COMP 9900 Project Proposal

t16p-ahduiduidui

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1 Background

1.1 Problem statement

With the development of the Internet in recent years, people's dependence on the Internet has increased greatly. As the number of people watching movies increases, people are also curious about the things behind the movies, so a lot of websites related to movies have emerged. And when those movie lovers live on the Internet, they need a movie platform where they can look for movies to watch, learn about current movie information and communicate with each other. This project is dedicated to developing a movie finder system. The user group of the website can be roughly divided into guest and logged-in user, and the website manager has the right to supervise and maintain the website as an administrator.

For website guests, what they need is a convenient and fast platform to look for movies, timely meet their needs, provide detailed movie information.

For logged-in users, we enable them to express their views on movies. In order to improve the user's use of the system, we will launch a list module. In addition, in order to meet the needs of each user, we also include the reference of historical records into the basis of movie recommendations. As well, we need to ensure the security of the user data. Therefore, each logged-in user will have a unique token in the background.The same mailbox must not be registered multiple times.

As a movie finder system, we not only want to provide basic query functions, it is also a real-time and convenient system to interact with users. We will follow up on the detailed development of the above aspects, and improve the system in the process of the project development, and continuous detail during the project.

1.2 Existing systems analysis

For reference learning, we looked at the existing movie finder sites *Rottentomatoes* (https://www.rottentomatoes.com/) and *Letterboxd* (https://letterboxd.com/) ,and summarize the advantages and disadvantages of these two websites.

For the homepage, both websites provide each user with a display of the most popular and upcoming movies in the near future. Users can click on the movie cover to view the details of the movie. Next to the film cover, there will be data to represent the recent user's evaluation of the film. On *Letterboxd*, the data is expressed in the form of an asterisk (up to 5), and on *Rotten Tomatoes*, the data is expressed in the form of a percentage (up to 100%). When the

data is greater than 70%, there will be an *RT* exclusive icon to indicate recommendation, and when the data value is less than 70%, there will also be another *RT* exclusive icon to indicate no recommendation.

In the search module, both of these sites allow users to search for movies by key words. In *Rotten Tomatoes*, when users type in the search bar, it will directly display the movie information matching it in the drop-down menu, while in *Letterboxd*, there is no such function. When the search is completed, *Letterboxd* will display the movies that exactly match, the series of movies with the same name and the registered users of the site. *Rotten Tomatoes* will display the movie information matching keywords, as well as the movie information containing keywords.

In the movie recommendation module, *Rotten Tomatoes* recommends movies by category. It is divided into popular movies in theaters, best lgbtq+ movies, best series on netflix and others. However, *Letterboxd* does a very single job in this respect.

2 User Stories

All user stories of DOUBI online movie finders are given below. The stories are designed based on the project objectives and analysis of existing systems.

2.1 User Authentication

Users can view the Home page as guests without logging in. They can also view the most popular movie reviews including the moive name, comments, who made this comment and movie rankings of different categories, including recent hits, recent releases. At the same time, they can also change the way of ranking by clicking the select button at the top of the ranking.

2.1.1 Login Page

Registered users can login in at this page by inputting the username and password. After the system confirms that the inputted information is correct, the user will be directed to the page that he/she was browsing right before going to the login page.

2.1.2 Sign up Page

If a guest has not registered yet, a registration process needs to be gone through first. A new customer user needs to mark down username, his/her E-mail address, and password. Also, during the registration, a confirmation of password consistency will be required. After the front end passes the registration information to the back end, the system will check that there will be no duplicate username and email addresses existing in the database. If the user remembers the account that has been registered before in the registration interface, he can also log in to the account through "Login now!" at the bottom right.

2.2 User Profile and Modify User Information

After the user logged in, his/her profile photo will show on the left of the User Profile page. On the right side of the profile photo, the user name and email address are displayed. There are also two buttons below: 'Update', ' My reviews' and 'follows & black list'.

2.2.1 User's Profile Page

Logged-in users can view their personal information on this page such as user's profile photo, user name and email. In addition, 'My reviews' can be used to view the movie reviews that the user has posted and the corresponding movies. After clicking the button, a page will appear with details of the information in the form of a list. It has the name of the movie, his/her rating of the movie and his/her reviews. Here, he/she can also modify the comment messages.

