# Computer Sciences

## Anime Asylum

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Word Count: 11971

This project was proposed by the author with no arrangements of propriety.

# Contents

# Introduction

The aim of this project is to highlight the issue of developing online communities for likeminded people whose hobbies/interests are not as common for example, Sports (Football, Tennis, etc.), often these interests are widespread amongst the general demographic particularly Football which has a global following. For these more common interests, finding likeminded online groups/communities to interact and share views with is often relatively accessible. A variety of clubs are available for individuals to join to connect with others and pursue their passion. However, when a person's passion isn't as commonly adopted by the masses, such as Anime it could prove to be rather difficult to network and find people who share the same interests.

The author, who has been into Anime for several years, has come to acknowledge the lack of forums, websites, pages, or generally any online platforms where likeminded people can share their interests. dedicated to anime enthusiasts. At current, there are universal platforms such as "Discord" and "Reddit" that have elements that cater to anime watchers. However, being that the community is already large and continues to grow, it is fair to say a designated online space is certainly a gap in the market which has much potential to be filled. Therefore, the author decided to create a website catering specifically to these individuals, with specific features and functionalities bespoked for Anime enthusiasts.

an interesting article written by "Thanh Pham", that explores the idea of having a passion but being unable to share it. The article explores different challenges faced by individuals that are unable to express their passion due to lack of support/opportunity to do so therefore, the author saw this as an opportunity to fill the void on this subject area. The article creates a link between the aforementioned issues, and how it indirectly increases the likelihood of loneliness and depression which could subsequently lead to mental health issues. The article suggests that one should "look beyond your circle" and essentially find a group of people that perhaps could share and appreciate your passion. Modern day society has been revolutionised by the internet and has become a key driver in connecting people, the most suitable option would be to browse the internet in search of such groups. This enables people to connect with the world and find others who share their common interests.

After reading this article, a greater felt assurance that the author was not alone in thinking that being a part of a community that shares your interests is an essential way to feel a sense of

belonging but can also bring you contentment. In Addition, the proposal would allow the author to explore the more substantial issues based around mental health. loneliness and depression. It is a commonly adopted view that most friendships are developed around passions that coincide with one another.

The aim of the project proposal simply put is to bring people together using the benefits of the internet which can help so many people who may feel out of place or have an element of imposter syndrome to feel they have a place to create bonds with others and perhaps lead to their own self-improvement by the benefits of socializing.

Throughout this project, the author will design, plan and implement a social-media site dedicated to people who have an interest in Anime. This proposal aims to provide a platform that would not only allow people to voice their passion but connect with others and create bonds with people of similar mindsets/interests. Users will be able to rate, review and discuss current Anime's they have been watching. Furthermore, the user would gain 'XP' points by completing quizzes and rating. The points system enables them to firstly, identify their level of "experience" and compare with others. Additionally, this is something that can evolve into a paid service for people to attain exclusive online content (I.e., exclusive avatar's etc,).

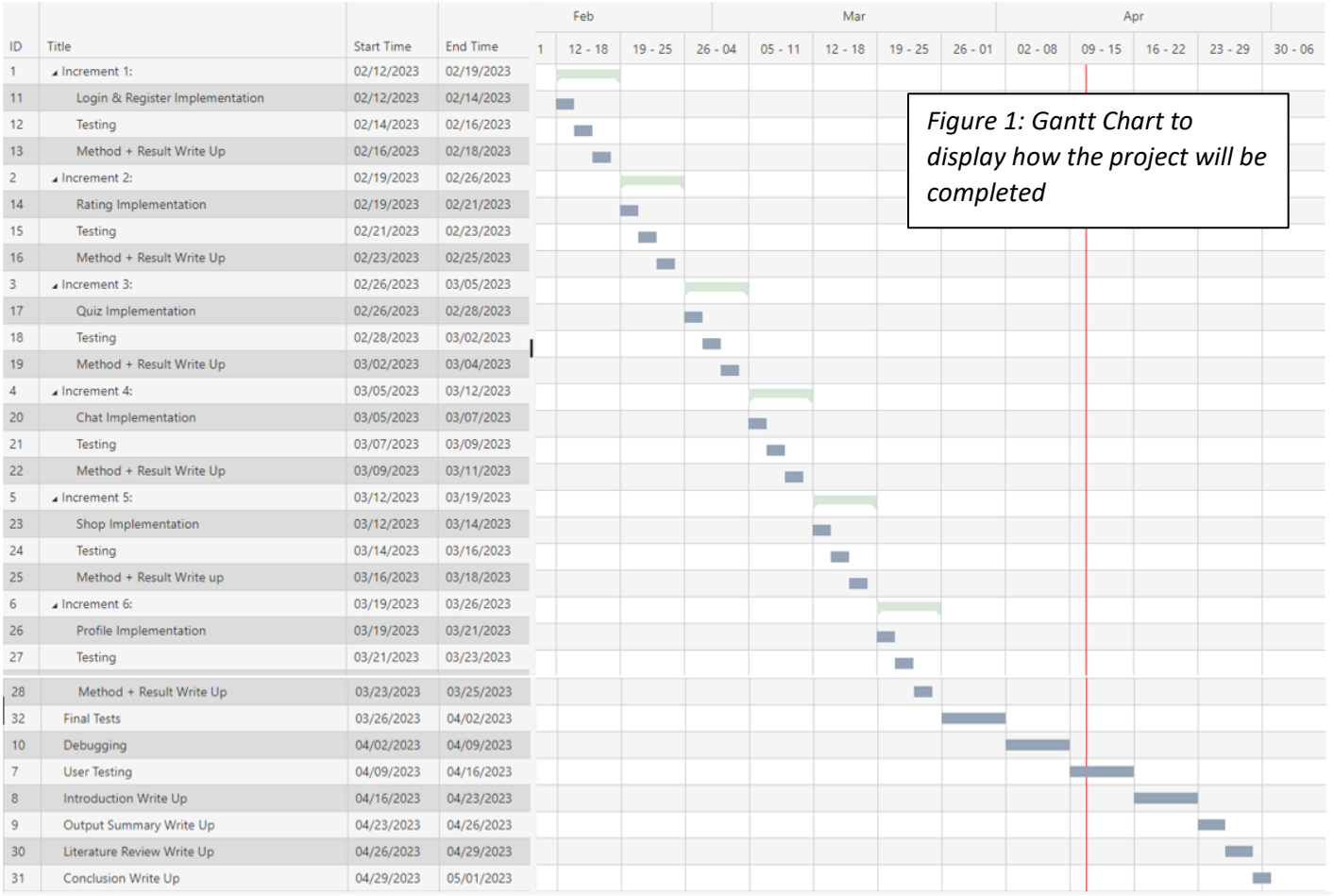
The project is heavily based on programming, as such the "testing procedure" will be executed throughout the programming stage as well as the end, this will ensure there are no major setbacks throughout the duration of the project, the author plan to thoroughly test the website after every section has been implemented. Finally, when the author is satisfied with the final piece, they will carry out tests on all the different features as well as nominate friends to test the site to see whether it performs accordingly. During this testing phase they will also ask for feedback which, the author aim to implement as part of the submission. However, if the suggestions cannot be implemented within the timeframe, they will attach with the work what they would have liked to include/implement provided they had a greater availability of time to do so.

Ideally, the author would like to complete implementation, however they cannot set objectives which are unachievable, therefore, the author must consider the time and resources available to themselves prior to proposing what the overall result will be. They must consider obstacles which may arise within the programming & design sectors etc. As a result, the author will seek as much guidance as they can from the consultant and TAs. However, if they reached a point where they lack the ability to perhaps develop something they have envisioned then the

author will make a very detailed analysis on how they had initially planned a certain part as well as the thought process in tackling the idea in hopes to satisfy what they had envisioned.

This project will mainly benefit those who have a passion for Anime as this site will offer a place to connect and converse with others within the Anime community encouraging them to use the Anime Asylum site.

Gantt Chart Work Plan



| ID | Title | Start Time | End Time |
|---|---|---|---|
| 1 | Increment 1: | 02/12/2023 | 02/19/2023 |
| 11 | Login & Register Implementation | 02/12/2023 | 02/14/2023 |
| 12 | Testing | 02/14/2023 | 02/16/2023 |
| 13 | Method + Result Write Up | 02/16/2023 | 02/18/2023 |
| 2 | Increment 2: | 02/19/2023 | 02/26/2023 |
| 14 | Rating Implementation | 02/19/2023 | 02/21/2023 |
| 15 | Testing | 02/21/2023 | 02/23/2023 |
| 16 | Method + Result Write Up | 02/23/2023 | 02/25/2023 |
| 3 | Increment 3: | 02/26/2023 | 03/05/2023 |
| 17 | Quiz Implementation | 02/26/2023 | 02/28/2023 |
| 18 | Testing | 02/28/2023 | 03/02/2023 |
| 19 | Method + Result Write Up | 03/02/2023 | 03/04/2023 |
| 4 | Increment 4: | 03/05/2023 | 03/12/2023 |
| 20 | Chat Implementation | 03/05/2023 | 03/07/2023 |
| 21 | Testing | 03/07/2023 | 03/09/2023 |
| 22 | Method + Result Write Up | 03/09/2023 | 03/11/2023 |
| 5 | Increment 5: | 03/12/2023 | 03/19/2023 |
| 23 | Shop Implementation | 03/12/2023 | 03/14/2023 |
| 24 | Testing | 03/14/2023 | 03/16/2023 |
| 25 | Method + Result Write up | 03/16/2023 | 03/18/2023 |
| 6 | Increment 6: | 03/19/2023 | 03/26/2023 |
| 26 | Profile Implementation | 03/19/2023 | 03/21/2023 |
| 27 | Testing | 03/21/2023 | 03/23/2023 |
| 28 | Method + Result Write Up | 03/23/2023 | 03/25/2023 |
| 32 | Final Tests | 03/26/2023 | 04/02/2023 |
| 10 | Debugging | 04/02/2023 | 04/09/2023 |
| 7 | User Testing | 04/09/2023 | 04/16/2023 |
| 8 | Introduction Write Up | 04/16/2023 | 04/23/2023 |
| 9 | Output Summary Write Up | 04/23/2023 | 04/26/2023 |
| 30 | Literature Review Write Up | 04/26/2023 | 04/29/2023 |
| 31 | Conclusion Write Up | 04/29/2023 | 05/01/2023 |



*Figure 1: Gantt Chart to display how the project will be completed*

A key risk which would have a direct impact on the ability to complete the work to the best possible quality would be the availability of the consultant and the time he/she is able to offer to help troubleshoot and provide direction to ensure the author is staying in line with the project requirements. To reduce the likelihood of this occurring, from an early stage agree and timetable in weekly consultations for us to review current progress and for the author to outline any obstacle or issues they encounter at any given stage. The author will produce a concise document which they will update weekly consisting of their concerns, their consultants'

suggestions/solutions and deadlines i.e. prior to the next meeting track whether these issues have been closed out.

Secondly, another risk factor could lie within the IDE they wish to use to code the site on. The author had decided to use the IDE vsCode as this IDE was recommended during the Web Devlopment Module. Additionally, the author will be using XAMPP for the backend sections of the project. This application could all of a sudden shut down and lose its ability to open. As a result, to avoid this catastrophe the author had looked into other IDEs such as phpStorm that can be used as an alternative. Similarly, they will ensure to back up all files (html, css, php, jpeg files), as there is also a risk that the machine, the author will be operating on could get infected with malware which could result in the files being lost or unable to open.

# Chapter 2: Output Summary

**Multi Page Application**

| | |
|---|---|
| Description | An application with various php files including php code. SQL queries are used to communicate to and from the database. |
| Usage | Authors, reviewers, individuals within the Anime community or have an interest in Anime to connect with one another in a gamification kind of way. |
| Beneficiary | Users |
| Link | Compressed file One Drive link (Appendix H) |

**Frontend**

| | |
|---|---|
| Description | The frontend of the application consists of the languages: Javascript, HTML and CSS with about 10% being comments. |
| Usage | Provided for a user-friendly interface |
| Beneficiary | User |
| Link | Compressed file One Drive link (Appendix H) |

**XAMPP**

| | |
|---|---|
| Description | XAMPP is a web server that allows for the website's graphical interface to be viewed from a local host. It also allows you to connect to a local database (phpMyAdmin) and can be communicated using SQL queries in PHP codes. Roughly 10% of this code is code comments |
| Usage | Used by the web application to store and fetch data to display certain features or carry out particular functions. |
| Beneficiary | User |
| Link | Compressed file One Drive link (Appendix H) |

**Setup Manual**

| | |
|---|---|
| Description | Certain dependencies and environment are required to run the code and utilise all features. This guide was developed to instruct the user how to run the code effectively. |
| Usage | Launch the system externally |
| Beneficiary | User |
| Link | Document File (Appendix J) |

| | |
|---|---|

# Chapter 3: Literature Review

Technology has drastically changed many if not all industries and lifestyles. Connecting with people across the globe virtually has been one of the biggest changes and developments through the enhancement of technology. Currently live in an age where individuals not only connect with their real-life friends but also develop online friendships where they can discuss experiences and create communities based on their common interests. A community in particular that has been increasing in followers over the years is the Anime community. Not only has Anime become a common passion for people across the world but there also seems to be a lack of platforms dedicated to Anime fans.

## Social Media Overview & Studies

Social-media platforms are initially developed with individual's ability to connect and find communities. Science has shown that when connecting to individuals virtually dopamine is released from our brains which is a neurotransmitter connected to feeling a sense of reward or pleasure. This feeling is the key factor to constantly draw people to continue engaging with social-media platforms as it provides the user with a positive feeling. As of recent years, clever technology has been incorporated to allow for these platforms to become addictive by using algorithms which display to the user content is which they are interested in. These features can make using social-media platforms very addictive.

Numerous studies and experiments were carried out in order to comprehend the social-media effects regarding the human brain. The University of California discovered the reward centers within the brain can be stimulated leading to increased levels of oxytocin, thus activating feelings of positive well-being and trust (Sinha et al., 2013). These findings are extremely relevant in today's age as mental health awareness is a largely talked about and encouraged, as having poor mental well-being can lead to issues such as social isolation, reduced productivity etc. As a result, promoting and addressing mental health issues is essential to aim toward a productive and healthy society. Additionally, a study carried out by the Journal of Communication (Virtual Communities) discovered that using social-media not only enhances social skills but promotes a sense of belonging. The results of this study showed that individuals which were involved in a Virtual Community resulted in greater levels of self-esteem, social support, and life satisfaction compared to individuals which were not involved in a virtual

community. The study's findings reported that virtual communities can overall reduce feelings of isolation/ loneliness especially for individuals who struggle to form bonds and connections with people in real-life.

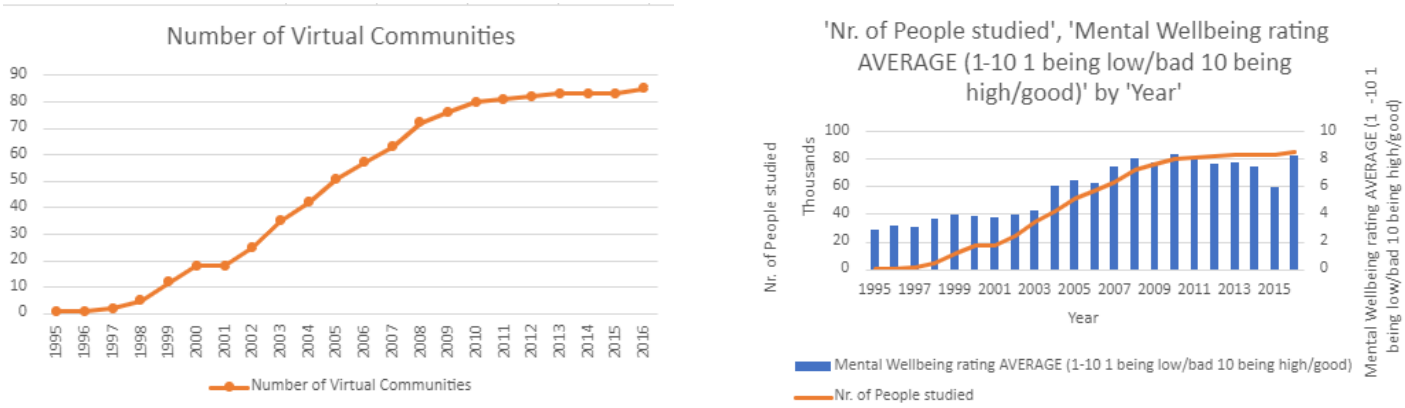



Figure 2: Graphs from the study carried out by The University of California

From analysing the two graphs, there is a clear correlation between virtual communities and mental wellbeing. The strong positive correlation between the two graphs is evidence of the fact that having an increase in the number of virtual communities helped to increase the mental wellbeing drastically.

Upon earlier years a global pandemic known as COVID-19 was discovered resulting in individuals around the world to quarantine and isolate themselves. This left people with a last resort to connect with others virtually and through virtual communities. These abrupt rules had understandably allowed others to feel an increased sense of loneliness as socializing was not as easily accessible. Online communities, platforms and forums had however given these people hope since they were still able to communicate and socialize with their friends and family during these challenging times. The Anime social-media that was developed regarding this project aims to provide Anime fans with a virtual space to connect with others that share similar interests. This ultimately provides individuals with a sense of belonging which was a desperate tool needed during the pandemic.

<u>Similar Software</u>

Social-media platforms that currently exist which appeal to the Anime community are "MyAnimeList" and "Anime-Planet". Although these sites are well known and are highly

enjoyable, they however lack in areas which Anime Asylum excel in. For example, Anime Asylum allows their members to collect XP points by completing quizzes and Anime reviews, which then enables them to purchase items from an online built-in shop. These features provide a "game" element to the platform ultimately encouraging users to peruse using the website as well as create a sense of competition incorporating the addictive nature of websites. In addition, anime recommendations are provided to the user through the use of NLTK library based on the user's discussions and personal preference. This feature encourages users to watch new Anime that they might have not seen before.

Recommending Anime

The recommendation system which was incorporated involves NLTK python library which analyze the user's conversations and provides a recommendation based on the keywords found in the chat. NLTK is a Python Library which is commonly used in NLP. The system which was implemented using this tool to analyze and fetch keywords from the chat forum in order to compare them to a dataset allowing the system to recommend relevant Anime. This feature allows for a personalized touch to the user as they are provided with recommendations unique to them. This not only broadens their horizons in the sorts of Anime they have yet to discover but can be extremely helpful for users who lack Anime knowledge, allowing the website to cater towards all groups. These features overall outline the main reasons as to why this platform would be unique to the current platforms available, encouraging users to use the site as unique features are offered by Anime Asylum.

To conclude the social-media platform which was developed allows users to feel a sense of community and connectivity. Although some may argue that there are a large number of negative impacts related to social-media, there is a strong belief that the current website in development consists of various elements resulting in a number of positive impacts on a user that essentially outweigh the cons. Elements such as the gamification and personalized recommendation features allow users within the Anime community to connect with others that share their similar interest. Additionally, if this website were to exist during the pandemic, the author believed that Anime Asylum would have provided a space for social interactions and to connectedness improving the emotional well-being of those difficult times.

