

6COSC023W – Final Project Report

Project Title: Mile End training sessions

Student: Mohammed Ruhul Amin

Supervisor: Mohamed Shah

This report is submitted in partial fulfillment of the requirements for the

BSc (Hons) Computer Science degree

BEng Software Engineering degree

at the University of Westminster.

School of Computer Science & Engineering
University of Westminster

Date: 30/4/24

Document Scope

The purpose of this document is to describe and reflect on the processes that took place in developing the Final Project. Discuss any ethical issues associated with your project and describe the methodology that was adopted to develop its design, implementation and testing.

All chapter word counts in this document are approximate and are not intended to be prescriptive.

Declaration

This report has been prepared based on my work. Where other published and unpublished source materials have been used, these have been acknowledged in references.

Word Count: 17125

Student Name: Mohammed Ruhul Amin

Date of Submission: 30/4/2024

Abstract

In my final project report, I provide a comprehensive overview of the website I developed to facilitate football training for individuals at various skill levels. My project specifically addresses the lack of inclusive training platforms that cater to both amateur and experienced users, to democratise access to quality football coaching. The primary goal was to create a user-friendly online platform where users can easily book in-person training sessions with professional coaches, thereby improving their football skills and overall physical health.

Methodology:

I structured the project's methodology into several key phases: design, implementation, and testing, each playing a crucial role in the project's lifecycle:

- Design Phase: I focused on crafting a user-centric interface, ensuring the website was intuitive and accessible. The design process involved creating wireframes and mockups, which laid the groundwork for the website's aesthetic and functional elements.
- Implementation Phase: During implementation, I employed a variety of technologies. HTML and CSS were used for structuring and styling the website, ensuring it was visually appealing and responsive. I utilised PHP for server-side scripting to handle database interactions and user session management, while JavaScript enhanced the interactivity of the web pages, providing a dynamic user experience.
- Testing Phase: I conducted rigorous testing to ensure the website's functionality and usability. This included both manual and automated tests to check the interface, user interactions, and backend processes. The testing phase was critical in identifying and rectifying any issues before the final deployment.

Results:

The main outcome of the project was the successful creation of a fully functional website that simplified the process of scheduling football training sessions. The site featured an efficient booking system and a straightforward user interface, which significantly enhanced user engagement and satisfaction. Additionally, the website was equipped with features that allowed users to select training sessions based on what skill they wanted to boost and a chosen trainer.

Conclusions and Observations

I concluded that the website effectively filled a significant gap in the market by providing a specialised training platform accessible to a wide range of football enthusiasts. It not only facilitated skill enhancement but also contributed to the

promotion of a healthier lifestyle through active participation in sports. Observationally, I noted the potential of the platform to foster stronger community bonds among users, creating a social network of players and coaches united by their passion for football.

Overall, the project was successful in achieving its objectives, delivering a platform that not only meets the practical needs of its users but also enriches their sporting life. This initiative could serve as a model for similar platforms in other sports disciplines, suggesting a scalable and replicable approach to sports training websites.

Acknowledgements

Thank those who helped you build your project and supported you during its development if you wish to here.

- I would like to thank my project supervisor Mohammad Shah as he has worked hard to provide me feedback for my project and reports.

Table of contents

Project Title.....	1
Document Scope.....	2
Declaration.....	3
Abstract.....	4
Acknowledgements.....	6
Table of contents.....	7
List of figures.....	8
List of Tables.....	9
1. Introduction.....	11
1.1 Problem Statement.....	11
1.2 Aims and Objectives.....	12
2. Background.....	14
2.1 Literature survey.....	14
2.2 Review of projects/applications.....	16
2.3 Review of tools frameworks and techniques.....	25
3. Legal, social and ethical issues.....	31
4. Methodology.....	34
5. Design.....	41
6. Tools and implementation.....	49
6.1 Tools.....	49
6.2 Implementation.....	53
7. Testing.....	64
7.1 Test coverage.....	64
7.2 Test methodology.....	69
8. Conclusions and reflections.....	72
9. References.....	75
10. Bibliography.....	79
Appendix I - Figures.....	80
<u>Appendix II - Video Demo.....</u>	94

List of Figures

Provide a list of figures, linking figure numbers to page numbers. If you can, hyperlink the page numbers/figures.

List of tables:

Section	Table name
2:2	<ul style="list-style-type: none"> • Background research of applications • Detailed research findings • Comparative table of my Application and researched Applications
2:3	<ul style="list-style-type: none"> • Review of Tools used for my project • Advantages and Disadvantages of Tools used in my project
3	<ul style="list-style-type: none"> • Legal, social, ethical, professional and security issues and considerations/actions taken to improve my project.
4	<ul style="list-style-type: none"> • Describing my Gantt charts tasks • Table of how I followed the Scrum methodology for my project • Table showing implementation considerations • Table showing different testing methods used for my project
5	<ul style="list-style-type: none"> • Table discussing the UI design principles followed in my project • Table discussing my project and the infrastructure used • How my infrastructure is going to be scalable and secure • Table describing the core functions of my project
6.1	<ul style="list-style-type: none"> • Description of tools used and why it was important for my project • Skills development during the project
6.2	<ul style="list-style-type: none"> • Use Case Diagram explanation • Use Case 1 (User - Register/ Login) - This table will discuss the Login Use Case, and the Registration side will be discussed in Use Case 11. (Use Case 17 is completed here) - Figure 19 • Use Case 2 (User - Navigate to My Account) - Figure 20 • Use Case 3 (User - Book Session) (Use Case 4 is completed here) - Figure 21 • Use Case 5 (User - Check Portal for Updates)

	<p>(Use Case 6,9,13,14, 20 is completed here) - Figure 22</p> <ul style="list-style-type: none"> ● Use Case 8 (User - Review the Trainer) - Figure 23 ● Use Case 10 (User - Update Personal details) (Use Case 16 is completed here) - Figure 24 ● Use Case 11 (Trainer - Register/ Login) (Registration Case) - Figure 25 ● Use Case 12 (Trainer - List Skills) - Figure 26 ● Use Case 18 (Admin - View Booking Request) (Use Case 19 is completed here) - Figure 27
7.1	<ul style="list-style-type: none"> ● Black Box Testing for My Project ● White Box Testing for My Project

1. Introduction

1.1 Problem statement

The purpose of my project is to create and launch a website that specialises in football training. It was essential to this project that users, regardless of experience level, be able to conveniently schedule a training session, which will help them both improve their football skills and their overall health. The issue that exists right now is that there aren't many training websites that let individuals with less experience engage and desire to advance their skills. Therefore, the website must make it possible for users with a variety of skill sets to feel at ease using its resources to advance their skills.

The importance of the problem is that a lack of football training websites that allow amateurs to also train leaves these users isolated as they would want to as well train with those who have a similar level of experience to encourage them to improve their skills. It is important to make sure that these problems are addressed as football within the UK is unbelievably popular and is always a discussion wherever you go *Great British Mag* (2021) it's also a great way to know people which creates a community within football which highlights that this problem should be addressed to allow everyone with all different skill gaps to be a part of the community.

While some websites do allow for training sessions for all skill gaps such as *Professional Soccer Coaching* (2019), this site only allows online training with video tutorials on how to improve skills for all skill gaps better. While these videos are useful for some and may help some users football is a physical game and with my project, I will allow my users to book their sessions and then meet and complete an in-person session with the top-of-the-range coaches who can make sure our users are improving their skills.

My clear intention is to make a website that allows my users to simply create an account, log in to my website and choose a training session time that suits them, they should be able to choose what sort of skills they want to improve upon and our coaches will have vast experience allowing for our users to improve their abilities on the pitch. The benefits of my website are that users will have a seamless experience when navigating through my site as well as allowing my users to have a robust system that will let them book a session. By bridging this gap, the website will not only enhance individual skill levels but also strengthen the bonds within the football community, making sure our training sessions are more accessible to users of all skill levels.

1.2 Aims and Objectives

My application aims to develop a user-friendly website that allows people of all skill gaps to book a football training session. My project also aims to help those who have a passion for football and want to improve their health. By creating an interactive website I intend to make sure that my project allows users to be able to easily navigate through the site and be able to book training sessions with ease.

To ensure my project meets the project's aims I have developed some SMART objectives to ensure they are specific, measurable, achievable, relevant and time-bound. SMART objectives are crucial for project success as they provide clarity and effective decision-making throughout my project's lifecycle.

My first SMART objective *Walker, S. (2023)* is to implement and launch the user side of the website:

- **S** - Develop and launch a user-friendly website that enables users of all experience levels to easily create accounts, log in, and book in-person football training sessions.
- **M** - The website should feature account creation, login functionality, and a booking system.
- **A** - Use HTML, CSS and PHP to make sure the site is built and functioning.
- **R** - The need for a platform that makes football training sessions accessible to all skill levels.
- **T** - Complete the user side of the project before the 1st of April 2024.

My second SMART objective *Walker, S. (2023)* is to then implement and launch the staff side for the website:

- **S** - Develop and launch a user-friendly website that allows staff to book the users for their sessions as well as being able to log in, and create accounts.
- **M** - The website should allow for account creation, and login functionality and be able to book users their sessions.
- **A** - Use HTML, CSS and PHP to make sure the site is built and functioning.
- **R** - Needed or else users will not be able to successfully have their booking sessions available.
- **T** - Complete the staff side of the project before the 1st of April 2024.

My third SMART objective *Walker, S. (2023)* is to receive feedback from users about the importance of User Interface (UI) and User Experience (UX) for my project:

- **S** - Assess the website and understand users' viewpoint of the importance of UI and UX, taking into account what a user thinks is crucial to the success of a website.
- **M** - Conduct a form using Google Forms to have statistics ready to further show the engagement of users for my survey.
- **A** - Ask students within the campus to try my website and ask them to fill in the form to gather data about the importance of UI and UX.
- **R** - Feedback is always needed as this helps to understand the user's views and without feedback, a project is never successful.
- **T** - Complete the Google Forms before the 5th of April 2024.

My fourth SMART objective *Walker, S. (2023)* is to conduct different testing methods on my project to ensure small bugs are found and to correct them before final submission:

- **S** - Conduct various different tests to ensure small bugs are identified, such as black box testing, and white box testing while considering methodologies such as end-to-end, security and performance testing.
- **M** - Create multiple test cases that should be tested within my project to ensure there is security, and validation to ensure the front end is working for the user view.
- **A** - Ensure that the necessary testing tools, frameworks, and resources are available and accessible. Allocate sufficient time for thorough testing and bug fixing before the final submission deadline.
- **R** - Testing is crucial for delivering a high-quality, bug-free project. Identifying and resolving small bugs early in the development process can prevent larger issues and ensure a smoother final submission.
- **T** - Ensure testing is conducted once a week during the development stage to ensure there is constant testing conducted to ensure the project runs as it should. As well as making sure I provide a couple of days just conducting tests for my project.

2. Background

2.1 Literature survey

The Importance of a Literature Survey for my project cannot be understated as it will provide a greater context as to why my project will be completed as well as provide greater reasoning as to why my project is needed for my users, by checking out articles finding further reasons as to why my project is needed.

My project aims for users to live better healthier lifestyles by getting involved with my training sessions, it is important to live a healthy lifestyle as it will make sure our users reduce any dangerous health risks that can occur, such as the chances of a heart attack are decreased by 30% if users continually participate in exercises which my project aims to do *Website, N. (2024)*. So by encouraging our users to book sessions with my site, they can be sure they complete the recommended amount of exercises that can severely reduce potential health risks. This makes it vital that my project is needed as I want to improve users' lifestyles and provide a fun way to improve some users' unhealthy lifestyles. I have also checked out an article *Katrien Koppo (2023)* which further shows the benefits of football as this article shows further research on the effects football training can have for the elderly and indicates that a 10-week recreational football training program improved leg-extensor velocity production in older adults, suggesting that football can be an effective form of exercise for various age groups. This further shows the importance of my project as the findings suggest that football training can be an effective form of exercise to enhance certain aspects of physical fitness in the elderly population and my project wants to be inclusive for all ages.

My project also aims for users with a passion for football to get involved with my training session, within the UK football is a discussion within every household so this makes it extremely popular, people with all different skill levels want to enjoy football and improve their skills *Great British Mag (2021)*. So by letting our users book sessions with my site, I'm sure they can participate in football training sessions that help them improve their skills no matter their skill level. This makes it vital that my project is needed as I want to ensure that users with a passion for football have a place where they can book a training session to improve their skills at any point. I have also found an article *Fontanive, S. (2021)* discusses how sports fans desire deeper connections with their favourite teams and athletes. This includes gaining behind-the-scenes access and understanding the lives and motivations of athletes. Such engagement could inspire fans, especially younger ones, to aspire to become footballers themselves, seeing the lifestyle and success of their idols up close. This is a further highlight as to why football training sites

are very important as they allow for younger players with aspirations to become footballers, my platform will allow for them to train and become the best they can to help them with their dreams of becoming footballers.

The literature survey also reveals a gap in the availability of accessible and comprehensive platforms for booking sports training sessions. While there are numerous fitness apps and websites, few offer a specialised focus on football training for a range of skill levels. My project seeks to fill this void by creating a dedicated space for football enthusiasts to not only book training sessions but also to join a community of like-minded individuals. A site like *FootballDNA* does allow for all skills levels to participate but not to the extent that any person with a lower skill set can join in and feel comfortable. My project will allow for any skill level to participate in the project to participate. Furthermore the article by *Fontanive, S. (2021)* showed the importance of football for younger audience and my project will ensure they can book a session so they can make their journey to follow their heroes in football, which further highlights the popularity of football meaning football training sites are essential. As well as the article by *Katrien Koppo (2023)* which showed the importance of football training for elderly people as this boosts their health, which further shows a gap as my football training site that allows the elderly to train with coaches who will be more than happy to help them.

2.2 Review of projects/applications

Within this section, I will analyse and discuss already existing applications compare the findings of my research and then compare these applications to my own. It is crucial to examine other applications within my niche as this then helps me to find gaps within the market which provides more opportunities for my project *Clockify(2023)*.

Background research of applications:		
Title of Application	Purpose of the Application	Features within the Application
FootballDNA - https://footballdna.co.uk/	FootballDNA is a service that allows people within all levels of football to have a platform where they can check out ways to improve their skills by having many videos published online which helps users to have many videos to choose from to improve their abilities.	<ul style="list-style-type: none"> • Including over 1000 videos that help its users to choose which skill they feel they need to improve. • Many videos provide a tactical insight into football for people to better understand the game. • There is also a player development section which allows users to test their technical skills and interactively improve their skills. • There is also a membership option which allows users to access more exclusive content and allows them to access new videos earlier.
Coachability Group - https://coachabilitygroup.com/1-to-1-football-coaching	Coachability Group is an online hub that allows users to search for coaches see their ratings and then select a coach that they believe is well-rated and affordable to train with. It aims to connect the user and the coach to then meet for a 1 on 1 session or a small group.	<ul style="list-style-type: none"> • There is a detailed search for coaches that allows users to find the coach that they think will benefit them the most. • There is also an algorithm that helps to match with coaches that the site believes would help the user the most. • There is a message section that allows for secure communication

		<p>between the user and the coach to have a dialogue.</p> <ul style="list-style-type: none"> resources within the website that allow users to look for more guides to improve their abilities.
My personal football coach - https://mypersonalfootballcoach.com/	<p>This site offers personalised coaching tips for players of all levels, allowing users to improve their skills with tailored workouts. It aims to be a convenient and effective solution for players to have an app that can help them improve their skills.</p>	<ul style="list-style-type: none"> There are training tips available whether you are a beginner or have more experience. Personalised workouts so to ensure that users get the most out of their training and are doing training that helps their specific situation. Coaches provide feedback to users which allows for great progress tracking and gives extra motivation to users to see how they have improved over time.

Detailed research findings:	
FootballIDNA	<ul style="list-style-type: none"> Main Purpose: FootballIDNA serves as a comprehensive online platform designed to enhance the skills and understanding of football for coaches, players, and enthusiasts at all levels of the game. It aims to facilitate the development of football talent through accessible, high-quality educational content. Problem It Solves: The platform addresses the need for a centralised resource where individuals can learn and improve various aspects of football, from technical skills to tactical knowledge. It tackles the challenge of providing structured, professional coaching advice outside of traditional training environments. User Base: FootballIDNA caters to a wide audience within the football community, including coaches looking to refine their training sessions, players aiming to improve their skills, and football enthusiasts seeking a deeper understanding of the game's tactics.

Coachability Group	<ul style="list-style-type: none"> ● Main Purpose: Coachability Group operates as an innovative online platform designed to bridge the gap between football coaches and players seeking personalised training. Its primary goal is to facilitate the connection between athletes of all ages and skill levels with qualified and verified football coaches for one-on-one or small group sessions. This personalised approach aims to significantly enhance the player's skills, confidence, and overall football performance. ● Problem It Solves: The platform addresses the challenge many players face in finding accessible, affordable, and high-quality football coaching tailored to their individual needs. By providing a centralised hub where users can easily search for and connect with coaches, Coachability Group makes personalised football training more accessible to a wider audience. This is particularly beneficial for athletes looking to improve specific aspects of their game through focused coaching. ● User Base: Coachability Group caters to a diverse range of users, from young aspiring footballers to adult players looking to refine their skills. The platform is designed to serve athletes at all levels of proficiency, offering them an opportunity to work closely with coaches who can provide customised training plans and direct feedback.
My personal football coach	<ul style="list-style-type: none"> ● Main Purpose: My Personal Football Coach is a dynamic online platform and mobile application designed to offer personalised football coaching tips and training programs for players at all levels. Its core mission is to provide a convenient, accessible, and effective training solution that allows players to enhance their football skills through tailored workouts and expert guidance. ● Problem It Solves: The platform addresses the challenge many players face in accessing personalised coaching and structured training programs that cater to their individual skill levels and development needs. By offering a digital solution that includes personalised workouts and feedback from coaches, My Personal Football Coach enables players to train effectively at their convenience, overcoming geographical and scheduling barriers that might otherwise limit their access to quality coaching. ● User Base: The service is tailored for a wide range of users, from beginners who are just starting their

	football journey to more experienced players seeking to refine specific skills or achieve higher levels of performance.
--	---

Advantages and disadvantages of research findings:		
Application name	Advantages	Disadvantages
FootballDNA	<ul style="list-style-type: none"> • The platform provides a comprehensive library of over 1,000 coaching videos covering all age groups and levels, with new content added weekly. • It offers a wide range of pre-designed practice and session plans that coaches can use directly, saving time in planning. • The platform facilitates a community of coaches through a Facebook group to discuss and share ideas. • There is also a player development section which allows users to test their technical skills and interactively improve their skills. 	<ul style="list-style-type: none"> • The content may not be suitable for larger group sizes: One user review mentioned that "it would be great if there were more sessions aimed at larger groups" beyond just individual and small-group training <i>FootballDNA - Trustpilot (2024)</i>. • While the platform provides a vast library of pre-designed practice and session plans, some users may prefer more flexibility to fully customise the content to their specific coaching needs • The platform relies heavily on video demonstrations of drills and sessions, but some users may prefer more detailed written instructions and coaching points to complement the videos <i>Figure 1</i>.
Coachability	<ul style="list-style-type: none"> • All Coachability 	<ul style="list-style-type: none"> • Prices may be a

Group	<p>coaches have extensive coaching experience and are required to pass rigorous background checks, ensuring qualified and verified coaches.</p> <ul style="list-style-type: none"> ● Allows you to easily book coaching sessions in minutes through their platform, with all financial transactions processed securely online. ● Offers 1-on-1 training, 2-player training, and small group training options to cater to different coaching needs. 	<p>factor as users will work with coaches with professional badges this would mean more money to pay for a session</p> <ul style="list-style-type: none"> ● The service seems to be focused on certain areas such as London and Manchester, this geographic limitation means that individuals outside these areas may not find the service useful or may not have access to a wide range of coaches <i>Figure 2</i>.
My personal football coach	<ul style="list-style-type: none"> ● It allows players to train at home with guidance against a consistent and technical development program. ● The platform advocates for 1-on-1 training, which can help address individual player needs and development areas that may be overlooked in team training. ● The platform offers online 1-on-1 soccer training, which is a cost-effective and convenient way for players to get expert coaching and feedback without having to travel to an in-person session. 	<ul style="list-style-type: none"> ● The terms and conditions indicate that users must be 18 years or older to register for the service, this may limit access for younger players who could benefit from the platform <i>Figure 3</i>. ● While the platform offers a range of training resources, no details on the quality or effectiveness of the specific training content and programs. User reviews or testimonials may be needed to fully evaluate the value.

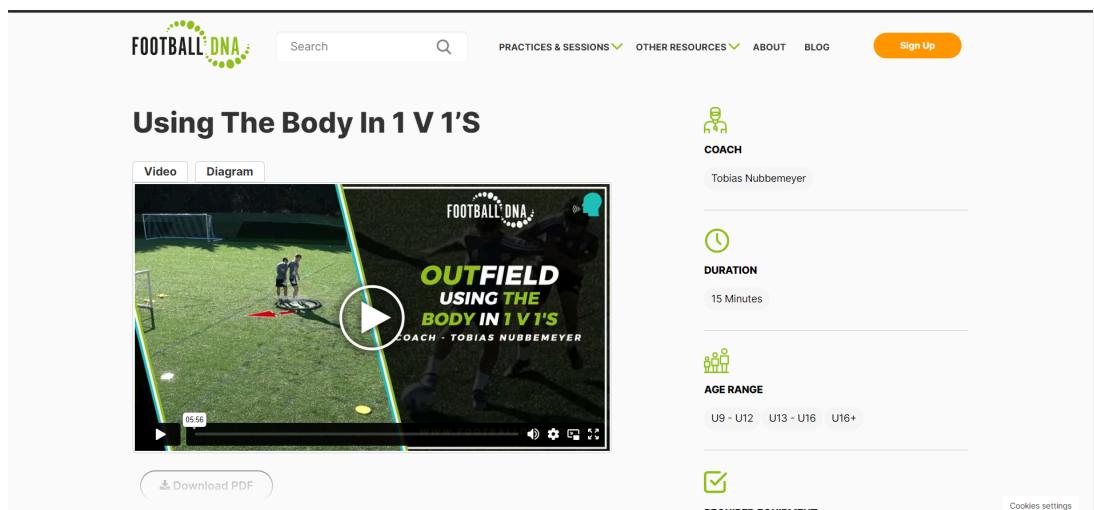


Figure 1: Screenshot from FootballDNA highlighting a lack of written instructions.

