AoBuild Website Application

Project Advisor: Lidia Morrison

Submitted by: Rodrigo Onate Garcia

Student ID: 887317923

Department of Engineering and Computer Science

California State University, Fullerton

Spring, 2023

Table of contents

Table of contents **2**
Table of Figures **4**
Abstract **5**
1.0 Introduction 6
1.1 Background 6
1.2 Motivation 7
1.3 Related Work 7
1.3.1 Final Round eSport news website and relation to Aobuild 7
1.3.2 Facebook databases and relation to Aobuild 8
1.3.3 Fastest database and relation to Aobuild 8
2.0 Problem Statement **9**
3.0 Proposed Project and Significance **10**
4.0 Objectives **11**
Overall Project Objective 11
4.1 UX Design and Functions 11
4.1.1 Getting Started with Aobuild 11
4.1.2 Setting up personal profile to navigate Aobuild 12
4.1.3 User Home Page 13
5.0 Activities **15**
5.1 Functionality 15
5.2 User-friendly 15
5.3 Security 15
6.0 Software Requirements 16
7.0 Hardware Requirements 16
8.0 Overall Description **17**
8.1 General Overview 17
8.2 Application Overview 17
9.0 System Architecture Design **17**
10.0 UML Diagrams **19**
10.1 Use Case Diagram for Aobuild 19
10.2 Sequence Diagram for Aobuild 20

11.0 Implementation **22**
11.1 Login Page 24
11.2 Sign up Page 25
11.3 Home Page 29
11.3.1 Posting 30
11.3.2 Theme Window 32
12.0 Test **34**
13.0 Installation Instructions **34**
References **37**

Table of Figures

Figure 1 - Aobuild Landing Page……...12

Figure 2 - Aobuild Profile Page…….13

Figure 3 - Aobuild Home……...14

Figure 4 - Event Driven Architecture diagram for Aobuild……..…18

Figure 5 - Use Case Diagram for Aobuild…….19

Figure 6 - Sequence Diagram for Aobuild…….21

Figure 7 - Login Page Desktop View for Aobuild…….22

Figure 8 - Login Page Mobile View for Aobuild……...23

Figure 9 - Login Page Error for Aobuild……...24

Figure 10 - Sign Up Page Username Error……26

Figure 11 - Sign Up Page Email Error……...26

Figure 12 - Sign Up Page Password Error…….……27

Figure 13 - Sign Up Page with input data for Aobuild…….…….……28

Figure 14 - Stored Data on successful signup for Aobuild……28

Figure 15 - Homepage with rodrigo username for Aobuild…….…….……30

Figure 16 - Homepage Post made by rodrigo username for Aobuild……31

Figure 17 - Stored Data on successful post for Aobuild……32

Figure 18 - Homepage Theme Window for Aobuild…….33

Figure 19 - Files for Aobuild…….34

Figure 20 - Database for Aobuild……..36

Abstract

ESports have grown enormously in the past years, and it has led to a large number of players trying to achieve their dreams and play video games for a living. The growth of eSports has led to an immense number of websites for each competitive game, and having all those options around takes players a lot of time to find what they need and want to improve their competitive experience. Aobuild comes to answer all those unanswered questions as an all-in-one website where players can share with each other their best builds for the game they have always wanted to improve on. Its main purpose is to shorten the time that players spend trying to find information on how to improve their gameplay and to find possible friends that would like to improve with you as they play the game together. In order to accomplish this goal Aobuild will let the user find the information they want by searching keywords, and if the information is not available, the user will be able to make a post asking for the desired information. Players get better by playing with each other, and they will get even better by sharing their builds with each other.

1.0 Introduction

Gaming websites have helped players over the years to improve their competitive experience. However, the efficiency when trying to find information on a specific game is not the best. There are too many websites, and players don't want to be looking around when they could be using that time improving their skills by playing the game. Gamers want what they are looking for as fast as possible so that they can jump into the game and improve their skills rapidly, which is why an all-in-one website like Aobuild is necessary.

1.1 Background

Many people say that playing games is fun, but that they are a waste of time and don't help in your life at all. However, there are also people that start playing games because they are fun, and then get into competitive gaming because they see an opportunity of making a living out of playing video games. The Esports industry has grown considerably over the past years and it is no longer a far away dream to achieve being a competitive gamer and live off of it.

As users that want to be part of Esports and make a living out of it, players want to spend as much time as possible on their games, but also knowing that they are not wasting their time improving the "wrong way". Which is why it is important that the time spent on the internet searching for "tips and tricks" is as little as possible.

1.2 Motivation

The Aobuild website aims to support players on their journey to become competitive players and achieve the results they want as efficiently as possible no matter the game or platform where they play. Aobuild wants players to not only share their best builds and information with each other, but to also improve by playing with new people that they meet on the website. Thus, because being a solo player may not always be the best way to improve and rise as a competitive player. Many competitive games are played on teams and if as a player they are lacking in communication skills and not gaming skills, then playing with other people that are on the same boat might be more beneficial to their competitive experience than playing solo. Overall, Aobuild's aim is to help all types of players improve on the time they spend finding their perfect build spending as little time as possible on the internet, and help them improve their communication skills by playing with other people that are on the same page as them.

1.3 Related Work

1.3.1 Final Round eSport news website and relation to Aobuild

Final Round is a website that offers users a customizable experience to follow their favorite eSports teams and players. However, Aobuild is interested in following competitive teams and players to be able to follow up with their builds and data, so that it can be given to the users of Aobuild. Thus, Final Round shares the purpose of Aobuild in a way, but it is focused on only keeping track of eSports competitions superficially.

1.3.2 Facebook databases and relation to Aobuild

Facebook uses different types of databases for different types of workloads, because there are databases that work better than others depending on their characteristics Thus, to bring users a fast and smooth experience using Aobuild, it will be necessary to use different ways of storing data so that all the processes happening on the website work as fast as possible. Furthermore, having a fast website will keep the purpose of Aobuild intact.

1.3.3 Fastest database and relation to Aobuild

There are four databases compared in the article “Comparison of MySQL, MSSQL, PostgreSQL, Oracle databases performance, including virtualization.” Aobuild needs the fastest database that there is. However, in the previous related work I talked on how different databases are used for different work loads. This article comparing four databases will help decide on what database is the best one to be the core of Aobuild.

2.0 Problem Statement

According to the article from MIDiA by Karol Severin, the average player spends a little more than an hour per day playing video games. However, a competitive Esport player spends between 12 to 14 hours a day playing video games, says an article by Jonathan Lee. Meaning that if an average player wants to rise in the competitive gaming world they would not only need to play a few more hours daily, but they will also need to find competitive information as fast as possible so that they spend most of their time playing the game. Depending on the game the average player might be able to play at most 2 games per day, so it is important that they make the most out of them if they want to improve faster. Furthermore, having friends to play with is very important to improve a player's competitive experience. This is because sharing information on how to improve while playing might let you try those "tips" out right away, speeding up the learning process.

3.0 Proposed Project and Significance

The proposed project is a web application that will allow users to find previous posts on gaming information, and to make new posts asking for it if the information isn't currently available. The website will also allow users to add each other in case they want to further discuss on a topic outside the main post, to play together their respective game, or to simply be friends on the site for further talks.

Aobuild's main purpose is to help users improve their competitive gaming experience by reducing the time it takes to search for builds/ "tips and tricks" for each specific game so that users can focus mainly on what they like, gaming. Moreover, Aobuild will also recommend some websites for each game where you can find useful information so that the user does not need to be waiting for a reply on their post needlessly.

4.0 Objectives

Overall Project Objective

The general objective of this project is to help players find reliable competitive information on builds as quickly as possible so that they can spend their time gaming. This will be done by letting the user choose their desired platform and games that they want to see on their feed, so that they can instantly search for information without the need of extra filters, and if the information found isn't the desirable one or is outdated then the user can make a post asking for help to the rest of the community. Moreover, Aobuild will have a few links to external websites that may have more information about that specific game, making it simpler and faster than looking at every single website on the web. Furthermore, the website will allow users to add each other so that they can keep discussing topics without overloading posts, so that everyone can read comments in posts without having to scroll through thousands of comments. By adding each other the website creates an opportunity of meeting new friends that you can improve with if at some point they want to play games together.