At the same time, there is an follows & blacklist button under user's profile photo. After clicking the button, a page will be displayed, which contains the information that the user follows (including the user name and user's profile photo), the blacklist list of the user (including the user name and user's profile photo).

2.2.2 Modify User Information

If the user wants to update his/her profile, there is a update button on this page. After clicking it, there will show a page where users can change the information. By clicking 'Upload an image' users can upload a new profile photo. By clicking the corresponding button, the user can also change his/her user name and password.

2.2.3 Other Users' Profile Page

All users can access their page through other users' reviews. On this page, you can view the user's profile photo, user's wish list, and user's reviews, and follow or put this user on the blacklist. There is an "all" button next to the wishlist and reviews. After clicking the button, you can view the user's wishlist and reviews in the new page. The wishlist includes the name of the movie and the movie information. Reviews not only includes the movie information, but also the user's comments and ratings on the movie.

2.3 Movie

2.3.1 Movie Rank

Users can view the Home/Dashboard page without logging in. They can also view the movie rankings of different categories, including recent hits, recent releases, etc. At the same time, they can also change the way of ranking by clicking the select button at the top of the ranking.

2.3.2 Movie search

Users can enter the corresponding movie title, genre, description, etc. In the search bar to search for similar movies. After completing the search, eligible movies will be displayed in front of users in the form of a movie list. Movies will be ranked from high to low according to the movie's rating. For each movie, the name, country, year, and director of the movie will be displayed. After clicking the movie name, you will enter the movie information page.

2.3.3 Movie Information Page

Click the movie card in any interface to enter the movie information page. This interface contains the movie name, movie information, current movie ratings, movie recommendations similar to this movie, and other users' comments on this movie. For other users' comments on the movie, like or dislike the comment by clicking on the thumbs-up-like button. The page will also display the number of "like" and "dislike" of each comment.

Users can comment and rate this movie through the "Comment" button in the lower left corner of the information page, or add this movie to wishlist through the "Want to see" button in the lower right corner.

2.4 Admin

This page will only be displayed to admin user (super-user). The admin user logs in on the same page as the ordinary user, but the account number entered is different.

2.4.1 Manage Reviews Page

After the admin user is logged in, there is a 'Manage Reviews' button at the top of the left side of the page. The backend will scan over the comment for some "bad-words", and if there are such some bad words, the comment will be stored in a separate database and displayed to the admin for him to decide whether to delete the comment. The comments list will also show the Movie Name, the rating of the movie and details of this comment.

2.4.2 Manage Users

After the admin user is logged in, there is a 'Manage Users' button at the middle of the left side of the page. After the admin clicks this button, a search bar will appear on the right, and the admin can search relevant users through keywords. Relevant user information will be displayed below the search bar, including user's profile photos, user names and other information. The admin user can choose whether to delete this user.

2.4.3 Upload New Movie

After the admin user is logged in, there is a 'Upload New Movie' button at the bottom of the left side of the page. The admin can upload new movies to the database, and needs to input

various corresponding movie information, including movie name, movie director.etc

3 System Functionalities and Backlog mapping

Basic functionality	
DOUBI-1 Movie Search	AHDUI-13, AHDUI-32, AHDUI-33
DOUBI-2 Movie Detail	AHDUI-14
DOUBI-3 Wishlist	AHDUI-28, AHDUI-39, AHDUI-53, AHDUI-54
DOUBI-4 Movie Review	AHDUI-15, AHDUI-23, AHDUI-24, AHDUI-26
DOUBI-5 Blacklist	AHDUI-30, AHDUI-38, AHDUI-41
DOUBI-6 Movie Recommendation	AHDUI-27

Novel functionality	
DOUBI-7 Authoritarian	AHDUI-11, AHDUI-19, AHDUI-20
DOUBI-8 Follows List	AHDUI-29, AHDUI-37, AHDUI-40
DOUBI-9 Review Rating	AHDUI-25, AHDUI-34
DOUBI-10 Admin	AHDUI-17, AHDUI-36, AHDUI-55
DOUBI-11 User Profile	AHDUI-12, AHDUI-31

4 Backlog and Sprint

4.1 Backlog

There are 29 backlogs for the system in total and all of them are assigned to the following three Sprints.