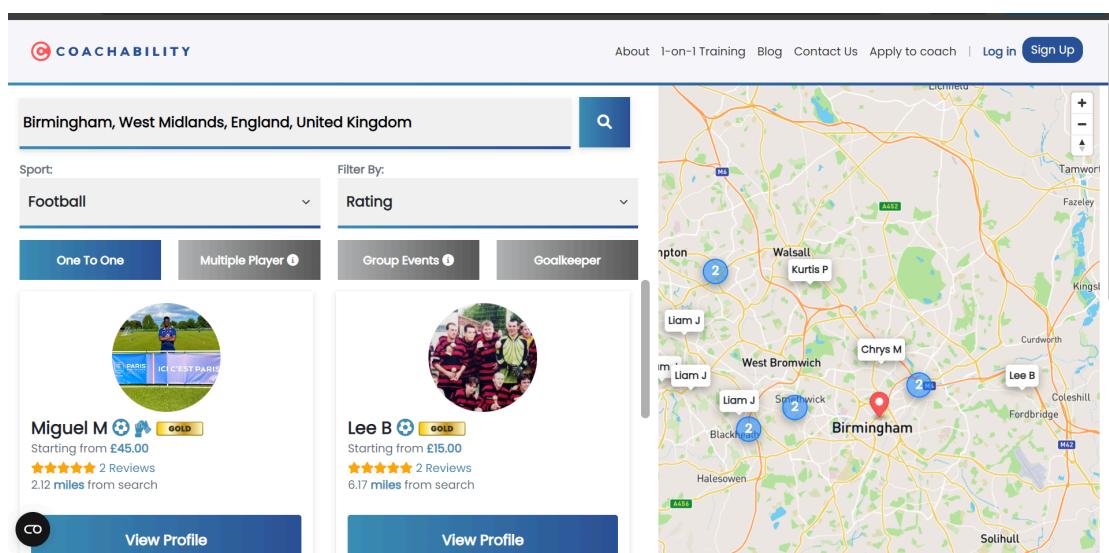
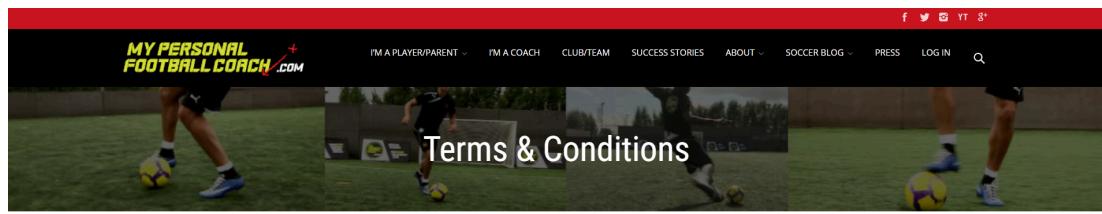


Figure 2: Screenshot from Coachability highlighting a lack of coaches in certain areas.



Please read all these terms and conditions.

As we can accept your usage of My Personal Football Coach services and make a legally enforceable agreement without further reference to you, you must read these terms and conditions to make sure that they contain all that you want and nothing that you are not happy with.

Application

1. These Terms and Conditions will apply to the usage of any My Personal Football Coach sites and the purchase of the services and goods by you (the **Customer or you**). We are My Personal Football Coach a company registered in England and Wales under number 09747177 whose registered office is at Flat 1 Abingdon Mansions, London, W8 6AD with email address info@mypersonalfootballcoach.com; (the **Supplier or us or we**).
2. These are the terms on which we sell all Services to you. Before placing an order on the Website, you will be asked to agree to these Terms and Conditions by confirming your Order. You can only purchase the Services and Goods from the Website if you are eligible to enter into a contract and are at least 18 years old. For persons under 18 years of age a parent or guardian of at least 18 years of age must agree to the terms.

Interpretation

1. **Consumer** means an individual acting for purposes which are wholly or mainly outside his or her trade, business, craft or profession;
2. **Contract** means the legally-binding agreement between you and us for the supply of the Services;
3. **Delivery Location** means the Supplier's premises or other location where the Services are to be supplied, as set out in the Order;
4. **Durable Medium** means paper or email, or any other medium that allows information to be addressed personally to the recipient, enables the recipient to store the information in a



Figure 3: Screenshot from My Personal Football Coach showing the age restriction to join.

Comparative table of my Application and researched Applications		
Application name	Comparison	How does this differ/improve from existing solutions
FootballDNA	<p>Similarities:</p> <ul style="list-style-type: none"> • Just like FootballDNA, I feel as though my application may not be suited for larger groups as for my application a user can only book a session for themselves. <p>Differences:</p> <ul style="list-style-type: none"> • FootballDNA aims to show videos of training sessions whereas with my application I want users to meet with coaches and have physical sessions. • FootballDNA has a subscription feature whereas on my site there is no subscription feature. • My site shows users who have been successful using our services and 	<ul style="list-style-type: none"> • My site differs from FootballDNA as there won't be video demonstrations as we want users to attend sessions in person. • My site improves from existing solutions within FootballDNA there are no testimonies of users who have been successful using its services. Whereas with my site there are testimonies of users who have been successful using my services <i>Figure 4</i>.

	FootballDNA this feature isn't there.	
Coachability Group	<p>Similarities:</p> <ul style="list-style-type: none"> • My site and CoachabilityGroup aim to make sure our users can get into contact with a coach and complete a session. • Both sites allow users to easily find a coach and book a session with a chosen coach. <p>Differences:</p> <ul style="list-style-type: none"> • We make sure that we have coaches available in loads of areas, they don't have coaches in certain areas. • They have made sure that their coaches have certification whereas with mine there is no certification with my coaches. 	<ul style="list-style-type: none"> • My site differs from CoachabilityGroup as we want to make sure we have coaches available within our area. • My site improves from existing solutions to make sure we are successful we will make sure that we have coaches available at all times so that our users can book a coach when the time suits them.
My Personal Football coach	<p>Similarities:</p> <ul style="list-style-type: none"> • We both allow our users to easily book a session with a coach. • We both allow our users to easily register for our pages so that they can begin to look for sessions <p>Differences:</p> <ul style="list-style-type: none"> • They don't allow users under 18 to make their account, we allow users under 18 to make their account to make sure they can take advantage of the services we provide. 	<ul style="list-style-type: none"> • My site differs from this site as we want to allow our services to be accessed by people under 18 so they can have the skills to maybe go professional. • My site improves from existing solutions as we want to let people under 18 register with our services so that they can have the means to enjoy their time using our site.

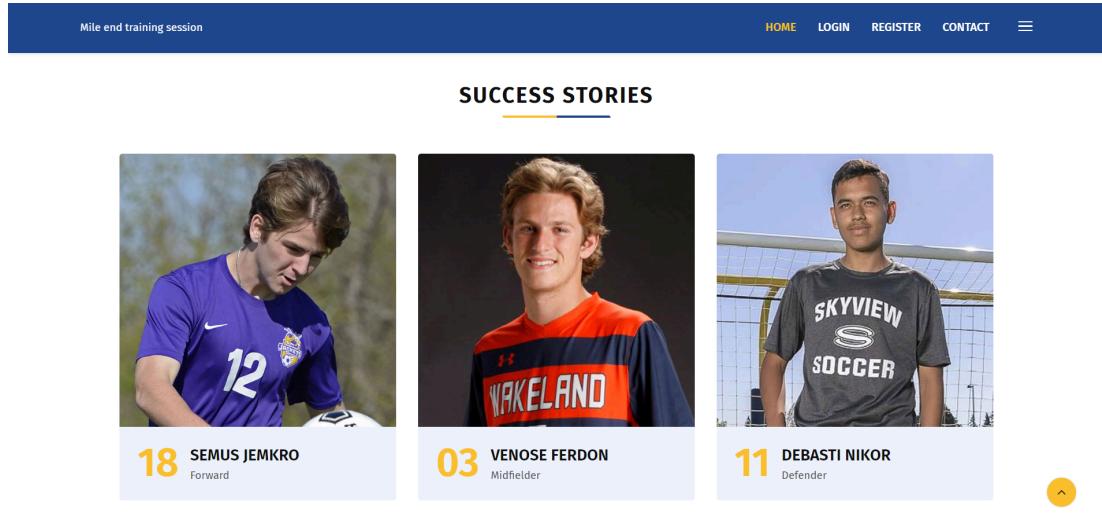


Figure 4: Screenshot from my application showing success stories

To conclude my analysis of similar applications within my comparative table analysis, my proposed application highlights potential areas for improvement and differentiation, such as ensuring the availability of coaches in a wider range of areas, incorporating success stories to build trust and credibility, and removing age restrictions to make the platform more accessible to younger players. By addressing these gaps and leveraging the strengths of existing platforms, my application aims to offer a more inclusive, flexible, and user-friendly solution that caters to the evolving needs of the football community.

2.3 Review of tools frameworks and techniques

Within this section, I will describe and discuss frameworks and tools that I have used to develop my project. As well as discussing programming languages and environments used to create my project. Then finding sources and references to list the advantages and disadvantages for each factor considered to create my project.

Review of Tools used for my project	
Tool name:	How I have incorporated it into my project:
HTML	<ul style="list-style-type: none">I have used HTML within my project as the baseline to make the front end of my code, I was able to structure my website and have the outline of my site in the place I would want it. Such as adding the basics of my site such as the header, images and paragraphs <i>GfG</i> (2022).
CSS	<ul style="list-style-type: none">I have used CSS in my project to make sure my front end has more interactivity to enhance the experience, I was able to make sure there was more style within my site for eg being able to make sure my navigation bar was, overall making sure my site is more responsive and visually appealing <i>Perfect eLearning</i> (2019).
Javascript	<ul style="list-style-type: none">I have used Javascript in my project to further enhance the user experience and make my site even more interactive, I was able to incorporate it for eg, by making sure that user forms are validated to ensure that forms are correctly filled <i>Laurent, L.</i> (2023).
PHP	<ul style="list-style-type: none">I have used PHP in my project to make sure my website can interact with a database to ensure my user's information is sent somewhere secure, I have been able to add PHP in my project for eg when my users register for my site the information is saved and secured within a database that PHP has allowed interacting with my frontend <i>Team, Aic. and Team, Aic.</i> (2023).
Visual Studio Code (VS Code)	<ul style="list-style-type: none">I have used VS code to develop my project and complete my project and to ensure that it is well written with comments as well as being able to keep folders tidy, I have been able to successfully use VS code as there are clear syntax highlights and debugging features which have allowed me to

	create my project <i>Fred</i> (2023).
XAMPP	<ul style="list-style-type: none"> I have used XAMPP to make sure I was able to host a local server to ensure my project could function, I have been able to have easy access to a live server to test my site and make sure it runs smoothly <i>Mark</i> (2023).
Laravel	<ul style="list-style-type: none"> I have then used Laravel for the framework of my PHP code to ensure extra security for my database and more scalability, I have shown this within my project by making sure my databases are more secure when queries are being filled to ensure data is secure at all times <i>Dixit, P.</i> (2023).
PHP myAdmin	<ul style="list-style-type: none"> I have also used PHP myAdmin to manage my database, I have added this within my project to make sure that my user's information is saved in a secure database management application.

Advantages and Disadvantages of Tools used in my project		
Tool name	Advantages	Disadvantages
HTML	<ul style="list-style-type: none"> One benefit of using HTML for my project is that it was quite simple for me to use during my project as I have a great understanding of how to make a simple layout for my page and HTML allows for me to create layouts for a site simply. Another benefit to using HTML is the amount of help there is when in need of an answer, as HTML is one of the most popular programming languages there is always help <i>Figure 5.</i> 	<ul style="list-style-type: none"> There are very limited styling options on HTML alone as it requires CSS to make sure the site is engaging for the users. HTML has very weak security making sites that use HTML alone unsafe as are vulnerable to attacks <i>Tutorialspoint</i> (2023).

CSS	<ul style="list-style-type: none"> One benefit is that it allows for more consistency between pages making sure that finished pages are more professional looking. Also, design is flexible as pages can respond and adjust to different device sizes such as from a PC to a mobile phone <i>Bhagwat, S. (2023)</i>. 	<ul style="list-style-type: none"> One drawback is that larger projects that require more CSS can make sure that Some code is less readable for someone who is just viewing the code without any background in the project. Another drawback is that some CSS file sizes can be excessively large which can lead to poor performance on the website responsiveness <i>Unstop (2024)</i>.
Javascript	<ul style="list-style-type: none"> One benefit of using Javascript is that it has a simple syntax that is easy to learn and use for both developers and users. Another benefit is that it is extremely popular for organisations to use as there are over 50,000,000 websites that have javascript <i>Gitnux (2023)</i>. 	<ul style="list-style-type: none"> A drawback is that there are debugging issues that can make it tricky for us to find issues within our javascript code. It can also be an issue for larger scale projects as for them it will require more planning and tools to ensure the javascript is functional <i>Team, D. (2021)</i>.
PHP	<ul style="list-style-type: none"> A benefit is that it allows for a connection to my database in which my front-end outputs will collect the data and send it to the database. Another benefit is that PHP has a simple curve learning which makes sure users can learn quickly 	<ul style="list-style-type: none"> A drawback is that there is a concern for the lack of flexibility as it may not be best used for certain applications. Another drawback is that less popularity in learning PHP as Python has taken over as it is more friendly for users, suggesting that PHP is more old-school

	<i>Careerera (2021).</i>	<i>Figure 6.</i>
Visual Studio Code (VS Code)	<ul style="list-style-type: none"> A benefit to using VS Code is that it is easy to access as well as having an easy-to-use interface. Also, there are debuggers which help me to make sure my code is correct and make sure there are fewer issues with my project. 	<ul style="list-style-type: none"> A downside is that there is a huge dependence on extensions to enhance the experience and this may dampen the overall experience on less powered machines <i>Far, O. (2017)</i>. Another downside is that there may be a slight learning curve for those who are moving from another IDE, which can reduce productivity for a new user <i>Cloudinary (2023)</i>.
XAMPP	<ul style="list-style-type: none"> A benefit to using XAMPP it is suited for beginners to start learning web development to manage web servers <i>Mark (2023)</i>. XAMPP includes the tools that are needed for web development such as MySQL and PHPmyAdmin to start creating a dynamic website <i>Nagendrag (2024)</i>. 	<ul style="list-style-type: none"> A downside to it is that there are potential risks with inputted data as a local environment could be attacked if exposed to the internet <i>Nexcess (2022)</i>. Another drawback is that there is limited scalability with XAMPP as it is meant for testing and not for wider-scaled projects <i>Nexcess (2022)</i>.
Laravel	<ul style="list-style-type: none"> A benefit to using it is that there are built-in syntax and libraries that can make sure developers can code quicker and more efficiently <i>ScaleupAlly (2024)</i>. Another benefit is 	<ul style="list-style-type: none"> A downside is that there are frequent updates which means that my machine needs to constantly be up to date with the latest version of Laravel <i>Staff, G. (2022)</i>. Another downside is

	<p>that Laravel is one of the most popular PHP frameworks meaning that there is constant help and resources available at all times <i>Figure 7.</i></p>	<p>that there is a steep learning curve as there are many functions when using Laravel <i>Staff, G. (2022).</i></p>
PHP myAdmin	<ul style="list-style-type: none"> A benefit to using PHP myAdmin is that it is easy to use for developers as there is a simple enough interface which makes it simple to create tables and run queries <i>Shah, V. (2024).</i> Another benefit is that there is loads of community support, which makes finding the solutions to common problems much easier as there is a community to learn from <i>Brainvire (2021).</i> 	<ul style="list-style-type: none"> A drawback is that there is a dependence on Apache and SQL to make sure it can function, which means that there needs to be more software installed to ensure PHP myAdmin can run <i>Brainvire (2021).</i> Another drawback is that there is limited scalability and this application is used rather for smaller projects and larger scale projects a larger database management system will be required <i>Brainvire (2021).</i>

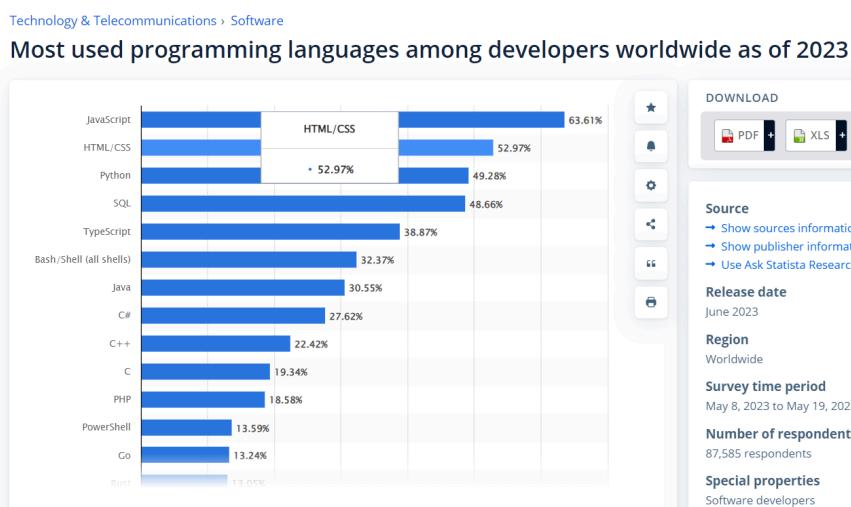


Figure 5: Screenshot from Statista (2024): Showing the popularity of HTML.

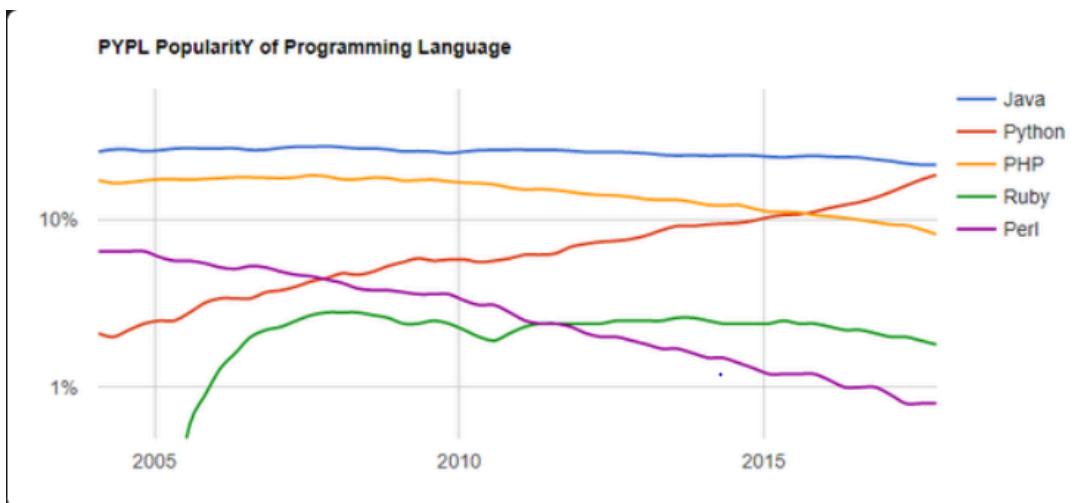


Figure 6: Graph from Quora (2017): Showing less of a trend to use PHP.

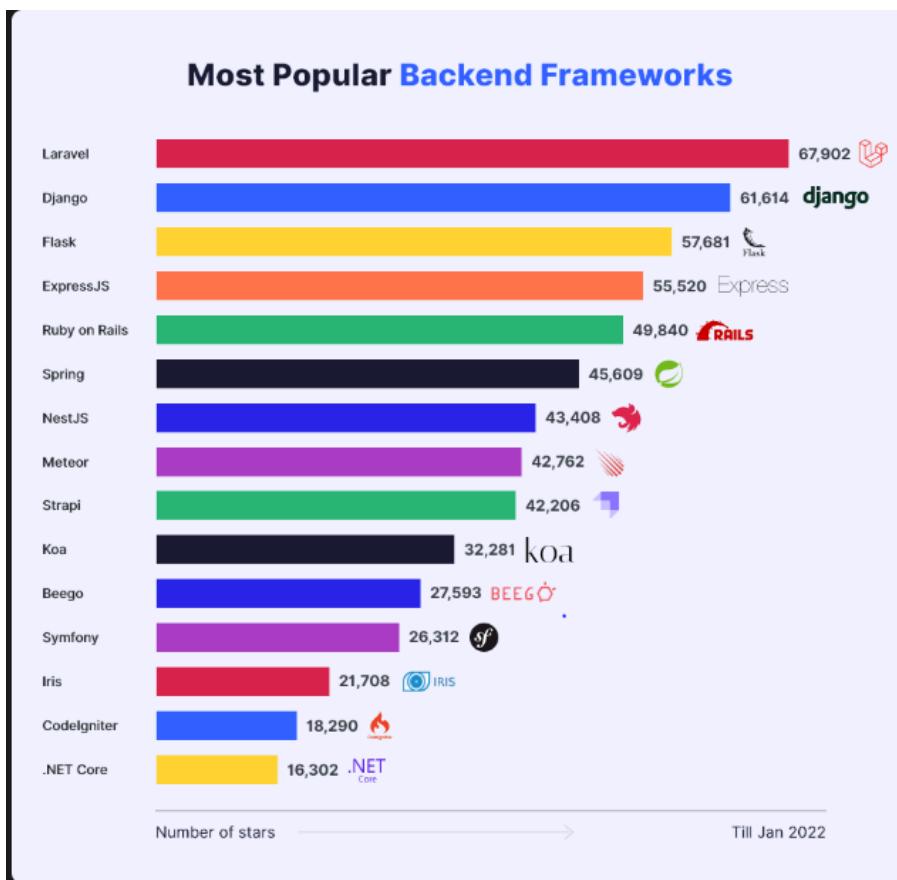


Figure 7: Graph from Webmobtech (2023): Showing the popularity of Laravel.

3. Legal, social and ethical issues

Within this section, I will consider legal, ethical, social, professional and security issues that are associated with my project. Then explaining what action I can take to mitigate and work around the issues that have been considered.

Legal, social, ethical, professional and security issues and considerations/actions taken to improve my project.		
Aspect	Potential Issue	Considerations/ Actions
Legal	<ul style="list-style-type: none"> A legal issue that has been thought of is making sure there are clear disclaimers and copyright notices to protect my project, <i>Olivo, F. (2020)</i>. 	<ul style="list-style-type: none"> I have considered this by making sure my site has a clear copyright notice to let users know that the content within my project is owned by me <i>Figure 8</i>.
Ethical	<ul style="list-style-type: none"> An ethical issue that has been is for users' consent when creating an account for my project. A privacy issue is also something that can make sure users don't trust my website and give their sensitive information. 	<ul style="list-style-type: none"> I have made sure that my users will have to confirm their password and this will then indicate that they have given their consent to be registered for my site. To consider the privacy issues I have made sure that the information that is submitted in forms is sent to a PHP myAdmin database which will keep sensitive information secure.
Social	<ul style="list-style-type: none"> My project aims to help with social skills as it aims to create a community feeling. Making sure my site is more inclusive to people with lesser skills in football. 	<ul style="list-style-type: none"> To create a community feeling with my project I made a success stories section within my project so that there is belief for users that they can make it to the top <i>Figure 4</i>.

		<ul style="list-style-type: none"> My project aims to make sure that people with little experience can have a good time when joining my site, this creates a feeling of inclusion for people who may not have had the chance to train with other companies who only want more skilled users.
Professional	<ul style="list-style-type: none"> A professional practice that I am going to follow is making sure there is constant branding within the site. Another professional practice that I will follow is making sure my site is responsive is easy to navigate. 	<ul style="list-style-type: none"> I have considered this issue by making sure the name of my site is on the top left to let my users know of my site at all times <i>Figure 8</i>. I have considered this by making sure my navigation bar is at the top and is sticky so when users scroll down they will still be able to see the navigation bar, allowing for good responsiveness.
Security	<ul style="list-style-type: none"> A security practice that I am going to follow is by making sure that my user's passwords are hashed within the database. Another security feature I am going to make sure I follow is making sure that I have changed my PHP myAdmin password. 	<ul style="list-style-type: none"> I have considered this by making sure in my code I have written near the code hashed to make sure that the input of a password is hidden and when entering the database no one will know the password except the user, in case of a breach the attackers won't be able to access passwords. I have considered this by changing the password into

something that I can remember to ensure that if the database is attacked at any point attackers wouldn't have the password to access the information within the database Saive, R. and Saive, R. (2016).