4.1 UX Design and Functions

4.1.1 Getting Started with Aobuild

The user will search for the website on the web browser. It is important that the landing page looks simple and easy to use so that the user wants to give it a try. Once in the landing page, the user will sign up inputting email and password. (*see Figure 1 - Aobuild Landing Page*)

Figure 1 - Aobuild Landing Page

4.1.2 Setting up personal profile to navigate Aobuild

As soon as the user finishes signing up to the website, the profile page will be displayed so that the user can finish setting up their account and preferences. (see Figure 2 - Aobuild Profile Page)

In this page the user will complete their profile filling up all the data required by the website. Also, they will choose their preferred gaming platform and favorite games, so that when they are done setting it up the home page displays their settings accordingly.

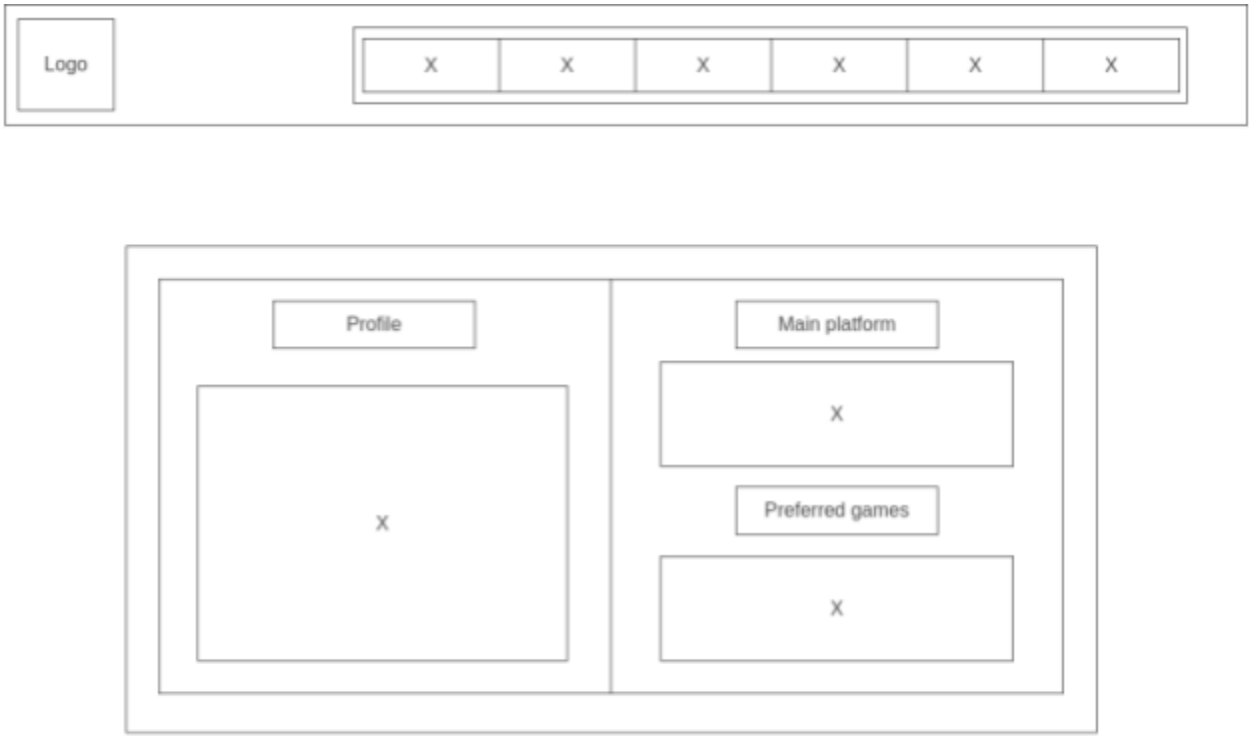

Figure 2 - Aobuild Profile Page

4.1.3 User Home Page

After the user is done setting up their profile and preferences the home page will load up. Here the user will be able to search for a post related to the information they are trying to find. If the post doesn't exist or it is outdated, then the user will have the choice of making their own post to receive the information from other users or the admins itself. (*see Figure 3 - Aobuild Home Page*)

Figure 3 - Aobuild Home Page

5.0 Activities

5.1 Functionality

Functionality is one of the main points of this project. The website has to function exactly as intended so that users can navigate through it without any issues. The website has to function fast so that it achieves the goal of improving time search for users, otherwise it will be taking time from them that can be spent playing video games. The functionality of the profile page has to work properly and as minimalistic as possible so that users can get into their home page rapidly, which is also why the signup/login page doesn't ask for all the information that the profile page does. Furthermore, the profile page has optional data, so that users can input only what is needed for the website to work properly without taking any extra second from them.

5.2 User-friendly

Aobuild will be as intuitive as possible. Time cannot be wasted trying to learn how the website works, so everything has to make sense as soon as the users get to a new page. When the user is trying to do something and the website is rejecting it, the website must tell them in a very simple message why that is happening. Small simple messages are easier to understand and to replicate than trying to remember a long tutorial when they first arrive at the website.

5.3 Security

Security is a necessity when dealing with a user's personal information. This website will require very little private information, but protection against intruders is a must. The website will guide users to make strong passwords, and those will be hashed by algorithms so that they are as secured as possible. Some profile information will be displayed to other users, which is why

Aobuild will not require users to fill all the data in their profiles, only what's necessary to be recognizable by other users. Emails will also be under hash algorithms so that they cannot be stolen from the website's database.

6.0 Software Requirements

The programming languages that will be used in the development of the Aobuild website will be PHP, HTML, CSS, and JavaScrip. The text editor will be Visual Studio Code. The database that the web app will be utilizing is a MySQL database accessed through localhost/phpmyadmin running the XAMPP application for MySQL and also for the server Apache2.

Programming Languages: PHP, JavaScript

Front-end Technologies: HTML, CSS

IDE Platform: Visual Studio Code

Database: MySQL

Operating System: Windows 11, 64 bit

Browser: Chrome, Edge

Server: Apache

Database: MySQL

Application to run database and server in windows: XAMPP

7.0 Hardware Requirements

The hardware requirements that will be used to make Aobuild include a Intel I7 9th generation processor with up to 3.0 GHz, and RAM of 16 GB. Internet connection will not be an

issue when working on the website locally, but when needed the internet connection will need to have a minimum of 20 Mbps of download speed and a minimum of 3 Mbps of upload speed.

8.0 Overall Description

8.1 General Overview

Aobuild as a social media website is designed to function online on any web browser with the exception of Safari because it has not been tested on it. However, because it is not fully finished it can only be used offline and tested on the same machine where it is installed. Aobuild will offer users a place where they can ask for information about their specific games without having to navigate the internet for a long period of time to find the build they need.

8.2 Application Overview

Users will be able to register to the website, login, and access the homepage where the username that they registered as will be displayed so that they know they are logged in. They will be able to make posts, and see other people's posts besides their own on their feed. Users will also be able to change the theme of how their homepage looks, changing the color of their buttons, background, and also the size of the text displayed on the homepage. The user will be able to use the website on any device because it is made with media styling.

9.0 System Architecture Design

The project consists of three web pages. A login page that allows the user to login and gain access to the homepage. A signup page which can be accessed by clicking on a link on the

login page that will allow you to access the homepage after registration is successful. A homepage which is where the user will be able to see the posts from other users, make their own posts, and change the theme on their homepage.

