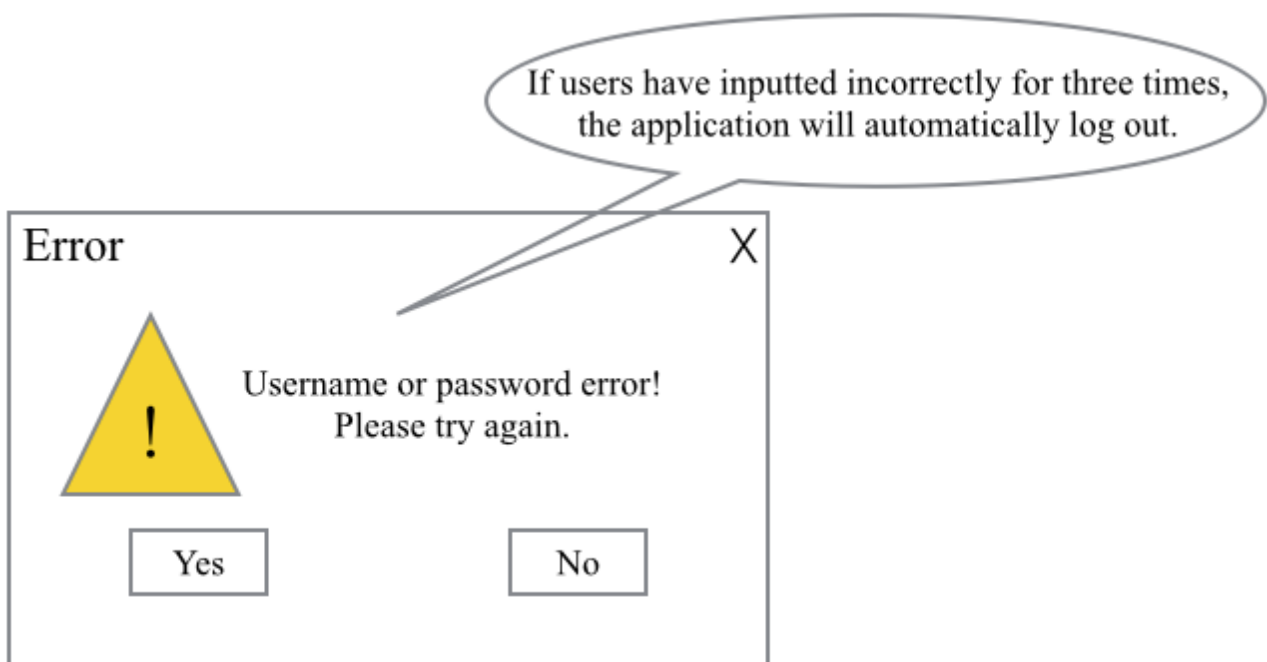# User system_Login_User information error

