

# Development of a Gym Membership System Using PHP and XAMPP: A Systematic Analysis

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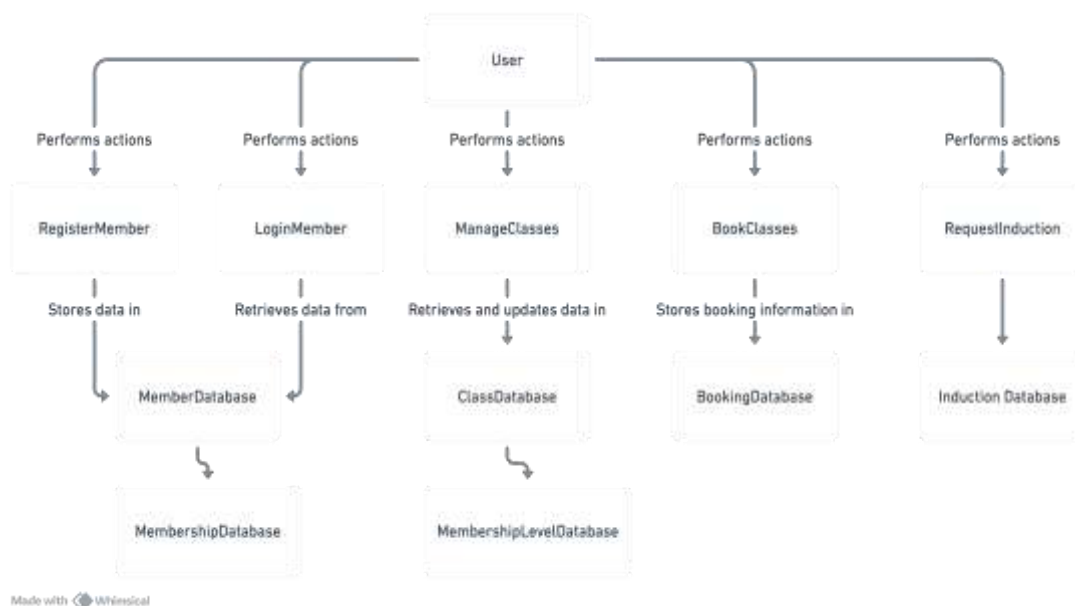
## 1. Introduction

This report outlines the design and development of a gym membership management system, that helps to manage the operations within a gym setting. It provides a robust platform to manage gym memberships such as registering new members, login in members, updating the existing details, booking classes, inductions and many more. This system ensures seamless operational flow, and an organised approach within the management. This web page is designed and developed to enhance the user experience for gym members and the admin staff to by providing a user-friendly interface for interaction. This website is developed using web technologies such as PHP on the Xampp server.

A detailed system analysis, interface design, prototype description, and code explanation, along with a comprehensive description of the system's capabilities and design rationale is explained in this report.

## 2. System Analysis

### 2.1 Data Flow Diagram (DFD) Analysis



**Fig 1.1 Data Flow Diagram**

The DFD gives a detailed overview of the lifecycle of data within the system, depicting how data moves around the system, as how actions interact to maintain the integrity of the system.

### **2.1.1 User Input and Data Entry**

#### **Registering Members:**

The process is initiated when a gym member enters their personal details into the registration form. This data flows into the "Register Member" process, where it is validated and processed. After successful validation, this information is stored in the "Member Database." This database entry includes fields such as member ID, name, address, and contact details, forming the core of the member's profile.

#### **Logging In:**

When a member attempts to log in, their credentials such as username and password are entered. This data is then sent to the "Login Member" process where it is compared and checked with the stored credentials in the "Member Database" for authentication. If the credentials match, access is granted, otherwise, the login attempt is denied, and the user receives an error message.

### **2.1.2 Data Processing and Management**

#### **Managing Classes:**

The gym administrators update class information such as class schedules, descriptions, instructor details through the admin interface and this flows to the "Manage Classes" process. After processing, the updated or new class information is stored in the "Class Database." which is essential for members who wish to view available classes and for booking.

#### **Booking Classes:**

Users book classes through a user interface where they can select their desired class from a list queried from the "Class Database." and is processed by the "Book Classes" process, where booking details are stored in the "Booking Database." Booking information includes member ID, class ID, and booking time. The "booking database" communicates with the "class database" to update the availability of classes.

### **2.1.3. Data Retrieval and Feedback**

#### **Retrieving Class Information:**

When a member logs into their dashboard to look at classes, a request to retrieve class data is sent from the "Class Database." This retrieved data is displayed to the member which includes details regarding schedules and availability, providing them updated information to enhance their decision making in booking classes.

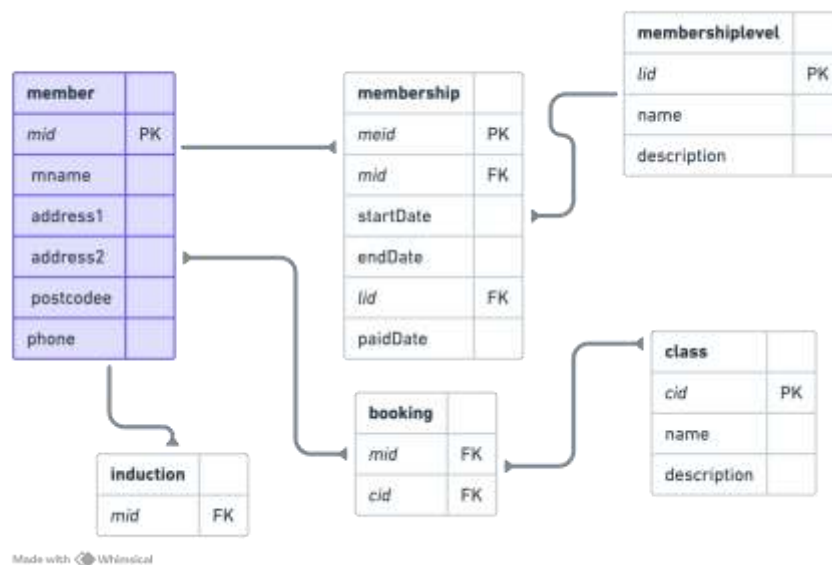
## Member Profile Access and Updates:

Members can navigate to their profile page to view and update their personal information. If a member requests to see their details, "Fetch Member Details" process retrieves this information from the "Member Database." When updates are made, the "Update Member Details" process is initiated, where changes (such as a new address or phone number) are submitted and stored back in the database.

### 2.1.4. Data Flow Between Processes

Data flows not only from users to processes and databases but also between processes. For example, the "Manage Members" and "Manage Bookings" processes must communicate to ensure that member status and current bookings are consistent. Similarly, processes like "Book Classes" and "Manage Classes" must interact to make sure that class capacity and booking status are updated in real-time.

## 2.2 Entity-Relationship (ER) Diagram Analysis:



**Fig 1.2 Entity Relationship Diagram**

The Entity Relationship Diagram (ERD) below depicts the underlying database schema (tables and columns) for a gym management website. The schema is vital for the functioning of this website which enables site users to register for gym membership, book classes, and conduct member induction sessions. To avoid data redundancies and guarantee the integrity of records, the design of the underlying database schema is normalized through the use of data tables.

Detailed Description of Entities and Their Relationships:

### 2.2.1 Member Entity

**Attributes:** Consists of mid (member ID), mname (member name), address details (address1, address2), postcode, and phone.

**Primary Key:** mid, uniquely identifying each member in the database.

**Technical Role:** This table is the key entity in a schema and directly or indirectly linked to all other entities. This is fundamental for managing member specific data, which is what any membership-oriented operation is all about.

### 2.2.2 Membership Entity

**Attributes:** Includes meid (membership ID), mid (linking to Member), startDate, endDate, lid (linking to Membership Level), and paidDate.

**Primary Key:** meid

**Foreign Keys:** mid references Member, and lid references Membership Level.

**Technical Role:** Manages the memberships in a gym. The foreign keys check relational integrity, ensuring that memberships are linked up correctly with both the members and also the levels of membership.

### 2.2.3 Membership Level Entity

**Attributes:** lid (level ID), name, and description.

**Primary Key:** lid

**Technical Role:** Depending on different levels of membership, customers are provided with different kinds of services or facilities priced in different ways. This table empowers the management of membership types to be easily manageable and adjustable, with the process of adding or modifying membership level not requiring to change the structure of the database.

### 2.2.4 Class Entity

**Attributes:** cid (class ID), name, and description.

**Primary Key:** cid

**Technical Role:** Shows the classes that the gym offers. This table is important because the classes' schedules, details and availability can easily be updated and inquired.

### 2.2.5 Booking Entity

**Attributes:** mid and cid.

**Technical Role:** A record is created for each reservation. It's a many-to-many model: a Member booked a Class.

**Normalisation:** A composite key of mid and cid guarantees that each booking is uniquely identified as a personally-held booking by a specific combination of member and class. Duplicate bookings for the same class by the same member are not allowed.

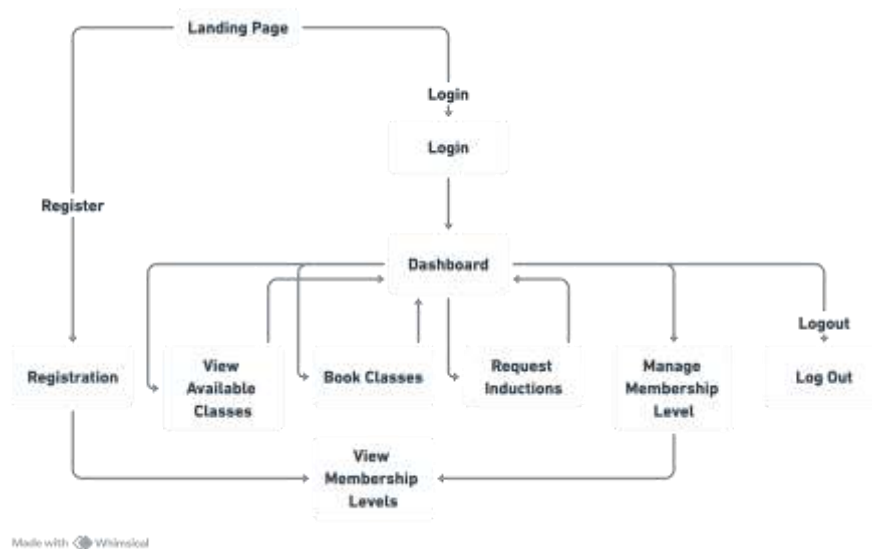
### 2.2.6 Induction Entity

**Attributes:** Only mid shown, implying a relationship to the Member.

**Foreign Key:** mid

**Technical Role:** Tracks that the person is a member because they have undergone an induction process. This may be another common induction requirement for members, but this still lacks date or status fields, so it must be a simple tracking mechanism, but may need to be expanded to cope with potential business rules.

## 2.3 Activity Flow Chart Analysis:



**Fig 1.3 Activity Flow Chart**

The activity flow chart in a website provides a visual representation of the sequence of actions a user performs within the system. The step-by step process is explained below:

### **2.3.1 Landing Page**

Once the user arrives on the landing page, this becomes the initial interaction point for any user. Here, visitors can learn about the gym, its services, and membership options. This page often includes navigation options to register as a new member or to log in for existing members.

### **2.3.2 Registration and Login**

#### **New Member Registration:**

From the landing page, new users choose to register. This process involves entering personal details such as name, address, email, and phone number, essential for creating a new membership account. Once the registration is complete, the system confirms their membership and navigates the user to their dashboard.

#### **Existing Member Login:**

Existing members select the login option, and enter their username and password. After successful authentication, the system grants access to their personal member dashboard. If authentication fails, the user is prompted to try again or recover their login details by “forgot my password” option.

### **2.3.3 Member Dashboard**

After user is logged in, they access the dashboard, which serves as the central hub for all member activities such as viewing personal membership details, upcoming classes, and any updates from the gym.

### **2.3.4 Booking and Managing Classes**

#### **View Available Classes:**

In the dashboard, members can view all available classes. This section retrieves data and displays class information from the Class Database, including timings, instructor details, and availability.

#### **Booking Classes:**

Members can book classes directly from the list of available sessions. This interaction involves class selection, confirmation of booking details, and saving the booking to “Booking Database”.

### 2.3.5 Membership Management

Members can request for inductions for using gym amenities. They can also manage their membership level, such as upgrading or downgrading their plans based on their preferences.

### 2.3.6. Session Termination

Once the activities are completed, the user can log out of the system. Logging out ensures that the session is securely closed and no further actions can be performed without re-authenticating.