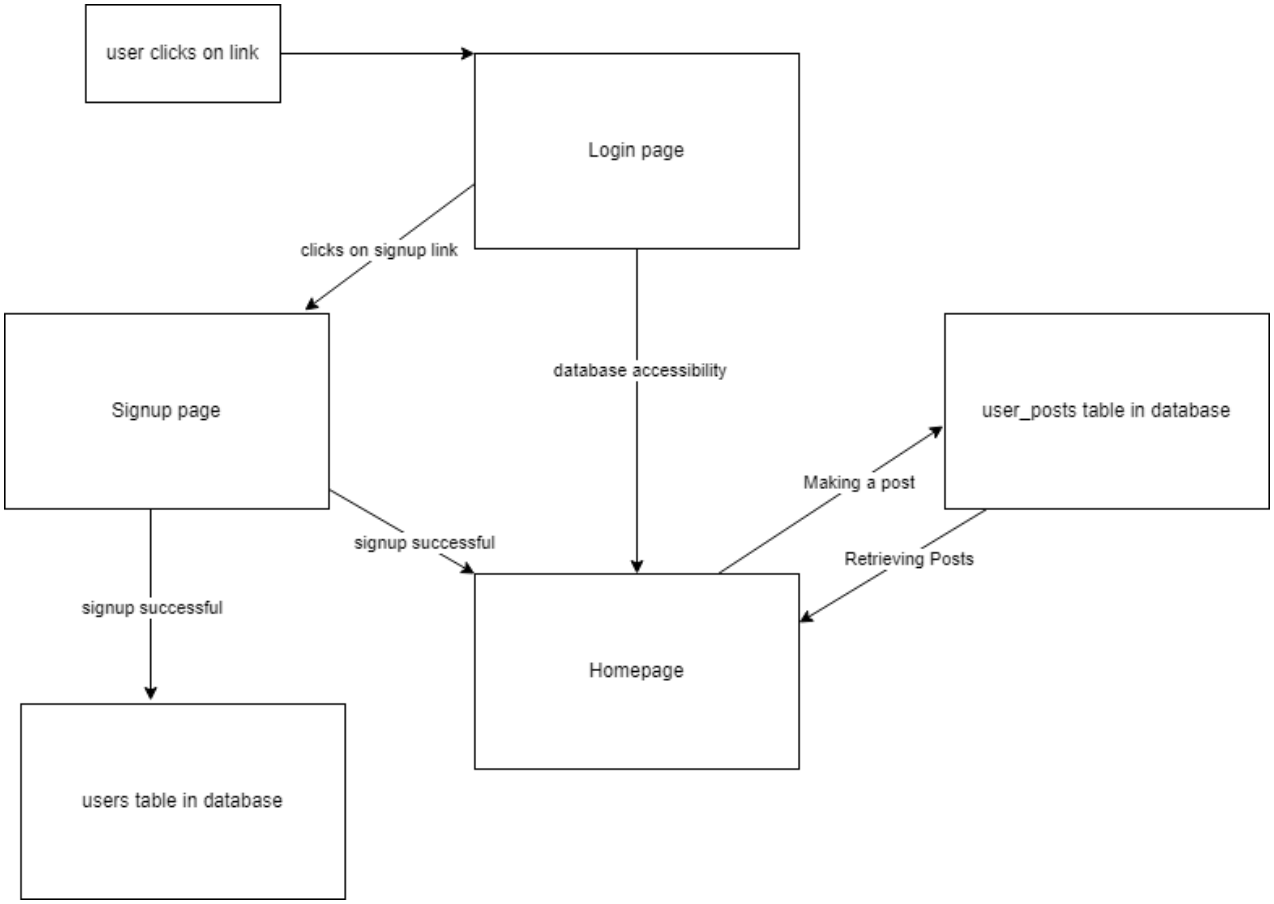

Figure 4 - Event Driven Architecture diagram for Aobuild

10.0 UML Diagrams

10.1 Use Case Diagram for Aobuild

After successfully setting up Aobuild, the user can sign up into the web application and the homepage will be displayed on successful sign up. In the home page the user is able to make posts with or without images and see posts from other users on the feed (middle of the page). The user is also able to change the theme that they want to see on the homepage by clicking on the theme menu. After, the user is able to log off and will be redirected to the login page, or simply just closing the browser will log them off. The data is saved in the database for when a returning user wants to login and access their homepage.

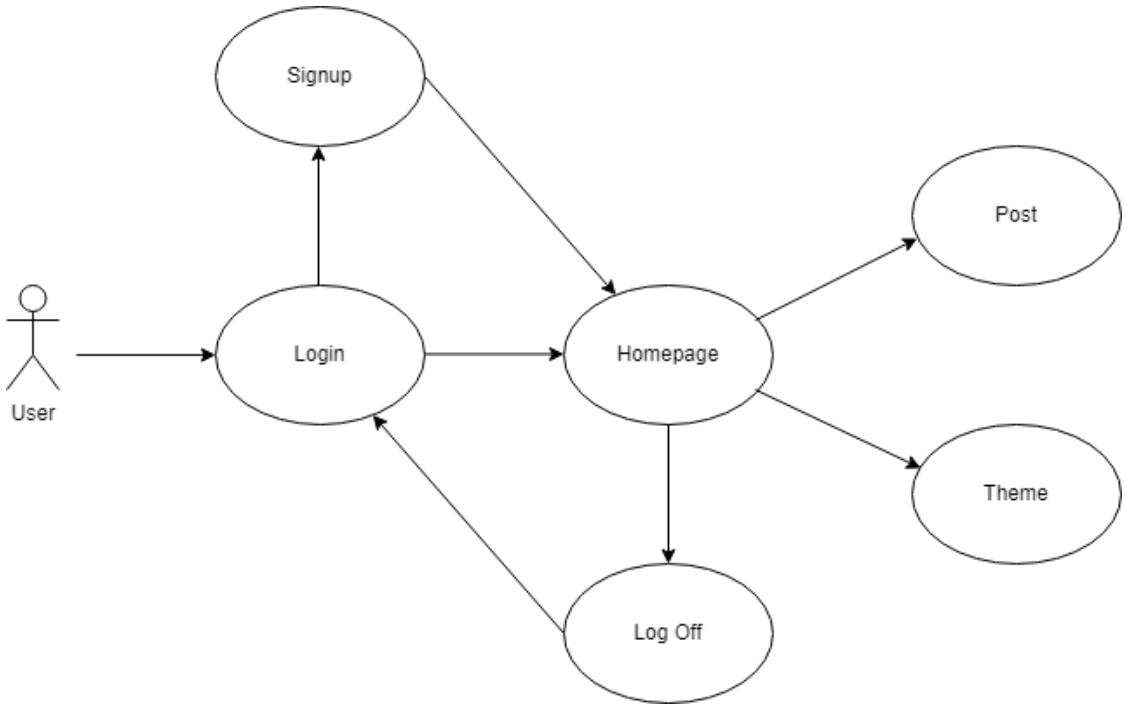

Figure 5 - Use Case Diagram for Aobuild

10.2 Sequence Diagram for Aobuild

The sequence diagram describes how a user can login and signup to Aobuild and how the user's information is validated. When the user goes to the designated URL, they will arrive at the login page. If the user is not registered on the website, they can click on the register button which will take them to the registration page. The user needs to enter the correct username, email, and password and click the signup button. The system will query the database with the user's information and return a result. Based upon the return, the user will either be redirected to the homepage or given an error saying that the information is already being used.

Once the user is in the database it can start navigating their homepage. The user can make posts with images or without them, and see the posts made by other users. When the user types a post with or without an image and clicks on the Post button, the system will query an entry for the post into the database. The homepage main feed will query the database to retrieve the posts data and display it on the feed. The user can change the theme on their homepage by clicking on the theme menu on the left of the website, or on the right of the website if you open the link on mobile. They can choose buttons color, size of the text displayed, and background color. Once the user is done using the website they can click on the Log Off button and they will be redirected to the login page or they can simply exit the browser.