# Chapter 4: Method

## Project Methodology & Life Cycle:

### Structure:

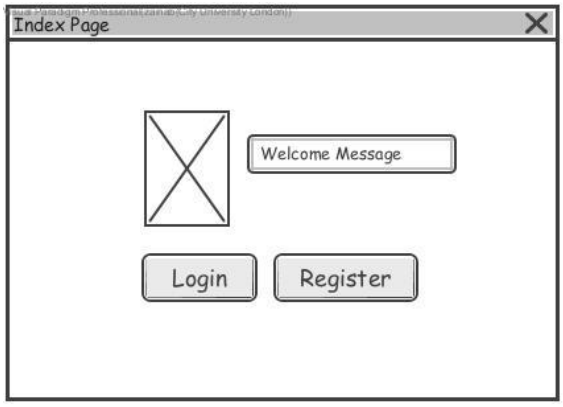
As the main features were outlined during the PDD the author decided to commence with the incremental approach when developing the project which is an agile methodology. This method allowed the author to tackle a few fundamental requirements at a time to produce a functioning project, whilst also allowing the author to revisit certain areas to either enhance or implement new features. This approach also allowed flexibility during implementation whilst also being able to fully complete tasks/requirements as the testing stage is constantly carried out in the incremental approach.

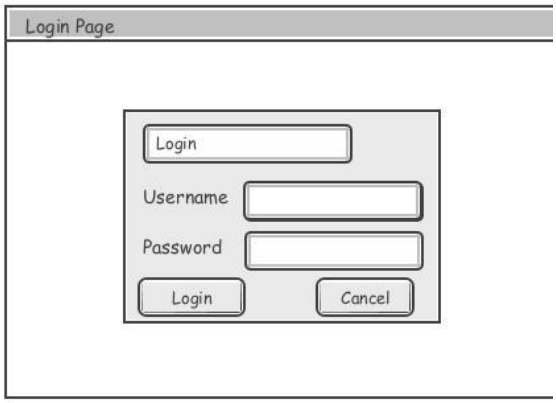
The project was split into six main increments. As opposed to splitting the project into different sections (frontend and backend), the decision was made to simultaneously work on both. Thus, the increments were split into the different pages within the site being index, profile, rate, quiz, chat and shop. The site was developed using the IDE 'Visual Studio Code' where html, css and php codes were implemented to develop the website. XAMPP was used for the backend, which allowed for a local database to be accessed to store and fetch data for the website.

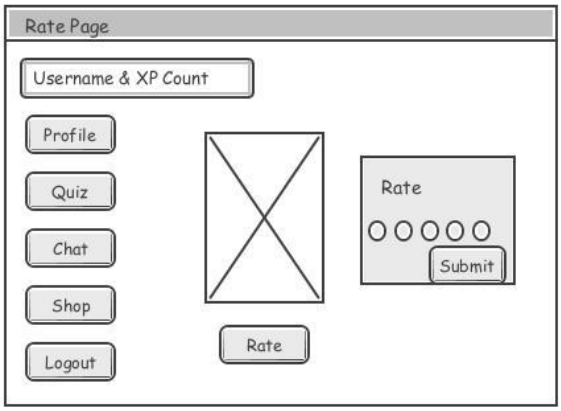
From the PDD a Gantt Chart (Appendix D.1) was outlined to clearly help outline the scope of the project as well as requirements and tasks that needed to be carried out, time was also being tracked as deadlines were being met at the appropriate date. Additional requirements could also be added with ease as well as quick notes being easy to log at any given moment. Overall, the plan proved to be very efficient in assuring tasks were met while the project was progressing at an appropriate pace.

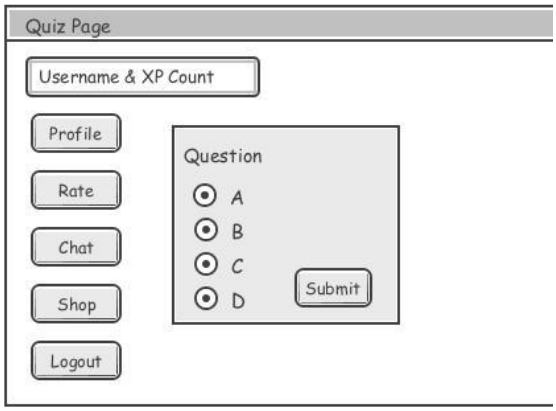
### Design & Prototype:

Regarding the design element of this project, the user should be able to freely navigate and explore the site with minimal assistance thus creating a user-friendly experience. However, the key to the interface was simplicity, intricate algorithms and programming was carried out to effectively output the true nature and vision of this project. To truly encompass the vision for the interface, wireframes were created prior to implementing any code. This provided the author with clarity in terms of the direction that needed to be taken to execute a user-friendly interface.


Index Page
Welcome Message
Login
Register


Login Page
Login
Username
Password
Login
Cancel


Rate Page
Username & XP Count
Profile
Quiz
Chat
Shop
Logout
Rate
Rate
Submit


Quiz Page
Username & XP Count
Profile
Rate
Chat
Shop
Logout
Question
A
B
C
D
Submit

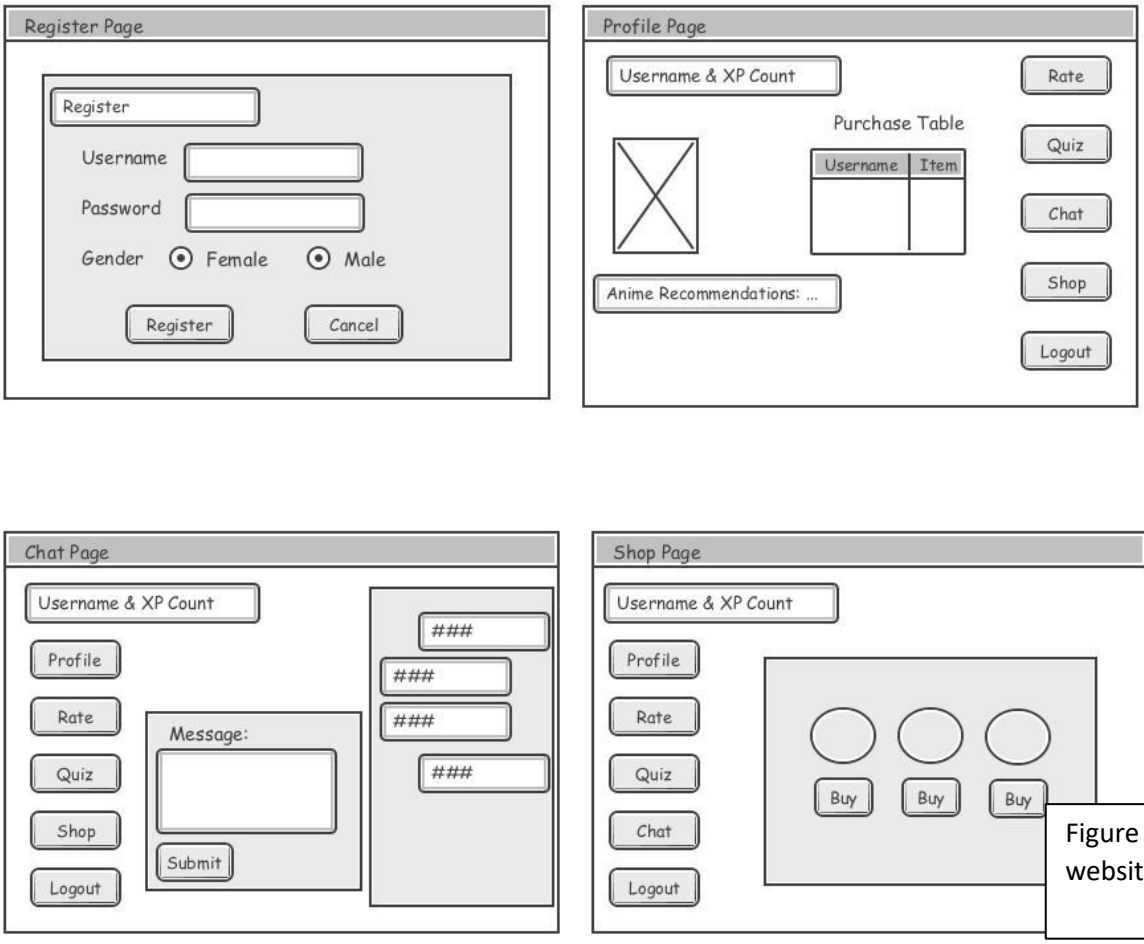



Figure 3: Wireframes of the website

**Version & Quality Control:**

Due to its functionality the project consisted of multiple files, as a result the author had to ensure that all locations which stored the site should consist of the most updated version of the project. Therefore, a backup process was carried out after the end of every week to ensure quality and version control. The process consisted of backing up / replacing the current project folder into github and an external hard drive. Additionally, throughout the entire implementation process the author kept thoughrough logs (Appendix I) of the progress being made and the feedback which was received through meetings. This allowed the author to keep track of their progress and make sure that the advice received was taken on board and not forgotten. The quality of the final project was impacted as all the relevant tweaks were made to produce the final product to its best standard with minimal bugs.

Project Requirements & Analysis:

The requirements of the website must not only be understood by the developer but also by the end user which could overall affect the implementation of the website. Therefore, when coming up with the different increments involved within this project, the author found it effective to consider the users interaction with each requirement to ensure the website's fundamental functions.

| **Requirement** | **Description** |
|---|---|
| 1.0 | Increment 1 |
| 1.1 | User must be able to clearly login or register to the website |
| 1.2 | User must be able to login into the site with appropriate credentials - system must validate the credentials |
| 1.3 | User must be able to register to the site with their name, email and password |
| 1.4 | System should store a new user's credentials into the database |
| 1.5 | System should recognise the user logged in and redirect them to the profile page |
| 1.6 | The user should be able to see their username and the number of xp points displayed on the profile page - retrieved from database |
| 1.7 | The user should be given an option on what they'd like to do next from the profile page |
| 1.8 | The user should be able to go to the rate, quiz, chat or shop page from the profile page |

| | |
|---|---|
| 1.9 | The user should be able to log out and the system should be able to end the current user's session |
| 2.0 | Increment 2 |
| 2.1 | The user should be able to pick an anime to rate from rate page |
| 2.2 | The system should pop open a subpage which displays the anime name and 5 interactive stars |
| 2.3 | The user should be able to select the number of stars they'd like to give for the particular anime |
| 2.4 | The system should increment five xp points once the user has provided a rating and pressed the submit button |
| 2.5 | The system should store the user, movie name and rating |
| 2.6 | The user's name and new xp count should be displayed in the header |
| 3.0 | Increment 3 |
| 3.1 | The user should be an able to select a quiz to complete from the quiz page |
| 3.2 | The system should display text showing each question and interactive options |

| | |
|---|---|
| 3.3 | The user should be able to progress through to the next questions once they have chosen an option and pressed the next button. |
| 3.4 | The system should calculate which questions were correctly answered and should display the final result |
| 3.5 | The system should increment five xp points once the user has completed the quiz |
| 3.6 | The user's name and new xp count should be displayed in the header |
| 4.0 | Increment 4 |
| 4.1 | The user should be directed to the chat page via the chat button |
| 4.2 | The system should display a text box for the user to enter their name and message as well as a send button |
| 4.3 | The system should store the message into the database after the button is pressed and immediately display the message on the screen |
| 5.0 | Increment 5 |
| 5.1 | The user should be being directed to the shop page via the shop button |
| 5.2 | The user should be able to browse the items and select an item they are interested in |

| | |
|---|---|
| 5.3 | The system should display details such as description and xp amount after a user has selected an item |
| 5.4 | The system should decrement the appropriate number of XPs if the user has selected the buy button |
| 5.5 | The user's name and new xp count should be displayed in the header |
| 5.6 | The item purchased should be seen in the user's profile page |
| 5.7 | The system should the user's database area with the new item |
| 6.0 | Increment 6 |
| 6.1 | The user should be able to visit the profile page from any page |
| 6.2 | The user should be shown general information (i.e. avatar, purchased items, anime recommendations) |

**Use Case Diagram:**

The website was designed to cater for individual users to use the system at a time. As a result, a use case diagram (Appendix E.1) was created to show a clear understanding of the sorts of interactions a user can have with the system

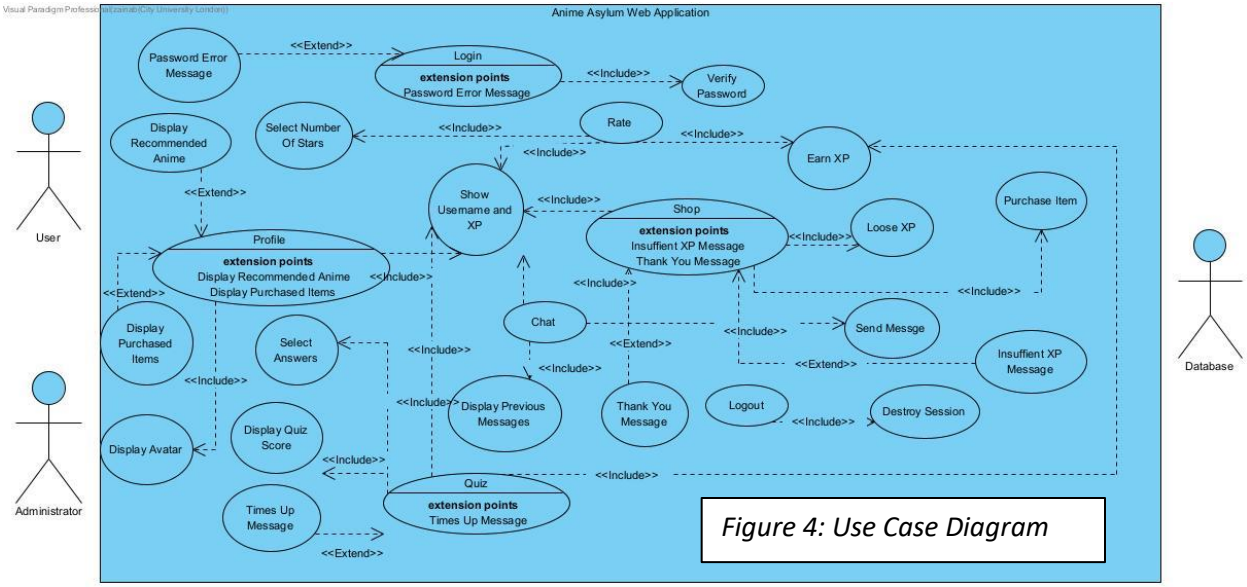



*Figure 4: Use Case Diagram*

**ERD Diagram:**

This project relies heavily on the database / backend functionality therefore to better understand the backend structure an ERD diagram (Appendix E.2) was designed. For this project a more traditional and well known language to manage data was used being SQL.

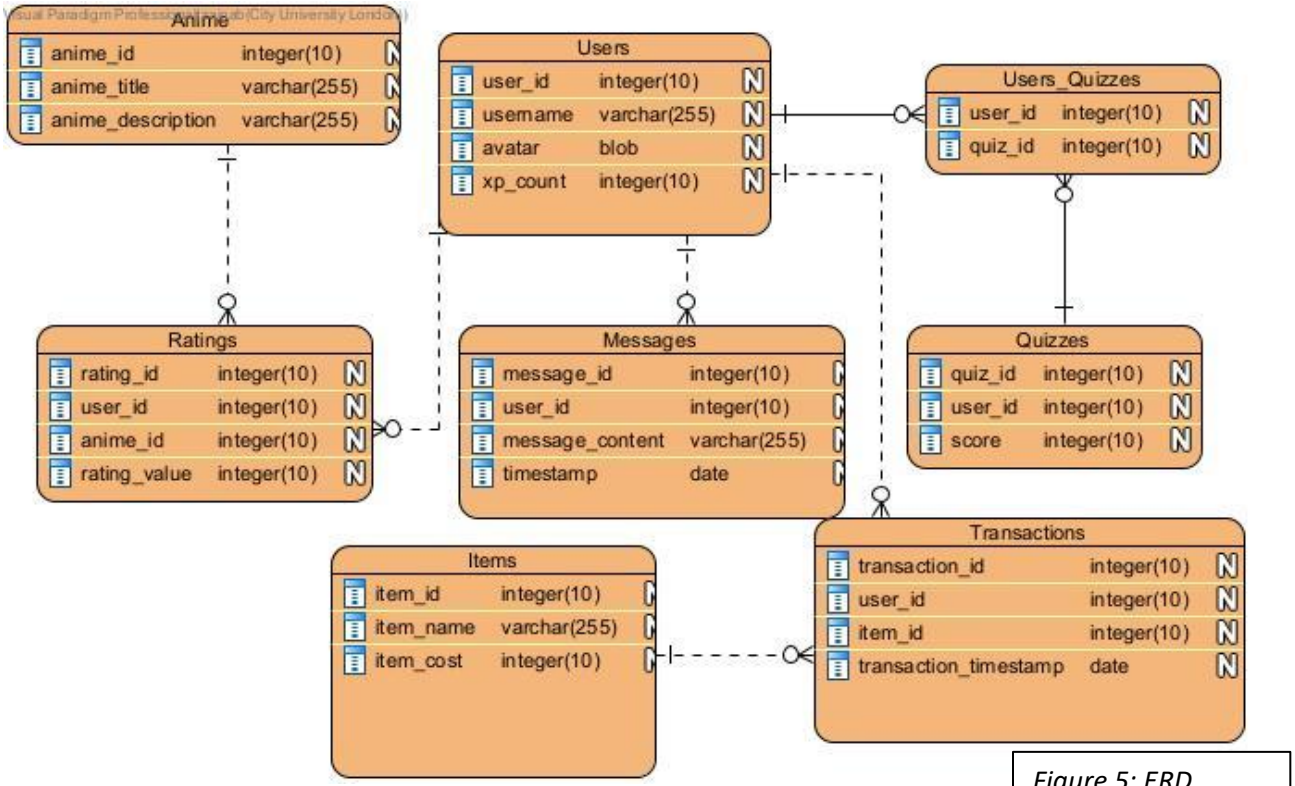



*Figure 5: ERD*

**Class Diagram:**

In this website data is stored separately from the application and can be updated with ease therefore can be considered a data-centric program. The sort of data that is used and collected are: user details, stored messages, user purchases, user ratings as well as data stored for the program to obtain such as the 'male' / 'female' avatar image. A class diagram (Appendix E.3) displays the implementation of this data.