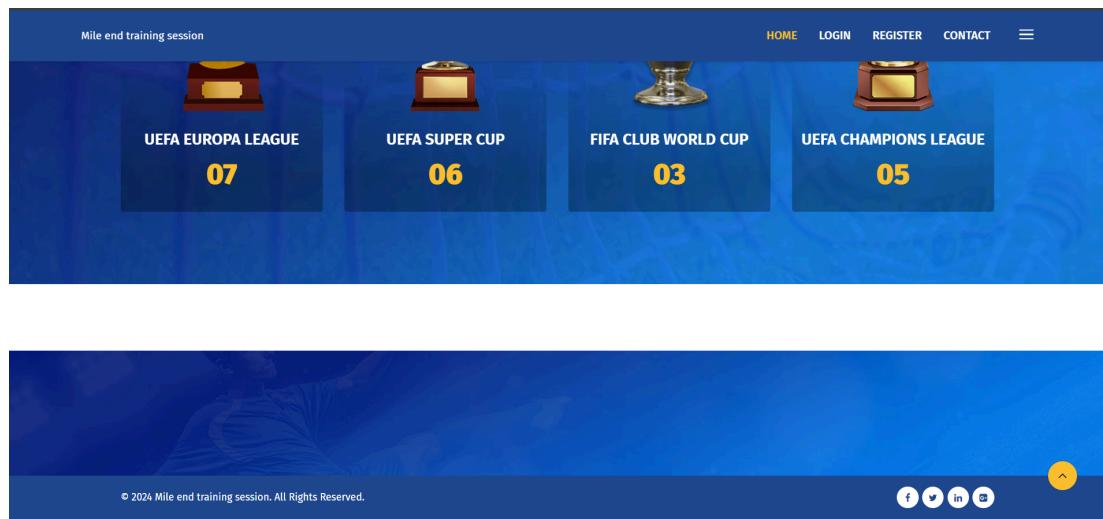


Figure 8: Screenshot from my project showing a copyright notice and branding.

4. Methodology

Within this section, I will discuss my project life cycle stages, chosen project management methodology and how I have accomplished this in my project. Then discussing the UX and UI considerations within my project as well as a survey on Google forms highlighting the importance of user feedback for UI and UX considerations. Then explain my choices for my testing methodology and their importance.

Project life cycle:

My Gantt chart shows the stages of my project and the start and end dates, each of the blue bars represents a task that has to be completed for my project to be successful *Figure 9*. This provides a clear indication of what my project aims to do with clear timings and dates. Displaying the tasks and dates gives people who read my Gantt chart a better understanding of my purpose and the tasks completed to finish my project, but overall gives me a better way to make sure I can stay on track with my project *Grant, M. (2023)*.

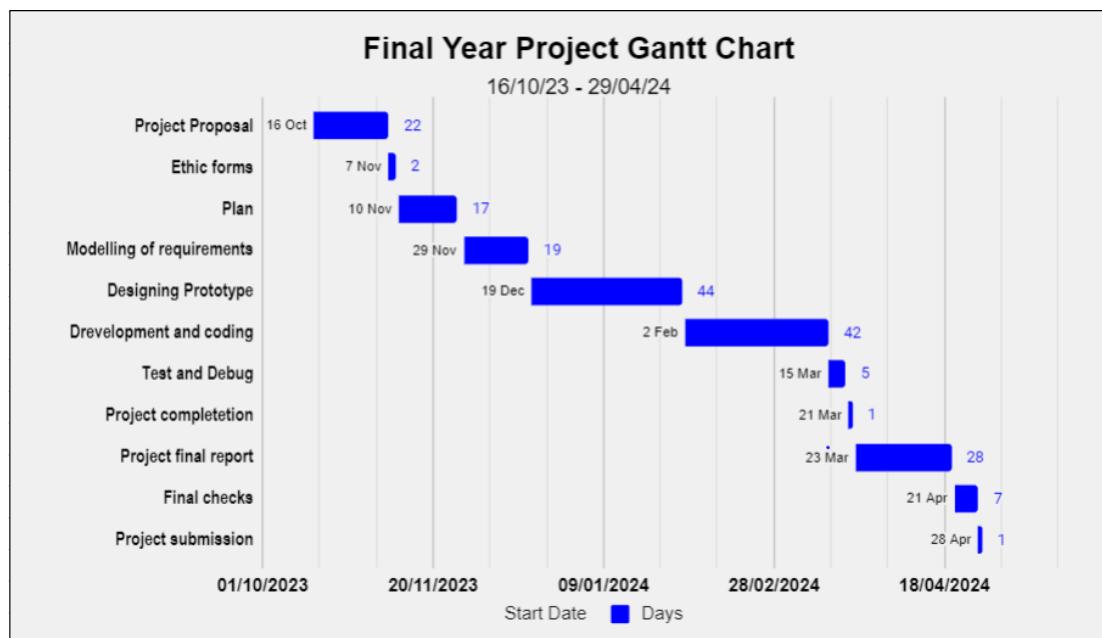


Figure 9: My project Gantt chart showing my project progress

Describing my Gantt charts tasks	
Stages	Description
Project Proposal	<ul style="list-style-type: none">Within my project proposal, I had written down my project objectives and the initial outline aims for my project. As well as thinking about the stakeholders that my project would have to consider.

Ethic forms	<ul style="list-style-type: none"> It was important to make sure that ethics forms were considered for my project to be credible and within my ethics forms, I was able to make sure I had authentic research.
Plan	<ul style="list-style-type: none"> It was then important to make time to have a plan as this stage would then help me to create my design for my prototype and then think of requirements for my project.
Modelling of Requirements	<ul style="list-style-type: none"> Within this section, I then created graphs and diagrams to ensure the role of stakeholders is made more clear. As well as designing diagrams that will demonstrate how my system will work.
Designing Prototype	<ul style="list-style-type: none"> I then designed my prototype thinking by first using wireframes to make the layout and then implementing the prototype which will have a better layout of what I would like my final implementation to look like.
Development and coding	<ul style="list-style-type: none"> This section is where I start developing my final project and start to develop the front end and the back end to make sure my requirements are all there.
Test and Debug	<ul style="list-style-type: none"> This is where I make sure that my front end and back end are collecting the inputs from the front end. As well as conducting other tests to make sure that other functions within my project are working.
Project completion	<ul style="list-style-type: none"> This is the stage where I want to make sure that my project's front-end and back-end should be fully functional with all the requirements that have been thought for.
Project Final Report	<ul style="list-style-type: none"> This is where I make sure to start completing the report and completing the questions that have been asked within the report as well as discussing my overall project.
Final checks	<ul style="list-style-type: none"> This is where I want to make sure my report has everything needed and in detail, as well as make sure that my code has enough comments to make sure I can talk about my project.
Project Submission	<ul style="list-style-type: none"> This is when I will submit my project and the report after all final checks have been considered.

Chosen Project Management Methodology:

For my project, I have chosen to adopt the Scrum methodology, which falls under the Agile umbrella. This decision is driven by the need for flexibility and adaptability in my project's development process. Scrum's structured yet iterative approach allows for incorporating changes and enhancements based on ongoing feedback. This is crucial as it aligns with Agile's core principles of embracing modifications to meet evolving project requirements. Scrum facilitates frequent evaluation through its sprint reviews, ensuring that both the code and backend functionalities are performing as expected. By employing Scrum, I am committed to continuous improvement and delivering valuable software efficiently and effectively *Simplilearn* (2024).

Table of how I followed the Scrum methodology for my project	
Phase	How I accomplished this for my project
Plan	<ul style="list-style-type: none">Within this phase of my project, it was important to make sure that my project had clear aims and objectives as well as knowing who the stakeholders for my project were gonna be. As well as making sure I can manage my tasks better by making them into smaller and more manageable tasks.
Design	<ul style="list-style-type: none">For this phase, it was crucial to make sure to develop wireframes to make sure my site had an idea in mind to have a clear outline for each page that I would like to include in my site. Then to design a prototype w prototype that includes more functions that will be included within my project. This allows me to make sure I have a clear idea before heading into the development phase.
Development	<ul style="list-style-type: none">For the development stage, I made sure to start creating the code and creating the backend to make sure that my project was delivered on time and with the functions that had been thought for. Using tools like my Gantt chart to further make sure I stick to the correct timings and ensure my project is delivered in the time asked for.
Test	<ul style="list-style-type: none">After the development phase came the testing phase which made sure I could fully make sure my project was up and running and by making sure I could also gain some insight from users who could provide some feedback about my project.
Review	<ul style="list-style-type: none">During the review phase, I would check over the progress that had been made during my project and

	if it would be necessary to start the process again or believe the process was finished.
--	--

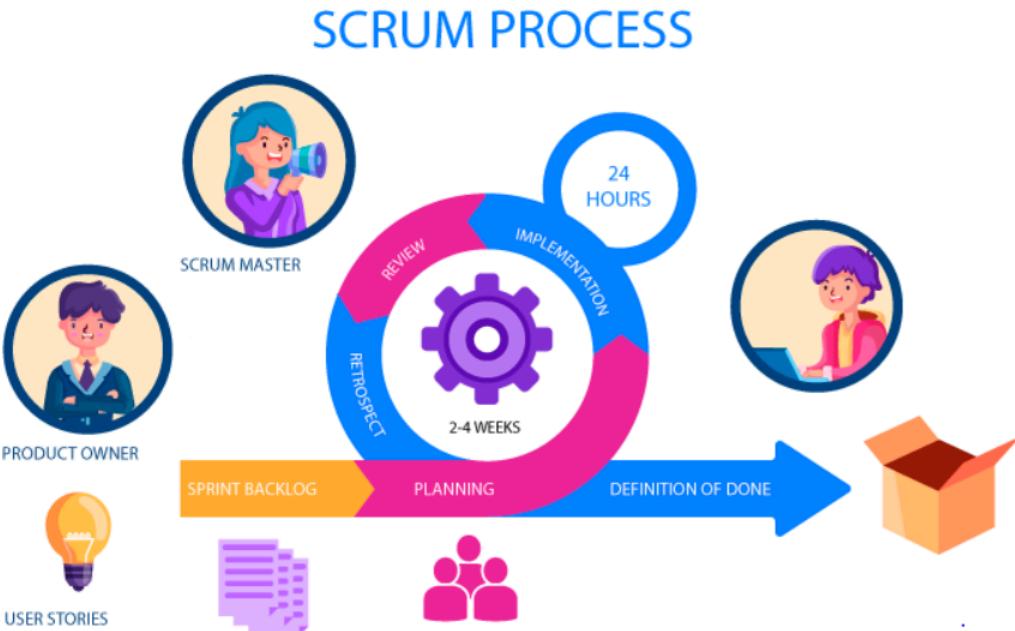


Figure 10: Diagram of the Scrum process from S. B. (2024)

Table showing implementation considerations	
Consideration	How they have been implemented
User Experience (UX)	<ul style="list-style-type: none"> Conducted forms to gain insight as to what a group full of users would like for my project. Helped to identify key functions to consider while designing my project and what users feel would be more important when they look at a site. Made sure to UX principles when designing my project to make sure the site is clear when navigating through, such as making sure there is clear navigation and an easy user experience to make sure users can complete their tasks much more easily. This was thought for when I conducted a form in which users thought the navigation was mostly clear <i>Figure 11</i>. To make sure my site is better suited for users it will be great to let users use a prototype and give their feedback which then can be taken into the final development to further enhance the user experience.

User Interface (UI)	<ul style="list-style-type: none"> To make sure the UI was the best it could be I made a low-fidelity wireframe to outline what my project outline would look like. Then slowly progressed to a higher-level prototype which included more functionality as it would closely resemble my project. Made sure that my colour schemes were similar on every page to provide consistency and give my project more recognition as there is a clear scheme throughout each page which makes the site stay consistent. Carefully made sure to include the main features of the site and made sure they are sticking out so users can easily interact with them. This has been thought for by letting users provide feedback about how quickly they can find complete a task that they are looking to do <i>Figure 12</i>.
---------------------	---

Google form questions that consider UI and UX:

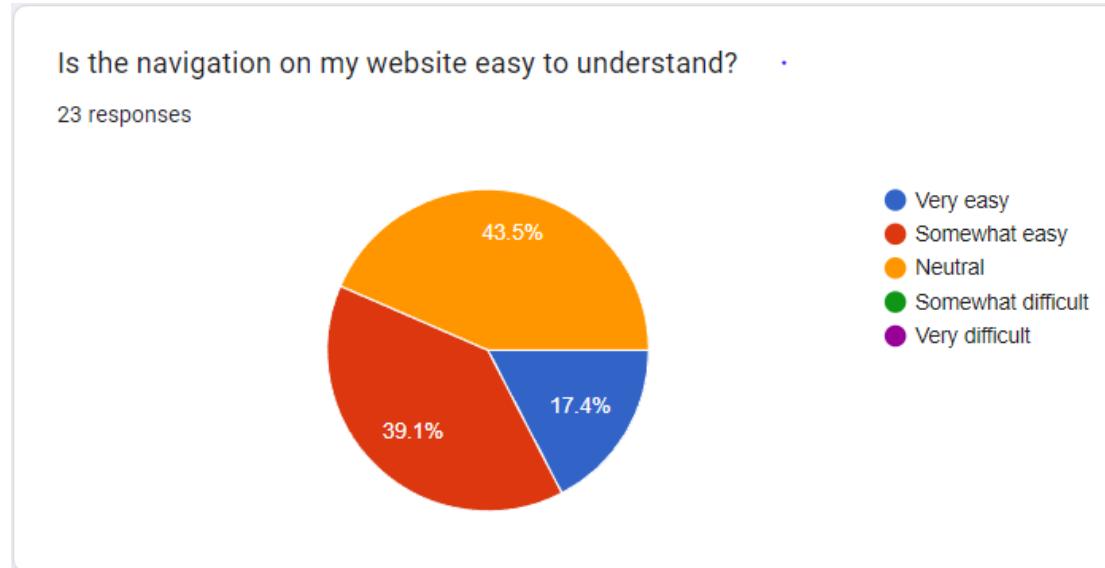


Figure 11: Google form conducted to get feedback from users about my site considering UX in this question considering the navigation. Ruhul (2024)

How quickly do you find what you are looking for on my website?

23 responses

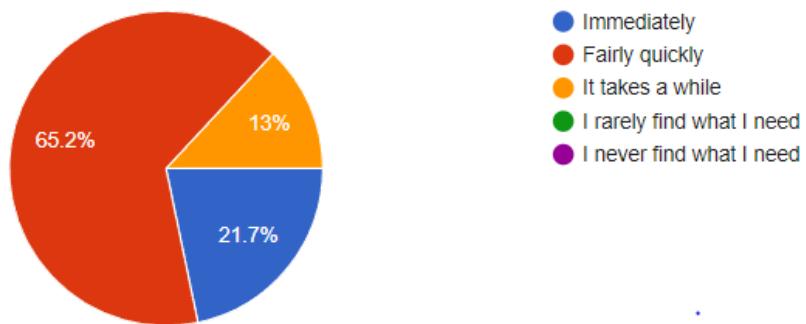


Figure 12: Google form conducted to get feedback from users about my site considering the UI in this question about how quick they can complete a task. Ruhul (2024)

Testing methodology:

Table showing different testing methods used for my project	
Testing Methodology	How I used this for my project and its importance
End-to-End Testing	<ul style="list-style-type: none">I made sure to test my project from the user's perspective to make sure that it is implemented as it should be. I made sure I completed this test by running my application logging in and registering as if I was a user.I was able to conduct this test by following my Use case diagram which showed the main steps of what my project should do to ensure that the project was running as I had intended it to <i>Figure 18</i>.It was important to conduct end-to-end testing as it provided me more confidence for my project as I would know my project was in the state that I wanted it in and ensured that I had all the components that were required for my project Sajjad, Z. (2022).
Security Testing	<ul style="list-style-type: none">I was able to conduct this test by making sure I was able to enter my password and it was hashed to ensure that the password was kept secure. Then I made sure to check PHP myadmin to ensure that the password was hashed to ensure that in case of an attack, the passwords couldn't be stolen.I was able to conduct this test by making sure I logged in to the site and registered an account to

	<p>ensure that the security was there, then by checking PHP my admin that passwords were hashed.</p> <ul style="list-style-type: none"> It was important to conduct security testing as this would ensure that my site had the security that is required to make sure I could improve the vulnerabilities that could be within the site, as well as allow me to make sure that the site is ready for users to put in their details to register <i>Sahoo, C. (2024)</i>.
Performance Testing	<ul style="list-style-type: none"> I was able to conduct this by making sure by clicking on every hyperlink to ensure that every link was working and loading times were not too long. I also made sure to check the responsiveness with each button to ensure that the page had a good performance and the loading times weren't too long before I let users try out my page. It is important to conduct performance testing as it would make sure I can boost the user experience I have made sure that the performance of my site has been tested to make sure it is ready to be used by users <i>Srinivasan, N. (2024)</i>.

5. Design

User Interface (UI):

Table discussing the UI design principles followed in my project	
UI design principle	How this has been followed within my project to ensure there is an effective UI.
Clarity	<ul style="list-style-type: none">To make sure my project was able to the clarity principle I made sure that each page the main functions on show at all times so that users know what to expect for each page which makes sure there is clarity for each page. Making sure the main function of each page is on site is important for my page for eg when a user tries to log in there shouldn't be clutter within the page as the main function of the page should be shown in <i>Figure 13</i>.
Consistency	<ul style="list-style-type: none">To make sure my project followed the consistency principle it was important to make sure each of my pages followed a similar colour scheme to ensure that there is clear branding within my site which makes sure there is a better workflow for my users as they can begin to understand my site better as there is consistency between each page <i>Gill, N.S. (2022)</i>.
User control	<ul style="list-style-type: none">To make sure my project followed the user control principle it was important to make sure there were ways for my users to get through my application and implement shortcuts to make sure users could easily navigate through with ease making them feel in control at all times. I have made sure I allow users to feel in control by making sure there is clear navigation on my project so that they can easily go from page to page <i>Figure 13</i>.
Comfort	<ul style="list-style-type: none">To make sure my project followed the comfort principle it was important to make sure to make sure to use colours that make sense to use together to make sure my site can be comforting to read information from. As colour clashes can make users feel discomfort when reading information from a screen so in <i>Figure 13</i> you can see that I have used colours that contrast each other to make users feel more comfortable when reading.
User Feedback	<ul style="list-style-type: none">To make sure my project followed the user feedback principle it was important to make sure

	<p>users were given feedback if they made a mistake when using my site to let them understand what they may have done and how they can fix their mistake. For example, when a user enters the wrong details to log in they will be told specifically that they need to input the correct details which provides clear user feedback <i>Figure 13</i>.</p>
--	---

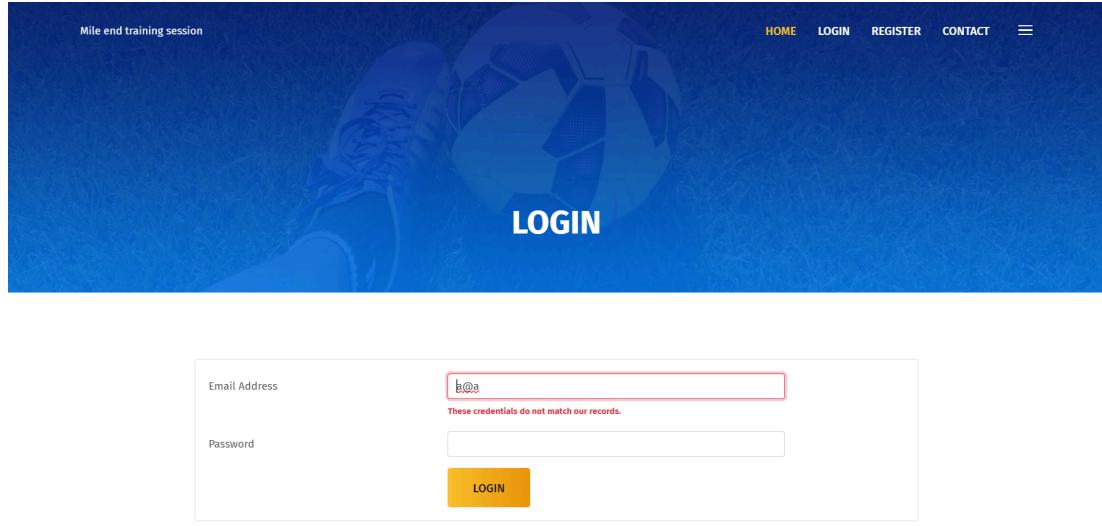


Figure 13: Screenshot from my application showing how I have considered principles in UI.

Infrastructure:

Table discussing my project and the infrastructure used	
Infrastructure	How this has been used for my project
Web server	<ul style="list-style-type: none"> My project will be hosted on an Apache server which will show the content of my project. Using XAMPP a tool which includes Apache was useful for my project as this had the main infrastructure that allowed me to run my project onto a web server and make sure it was ready and had the functions that were required Gillis, A.S. (2020).
Application server	<ul style="list-style-type: none"> My project has allowed for users to log in and register, and by using a web server and an application server, the user's login credentials can be validated and processed. The web server handles the user interface and form submissions,

	while the application server, which can be built using PHP, is responsible for validating the user's input and interacting with the database to authenticate the user or create a new account.
Database	<ul style="list-style-type: none"> My project allows for users' information to be stored in a PHP myadmin database and when a user enters their credentials in the web server the application server will link to the database and check if the details are there and if not it will relay this back to the web server and it can put out a message saying the credentials are not there <i>Packetlabs (2022)</i>.

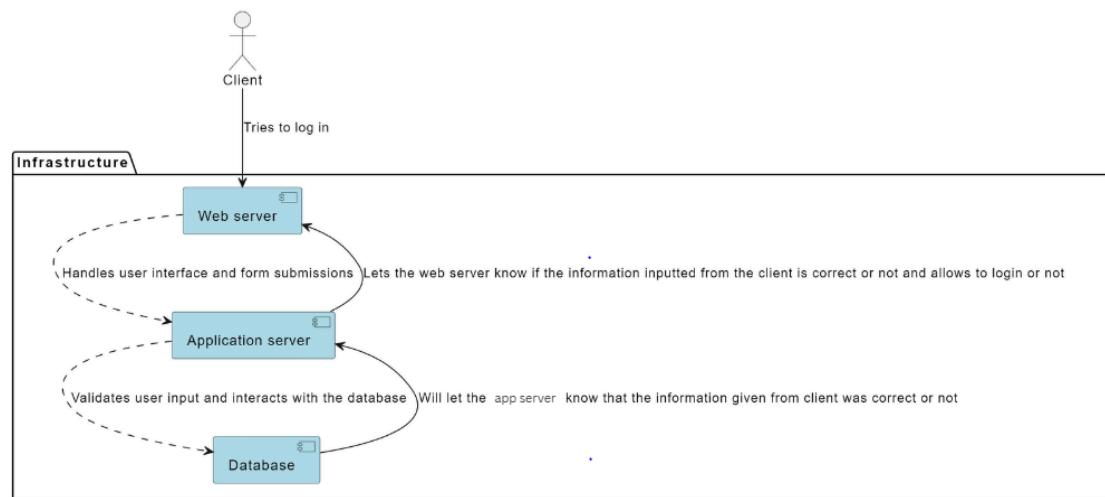


Figure 14: Diagram showing how the software infrastructure would work for my project example when a client tries to log in.

How my infrastructure is going to be scalable and secure		
Infrastructure	Scalability considerations	Security considerations
Web server	<ul style="list-style-type: none"> Choosing XAMPP to host my Apache server is a scalability consideration which allows me to have a fast and reliable server to run my project. Which allows for datasets to work and an overall good framework for my project to be scalable. 	<ul style="list-style-type: none"> Have made sure that my web server hashes all passwords to ensure that details are secure at all times in case of an attack. Making sure my Web server is updated to ensure new patches are updated which improves the security of my project <i>Sucuri</i>

		(2024).
Application server	<ul style="list-style-type: none"> I have made sure my application server is scalable by ensuring that users can have their details quickly checked by the database which makes my project more scalable. 	<ul style="list-style-type: none"> To make sure my application server is secure it is vital to make sure that the PHP files for my project are kept secure at all times, this is done by making sure there is the correct authorisation in my machine.
Database	<ul style="list-style-type: none"> To make sure my database is scalable I have used PHP myadmin as it is available at all times which makes sure my project is scalable. 	<ul style="list-style-type: none"> To ensure my database is secure I would need to make sure there is restricted access by making sure my project is bound to a local host setting <i>Murray, L. (2023)</i>.