4.2 Sprint 1 (14 Jun - 28 Jun)

Backlog No.	Backlog
AHDUI-11	As a guest, I want to register my account with email address, so that I can have my personal record.

AHDUI-20	As a guest, I want to log in to my account, so that I can check my personal record and experience all function of the system.
AHDUI-19	As a logged-in user, I want to log out of my account, so that I can protect my privcy data while using public devices.
AHDUI-14	As a guest, I want to check detail information of movies, so that I can know more about them.
AHDUI-15	As a logged-in user, I want to rate a movie from 0 to 5, so that I can give a simple suggestion to other user.
AHDUI-23	As a guest, I want to check the rating of certain movie, so that I can briefly understand the evaluation of the movie.
AHDUI-24	As a guest, I want to check the reviews given by other user for certain movie, so that I can have a more comprehensive understanding of the movie.
AHDUI-26	As a logged-in user, I want to review on movies, so that I can express my point of view on them.
AHDUI-25	As a guest, I want to like or dislike other users' reviews, so that I can expressing my preference on their reviews.
AHDUI-34	As a guest, I want to view a list of popular reviews on dashboard, so that I can raising interest in that movie.

4.3 Sprint 2 (28 Jun - 19 Jul)

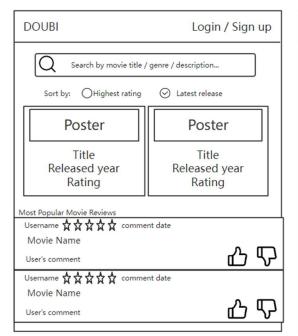| Backlog No.	Backlog
AHDUI-12	As a logged-in user, I want to update my account details, so that other users can get to know me better.
AHDUI-31	As a logged-in user, I want to upload a picture as my profile photo, so that I can show my virtual image lively.
AHDUI-29	As a logged-in user, I want to add users to my following list, so that I can keep tracking their wishlists and reviews.
AHDUI-37	As a logged-in user, I want to browse my follow list, so that I can know who I currently follow and easy to check their page.
AHDUI-40	As a logged-in user, I want to remove users from my following list, so that I can organize my following list.
AHDUI-30	As a logged-in user, I want to add users to my blacklist, so that I can ignore their reviews and avoid the effects of their ratings.

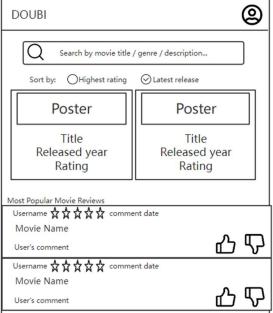| AHDUI-38 | As a logged-in user, I want to browse my blacklist, so that I can know who I currently block. |
| AHDUI-41 | As a logged-in user, I want to remove users from my blacklist, so that I can organize my blacklist. |
| AHDUI-55 | As an admin, I want to add new movies to the system, so that the system could be undated frequently. |

4.4 Sprint 3 (19 Jul - 2 Aug)

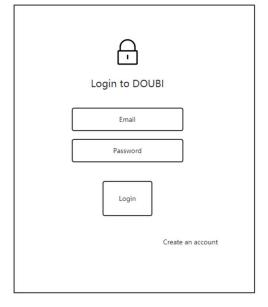| Backlog No.	Backlog
AHDUI-17	As an admin, I want to delete reviews that are not friendly so that I can avoid users from seeing them.
AHDUI-28	As a logged-in user, I want to add movies to my wishlist, so that I can keep a record of movies I want to watch.
AHDUI-32	As a logged-in user, I want to add movies to my wishlist, so that I can keep a record of movies I want to watch.
AHDUI-39	As a logged-in user, I want to remove movie from my wishlist, so that I can stop following movies that I am no longer interested in.
AHDUI-13	As a guest, I want to search movies by keywords, so that I can match a list of movies that I'm interested in.
AHDUI-33	As a guest, I want to browse the search result sorted by released date, so that I can know recent popular movies.
AHDUI-36	As an admin, I want to block account with multiple bad behaviors, so that I can keep the environment positive.
AHDUI-27	As a logged-in user, I want to browse recommended similar movies for certain movie, so that I can easily find movies I am interested in.
AHDUI-53	As a logged-in user, I want to browse my wishlist, so that I can know what movie I am going to see.
AHDUI-54	As a guest, I want to browse other users' wishlist, so that I can know what movie they are following.