<To be added>

## 3. Interface Design:

Following are the screenshots of our prototype

1. Home Page:

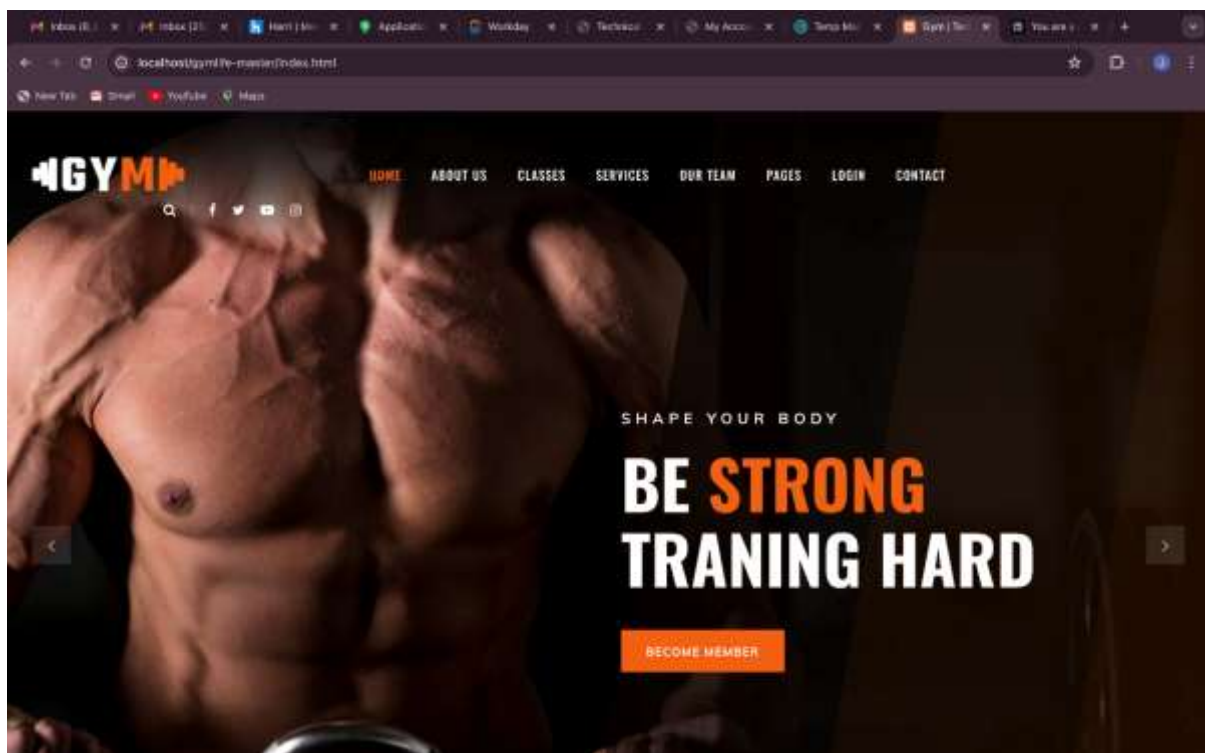


Fig.2.1



This is the homepage for our website. This screen includes hyperlinks to redirect the user to relevant pages. These links are: About us, Classes, Services, Out Team, Pages, Login and Contact. There is also a button which is labelled as "Become a member" which redirects the user to the registration page.

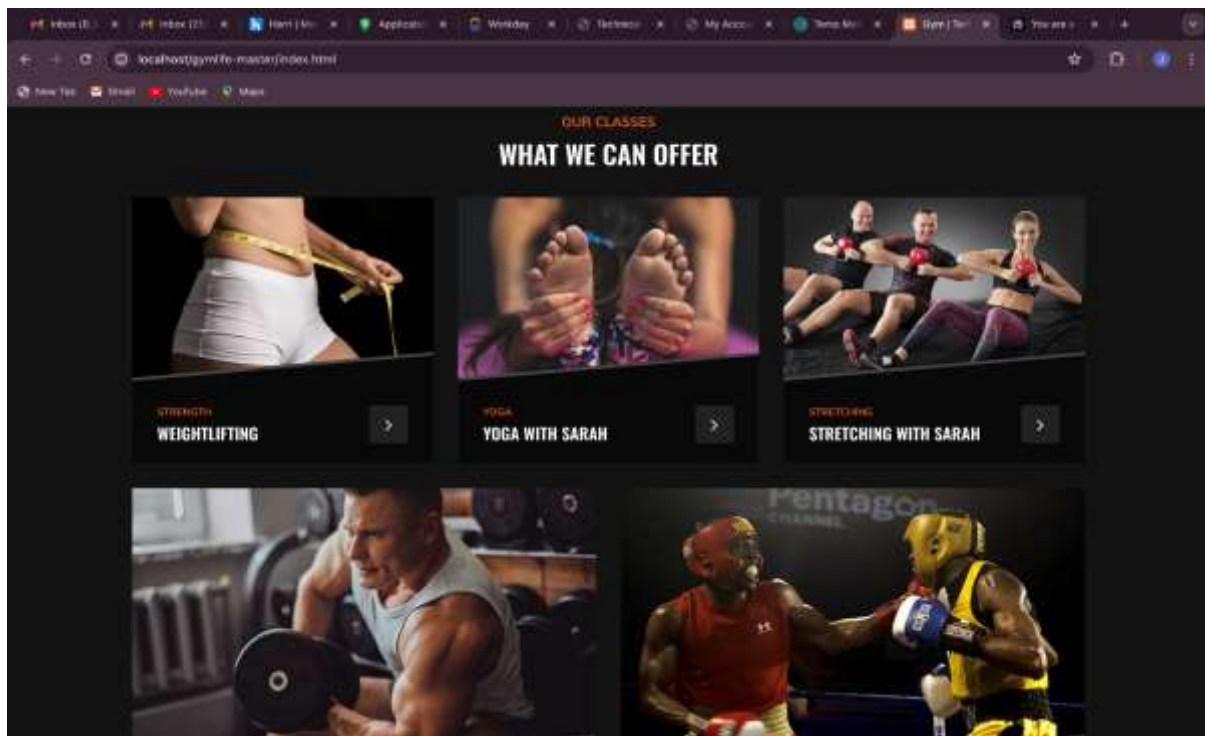
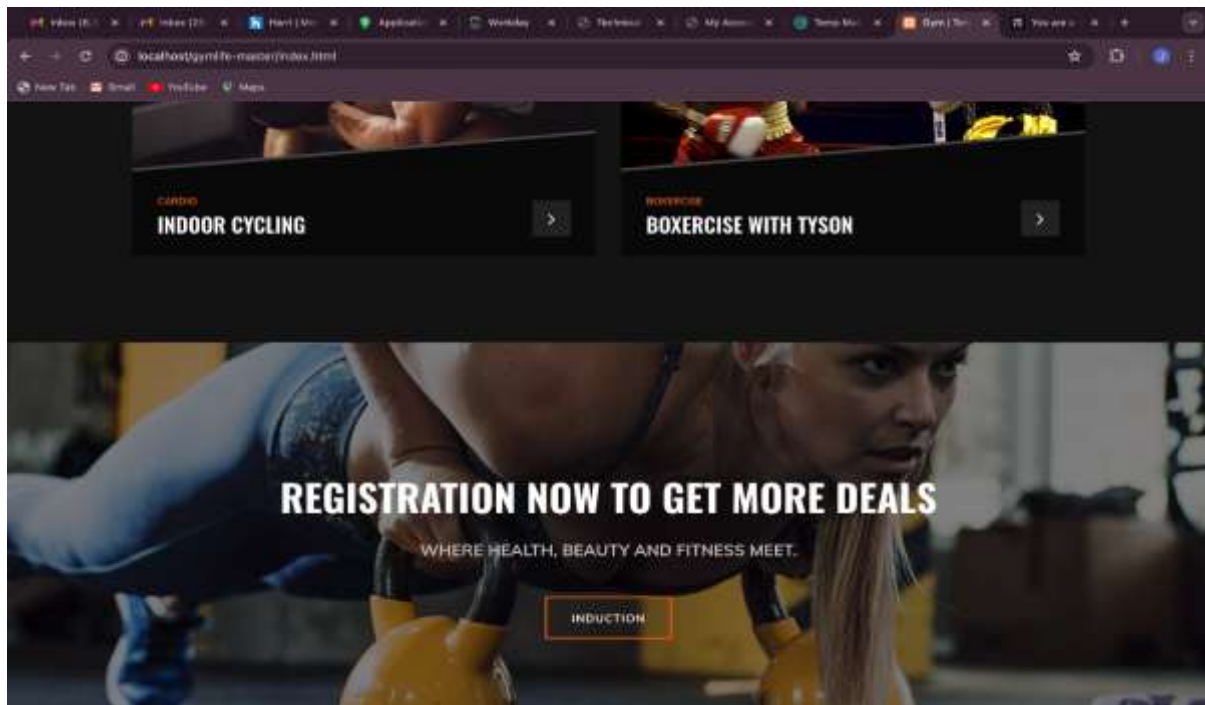
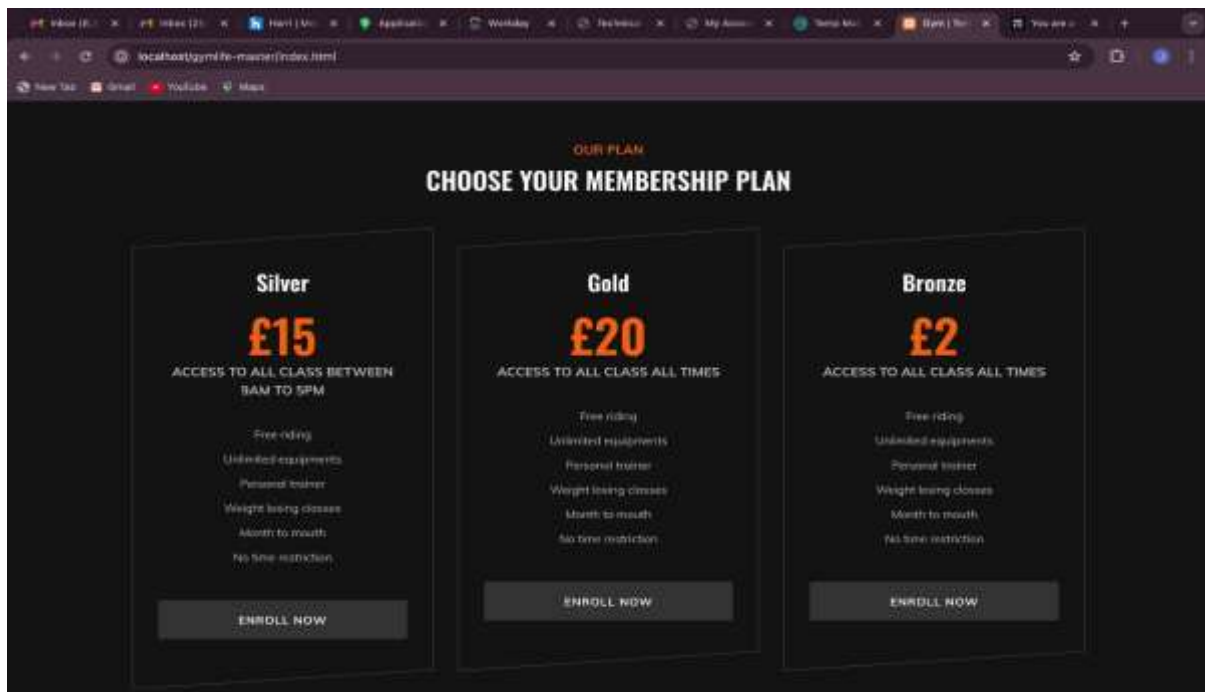


Fig2.2

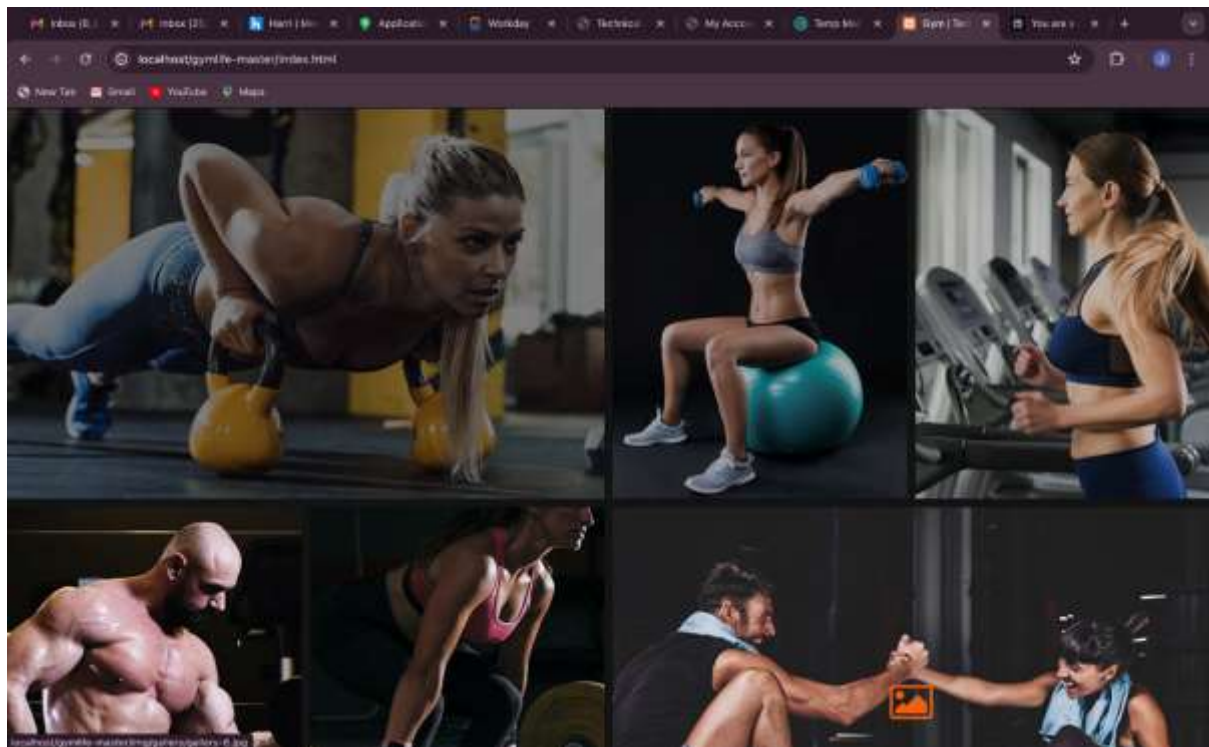
This image specifies the different classes and what they offer. These are specialized classes where the trainers conduct sessions with the registered members.



