TECHNICAL DOCUMENTATION

1. Introduction

The purpose of this document is to provide an in-depth overview of the technical aspects of MDB. By the end of the document, the reader should have a thorough understanding of the site and its technical features.

2. Purpose

MDB (Manga Data Base) is a website that aims to make it easy for fans of manga to stay up to date with their favorite titles. It offers a user-friendly interface and includes a helpful User Guide to assist users in navigating the site.

The target audience for MDB is primarily teenagers, who may have a particular interest in the genres often featured in manga and may have more time to devote to reading and following manga series. However, the site is also intended to be accessible and appealing to older users who are fans of manga. Overall, MDB is a helpful resource for anyone looking to stay informed about the latest manga releases and developments.

3. Technical details

The website has been tested and found to be compatible with a variety of popular web browsers, including Microsoft Edge, Opera, Mozilla Firefox, and Google Chrome. It is likely that the website will also function correctly on other browsers that utilize the same rendering engines as these browsers. However, it is always a good idea to test a website on as many different browsers and platforms as possible to ensure that it performs well for all users.

One potential limitation of the website is that it may not be able to handle a high number of requests simultaneously due to the current RAM limitations of the database. This may cause performance issues if the website experiences a sudden increase in traffic. To address this issue, it may be necessary to upgrade the database's RAM but due to the limited necessities of the project I opted for it

4. Technologies used

In development:

a. HTML5

HTML5 is a markup language used for structuring and presenting content on the World Wide Web. It is the fifth and most recent version of HTML, which is the primary language used for creating web pages.

b. CSS

CSS, or Cascading Style Sheets, is a stylesheet language used to describe the look and formatting of a document written in a markup language. It is most used to style web pages written in HTML.

c. PHP

PHP is a server-side scripting language that is commonly used for web development. It is a powerful tool for creating dynamic and interactive websites and can be embedded into HTML pages.

d. Javascript

JavaScript is a programming language that is commonly used to add interactivity and dynamic behavior to websites. It is a client-side language, which means that it is executed by the user's web browser, rather than on the server.

e. Bootstrap

Bootstrap is a free and open-source front-end framework for designing web applications and websites. It is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first projects on the web. It provides a comprehensive set of styles, components, and layout options that can be easily customized to fit the needs of any project

f. Ajax

Ajax (short for "Asynchronous JavaScript and XML") is a set of technologies that are used to build dynamic, interactive web applications. It allows web pages to be updated asynchronously by exchanging small amounts of data with the server behind the scenes, without the need to reload the entire page.

g. Lazysizes

Lazysizes is a popular JavaScript library that is used to implement lazy loading of images on a web page. Lazy loading is a technique that defers the loading of content until it is needed, rather than loading all of the content at once when the page is first requested. This can improve the initial loading time of a web page and reduce the amount of data that needs to be transmitted to the user's device.

h. ssmtp

ssmtp is a lightweight Linux/Unix, Simple Mail Transfer Protocol (SMTP) client that allows users to easily send email messages from the command line or through client applications.

Servers:

a. Apache

Apache is a popular open-source web server. It is used to host websites and web applications and is the most widely used web server in the world.

In addition to serving static content such as HTML, CSS, and JavaScript files, Apache can also be used to host dynamic applications written in languages such as PHP, Perl, and Python. It is a versatile and powerful web server that is used by many web developers and administrators around the world.

b. MariaDB

MariaDB is a free and open-source relational database management system (RDBMS). It is a fork of the MySQL database and is designed to be a drop-in replacement for MySQL, with enhancements to performance, stability, and features.

Applications:

a. Phpstorm

PhpStorm is an integrated development environment (IDE) for PHP development. It is a commercial product that is developed and maintained by JetBrains. PhpStorm supports a wide range of PHP versions and frameworks, including WordPress, Laravel, and Symfony.