Functionality:

Table describing the core functions of my project	
Function	How it matches my project requirement
Allow Users and trainers to register an account.	<ul style="list-style-type: none"> To ensure users can create their account which will then allow for them to choose a trainer of choice with the skillset they are looking for to start improving their skills. To ensure that trainers can create their account which will then allow them to showcase their skills and from which users will select them if they are a trainer who would help their skills.
Allow Users, Trainers and Admin to log in.	<ul style="list-style-type: none"> To ensure all 3 can successfully log in and can do the task that is required for them to do. By entering their correct details which will then allow them to check the details of their page.
Allow Users to choose a trainer of their choice	<ul style="list-style-type: none"> Once the user is logged in they should be able to navigate through the site and be able to complete the form which will then allow them to

and book a training session	book a training session with a trainer of choice.
The user should be able to leave a review of the trainer	<ul style="list-style-type: none"> Once the user has completed their session they will be allowed to give a review of their coach using a star system which other users will be able to see and know which coaches are the best to book and the best reviewed.
The trainer should be allowed to put in skills that they have	<ul style="list-style-type: none"> Once the trainer logs in they will be allowed to put in the skills they have that they can train to the users.
The trainer will also be able to view upcoming training sessions that have been requested by the user	<ul style="list-style-type: none"> The trainer will be able to see what sessions they have upcoming and the duration for well as the skill that the user wants to improve upon.
The admin will make sure all sessions are confirmed and make sure the user and trainer will know	<ul style="list-style-type: none"> Once a user sends in a request for a training session the admin will confirm this booking and then it will be sent to the user and trainers portal to ensure they are both aware that it has been confirmed.
The User and trainer can contact the support team if there are any issues	<ul style="list-style-type: none"> The users and trainers can easily navigate through and choose the Contact Us options which will allow them to send in a complaint if there are any issues with the page by providing a few details.
The user and trainer can update their profile	<ul style="list-style-type: none"> The user and trainer can update any personal details if needed in case they have an error with spelling their name.

Algorithm Development:

This here is a sequence diagram that I have created to show how the user will interact with my project: The algorithm for the sequence diagram involves managing interactions between users, website, database, booking system, trainer portal, and trainer. It initialises objects representing each entity, handles user account creation, and updates status in user and trainer views. After training, it facilitates user reviews and ratings, ensuring data validation, error checking, and maintaining system integrity. The algorithm also handles data validation, error checking, and maintaining system integrity.

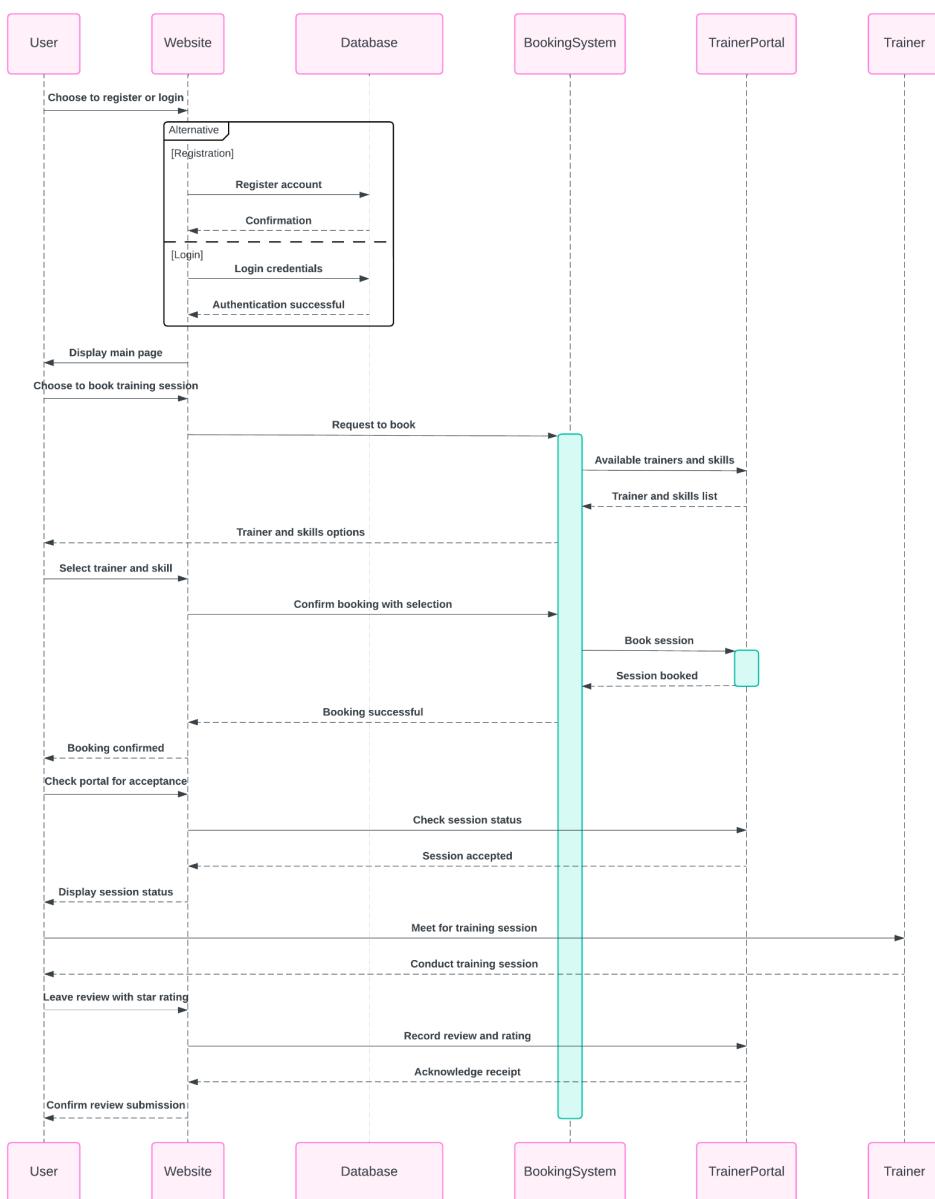


Figure 15: Sequence diagram that shows how the User side will interact with my project.

This is a sequence diagram that I have created which demonstrates how the trainers will interact with my project: To make it easier for trainers, the training portal, and users to engage, the training system algorithm consists of multiple steps. In order to ensure a structured flow from authentication to session completion, it prompts trainers to log in or register, authenticates credentials, grants access, lets them manage their profile, looks for and approves session requests, updates the status of the session, and records the session as finished.

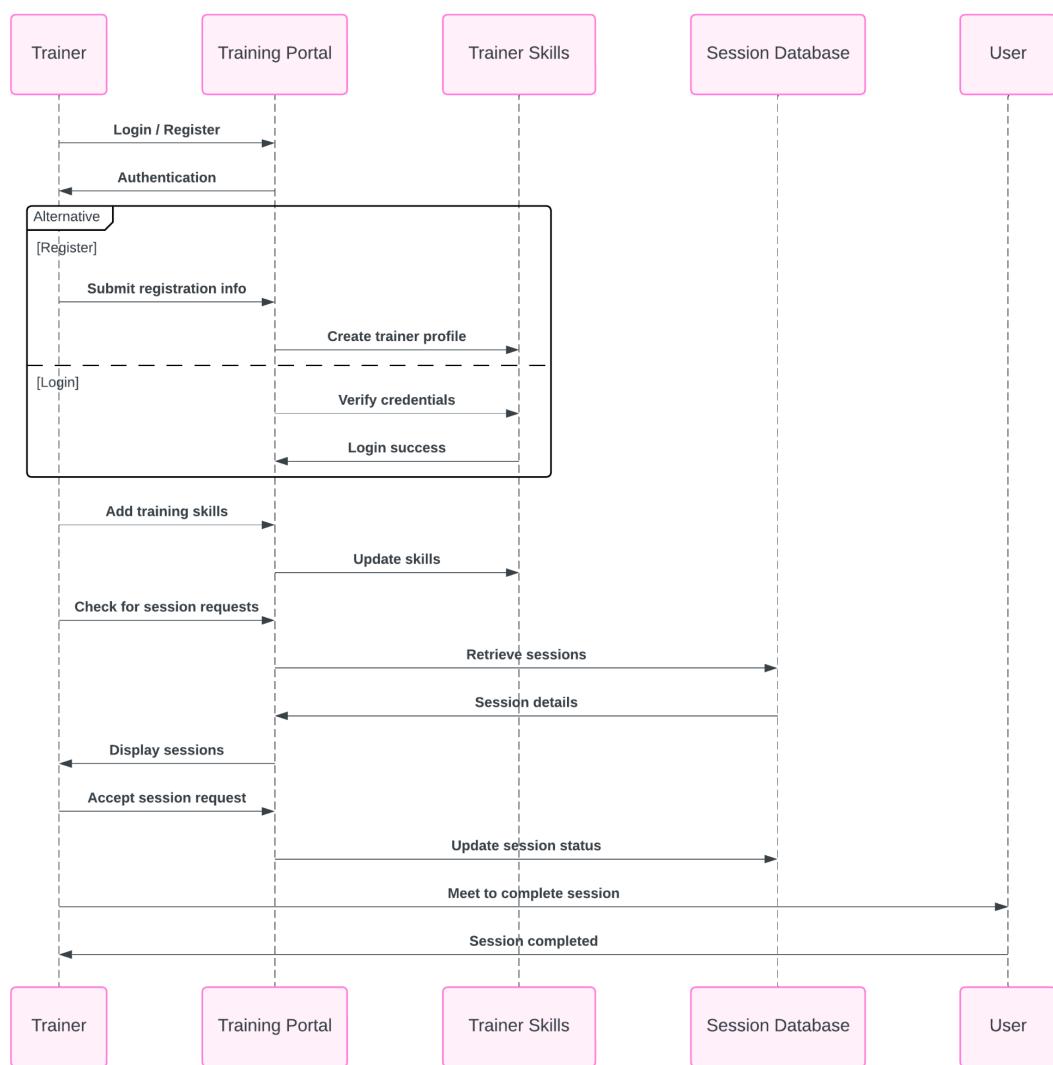


Figure 16: Sequence diagram that shows how the Trainer side will interact with my project.

This here is a sequence diagram that I have created to demonstrate how the admin will interact with my project: Initialising system components, providing admin login capability, monitoring for session requests, scheduling a user, updating TrainerPortal and UserPortal, and notifying trainers and users are all part of the sequence diagram algorithm. In order to handle possible difficulties like database faults, authentication failures, or communication breakdowns between system components, the algorithm makes sure that strong error-handling methods are in place. The admin's status within the system is preserved with the aid of this sequence diagram.

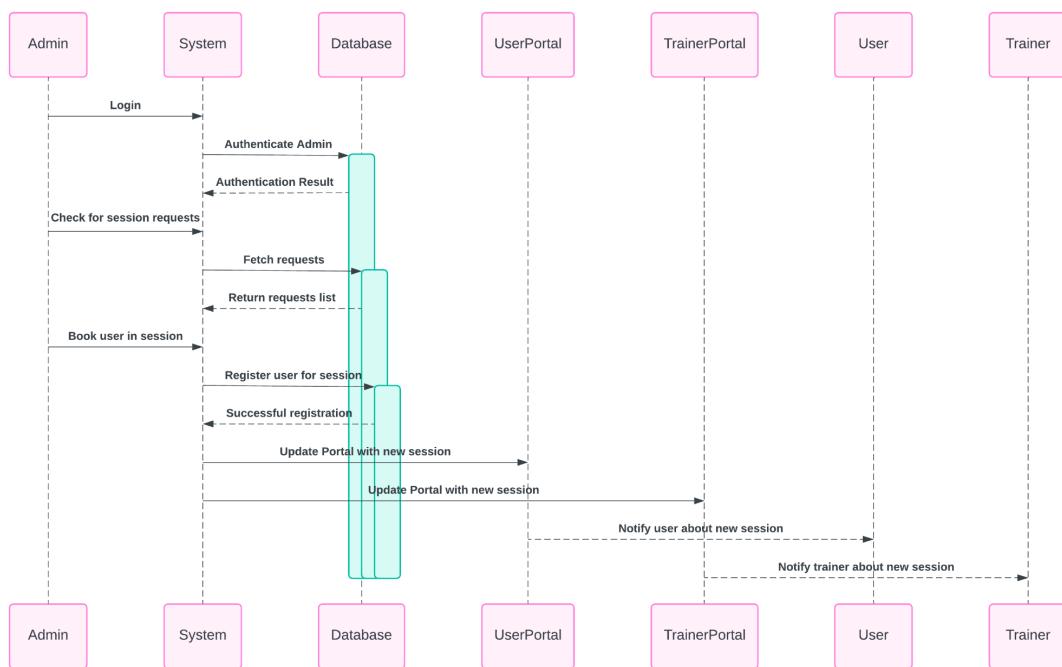


Figure 17: Sequence diagram that shows how the Admin side will interact with my project

6. Tools and implementation

6.1 Tools

Within this section I am going to discuss the tools that I have used for my project and where they have been used, as well as justifying as to why it was important for my project. Then explain any skills that I have learnt along the way and how it was important for my project as well as describe the existing skills that have helped me for my project.

Description of tools used and why it was important for my project		
Tool name	Description of tool	How the tool was used for my project.
HTML	<ul style="list-style-type: none">I used HTML to write the basic outlines of the front end of my project, such as the placements of the header and the images.	<ul style="list-style-type: none">Was good to use HTML to write the code for the front end as I have a lot of experience using this now, aswell as it is simple to read as the code readability is very good with HTML.
CSS	<ul style="list-style-type: none">I used CSS to make sure that my project could have more colour and to ensure that my project didn't appear too simple.	<ul style="list-style-type: none">Crucial to use CSS for my project or else my site will be very dull and a dull website will not be very appealing to customers as there isn't much to look forward to when clicking on a dull website without CSS.
Javascript (JS)	<ul style="list-style-type: none">I used JS to make sure my project was interactive as a project that allows for more interactions will allow me to implement more functions.	<ul style="list-style-type: none">It was vital to use JS for my project as it made sure my project was interactive aswell as making sure my project could have more functions than I had down in my project

		requirements.
PHP	<ul style="list-style-type: none"> I used PHP in my project to make sure that my front end was able to send information to a database, this was crucial for filling in forms and making sure users could select the trainers they wanted to train with. 	<ul style="list-style-type: none"> Without the use of PHP my project wouldn't have many complex functions and with the use of PHP, I can make sure my project can interact with a database making sure my project is more complex.
Visual studio code (VS Code)	<ul style="list-style-type: none"> I used VS Code for my project as I was able to pick up the extensions for my project, aswell as allowed me to comment on my code which makes sure I can let people who want to read my code have a better understanding of the project. 	<ul style="list-style-type: none"> Without the use of VS Code, I would not be able to have the extensions that have made sure that I can add the functions that I would have liked. Aswell as loads of debugging tools which refine my code and allow me to correct any errors right away.
XAMPP	<ul style="list-style-type: none"> I used XAMPP for my project as it allowed me to have a liver server and test my project and allowed me to use PHP myadmin to store information for my database. 	<ul style="list-style-type: none"> Without the use of XAMPP, I would not be able to test if my project was functional aswell and without XAMPP's inbuilt technology including PHP myadmin, I wouldn't be able to store the fields the users of my project fill in.
Laravel	<ul style="list-style-type: none"> I used the Laravel framework for my project because it provides a robust and well-structured framework that manages and 	<ul style="list-style-type: none"> Without the use of Laravel, I would not be able to make sure my PHP code is robust is well structured as there is a large selection of

	develops PHP applications.	extensions to help me with my project.
PHP myadmin	<ul style="list-style-type: none"> I used PHP myadmin for my project as it allows me to store the user's information as well as allows me to easily use this tool with the download of XAMPP. 	<ul style="list-style-type: none"> Without the use of PHP myadmin, I would not be able to make sure my user's information is being saved within a strong database that is secure at all times.

Skills development during the project	
Skill type	How these skills were developed/ enhanced during my project
Existing Skills	<ul style="list-style-type: none"> My skills with using HTML were further enhanced as I already used it many times with other projects but with this project, it was enhanced more as it was a way larger project that required more coding than ever, skills that I was able to make more complex front end functions such as an image carousel for this project. My skills with CSS were further enhanced as with HTML I have used it many times but for this project, I decided to import more text types rather than using stock texts, which further improved my designing skills for my front end. My skills with JS have also been enhancing as with now more experience with this tool I have been able to make sure my user interfaces are more complex and far more interactive, boosting my overall skills of providing a good user interface. My skills with PHP were also enhanced during this project as a lot of my project would depend on my use of PHP and within my project I have been able to enhance my PHP to make my databases more interactive. My skills with VS Code were also further enhanced as I have used this with my projects but it was important more so this time as for this project I was able to use many extensions which helped with the overall framework of my project, boosting my skills of using extensions. My skills with PHP myadmin were enhanced more as I

	have used this for other projects but it was improved as I was able to ensure my database skills improved, to create and modify queries.
New Skills	<ul style="list-style-type: none"> ● My skills with XAMPP were developed as I have some experience with the tool but it was enhanced further to let me know how to set up a web server and run a database using PHP myadmin. ● My skills using Laravel were developed too as this was a tool that I had learned for my project to make sure I could have a clear framework for my project and to keep my code efficient, aswell as many extensions within Laravel that have helped me overall develop a new skill by utilising its extensions.

6.2 Implementation

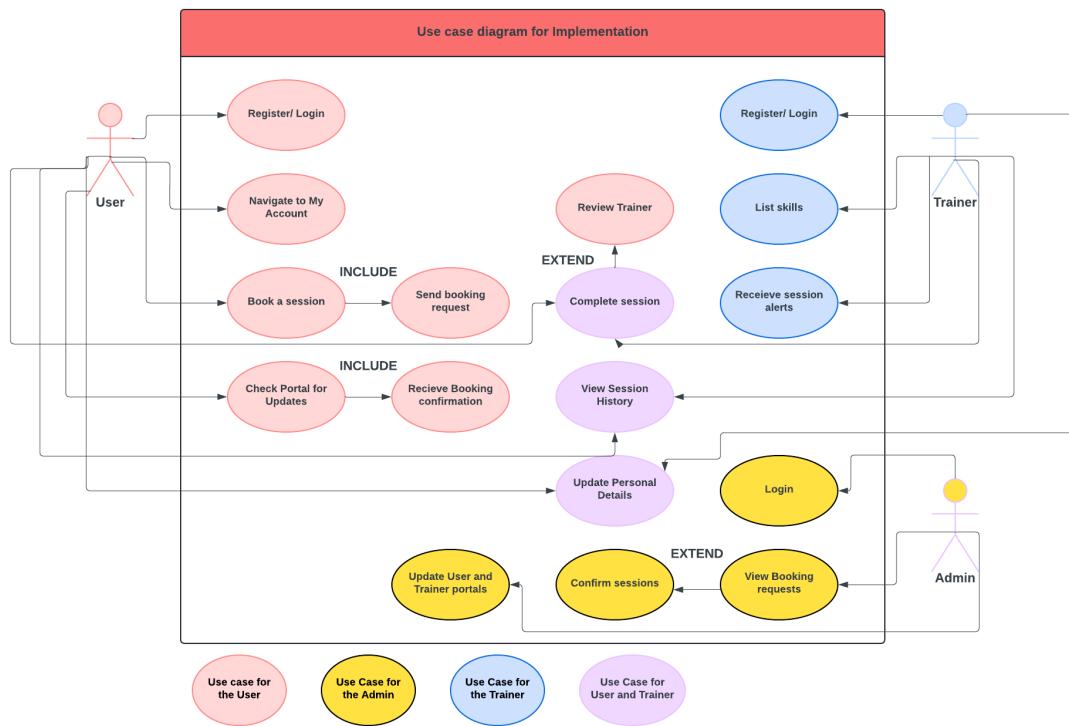


Figure 18: An Updated Use Case Diagram showing every implementation for my project.

Use Case Diagram explanation		
Actor	Use Case	Use Case overview
User	1. Register/ Login	The user can create a new account or log into an existing one.
	2. Navigate to My Account	After registering/logging in, the user is directed to their account page.
	3. Book a session	The user can book a session with a trainer and select a skill to improve.
	4. Send Booking Request	The user sends a request for a session with a trainer.
	5. Check Portal for Updates	The user can check their portal for any updates regarding their booking.

	6. Receive Booking Information	Once the booking is confirmed, the user sees the update in their portal.
	7. Complete session	The user meets the trainer for the session and the session is complete
	8. Review Trainer	The user can send a review of the trainer after the session.
	9. View Session History	The user can see the history of their previous bookings.
	10. Update Personal Details	The user can update their personal details, such as their name.
Trainer	11. Register/ Login	The trainer can create a new account or log into an existing one.
	12. List skills	The trainer lists down the skills they can train to Users.
	13. Recieve session alerts	The trainer gets alerts in their portal about upcoming sessions.
	14. View session history	The trainer can see a history of sessions they have completed.
	15. Complete session	The trainer meets the user for the session and the session is complete
	16. Update personal details	The trainer can update their personal details on the My Account page.
Admin	17. Login	The admin logs into the system.
	18. View Booking requests	The admin can see all the booking requests sent by users.
	19. Confirm sessions	The admin confirms the sessions
	20. Update User and Trainer portals	The admin will then update the user and trainer portals to ensure the session is alerted to both.