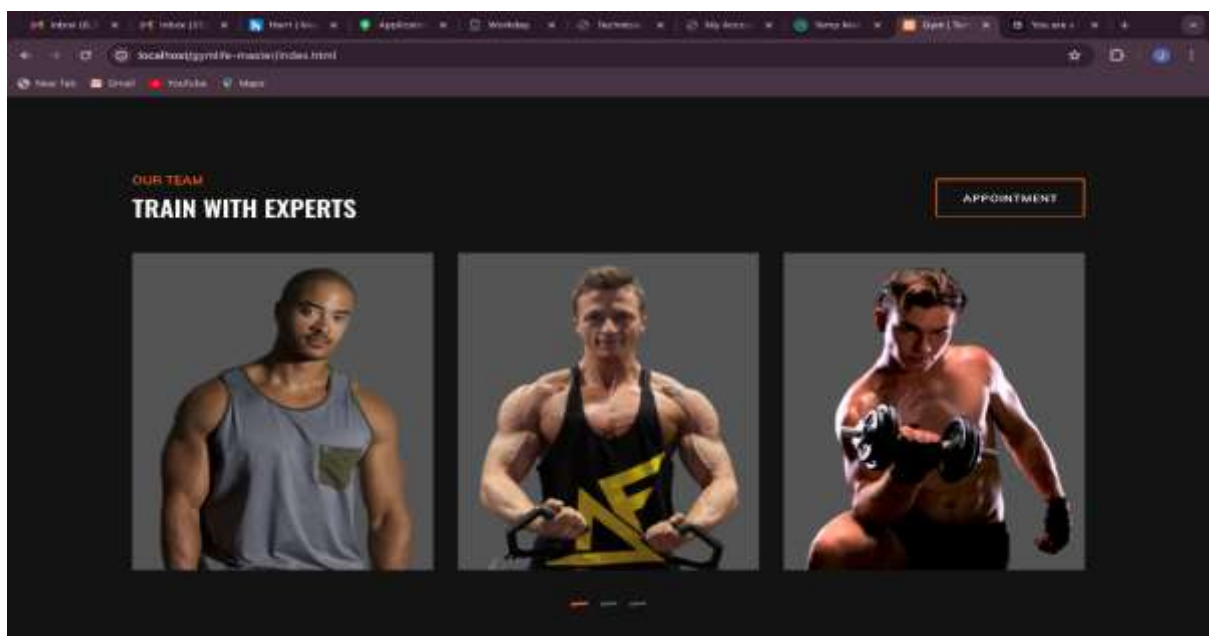
This image depicts the induction use case where the user is introduced to various offers and classes available.



This image represents the membership plans that the gym offers to users. Users can click on "Enrol now" for their specific required membership plan. Each plan has different programs which the users can access after enrolling.

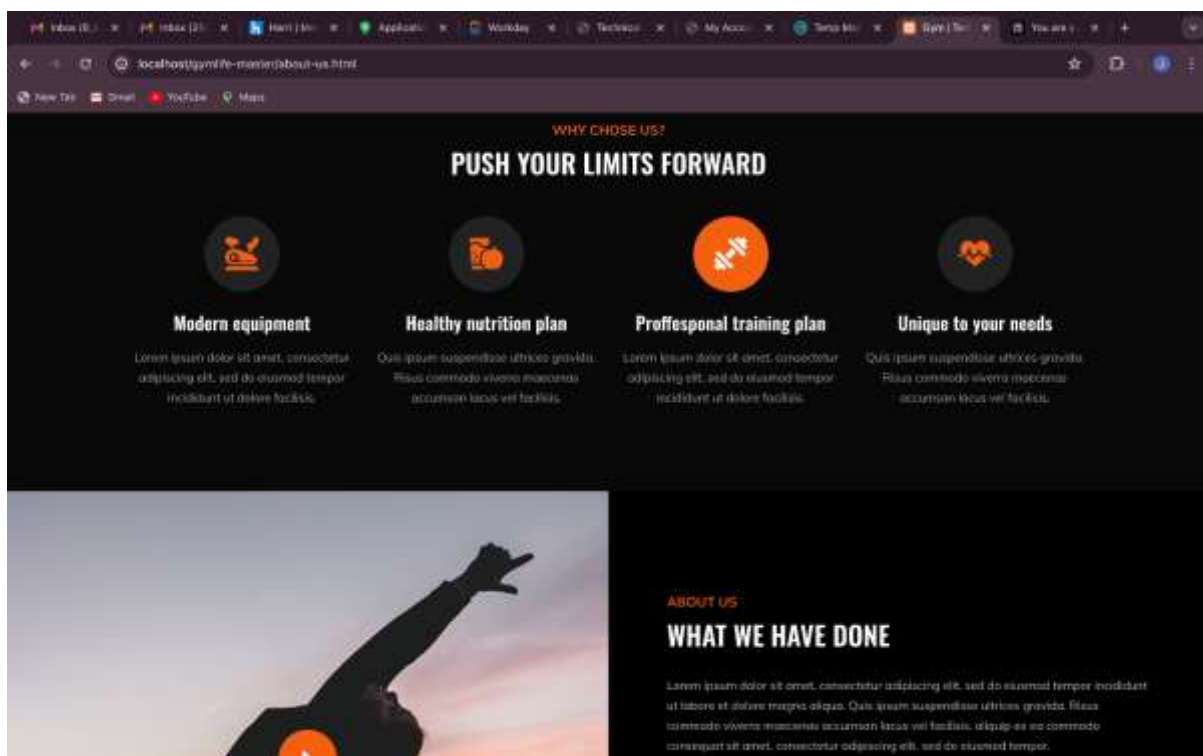
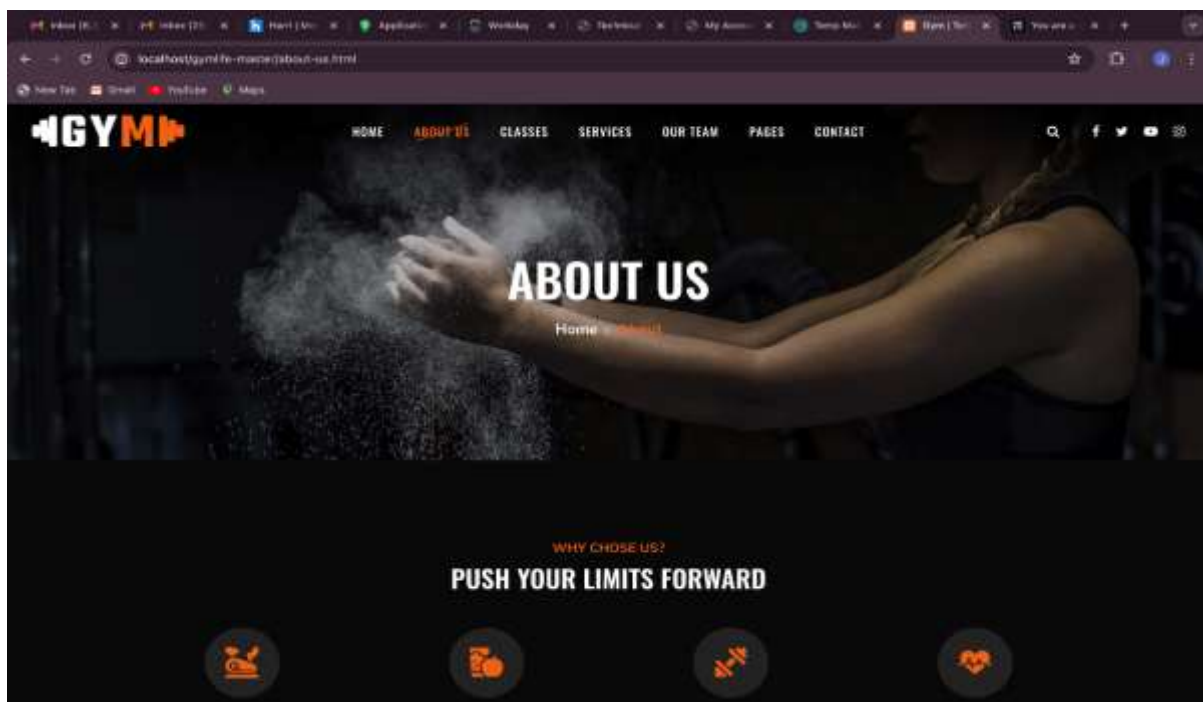


This screen depicts the images from the trainers which can be accessed by the users.



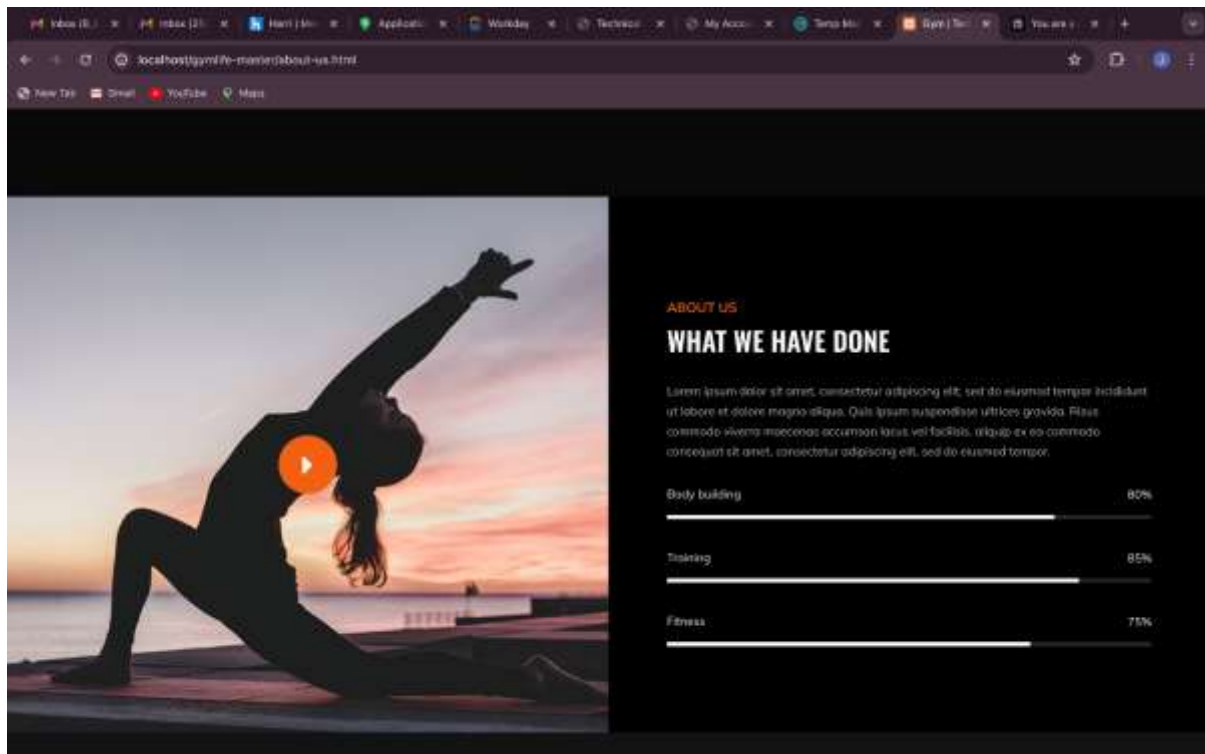
This image shows us experts specializing in their own craft. The users have the option to book an "Appointment" when they click on the button which is labelled as "Appointment".