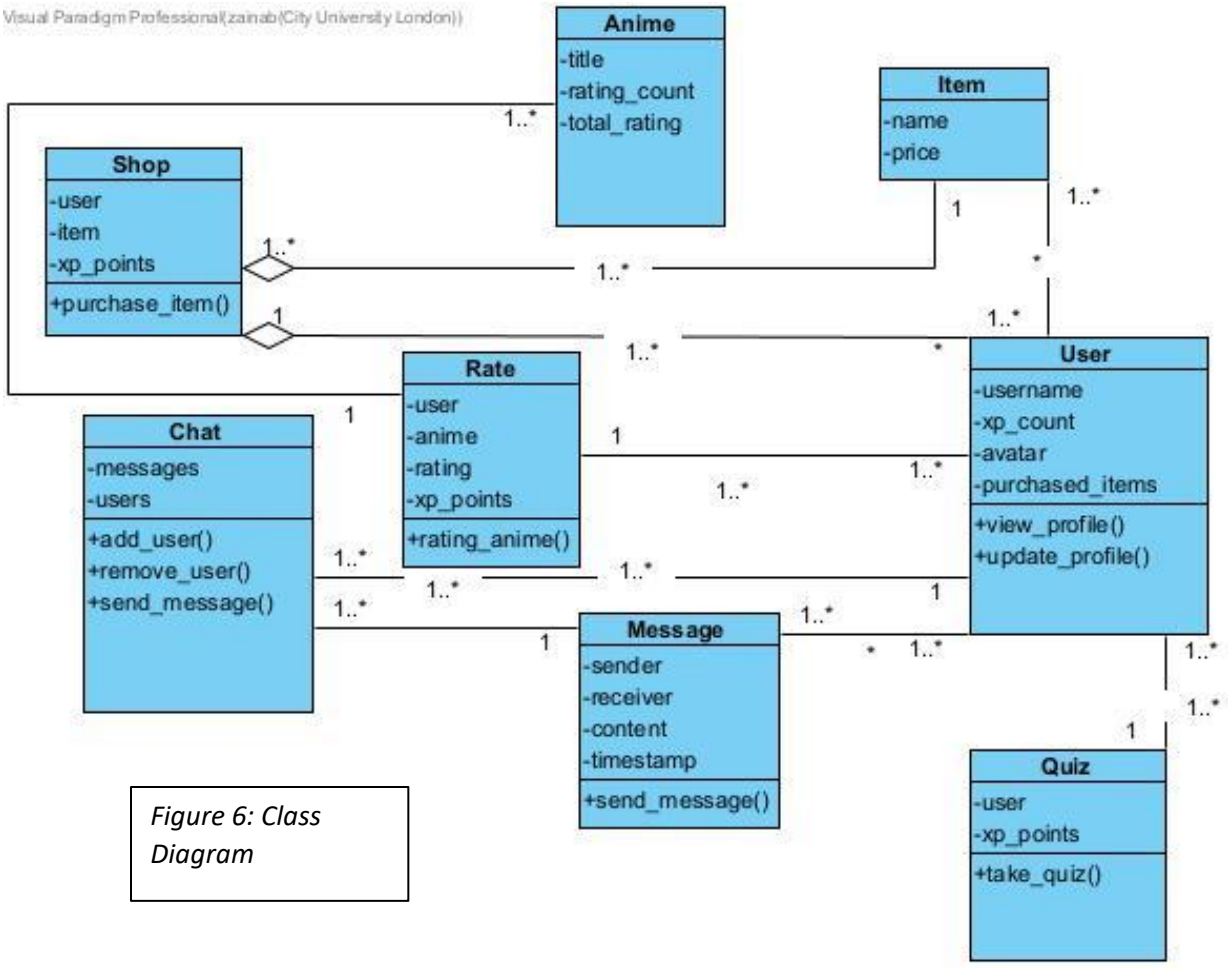



*Figure 6: Class Diagram*

Tools & Software Used:

| **Tools & Software** | **Description** |
|---|---|
| Visual Studio Code | The IDE Visual Studio Code was used to develop the program. This environment was ideal to use as it caters for various programming languages with numerous extensions and tutorials. The IDE was |

| | |
|---|---|
| | also very helpful in adapting and incorporating the various languages that were used to develop the website. |
| Visual Paradigm | Many diagrams and wireframes were designed and developed using this software |
| XAMPP | This program was used to launch and test the website locally also providing a database to store data locally. |
| MySQL | The system used to manage databases also known as a database server. |
| phpMyAdmn | The tool in which to administer the MySQL database. |
| Programming Languages | - HTML<br>- CSS<br>- PHP<br>- Java Script |
| Python Libraries | - NLTK |
| Drift | Tool used to incorporate a bot feature and to generate automated responses. |

**Project Skeleton:**

Each iteration includes having the frontend designed before completing other functionalities. The site has 'typical' web browser dimension and was designed accordingly via wireframes (Appendix F.1). The design's vision was to be user-friendly with clear indication of the different features with little to no help and prompts.

**Starting Project:**

Regarding the frontend, it was considered whether to use a framework during implementation. Using a framework would have provided a structure to then enhance and expand further for the finalized version of this project. In hindsight using a framework seemed to be a great idea as its advantages significantly outweighed the disadvantages. Additionally, the programmer would have less errors and debugging to carry as frameworks have already been tested for such errors, providing a piece of code that runs smoothly. However, after much consideration it was decided against using a framework as the developer believed they would lack the freedom and flexibility. In addition, the developer struggled to find a framework that clearly conveyed the initial design and vision for the website.

As a result, having clearly outlined the design through wireframes was a key part in completing the frontend of this website. A clear idea of the site's design was mandatory in ensuring the programmer was able to execute the frontend based on the initial requirements and vision for the program. Monumental time was spent in researching and ruling out different ideas suggested for the frontend, narrowing down the most suitable design.

**Components & Views:**

The diagram gives a generalized view of what the user can see once they have passed the login verification. Once the user has successfully logged in, they will be able to navigate to any desired page view and would be shown the same navigation buttons on each page. Due to the project's scope the view and structure of this project is limited and is simply designed to showcase the site's potential, this however can be improved if the site were to be scaled up.

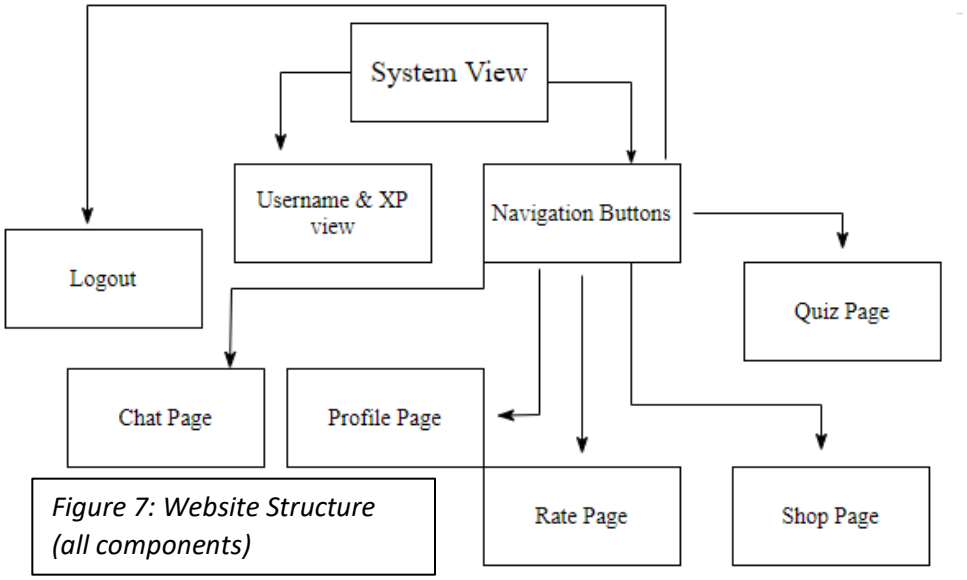



*Figure 7: Website Structure (all components)*

The 'username and xp' view can be seen on all pages of the site. It involves a re-usable function that fetches the data from the local database through HTTP requests. The main requirement is for the system to acknowledge the user's session and be able to communicate live updates to the user i.e. if an item has been bought the xp count should instantly refresh. This view should also not mislead the user by displaying another user's xp count or another user's username.

As the name suggests the navigation buttons will navigate the user to another html page. The logout button is the only button which has a function that destroys the session and redirects the user to the index page. Although all buttons lead to an entirely different page, within those pages there are single components attached. For example, within the rate page, there is a button called 'rate' which would pop open a small form that allows the user to add the number of stars and submit. This decision was made as opposed to having a separate page as for starters fewer information was required therefore to improve the layout, view and design the author had decided to complete the 'rating' function within the same page.

The rate, quiz and shop page were the three pages which consisted of code to increment / decrement xp points. The function would then have to ensure the new count was updated within the database outputting the new score. Additionally, code was written to ensure that xp points could no longer be decremented after reaching 0. Similarly, the quiz and rate pages would only allow the user the option to increment xp points after completing the task. The profile and chat

page do not affect the xp count however, offer different functionality. Firstly, the profile page is the default page directed to when the user either logs in or creates an account. The system would recognize the gender inputted by the user and provide them with an avatar based on the information received. The user is also able to view purchases they've made on this page. The chat page offers the user a space to connect and talk with other users registered to the website. Every time the user sends a message their username will align with the message, communicating to other users who the message was sent by.

**Reusable Code:**

To show 'good code practice', it was vital that code wasn't re-written several times. Therefore, PHP files were developed to store code that would output the username and xp points. As this information was provided on several pages the developer decided to create a file that stored this code and retrieved the code on all the pages that required the necessary information. Additionally, all CSS codes were stored on 'stylesheet' which was imported on all web files. This ensured consistency of the design on each page and again reduced code being written several times.

**Local Database:**

As the stored backend data plays a big role in this project, different data storage methods were considered. Firstly, having data stored within a JavaScript file would provide limitations such as a size limit and risk of data loss. If the browser were to be lost, then inputted data will also be lost therefore using a server would be most reliable. Secondly, a JSON file could be created that could store data and be retrieved via HTTP requests. Ultimately this seemed to be a better execution for storing data, however the developer considered disadvantages such as data types not set, less secure and minimal commenting.

As a result, the author had decided to use a tool familiar to them, a server known as XAMPP. This tool provides a suitable environment allowing developers to verify and test their project's functionality (MySQL & PHP). For the purpose of this project XAMPP seemed like the most ideal tool to use as the functionality could be tested with ease from all sectors from basic html codes to backend functionalities such as php. XAMPP provided a local host so the site could be viewed live via a web browser and also gave access to a local database which could be managed using phpMyAdmin.

**Authentication:**

Security is a fundamental component within this project as users will entrust the site with confidential information about themselves therefore, the author took into consideration methods which could optimize security. Users should be encouraged to use difficult passwords and as a result the user code was implemented to reject a password that was not considered “strong”. This was done through using a regular expression. The expression essentially defines the rules of the password being capital letters, lower case letters and a minimum of one number. If the user’s input reaches the required, then the system will register the user into the database and store their credentials. Otherwise, the user is prompted with a message with suggestions on how to improve the password so it can be verified by the system.

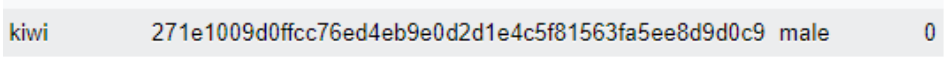



Figure 8: Showing password encryption

Another improvement made by the author to enhance security was to encrypt the data stored within phpMyAdmin. After research there were two main methods of encrypting the data, the first method was to apply a setting into phpMyAdmin to allow all inputted data into the field to be encrypted by default. Another method was to include an algorithm and a built in function in php known as hash() which would encrypt the password inputted into the database increasing security. Additionally, when a user logs in, their password is hashed using this algorithm (SHAH-256) and then compared to the stored hash to verify the password / identity.

**Advanced Functionality (NLP):**

The website also consists of a feature which analyses the messages being sent by users and recommends an anime based on the keywords. This part of implementation was in-fact extremely difficult to incorporate as the developer was not too familiar with natural language processing. As a result, the author was required to carry out a considerably large amount of research in this particular field.

From various research the author had narrowed down to two libraries being the hugging face and NLTK that could search through the keywords within the messages table. It was decided to go ahead with the latter simply because there were much more resources available online. Additionally, NLTK includes features such as tokenization, stemming etc. The user had

to first install the required tools, being python, pp and NLTK library. A path also had to be set representing environmental variables which allowed the system to view the path of the language. Next the dataset which was loaded therefore it was required for it to be in the appropriate csv file and ensure there were a minimum of two columns named “name” and “genre”. Finally, after implementing the appropriate functions the system was able to successfully analyze the messages being sent and suggest appropriate anime based on the keywords.

**Planning & Creating Functions:**

The following steps were taken to incorporate a function that would recommend the user anime based on the conversations and genres of anime that exist.

- Messages but be sent and stored in the database
- Keywords from the messages must be extracted
- The keywords were then compared to the genres within the dataset
- Based on the keywords, the ‘name’ column from the dataset would be extracted in regard to the matches

Many functions were required in carrying out the following steps and overall accomplishing the end goal in recommending suitable/ appropriate anime to the users based on the messages and conversations that were carried out.

**Bug Fixes:**

After the first draft was completed, general tests were conducted ensuring all functions and features were running smoothly. Below were the different bugs discovered during this phase:

| | **Bug** | **Priority** | **Status** |
|---|---|---|---|
| 1 | Ensure all navigation buttons lead to the correct location | High | Complete |
| 2 | Display the username of the user that has sent a message | High | Complete |

| | | | |
|---|---|---|---|
| 3 | XP points should not decrement after reaching 0 | Medium | Complete |
| 4 | Changing default font to a better fitting one | Low | Complete |
| 5 | Change button colour when mouse hovers over the button | Low | Complete |

**Additional Features: Bot**

After completing the main functionality of the website the author decided to research how they would be able to further enhance the website to attract additional users to the website. One suggestion from an article titled “must-have features for your website” was to incorporate a help bot with generated features. Due to the time scope required for this project, the author decided to use a programming tool as opposed to implementing this feature from the beginning. In this case the tool “Drift” was used. Drift is a website that allows you to design and create a personalized bot for your website by choosing the default image, colour of icon etc. The code (Appendix B.1) was then inserted into the JavaScript file which was fetched within all web pages. This feature would be able to assist users who are struggling to navigate the website, or to answer any queries they may have. Any questions that could not be answered by the bot would be sent to the administrator’s mailbox which would then allow an actual human to assist their issue, resulting in a higher possibility of the user’s query being solved.

**Additional Features: Timer**

Another feature which was added was a timer to the quiz. As the quiz’s purpose was to encourage users to take part as opposed to test their knowledge, the user is granted XP points regardless of their score. As a result the author wanted to incorporate another factor which would encourage the user to complete the quiz. Scientific research shows that individuals tend to work better and quicker when under working under a deadline or time limit. As a result, by incorporating a timer to complete the quiz by, should overall increase the user’s drive to achieve higher in the quiz.

**Additional Features: Help**

The final additional feature which was included was a help guide. This allows the site to become user friendly as they are guided through the page's different functionality. Each page consists of a help button which would display helpful prompts once it has been clicked. The information is shown quickly and simply reducing how much the user may have to read before solving their issues. This increases a user's efficiency whilst using the website as time is not being wasted trying to establish how to carry out a certain task.

Deviations:

After much consideration the author decided that all functionalities were necessary in the final production of the project, and by removing any of the existing features could result in a poorly executed program not entirely true to the initial requirements. As a result, the user decided to research and establish a new feature that could be added to the website increasing its scalability and attracting additional users. The author decided to incorporate a section which recommends the users Anime based on the kinds of conversations that were carried out in the chat forum. After much time was spent exploring existing websites the author decided to brainstorm what appeals to them and what features improve the user experience whilst exploring the website. It was concluded that the incorporation of AI techniques drastically determines the amount of time being spent on these sites, as the more time a user spends using the site, the more information the system can obtain, thus improving in customizing the user's experience with relevant data that interests the user.

Tutorials:

Aside from the NLP which was incorporated, most functionality implemented was taught within the Computer Science course at City, University of London. The author had revisited previous projects to recap certain areas involved in the development of the current project. In addition, the author had also watched lectures from both Moodle and other forms of education tools such as technology study websites, and YouTube.

Testing:

**Functional Testing:**

Each increment involved a testing procedure which was carried out after the implementation was complete for that particular increment. The requirements of the incremented

was documented, which allowed the developer to understand the end product of each milestone, this same document was then used to black box test (Appendix G) the features and functions. After tests were carried out some issues (i.e, those linked to design), were not as fundamental to fix and was therefore moved to the table above highlighting bugs.

| **Increment 1:** | | | |
|---|---|---|---|
| Input | Expected Output | Actual Output | Status |
| Credentials such as username and password | New account should be registered into system | New account was registered into system | Pass |
| Existing credentials such as username and password | Successfully logs into the system | Successfully logs into the system | Pass |
| **Increment 2:** | | | |
| Pressing arrows | Different Anime should be shown | Different Anime was shown | Pass |
| Pressing rate button | Form to rate Anime should appear | Form to rate the Anime appeared | Pass |
| Pressing stars | The number of stars pressed should be the number of stars that go yellow | The number of stars pressed was the number of stars that go yellow | Pass |
| Pressing submit button | The system should store the rating and add 5 XP | The systems stores the rating and adds 5 XP points | Pass |
| **Increment 3:** | | | |
| Press an option | The system should move to the next question | The system moves to the next question | Pass |
| Pressing add 5 xp button | The system should increment the XP count by 5 | The system increments the XP count by 5 | Pass |
| Reload button | The quiz should reload | The quiz reloads | Pass |
| **Increment 4:** | | | |
| Text box | The user should be able to type text into the text box | The user can type text into the text box | Pas |
| Submit button | The text should be stored and should be displayed back onto the page within the chat box | The text is stored and displayed back onto the page with the chat box | Pass |
| **Increment 5:** | | | |
| Pressing buy button | XP points should decrement, and the item should be stored onto the user's account | XP points are decremented, and the item is stored onto the user's account | Pass |
| **Increment 6:** | | | |
| Displays | The user should be displayed information such as purchased item, recommended anime, avatar, username and XP count | The user is displayed information such as purchased items, recommended anime, avatar, username and XP count | Pass |

Figure 9: Blackbox Testing

**Non - Functional Testing:**

After the initial implementation was finished, tests were carried out by nominated individuals to receive a realistic and honest review from the website. After signing a consent form (Appendix C.1) three University students were given an information sheet (Appendix C.2) where they carried out a number of tests and provided feedback. Here is an overview of the tests carried out. (Full tests can be found in the (Appendix C.3))

| **Person** | **Application Speed** | **Ease of Use** | **User Interface** | **Overall Satisfaction** |
|---|---|---|---|---|
| X | 100% | 100% | 100% | 100% |
| Y | 70% | 87% | 94% | 88% |
| Z | 90% | 93% | 74% | 84% |
| Average | 87% | 93% | 90% | |

The feedback (Appendix C.3.2 & Appendix C.3.3) given from person ‘Y’ and person ‘Z’ were taken on board and incorporated into the project.

# Chapter 5: Results

For this project the developer made the decision to use XAMPP which allowed for both the frontend and backend of the website to be tested. By enabling both the Apache and MySQL feature, the website could be viewed from a local host via one's browser. In order to connect all pages to the database, a connection file was created and included in all pages that required information to either be retrieved or sent from the database.

```
<?php
//local database fields
$servername = "localhost";
$username = "root";
$password = "";
$db_name = "animeasylum";
// establishing the connection with mysql
$conn = new mysqli($servername, $username, $password, $db_name);
// check if the connection was unsuccessful then show error message
if($conn->connect_error){
   die("Connection Failed".$conn->connect_error);
}
// echo an empty string
echo "";
 ?>
```

The code sets up a connection with the database using servername, username, password and the name of the database. The code then runs to find a match with the above details, otherwise an if statement was written to display a connection failed message if the database could not be found or could not be connected to. If the connection was successful and the database was established then a “connected” message will appear communicating to the developer that information could

now be retrieved and sent to the database. Finally, as opposed to writing these lines of codes several time, a file was created called “connectdb” which stored this code and when a page required php coding the “connectdb” file was included allowing the connection to be maintained throughout the entire website.