Use Case 1 (User - Register/ Login) - This table will discuss the Login Use Case, and the Registration side will be discussed in Use Case 11. (Use Case 17 is completed here) - Figure 19

Pseudocode for Use Case 1	Code snippet for Use Case 1
<p>The code starts by displaying a login form with email and password fields. When the form is submitted, the code validates the form data. If the data is valid, the login() function is called to authenticate the user. If the login is successful, the user is redirected to the dashboard. If the login fails or the form data is invalid, error messages are displayed.</p> <pre> START # Display login form DISPLAY form with following fields: - Email address - Password # Handle form submission IF form is submitted # Validate form data IF email is valid AND password is valid # Authenticate user CALL login() function IF login is successful # Redirect user to dashboard REDIRECT to dashboard page ELSE # Display error message DISPLAY error message ELSE # Display validation errors DISPLAY validation errors END </pre>	<p>The image displays a snippet of HTML code that I've written, which is part of my project's login form. The form is structured with Bootstrap classes to create a responsive layout, and it includes input fields for an email address and a password. Each field is accompanied by a label and has built-in validation error handling, which is indicated by the Blade template syntax for displaying error messages. The form is designed to post data to a 'login' route when submitted.</p> 

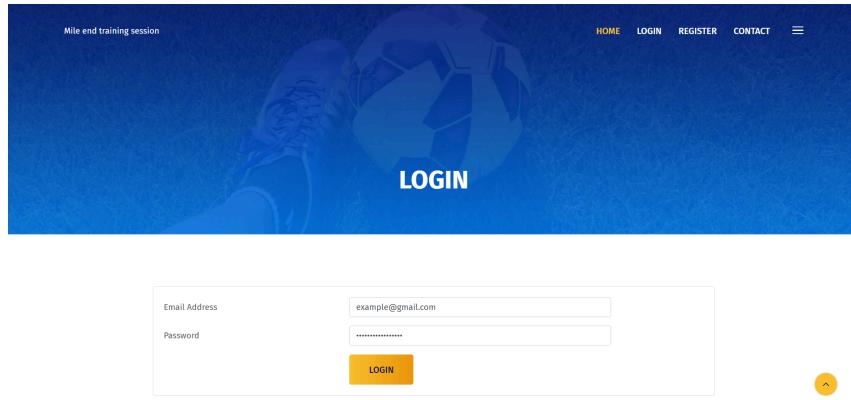


Figure 19: My projects login page

Use Case 2 (User - Navigate to My Account) - Figure 20	
Pseudocode for Use Case 2	Code snippet for Use Case 2
<p>First, the code checks if the authenticated user's role is 2, which is a user. If the user's role is 2, the code displays two table rows with links to the "user-session" and "user-book-session" routes, allowing the user to access session-related functionality.</p> <pre># Check if the authenticated user's role is 2(User) IF the authenticated user's role is 2: # Display the "Sessions" link DISPLAY a table row with a link to the "user-session" route # Display the "Book Session" link DISPLAY a table row with a link to the "user-book-session" route # Display the logout form DISPLAY a hidden form with the following: - ID: "logout-form" - Action: route to the "logout" route - Method: POST - CSRF token # Display the logout link DISPLAY a table row with a link that: - Prevents the default link behavior - Submits the "logout-form"</pre>	<p>This snippet includes conditional logic to display certain links based on the user's role, specifically if the user has a role value of 2. The links provided are for "Sessions" and "Book Session," which are given to the user's ability to manage or book sessions.</p> <pre>@if(auth().user().role == 2) Sessions Book Sessions @endif <form id="logout-form" action="{{ route('logout') }}" method="POST" style="display: none;"> @csrf Logout </pre>

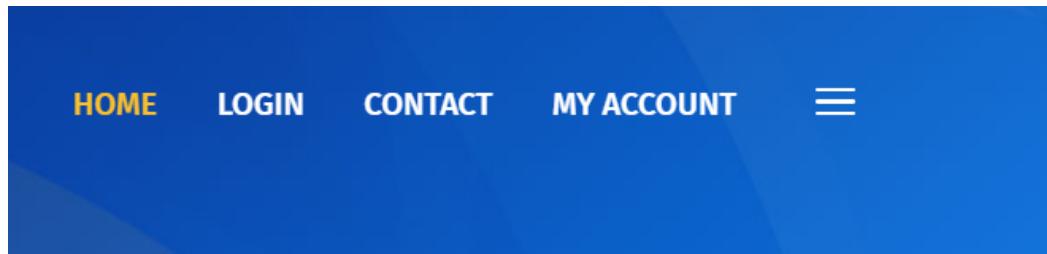


Figure 20: User will press the My Account page to then book their sessions

Use Case 3 (User - Book Session) (Use Case 4 is completed here) - Figure 21	
Pseudocode for Use Case 3	Code snippet for Use Case 3
The pseudo code is a form section with various input fields and dropdown menus. The form allows users to choose a skill and time, then a button to submit their request.	The code snippet is from my project, featuring dropdowns for selecting a trainer and skills, date-time inputs for scheduling, and buttons for form actions.

<pre> START # Create a row with padding-top CREATE row pt-3 # Create a column for Trainer dropdown CREATE col-md-6 form-group CREATE label "Trainer" and select "trainer_id" END # Create a column for Training Skills dropdown CREATE col-md-6 form-group CREATE label "Trainings Skills" and select "skill" END END # Create another row with padding-top CREATE row pt-3 # Create a column for Start date input CREATE col-md-6 form-group CREATE label "Start date" and datetime-local "start_datetime" END # Create a column for End date input CREATE col-md-6 form-group CREATE label "Start End date" and datetime-local "end_datetime" END END # Create form actions with submit button CREATE form-actions card-body CREATE submit button "Save" END </pre>	<pre> <div class="col-md-6"> <div class="form-group"> <label class="form-label">Trainer</label> <select class="form-control change-trainer" name="trainer_id"> <option value="">Select</option> <option value="1">Jude</option> <option value="2">Ruhul</option> <option value="3">Diana</option> <option value="4">Samantha</option> <option value="5">Liam</option> <option value="6">Ava</option> <option value="7">Noah</option> <option value="8">Ella</option> <option value="9">Isabella</option> <option value="10">Lucas</option> <option value="11">Mia</option> <option value="12">Aiden</option> <option value="13">Olivia</option> <option value="14">Caleb</option> <option value="15">Aria</option> <option value="16">Elijah</option> <option value="17">Avery</option> <option value="18">Layla</option> <option value="19">Aiden</option> <option value="20">Aria</option> </select> </div> </div> <div class="row pt-3"> <div class="col-md-6"> <div class="form-group"> <label class="form-label">Start date</label> <input type="datetime-local" name="start_datetime" id="start_datetime" class="form-control" placeholder="start_datetime"> </div> </div> <div class="col-md-6"> <div class="form-group"> <label class="form-label">Start End date</label> <input type="datetime-local" name="end_datetime" id="end_datetime" class="form-control" placeholder="end_datetime"> </div> </div> </div> <div class="form-actions"> <button type="submit" class="btn btn-success text-white"><i class="fa fa-check">/i> Save</button> <!--<button type="button" class="btn btn-dark">Cancel</button>--> </div> </pre>
---	--

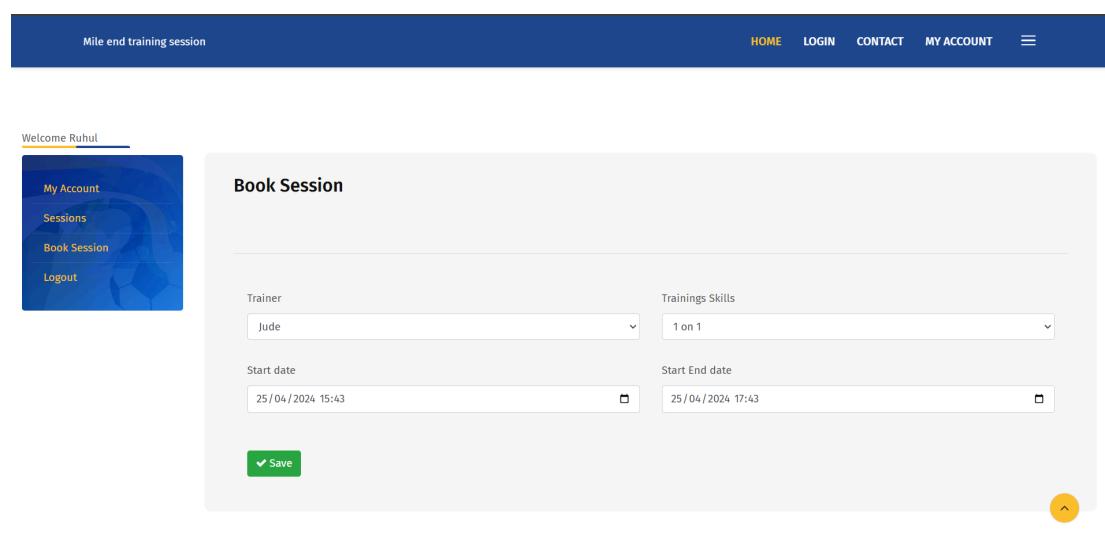


Figure 21: My projects book session page available for users.

Use Case 5 (User - Check Portal for Updates) (Use Case 6,9,13,14, 20 is completed here) - Figure 22	
Pseudocode for Use Case 5	Code snippet for Use Case 5
This pseudocode shows what happens when a user checks their portal for an update, there is a table row displaying various information about the booking, such as the trainer, user, skill, start and end date-time, and the booking status.	This code snippet is a template for displaying information about the user's booking status. It includes dynamic fields for an item's ID, trainer name, user name, skill title, start and end times, and status. Conditional logic is used to display certain information only if specific conditions are met, such as the booking status being "complete".

```

START
    DISPLAY a table row <tr>
        DISPLAY a table cell <td> with the value of $item->id
        DISPLAY a table cell <td>
            CREATE a div element with the class "club-item"
            DISPLAY the value of $item->trainer->name inside the div
    END
    DISPLAY a table cell <td>
        CREATE a div element with the class "club-item"
        DISPLAY the value of $item->user->name inside the div
    END
    DISPLAY a table cell <td>
        CREATE a div element with the class "club-item"
        IF $item->skill->title is set
            DISPLAY the value of $item->skill->title
        ELSE
            DISPLAY an empty string
        END IF
    END
    DISPLAY a table cell <td>
        CREATE a div element with the class "club-item"
        DISPLAY the value of $item->start_datetime
    END
    DISPLAY a table cell <td>
        CREATE a div element with the class "club-item"
        DISPLAY the value of $item->end_datetime
    END
    DISPLAY a table cell <td>
        CREATE a div element with the class "club-item"
        IF $item->status is equal to "complete"
            DISPLAY the appropriate content or functionality
        END IF
    END

```

```

<tr>
    <td>{($item->id)}</td>
    <td>
        <div class="club-item">{($item->trainer->name)}</div>
    </td>
    <td>
        <div class="club-item">{($item->user->name)}</div>
    </td>
    <td>
        <div class="club-item">{($item->skill->title) ? $item->skill->title : ''}</div>
    </td>
    <td>
        <div class="club-item">{($item->start_datetime)}</div>
    </td>
    <td>
        <div class="club-item">{($item->end_datetime)}</div>
    </td>
    <td>
        <div class="club-item">
            &#14; {($item->status == "complete")}
        </div>
    </td>

```

Mile end training session
HOME
LOGIN
CONTACT
MY ACCOUNT
≡

Sessions						
Id	Trainer	User	Session for Skill	Start date	End date	Status
3	Jude	Ruhul	1 on 1	2024-04-25T15:43	2024-04-25T17:43	complete -- Add Review
2	Mohammed Ruhul	Ruhul	defending	2024-04-18T15:42	2024-04-18T17:42	accept

Figure 22: My Projects page which shows users sessions page

Use Case 8 (User - Review the Trainer) - Figure 23	
Pseudocode for Use Case 8	Code snippet for Use Case 8
<p>This pseudocode defines a user review and star rating system for my project. It includes a section to display instructions for the star rating, a form group for the user's review input with a character count, hidden inputs to store the star rating and session booking ID, and a submit button.</p>	<p>This code snippet is part of a form for writing and submitting a review. It includes a help message explaining the star rating system, a text for the review, a span element showing remaining characters, two hidden input fields, and a submit button. The JavaScript code handles the star rating system by listening for mouse events on the star elements and updating the selected star accordingly.</p>

<pre>// Define a section for star rating information DEFINE section DISPLAY message "Click on a star to change your rating 1 - 5, where 5 = great! and 1 = really bad" // Define a form group for user review input DEFINE form group DISPLAY label "Your Review:" DEFINE text area SET class to "form-control" SET rows to 10 SET placeholder to "Your Review" SET name to "review" SET id to "review" END text area // Display character count information DISPLAY character count info DISPLAY remaining characters "999 Characters remaining" END character count info END form group // Define hidden inputs to store star rating and session booking ID DEFINE hidden input for star rating SET class to "star-input" SET name to "stars" SET value to empty END hidden input DEFINE hidden input for session booking ID SET name to "session_booking_id" SET value to dynamic ID END hidden input // Define a submit button DEFINE submit button SET id to "submitForm" SET type to "submit" SET class to "btn btn-primary" DISPLAY text "Submit" END submit button</pre>	<pre> Click on a star to change your rating 1 - 5, where 5 = great! and 1 = really bad <div class="form-group"> <label class="control-label" for="review">Your Review:</label> <textarea class="form-control" rows="10" placeholder="Your Review" name="review" id="review"></textarea> 999 characters remaining </div> <input type="hidden" class="start-input" name="stars" value=""> <input type="hidden" name="session_booking_id" value="{{id}}"> <input id="submitForm" type="submit" class="btn btn-primary"></pre>
---	---

Figure 23: My Project shows the Review page after users have completed their training session.

Use Case 10 (User - Update Personal details) (Use Case 16 is completed here) - Figure 24	
Pseudocode for Use Case 10	Code snippet for Use Case 10
<p>The pseudocode outlines a form for authenticated users to update their profile information. The form, classed "register-form", uses the "post" method to submit data to the "updateProfile" route. It has input fields for name, email, surname, date of birth, and gender buttons. The form also has a "submit" button.</p>	<p>This code snippet is a part of a larger HTML form for updating a user's profile. It includes input fields for the user's name, email, surname, and date of birth, as well as a radio button group for selecting the user's gender. The form also includes a submit button for updating the profile. The input fields are pre-populated with the current user's information, and the radio buttons</p>

```

START
  DEFINE form with class "register-form" and id "register-form"
  SET method to "post"
  SET action to "/{(route('updateProfile',Auth::user())->id)}"
  INCLUDE CSRF token

  DEFINE FORM
    DEFINE column with class "col-md-6"
      DEFINE label with class "input-label" and text "Name"
      DEFINE input with class "custom-placeholder" and value "{{ Auth::user()->name }}"
        SET type to "text"
        SET name to "name"
        SET required to true
    DEFINE column with class "col-md-6"
      DEFINE label with class "input-label" and text "Email"
      DEFINE input with class "custom-placeholder" and value "{{ Auth::user()->email }}"
        SET type to "text"
        SET name to "email"
        SET required to true
        SET readonly to true

  DEFINE FORM
    DEFINE column with class "col-md-6"
      DEFINE label with class "input-label" and text "Surname"
      DEFINE input with class "custom-placeholder" and value "{{ Auth::user()->surname }}"
        SET type to "text"
        SET name to "surname"
        SET required to true
    DEFINE column with class "col-md-6"
      DEFINE label with class "input-label" and text "D.O.B"
      DEFINE input with class "custom-placeholder" and value "{{ Auth::user()->dob }}"
        SET type to "date"
        SET name to "dob"
        SET required to true

  DEFINE FORM
    DEFINE column with class "col-md-4"
      DEFINE div with class "margin-bottom gender-detect"
        DEFINE label with class "input-label" and text "Gender"
        DEFINE label
          DEFINE input with class "radio-btn" and value "male"
            SET type to "radio"
            SET name to "gender"
            SET required to true
            SET checked if Auth::user()->gender == "male"
        DEFINE span with text "Male"
        DEFINE label
          DEFINE input with class "radio-btn" and value "female"
            SET type to "radio"
            SET name to "gender"
            SET required to true
            SET checked if Auth::user()->gender == "female"
        DEFINE span with text "Female"

      DEFINE div with class "submit-btn"
        DEFINE button with class "readon" and type "submit"
          SET text to "Update"
    END

```

are checked based on the user's current gender.

```

<form>
  <div class="register-form" id="register-form" method="post" action="/{(route('updateProfile',Auth::user())->id)}">
    <div class="row">
      <div class="col-md-6">
        <label class="input-label">Name</label>
        <input class="custom-placeholder" value="{{ Auth::user()->name }}" type="text" name="name" required>
      </div>
      <div class="col-md-6">
        <label class="input-label">Email</label>
        <input class="custom-placeholder" type="text" value="{{ Auth::user()->email }}" name="email" required="required" readonly>
      </div>
    </div>
    <div class="row">
      <div class="col-md-6">
        <label class="input-label">Surname</label>
        <input class="custom-placeholder" value="{{ Auth::user()->surname }}" type="text" name="surname" required>
      </div>
      <div class="col-md-6">
        <label class="input-label">D.O.B</label>
        <input class="custom-placeholder" type="date" value="{{ Auth::user()->dob }}" required="required" name="dob" data-date="dob">
      </div>
    </div>
    <div class="row">
      <div class="col-md-4">
        <div class="margin-bottom gender-detect">
          <label class="input-label">Gender</label>
          <div>
            <input checked="" type="radio" name="gender" value="male" /> Male
            <input type="radio" name="gender" value="female" /> Female
          </div>
        </div>
      </div>
    </div>
    <div class="submit-btn">
      <button type="submit" value="Submit">Update</button>
    </div>
  </div>

```

The screenshot shows a web application interface. On the left is a sidebar with 'Welcome Ruhul' and links for 'My Account', 'Sessions', 'Book Session', and 'Logout'. The main content area has a title 'Profile Update'. It contains several input fields: 'Name' (Ruhul), 'Email' (example@gmail.com), 'Surname' (Amin), 'D.O.B' (12/07/2003), and a 'Gender' section with a radio button for 'Male' (which is checked) and another for 'Female'. At the bottom is a yellow 'UPDATE' button.

Figure 24: My Project showing the My Account page which allows the User/ Trainer to update some details.

Use Case 11 (Trainer - Register/ Login) (Registration Case) - Figure 25	
Pseudocode for Use Case 11	Code Snippet for Use Case 11
<p>The code creates a user registration form for a web application, requiring a POST request and a CSRF token for security. It includes input fields for the user's name, surname, date of birth, gender, email, password, and user type, with error handling.</p>	<p>This code snippet is a part of a larger HTML form for registering a new user. It includes input fields for the user's name, surname, date of birth, gender, email address, and password, as well as a select field for choosing the user type (User or Trainer). The form also includes a CSRF token and a submit button for</p>

```

START
DEFINE form with method "POST" and action "{{ route('register') }}"
INCLUDE CSRF token

DEFINE row for name input
    DEFINE label for "Name"
    DEFINE input field for "name"
    IF error in "name" field
        DISPLAY error message

DEFINE row for surname input
    DEFINE label for "Surname"
    DEFINE input field for "surname"
    IF error in "surname" field
        DISPLAY error message

DEFINE row for date of birth input
    DEFINE label for "D.O.B."
    DEFINE input field for "dob"
    IF error in "dob" field
        DISPLAY error message

DEFINE row for gender selection
    DEFINE label for "Gender"
    DEFINE dropdown select for "gender"
    IF error in "gender" field
        DISPLAY error message

DEFINE row for email input
    DEFINE label for "Email Address"
    DEFINE input field for "email"
    IF error in "email" field
        DISPLAY error message

DEFINE row for password input
    DEFINE label for "Password"
    DEFINE input field for "password"
    IF error in "password" field
        DISPLAY error message

DEFINE row for confirm password input
    DEFINE label for "Confirm Password"
    DEFINE input field for "password_confirmation"

DEFINE row for user type selection
    DEFINE label for "User type"
    DEFINE dropdown select for "role"
    IF error in "role" field
        DISPLAY error message

DEFINE row for submit button
    DEFINE submit button with text "Register"
END

```

registering the new user. The input fields are pre-populated with the current user's information, and the form includes validation messages for each input field.

```

<form action="{{ route('register') }}" method="POST">
    @csrf
    <div class="row mb-3" id="name">
        <div class="col-md-4 col-form-label text-md-end">Name</div>
        <div class="col-md-4">
            <input type="text" class="form-control" name="name" value="{{ old('name') }}" required autocomplete="name" autofocus>
            @error('name')
                <div class="invalid-feedback" role="alert">
                    {{ $message }}</div>
            @enderror
        </div>
    </div>
    <div class="row mb-3" id="surname">
        <div class="col-md-4 col-form-label text-md-end">Surname</div>
        <div class="col-md-4">
            <input type="text" class="form-control" name="surname" value="{{ old('surname') }}" required autocomplete="surname" autofocus>
            @error('surname')
                <div class="invalid-feedback" role="alert">
                    {{ $message }}</div>
            @enderror
        </div>
    </div>
    <div class="row mb-3" id="dob">
        <div class="col-md-4 col-form-label text-md-end">D.O.B.</div>
        <div class="col-md-4">
            <input type="date" class="form-control" name="dob" value="{{ old('dob') }}" required autocomplete="dob" autofocus>
            @error('dob')
                <div class="invalid-feedback" role="alert">
                    {{ $message }}</div>
            @enderror
        </div>
    </div>
    <div class="row mb-3" id="gender">
        <div class="col-md-4 col-form-label text-md-end">Gender</div>
        <div class="col-md-4">
            <select name="gender" class="form-control" required="required" data-validation="required" data-validation-error="This field is required.">
                <option value="Male">Male</option>
                <option value="Female">Female</option>
            </select>
            @error('gender')
                <div class="invalid-feedback" role="alert">
                    {{ $message }}</div>
            @enderror
        </div>
    </div>
    <div class="row mb-3" id="email">
        <div class="col-md-4 col-form-label text-md-end">Email Address</div>
        <div class="col-md-4">
            <input type="email" class="form-control" name="email" value="{{ old('email') }}" required autocomplete="email" autofocus>
            @error('email')
                <div class="invalid-feedback" role="alert">
                    {{ $message }}</div>
            @enderror
        </div>
    </div>
    <div class="row mb-3" id="password">
        <div class="col-md-4 col-form-label text-md-end">Password</div>
        <div class="col-md-4">
            <input type="password" class="form-control" name="password" required autocomplete="new-password" data-validation="required" data-validation-error="This field is required.">
            @error('password')
                <div class="invalid-feedback" role="alert">
                    {{ $message }}</div>
            @enderror
        </div>
    </div>
    <div class="row mb-3" id="password_confirmation">
        <div class="col-md-4 col-form-label text-md-end">Confirm Password</div>
        <div class="col-md-4">
            <input type="password" class="form-control" name="password_confirmation" required autocomplete="new-password" data-validation="required" data-validation-error="This field is required.">
            @error('password_confirmation')
                <div class="invalid-feedback" role="alert">
                    {{ $message }}</div>
            @enderror
        </div>
    </div>
    <div class="row mb-3" id="user_type">
        <div class="col-md-4 col-form-label text-md-end">User type</div>
        <div class="col-md-4">
            <select name="role" class="form-control" required="required" data-validation="required" data-validation-error="This field is required.">
                <option value="Trainer">Trainer</option>
                <option value="Reader">Reader</option>
            </select>
            @error('role')
                <div class="invalid-feedback" role="alert">
                    {{ $message }}</div>
            @enderror
        </div>
    </div>
    <div class="row mb-3 offset-md-4">
        <div class="col-md-4 offset-md-4" style="text-align: right;">
            <button type="submit" class="btn btn-primary">REGISTER</button>
        </div>
    </div>

```



Name	<input type="text"/>
Surname	<input type="text"/>
D.O.B.	<input type="date"/> dd/mm/yyyy
Gender	<input type="text"/> Male
Email Address	<input type="text"/>
Password	<input type="password"/>
Confirm Password	<input type="password"/>
User type	<input type="text"/> Trainer
<input type="button" value="REGISTER"/>	

Figure 25: My Project showing the Registration Page for trainers and users to create accounts.

Use Case 12 (Trainer - List Skills) - Figure 26	
Pseudocode for Use Case 12	Code Snippet for Use Case 12
<p>The code represents a form for a web application, likely used for registering or submitting skill or training-related information. The form uses the HTTP POST method to submit data to a server route and includes a CSRF token for security. The form contains a single required input field for a "title" and a submit button labelled "Submit".</p> <pre> START DEFINE Form with class "register-form" and id "register-form" SET method to "post" SET action to "{route('trainer.skills.post')}" INCLUDE CSRF token START row START column with class "col-md-6" DEFINE label with class "input-label" and text "Title" DEFINE required span element DEFINE input field with class "custom-placeholder" and name "title" END column END row START submit button section DEFINE button with class "readon" and type "submit" SET button text to "Submit" END submit button section END </pre>	<p>This code snippet is part of a larger HTML form for adding new skills for a trainer. It includes a single input field for the user to enter the title of the new skill. The form also includes a CSRF token and a submit button for adding the new skill. The input field is required, and the form includes a submit button for adding the new skill.</p> <pre> <div class="col-lg-8"> <form class="register-form" id="register-form" method="post" action="{route('trainer.skills.post')}> <csrf> <div class="row"> <div class="col-md-6"> <label class="input-label">Title</label> <input class="custom-placeholder" type="text" name="title" required=""> </div> <div class="submit-btn"> <button class="readon" type="submit">Submit</button> </div> </form> </div></pre>

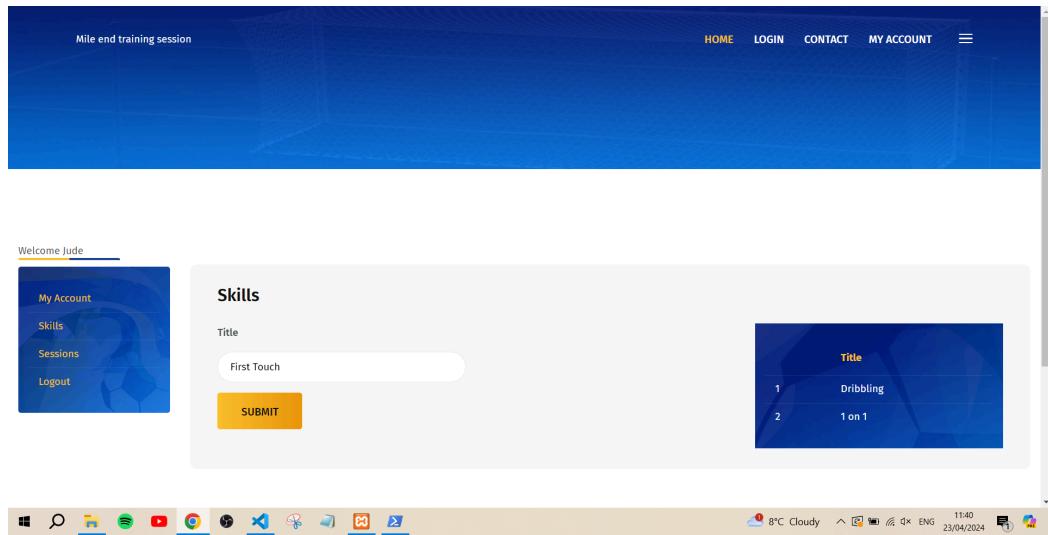


Figure 26: My project showing the page where Trainers can list down skills they can teach to Users.