It also integrates with popular front-end technologies, such as HTML, CSS, and JavaScript, and can be used with a variety of version control systems, such as Git and SVN.

b. Datagrip

DataGrip is a cross-platform integrated development environment (IDE) for SQL databases. It is a commercial product that is developed and maintained by JetBrains. DataGrip supports a wide range of popular SQL databases, including MySQL, PostgreSQL, and SQL Server.

It also integrates with a number of other tools and technologies, such as version control systems and cloud services, to provide a complete solution for working with SQL databases..

c. Adobe Photoshop

Adobe Photoshop is a commercial image editing application. It is developed and maintained by Adobe Systems, and is part of the Adobe Creative Cloud suite of applications.

Photoshop is a powerful tool for editing and manipulating digital images. It provides a wide range of features, including tools for selection, retouching, color correction, and compositing, that allow users to create and enhance images with a high level of precision and control.

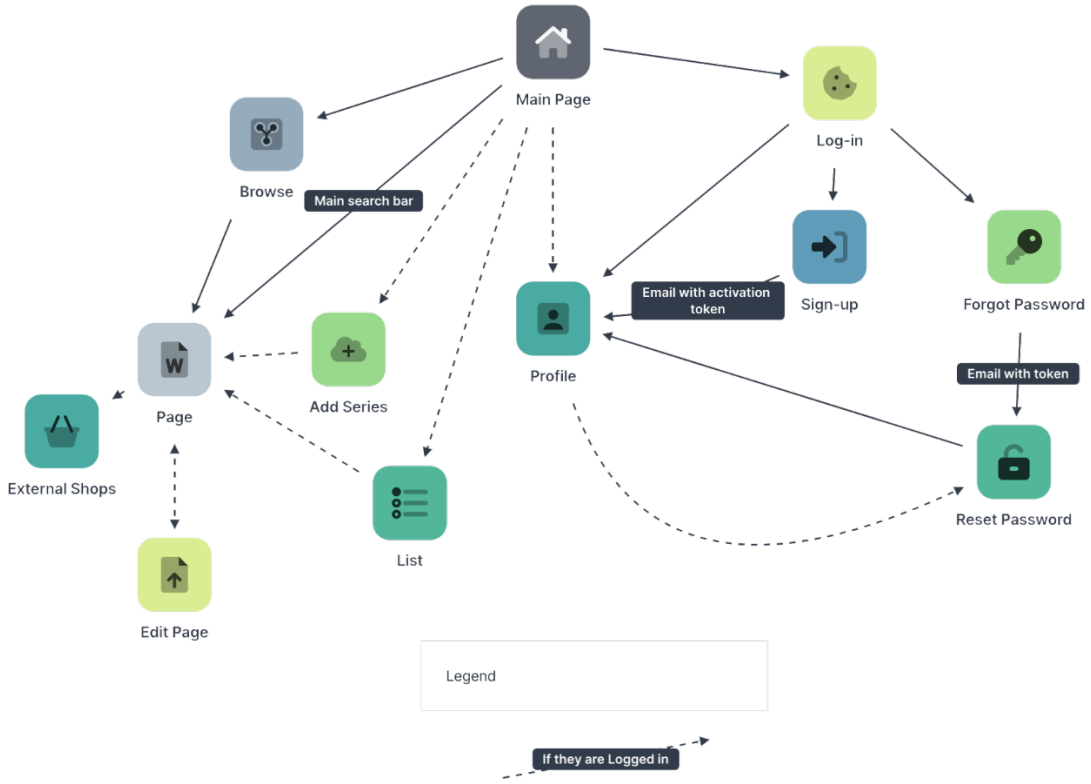
The usage:

For this website project, I utilized a variety of technologies to ensure the best possible results. The site was hosted on a Linux-based system running the Apache web server, and I chose to use MariaDB as the database management system due to its impressive performance.

In order to efficiently handle the data, I utilized Datagrip as my database tool. For development, I utilized Phpstorm, utilizing its capabilities for both frontend and backend development as well as occasional interactions with the database.

In terms of design, Photoshop was my primary tool, used to create backgrounds, default avatars, and logos. Overall, the combination of these technologies allowed me to effectively build and manage the website, resulting in a high-quality final product.