The structure of XAMPP is very complicated as it involves a variety of components that include apache, mariaDB, php, phpMyAdmin, filezilla etc. Upon installing XAMPP the user will have access to a control panel allowing them to navigate to different functionalities. In order to allow for a website to be tested locally, it must be stored within the htdocs file provided by XAMPP. Additionally, when data is added to phpMyAdmin database the files within XAMPP are also updated within the mysql folder in data. These folders were vital in regard to the development of this project as all javascript, php, css files were stored in these locations providing the fundamental building blocks for this project.

Design & Analysis:

**Use Case Diagram:**

The author created a use case diagram (Appendix E.1) to demonstrate how a user as well as external platforms will interact with the system. This also allowed the author to analyse and understand how interactions will be made via the database and website application. Alongside the use case diagram, specification were also outlined as it allowed the author to go into dept the vital features to decide whether the application works.

**ERD Diagram:**

An entity relationship diagram (Appendix E.2) was also developed as it provided clarity in visualising data and its relationship to components within the website application. From viewing the final structure of the ERD diagram, it was clear that using a SQL database would be best fitted for this project as its fundamental components are well equipped and designs for data structures as this.

**Class Diagram:**

Before creating the final version of the class diagram (Appendix E.3) different ideas were laid out for the different classes and functions. This was to avoid unnecessary classes from being the final version. The diagram’s main objective was to outline the important mechanisms within

the web application as well as classes and the various relationships between them. The author was also able to analyse the existing attributes and what data types were needed for the database.

User Interface Design:

**Wireframes:**

The design for the website was a key component as it is the main component involved in deciding whether the interface is user friendly. An initial design was created with pen and paper which was followed through during implementation. However, as the implementation process had started, and more and more functionality / features were being added, the initial design was not being incorporated well, such as colours were not blending well etc. Therefore, after finishing all functionality of the website the user developed wireframes that would better fit the existing website. As opposed to freestyling the design the author decided to come up with a theme and make all design decisions based on this theme. Various gifs were also used providing a friendly and welcoming atmosphere to the website encouraging users to browse the site further. Overall, the "pixelated / retro" theme was established, and the final design blended very nicely with the functionality and features of the website.

Implementation:

The first design choice was to ensure the user's username and xp count was always visible to the user upon signing into the website. This data will be fetched from the local database using HTTP requests. The location of this information would stay in one location for the user's convenience. Additionally, navigation buttons were also shown to the user allowing for easy navigability between different web pages. Similarly, to the user details fetched from the database, the profile page also consists of a table outlining the purchases made by the user as well as the user's avatar which is automatically generated when the user registers to the system.

The review page includes a unique feature to all the other pages. After a user has selected an anime to rate, they would proceed to pressing the rate button. However, as opposed to redirecting the user to another web page, a small popup form will open providing the extra pieces of data the user needs to complete their review. This overall improves the web design and efficiency as the user will not be constantly redirected to various locations when trying to carry out one function. Additionally, the website can look appeasing when certain pieces of data are

hidden and only appears when the user triggers a function to make it appear. The quiz page consists of a form displaying questions and multiple-choice answers. The user will continue through the numerous questions until they are shown their result with an option to re-attempt the quiz and collect XP points. The design choice made was to display each question at a time to the user as opposed to displaying all questions on one page. This design choice emphasizes the simplistic theme envisioned by the author.

The shop page allows the user to buy item based on the number of XP points they have. The page includes the different items that can be purchased on the shelf. The image chosen for the shelf had to fit the theme and therefore the author decided to choose a pixelated shelf which suited the design entirely. Finally, the chat page is a forum that can be accessed by all members registered to the website. A design choice considered for this page was to have all messages appear instantly on the page as opposed to having to click on a button to showcase the messages. This was done to allow the user to quickly skim the chat and get involved with the current discussion.

**Database:**

To further understand the structure of the database ERD and Class diagrams were created which outlined the relationship regarding the web application. The open-source web server (XAMPP) which was used for this project consists of programming languages such as PHP and Perl which were primarily designed for backend development. XAMPP also consists of a tool called phpMyAdmin which was a fundamental look in administrating the database. The initial steps in setting up the database were to firstly create a new database which would primarily be used for the website. Secondly, multiple tables were created within the database highlighting different areas and functionalities within the website whilst also clearly organizing all the data. The unique identifier is the username, which allowed data from multiple tables to be merged. Certain tables stored default data which was required for certain functionalities to work. For example, the gender_image table includes images of the avatars that will be extracted based on the gender selected upon registering to the website. Without these data files an avatar will not appear on the profile page.

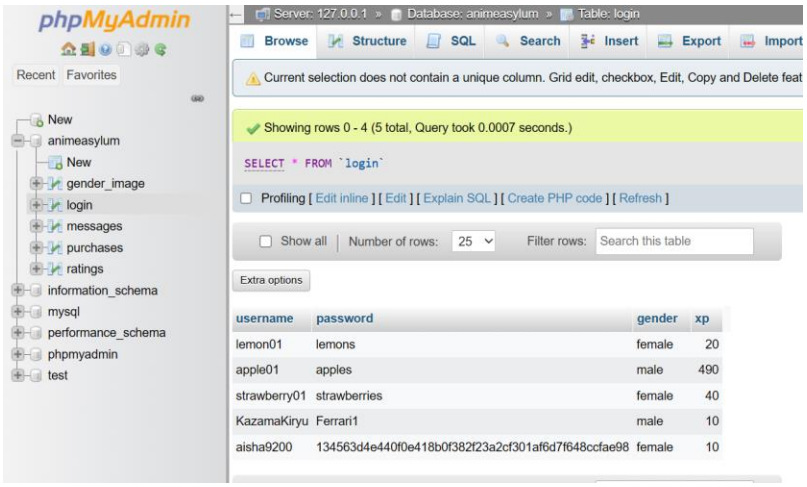



Figure 10: phpMyAdmin database screenshot

Upon accessing the index page for the website the user is prompted to either login or register. These details must be authenticated before the user can have access to other functionality within the website. If a user does not have an account then they are required to share some information within the register page. Within the username section the individual may find their chosen username input is being rejected. This is due to the fact that the username is a unique identifier meaning that is someone else already possess a username another user will not be allowed to use the same one. Secondly, if two users were to have the same unique identifier, this could result in a miscommunication when presenting a user's details i.e, the XP count for both users will be displayed. This can also lead to a risk of a security breach as users without the proper viewing right would not be eligible to view confidential information of other users within the site.

The login table displays the confidential information entered by the user, and therefore can be pulled and combined with another piece of information. For the correct avatar to appear within the profile page the system first checks to see what gender the user is by using the user's unique identifier (their username). Then, the system will be directed to the gender_image table where it is provided information with the current input it possesses. For example, if the user is listed under 'female' within the gender column then the female image is fetched from the gender_image table and is displayed on the profile page.

Components:

**Login Component**

The login component involves PHP codes that authenticate credentials by first confirming whether the form has been submitted, and second then retrieving the inputted credentials and checking if they inline with the inputted data within the database using SQL queries. If the credentials are true and correct with the database's information a session variable is set by the script redirecting the user to the profile page. If the combination does not exist, it takes no further action. The script also initiates a user session to maintain authentication state across multiple pages.

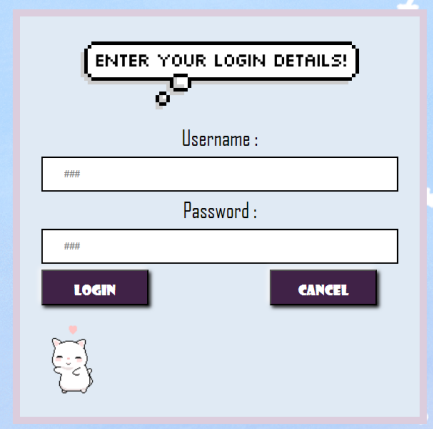



*Figure 11: Login Screenshot*

**Register Component**

On the page the form is checked to see if it has been submitted and then retrieves the information that has been submitted. SQL checks the username to see whether it already exists in the database otherwise the inputted username is stored into the database as a new user however, if a user with the same username already exists then an error message would be displayed. If all information has been inserted accordingly / successfully a session variable is set by the script which connects the user to the profile page. Otherwise, if the insertion of data was not successful an error message appears informing the user. Finally, a user session is initiated in order to maintain authentication across the various pages.

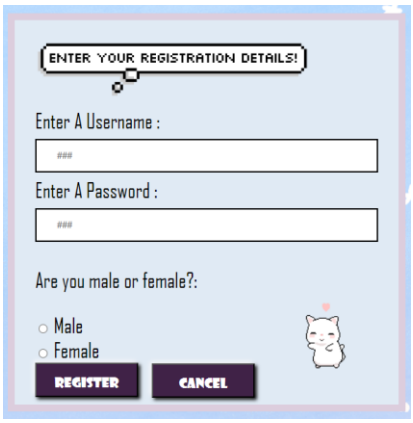



*Figure 12: Register Screenshot*

**Navigation Buttons Component**

Once the user has logged in a set of buttons are displayed which help the user navigate through the different pages within the website. These buttons are not visible to the user until they have logged in and their credentials have been validated. In addition, the system will only display the buttons for a user to navigate to as long as they are not currently on that page i.e, the 'shop' button cannot be seen if the user is already on the shop page.

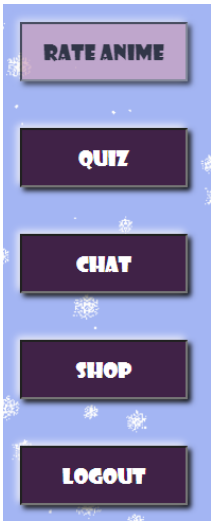



*Figure 13: Navigation Screenshot*

**Profile Component**

All the pages consist of various php functions which relate to the user's session. After connecting to the database using "connectdb file" a function called session_start() is initialised. After checking if the logged variable is set a welcome message is displayed on the screen alongside the current user's username as well as their xp count. Next, a MySQL query is executed to fetch the purchases made by the user from the purchases table within the database. If

there is data in the purchases table that is unique to the current user, then those purchases are displayed otherwise the table is hidden. After that another MySQL query is sent which establishes the gender of the user and therefore, retrieves the corresponding image from the 'gender_image' table displaying the appropriate image based on the user's gender. It is important to note that none of these functions will display anything if the 'logged' session variable is not set. Using the user's database records and session data information is displayed creating an user friendly experience.

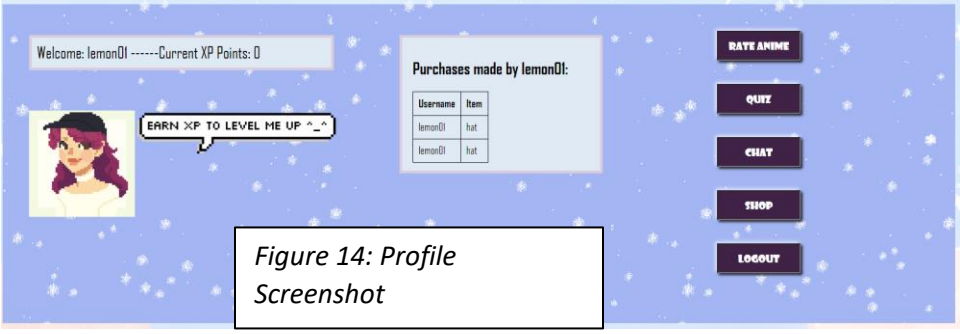



*Figure 14: Profile Screenshot*

**Rate Component**

The rate page carries out a process that allows logged in users to rate an anime and store their ratings that are stored in the database. After the 'rate' button has been pressed, a form is displayed showing a rating system with five stars. The user can then select the number of stars they wish to input and proceed to clicking the 'submit' button to submit the rating. After the button is pressed the code verifies that the rating field within the form has been filled out and then proceeds to storing the rating along with the username from the current logged in user as well as the name of the anime they have just rated. This data is stored within the ratings table in the database using an SQL INSERT statement. If this statement was successful, then the code increments 5 XP to the current count that can be found within the login table using a SQL UPDATE statement. In order to avoid the form from a resubmission the user is redirected to the same page. The anime in which can be reviewed is displayed as a slide show consisting of 4 images which can be navigated by pressing the arrows on either side of the images.

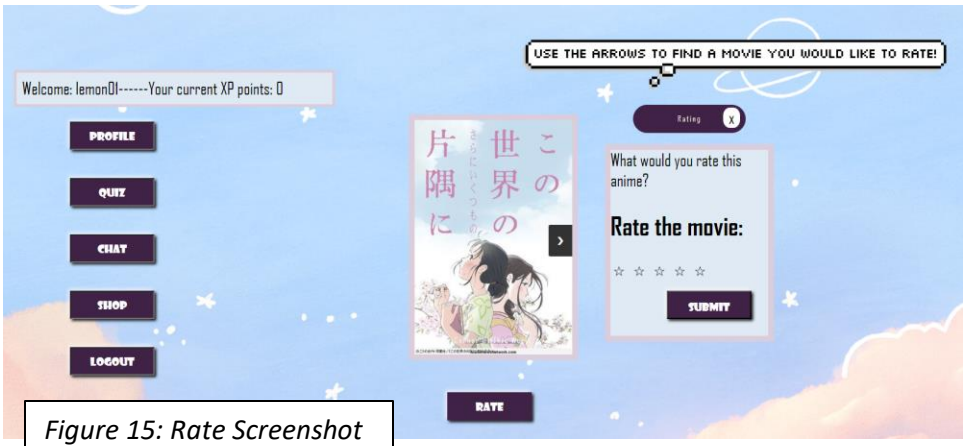



*Figure 15: Rate Screenshot*

**Quiz Component**

The HTML section of this page involves a anime quiz with four questions defined by the quizData array. The array involves several objects that represent a question with its multiple choice answers as well as the correct answer being defined. CSS was used to style the quiz with radio buttons for the multiple-choice aspect. The user can progress to the next question after selecting an option and pressing submit. After the quiz has been completed they are shown their score, a reloadbutton as well as an isset() function is used to check whether the 'addxp' form has been pressed. If this statement is true, then the user's username is obtained as well as the current XP count from $row array. Five XP points are added to the current XP count, as well as a SQL statement being sent updating the login table with the new count. Once this process is carried out the user is redirected to the same page with the header() exit() functions to avoid the form from resubmitting.

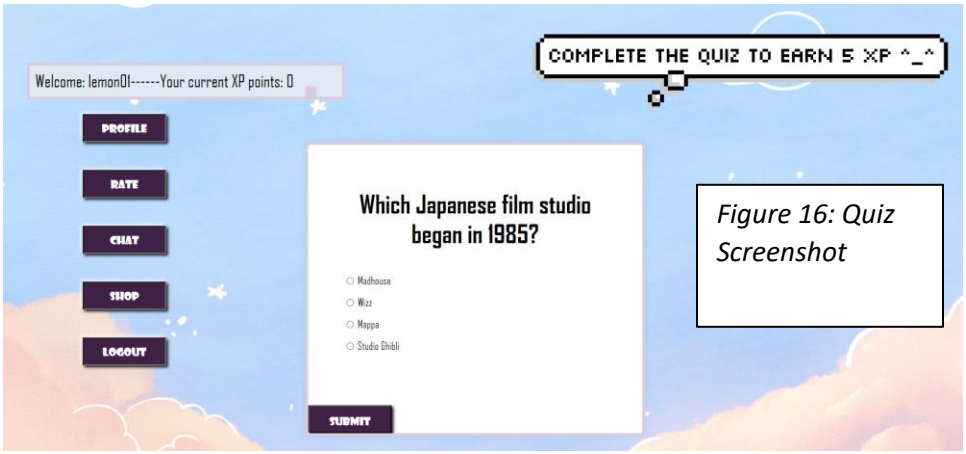



*Figure 16: Quiz Screenshot*

**Shop Component**

This page includes PHP code that is used to allow users to make purchases based on the number of XP points they have. Buttons are positioned next to items to allow the user to browse and purchase a specific item. Upon clicking the button, the code checks whether the user has enough XP points to make the purchase. If the user has enough points, then the correct number of XP points are deducted from their account and saves the newly purchased item into the purchases table. However, if the user does not possess the correct number of XP points, then a message is displayed stating this. To decrement the XP, count a session variable is used that retrieves the username for the current used and locates their XP count from the login table within the database via a query. The XP count is updated by decrementing the correct number and saves the new count. The user is again redirected to the same page avoiding the form from being resubmitted. HTML and CSS codes were used to showcase the webpage including numerous items that are available. Images of the items are positioned in accordance with the shelf which they are sitting on.

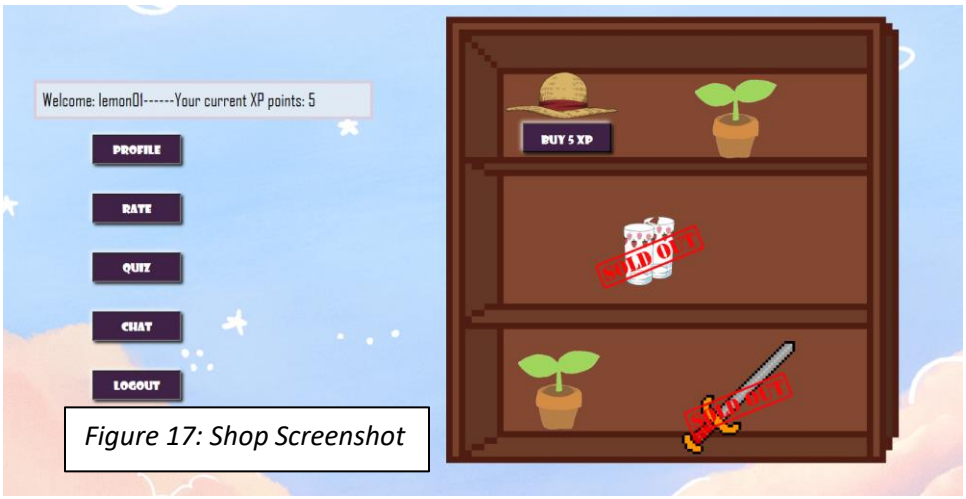


*Figure 17: Shop Screenshot*

**Chat Component**

The chat page enables registered users to submit messages and view messages which were previously submitted to the chat forum. Firstly, the form is checked to see if it has been submitted via the PHP code and whether the submit and text variables are set in the $_POST array. If this statement is true, then the user's input is retrieved from the form avoiding potential harmful characters using the mysqli_real_escape_string() function. Then the message is inserted into the database within the 'messages' table. If the insertion is not successful, then an error message is displayed. Once again, the user is redirected to the same page in order to avois the message from being submitted several times. If the HTTP request is GET all messaged are

retrieved from the messages table and is displayed with the class ‘chatCon’. A mysqli_fetch_assoc() function is used to fetch the data from the database, which then carries out a while loop in order to iterate through the data so the message alongside the user’s username is displayed. HTML and CSS codes were used to create a form to show the messages as well as a text area and a submit button allowing the user to send a message.