## 2. About us Page:

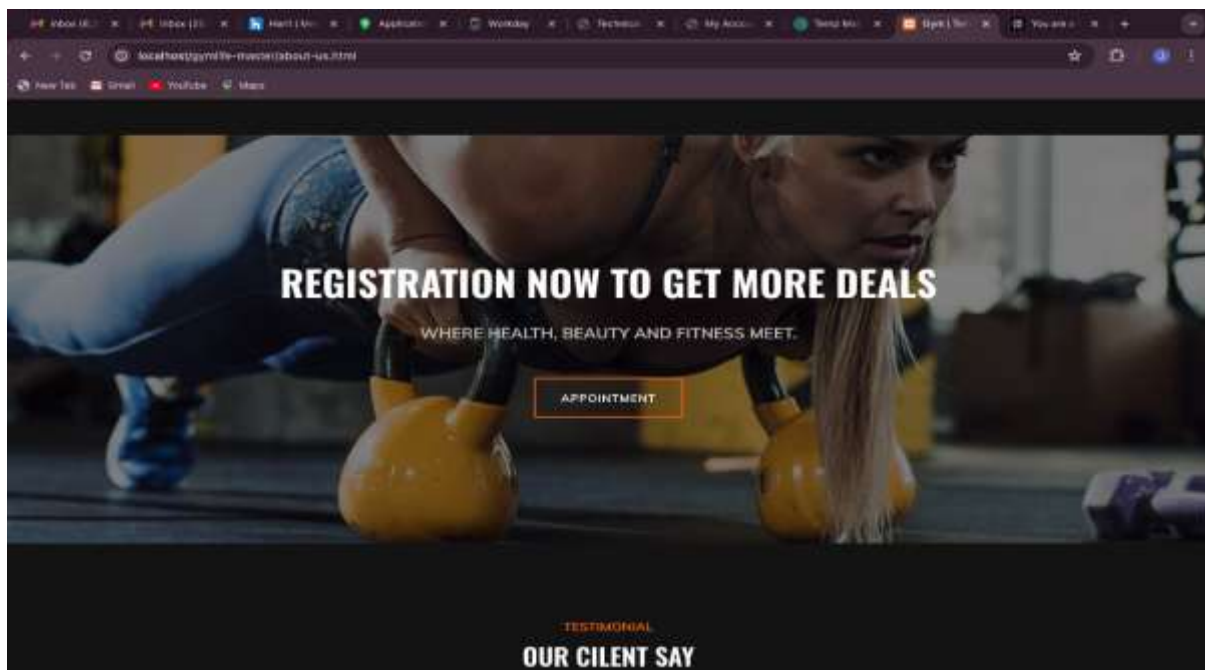


This image shows us the exclusive services that our gym provides. The icons are interactive where if the user hovers over them, they change the appearance.

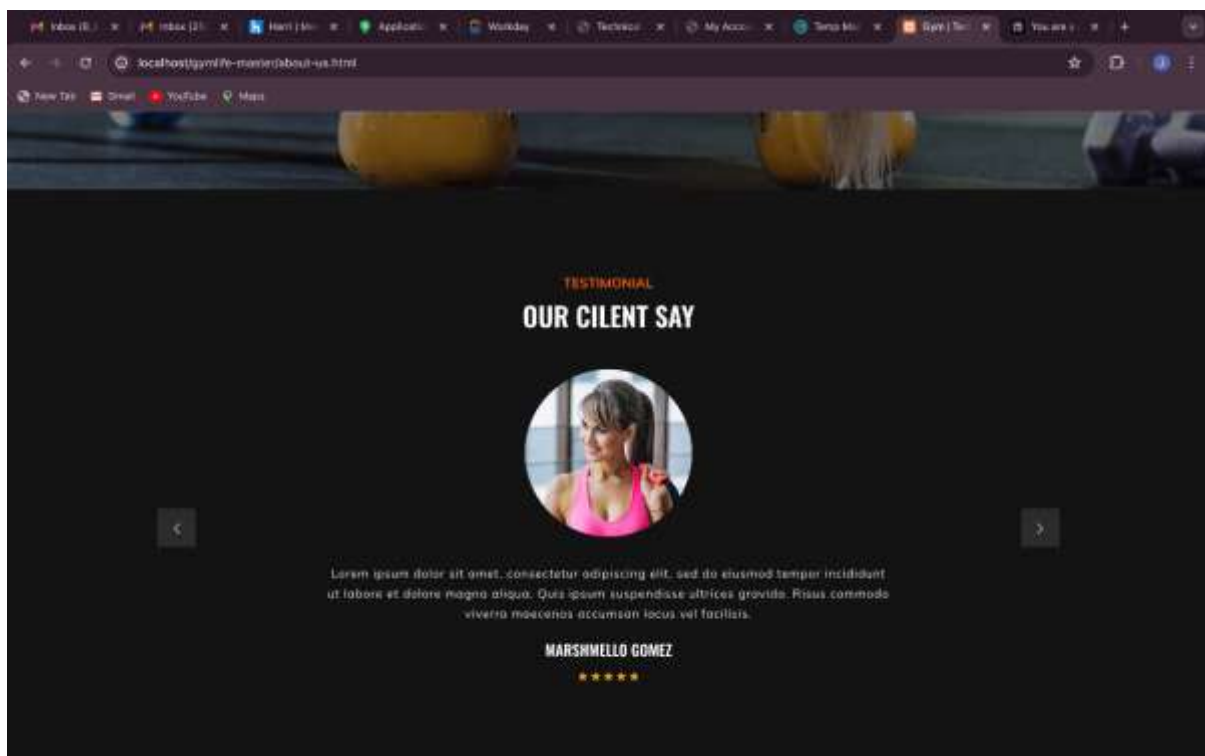
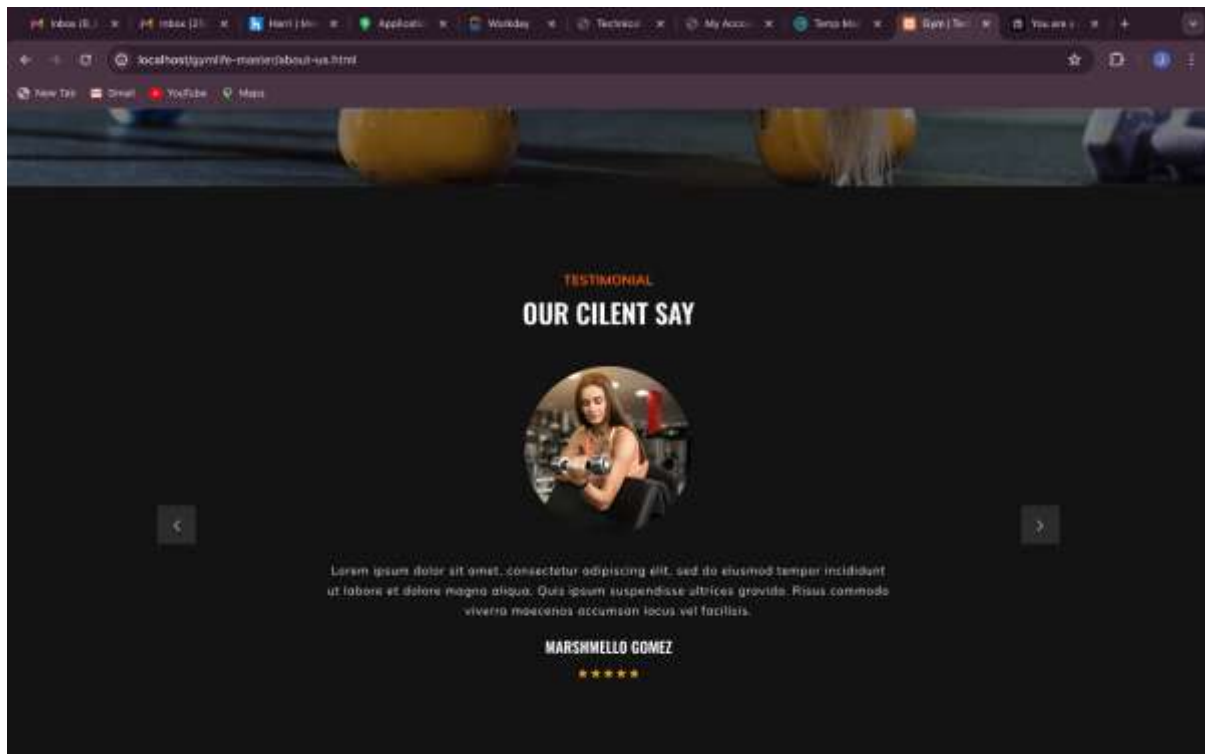




This image shows that we have included a video depicting the change that we have brought to our clientele and the overall ratio in different interests of the uses.

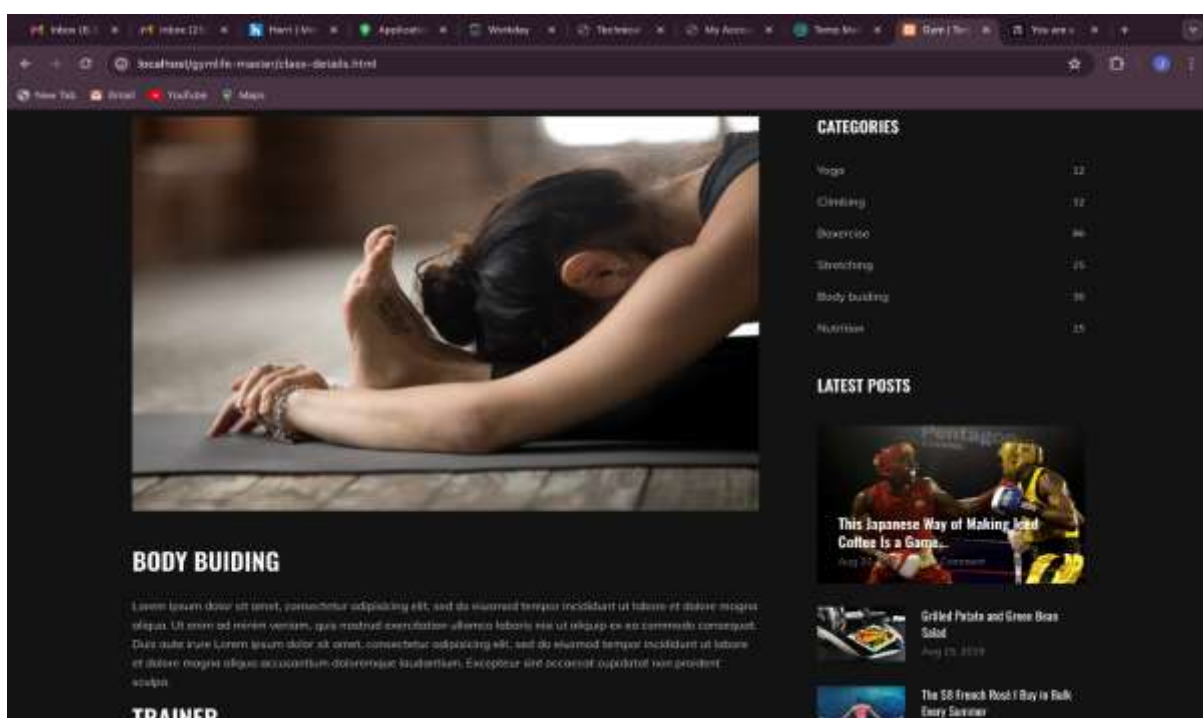
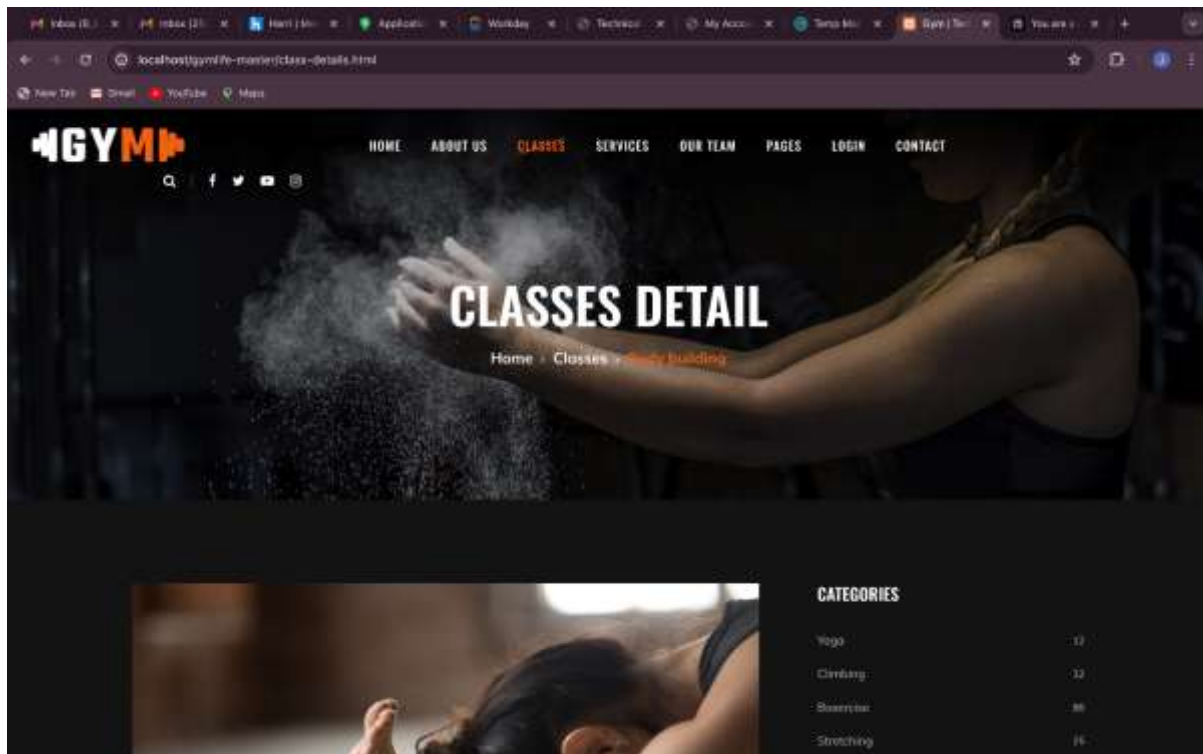


The "Appointment" button directs the users to the registration page.