5. Design



(Fig 1 – Site Map, created with Milanote)

The site's design follows a traditional structure, using a combination of HTML for layout, CSS for styling, PHP for database management, and JavaScript for enhancing the user experience. Bootstrap was also heavily utilized in the development of the site, helping to create a consistent and efficient front-end design.

The navigation bar, which is present throughout the site, was built using a combination of Bootstrap and JavaScript, allowing for a seamless user experience.

The search bar on the front page also utilizes a combination of JavaScript (using Ajax) and PHP to provide an animated response and direct users to the desired page.

If the exact title is not found, the search will redirect users to the browse page, which functions in a similar manner but provides more detailed results.

The page layout for each title heavily relies on information from the database. It includes interactive features such as the ability to add a series to a list and change the rating of a it. There is also an edit page that allows users to input and update information about a title, such as the poster or even the title name. In order to access these features, users must be logged in.

At the end of the page, there are links to Amazon and Barnes & Noble that are updated for each title and will redirect users to the search bar on those websites to check if the desired volume is available for purchase.

The list page combines the features of the browse and page, displaying the titles that a user has added to their list and their ratings. In order to add a series to the list, a user must be logged in.

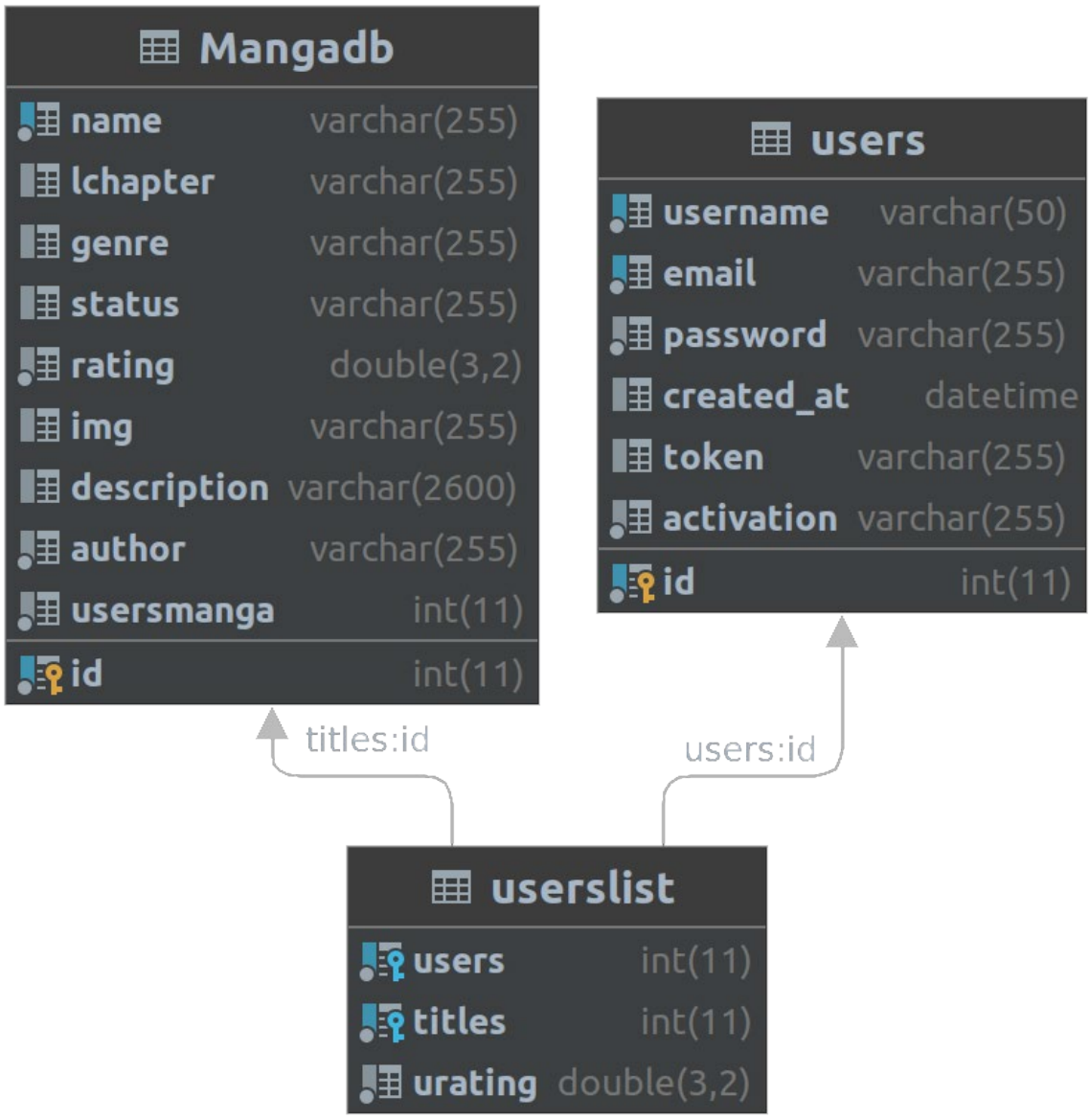
Adding a series to the database is similar to the edit page, but specifically requires users to add the name of the series.