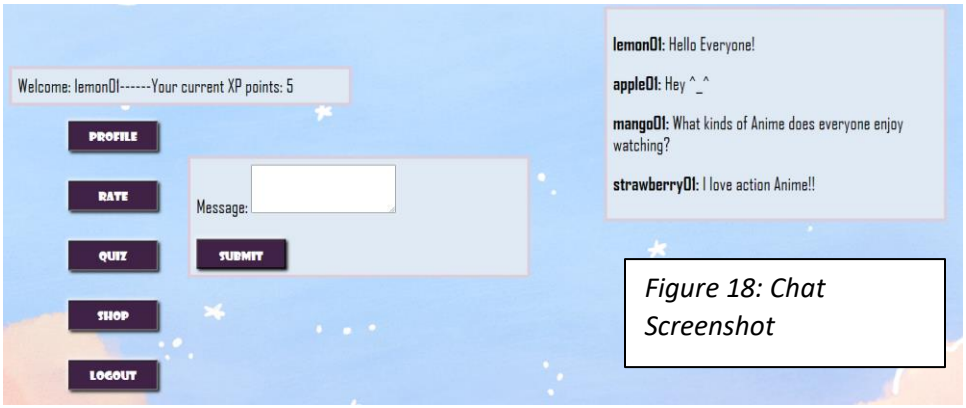



*Figure 18: Chat Screenshot*

NLP:

**NLP Research**

After researching the number of ways to incorporate NLP for recommendations it was decided to commence using NLTK (python library). NLTK was used to extract keywords from the chat forum and compare them to a dataset to output appropriate recommendations. From the variety of different methods which could have been used NLTK was chosen for its easy-to-use advantage and simplicity. An alternative method which was considered was Hugging Face. This deep learning company provides NLP tools and models. A method which was considered was to use a pre trained language model such as GPT or BERT which would process the conversation within the forum to output and generate a recommendation. Although this method would have perhaps been more accurate as the models have been trained on sums of data NLTK was overall used as this level of sophistication was not required from the scope of this project. Thus, using a simplified tool such as NLTK would provide accurate results for the lack of data is needs to be processed. However, when considering how this project could improve and cater to a larger scale then using Hugging Face may be a more suitable method.

**Recommendation Generation**

For the system to recommend Anime it initially needs messages to be stored in the database. This would be done through users engaging with one another through the chat page by sending messages to the forum. Below the process of getting these messages to produce the output of recommended Anime is described below.

**Importing Libraries**

The required libraries are required to be imported before any other code can be written. Imported libraries include:

- CSV Library (allowed for the system to read csv files such as the Anime dataset)
- NLTK Library (used for processing text)
- MySQL.Connector Library (used to connect to the MySQL database)
- Flask (imported to turn project into a web application)

**Loading Dataset**

For the recommendations to be accurate the author decided to import an Anime dataset which lists a number of Anime alongside various pieces of information about them. After the dataset is imported with the CSV library, it is stored as a list of dictionaries with each dictionary representing an Anime and its attributes.

**Preprocessing Messages**

After establishing a connection with the MySQL database using the mysql.connector library, SQL queries were written to fetch the messages from the database. The NLTK python library helps to preprocess the messages within the database. This is carried out by calling upon the RegexpTokeniser which aids in breaking down the messaged into smaller components and then referred to as tokens regarding regular expression patterns. The porterStemmer algorithm is then applied which reduces the tokens to their base root forms. Stop words are also removed such as “and” “the” “it” etc. from the tokens by the predefined set of stop words provided by the NLTK library.

**Recommendation Anime**

A recommend_anime function is created to recommend suitable Anime to the user. The function obtains a list of messages by filtering the keywords using the preprocess_message function which is then compared to and matched with the Anime found in the Anime dataset. For

all matches found the Anime name from the dataset is extracted and added to a list representing the recommendations. This function also uses REST API which uses HTTP methods (DELETE, GET, POST, PUT) to delete, retrieve, create and update resources. This function returns the list of recommendations.

**Creating Web Application**

In this project Flask was used to develop a web application. Flask is a micro web framework tailored to python and is defined using a Flask class. App.route is also defined which creates a route for the application which is essential as it handles incoming HTTP (Hypertext Transfer Protocol) requests whilst also returning responses allowing for data to be transferred over the web. Communication with the backend must be flawless as the backend maintains preprocessing messages, recommending Anime and connecting to the database.

```
import csv
import nltk
from nltk.tokenize import RegexpTokenizer
from nltk.corpus import stopwords
from nltk.stem import PorterStemmer
import mysql.connector
from flask import Flask, request
tokenizer = RegexpTokenizer(r'\w+')
stop_words = set(stopwords.words('english'))
stemmer = PorterStemmer()
with open('anime_dataset.csv') as f:
    reader = csv.DictReader(f)
    dataset = list(reader)
def preprocess_message(message):
    tokens = tokenizer.tokenize(message.lower())
    stemmed_tokens = [stemmer.stem(token) for token in tokens if token not in
stop_words]
    return set(stemmed_tokens)
```

```
def recommend_anime(messages):
    recommendations = []
    extracted_keywords = set()
    for message in messages:
        extracted_keywords.update(preprocess_message(message))
    print("Keywords extracted from the messages:", ", ".join(extracted_keywords))
    for anime in dataset:
        anime_keywords = preprocess_message(anime['genre'])
        if any(keyword in anime_keywords for keyword in extracted_keywords):
            print("Match found for anime:", anime)
            if 'ï»¿name' in anime:
                recommendations.append(anime['ï»¿name'])
            else:
                print("Warning: anime entry has no name field:", anime)
    return recommendations
```

```
db = mysql.connector.connect(
  host="localhost",
  user="root",
  password="",
  database="animeasylum"
)
app = Flask(__name__)
@app.route('/recommend_anime', methods=['POST'])
def handle_message():
    messages = request.json['messages']
    recommendations = recommend_anime(messages)
    if recommendations:
        return {'recommended_anime': list(set(recommendations))}
    else:
        return {'recommended_anime': []}
if __name__ == '__main__':
    app.run(debug=True)
```

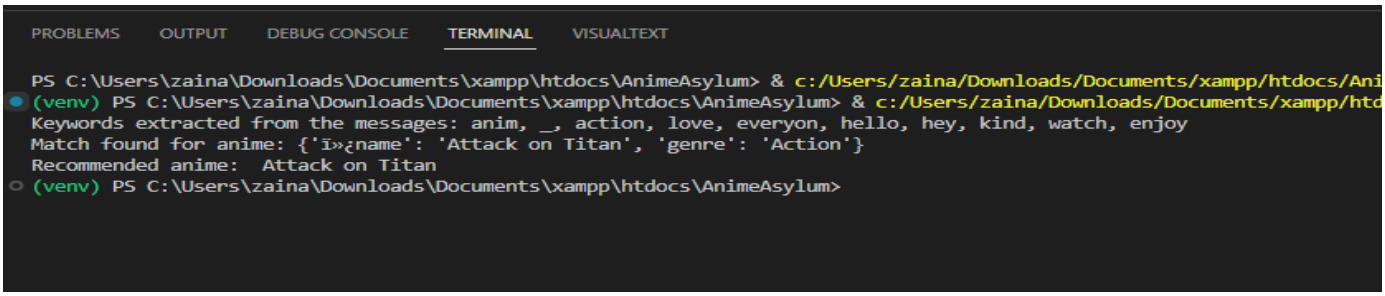




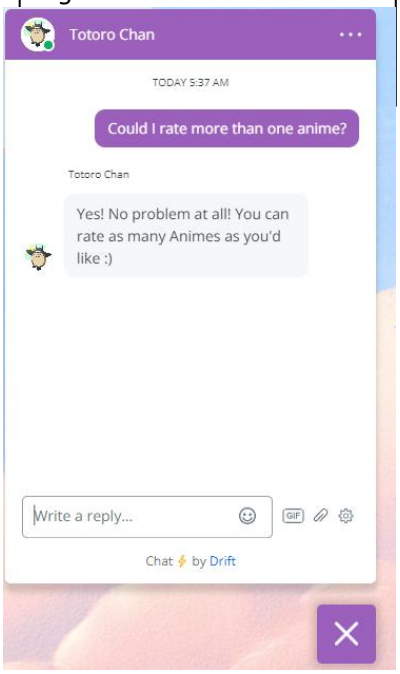
*Figure 19: Advanced Feature Screenshot*

Additional Features:

**Additional Features: Bot**

Every page displays a button which instantly opens a chat box that would directly connect to the website's administrator. This bot allows users to ask questions regarding the website's functionality. They are then sent automated responses to solve their issue, otherwise the administrator can step in and continue to tackle their issue. Having an interactive bot allows for several features which ultimately attract individuals to continue to use or discover the website. An advantage to having a bot allows for issues to be solved regardless of time of day. Meaning if the user was facing an issue at 9pm they could still receive assistance in tackling their issue as opposed to waiting for the next workday to have some reply and assist them.

*Figure 20: Bot Screenshot*




**Additional Features: Timer**

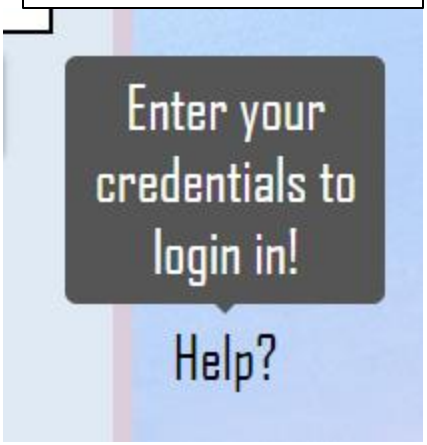
When accessing the quiz page, a timer instantly displayed. This gives the user a real incentive to complete the quiz in an appropriate amount of time as, if the timer runs out then a message will be displayed alongside the page refreshing. If the page is refreshed, then the user would be redirected to the first question and would be required to reattempt the quiz. Before incorporating the timer, the user would not have any motivation to complete the quiz in a timely manner. However, after implementing the timer the user would be struck with an adrenaline rush to complete the quiz as fast as possible.


*Figure 21: Timer Screenshot*

**Additional Features: Help**

A help button can be found on all pages within the website to assist the user in utilizing the functionality of a website. As opposed to opening a new form or webpage the prompts are given discretely with minimal information. This design choice was made simply because the author wanted to ensure the user was getting help as effectively as possible by not needing to filter through several pieces of text / paragraphs. Additionally, the prompts are provided on the same page without obscuring or overlapping any other pieces of information or data. This allows the user to quickly and clearly navigate what they can do on that page.

*Figure 22: Help Screenshot*



# Chapter 6: Conclusion & Decision

**Project Objectives**

The development of this social-media website must satisfy all functional and non-functional requirements outlined for the final product to be successful. The websites focus on connecting individuals within the Anime community whilst also having a 'fun' element to the website such as earning and using XP points which are not traditionally found in social-media websites. As a result, this website offers a unique selling point attracting users to utilize the website. Regarding the three individuals who participated in testing the website, it was made apparent that this website fulfils its initial vision and can be used and enjoyed by both Anime fans and non-fans.

This website was developed from scratch without the use of a framework using HTML, CSS, JavaScript as well as PHP and Python for the backend. Although the majority of the backend implementation was carried out via PHP, Python's Flask was also incorporated to enhance and carry out a complex feature to recommend the user Anime based on chat conversations. MySQL queries were made to communicate with the backend database as well as tools such as XAMPP and phpMyAdmin were highly utilised to improve communication and testing with the backend.

**Lessons Learnt**

Studying Computer Science, the author had carried out a number of Modules where various skills were developed ranging from skills in Web Devlopment, Language Processors, Data Structures etc. This project enabled the user to combine all the skills which were attained and compile them within this project that helps solve a real-world problem. As the project consisted of an in-depth intricate outline new skills had to be learnt to aid in the success of the final project. This ultimately involved the user needing to take subsequential time outside of developing the website to understand topics to a certain degree before implementing the intended vision for the project.

Although the user had developed web applications in the past, the user however had not been successful in developing a functional backend by communicating with the database. Since the recommended method provided in the IN1010 module did not previously work will the

author, further research was carried out to establish other methods to implementing a functioning backend. The author decided to use XAMPP which is a tool that aids developers to connect to the backend of their website. XAMPP enables a local database to be accessed which is ideal for developers to test their backend functionality. Due to the project's scope the author believed it would work ideally for this project. Additionally, the author had never coded in Python before thus it was essential to begin by learning the basics and fundamentals of the language. As the author had planned to utilize a Python library to aid the development of NLP techniques, it was required to establish Python libraries, why they're used and how to implement them. Other methods were considered such as hugging face that could have aided in deploying the recommendation advanced functionality however after several days of unsuccessful attempts the user decided to use a Python tool.

**Project Reflection**

Although the consultant and other lectures had informed the author that certain functionality and aspects of the website may not be able to be fully deployed due to the scope of the project, this was better understood when the author was able to reflect on the project. For this task the author had initially planned for there to be additional functionality to better replicate the sorts of other social-media web applications currently available on the market. However, since the author spent the majority of their time learning NLP and the programming language Python, there was not enough time to further improve the current version of the web application. Although features such as following a specific user, having a user's avatar change its appearance were not implemented in the current versions, these features could however be considered when increasing the scalability of this project.

Another feature that could be considered to further improve and scale up the current site would be to incorporate variation to existing games and to consider new games to earn XP. This would ultimately give users an incentive to frequently visit the site in order to indulge in the newest games and new levels of existing games.

**Future Work**

Throughout this report various suggestions were made to scale up this project and further develop it for an even greater chance to compete with competitors and overall enhance the user experience. Some improvements include using a database which caters for large amounts of data,

using NLP method which provides more accurate results, increasing the game element i.e., more fun ways to earn XP, more ways to connect to other fans around the world etc. Additionally, as smartphones play an immense role in today's age, having developed this website into a mobile application would also provide for a slightly easier option to connect with people. Having a subscription was another idea thought of by the author. Users that have signed up for a premium subscription could have access to certain functionality and extra features that would not be accessible with the regular package. Additionally, the idea could be pitched to other Anime cooperations which would provide additional advantages to premium customers. For example, premium customers could have early access to Anime episodes or merchandise.

**Improvements**

The two libraries that were considered when implementing the recommendations feature were hugging face and NLTK. Although NLTK was the one that uses hugging face however provides pre-trained models for complex NLP tasks using deep learning technique, while NLTK is better used for basic NLP tasks. For recommending Anime based on chat conversations, hugging might have been a better choice as it could have leveraged pre-trained models for keyword extraction and semantic matching that could have resulted in better and more accurate results. Although the current use of NLTK works perfectly fine with the current data in the database and chosen dataset, perhaps hugging face would work better when dealing with a bigger dataset and database.

Additionally, the quiz feature of the application could have been improved by perhaps incorporating NLP techniques to generate a different quiz each time. This would increase the enjoyability of the website for users and perhaps allow them to find long term enjoyment in the feature as opposed to short term. Due to the project's time scope time, the author hadn't considered implementing such a feature however in hindsight this improvement could have been achieved as NLP had already been studied, thus incorporating it in regard to the quiz page may not have been too difficult and time consuming.

**Benchmarking**

To further explore and evaluate the project, the author decided to carry out benchmarking which is procedure to compare the product against other services available on the market to see where AnimeAsylum excels as well as areas that could be improved.

Key (1-5, 5 being excellent

| | AnimeAsylum | MyAnimeList | StackOverflow |
|---|---|---|---|
| Forum Chatting | 4 | 5 | 5 |
| Gamification Appeal | 4 | 1 | 1 |
| Userfriendly Interface | 5 | 4 | 5 |
| Encouraging communities to develop | 3 | 4 | 2 |
| Ability to attract multiple users | 2 | 4 | 4 |

MyAnimeList is a well-known Anime website which allows users to connect to one another, watch anime and create lists, read Anime etc. Forums are also available for fans to discuss particular Anime topics. The database of anime is exceptionally large which is constantly updated to fit the modern appeal to current Anime fans. StackOverflow is a site dedicated to solving and discussing technical issues ranging from all sorts of computing problems including development, data science, hardware issues etc. The community that is attained as a result, is very formal and is immediately broken once a particular issue is resolved. However, communication until a matter is resolved is speedy and constructive, ultimately helping the user with their issues. These responses could have been encouraged from their reward system, as a user's reputation is increased depending on how useful their answers are which also has empathies on quality control with the information being shared on their platform.

MyAnimeList was used in regard to benchmarking as the values held, inline with the author's vision for the product they have developed. As a result, the author believed it was interesting to compare their site to a well established one with similar values. From the analysis it was clear to see that AnimeAsylum had surpassed MyAnimeList in having a gamification appeal. Ultimately, this feature would encourage users to revisit the site as they would have a motive whether it would be to increase their XP score or to view the new levels available. However, it was also clear to see that MyAnimeList had successfully achieved the forum aspect of their sites as they have various forum chats available to all users, making it very accessible for new users to engages in an ongoing conversation of their choice.

Stack Overflow is an online community for programmers and developers to be able to ask questions for their programming issues as well as share their own knowledge and understanding to help others solve their issues. Stack Overflow was used as an example of benchmarking due to the fact that it is a widely popular online community in which the standards for the forums have been mastered. The way the community is able to communicate with each other in the most efficient way which is something that AnimeAsylum aims to achieve. It again is something that falls in line with the author's vision for AnimeAsylum. Considering StackOverflow has a point system which rewards the communities based on their efforts to communicate, AnimeAsylum could use this idea to perhaps implement a user goal which involves rewarding users based on their interactions within the forum. These rewards can be linked to XP points and thus include the benefits of having a higher XP count. Based on the results, the way AnimeAsylum encourages communities to develop is something that, in comparison to StackOverflow, clearly excels in. In regards to StackOverflow, although their methods of communication is highly effective, once an issue or a problem is solved, the community in a sense also dies down whereas AnimeAsylum has a community which constantly increases over time.