In the testimonials, we included a section where the members can leave reviews that can be accessed by new potential users. We integrated the functionality where the users can click on "next" arrow to read different reviews.

### 3. Classes Page:

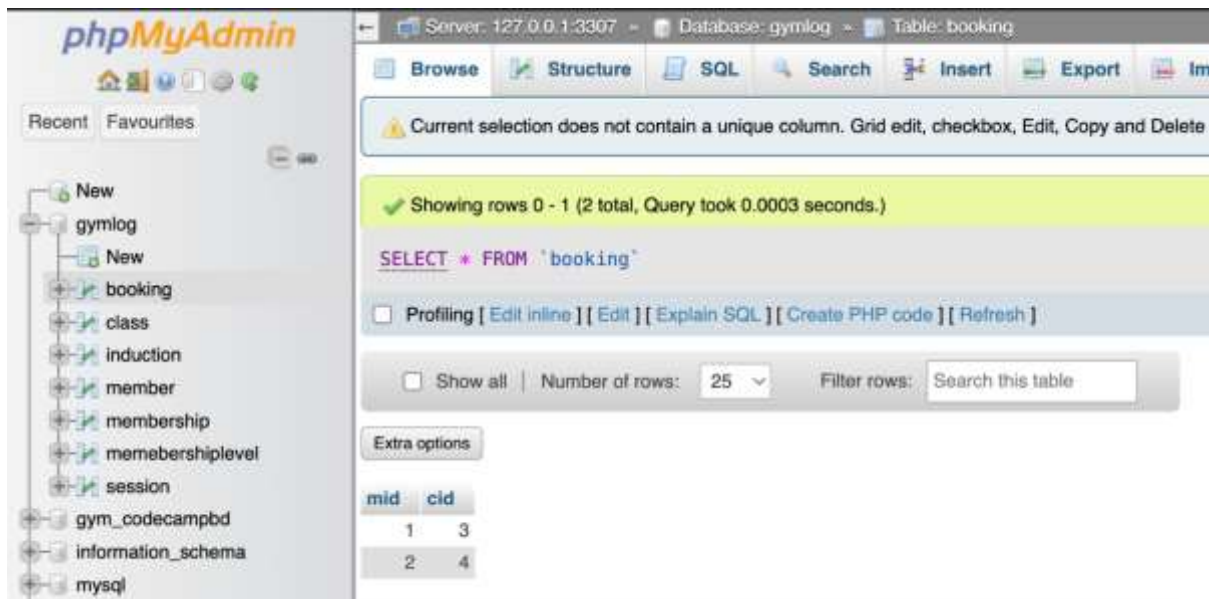


We included categories where different classes, and the ongoing number of sessions are displayed. The users can read about these different classes in the description provided. We integrated news related to the classes provided to give the users latest piece of information on the topic.

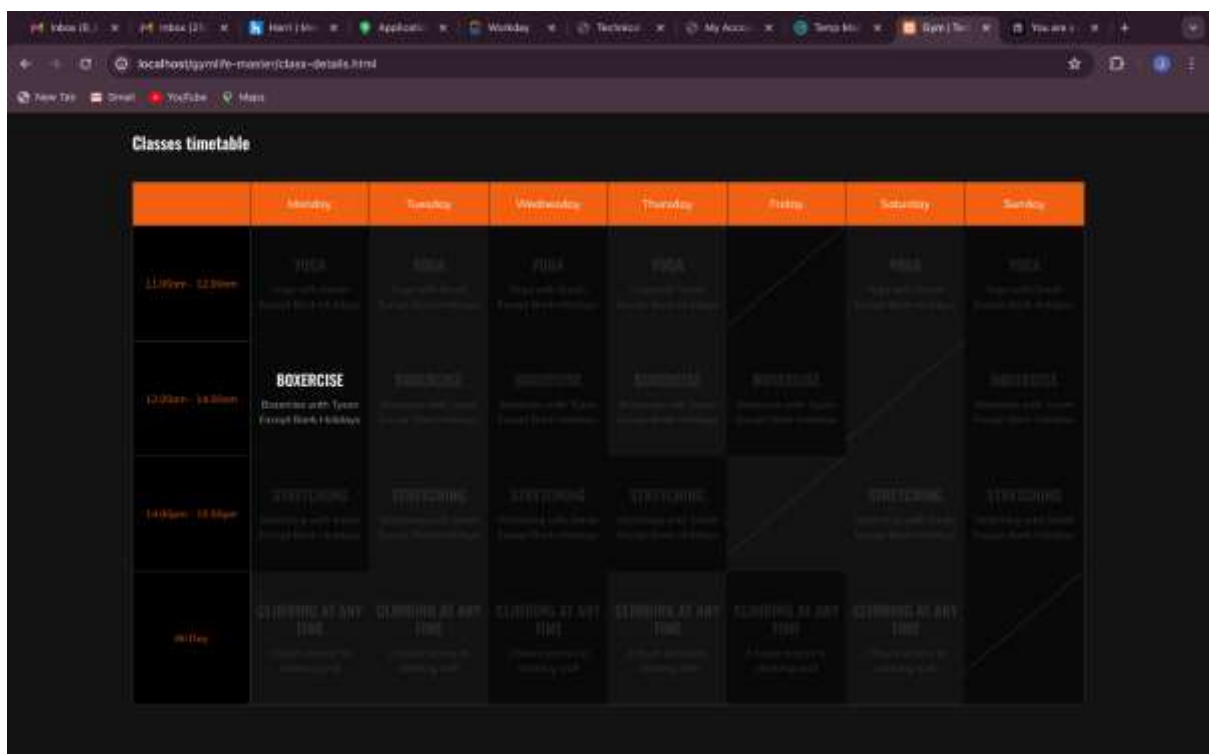




In this image, class timetable for an individual is displayed. It is sorted by Time and Day. It presents the data for classes if that user has enrolled in any.

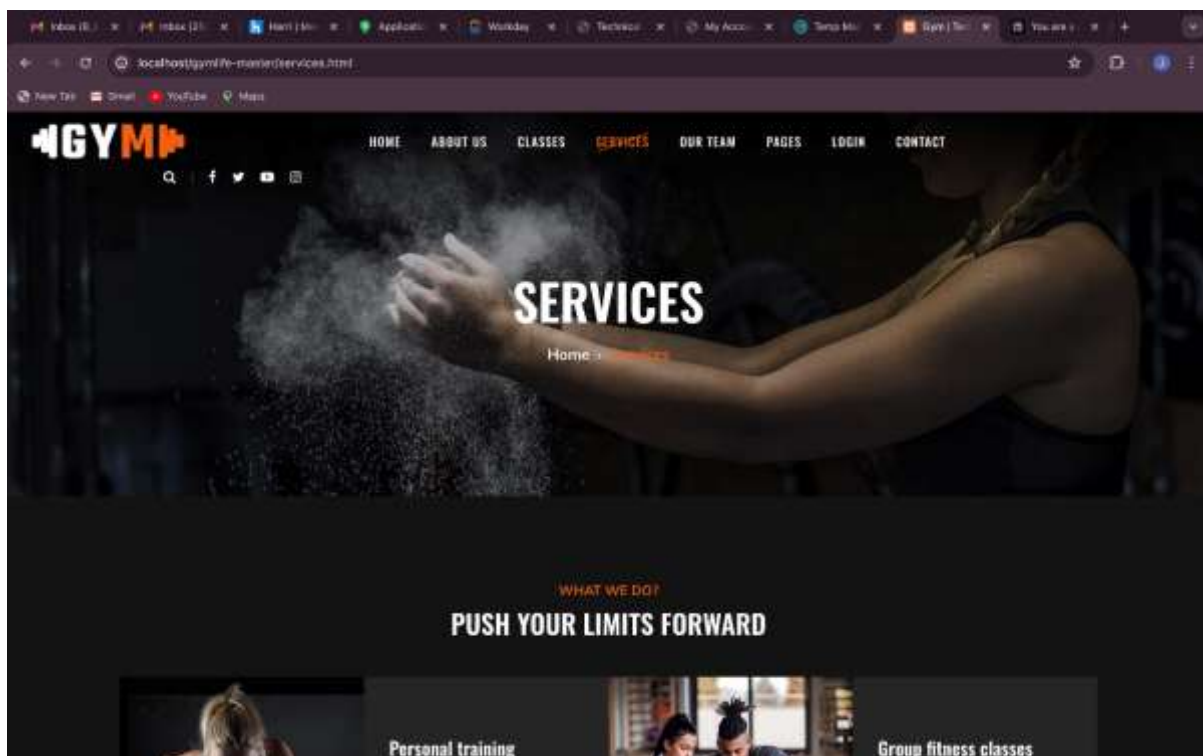


This code explains that if the user has enrolled in any class, then that information is fetched and displayed in the timetable.

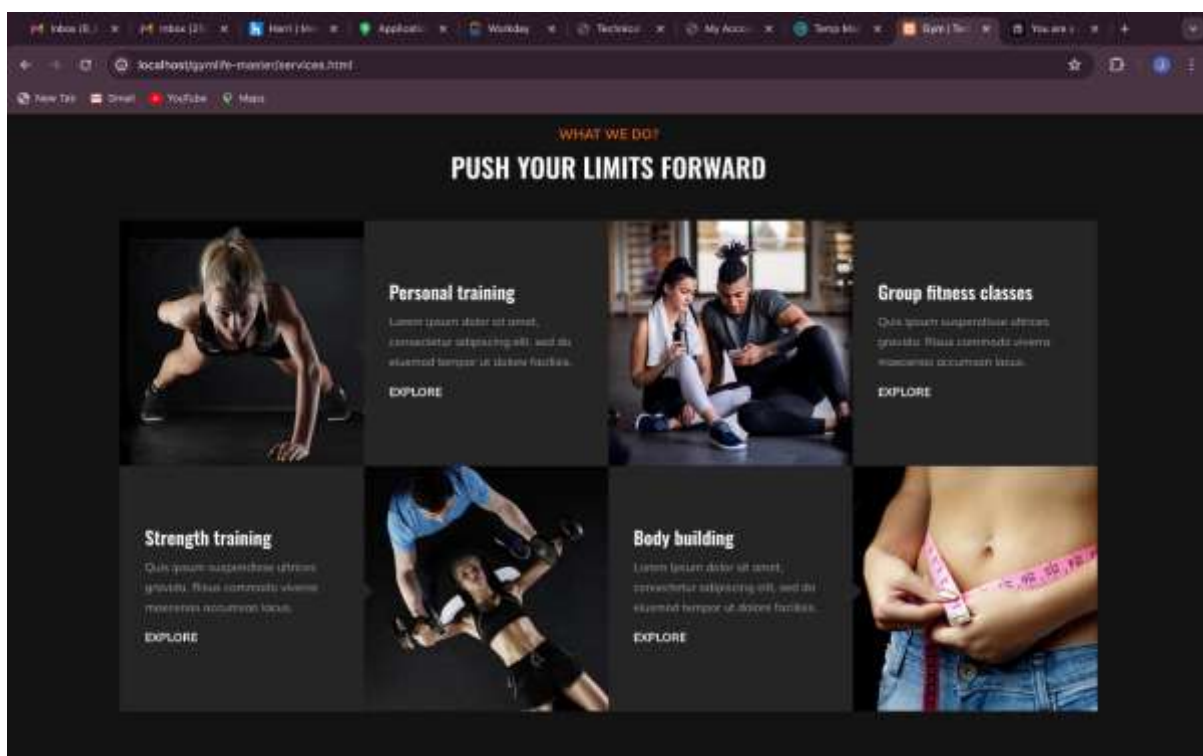


As you can see, this individual enrolled in "Boxercise" which is successfully reflected in the timetable.