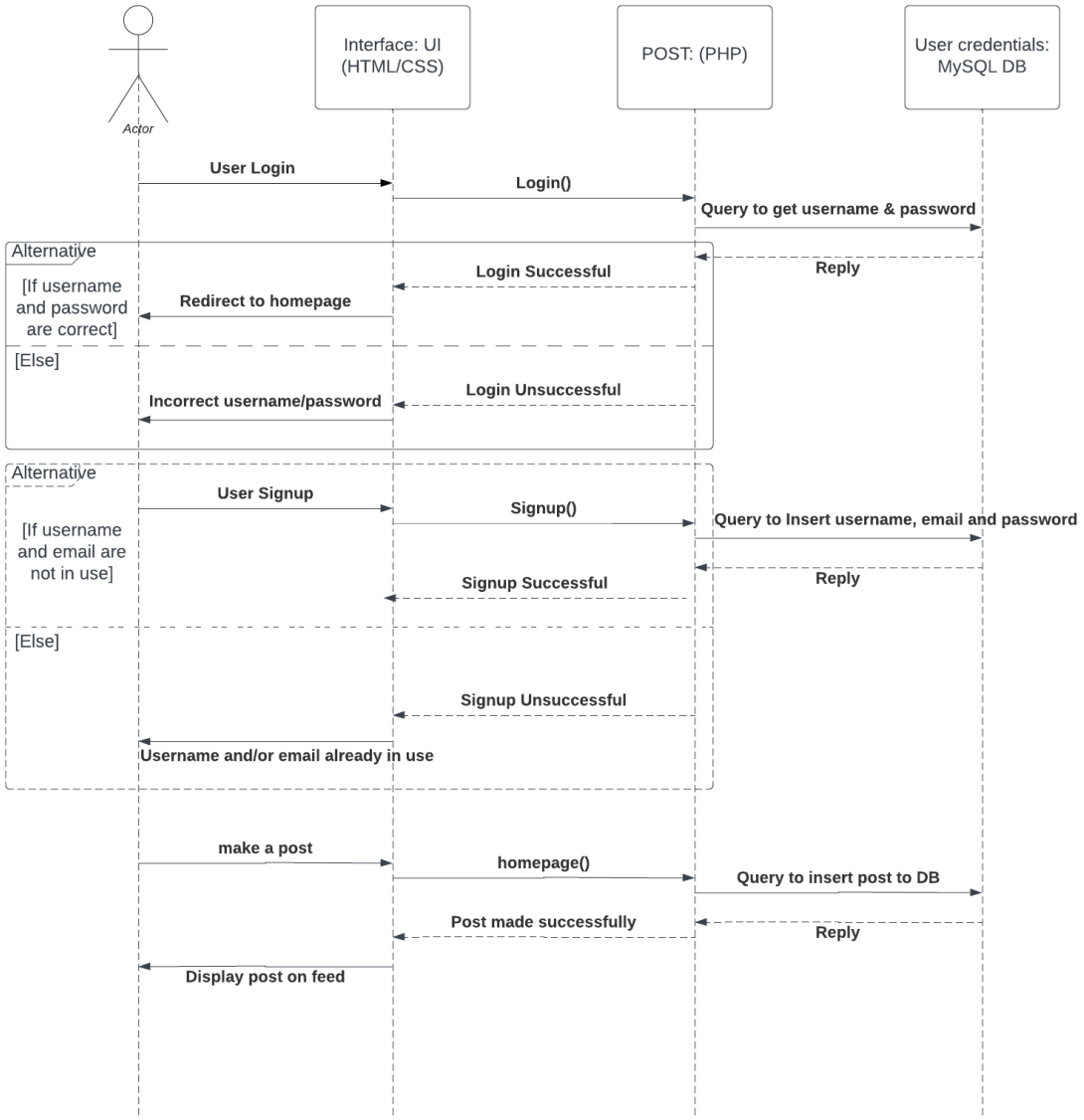

Figure 6 - Sequence Diagram for Aobuild

11.0 Implementation

The Aobuild web application scales to the user's window. It can be used on any browser on any device with the exception of Safari which was not tested on, so it may work or not in Safari. To avoid confusion, the images shown in this section will be shown in the desktop scale.

Below there are two images (Figure 7 and Figure 8) of how the site will look in the desktop environment and in the mobile environment.

Figure 7 - Login Page Desktop View for Aobuild

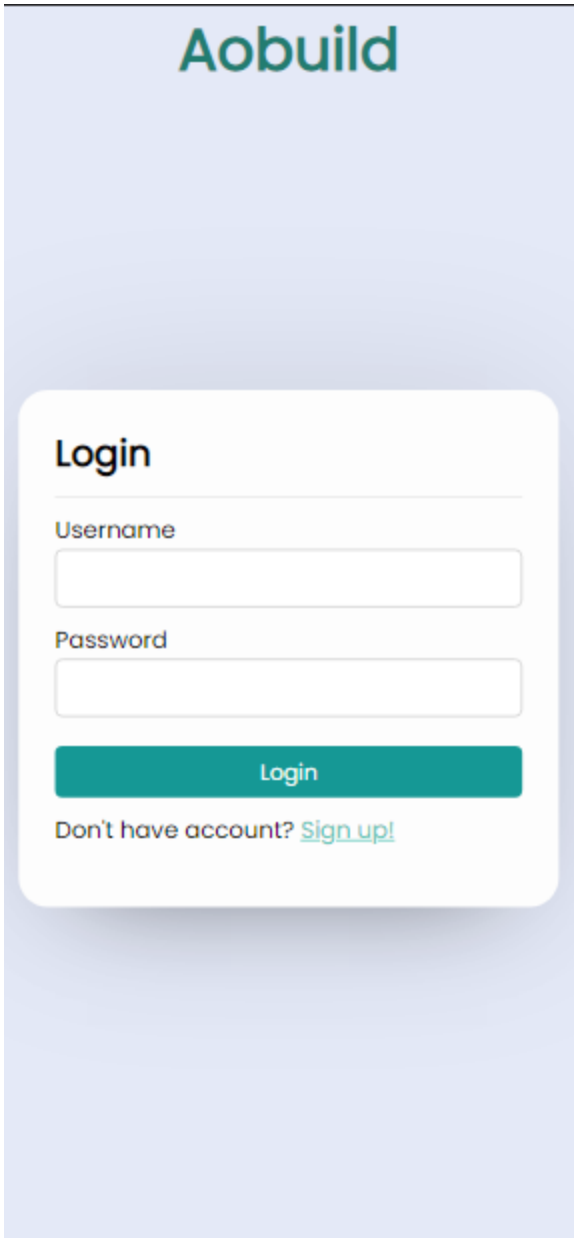

Figure 8 - Login Page Mobile View for Aobuild

11.1 Login Page

Above is the login page of the Aobuild website (See Figure 7 and Figure 8). The user will be able to enter their username and password. If successful they will be redirected to the homepage. However, if the user information is incorrect, a message will appear saying Invalid username or password (See Figure 9 below), and the user will be able to try to input the correct data again. If the user does not have an account they will be able to click on the Sing up! button/label to be redirected to the signup page.

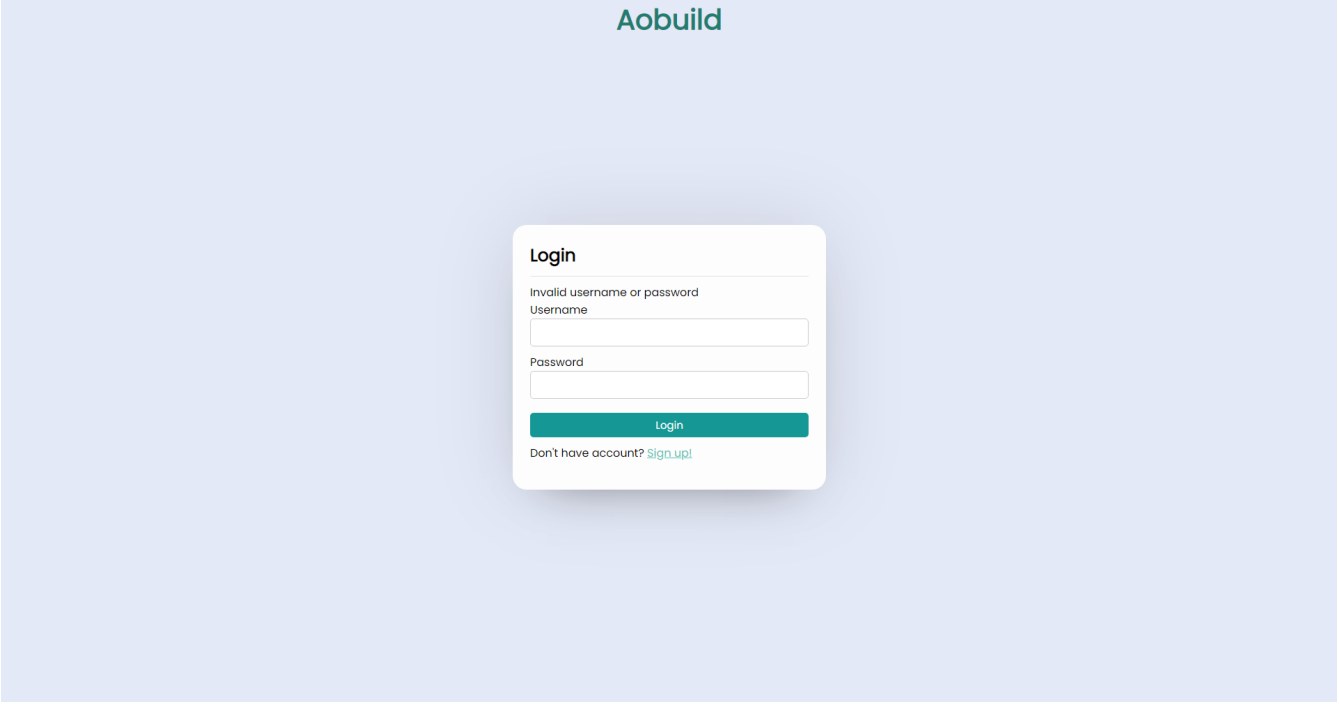

Figure 9 - Login Page Error for Aobuild

11.2 Sign up Page

In the sign up page the user will be able to enter their username, email, and password to register to the Aobuild website. The user will have to enter the password twice to confirm that the password is correctly spelled. If successful after clicking on the Sign up button, the user will be redirected to the homepage where their username will be displayed so that they know it is their own homepage.

If the user provides a username that already exists in the database, an error will occur and a message will be displayed saying “Username is already taken!” (See Figure 10 below). If the user provides an email that already exists in the database, an error will occur and a message will be displayed saying “Email is already taken!” (See Figure 11 below). Lastly, if the passwords provided that the user do not match, an error will occur and a message will be displayed saying “Passwords do not match!”(See Figure 12 below).