Figure 24: Design of user information error verification during login process

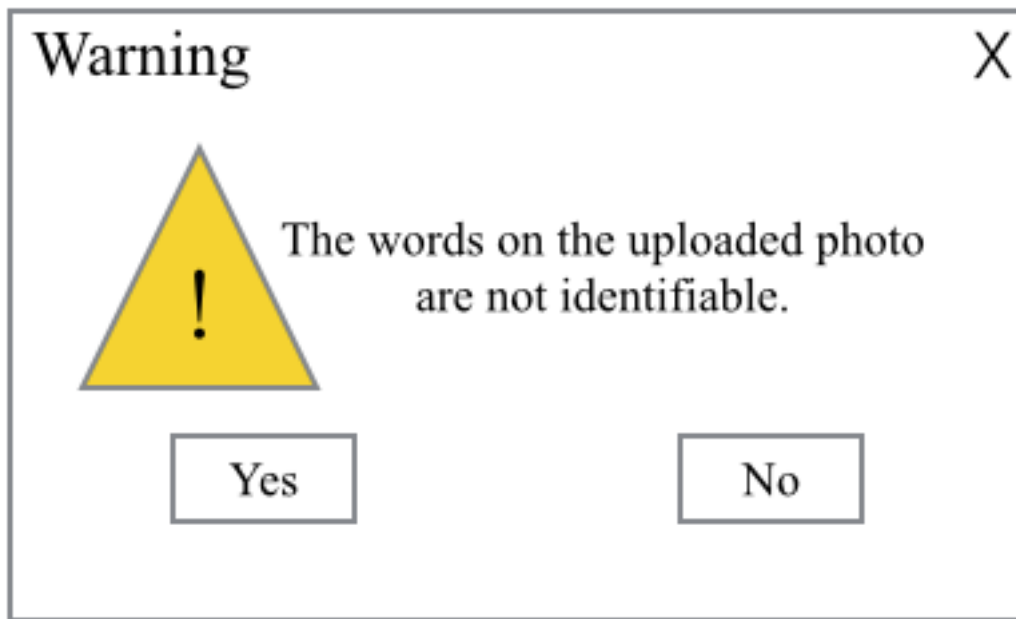# Function_Photo recognition error

Figure 25: Design of photo recognition error verification
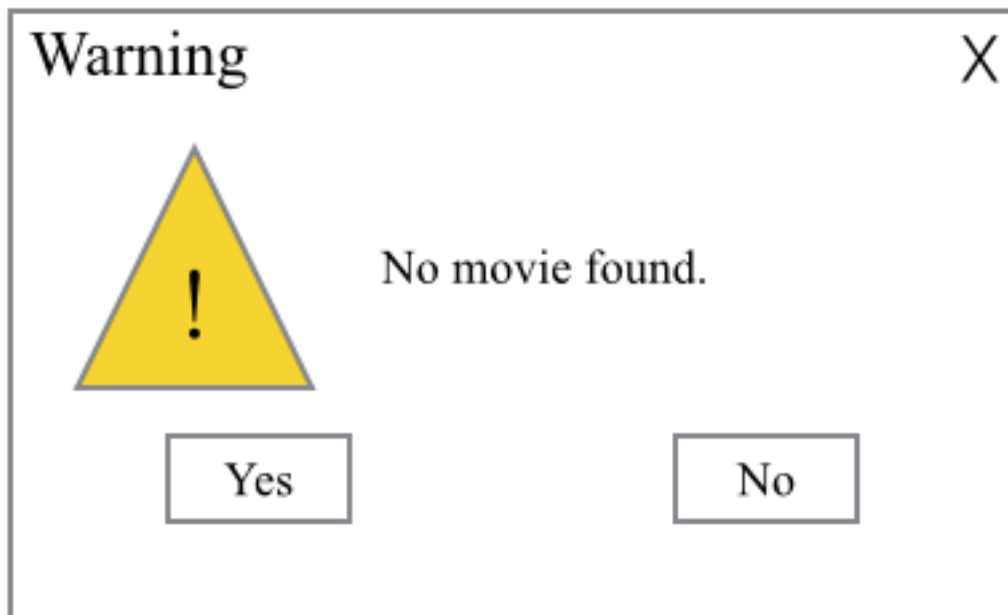
Function_Searching error