Use Case 18 (Admin - View Booking Request) (Use Case 19 is completed here) - Figure 27	
Pseudocode for Use Case 18	Code snippet for Use Case 18
The pseudocode generates dynamic table rows using \$item and \$cols	This code snippet generates a table row for each item in the \$items

arrays, assigning variables for row class, iterating through columns, handling status, designer, and action, and printing values, concluding with the END keyword.

```

START
  DEFINE a variable '$row-id-{{($item->id)'}}' for the class of the <tr> element
  FOR each column in the $cols array:
    IF the column key is 'status':
      DEFINE a select element with the following options:
        - 'Select'
        - 'New' (selected if $item->status is 'New')
        - 'In Progress' (selected if $item->status is 'In Progress')
        - 'Complete' (selected if $item->status is 'Complete')
      ASSIGN the select element to $item['status']
    ELSE IF the column key is 'designer':
      DEFINE a select element with the following options:
        - 'Select'
        - Options for each designer in the $designersData array (selected if
          $item->designer_id matches the designer's id)
      ASSIGN the select element to $item['designer']
    ELSE IF the column key is 'action':
      DEFINE a link element with the route 'order.details' and the $item->id
    parameter
      ASSIGN the link element to $item['action']
      PRINT the value of $item[column_key] inside a <td> element
    END FOR
  END

```

array. The table columns include the session ID, trainer name, user name, skill title, start and end datetime, and a dropdown to change the status of the session. The dropdown options are "Select", "Accept", "Pending", and "Complete". The changeStatus JavaScript function is called when the dropdown value is changed, and it sends an AJAX request to update the session status in the backend.

```

<t>
  <td>{{($item->id)'}}</td>
  <td>{{($item->trainer->name)'}}</td>
  <td>{{($item->user->name)'}}</td>
  <td>{{isset($item->skill->title) ? $item->skill->title : ''}}</td>
  <td>{{($item->start_datetime)'}}</td>
  <td>{{($item->end_datetime)'}}</td>
  <td><select class="form-control" onchange="changeStatus('{{($item->id)}', this)">
    <option>Select</option>
    <option value="accept" {{($item->status == "accept" ? "selected": "")}}>Accept</option>
    <option value="pending" {{($item->status == "pending" ? "selected": "")}}>Pending</option>
    <option value="complete" {{($item->status == "complete" ? "selected": "")}}>Complete</option>
  </select>
  </td>
</tr>

```

ID	Trainer	User	Session for Skill	Start Date	End Date	Status
1	Mohammed Ruhul	Ruhul	dribbling	2024-03-24T18:07	2024-03-24T21:07	<button>Complete</button>
2	Mohammed Ruhul	Ruhul	defending	2024-04-18T15:42	2024-04-18T17:42	<button>Accept</button>
3	Jude	Ruhul	1 on 1	2024-04-25T15:43	2024-04-25T17:43	<button>Complete</button>

Showing 1 to 3 of 3 entries
Previous Next

Figure 27: My projects Admin panel where they can view Booking requests.

7. Testing

7.1 Test coverage

Within this section, I will be conducting Black Box testing to ensure my project works as it should from the user's point of view then providing a couple of test cases to ensure my project tests the requirements that have been discussed. Then conduct White Box testing to ensure my code is up to standard and to make sure there are few errors within my codebase then provide a couple of test cases to make sure the code adheres to the correct coding standards.

Black Box Testing:

Black Box testing examines the internal organisation, design, and implementation of the program to determine how well the program satisfies end-user expectations for behaviour without taking into account the underlying code or componentry. This is helpful for my project since it enables me to review my requirements, make sure they are met, and, if not, pinpoint the reasons why they haven't *Merixstudio (2020)*.

Black Box Testing for My Project				
Test Case ID	Requirement	Input	Expected Output	Result
BB-01	Secure Login for User	Email: example@gmail.com Password: ***** **	User should be able to successfully login and begin to use the functions within their user portal.	PASS - The user can log in successfully, user can log in as the password and email match those given within the database.
BB-02	Trainer wants to create an account but enters 2 different passwords in the "Password" and "Confirm Password" Section	Password: ***** Confirm Password: ***** "	The trainer will not be able to successfully register an Account as the passwords do not match and my code requires passwords to match.	PASS - The trainer is not able to create an account as passwords do not match, so a validation message is sent to the trainer to ensure

				passwords are matching when creating an account.
BB-03	The user wants to book a session but has not filled in every field that has been asked for.	Trainer: "Jude" Skill: "Dribbling" Start Date: "24/4/24" - 14:00 End Date: Null	The form will not be submitted as all fields have not been filled as asked for and therefore the booking request will not be submitted.	PASS - The User booking request has not been completed and the user is sent a validation message to make sure they complete all the inputs that are required.
BB-04	The Trainer wants to check if they have any upcoming sessions to attend to.	The Trainer is on their "My Account" page and clicks on the "Session" button to check for any upcoming sessions.	The Trainer should be able to check upcoming sessions with no problem when clicking on the hyperlink.	PASS - The Trainer can check for upcoming sessions as the hyperlinks are working for the trainer to check.
BB-05	The User wants to update their name as they have accidentally spelled their name in the registration section.	The user heads to the My Account page and changes the name from "Jude" to "Vini".	The user should be able to press save and their updated name should appear.	PASS - The user's name has changed to an updated one, they are also given a message which alerts them that it has changed so they are aware.
BB-06	The Trainer wants to log out from the	The Trainer presses the "Logout"	The Trainer should be logged out	PASS - The Trainer can successfully

	system measure time taken.	to the button.	quickly to ensure their time isn't being taken up.	log out, however it does take awhile to log out which means my machine is probabaly quite slow, so in peak times these loading times may take even longer.
--	----------------------------	----------------	--	--

White Box Testing:

White box testing is a software testing technique that examines the internal structure and working of an application's source code. The primary goal of white box testing is to ensure that the application's functionality and logic are accurate at the code level. I must conduct White box testing for my project to ensure there are minimal bugs within my code and to ensure there is consistent code quality throughout my code files *Rana, K. (2023)*.

White Box Testing for My Project					
Test Case ID	Description	Code Path	Test action	Expected Output	Result
WB-01	Invalid email format	@error('email') ... @enderror	Enter an invalid email format (e.g., "invalid email") in the email field. Attempt to submit the form	Display error message for invalid email format	PASS - Users must enter the correct email format or they wont be able to login.
WB-02	Test name input field	<input id="name" ... />	Enter a valid name ("John") in	The name should be accepted, and no	PASS - Name is accepted and no

			the name input field. Submit the form.	error message should be displayed.	errors occurred due to the name being accepted.
WB-03	Let the User add a review	'addReview(\$id)'	Call 'addReview' with a valid '\$id' Call 'addReview' with an authenticated user	Should return a view with review form and session data Should display the review form	PASS - The user can give their review of the trainer.
WB-04	Let the trainer add a new skill	'skillCreate()'	Call the skillCreate() method. Verify that the \$data['skills'] array contains the correct skills for the trainer.	This should allow for users to add new skills.	PASS - The trainer can put down new skills to teach to users.
WB-05	Making sure the Admin can see the bookings	'@section('content')'	Ensure the \$items variable is passed correctly from the controller. Test the "changeStatus" function by selecting different options from the	The table data is displayed correctly, and the "changeStatus" function works as expected.	PASS - The Admin is able to see booking and make sure users are booked in.

			dropdown and ensure the status is updated correctly.		
WB-06	Allow for the trainer to update their details	<button class="reason" type="submit ">Update</button>	Check that the submit button is present and has the correct text	The submit button should be present and have the text "Update"	PASS - Trainer can update their details.

7.2 Test methodology

Within this section, I will discuss testing methodologies that include End-to-End Testing, Security Testing, and Performance Testing. Each of these testing types was crucial for verifying different aspects of the project from functionality and security to performance, to create a robust and user-friendly application. As well as discussing feedback that I have obtained and how I was able to use it. Ending off with an evaluation of the testing Methodologies that I have used throughout my project.

End-to-end Testing:

End-to-end testing was conducted to ensure that the project functioned as intended from a user's perspective. This involved simulating real user interactions with the application by logging in and registering accounts, closely mirroring typical user behaviours. The testing process was guided by a Use Case diagram *Figure 18*, which outlined the essential functions and flow of operations within the application. This diagram served as a roadmap, ensuring that all intended features were implemented correctly and were operational.

The significance of End-to-End Testing lies in its ability to provide a holistic view of the application's functionality. It not only confirmed that individual components worked in isolation but also ensured they functioned together seamlessly as a whole. This testing instilled confidence that the application was ready for deployment, meeting all specified requirements and providing a smooth user experience.

Security Testing:

Security Testing focused on safeguarding user data, a critical aspect given the sensitive nature of login credentials. This testing phase involved entering passwords during account creation and login processes, which were then hashed to enhance security. The integrity of this hashing process was verified by inspecting the database entries through PHPMyAdmin, ensuring that passwords were stored securely and were resistant to potential theft or unauthorised access.

To strengthen the application against vulnerabilities and safeguard user data from potential security breaches, thorough security testing was necessary. This conforms with data protection laws in addition to supporting the preservation of user confidence *Prey Blog (2023)*. Preventing data breaches and preserving the integrity of the application depends on having strong security mechanisms in place.

Performance Testing:

Performance Testing was carried out by interacting with every hyperlink and button within the application to monitor response times and overall agility. This testing ensured that all links were functional and that the application pages loaded efficiently without undue delays. The responsiveness of the application was scrutinised to guarantee a smooth user experience, which is crucial for user retention and satisfaction.

The importance of Performance Testing is that it directly impacts user satisfaction and usability. By ensuring that the application performs well under various conditions, we can enhance user engagement and reduce frustration caused by slow response times. This testing phase helps in identifying performance bottlenecks and optimising them to meet user expectations effectively.

Obtaining and Using Feedback:

Feedback was an integral part of the testing process, gathered from both expert and non-expert users. Expert users such as my project supervisor gave me expert advice, providing insights into the technical aspects of the application, such as code efficiency, and security practices. Non-expert users, representing the end-users of the application, offered valuable perspectives on usability, interface design, and overall user experience.

The feedback obtained was meticulously analysed and used to refine the application. For instance, expert users might have pointed out potential security flaws or performance issues, which were then addressed to enhance the application's robustness. Non-expert feedback often led to adjustments in the UI/UX to make the application more intuitive and user-friendly. This iterative process of incorporating feedback ensured that the application evolved in a way that met the needs and expectations of all users.

Evaluating Test Methodologies:

Reflecting on the testing methodology employed, it is evident that the combination of End-to-End, Security, and Performance Testing, along with the integration of user feedback, provided a comprehensive evaluation of the application. This approach not only ensured that the application met its functional requirements but also that it adhered to security standards and delivered a satisfactory user experience.

The strengths of this testing methodology included a thorough validation of user workflows through End-to-End Testing and a strong emphasis on security, which is crucial for user trust. Performance Testing ensured that the

application could handle expected loads and interactions without significant delays.

While the current testing methodology was effective, there are always areas for improvement. For future projects, incorporating automated testing tools could enhance the efficiency and coverage of tests. Additionally, asking more expert users could have boosted my expert feedback alot more providing me with more deep insight for better code practices and better technical aspects.

8. Conclusions and reflections

Project Scope and Planning:

One of the most notable aspects of the set timeline of the project was a comprehensive proposal followed by a rigorous planning phase. The identified objectives were concise and straightforward, seeking the development of a functional website appealing to football fans of different levels of proficiency. A Gantt chart was used in the planning phase, enabling me to visualise the set tasks and required terms, ensuring my alignment with the deadlines and complexities.

Therefore, the scope of the project was provided as delivering a platform to serve the interaction between users and trainers to book sessions and improve their football skills. All the objectives were achieved, as demonstrated by the platform's functionality and interactivity. However, to optimise the planning process, the risk assessment procedure could be more detailed. In this case, it would be necessary to identify possible risks, their impact, and the severity of outcomes before developing appropriate strategies to address them. This approach could help the team be more prepared for unexpected issues and make the development process and communication more efficient.

Design and Development:

The design phase was critical in ensuring the website was not only functional but also aesthetically pleasing and intuitive for users. This phase utilised wireframes and prototypes, which facilitated a structured approach to UI/UX design, allowing for the iterative refinement of the website's layout and functionality based on stakeholder feedback.

During the development phase, technologies such as HTML, CSS, PHP, and JavaScript were integrated to create a dynamic and interactive website. The Laravel framework and Visual Studio Code were chosen as development tools, providing a robust framework and a conducive environment for coding. These tools were instrumental in building a scalable and secure application. However, the design phase could have benefited from more innovative elements to enhance user engagement, and the development phase could have included more iterative testing to identify and resolve issues more efficiently.

Implementation:

The implementation phase of the project involved a detailed and structured approach to bringing the design and functionalities of the football training website to life. PHP was used for server-side scripting, handling crucial functionalities like user authentication, session management, and database interactions. The Laravel framework provided a robust environment for developing scalable and secure web applications, significantly aiding in efficient back-end coding and database management with PHPMyAdmin. The development environment was supported by Visual Studio Code, which offered a comprehensive suite of tools for code writing, debugging, and organisation, enhancing the overall coding efficiency.

Throughout the implementation, the project adhered to the scrum development methodology under the agile methodology, allowing for iterative testing and refinements based on continuous feedback. This approach ensured that the website not only met the initial design specifications but also adapted to user needs and technological advancements effectively. The use of XAMPP facilitated a local testing environment, crucial for real-time testing and debugging to ensure constant testing of my project. This phase was critical in transforming the conceptualised functionalities into a fully operational and user-centric platform, ready for real-world deployment and use.

Testing:

The testing phase included comprehensive End-to-End, Security, and Performance Testing to ensure the application's functionality, security, and performance met the project's high standards. These methodologies were effective in identifying and addressing issues, which led to a secure and responsive application. User feedback was particularly valuable during this phase, as it highlighted areas for improvement and confirmed the application's usability and effectiveness.

While the testing was thorough, the incorporation of automated testing could be considered for future projects to enhance the efficiency and coverage of tests, reducing the time and resources required for manual testing.

Acquisition of Knowledge and Skills:

The project served as a ground for both the acquisition of new skills and the enhancement of existing ones. The use of Laravel, a robust PHP framework, was a new venture that significantly contributed to the project's success. Laravel's elegant syntax and rich set of features, such as its built-in

authentication and authorisation systems simplified many of the complex tasks associated with web development. The framework's emphasis on clean, maintainable code was instrumental in creating a scalable and secure application. Additionally, the integration of PHPMyAdmin, a web-based database management tool, facilitated the efficient handling of MySQL databases, allowing for the easy manipulation of user data and ensuring that database operations were executed seamlessly.

The project also provided an opportunity to deepen my understanding and proficiency in front-end technologies. My existing skills in HTML were enhanced as I worked on creating more complex and structured web pages. The use of CSS was refined to improve the visual aesthetics and responsiveness of the website, ensuring that it maintained a professional look. JavaScript skills were sharpened as I implemented interactive features and client-side validations, which are crucial for a dynamic user experience.

The knowledge and skills acquired during this project are not only valuable for my professional development but also transferable to future projects. They have laid a solid foundation for continued learning and have prepared me to tackle more complex challenges in the field of web development. The experience has been a testament to the importance of hands on practice in mastering new technologies and methodologies in the ever-evolving landscape of software development.

Conclusions and Further Work:

In conclusion, the project successfully met its initial objectives by providing a platform that caters to users of all skill levels for booking football training sessions. The research and comparative analysis conducted during the project were crucial in identifying market gaps and informing the website's features, leading to a unique value proposition.

For future work, the website could incorporate more advanced features such as a mobile application version or a real-time chat functionality. These enhancements could improve user engagement and expand the website's reach and impact. Additionally, exploring partnerships with local football clubs could provide further growth opportunities and community integration.

9. References

Include a list of cited in your text items (books, papers, websites, etc.). Use Harvard style for the purpose, or any other preferred standard referencing style.

- Great British Mag (2021) Why is football so popular in the UK?, Great British Mag. Available at: <https://greatbritishmag.co.uk/uk-culture/why-football-in-the-uk-popular/>
- Website, N. (2024) Benefits of exercise, nhs.uk. Available at: <https://www.nhs.uk/live-well/exercise/exercise-health-benefits/>.
- Professional Soccer Coaching (2019) Professional Soccer Coaching. Available at: <https://www.professionalsoccercoaching.com/>
- Walker, S. (2023) How to Use SMART Goals for Training and Development, Cognota. Available at: <https://cognota.com/blog/smart-goals-for-training-and-development/>
- Clockify(2023) Clockify Blog. Available at: <https://clockify.me/blog/productivity/project-management-techniques/>
- FootballDNA - Trustpilot (2024) Trustpilot. Available at: <https://www.trustpilot.com/review/footballdna.co.uk>
- GfG (2022) Dynamic Websites, GeeksforGeeks. Available at: <https://www.geeksforgeeks.org/dynamic-websites/>.
- Perfect eLearning (2019) Perfect eLearning. Available at: <https://perfectelearning.com/blog/creating-dynamic-websites-with-html-css-and-javascript>
- Laurent, L. (2023) Using JavaScript for Dynamic Web Content, AppMaster - ultimate all-in no-code platform. Available at: <https://appmaster.io/blog/javascript-dynamic-web-content>.
- Team, Aic. and Team, Aic. (2023) Unleash Your Creativity: Building a Dynamic Website Using PHP, AIContentfy. Available at: <https://aicontentfy.com/en/blog/unleash-creativity-building-dynamic-web-site-using-php>.
- Fred (2023) How to Use Visual Studio Code (VS Code) to Build a Simple Webpage, Get Me Coding. Available at: <https://www.getmecoding.com/how-to-use-visual-studio-code-to-build-a-simple-webpage/>.
- Mark (2023) Mastering the Basics: A Guide on How to Use XAMPP, Howto-Do. IT. Available at: https://www.howto-do.it/how-to-use-xampp/#google_vignette.
- Dixit, P. (2023) 13 Advantages of Laravel Development Services for Enterprises. Available at: <https://www.tristatetechnology.com/blog/13-advantages-laravel-development-services-enterprises>.

- Statista (2024) Statista. Available at: <https://www.statista.com/statistics/793628/worldwide-developer-survey-most-used-languages/>
- Tutorialspoint (2023). Available at: <https://www.tutorialspoint.com/advantages-and-disadvantages-of-html>.
- Bhagwat, S. (2023) Advantages and Disadvantages of CSS - Scaler Topics, Scaler Topics. Available at: <https://www.scaler.com/topics/advantages-of-css/>.
- Unstop (2024). Available at: <https://unstop.com/blog/advantages-and-disadvantages-of-css>.
- Gitnux (2023) GITNUX. Available at: <https://gitnux.org/javascript-statistics/>.
- Team, D. (2021) Pros and Cons of JavaScript – Weigh them and Choose wisely!, DataFlair. Available at: <https://data-flair.training/blogs/advantages-disadvantages-javascript/>.
- Careerera (2021) Advantages and Disadvantages of PHP, Careerera.com. Available at: <https://www.careerera.com/blog/advantages-and-disadvantages-of-php>
- Quora (2017) Quora. Available at: <https://www.quora.com/Why-is-PHP-no-longer-popular>.
- Far, O. (2017) The advantages of building dynamic websites, HackerNoon. Available at: <https://hackernoon.com/the-advantages-of-building-dynamic-websites-bc914071a155>.
- Cloudinary (2023) Cloudinary. Available at: <https://cloudinary.com/guides/e-commerce-platform/dynamic-website-how-it-works-and-should-you-build-one>.
- Nagendrag (2024) What is XAMPP?, CloudFoundation | Blog. Available at: <https://cloudfoundation.com/blog/what-is-xampp>.
- Nexcess (2022) Nexcess. Available at: <https://www.nexcess.net/help/how-to-use-xampp>.
- ScaleupAlly (2024) 21 Benefits of Using Laravel, ScaleupAlly. Available at: <https://scaleupally.io/blog/benefits-of-laravel-framework>.
- Webmobtech (2023). Available at: <https://webmobtech.com/blog/why-choose-laravel-as-the-best-php-framework>.
- Staff, G. (2022) The Pros and Cons of Laravel - Guru Blog. Available at: <https://www.guru.com/blog/the-pros-and-cons-of-laravel>.
- Shah, V. (2024) PHP And MySQL: Create Dynamic Websites Easily, WPWeb Infotech. Available at: <https://wpwebinfotech.com/blog/php-and-mysql>.
- Brainvire (2021) What are the benefits of using PHP MySQL Development Services?, Brainvire.com - A Website Development,

Mobile Apps and Digital Marketing Company. Available at: <https://www.brainvire.com/blog/benefits-of-php-mysql-development-services/>.

- Olivo, F. (2020) Website Legal Requirements: A Starting Guide to Legal Compliance, Elementor. Available at: <https://elementor.com/blog/website-legal-requirements/>.
- Saive, R. and Saive, R. (2016) 4 Useful Tips to Secure PhpMyAdmin Login Interface, 4 Useful Tips to Secure PhpMyAdmin Login Interface. Available at: <https://www.tecmint.com/secure-phpmyadmin-centos-ubuntu/>.
- Grant, M. (2023) Gantt Charting: Definition, Benefits, and How They're Used, Investopedia. Available at: <https://www.investopedia.com/terms/g/gantt-chart.asp>.
- Simplilearn (2024) Agile vs Scrum: Know the Main Differences and Similarities, Simplilearn.com. Available at: <https://www.simplilearn.com/agile-vs-scrum-article>.
- Laoyan, S. (2024) What Is Agile Methodology? (A Beginner's Guide) [2024] • Asana, Asana. Available at: <https://asana.com/resources/agile-methodology>.
- Sajjad, Z. (2022) Why End-to-End (E2E) Testing is Often Good Enough - Semaphore, Semaphore. Available at: <https://semaphoreci.com/blog/e2e-testing>.
- Sahoo, C. (2024) What is Security Testing and Why is it Important for Businesses?, Qualysec | Penetration Testing Services and Solutions. Available at: <https://qualysec.com/importance-of-security-testing-for-your-business/>.
- Srinivasan, N. (2024) Importance of Performance Testing | Why Do I Need it? Digital Engineering & Technology | Elearning Solutions | Digital Content Solutions. Available at: <https://www.hurix.com/the-need-for-performance-testing/>.
- Gill, N.S. (2022) 10 Principles of User Interface Design | Ultimate Guide, XenonStack. Available at: <https://www.xenonstack.com/insights/user-interface-design-principles>.
- Gillis, A.S. (2020) Web server, WhatIs. Available at: <https://www.techtarget.com/whatis/definition/Web-server>.
- Packetlabs (2022) Packetlabs. Available at: <https://www.packetlabs.net/posts/dynamic-pages/>.
- Sucuri (2024) Sucuri. Available at: <https://sucuri.net/guides/website-security/>.
- Murray, L. (2023) What is Database Security | Threats & Best Practices | Imperva, Learning Center. Available at: <https://www.imperva.com/learn/data-security/database-security/>.
- Merixstudio (2020) Merixstudio. Available at: <https://www.merixstudio.com/blog/black-box-testing>.