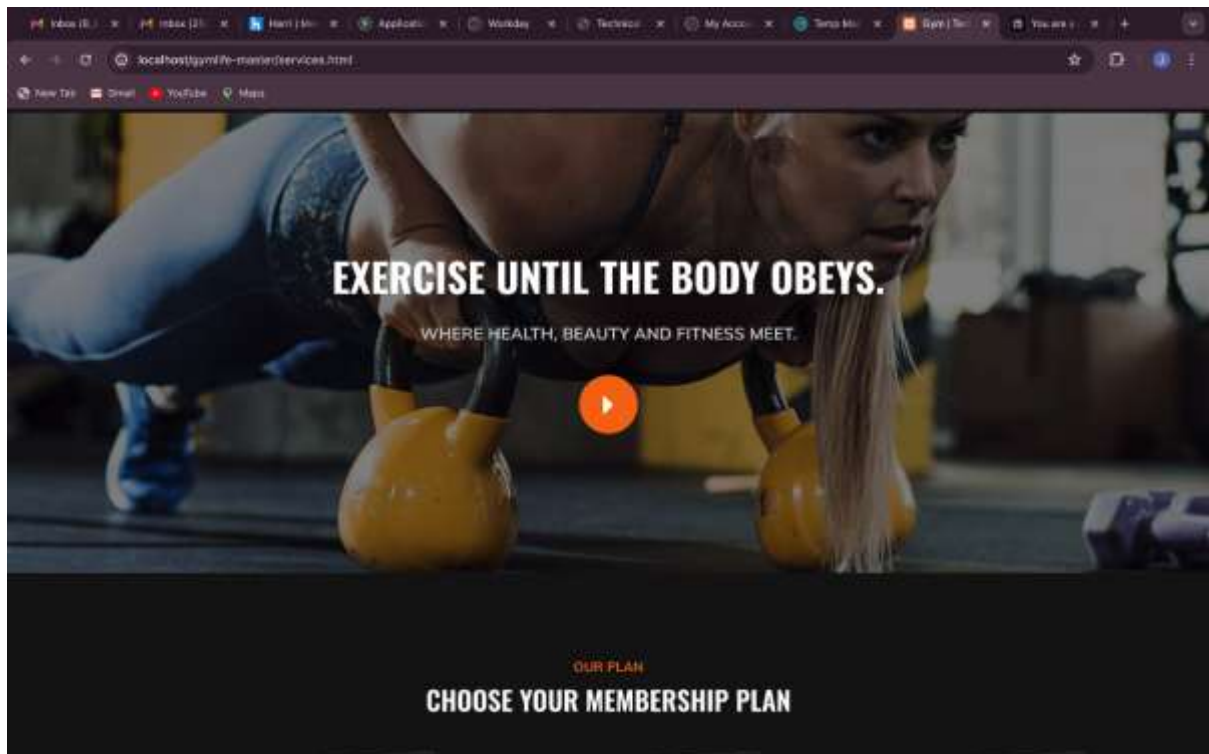
#### 4. Services:



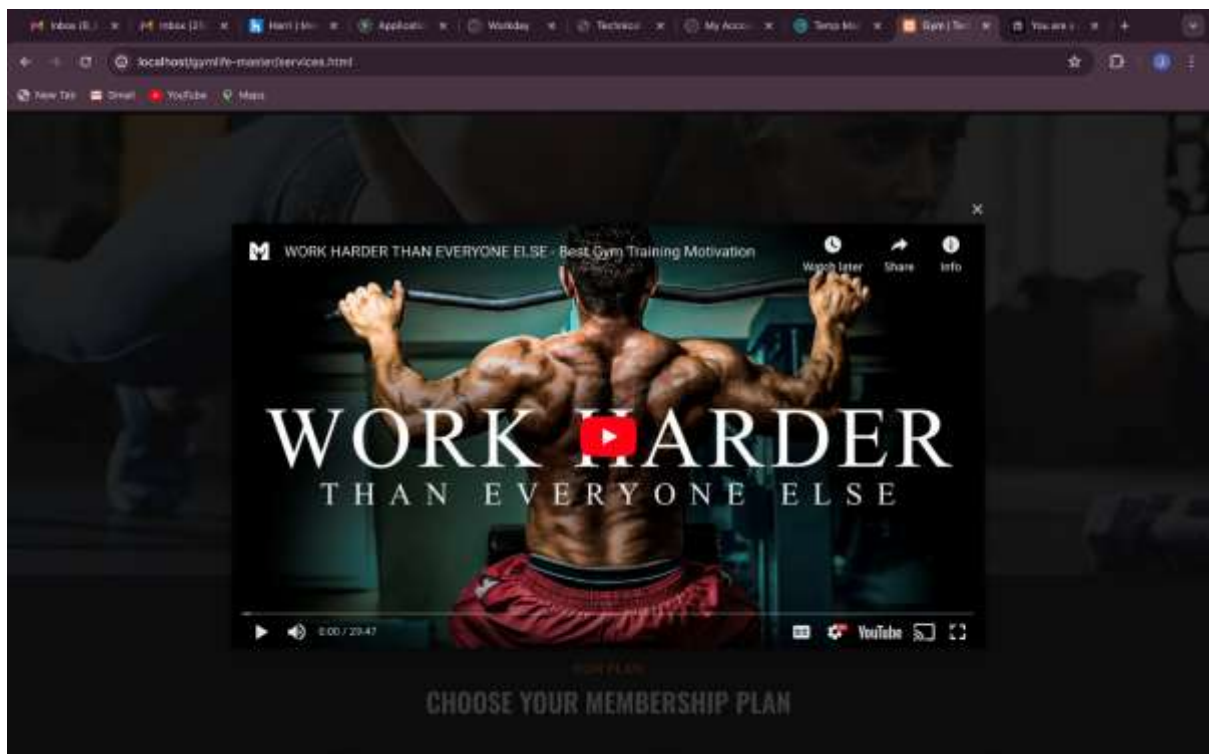
This is the page for the “services” we offer.



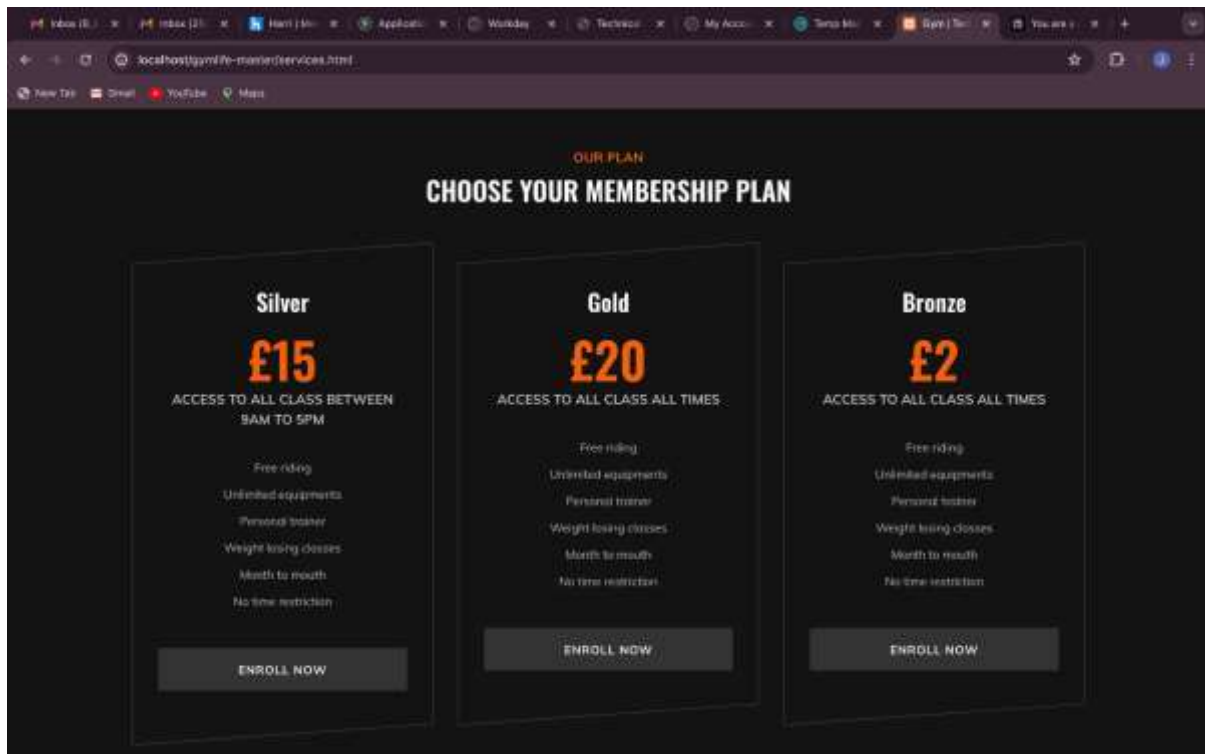
We have included the data related to the services provided in this interactive model where the user can then click on “Explore” to read more about the relevant information.



We have included a motivational video where the users can watch the members achieving their target with the help of our trainers.

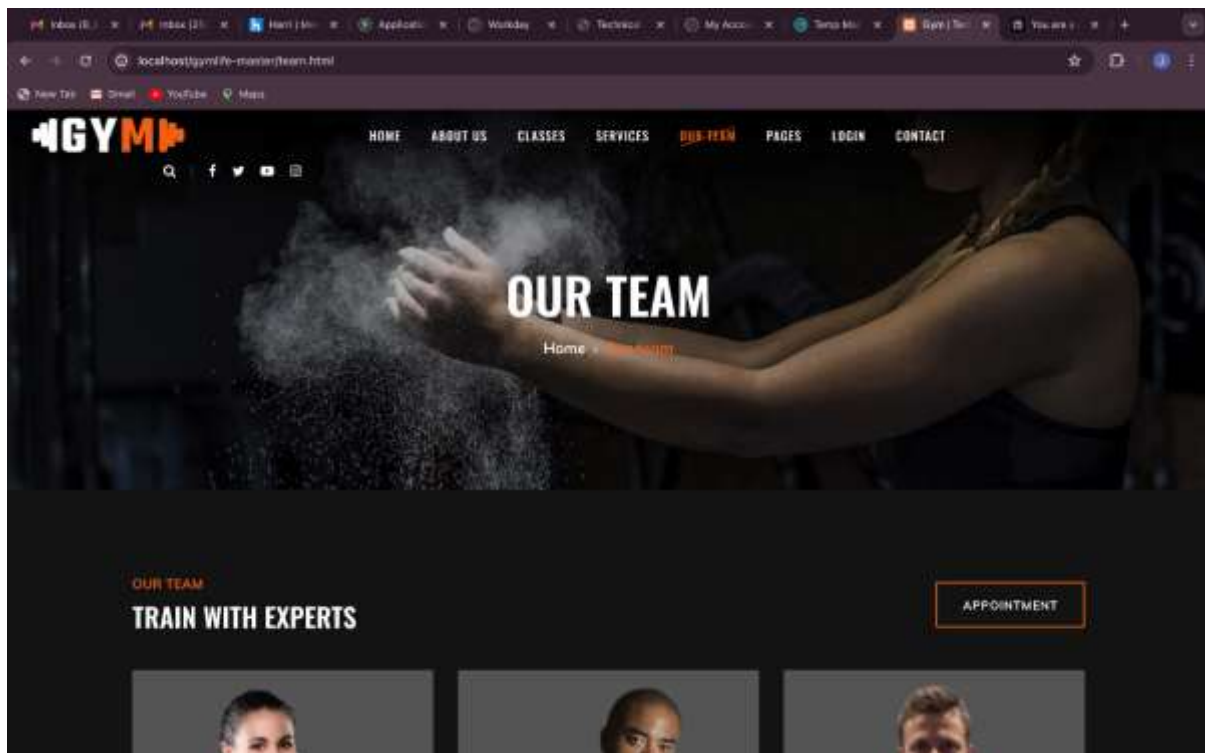


Here is the example for the above-mentioned feature.