4 Interface and Flow diagrams
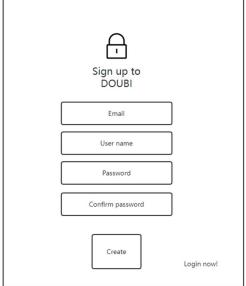
4.1 Dashboard / Home page

After entering the website, all users will be able to see the list of movies on this site, and the list can be sorted by release date and rating. The most popular reviews below will show the most popular reviews over a period of time (e.g. a week, a month)
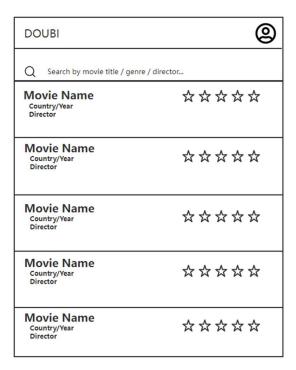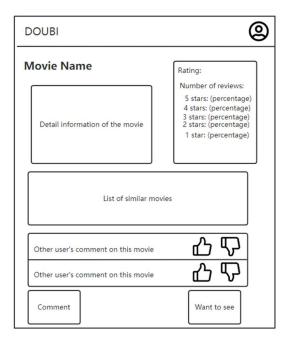
4.2 Login / Sign up Page

When the user clicks on the login button, he will be redirected to the login page, he can input the Email and password to login to the website, he can also click on the 'create an account' button to create an account then login to the website.

4.3 Movie Search Page

On the search page, users can search for specific movies by movie title, genre and director. The site will display movies matching the keywords, movies will be sorted from most popular to least popular based on the average rating of the movie, movies with the same rating will be sorted alphabetically, and clicking on the movie's link will lead to the corresponding detail page.
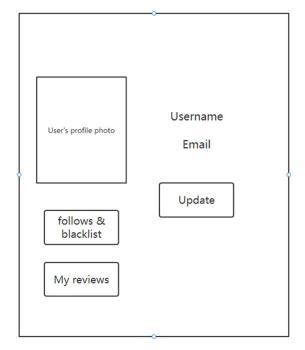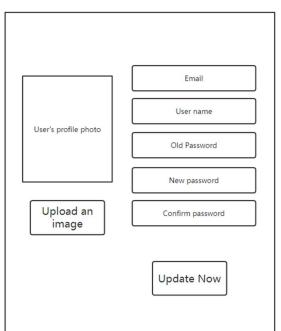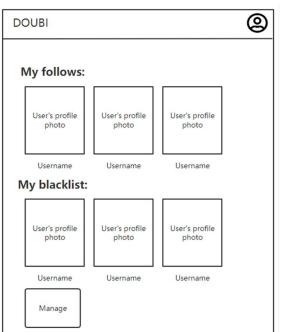
4.4 Movie Information Page