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# Glossary

| Term | Meaning |
|---|---|
| AI | Stands for artificial intelligence. Multiple machines and computers that work together to develop a human like intelligence in order to solve problems and make decisions. |
| Apache | A webserver software used to showcase web content over the internet. |
| Backend | Processes data and is responsible for providing this data to the frontend. This part of the application runs on the server. |
| Bert | Developed by google is a language model. Uses neural networks in order to comprehend natural languages and generate texts. |
| CSS | Stands for cascading style sheets. A language used in web development. Mainly used to present the design including colours, layout etc. |
| Database | Where data is stored in a specific location. It is structured accordingly and can be accessed, updated and managed simply. |
| Demographic | A group of people that share a common value i.e. age, gender etc. |
| Encrypt | In order to protect a piece of data, it can be encrypted so the text doesn't appear to look like the original. |
| Filezilla | Used in order to download and upload files from a server using FTP client |
| Frontend | This part of an application is visible to the user and can run via a web browser |
| GIF | Stands for graphical interchange format. Used to store animated images or short clips. |
| GPT | Stands for generative pre trained transformer. A model used for LP tasks. |
| HTML | Stands for hypertext markup language. This language allows to create online web content. |
| HTTP | Stands for hypertext transfer protocol. This protocol is used to transmit data between web servers over the internet. |
| IDE | Stands for integrated development environment. IDEs allow developers an environment to develop code, debug and test. |
| JPG | Stands for joint photographic experts group. Used to store a digital image. |

| | |
|---|---|
| Malware | A software which main function is to harm and disrupt network/ system either by interfering with regular operation or stealing unauthorised data. |
| MariaDB | An opensource data management to utilise MySQL. |
| NLTK | Stands for natural language toolkit. This is a python library that works as a tool to work with human data. |
| NLP | Stands for natural language processing. A subfield in AI that studies the communication and interactions among human (language) and computers. |
| Perl | This is considered a high level programming language. Main uses are web development, network programming and system administration. |
| PHP | Stands for hypertext processor. This language revolves around the server side and is mainly used for web applications. |
| PNG | Stands for portable network graphic. Used to store digital pictures as well as having advanced features such as transparency. |
| Prototype | The stage in which the product ticks the main requirements for the project and is mainly tested and evaluated at this stage before being released to the public. |
| Query | A message that is sent to the backend or database using some sort of syntax. |
| Script | A set of code that is written in a language which is then executed by a PC or computer. |
| Server | An application or software which provide resources to devices on a network. |
| Stemming | Mainly used in NLP, the process to reduce a word to its root state. |
| Tokenization | This procedure breaks down text into smaller components such as a word or a sentence. |
| UI | Stands for user interface. The part of a application that enables human interaction. |
| XP | Stands for experience points. A gaming terminology which refers to the number of points a player has attained. |

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# Appendices

## Appendix A: Project Definition Document

## Problems to be solved:

My project aims to address the issue of developing online communities for likeminded people whose hobbies/interests are not as common for example, Sports (Football, Tennis, etc.), often these interests are common amongst the general demographic and Football particularly has adopted a worldwide following. For these more common interests, finding likeminded groups/communities to interact and share views with is often relatively accessible. A variety of clubs are available for individuals to join to connect with others and pursue their passion. However, when a person's passion isn't as commonly adopted by the masses. such as Anime it could prove to be rather difficult to network and find people who share the same interests.

The author has been into Anime for several years, have come to acknowledge the lack of forums, websites, pages, or generally any online platforms where likeminded people can share their interests. dedicated to anime fans. At current there are universal platforms such as "Discord" and "Reddit" that have elements that cater to anime watchers. However, being that the community is already large and has grown greater since, it is fair to say a designated online space is required. Therefore, I have decided to create a website designated to these individuals, which will have the functionality and features catered towards people with an interest in Anime.

There is an interesting article written by "Thanh Pham", that explores the idea of having a passion but being unable to share it. The article explores different challenges faced by individuals that are unable to express their passion due to lack of support/opportunity to do so therefore, we see this as an opportunity to fill the void on this subject area. The article creates a link between the aforementioned issues, and how it indirectly increases the likelihood of loneliness and depression which could subsequently lead to mental health issues. The article suggests that we "look beyond your circle" and essentially find a group of people that perhaps could share and appreciate your passion. Modern day society has been revolutionised by the internet and has become a key driver in connecting people, the most suitable option would be to browse the internet in search of such groups. This enables people to connect with the world and find others who share their common interests.

After reading this article a greater felt assurance that the author was not alone in thinking that being a part of a community that shares your interests is an essential way to feel a sense of belonging but can also bring you contentment. In Addition, I feel my proposal would be allow me to explore the more substantial issues based around mental health. loneliness and depression. It is a commonly adopted view that most friendships are developed around passions that coincide with one another.

The aim of my project proposal simply put is to bring people together using the benefits of the internet which can help so many people who may feel out of place or have an element of imposter syndrome to feel they have a place to create bonds with others and perhaps lead to their own self-improvement by the benefits of socializing.

## Project Objectives:

Throughout this project the author will design, plan and implement a social media site dedicated to people who have an interest in Anime. This proposal aims to provide a platform that would not only allow people to voice their passion but connect with others and create bonds with people of similar mindsets/interests. Users will be able to rate, review and discuss current Anime's they have been watching. Furthermore, the user would gain 'XP' points by completing quizzes and rating. The points system enables them to firstly, identify their level of "experience" and compare with others. Additionally, this is something that can evolve into a paid service for people to attain exclusive online content (I.e., exclusive avatar's etc,).

Considering scalability premium users may have early access to exclusive Anime Merchandise or Anime Reviews, as well as other related prizes/gifts. Since this project will consist of a variety of features such as having a quiz feature, chatting feature etc, I plan to set smaller deadlines to ensure that these features can be completed on time.

The project is heavily based on programming, as such the "testing procedure" will be executed throughout the programming stage as well as the end, this will ensure there are no major setbacks throughout the duration of my work. I plan to thoroughly test my website after every section has been implemented. Finally, when I am satisfied with the final piece, I will carry out tests on all the different features as well as nominate friends to test the site to see whether it performs accordingly. During this testing phase I will also ask for feedback which, I aim to implement as part of my submission. However, if the suggestions cannot be implemented within the timeframe, I will attach with my work what I would have liked to include/implement provided I had a greater availability of time to do so.

Ideally, I would like to complete implementation, however I cannot set objectives which are unachievable therefore I must consider the time and resources available to myself prior to proposing what my overall result will be. I must consider obstacles which may arise within the programming & design sectors etc. As a result, I will seek as much guidance as I can from my consultant and TAs however, if I reached a point where I lack the ability to perhaps develop something I have envisioned then I will make a very detailed analysis on how I had initially planned a certain part as well as my thought process in tackling the idea in hopes to satisfy what I had envisioned.

## Project Beneficiaries:

This project will mainly benefit those which have a passion for Anime as this site will offer a place to connect and converse with others within the Anime community encouraging them to use the Anime Asylum site. In regard to scalability social media influencers may come aboard and generally believe in the idea and may propose their own input or want to back the idea to take it further. i.e. this forum/platform could evolve into an App, or Podcasts, YouTube videos, reviews etc. This will provide greater exposure for Anime Asylum, as once again people will be immediately drawn as it is a new and innovative idea.

## Project Risks:

### Risks to your project

A key risk which would have a direct impact on my ability to complete my work to the best possible quality would be the availability of my consultant and the time he/she is able to offer me to help troubleshoot and provide direction to ensure I am staying in line with the project requirements. To reduce the likelihood of this occurring I will, from an early stage agree and timetable in weekly consultations for us to review current progress and for me to outline any obstacle or issues I am encountering at any given stage. I will produce a concise document which I will update weekly consisting of my concerns, my

consultants suggestions/solutions and deadlines i.e. prior to the next meeting track whether these issues have been closed out.

Secondly, another risk factor could lie within the IDE I wish to use to code my site on. I have decided to use the IDE vsCode as this IDE was recommended during the Web Devlopment Module. Additionally I will be using XAMPP for the backend sections of my project. This application could all of a sudden shut down and lose its ability to open. As a result, to avoid this catastrophe I have looked into other IDEs such as phpStorm that can be used as an alternative. Similarly, I will ensure to back up all files (html, css, php, jpeg files), as there is also a risk that my machine, I will be operating on could get infected with malware which could result in my files being lost or unable to open.

## Risks that your project poses to others

Users must create an account before being provided access of the site's functionality. The problem lies when users are asked to create a password, most individuals would enter a password commonly used for their other accounts, this can become an issue as, if someone was to obtain a user's password they'd not only have access to the confidential information within their Anime Asylum account but could also infiltrate and invade a user's information via other accounts. This could be prevented by adding security measures when logging in such as a "2 factor authentication".

Secondly there may be cases of cyber bullying, my project revolves around having users connect virtually. Whilst the freedom to express oneself can come with many advantages, there can also be some downsides as there could be some people that may offend others through my site. Above all, people are generally encouraged to speak their mind behind a screen thus the likelihood of individuals filtering their speech is very unlikely. However, this could be solved by allowing users an option to report certain users if suspicious behaviour is being shown, thus reducing the amount of inappropriate behaviour that could take place.

I will consider a risk register throughout the duration of my project.

| Likelyhood | Consequences | | | | |
|---|---|---|---|---|---|
| | **Insignificant** *Risk is easily mitigated by normal day to day process* | **Minor** *Delays up to 10% of Schedule Additional cost up to 10% of Budget* | **Moderate** *Delays up to 30% of Schedule Additional cost up to 30% of Budget* | **Major** *Delays up to 50% of Schedule Additional cost up to 50% of Budget* | **Catastrophic** *Project abandoned* |
| **Certain** *>90% chance* | High | High | Extreme | Extreme | Extreme |
| **Likely** *50% - 90% chance* | Moderate | High | High | Extreme | Extreme |
| **Moderate** *10% - 50% chance* | Low | Moderate | High | Extreme | Extreme |
| **Unlikely** *3% - 10% chance* | Low | Low | Moderate | High | Extreme |
| **Rare** *<3% chance* | Low | Low | Moderate | High | High |

Appendix B: Reuse Summary

## Appendix B.1: Bot Code

https://www.drift.com/platform/custom-chatbots/

```
<script>
    "use strict";

    !function() {
      var t = window.driftt = window.drift = window.driftt || [];
      if (!t.init) {
        if (t.invoked) return void (window.console && console.error && console.error("Drift snippet included twice."));
        t.invoked = !0, t.methods = [ "identify", "config", "track", "reset", "debug", "show", "ping", "page", "hide", "off", "on" ],
        t.factory = function(e) {
          return function() {
            var n = Array.prototype.slice.call(arguments);
            return n.unshift(e), t.push(n), t;
          };
        }, t.methods.forEach(function(e) {
          t[e] = t.factory(e);
        }), t.load = function(t) {
          var e = 3e5, n = Math.ceil(new Date() / e) * e, o = document.createElement("script");
          o.type = "text/javascript", o.async = !0, o.crossorigin = "anonymous", o.src = "https://js.driftt.com/include/" + n + "/" + t + ".js";
          var i = document.getElementsByTagName("script")[0];
          i.parentNode.insertBefore(o, i);
        };
      }
    }();
    drift.SNIPPET_VERSION = '0.3.1';
    drift.load('3kia45czekvp');
    </script>
```

Appendix C: Tests

## Appendix C.1: Consent Forms

**Name of principal investigator/researcher: Jimenez Ruiz Ernesto**

**Title of study: Social Media Website**

| | | Please tick or initial box |
|---|---|---|
| 1 | I confirm that I have read and understood the participant information dated 17/04/2023 (Version 1) for the above study. I have had the opportunity to consider the information and ask questions which have been answered satisfactorily. | |
| 2. | I understand that my participation is voluntary and that I am free to withdraw without giving a reason without being penalised or disadvantaged. | |
| 3. | I understand that I will be able to withdraw my data up to 14 days prior to the time of publication. | |

| | | |
|---|---|---|
| 4. | I agree to the focus group/interview being audio OR video recorded. | |
| 5. | I agree to maintain the confidentiality of the personal date obtained from the focus group. | |
| 6. | I agree to City recording and processing this information about me. I understand that this information will be used only for the purpose(s) explained in the participant information and my consent is conditional on City complying with its duties and obligations under the General Data Protection Regulation (GDPR). | |
| 7. | I would like to be informed of the results of this study once it has been completed and understand that my contact details will be retained for this purpose only. | |
| 8. | I agree to take part in the above study. | |

| _____ | _____ | _____ |
|---|---|---|
| Name of Participant | Signature | Date |

| _____ | _____ | _____ |
|---|---|---|
| Name of Researcher | Signature | Date |

When completed, 1 copy for participant; 1 copy for researcher file.

**Explicit consent for the following should be obtained where applicable:**

- Reuse of data and an explanation of what the data will be used for, as well as reassurance that the data will only be reused in studies which have been given ethics approval.
- The use of direct quotes.
- Sharing data outside the research team (e.g. with collaborators).
- A statement that asks the participant to confirm that they understand that their anonymous data will be made open access, e.g. to underpin journal publication or to meet funding requirements.

## Appendix C.1.1: Person X Consent Form

**Name of principal investigator/researcher: Jimenez Ruiz Ernesto**

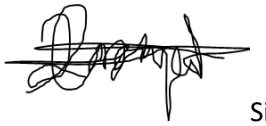
**Title of study: Social Media Website**

| | | Please tick or initial box |
|---|---|---|
| 1 | I confirm that I have read and understood the participant information dated 17/04/2023 (Version 1) for the above study. I have had the opportunity to consider the information and ask questions which have been answered satisfactorily. | ✓ |
| 2. | I understand that my participation is voluntary and that I am free to withdraw without giving a reason without being penalised or disadvantaged. | ✓ |
| 3. | I understand that I will be able to withdraw my data up to 14 days prior to the time of publication. | ✓ |
| 4. | I agree to the focus group/interview being audio OR video recorded. | ✓ |
| 5. | I agree to maintain the confidentiality of the personal date obtained from the focus group. | ✓ |
| 6. | I agree to City recording and processing this information about me. I understand that this information will be used only for the purpose(s) explained in the participant information and my consent is conditional on City complying with its duties and obligations under the General Data Protection Regulation (GDPR). | ✓ |
| 7. | I would like to be informed of the results of this study once it has been completed and understand that my contact details will be retained for this purpose only. | ✓ |
| 8. | I agree to take part in the above study. | ✓ |

13/04/2023 

Valentin Madzharov _____ _____

_____

Name of Participant  Signature

Date

| Zainab Mayet | _____ | 13/04/2023 |
|---|---|---|
| Name of Researcher | Signature | Date |

When completed, 1 copy for participant; 1 copy for researcher file.

**Explicit consent for the following should be obtained where applicable:**

- Reuse of data and an explanation what the data will be used for, as well as reassurance that the data will only be reused in studies which have been given ethics approval.
- The use of direct quotes.
- Sharing data outside the research team (e.g. with collaborators).
- A statement that asks the participant to confirm that they understand that their anonymous data will be made open access, e.g. to underpin journal publication or to meet funding requirements.

## Appendix C.1.2: Person Y Consent Form

**Name of principal investigator/researcher: Jimenez Ruiz Ernesto**

**Title of study: Social Media Website**

| | | Please tick or initial box |
|---|---|---|
| 1 | I confirm that I have read and understood the participant information dated 17/04/2023 (Version 1) for the above study. I have had the opportunity to consider the information and ask questions which have been answered satisfactorily. | ✓ |
| 2. | I understand that my participation is voluntary and that I am free to withdraw without giving a reason without being penalised or disadvantaged. | ✓ |
| 3. | I understand that I will be able to withdraw my data up to 14 days prior to the time of publication. | ✓ |
| 4. | I agree to the focus group/interview being audio OR video recorded. | ✓ |
| 5. | I agree to maintain the confidentiality of the personal date obtained from the focus group. | ✓ |

| | | |
|---|---|---|
| 6. | I agree to City recording and processing this information about me. I understand that this information will be used only for the purpose(s) explained in the participant information and my consent is conditional on City complying with its duties and obligations under the General Data Protection Regulation (GDPR). | ✓ |
| 7. | I would like to be informed of the results of this study once it has been completed and understand that my contact details will be retained for this purpose only. | ✓ |
| 8. | I agree to take part in the above study. | ✓ |

13/04/2023

| | | |
|---|---|---|
| Yasmin Namouni | _____ | _____ |
| _____ |  | Date |
| Name of Participant | Signature | |
| Zainab Mayet | _____ | 13/04/2023 |
| _____ | | _____ |
| Name of Researcher | Signature | Date |

When completed, 1 copy for participant; 1 copy for researcher file.

**Explicit consent for the following should be obtained where applicable:**

- Reuse of data and an explanation what the data will be used for, as well as reassurance that the data will only be reused in studies which have been given ethics approval.
- The use of direct quotes.
- Sharing data outside the research team (e.g. with collaborators).
- A statement that asks the participant to confirm that they understand that their anonymous data will be made open access, e.g. to underpin journal publication or to meet funding requirements.

## Appendix C.1.3: Person Z Consent Form

**Name of principal investigator/researcher: Jimenez Ruiz Ernesto**

**Title of study: Social Media Website**

| | | Please tick or initial box |
|---|---|---|
| 1 | I confirm that I have read and understood the participant information dated 17/04/2023 (Version 1) for the above study. I have had the opportunity to consider the information and ask questions which have been answered satisfactorily. | ✓ |
| 2. | I understand that my participation is voluntary and that I am free to withdraw without giving a reason without being penalised or disadvantaged. | ✓ |
| 3. | I understand that I will be able to withdraw my data up to 14 days prior to the time of publication. | ✓ |
| 4. | I agree to the focus group/interview being audio OR video recorded. | ✓ |
| 5. | I agree to maintain the confidentiality of the personal date obtained from the focus group. | ✓ |
| 6. | I agree to City recording and processing this information about me. I understand that this information will be used only for the purpose(s) explained in the participant information and my consent is conditional on City complying with its duties and obligations under the General Data Protection Regulation (GDPR). | ✓ |
| 7. | I would like to be informed of the results of this study once it has been completed and understand that my contact details will be retained for this purpose only. | ✓ |
| 8. | I agree to take part in the above study. | ✓ |

13/04/2023

Humzah Chowdry

Name of Participant

Signature

Date

| Zainab Mayet | | 13/04/2023 |
|---|---|---|
| Name of Researcher | Signature | Date |

When completed, 1 copy for participant; 1 copy for researcher file.

**Explicit consent for the following should be obtained where applicable:**

- Reuse of data and an explanation what the data will be used for, as well as reassurance that the data will only be reused in studies which have been given ethics approval.
- The use of direct quotes.
- Sharing data outside the research team (e.g. with collaborators).
- A statement that asks the participant to confirm that they understand that their anonymous data will be made open access, e.g. to underpin journal publication or to meet funding requirements.

## Appendix C.2: Information Sheet
## Participation Information Sheet

**Zainab Mayet – IN3007 Individual Project**

**City University of London**

---

Anime Social Media Website helping people to connect with gamification element:

We would like to invite you to participate in testing the current prototype of the newly developed Anime social media website. Before taking part, it is vital that you read this document to understand what is being carried out and what part you will play in this study. Ensure that questions are asked about anything that is unclear and feel free to discuss this document with a third party.

Purpose of study:

We are currently in the work of implementing a social media plat that specifically helps Anime fans to connect with one another and share their similar interests. For the project to be successful we request feedback from several volunteers so that required tweaks can be made before the project submission.

Participation:

Participating is completely optional. Although we are encouraging everyone to show interest in our upcoming project, taking part in providing feedback is not compulsory. If an individual does decide to take part, they have the right to withdraw if the conditions from the

consent form are met. For individuals that decide to take part would have an appointment arranged with the author at City, University of London where there would get a quick summary of the project and handed over a questionnaire form to fill out based on their user experiment. The overall aim of participants is to establish constructive criticism to further improve the current prototype. It is important to note that there is absolutely no risk of an individual's confidential information being leaked as we do not attain this data to begin with.

Benefits:

From agreeing to take part in testing the newly developed platform you will be one of the first people to use and assess its function, thus all feedback will be taken on board that could improve your user experience in the future. Additionally, testers will have a fundamental role in shaping and improving the site for future users.