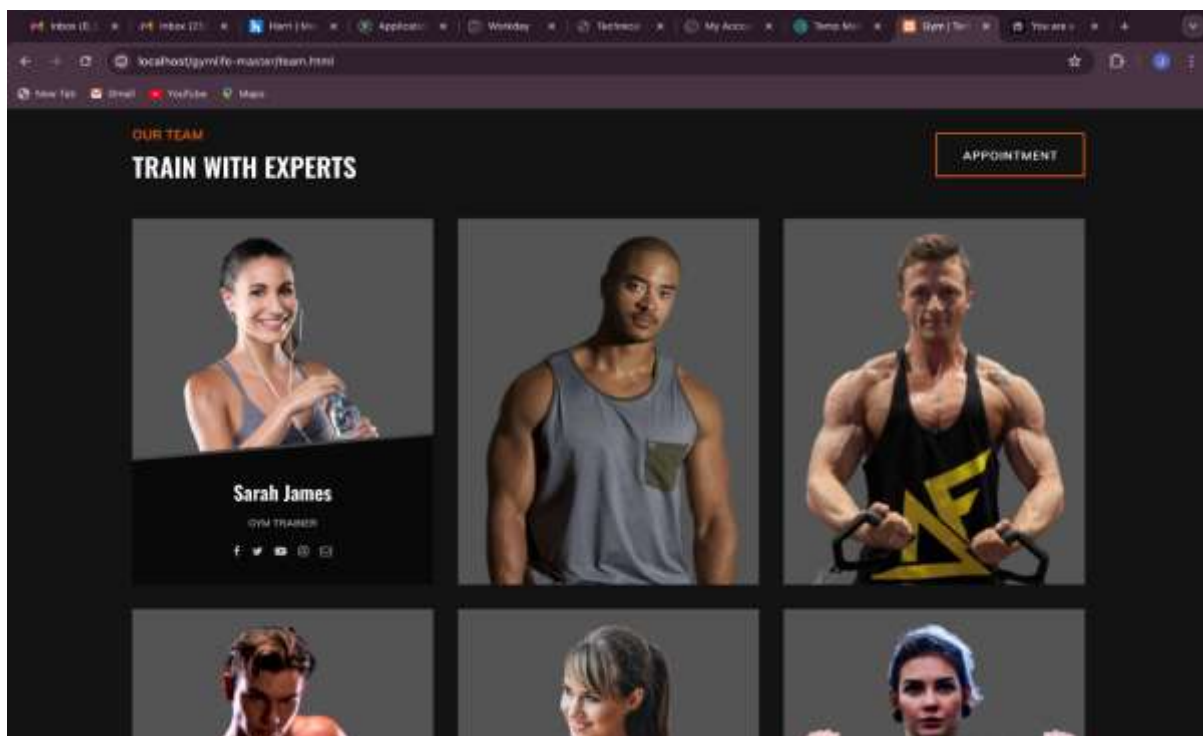
The membership plans are available to users after they go through all the services provided so that they can make an informed decision.

## 5. Our team:

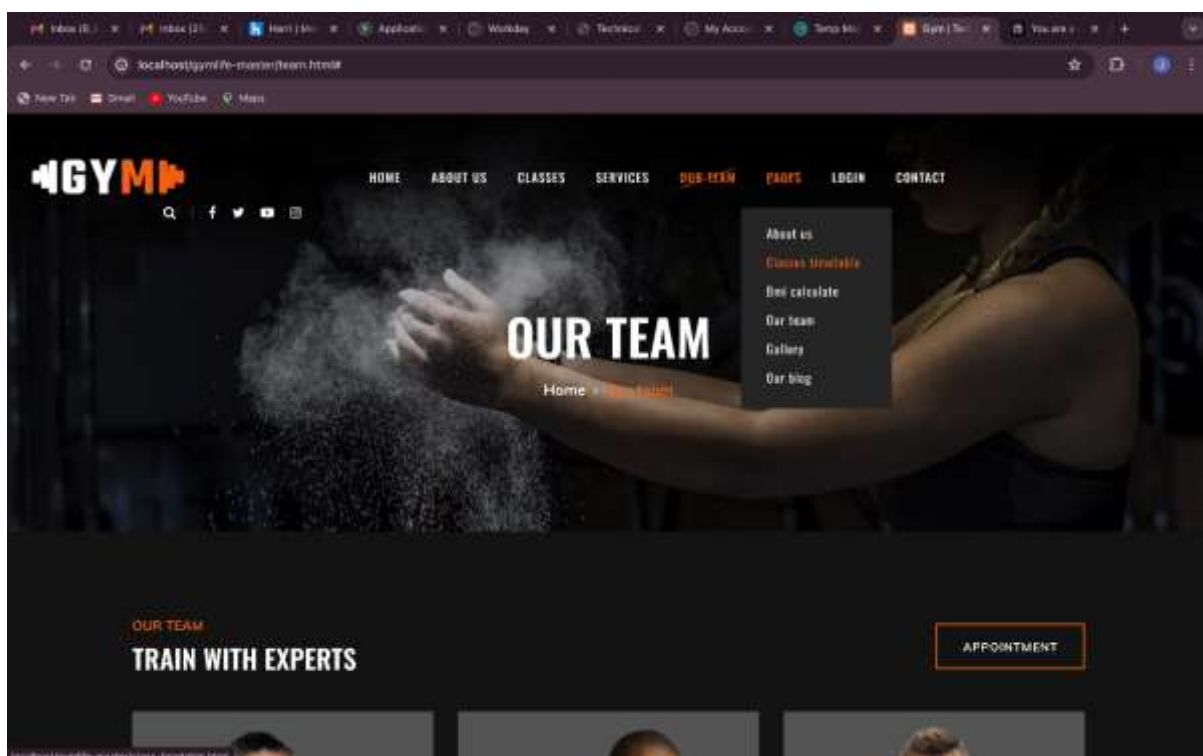


This is the page for "Our Team".



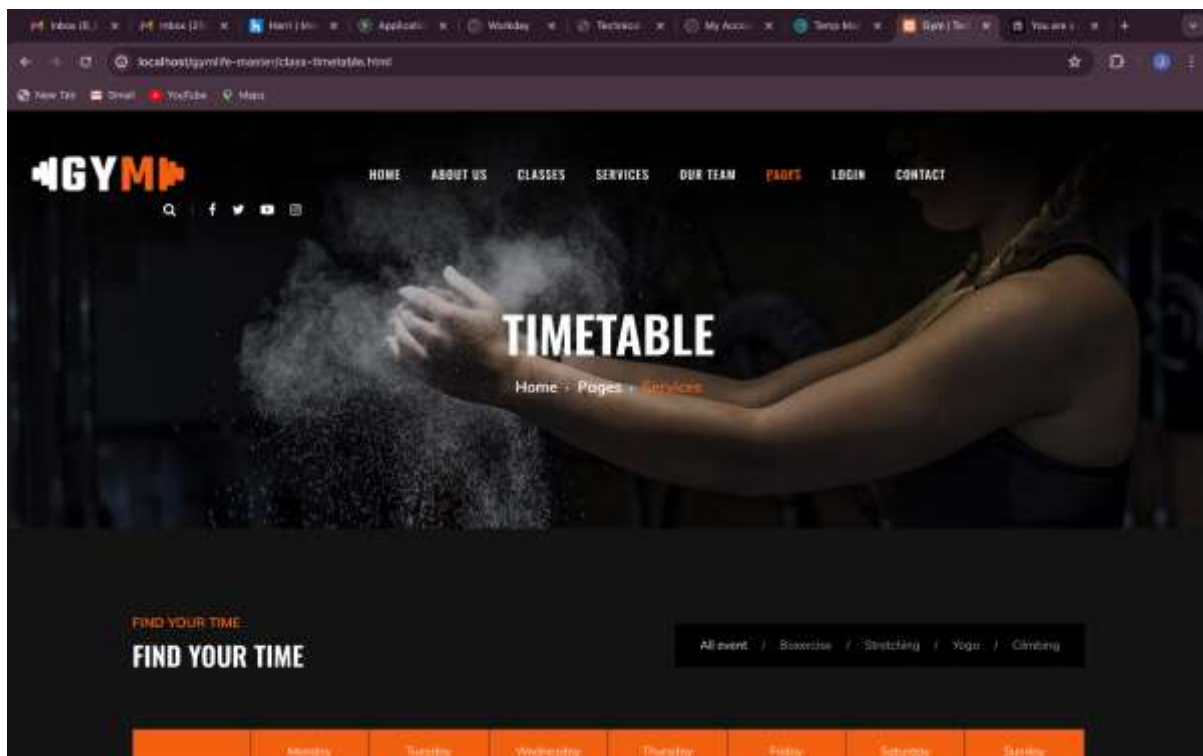


This is the detailed page for our experts who specialize in their craft. Users can access information about them and can book an "Appointment" by clicking the button.

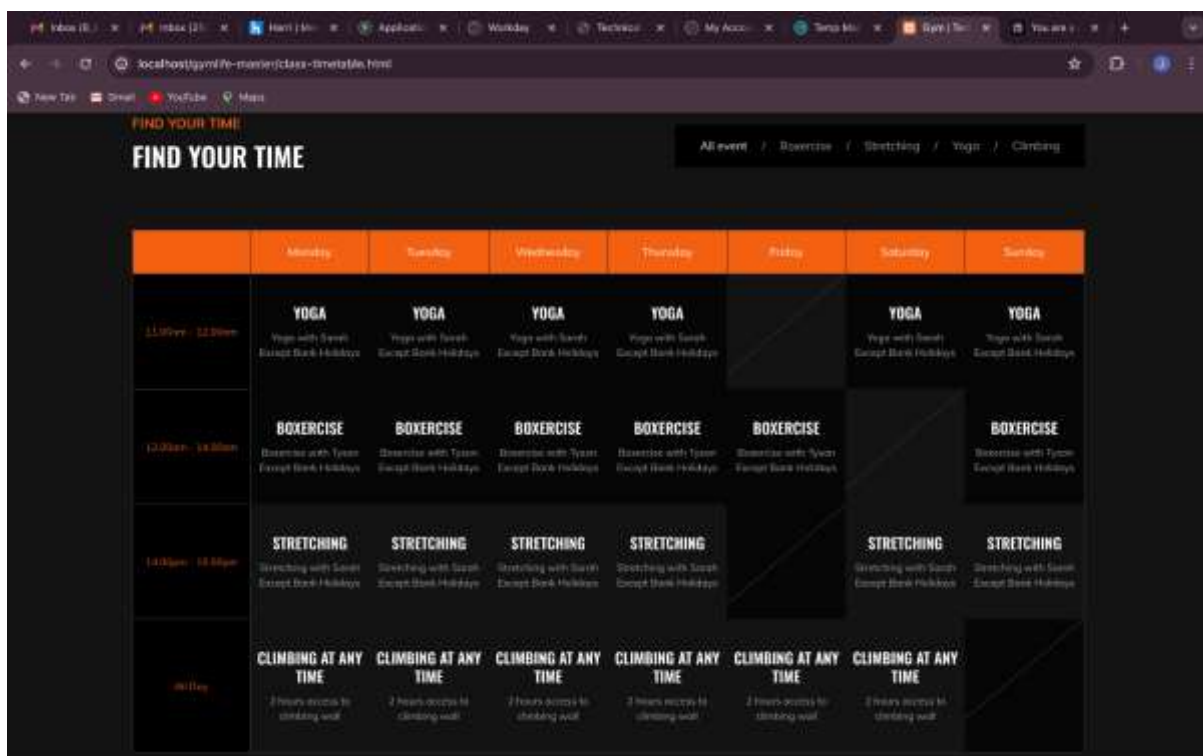


This image depicts that if the users click on "Pages" then the following options are displayed which the user can select accordingly.