When a user clicks on a movie card displayed on the dashboard page or movie search page. He will be redirected to a page that will display detail information of that specific movie (movie title, poster, director, casts, rating, reviews, similar movies...) User can also add this move to his wishlist by clicking "want to see" button. If he wants to leave some comments and rate the movie, he can click on the "comment" button and a pop-up will appear where the user can fill in the blanks. All users can read other users' comments about the movie, and he can like or dislike the comment by clicking on the thumbs-up-like button. The page will also display the number of "like" and "dislike" of each comment.
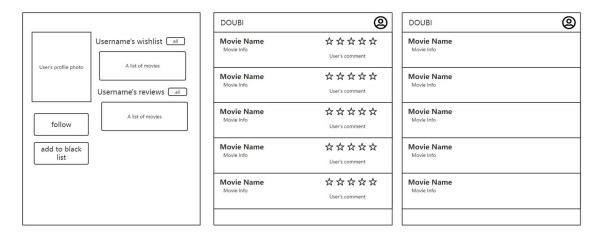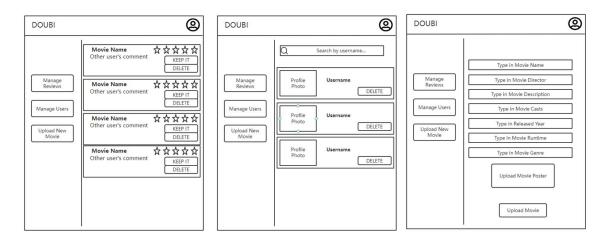
4.5 User's Profile Page

The user can access his information page by clicking on the icons in the navigation bar, in which he can view his information, and this page also allows him to access all his historical comments and make changes to his information. He can also click on the "follow & blacklist" button to manage his following and blacklisted people.

4.6 Other User's Personal Page

All users are able to access their personal page through other users' reviews. This page shows the user's wish list and the movies he has reviewed.When clicking on the "all" button next to it, the user will be taken to a different page showing all the movies in the list, both pages display information about the movie, but the difference is that the wishlist does not display the user's reviews and ratings of the movie.

4.7 Admin Page

This page will only be displayed to admin user (super-user). Once a user submit his comment to the website, the backend should scan over the comment for some "bad-words", and if there are such some bad words, the comment will be stored in a separate database and displayed to the admin for him to decide whether to delete the comment. The admin can also search for the user name and delete his acocunt. What's more, the admin is allowed to type in some information of a movie to generate a page of it, once a movie is created, other users can make

comments on the movie.

4.8 Page Relation

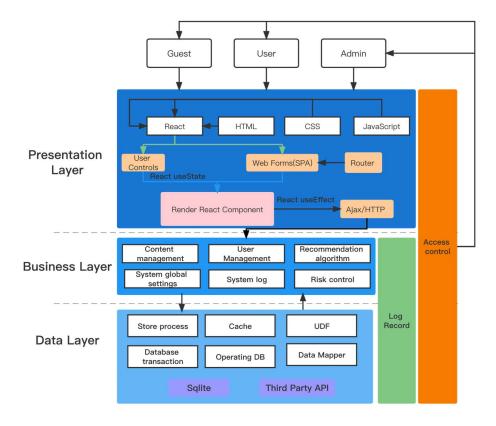All users can go back to the dashboard page by clicking the "DOUBI" button in the navigation bar (as shown on the leftmost lines). All logged-in users can view their own profile page by clicking the user icon in the navigation bar, for simplicity and aesthetics, all lines showing this relation have been removed except the one from the dashboard page to the profile page.

5 System Architecture

5.1 System Layers

In our system, we decided to use React and Flask as our front-end and back-end frameworks. React uses virtual DOM to reduce the burden of repetitive front-end rendering and improve page performance. It is the preferred development framework for major portals today. It is also compatible with various browsers, and has a large number of resources and scaffolding for developers to use, which greatly improves development efficiency.

Flask is a lightweight backend framework, but it is more than enough for our system, because flask is developed based on python, we can easily call other python libraries to write to our backend (some functions may be using skit-learn or TensorFlow). Using python to develop the backend may not perform as well as Java or Go, but the development efficiency is high, and it can be handled for our movie-finding system that does not require high concurrency and high throughput.

As can be seen from the above figure, our system is separated from the front and back ends, which is conducive to our better maintenance of the system. The front-end calls the Restful API through Ajax to obtain the data provided by the back-end, which is safe and saves time

and effort. The back-end (business layer) focuses on implementing various functional modules of the system, and then encapsulates them (ORM) to hide the details of calling the database, making the logic of the system clearer and less prone to errors.

The data layer focuses on performance issues. We create different tables through business logic to reduce data redundancy. For some commonly used data, we may also use a key-value pair library such as Redis to store it, so that the data can be called more efficiently to reduce user loading time. We may obtain and update movie information through open-source data and third-party APIs at the same time.