- Rana, K. (2023) *White Box Testing*, ArtOfTesting. Available at: <https://artoftesting.com/white-box-testing>.
- Prey Blog (2023). Available at: <https://preyproject.com/blog/how-to-prevent-data-breaches-5-essential-tips>.
- S, B. (2024) What Is Scrum Methodology? & Scrum Project Management, Nimblework. Available at: <https://www.nimblework.com/agile/scrum-methodology/>.
- Ruhul (2024) FYP UI and UX considerations of my project, Google Docs. Available at: https://docs.google.com/forms/d/e/1FAIpQLSeKp20jV1rkMGiK7baU0Bkgqrcso1zsxfdKyEkDEwKOMrf8qw/viewform?usp=sf_link.
-

10. Bibliography

Include here a list of general reading items (books, papers, websites, etc.). List the items in alphabetical order, using Harvard style to describe them.

- Fontanive, S. (2021). FOOTBALL ANALYTICS: A LITERATURE ANALYSIS FROM 2010 TO 2020 Dissertation presented as the partial requirement for obtaining a Master's degree in Information Management. [online] Available at: <https://run.unl.pt/bitstream/10362/119540/1/TGI0409.pdf>.
- Katrien Koppo (2023). Recreational Football Training Increases Leg-Extensor Velocity Production in 55- To 70-Year Old Adults: A Randomised Controlled Trial. Journal of sports science and medicine, [online] pp.345–357. doi:<https://doi.org/10.52082/jssm.2023.345>.

Appendix I - Figures

Provide additional material, if appropriate, in separate appendices.

Use one Appendix to provide a link to an online video demo of the project.

Do not include the entire code in print as an appendix.

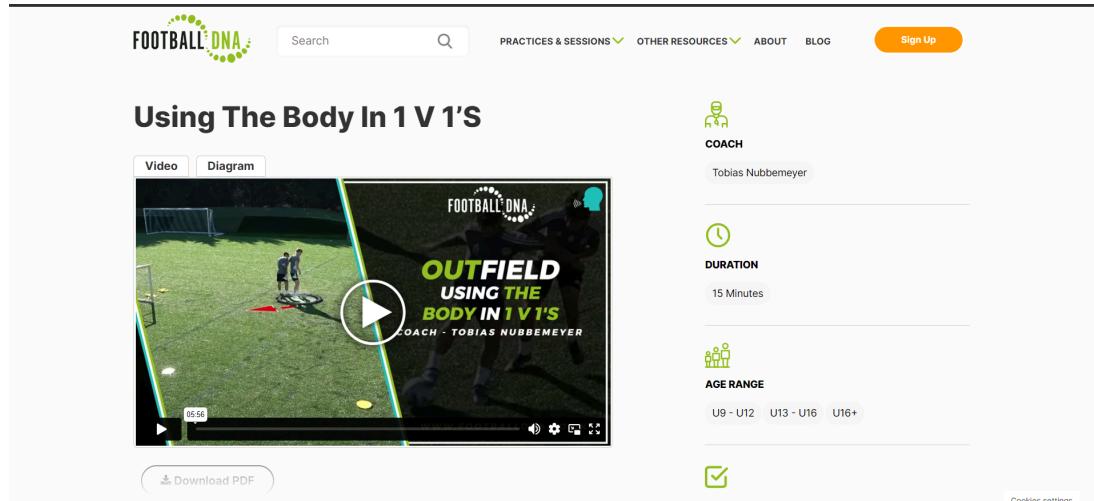


Figure 1: Screenshot from FootballDNA highlighting a lack of written instructions.

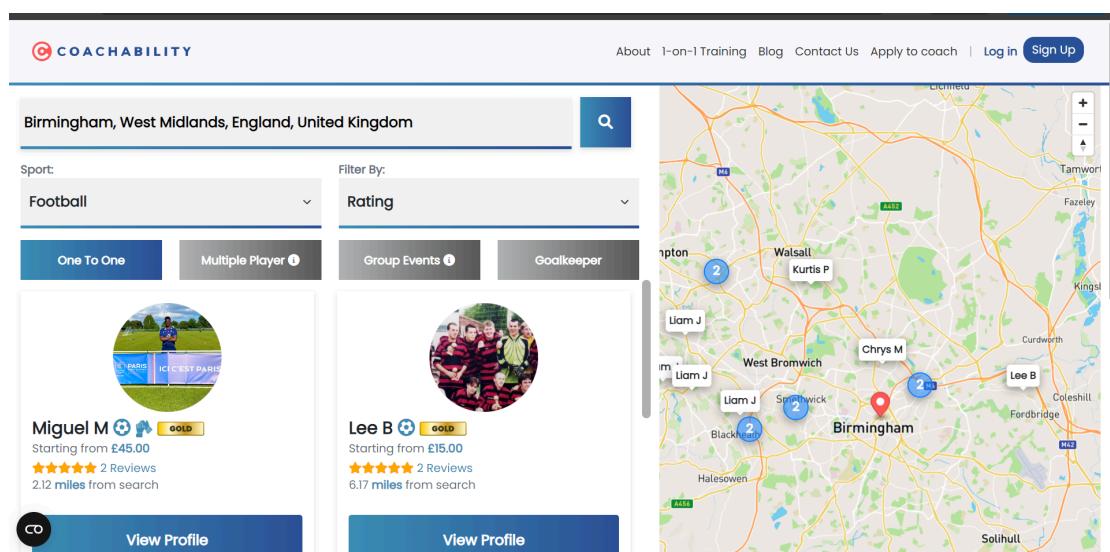
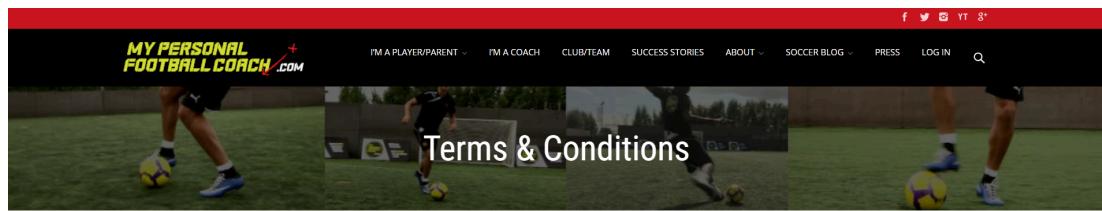


Figure 2: Screenshot from Coachability highlighting a lack of coaches in certain areas.



Please read all these terms and conditions.

As we can accept your usage of My Personal Football Coach services and make a legally enforceable agreement without further reference to you, you must read these terms and conditions to make sure that they contain all that you want and nothing that you are not happy with.

Application

1. These Terms and Conditions will apply to the usage of any My Personal Football Coach sites and the purchase of the services and goods by you (the **Customer or you**). We are My Personal Football Coach a company registered in England and Wales under number 09747177 whose registered office is at Flat 1 Abingdon Mansions, London, W8 6AD with email address info@mypersonalfootballcoach.com; (the **Supplier or us or we**).
2. These are the terms on which we sell all Services to you. Before placing an order on the Website, you will be asked to agree to these Terms and Conditions by confirming your Order. You can only purchase the Services and Goods from the Website if you are eligible to enter into a contract and are at least 18 years old. For persons under 18 years of age a parent or guardian of at least 18 years of age must agree to the terms.

Interpretation

1. **Consumer** means an individual acting for purposes which are wholly or mainly outside his or her trade, business, craft or profession;
2. **Contract** means the legally-binding agreement between you and us for the supply of the Services;
3. **Delivery Location** means the Supplier's premises or other location where the Services are to be supplied, as set out in the Order;
4. **Durable Medium** means paper or email, or any other medium that allows information to be addressed personally to the recipient, enables the recipient to store the information in a



Figure 3: Screenshot from My Personal Football Coach showing the age restriction to join.

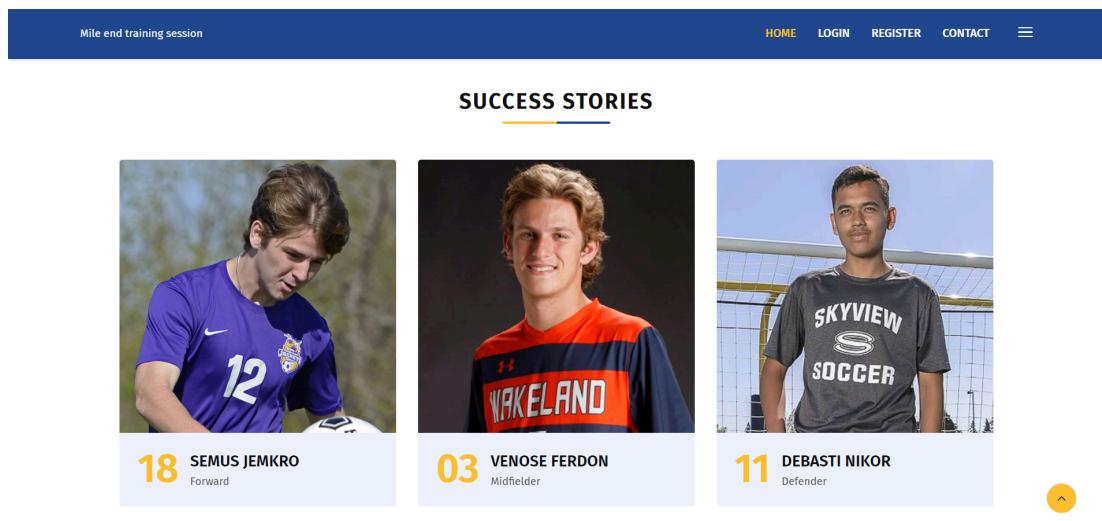


Figure 4: Screenshot from my application showing success stories

Most used programming languages among developers worldwide as of 2023

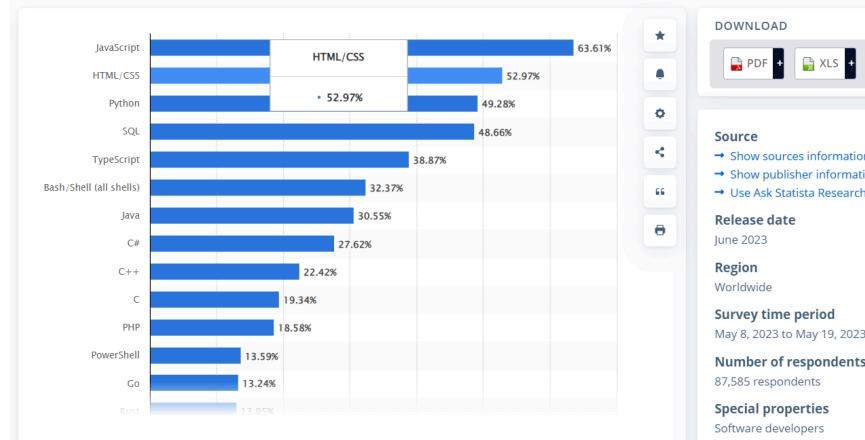


Figure 5: Screenshot from Statista (2024): Showing the popularity of HTML.

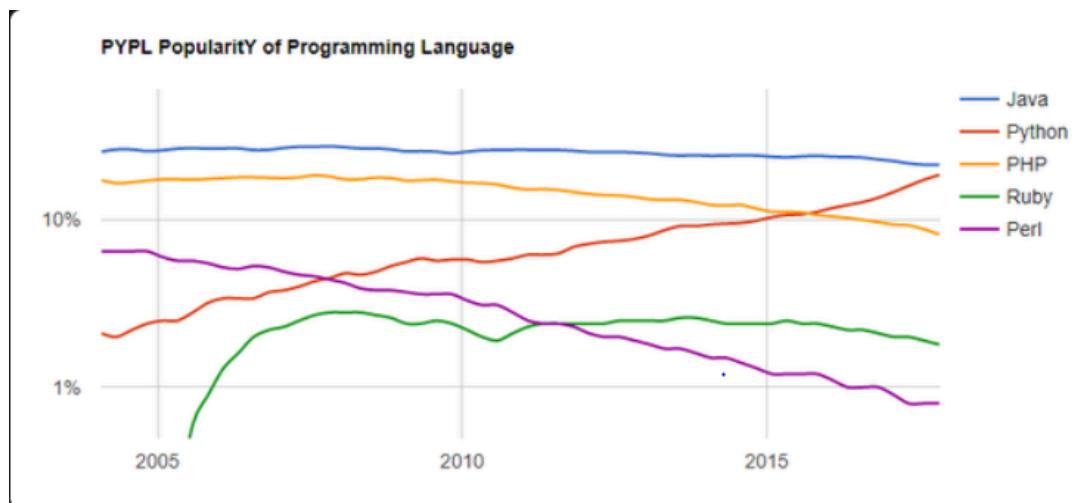


Figure 6: Graph from Quora (2017): Showing less of a trend to use PHP.

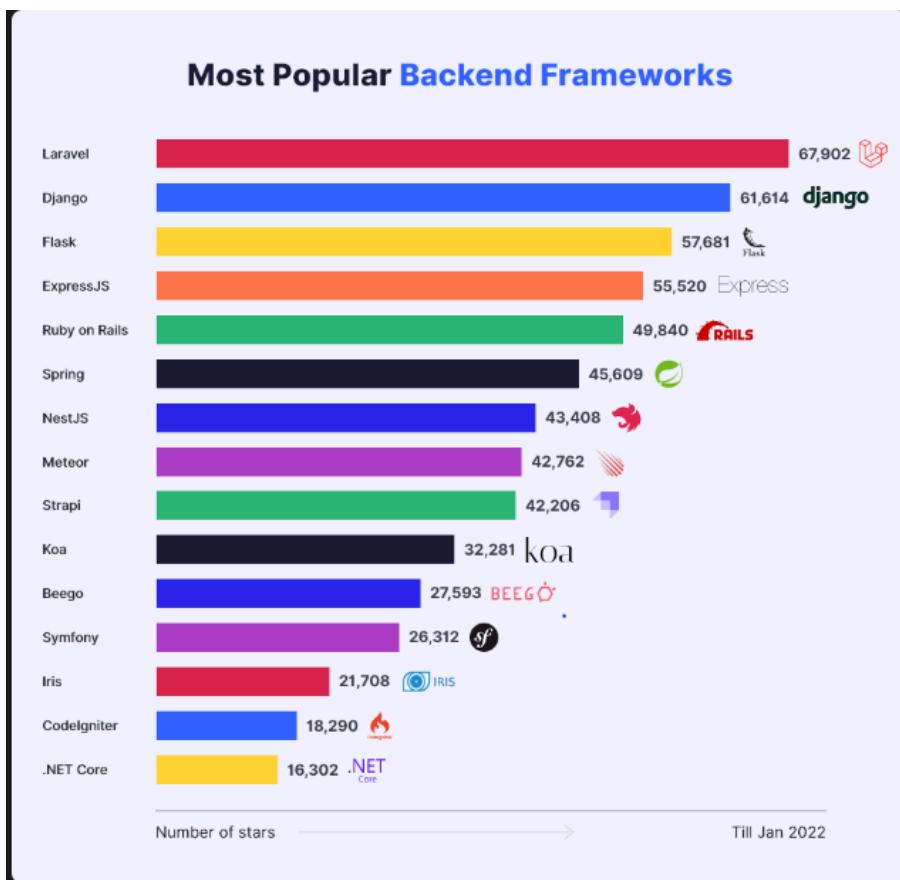


Figure 7: Graph from Webmobtech (2023): Showing the popularity of Laravel.

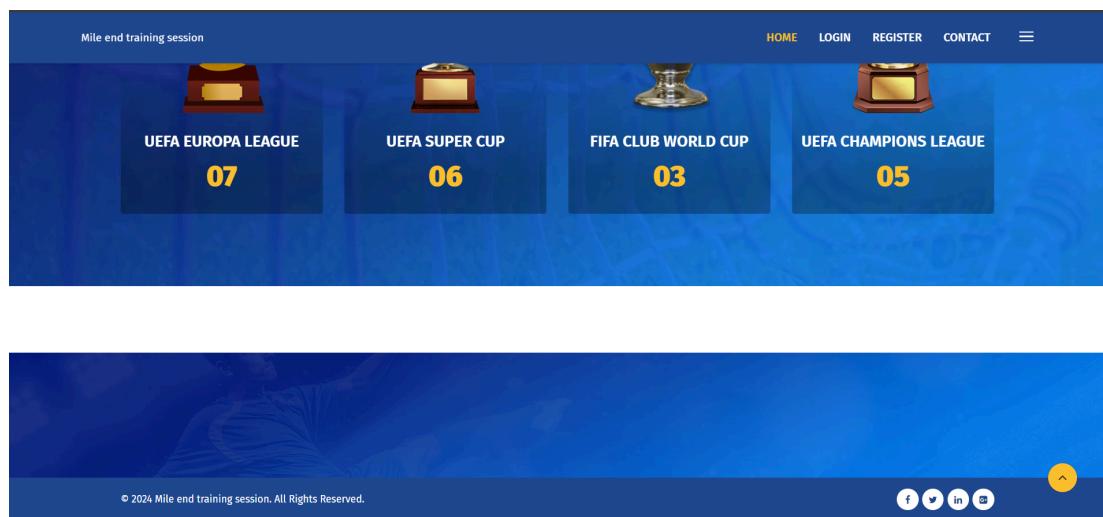


Figure 8: Screenshot from my project showing a copyright notice and branding.

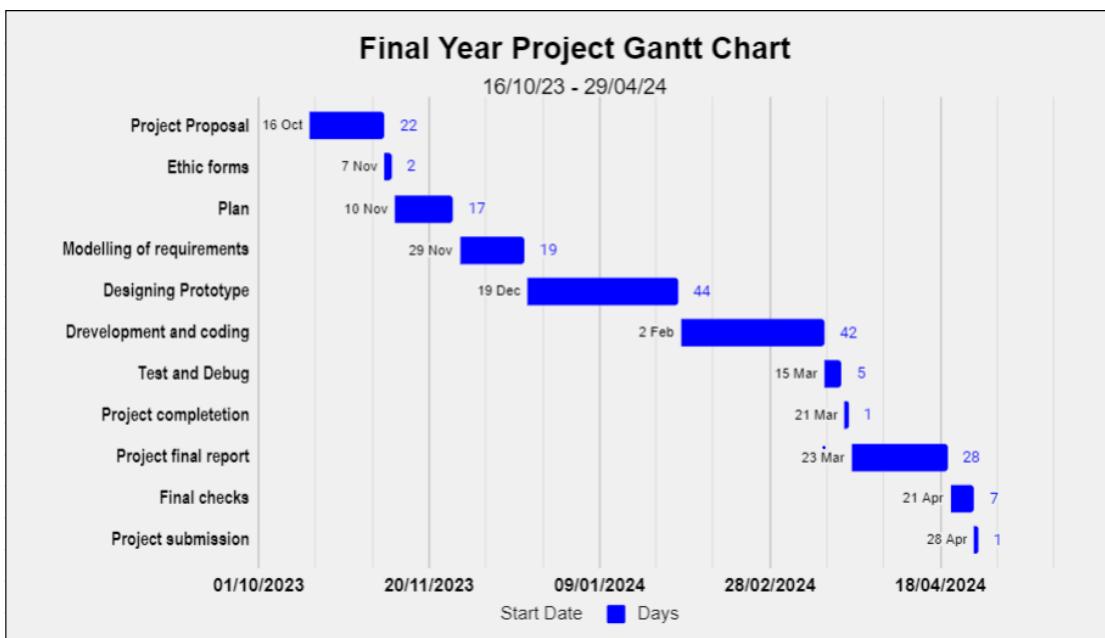


Figure 9: My project Gantt chart showing my project progress

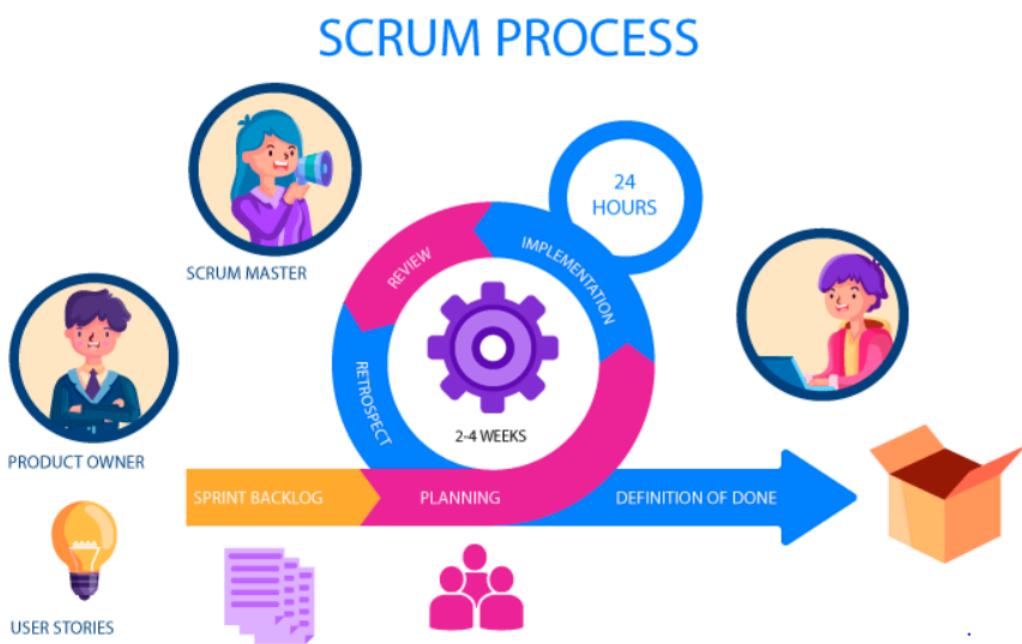


Figure 10: Diagram of the Scrum process from S, B. (2024)

Is the navigation on my website easy to understand?

23 responses

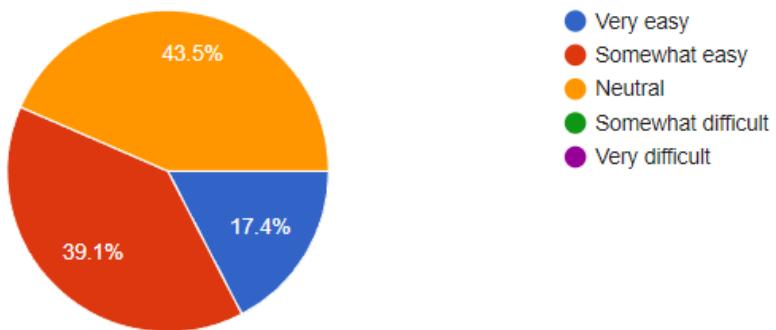


Figure 11: Google form conducted to get feedback from users about my site considering UX in this question considering the navigation. Ruhul (2024)

How quickly do you find what you are looking for on my website?