Figure 26: Design of local database/crawler searching error verification
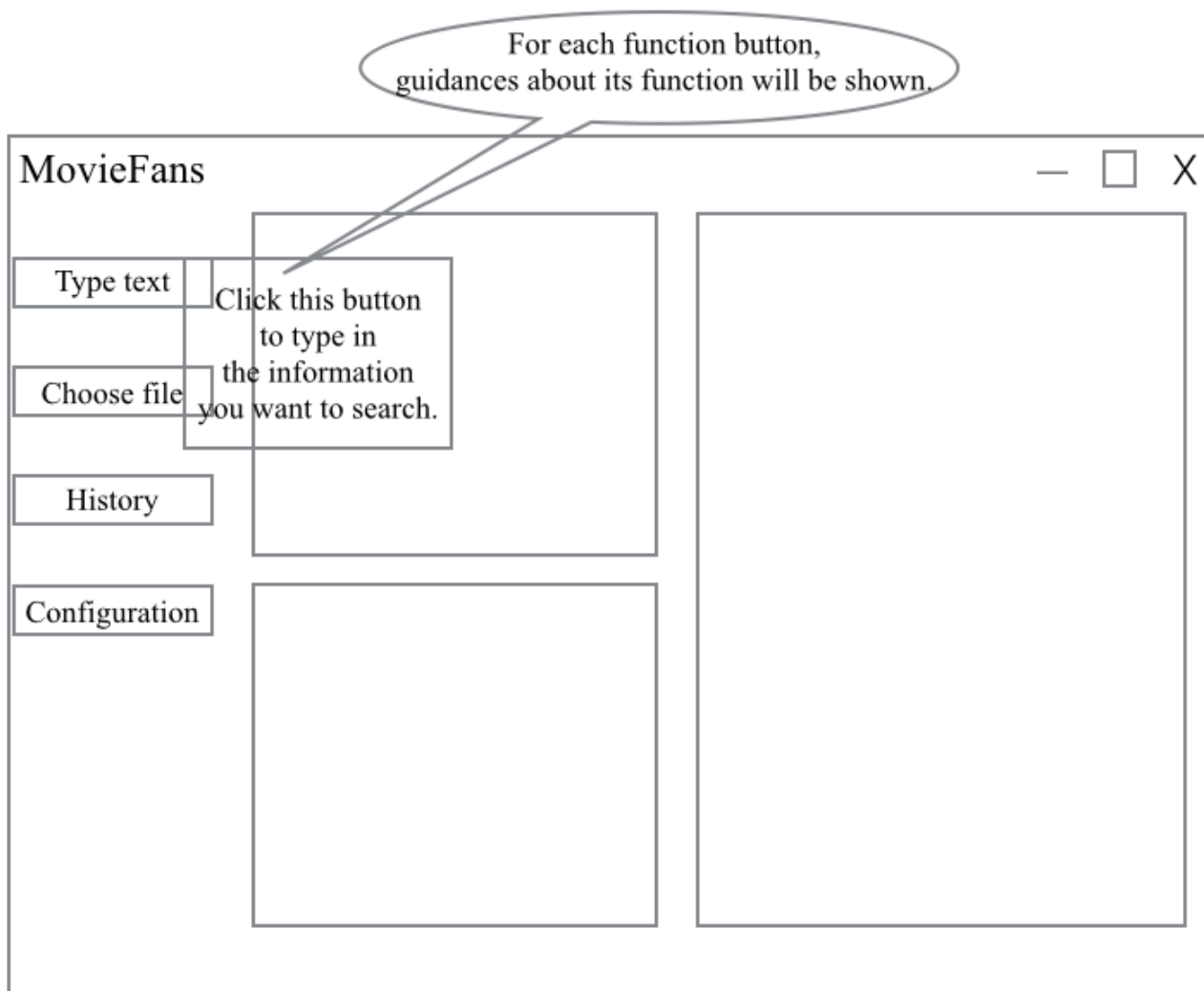
On-screen help

Figure 27: Example of the on-screen help of function button

Test plan

Module	Action to test	Method of testing	Expected result
1. Function			
1.1 Choose identity	Check whether the system can provide several choices for user identity	Open MovieFans application, check whether the system provides three options for users: registration, unregistered, and registered.	The application shows three options able for users to click: Want to create an account? Registered Unregistered
1.2 Hashlib	Check whether the user information is encrypted by the rules of Hash md5	Input an username and password, output Hash_username and Hash_password. Check whether inputted username and password are successfully encrypted by a hexadecimal string.	The user information is successfully encrypted as an unreadable data

Module	Action to test	Method of testing	Expected result
1.3 User database insert	Check whether the usernames and passwords can be successfully inserted into *user database*	Create an username and password in registration interface. Print the information stored in *user database*.(Should be in Hash form) Use Hash to decrypt the printed information. Check whether the printed information is the same as that inputted.	The printed information and inputted information are the same: User information is successfully inserted and stored in the *user database*. (Hash cannot ensure to decrypt all encrypted information, so the inputted information is pretested and verified to be in the library.)

Module	Action to test	Method of testing	Expected result
1.4 Typing input	Check whether the system allows typing input	Click 'Type text' button to see whether searching information can be inputted in the pop-up dialog.	Information can be typed in the white line in the dialog.
1.5 Photo input & display	Check whether users can successfully input their posters and whether these posters can be displayed on the main interface	Click 'Choose file' button to see whether can successfully choose the path of selected posters and click on 'OK' Check whether the selected posters are displayed on the screen	The path of selected posters can be successfully clicked. Selected posters are shown on the screen.
1.6 Poster translation	Check whether *Baidu API* can extract word contents in the posters	Run module *Baidu API* to see whether it can return accurate word contents.	*Baidu API* can return correct words.
1.7 Create tags	Check whether the system can create and display tags based on the word contents translated by *Baidu API*	Input a poster to see whether relevant tags can be displayed beneath the posters.	Several tags are shown below the place where the poster is displayed.
1.8 Crawler	Check whether the system can get movie lists from Douban Movie	Type information in the 'Type text' dialog or click the tags to see whether crawler interface is shown and runs correctly.	Crawler interface is successfully shown and can run properly.
1.9 Local database insert	Check whether the searching results from each online condition users can be inserted into *local movie database*	Run *crawler* function and print the information in *local movie database*, check whether the movie lists are stored in the local movie database.	Each of the accessed movie list is successfully stored in *local movie database*.