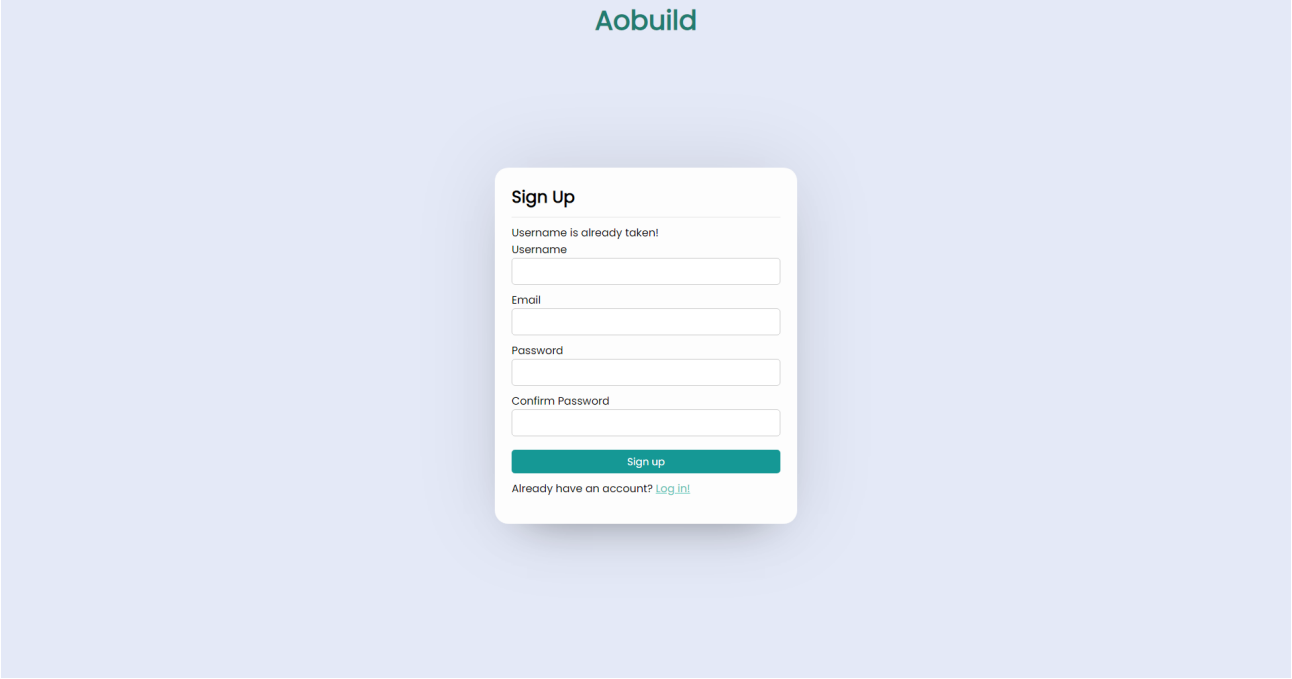

Figure 10 - Sign Up Page Username Error

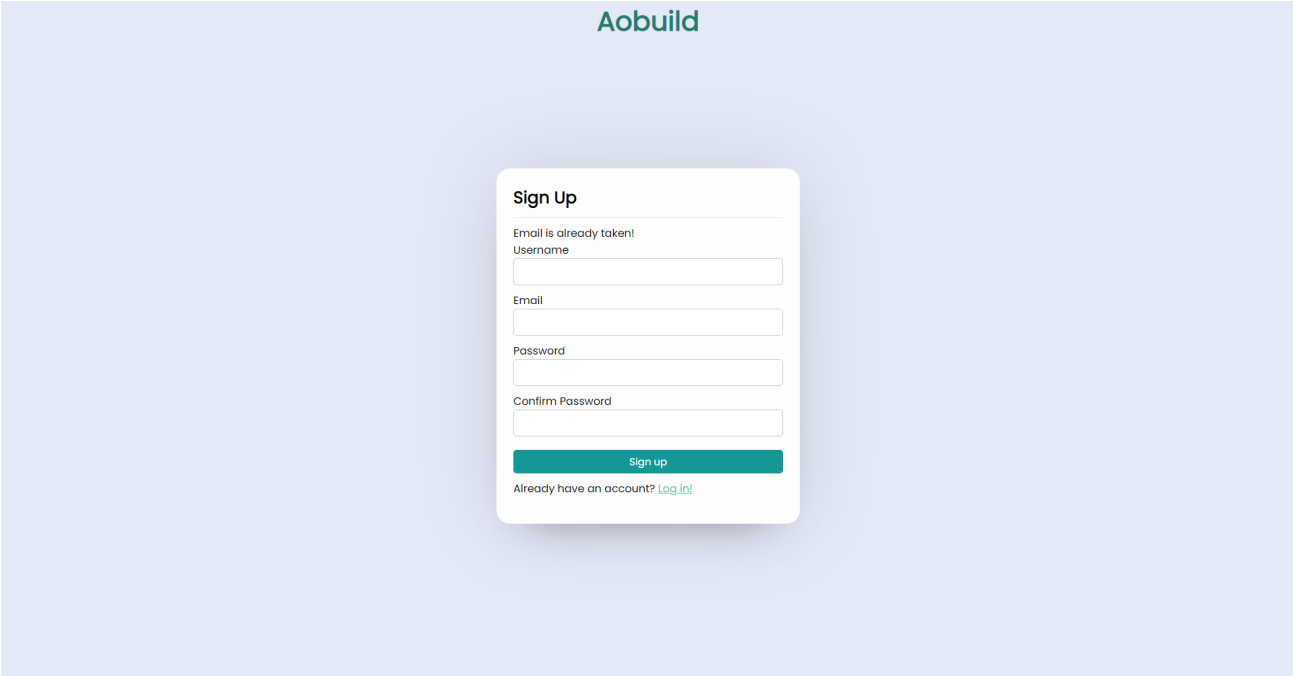

Figure 11 - Sign Up Page Email Error

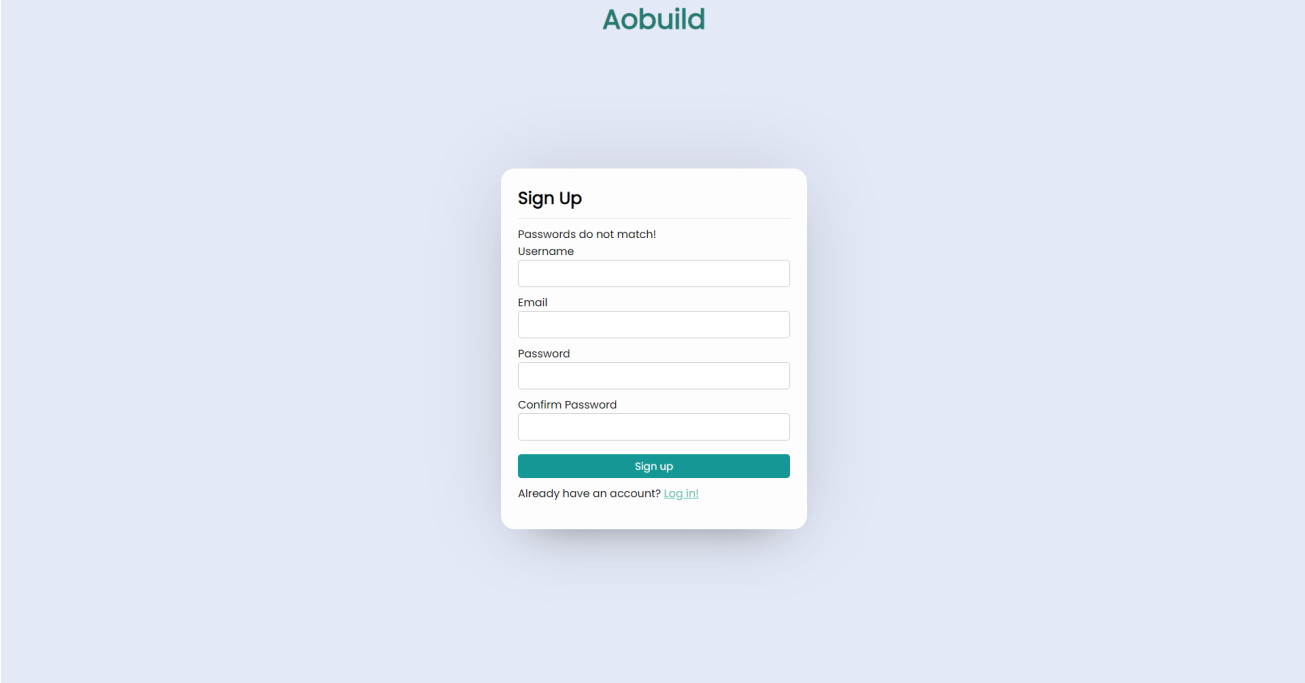

Figure 12 - Sign Up Page Password Error

After successfully signing up, the data entered by the user will be sent to the database to be stored so that the user can login the next time they land on the website's login page. In the example below (See Figure 13) we entered the username: rodrigo, email: rodrigo@gmail.com, and a password twice. After clicking on the Sign up button the data was sent to the database and stored as shown below (See Figure 14). The data stored is highlighted in yellow for a better understanding of the image.