The profile page displays information about the user's account and allows them to change their password without requiring access to their email. If the user has not yet activated their account, there is also an option to do so on this page.

The login system is highly interactive and includes a dual form implemented using JavaScript for both login and registration. During the registration process, there are specific requirements that must be met, and if they are not, the user will be notified. Once all requirements are satisfied, an activation email is sent via ssmtp.

The login form also includes a "forgot password" feature that allows users to reset their password if they have access to their email. The login, registration, forgot, reset processes utilize similar systems and techniques to notify the user.

The database for this site includes three tables: "users," "Mangadb," and "userlists." The "userlists" table is a combination of the first two tables.



(Fig 2 – Database Diagram, created with Datagrip)

The rating system is managed within the database using triggers. When a row is inserted into the "userlists" table, the number of users for that title is increased by one. When a user updates their rating for a title, an equation that uses both the number of users and the new rating is called to calculate the overall rating for the title. This new rating will be reflected on the website after the page is refreshed.

If a user removes a series from their list, the number of users for that title is decreased by one, and the rating that the user contributed is also removed from the overall rating for the title.

There is also a trigger in place before inserting into the "userlists" table to ensure that the IDs of the titles and users being added can be found in their respective tables. This helps to maintain the integrity of the database.

6. Results

Overall, MDB is a valuable resource for anyone looking to keep track of their favorite manga titles and stay informed about the manga industry.

https://github.com/PaulUngur2/MDB.git

7. Documentation

https://www.youtube.com/watch?v=3GsKEtBcGTk

It was the first tutorial I used for my login system, I mainly learned how to do checks and send errors with javascript.

https://www.section.io/engineering-education/password-strength-checker-javascript/

It was an addition to the login system since I felt there was a need for a better representation of the password strength that the user inputted.

https://chat.openai.com

All around great tool for debugging, helping to brainstorm ideas, and finding quick and efficient solutions.

https://www.tutorialrepublic.com/php-tutorial/php-mysql-login-system.php

Not only this page but more parts of this site helped me better understand the logic behind of a login/registration system.

https://codeshack.io/secure-registration-system-php-mysql/
https://codeshack.io/secure-login-system-php-mysql/
Also helped me shape the system.

https://www.makeuseof.com/best-linux-server-distributions/

https://www.cherryservers.com/blog/how-to-install-and-start-using-mariadb-on-ubuntu-20-04

For setting up the Apache and MariaDB Server on Linux.

https://www.youtube.com/playlist?list=PLm4wdvq8tptUjzQe12YyBJo50NF6k_s6I
Helped me understand AJAX better, also helped with the mail function.

https://www.kaggle.com/datasets/darknez/manga-dataset

Dataset I edited and used as the foundation of the site.