Module	Action to test	Method of testing	Expected result
1.10 Results display	Check whether the searching movie information can be displayed on main interface	Input searching information in 'Type text' dialog or click tags, see whether the movie information is shown on the result display space.	Movie information is shown on the right side of the main interface.
1.11 Sort movies	Check whether the movie lists are represented in an order followed from the highest scores to the lowest scores	Input searching information in 'Type text' dialog or click tags. Go through the second line of the result displayed grid to see whether the scores are sorted in a descending order.	Movies are sorted based on their scores.
1.12 Open hyperlinks	Check whether users can open the hyperlink of a movie to get detailed information	Double click the hyperlinks.	Detailed information of selected movies is shown on the website.

Module	Action to test	Method of testing	Expected result
1.13 Store using histories	Check whether the history searching information could be stored in *history database*	Input searching information in 'Type text' dialog or click tags, wait for outputs. Close the application, print information stored in history database to see: 1. Whether the Hash_username is corresponding to the tested user 2. Whether the searching time is appropriate 3. Whether the tags/ file path is corresponding(if choose 'Choose file' option) 4. Whether the latest history searching movie name is the same as the previous outputs.	All these checking information is appropriate. Yet, again, since Hashlib might not successfully decrypt all information, if real users have inputted information that is not stored in the library yet, their plain-text usernames might not be seen on the interface. Therefore, more applicably, if the system meet all other three requirements except showing the plain-text username, it could also be regarded as successful.
1.14 History display	Check whether individual user history can be shown on his/ her interface	Click 'History' button to see whether the information is displayed & whether all of the information belongs to the same username as the one used in login.	Information is displayed and belongs to the appropriate user.
2. User system			

Module	Action to test	Method of testing	Expected result
2.1 Registration	Check whether users can create accounts in registration interface	Click 'Want to create an account?' to go into registration interface. Create an username and password in corresponding lines. Confirm created password.	All these functions can operate correctly.
2.2 Login	Check whether users can login into the application	Click 'Registered' to go into login interface. Input usernames and passwords.	All these procedures can run correctly.
2.3 Unregistered	Check whether users can straightly go into main interface if they are unregistered	Click 'Unregistered', check whether can access to main interface.	Main interface is shown.
2.4 Change configuration	Check whether users can make changes in configuration interface	Click 'Configuration' button, change: 1. The number of webpages to control the number of displayed results.(e.g. 3) 2. The number of uploaded photos in once.(e.g. 1, 2, 3) 3. Click the offline button.	The number of times accessing webpages when doing crawler is the same as that specified in the Configuration dialogue.(e.g. 3) The number of times Choose File Path interface pops up is the same as the that set by users.(e.g. 1, 2, 3) The system changes into offline condition.

Module	Action to test	Method of testing	Expected result
2.5 Offline users	Check the designed conditions for offline users	Click 'offline' button. Input certain information into the system, wait for results displayed. Click 'history': For registered offline users, the searching history under offline condition will not be stored. Input the number of webpages in configuration.	Sentence 'Url is not available' shown on the url space on the right of the main interface. No offline searching results are shown. The number of times the system accessing webpages does NOT follow the input in Configuration.
2.6 Unregistered users	Check the designed condition for unregistered users	Click 'Unregistered' button and go into main interface.	History' button is gray(meaning disabled).
3. User interface			
3.1 Menu bar	Check whether menu bars are shown on the main interface	Get accessed into the main interface.	Type text', 'Choose file', 'History', and 'Configuration' menu bars are shown.
3.2 On-screen help	Check whether the on-screen help about each function are shown	Move mice nearby each menu bar, check whether the on-screen help is shown.	On-screen help is shown beside each button.
3.3 Success verification	Check whether success verification for creating account is shown when users successfully register.	Click 'Want to create an account?' button. Create an username and password. Confirm the password.	Success verification is shown.

Module	Action to test	Method of testing	Expected result
3.4 Error verifications	Check whether error verifications are shown in corresponding conditions.	Click 'Want to create an account?' button: 1. Input a registered username.	Error verification: Username is unavailable. Please design a new one.
		2. Input a different series of numbers in 'Confirm password' from the one inputted in 'Password' line.	Error verification: Please confirm your password
		Click 'Registered' button: 1. Input non-corresponding usernames and passwords.	Error verification: Username or password error! Please try again.
		Click 'Choose file' button on main interface: 1. Input a poster that contains no word contents or is blurred.	Error verification: The words on the uploaded photo are not identifiable.
		Input searching information by either text input or photo input.	Error verification: No movie found.

Word Count: 0