Requirements:

- Must attend City University of London

**For further information feel free to contact the author at Zainab.Mayet@city.ac.uk**

**Appendix C.3: Questionnaire**
**User Test Template**

**Zainab Mayet – IN3007 Individual Project**

**Anime Social Media Website helping people to connect with gamification element**

---

Person: # Date: xx / 04 / 2023

---

Please complete the form with a number (out of 5) to represent your feedback.

| **Application Speed:** | |
|---|---|
| I was able to quickly navigate through the different pages | x / 5 |
| Functions were carried out in a timely manner, i.e. pressing a button | x / 5 |
| Total | **x / 10** |
| **Ease Of Use:** | |
| I was able to easily register / login into the website | x / 5 |
| I was able to earn XP when rating Anime | x/ 5 |
| I was able to earn XP when finishing a quiz | x / 5 |

| | |
|---|---|
| I was able to send messages | x / 5 |
| I could successfully purchase an item | x/ 5 |
| I was able to log out of the website | x/ 5 |
| Total | **x/ 30** |
| **User Interface:** | |
| I was shown an appropriate avatar based on the gender selected | x / 5 |
| I was shown my XP count at all times (XP was updated when gaining or loosing XP points) | x/ 5 |
| I was shown my score after completing the quiz | x / 5 |
| Messages were shown instantly after being sent | x/ 5 |
| I was shown all the available items that I could buy with current XP count | x / 5 |
| I was shown purchased items in a table on the profile page | x/ 5 |
| Based on the conversations I was having I was recommended relevant Anime | x / 5 |
| Total | **x / 35** |
| **Additional Comments:**<br><br>As a anime lover I loved my experience when using the website and the design choice and the use of gifs was a really nice touch. The live chat functionality was my favorite as I was able to conversate with other anime lovers. | |

**Appendix C.3.1: Person X Questionnaire**

**User Test Template**

**Zainab Mayet – IN3007 Individual Project**

**Anime Social Media Website helping people to connect with gamification element**

---

Person: X Date: 13 / 04 / 2023

Please complete the form with a number (out of 5) to represent your feedback.

| | |
|---|---|
| **Application Speed:** | |
| I was able to quickly navigate through the different pages | 5 / 5 |
| Functions were carried out in a timely manner, i.e. pressing a button | 5 / 5 |
| Total | **10 / 10** |
| **Ease Of Use:** | |
| I was able to easily register / login into the website | 5 / 5 |
| I was able to earn XP when rating Anime | 5/ 5 |
| I was able to earn XP when finishing a quiz | 5 / 5 |
| I was able to send messages | 5 / 5 |
| I could successfully purchase an item | 5/ 5 |
| I was able to log out of the website | 5/ 5 |
| Total | **30/ 30** |
| **User Interface:** | |
| I was shown an appropriate avatar based on the gender selected | 5 / 5 |
| I was shown my XP count at all times (XP was updated when gaining or loosing XP points) | 5/ 5 |
| I was shown my score after completing the quiz | 5 / 5 |
| Messages were shown instantly after being sent | 5/ 5 |
| I was shown all the available items that I could buy with current XP count | 5 / 5 |
| I was shown purchased items in a table on the profile page | 5/ 5 |
| Based on the conversations I was having I was recommended relevant Anime | 5 / 5 |
| Total | **35 / 35** |
| **Additional Comments:** | |

| | |
|---|---|
| As a anime lover I loved my experience when using the website and the design choice and the use of gifs was a really nice touch. The live chat functionality was my favorite as I was able to conversate with other anime lovers. | |

**Appendix C.3.2: Person Y Questionnaire**

**User Test Template**

**Zainab Mayet – IN3007 Individual Project**

**Anime Social Media Website helping people to connect with gamification element**

---

Person: Y Date: 13 / 04 / 2023

---

Please complete the form with a number (out of 5) to represent your feedback.

| **Application Speed:** | |
|---|---|
| I was able to quickly navigate through the different pages | 3 / 5 |
| Functions were carried out in a timely manner, i.e. pressing a button | 4 / 5 |
| Total | **7 / 10** |
| **Ease Of Use:** | |
| I was able to easily register / login into the website | 5 / 5 |
| I was able to earn XP when rating Anime | 4/ 5 |
| I was able to earn XP when finishing a quiz | 4 / 5 |
| I was able to send messages | 5 / 5 |
| I could successfully purchase an item | 5/ 5 |
| I was able to log out of the website | 5/ 5 |
| Total | **26/ 30** |
| **User Interface:** | |
| I was shown an appropriate avatar based on the gender selected | 5 / 5 |

| | |
|---|---|
| I was shown my XP count at all times (XP was updated when gaining or loosing XP points) | 5/ 5 |
| I was shown my score after completing the quiz | 5 / 5 |
| Messages were shown instantly after being sent | 4/ 5 |
| I was shown all the available items that I could buy with current XP count | 5 / 5 |
| I was shown purchased items in a table on the profile page | 4/ 5 |
| Based on the conversations I was having I was recommended relevant Anime | 5 / 5 |
| Total | **33 / 35** |
| **Additional Comments:**<br><br>The website was super fun to use! I enjoyed all the cool gaming features as an anime fan I've never used an Anime Website which was so fun and interactive. As a forgetful person I'd suggest adding a 'forgot password' feature. | |

**Appendix C.3.3: Person Z Questionnaire**

**User Test Template**

**Zainab Mayet – IN3007 Individual Project**

**Anime Social Media Website helping people to connect with gamification element**

---

Person: Z Date: 13 / 04 / 2023

---

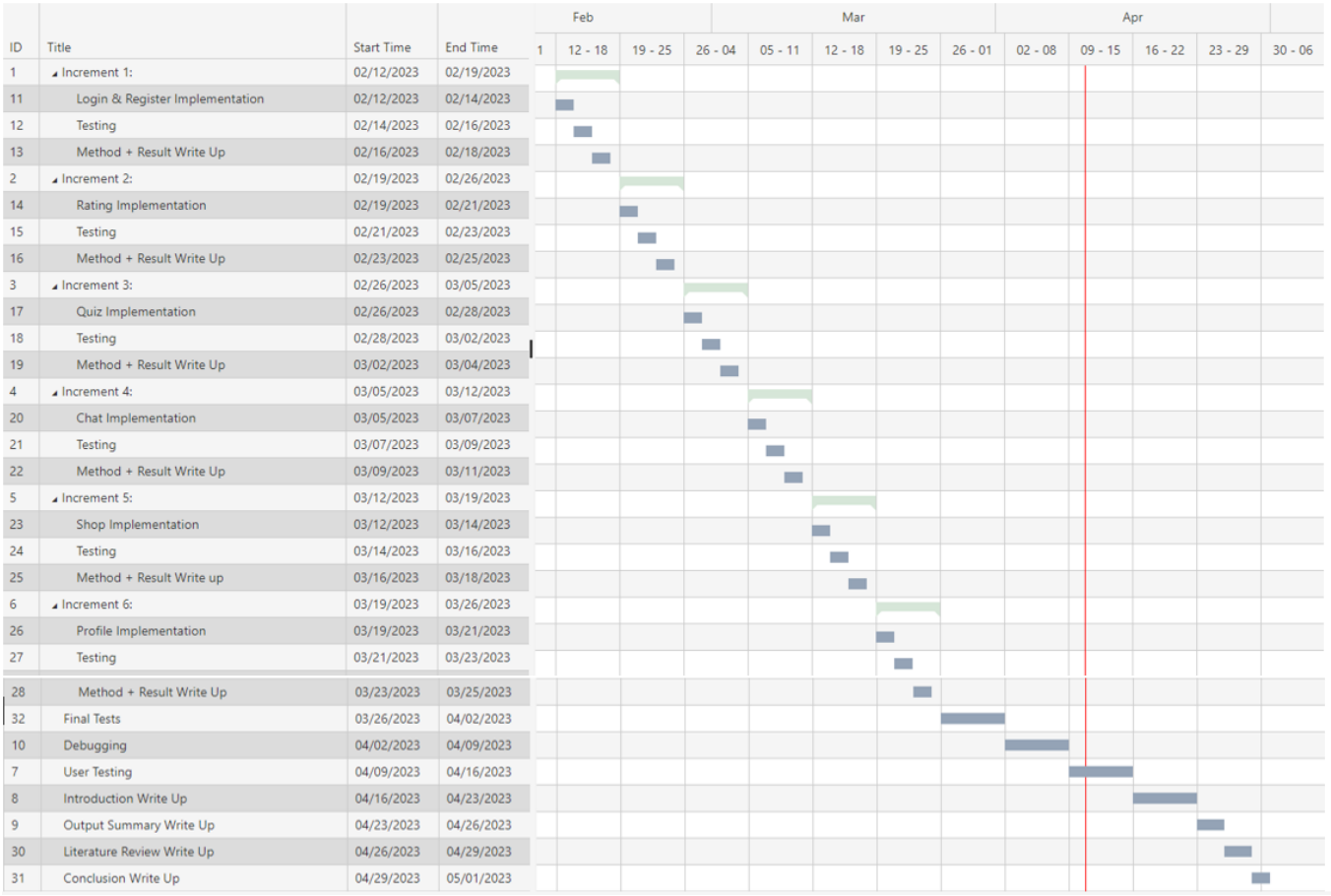
Please complete the form with a number (out of 5) to represent your feedback.

| | |
|---|---|
| **Application Speed:** | |
| I was able to quickly navigate through the different pages | 5 / 5 |
| Functions were carried out in a timely manner, i.e. pressing a button | 4 / 5 |
| Total | **9 / 10** |
| **Ease Of Use:** | |
| I was able to easily register / login into the website | 4 / 5 |

| | |
|---|---|
| I was able to earn XP when rating Anime | 5 / 5 |
| I was able to earn XP when finishing a quiz | 5 / 5 |
| I was able to send messages | 5 / 5 |
| I could successfully purchase an item | 5 / 5 |
| I was able to log out of the website | 4 / 5 |
| Total | **28 / 30** |
| **User Interface:** | |
| I was shown an appropriate avatar based on the gender selected | 3 / 5 |
| I was shown my XP count at all times (XP was updated when gaining or loosing XP points) | 5 / 5 |
| I was shown my score after completing the quiz | 3 / 5 |
| Messages were shown instantly after being sent | 5 / 5 |
| I was shown all the available items that I could buy with current XP count | 3 / 5 |
| I was shown purchased items in a table on the profile page | 2 / 5 |
| Based on the conversations I was having I was recommended relevant Anime | 4 / 5 |
| Total | **26 / 35** |
| **Additional Comments:**<br><br>I just wanted to say that I had a great experience using your website! The GUI was really easy to navigate and made it simple for me to interact with the website. I also loved the variety of fun and engaging activities available, such as quizzes and the chat features, that kept me entertained and interested. It's clear that a lot of thought and effort went into designing the site to create a positive user experience.<br><br>If I could make one suggestion, it would be to add more items to your store - I'd love to have more options to choose from. But that's just a minor thing - overall, I had a fantastic time on your site. Keep up the great work! | |

Appendix D: Project Time Management

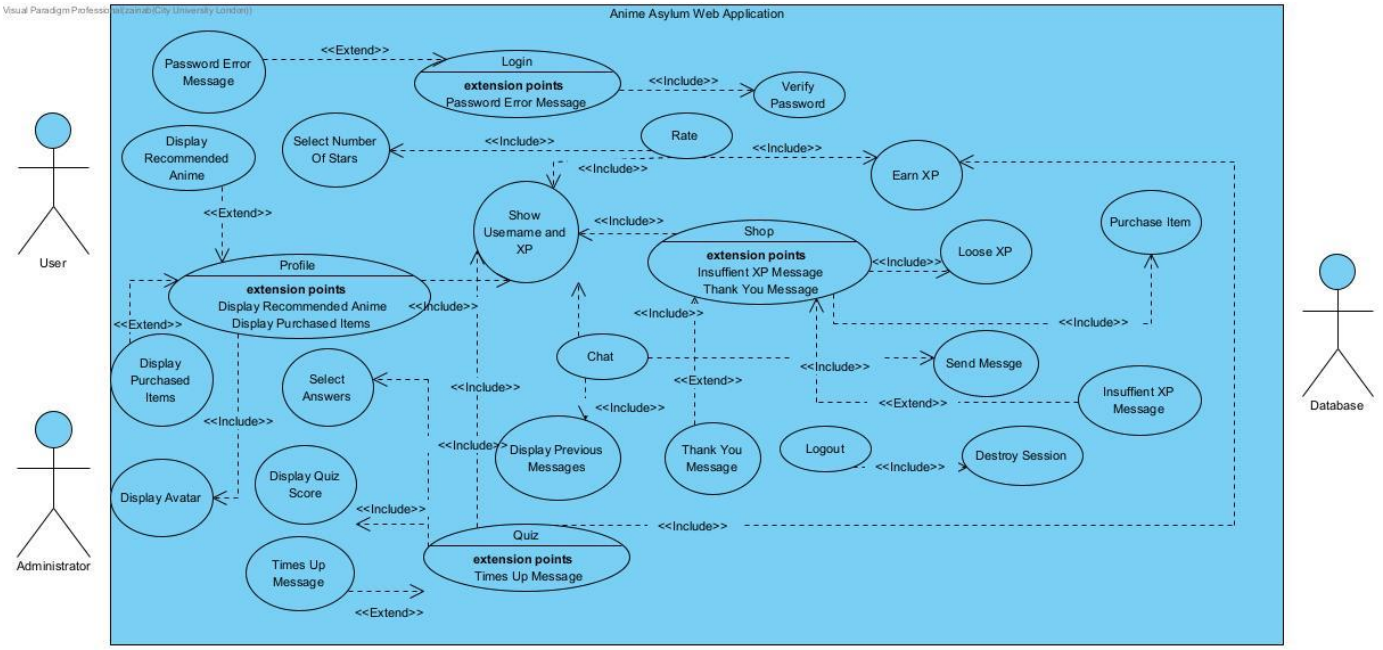
## Appendix D.1: Gantt Chart



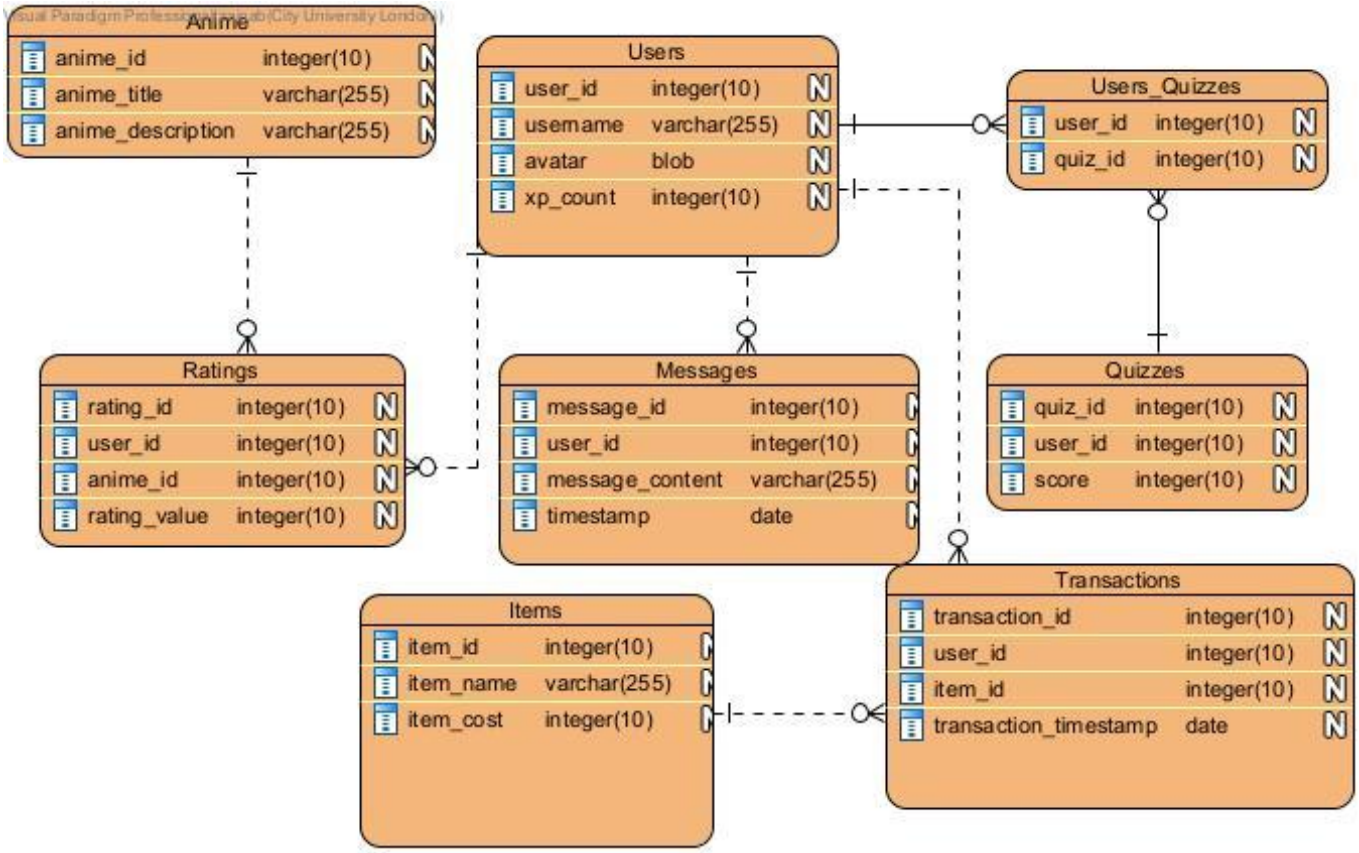
| ID | Title | Start Time | End Time |
|---|---|---|---|
| 1 | Increment 1: | 02/12/2023 | 02/19/2023 |
| 11 | Login & Register Implementation | 02/12/2023 | 02/14/2023 |
| 12 | Testing | 02/14/2023 | 02/16/2023 |
| 13 | Method + Result Write Up | 02/16/2023 | 02/18/2023 |
| 2 | Increment 2: | 02/19/2023 | 02/26/2023 |
| 14 | Rating Implementation | 02/19/2023 | 02/21/2023 |
| 15 | Testing | 02/21/2023 | 02/23/2023 |
| 16 | Method + Result Write Up | 02/23/2023 | 02/25/2023 |
| 3 | Increment 3: | 02/26/2023 | 03/05/2023 |
| 17 | Quiz Implementation | 02/26/2023 | 02/28/2023 |
| 18 | Testing | 02/28/2023 | 03/02/2023 |
| 19 | Method + Result Write Up | 03/02/2023 | 03/04/2023 |
| 4 | Increment 4: | 03/05/2023 | 03/12/2023 |
| 20 | Chat Implementation | 03/05/2023 | 03/07/2023 |
| 21 | Testing | 03/07/2023 | 03/09/2023 |
| 22 | Method + Result Write Up | 03/09/2023 | 03/11/2023 |
| 5 | Increment 5: | 03/12/2023 | 03/19/2023 |
| 23 | Shop Implementation | 03/12/2023 | 03/14/2023 |
| 24 | Testing | 03/14/2023 | 03/16/2023 |
| 25 | Method + Result Write up | 03/16/2023 | 03/18/2023 |
| 6 | Increment 6: | 03/19/2023 | 03/26/2023 |
| 26 | Profile Implementation | 03/19/2023 | 03/21/2023 |
| 27 | Testing | 03/21/2023 | 03/23/2023 |
| 28 | Method + Result Write Up | 03/23/2023 | 03/25/2023 |
| 32 | Final Tests | 03/26/2023 | 04/02/2023 |
| 10 | Debugging | 04/02/2023 | 04/09/2023 |
| 7 | User Testing | 04/09/2023 | 04/16/2023 |
| 8 | Introduction Write Up | 04/16/2023 | 04/23/2023 |
| 9 | Output Summary Write Up | 04/23/2023 | 04/26/2023 |
| 30 | Literature Review Write Up | 04/26/2023 | 04/29/2023 |
| 31 | Conclusion Write Up | 04/29/2023 | 05/01/2023 |