We have established log management modules in both the business layer and the data layer, so that when our system crashes, we can know where the problem is through historical logs and fix it in time. We set up access control modules throughout the system to allow different users to access the parts that should be accessed (see next point for details).

5.2 User types

In our system, there are three roles: guest, user (movie finder) and admin, We limit the scope of their access to the system by giving different accounts different permissions.

Guest: can only view the default index page, view the movie rankings of different categories, including recent hits, recent releases, etc.

Logged-in User: all content except(see user stories for details) the background management system.

Admin: background management system which can review possible malicious comments and high-risk users, and take actions such as delete comments or ban accounts.
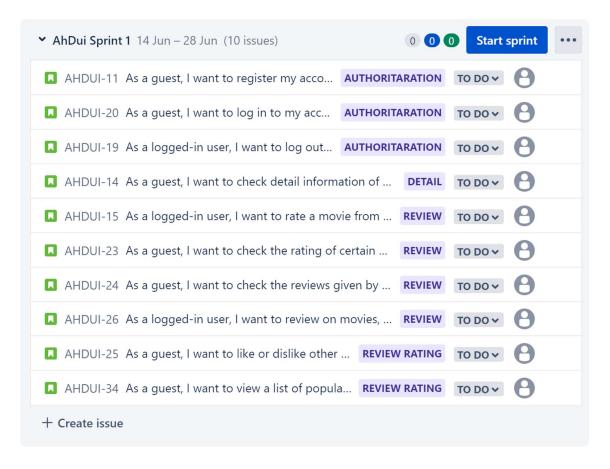
5.3 Technology stack

Front-end	

Back-end	
DataBase	

6 Appendix

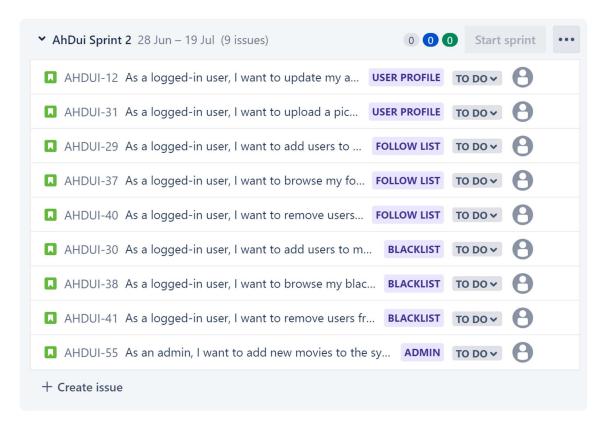## 6.1 screenshot of Backlog on Jira (19/06/2022)

6.2 screenshot of Sprint 1 on Jira (19/06/2022)

6.3 screenshot of Sprint 2 on Jira (19/06/2022)

∨ AhDui Sprint 2 28 Jun – 19 Jul (9 issues)	0 0 0	Start sprint	•••
🔖 AHDUI-12 As a logged-in user, I want to update my a... **USER PROFILE** TO DO ∨	👤
🔖 AHDUI-31 As a logged-in user, I want to upload a pic... **USER PROFILE** TO DO ∨	👤
🔖 AHDUI-29 As a logged-in user, I want to add users to ... **FOLLOW LIST** TO DO ∨	👤
🔖 AHDUI-37 As a logged-in user, I want to browse my fo... **FOLLOW LIST** TO DO ∨	👤
🔖 AHDUI-40 As a logged-in user, I want to remove users... **FOLLOW LIST** TO DO ∨	👤
🔖 AHDUI-30 As a logged-in user, I want to add users to m... **BLACKLIST** TO DO ∨	👤
🔖 AHDUI-38 As a logged-in user, I want to browse my blac... **BLACKLIST** TO DO ∨	👤
🔖 AHDUI-41 As a logged-in user, I want to remove users fr... **BLACKLIST** TO DO ∨	👤
🔖 AHDUI-55 As an admin, I want to add new movies to the sy... **ADMIN** TO DO ∨	👤
+ Create issue

6.4 screenshot of Sprint 3 on Jira (19/06/2022)