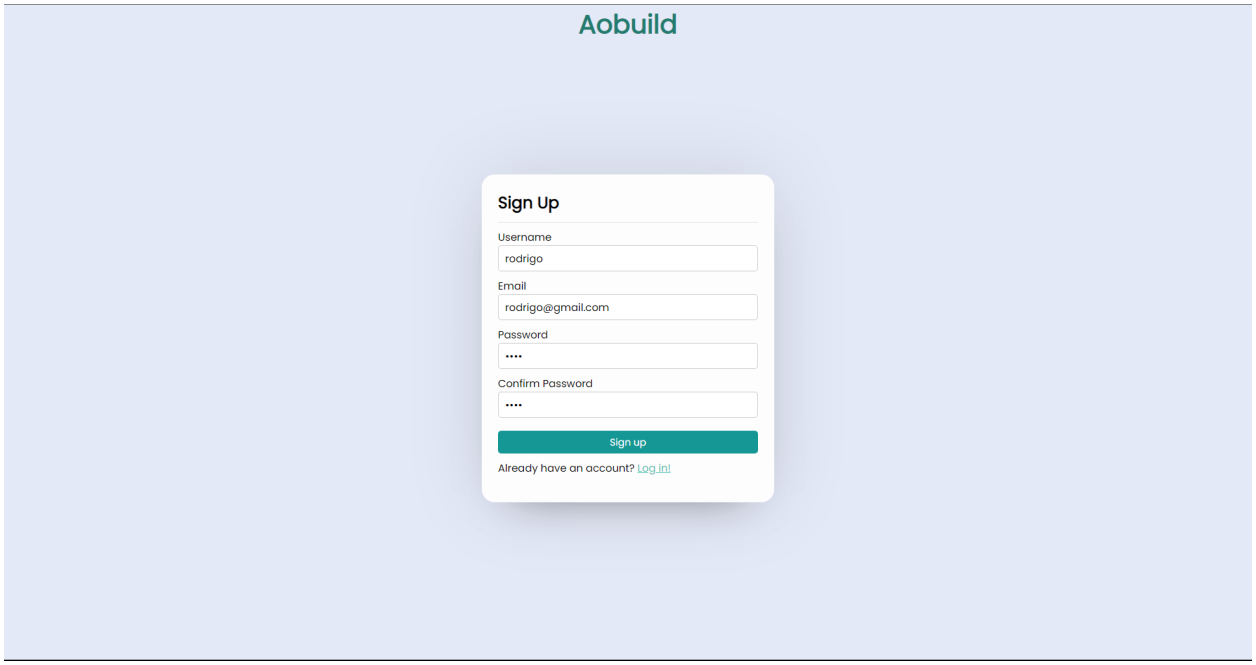

Figure 13 - Sign Up Page with input data for Aobuild

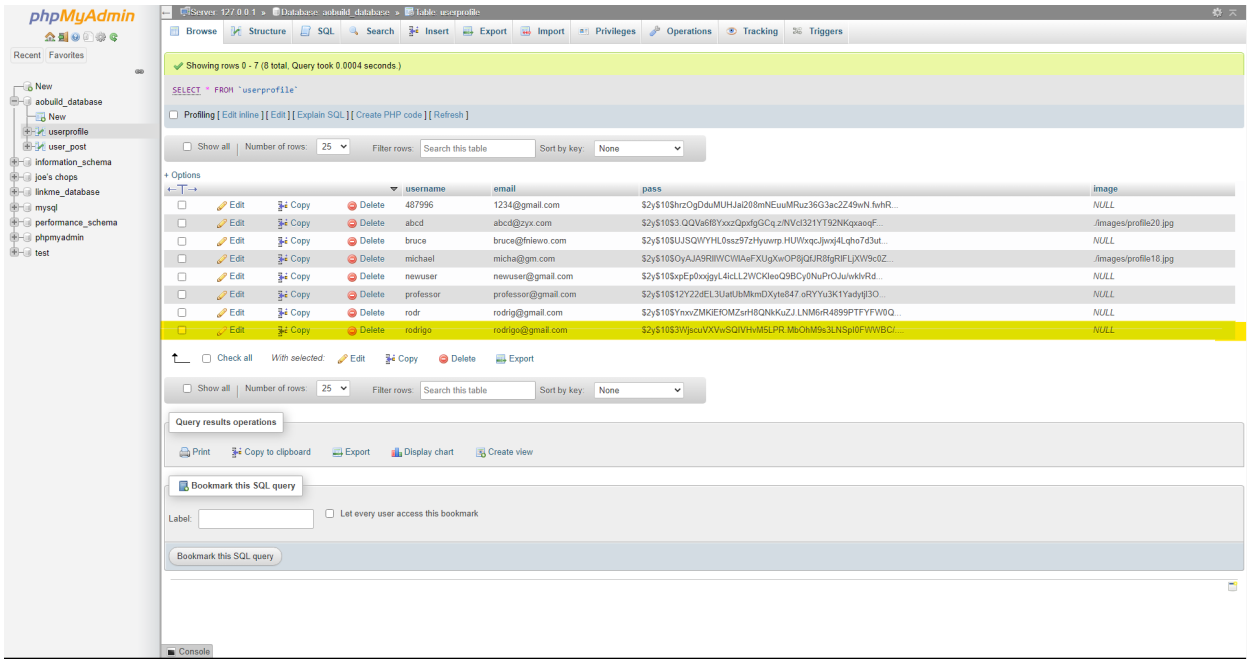

Figure 14 - Stored Data on successful signup for Aobuild

11.3 Home Page

Upon successful registration (See Figure 13 and Figure 14 above) for the first time or upon successful login, the user is redirected to the homepage where they will be able to see their username displayed on the top left of the page (See Figure 15 below). The user will be able to make posts with or without images in this page, and they will be able to see the posts made by other users on the main feed in the middle of the page.

On the left side of the page the user will have a menu where they can check their notifications, messages, friends, bookmarks, settings, and theme. At this time the only implemented menu object is theme. Notifications and messages have been hardcoded to see how they would work, but they are not fully implemented. Under the left menu the user will have a Log Out button for when they want to exit the web application. By clicking on it they will be redirected to the login page.

On the right side of the page the user will have a preview of their messages on a messages box, and their friend requests under the messages box. Again these two are not fully implemented thus I put hardcoded data for viewing purposes. The messages box does search for the name of the person that sent a message, but the messages and people are hardcoded in the page.

