

**SOCIAL MEDIA WEBSITE**

Final Assignment

HCS504 – Web Development

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# INTRODUCTION

This technical design report has been prepared to demonstrate the rationale behind the design and implementation of a Social Media Website using HTML, CSS (Bootstrap), PHP and JavaScript which is the main artefact produced for the assignment.

The report will cover the following aspects:

* Planning and Documentation
* Website Responsiveness
* Design and Usability
* Functionality
* Security and Legal

In addition to discussion of how these aspects have been implemented within the assignment, further rationale will be provided for each design choice.

A link to the working webpage can be found below:

<https://mayar.abertay.ac.uk/~2307369/FinalAssignment/index.php>

Various images have been utilised throughout this report, references to the sources can be found below:

Login/Welcome:

<https://www.freepik.com/free-vector/hand-drawn-flat-design-people-waving-illustration_20859175.htm#fromView=search&page=2&position=29&uuid=3d486478-1ec7-4d25-99e3-e8c39ebc9f71>

Profile Photos:

<https://unsplash.com/photos/woman-wearing-black-crew-neck-shirt-3TLl_97HNJo>

<https://unsplash.com/photos/mans-grey-and-black-shirt-ILip77SbmOE>

<https://unsplash.com/photos/woman-staring-directly-at-camera-near-pink-wall-bqe0J0b26RQ>

<https://unsplash.com/photos/man-wearing-black-shirt-aoEwuEH7YAs>

<https://unsplash.com/photos/grayscale-photo-of-man-XHVpWcr5grQ>

Delete Icon:

<https://freeicons.io/icon-list/business-6>

# PLANNING AND DOCUMENTATION

Planning and documentation are a key part to any project as it not only creates a roadmap for developers to follow for an efficient development process but also provides insights for future developers working on the project who are assisting in maintaining or improving it. The main aspects which will be touched on this section will be as follows:

* User Flow Design
* Function Design (Pseudocode)
* Database Design

## User Flow Design

With any product or service, it is key that the users are given careful consideration as it is them who will ultimately be using it to their benefit. A structure for the website was established comprising the following webpages:

* **Home Page** – Displays a main feed of posts which users can comment on and like.
* **Login / Signup Pages**: Allowing users to login to their personal account or create one.
* **Profile Page** – Allows users to view profile pages of registered users on the site.

These pages were used as the basis to form the plan the main user flow diagram throughout the website. The aim of this diagram is to gain insight into how a user may interact with the website and what the designer needs to provide at each stage to make sure the user experience is satisfying and enjoyable.

A diagram of a website

Description automatically generated

Figure 0.1 - Main User Flow for Social Media Site

The user flow show in the previous figure illustrates all the main paths that users might take during their typical journey through the site with pages and actions clearly distinguished using page designs and lightning bolts respectively.

## Functional Design (Pseudocode)

In the initial stages, it is easy to get carried away with lots of complex functionality that the website is going to have but it is critical that careful thought is given to how these functions will be designed and implemented when it comes to production. Pseudocode is a common was to describe functionality in a language not specific to any programming language, this helps to convey the main logic behind the functions and how they might interact with one another.

Since there are various functions present in this design it is thought too onerous to include within the body of this report. As such this has been included in the appendix (Appendix X).

## Database Design

The database which has been utilised for the project is MySQL which is managed through PHPMyAdmin. MySQL is an open-source relational database management system (Wikipedia Contributors, 2019).

The database is comprised of various data tables all of which have their own specific attributes which describe them and their relationships to other database tables. As part of the database design, a database schema was produced to effectively plan and implement the database.

A diagram of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

Figure 0.2 – LucidChart and MySQL Database Schema

The schema leverages the use of the following key attributes:

* Primary Keys – Uniquely identifying each entry into the table
* Foreign Keys – Allowing for the linking of tables to each other through common attributes
* Data Types – Determines which types of data can be store for attributes in the table

# RESPONSIVENESS

With the influx of new technology, it has been the case that the landscape of web development has been ever changing and having to adapt whether it be to new devices or new browser for which to view the web. This website makes use of a popular CSS framework (Bootstrap) alongside regular CSS to ensure responsive behaviour of the webpage on multiple platforms.

One of the main examples of how Bootstrap has been used effectively to achieve a responsive website is using the grid system which effectively splits the page into rows and columns for which the elements can be positions and laid out. These elements can then grow and shrink to suit their container are the size of the viewing window.