Appendix E: System Analysis & Requirements

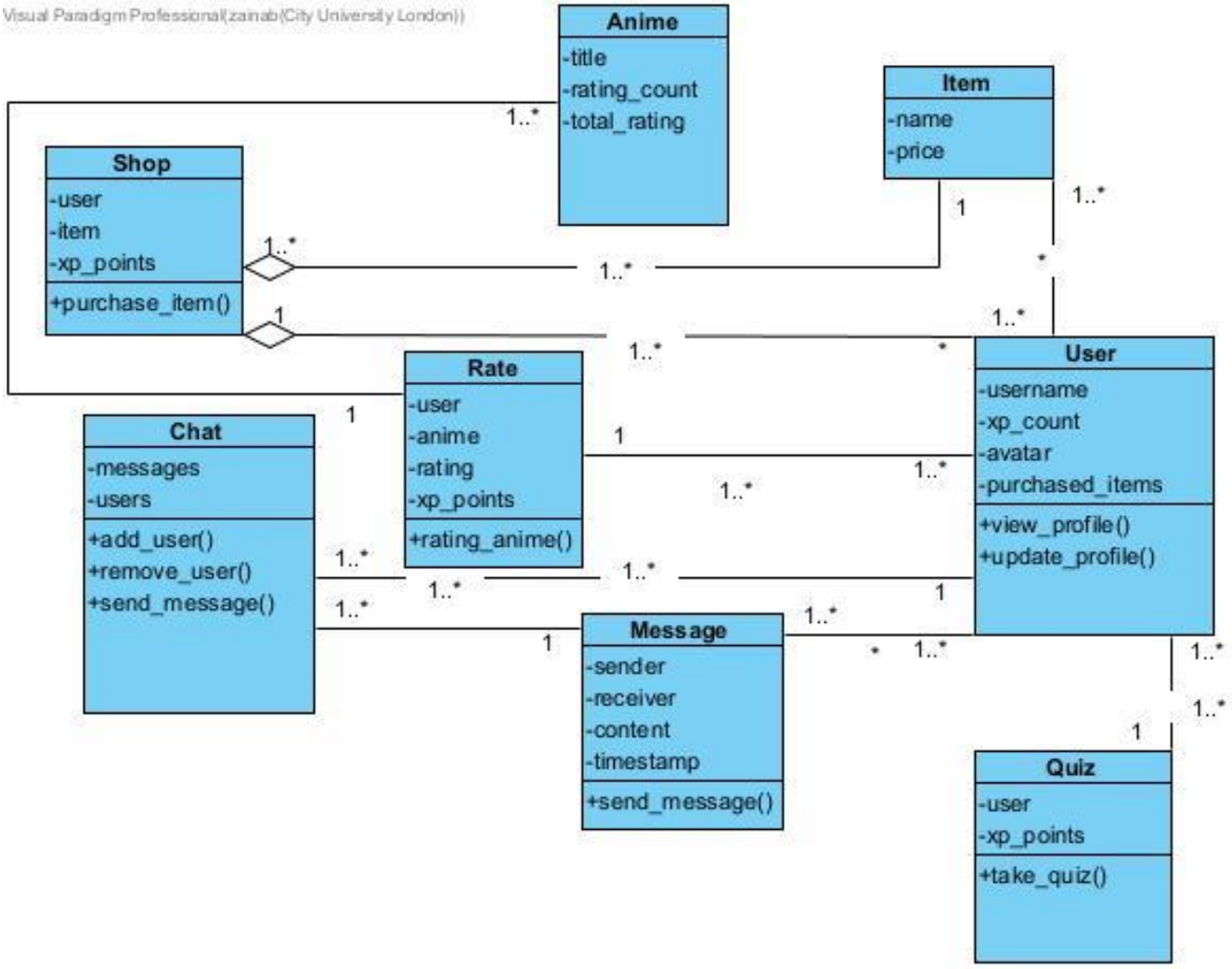
## Appendix E.1: Use Case Diagram




## Appendix E.2: Entity Relationship Diagram

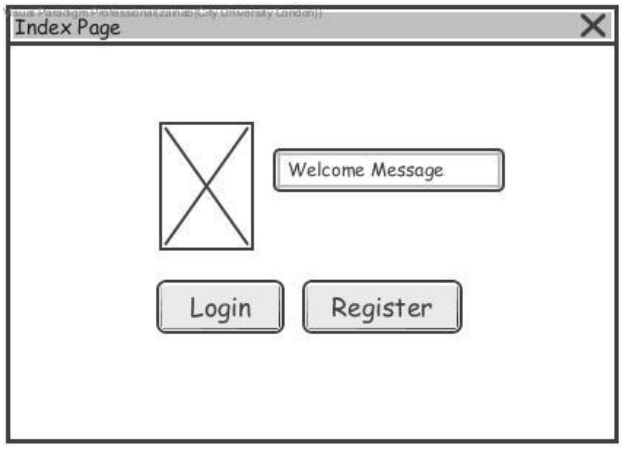


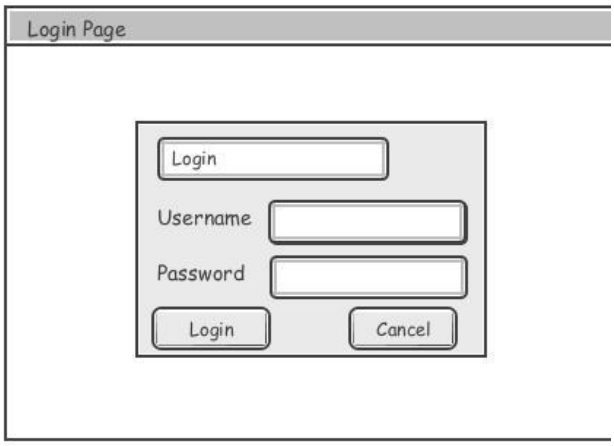
**Appendix E.3: Class Diagram**

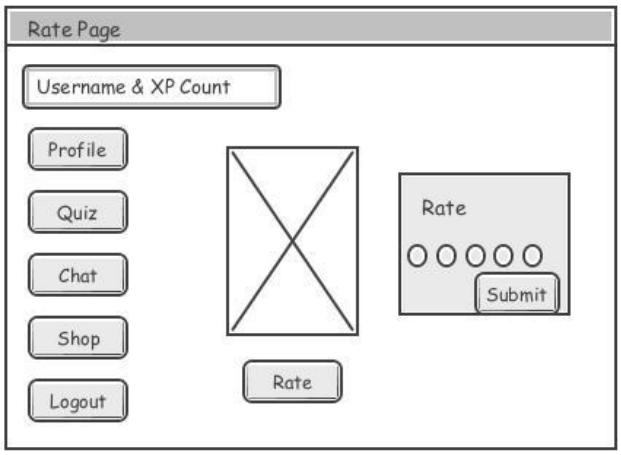


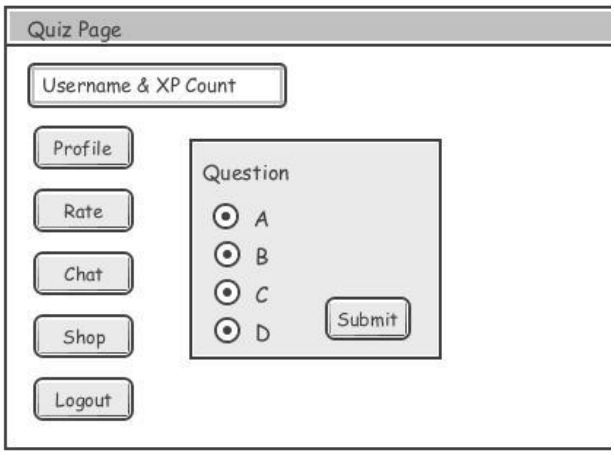

Appendix F: Design Requirements

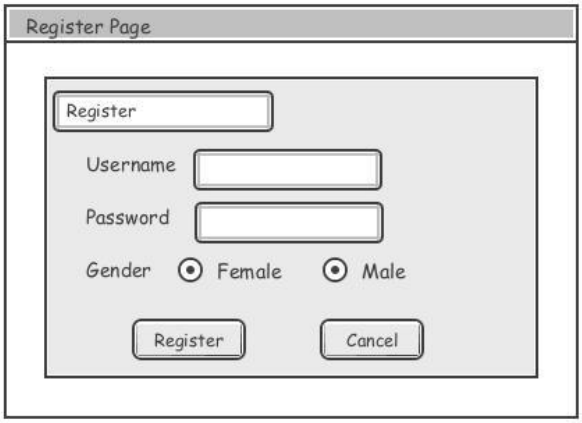
**Appendix F.1: Wireframes**

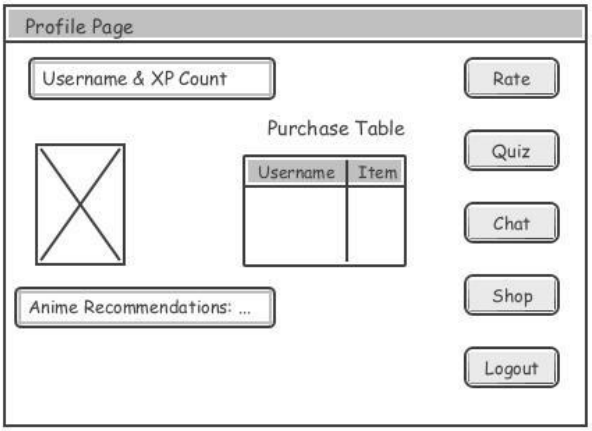

Index Page
Welcome Message
Login
Register

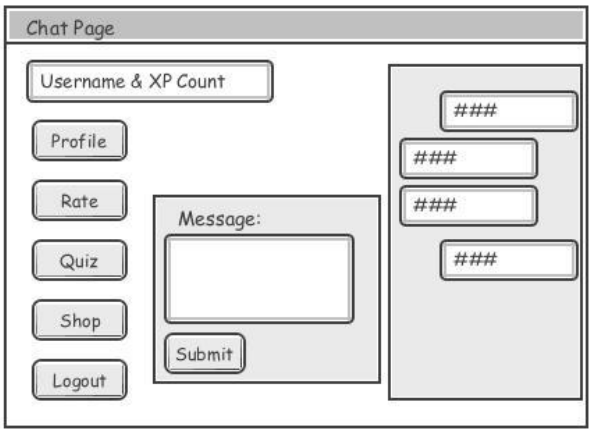

Login Page
Login
Username
Password
Login
Cancel

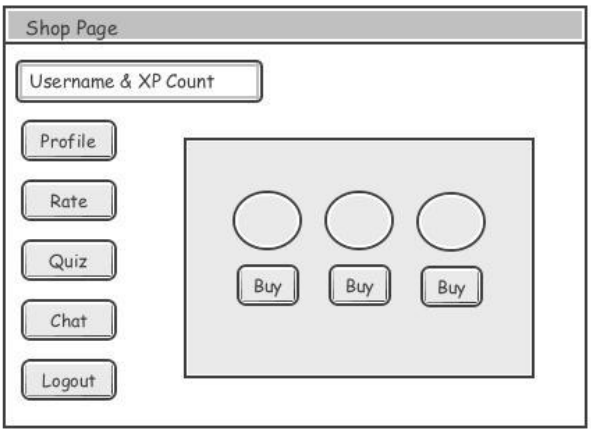

Rate Page
Username & XP Count
Profile
Quiz
Chat
Shop
Logout
Rate
Rate
Submit


Quiz Page
Username & XP Count
Profile
Rate
Chat
Shop
Logout
Question
A
B
C
D
Submit




## Appendix G: Blackbox Testing

| **Increment 1:** | | | |
|---|---|---|---|
| Input | Expected Output | Actual Output | Status |
| Credentials such as username and password | New account should be registered into system | New account was registered into system | Pass |
| Existing credentials such as username and password | Successfully logs into the system | Successfully logs into the system | Pass |
| **Increment 2:** | | | |
| Pressing arrows | Different Anime should be shown | Different Anime was shown | Pass |
| Pressing rate button | Form to rate Anime should appear | Form to rate the Anime appeared | Pass |
| Pressing stars | The number of stars pressed should be the number of stars that go yellow | The number of stars pressed was the number of stars that go yellow | Pass |

| | | | |
|---|---|---|---|
| Pressing submit button | The system should store the rating and add 5 XP | The systems stores the rating and adds 5 XP points | Pass |
| **Increment 3:** | | | |
| Press an option | The system should move to the next question | The system moves to the next question | Pass |
| Pressing add 5 xp button | The system should increment the XP count by 5 | The system increments the XP count by 5 | Pass |
| Reload button | The quiz should reload | The quiz reloads | Pass |
| **Increment 4:** | | | |
| Text box | The user should be able to type text into the text box | The user can type text into the text box | Pas |
| Submit button | The text should be stored and should be displayed back onto the page within the chat box | The text is stored and displayed back onto the page with the chat box | Pass |
| **Increment 5:** | | | |
| Pressing buy button | XP points should decrement, and the item should be stored onto the user's account | XP points are decremented, and the item is stored onto the user's account | Pass |
| **Increment 6:** | | | |
| Displays | The user should be displayed information such as purchased item, recommended anime, avatar, username and XP count | The user is displayed information such as purchased items, recommended anime, avatar, username and XP count | Pass |

## Appendix H: One Drive Link

AnimeAsylum.zip

## Appendix I: Logs

06 / 02 / 2023

- Created index.php
  - two buttons
- Created login.php
- Stylesheet.css
  - added css to buttons
  - added css to background

07 / 02 / 2023

- Login.html
  - added text boxes for username and password
- Created rate.php

08 / 02 / 2023

- Rate.html
  - Added star system
  - Created popup page within

10 / 02 / 2023

- Rate.html
    - Increments xp counter when a rating is submitted

13 / 02 / 2023

- Connected website to XAMPP server (can access through localhost)
- Connected site to database (login page)

20 / 02 / 2023

- Added chatbox to chat.php

21 / 02 / 2023

- Created quiz.php
    - Added all the questions
    - Incremented xp feature

22 / 02 / 2023

- Created shop.php
    - Added items
    - Implemented buying feature
- Added logout feature

23 / 02 / 2023

- Created profile.php
    - Included anime
    - Displayed all purchased items
    - Displayed recommended anime

## Meetings

| **Date** | **Notes from myslef** | **Feedback From Jimenez** | **Feedback From Andrew** | **Feedback From Cristina** |
|---|---|---|---|---|
| 07 / 02 / 2023 | - Is this a good enough project to get a good grade. | - Project is good.<br>- Time might be a concern in which case make a new plan that outlines all the complex things you need to complete so there is something to talk about in the report | | |
| 14 / 02 / 2023 | - Show the new work plan | - Work plan is good.<br>- Talk about all the technologies you'll be using and resubmit (email him new version) | | |

| | | | | |
|---|---|---|---|---|
| | | - Start write up for method and result so feedback can be given as you go – make sure you go into detail especially with backend design/implementation | | |
| 28 / 03 / 2023 | - Show my site progress<br>- Send over report progress | - Improve interface<br>- Rate page – could show recommendation for both anime and users with similar interests | | |
| 14 / 03 / 2023 | - Show finalised site | - Highlight all the interactions<br>- Gender neutral avatar<br>- Up scaling the interface<br>- Outline challenges and complexities | | |
| 15 / 03 / 2023 | - Show finalised site | | - Consent form to have other evaluate the site<br>- Make changes based of evaluation<br>- Perhaps make an add / following user function | |
| 22 / 03 / 2023 | - Ask Jimenez to help with incorporating nltk library for nlp<br>- Consent form<br>- Deviation ideas | - Fixed bug<br>- Find resources for consent form via moodle or asking module leader<br>- Deviation could also be the things you implemented which was not originally planned. | - | |
| 28 / 03 / 2023 | - Ask for suggestions on how to display python code | - Suggested to look into RESTAPI | - | |
| 11 / 04 / 2023 | - What could I do to further improve my work | - | - | - compare your product to an existing one<br>- benchmarking<br>- deep analysis |
| | - appendix b (used code) | - | - | |

Appendix J: Setup Manual

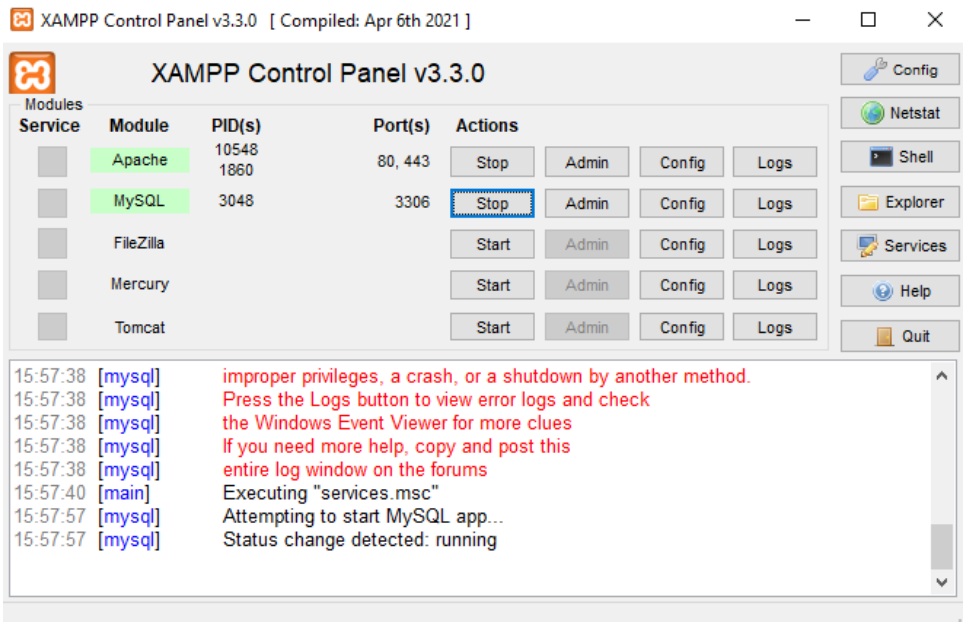
**Setup Guide**

**Zainab Mayet – IN3007 Individual Project**

**Anime Social Media Website helping people to connect with gamification element**

---

1. Begin by installing a suitable IDE, the author used VS code for this project. Next install Python and finally XAMPP.
2. Open the IDE and import the project folder.
3. Next open a new terminal and enter in the following commands
    - pip install NLTK
    - pip install mysql-connector-python
4. Next open XAMPP and press start for 'Apache' and 'MySQL' until a port number appears for both.




5. Next press the "Explorer" and press the "htdocs". After extracting the zip file paste in the project folder (AnimeAsylum) into here.
6. After that press 'Admin' on the 'MySQL' row and create a database called "animeasylum". Within this make the following tables with appropriate columns:
    - login
        - username

        - password
        - gender
        - xp
    - messages
        - username
        - name
        - text
    - purchases
        - username
        - item
    - ratings
        - username
        - movie
        - rating
    - gender_image
        - gender
        - image (jpeg or png must be inserted for ‘male’ and ‘female’)
7. Finally run the site with the following link:
    - http://localhost/AnimeAsylum/index.php