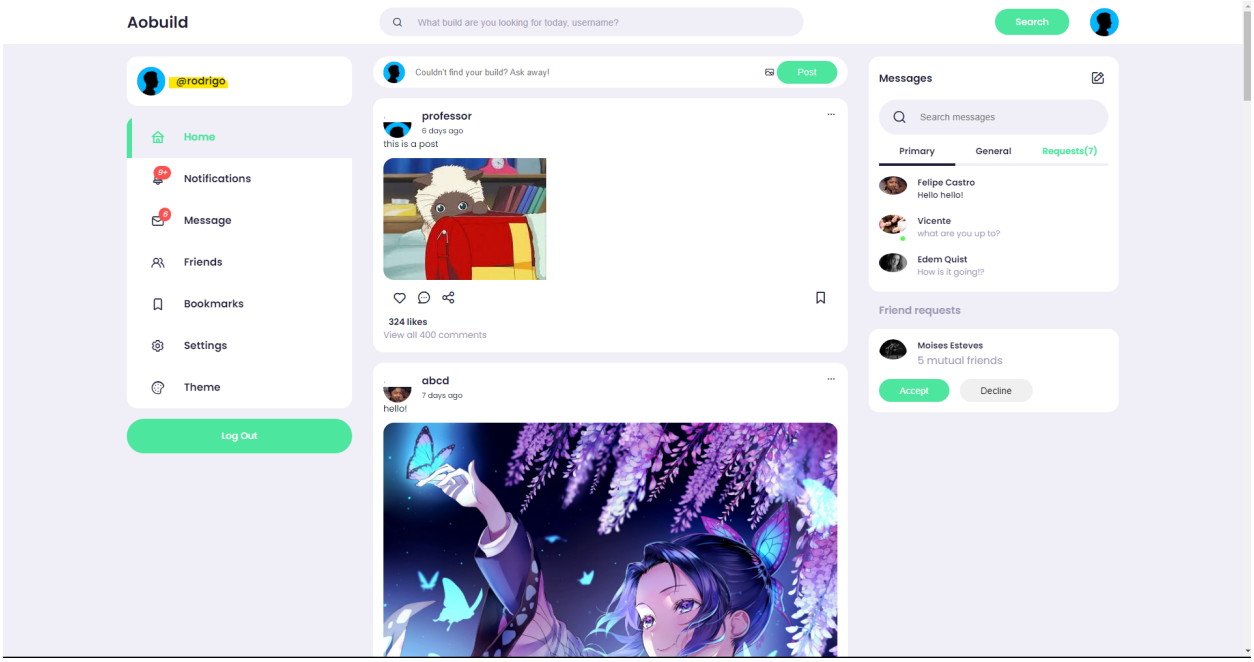

Figure 15 - Homepage with rodrigo username for Aobuild

11.3.1 Posting

The user can add a post to the main feed by clicking on the second bar from top to bottom in the middle of the page. The user can choose if they want to just post text, an image or both. To add an image to the post the user has to click on the small icon next to the Post button. The image will not be displayed after it is selected, but it will be displayed once the user clicks on the Post button. Once the Post button is clicked the data will be sent to the database, the main feed will retrieve that data, and the post will appear at the top of all posts in the middle of the page. As you can see below, the user rodrigo made a post saying “This is a post for final paper of

Aobuild" (See Figure 16).

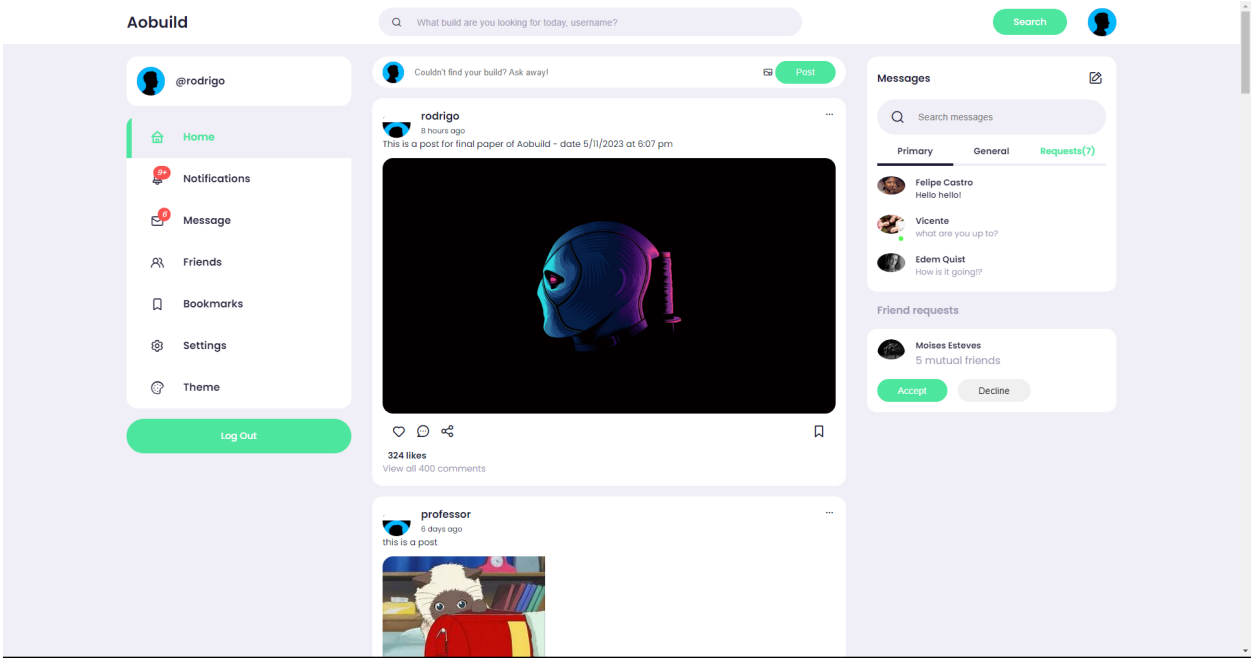

Figure 16 - Homepage Post made by rodrigo username for Aobuild

Below is an image of how this data looks in the database table after the Post button is clicked (See Figure 17). The data stored is highlighted in yellow for a better understanding of the image.

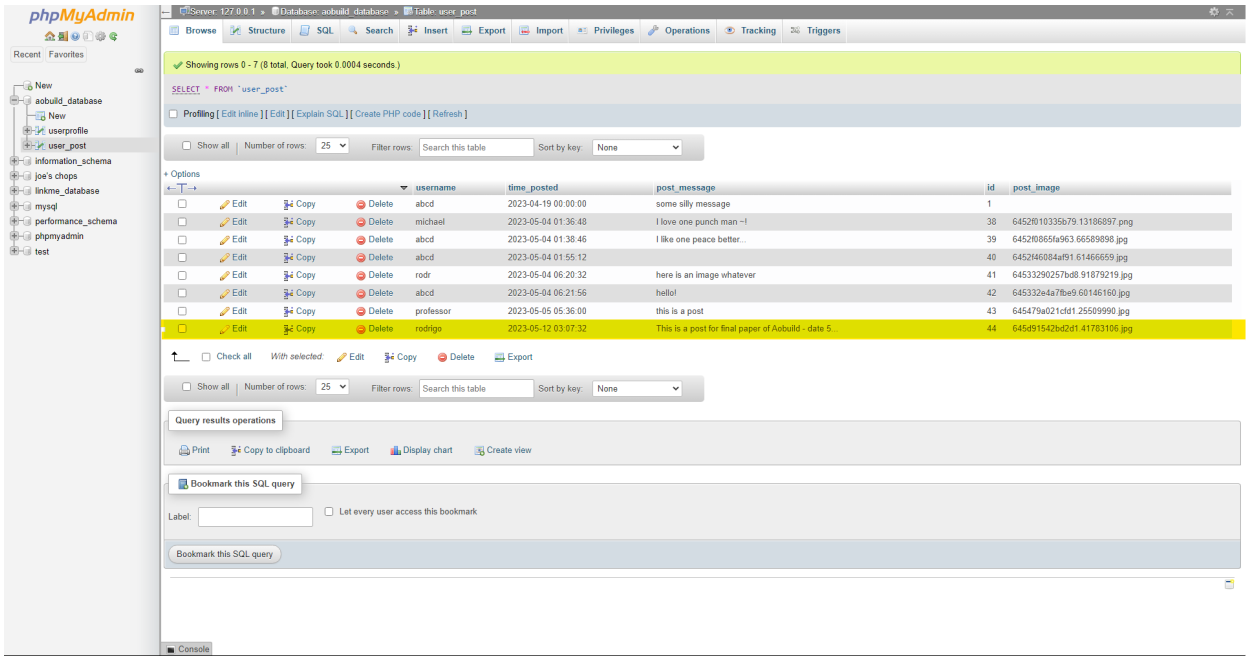

Figure 17 - Stored Data on successful post for Aobuild

11.3.2 Theme Window

In the homepage the user will also be able to change the theme of their page by clicking on the theme menu on the left side of the page. Clicking on it will display a window where the user can change the text font size, the color of the buttons, and the color of the background (See Figure 18).