A computer screen shot of a code

Description automatically generated

Figure 0.1 - Example of Boostrap Grid System

The figure above demonstrates the use of columns which adjust in size depending on the screen size using the provided media queries which can be included within the class as shown above.

As part of the testing process for responsiveness the following devices and browsers were utilised:

* Desktop (Chrome and Safari)
* Mobile, iPhone 14 Pro Max (Chrome and Safari)

A screenshot of a login form

Description automatically generatedA screenshot of a computer

Description automatically generated

Figure 0.2 - Website on Different Devices

Further responsiveness has been achieved using relative units for sizing elements in the DOM. The figure below demonstrates the Bootstrap class usage and the corresponding responsive output.

A screenshot of a person's profile

Description automatically generatedA screenshot of a social media post

Description automatically generated

A screen shot of a computer code

Description automatically generated

Figure 0.3 - Responsive Design Example for Social Media Posts

# DESIGN AND USABILITY

For usability, the main principles which were adhered to throughout the design were that of Jakob Nielsen’s 10 Usability Heuristics for User Interface Design (Experience, 2024).

Whilst these all form a critical part of design there were some that garnered more focus when undertaking the UI design:

* Visibility of System Status
* Error Prevention
* Aesthetic and Minimalist Design

## Visibility of System Status

Visibility of system status forms a key part of grounding the user experience by letting the user know where they are in the process and what action to take next. One such way this principle has been implemented in the website design is on the signup page. Since security is of the utmost importance it is key that users create passwords that are strong enough to resist brute force attacks. This process can be daunting to new users, and some may find it difficult to keep track of what’s in their password, therefore the signup page implements a responsive password validator to keep users informed of the status of their created password.

A screenshot of a login form

Description automatically generated

Figure 0.1 - Signup Password Validator

## Error Prevention

Considerations were given to error prevention in various ways through providing a simple and straight forward user interface. This helps to cut down on any mistakes which the user might make and consequently cause frustrations. The figure below shows examples of user forms throughout the website which utilise minimalist design alongside useful input field labels and placeholders to assist in minimising errors.

A screenshot of a login form

Description automatically generatedA screenshot of a login screen

Description automatically generatedA screenshot of a social media post

Description automatically generated

Figure 0.2 - Minimalist User Forms to Promote Error Prevention

## Aesthetic and Minimalist Design

An aesthetic and minimalist design formed a key part of the usability design for the website. It is thought that these promote a simple and straight forward experience for the user by minimising the cognitive load caused by overcrowded designs. The design puts a focus on the content and the users on the profile page and main feed page whilst keeping the more cognitive aspects such as data entry minimalist to ease the users’ potential frustrations.

A screenshot of a phone

Description automatically generatedA person looking up with a red background

Description automatically generated

Figure 0.3 - Minimalist Design w/ Subtle Use of Colour and Box Shadows to Lift and Emphasise Elements

The website also utilises a high quality of contrast between key elements to help these stand out to the user and in some cases add emphasis to actions to be taken.

# FUNCTIONALITY

As a social media website, there were essential functions that the website should be able to do to satisfy the requirements of its users, these included:

* Social Posts: Creation and Deletion
* Commenting and Liking Posts
* Login and Signup
* User Profile Searching and Viewing

## Social Posts

The creation of posts within the website was achieved using a combination of buttons, modals and data entry forms. The user can trigger the modal for post creation by pressing the “Create New Post” button on the homepage. Having this on the homepage and not the profile page encourages users to use their homepage more often and view others’ posts and interact with them as opposed to spending more time on their own personal pages.

## Comments and Likes

All posts created by users can be socially interacted with through liking and commenting by other users. The user can again achieve these interactions through buttons located below the posts itself. Association with certain posts is achieved using hidden input fields which store the id of the post allowing for correct updating of the database tables when a like or comment is submitted. This also achieves the task of updating the DOM to suit the updated state.

## Login / Signup

The website allows for the signup of new users and login of existing users. Checks are put in place to ensure that only logged in users can view the content of the website bouncing not logged in users back to the login screen if they try to access any pages without being logged in.

## User Profile Searching and Viewing

Users can search for other users using a search bar located in the nav at the top of the screen. This allows them to search for friends and other users whose profiles they wish to see. Viewing of the profiles themselves is achieved through dynamically altering the webpage URL to include the appropriate user ID to load the profile page of that user.

# SECURITY AND LEGAL

# CRITIQUE AND DESIGN REFLECTIONS

#### References

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#### APPENDIX A – PROJECT BRIEF

#### APPENDIX B – HTML FILES

#### APPENDIX C – CSS FILE