23 responses

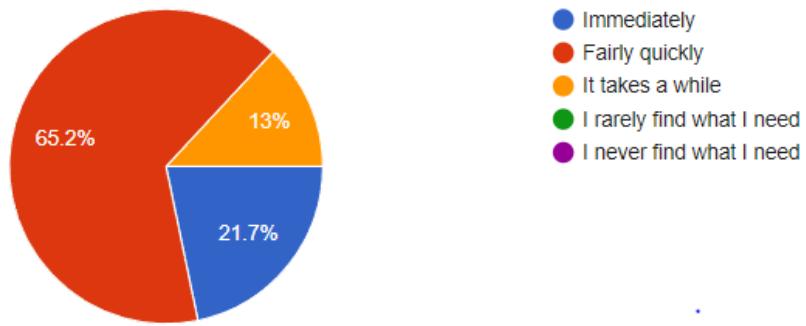


Figure 12: Google form conducted to get feedback from users about my site considering the UI in this question about how quick they can complete a task. Ruhul (2024)

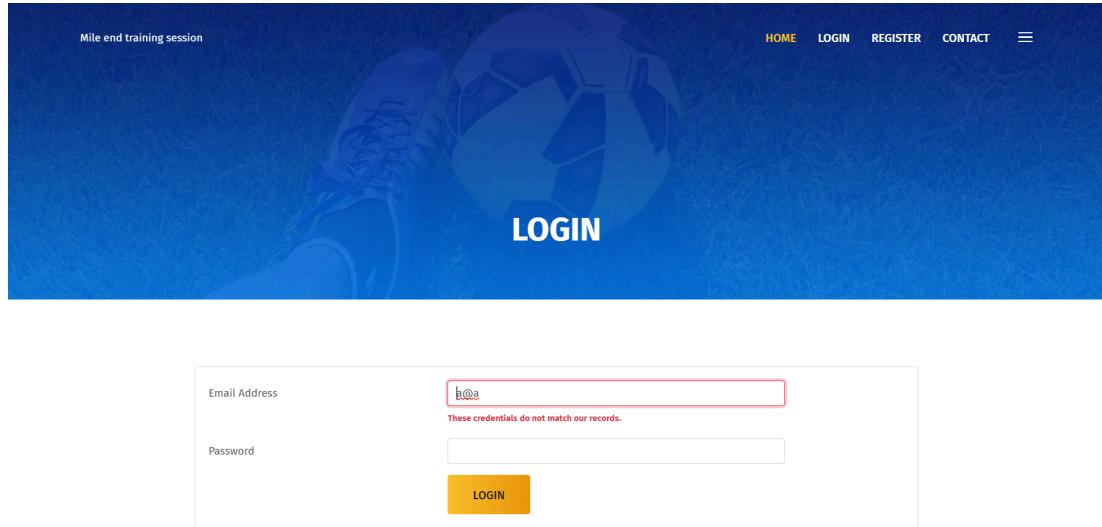


Figure 13: Screenshot from my application showing how I have considered principles in UI.

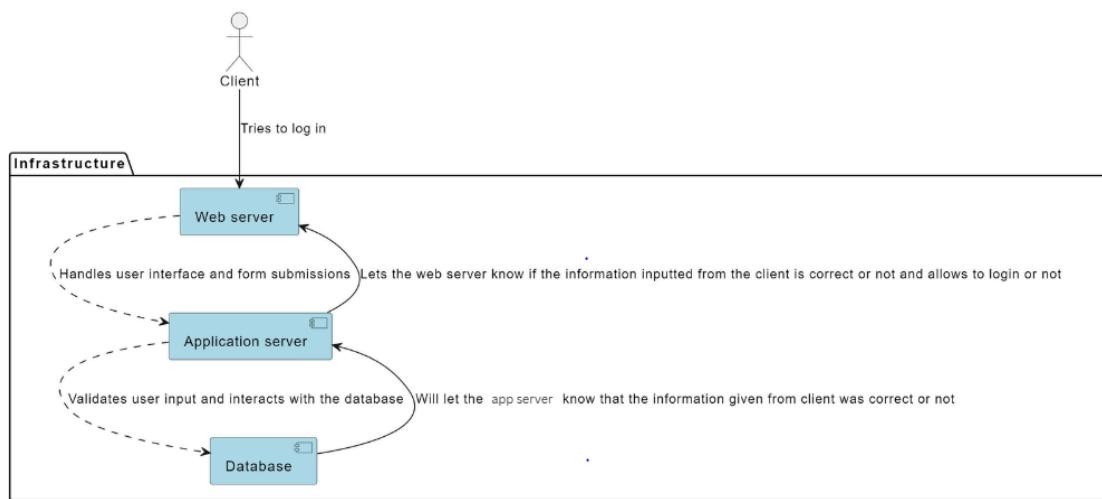


Figure 14: Diagram showing how the software infrastructure would work for my project example when a client tries to log in.

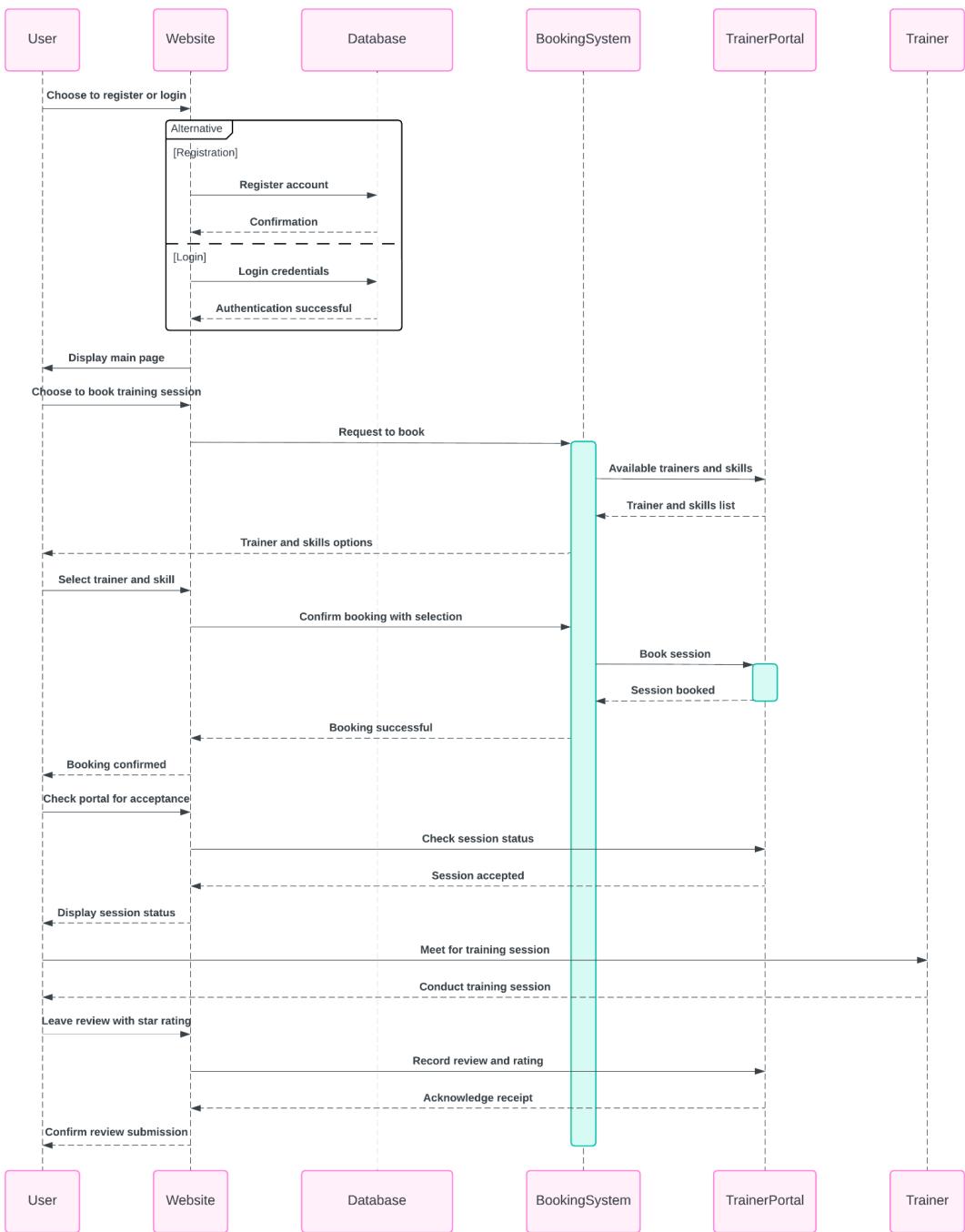


Figure 15: Sequence diagram that shows how the User side will interact with my project.

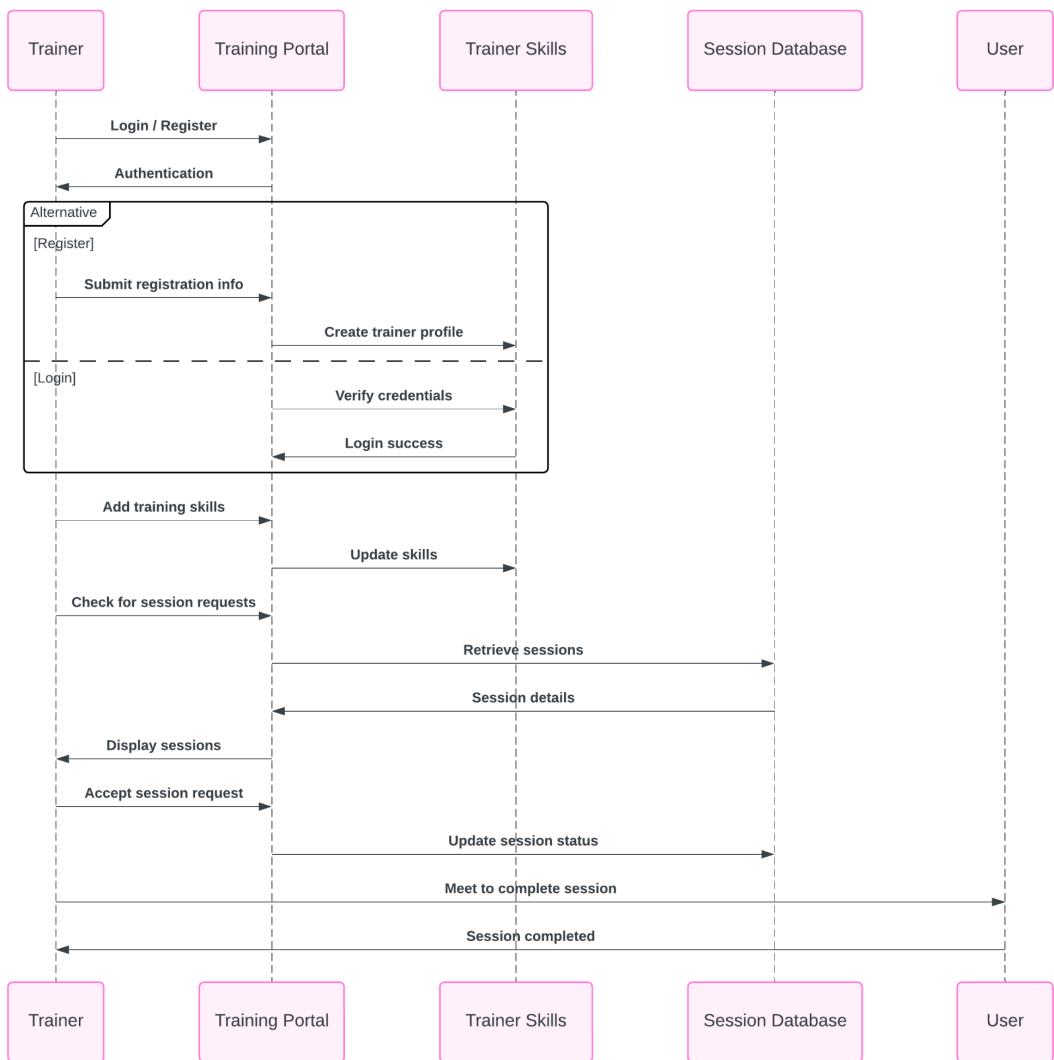


Figure 16: Sequence diagram that shows how the Trainer side will interact with my project.

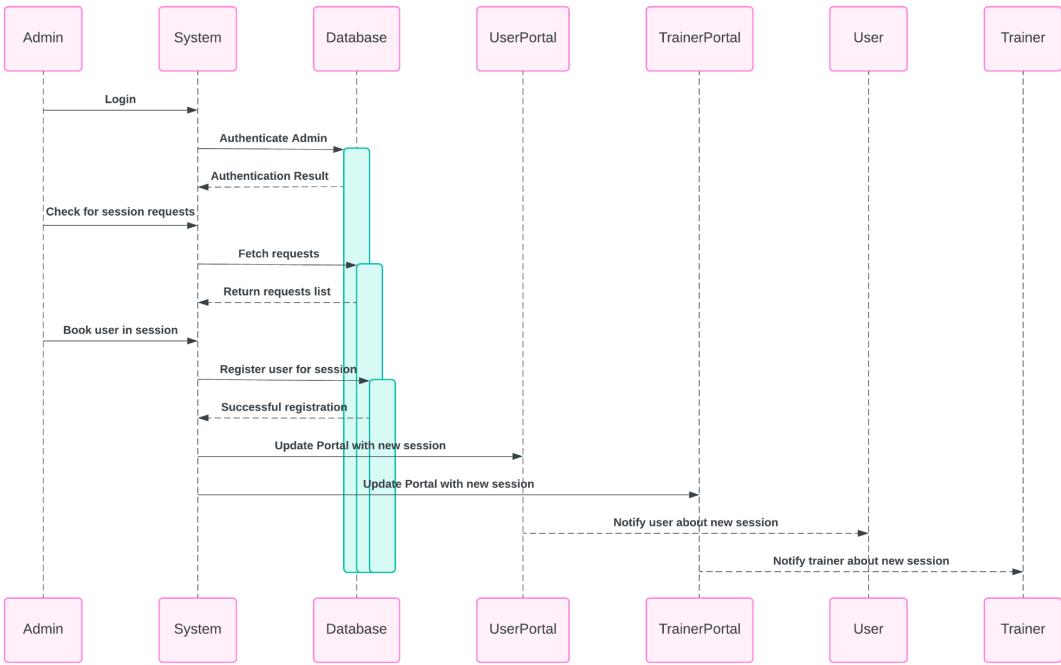


Figure 17: Sequence diagram that shows how the Admin side will interact with my project

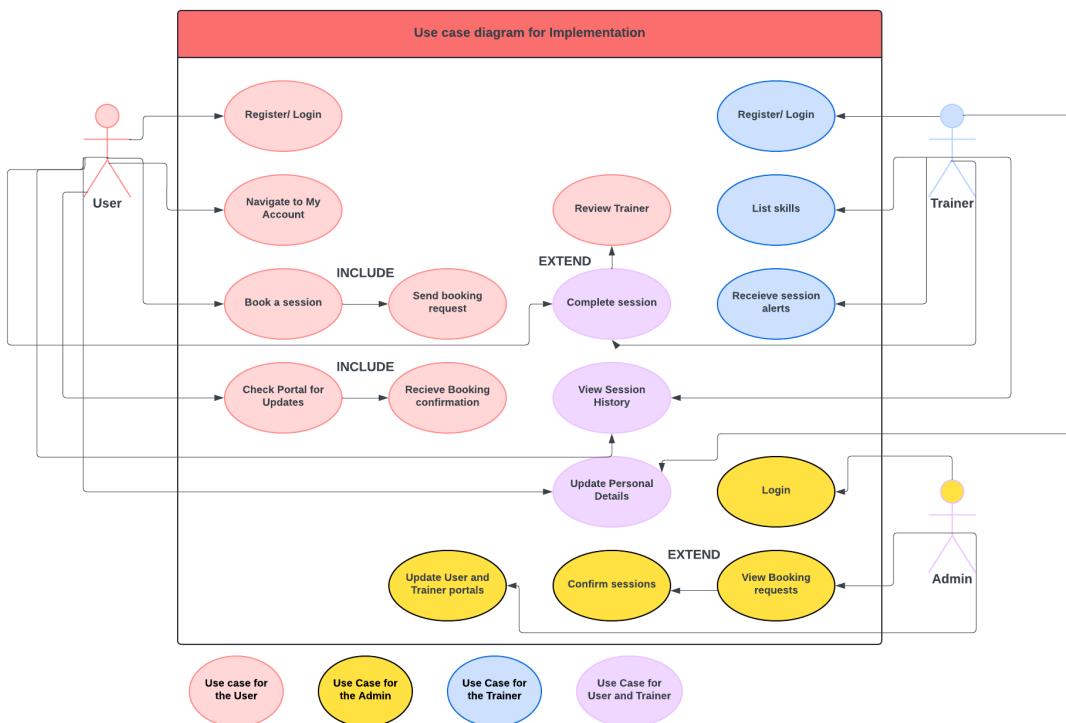


Figure 18: An Updated Use Case Diagram showing every implementation for my project.

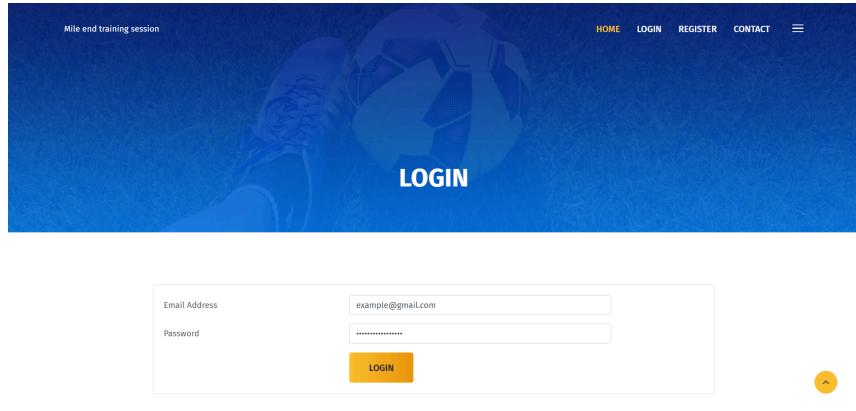


Figure 19: My projects login page

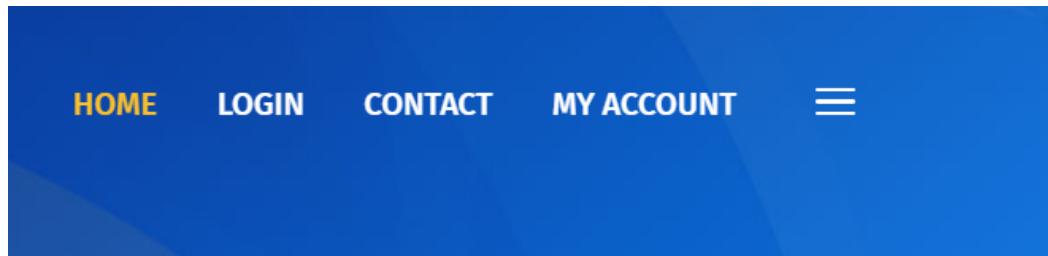


Figure 20: User will press the My Account page to then book their sessions

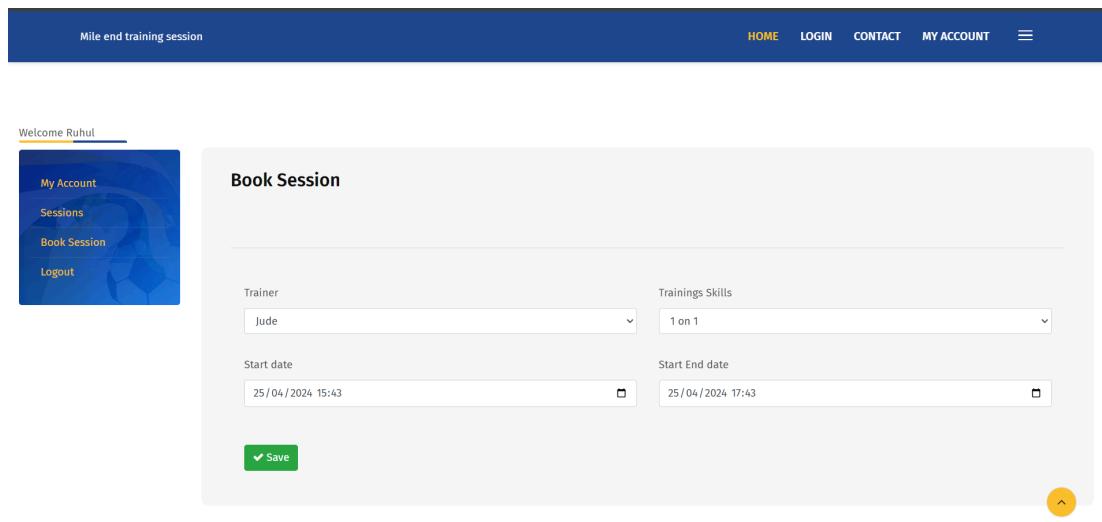


Figure 21: My projects book session page available for users.

Welcome Ruhul

Sessions

ID	Trainer	User	Session for Skill	Start Date	End Date	Status
3	Jude	Ruhul	1 on 1	2024-04-25T15:43	2024-04-25T17:43	complete -- Add Review
2	Mohammed Ruhul	Ruhul	defending	2024-04-18T15:42	2024-04-18T17:42	accept

Figure 22: My Projects page which shows users sessions page

Welcome Ruhul

Write Your Review

★★★★★

Click on a star to change your rating 1 - 5, where 5 = great! and 1 = really bad

Your Review:

the trainer was very good

Submit

974 Characters remaining

Figure 23: My Project shows the Review page after users have completed their training session.

Welcome Ruhul

Profile Update

Name	Email
Ruhul	example@gmail.com
Surname	D.O.B
Amin	12/07/2003
Gender *	
<input checked="" type="radio"/> Male	<input type="radio"/> Female

UPDATE

Figure 24: My Project showing the My Account page which allows the User/ Trainer to update some details.

The screenshot shows a registration form titled "Mile end training session". The form includes fields for Name, Surname, D.O.B. (with a date input field), Gender (Male selected), Email Address, Password, Confirm Password, and User type (Trainer selected). A yellow "REGISTER" button is at the bottom.

Figure 25: My Project showing the Registration Page for trainers and users to create accounts.

The screenshot shows a skills management interface. On the left, a sidebar for "Welcome Jude" lists "My Account", "Skills" (selected), "Sessions", and "Logout". The main area is titled "Skills" and contains a "Title" input field with "First Touch" and a "SUBMIT" button. To the right, a preview window shows a list of skills: "Title", "1 Dribbling", and "2 1 on 1". The taskbar at the bottom displays various application icons and system status information.

Figure 26: My project showing the page where Trainers can list down skills they can teach to Users.

The screenshot shows a web-based administration interface for a sports booking system. The top navigation bar includes 'Mile end training session' and 'Admin'. On the left, there's a sidebar with 'Users', 'Trainers', and 'Booking' (which is selected). The main content area is titled 'Session' and contains a table of booking requests. At the top of the table are buttons for 'Copy', 'CSV', 'Excel', 'PDF', and 'Print'. A search bar labeled 'Search:' is also present. The table has columns for 'Id', 'Trainer', 'user', 'Session for Skill', 'Start date', 'End date', and 'Status'. The data in the table is as follows:

ID	Trainer	User	Session for Skill	Start Date	End Date	Status
1	Mohammed Ruhul	Ruhul	dribbling	2024-03-24T18:07	2024-03-24T21:07	Complete
2	Mohammed Ruhul	Ruhul	defending	2024-04-18T15:42	2024-04-18T17:42	Accept
3	Jude	Ruhul	1 on 1	2024-04-25T15:43	2024-04-25T17:43	Complete

Below the table, it says 'Showing 1 to 3 of 3 entries' and has 'Previous' and 'Next' buttons.

Figure 27: My projects Admin panel where they can view Booking requests.

Appendix II - Video Demo

<https://youtu.be/msi7x8Sx25M>