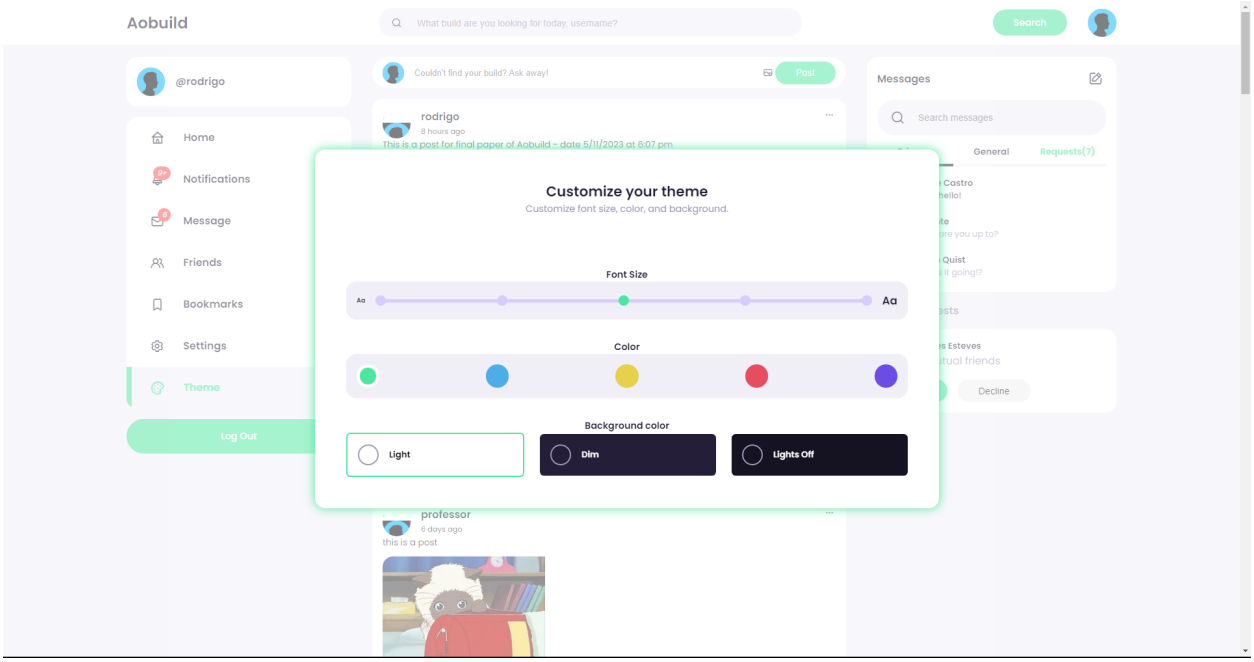

Figure 18 - Homepage Theme Window for Aobuild

12.0 Test

The application can be tested with XAMPP in windows and linux machines. It was not tested on Apple machines, so I can not say if it works or not. To test it you will need the XAMPP software to start Apache and MySQL (phpmyadmin), and you will also need the Aobuild folder which comes as a zip file.

13.0 Installation Instructions

First, you will need to install XAMPP. Start the MySQL database and Apache server from the application. Then, you will need to download the zip file that has the Aobuild folder with all its components (See Figure 19). The uploads folder should be empty, and the images folder should have 41 images.

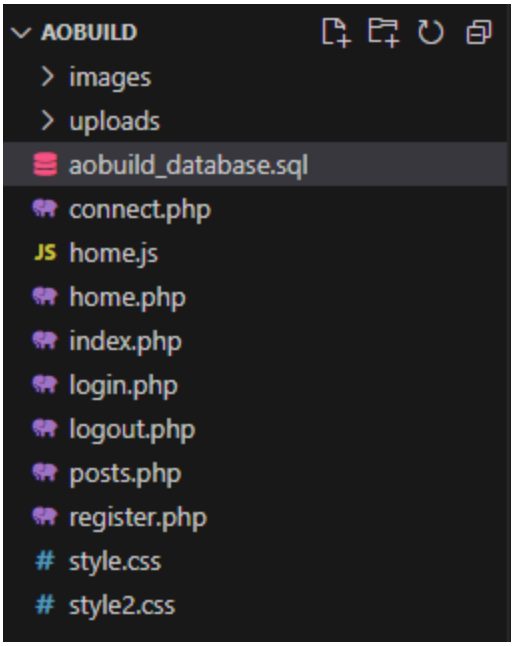

Figure 19 - Files for Aobuild

Once that is done, copy and paste the Aobuild folder into the htdocs folder that is located inside the xampp folder that was created when you installed XAMPP.

Here is a youtube video that I found to help with the installation of XAMPP and putting the folder into htdocs: https://www.youtube.com/watch?v=bL3jfSxFzu4

Before going into the Aobuild page we have to set up the database in phpmyadmin. Inside the Aobuild folder there is a “aobuild_database.sql” file. In localhost/phpmyadmin click on “New” on the top left side. After, in the middle of the page click on “import”. Then, click on “choose file” and choose the “aobuild_database.sql” file. The database and tables should be imported to your phpmyadmin, and it should look like this when you expand the aobuild_database menu from the ‘+’ sign (See Figure 20).

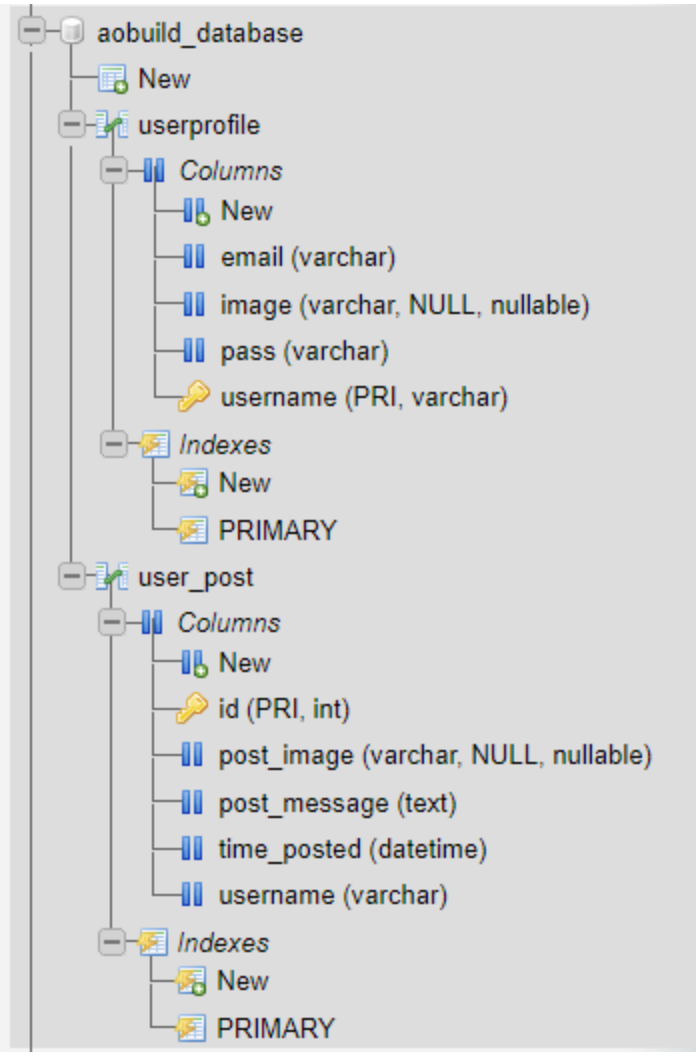

Figure 20 - Database for Aobuild

Once that is done, you can go to localhost/Aobuild and start navigating the page normally. After signing up the user should be displayed and the main feed should be empty, this is because the table for posts is empty.

If there is any trouble contact me at ronategarcia@csu.fullerton.edu

References

Final Round, A New Esports Media Platform, Launches Beta to Public: Website Offers Esports Enthusiasts the First Ever Opportunity to Completely Customize How They Follow Favorite Teams and Players on Visually Stunning Website." *PR Newswire*, 2019."

Dhruba Borthakur. 2013. Petabyte scale databases and storage systems at Facebook. In Proceedings of the 2013 ACM SIGMOD International Conference on Management of Data (SIGMOD '13). Association for Computing Machinery, New York, NY, USA, 1267–1268. https://doi-org.lib-proxy.fullerton.edu/10.1145/2463676.2463713

Truskowski, Klewek, R., & Skublewska-Paszkowska, M. (2020). Comparison of MySQL, MSSQL, PostgreSQL, Oracle databases performance, including virtualization. *Journal of Computer Sciences Institute*, *16*, 279–284. https://doi.org/10.35784/jcsi.2026

Severin, Karol. "The Average Gamer Plays More than One Hour per Day, as Time Spent Takes Centre Stage." *MIDiA Research*, 2022 MIDiA Research Ltd, 8 July 2022, https://midiaresearch.com/blog/the-average-gamer-plays-more-than-one-hour-per-day-as-time-spent-takes-centre-stage.

Lee, Jonathan. "Esports Stars Have Shorter Careers than NFL Players. Here's Why." *The Washington Post*, WP Company, 20 Apr. 2022, https://www.washingtonpost.com/video-games/esports/2022/04/19/esports-age-retirement/.

California State University Department of Computer Science Professor Bruce McKenzie: helped me with the use of MySQL queries for the PHP side of the site.