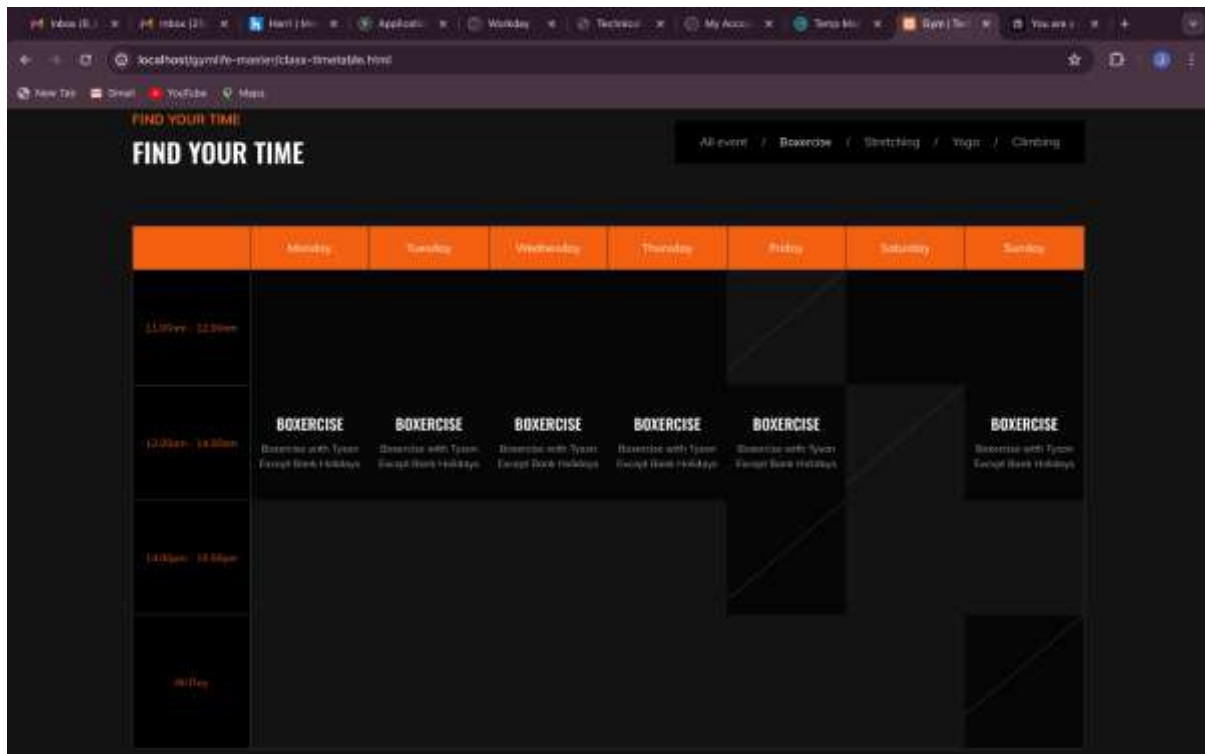
## 6. Pages:



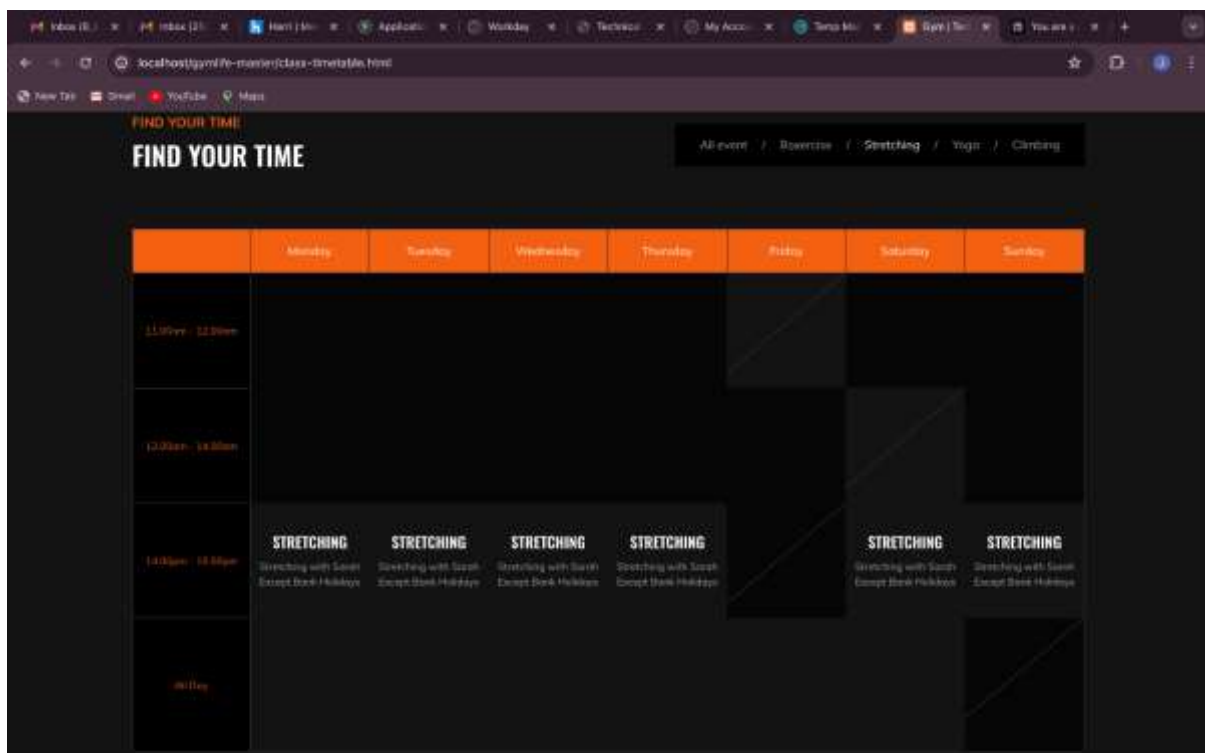
When the user click on "Timetable" he is directed to this page.



This images describes all the events that are available which are sorted by time and day which are displayed when user clicks on "All events". We have included function where these events are further classified according to the needs of the user.



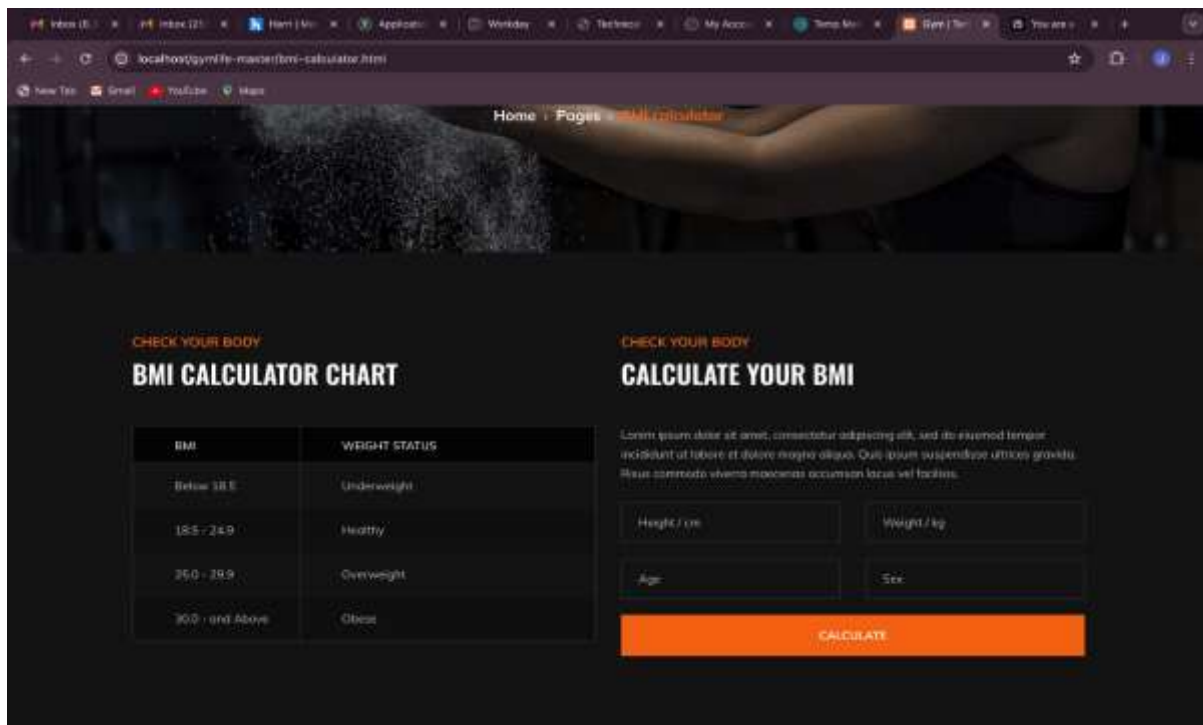
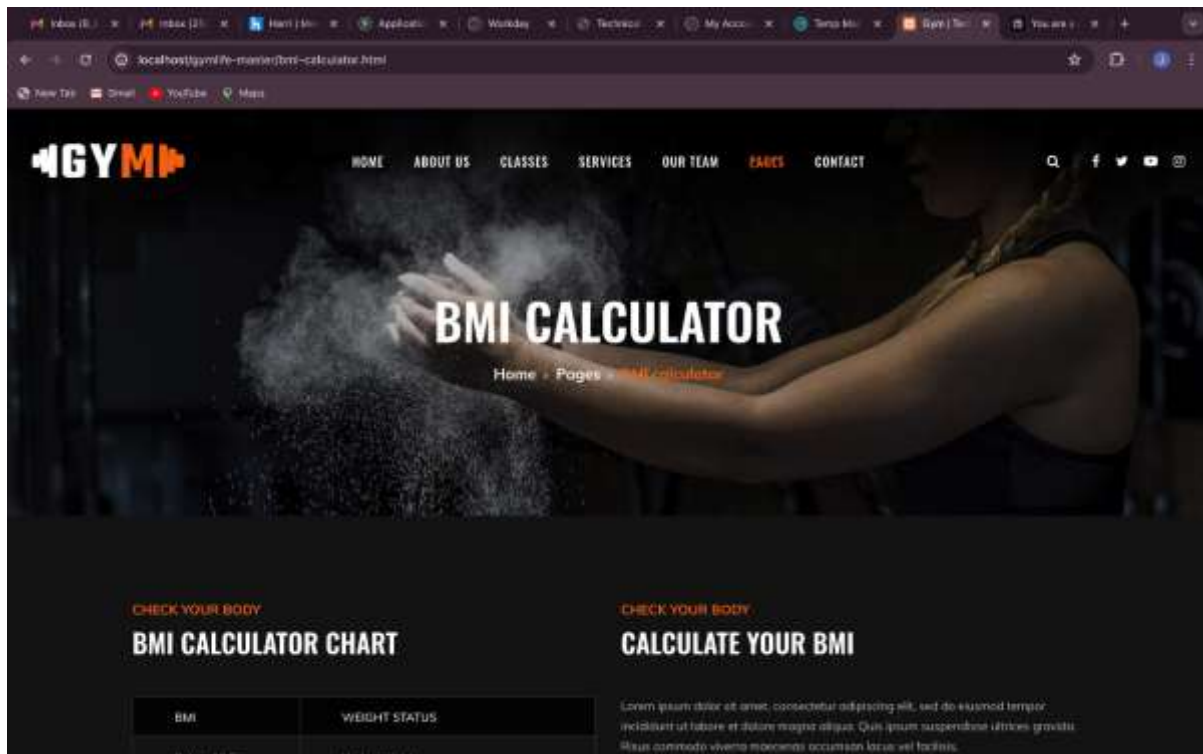
If the user selects "Boxercise" then all the sessions available for Boxercise are displayed. The empty fields reflect the Holidays/cancelled sessions.



If the user selects "Stretching" then all the sessions available for Stretching are displayed.

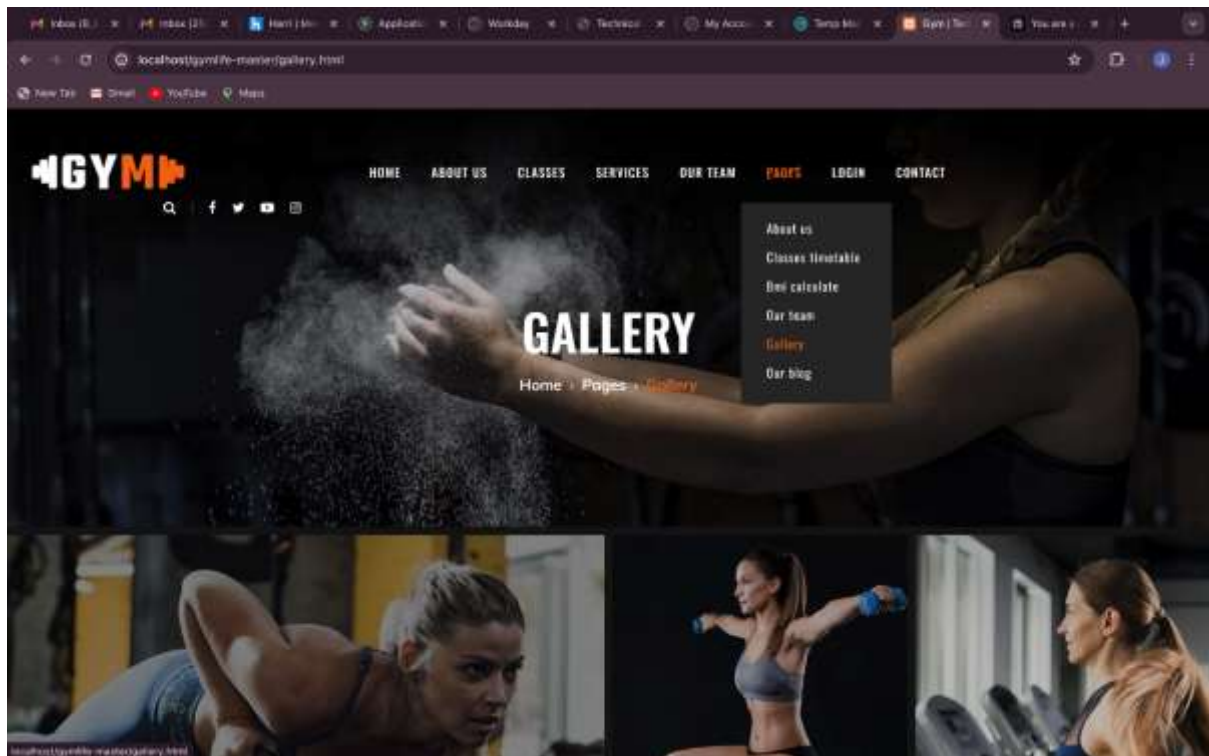






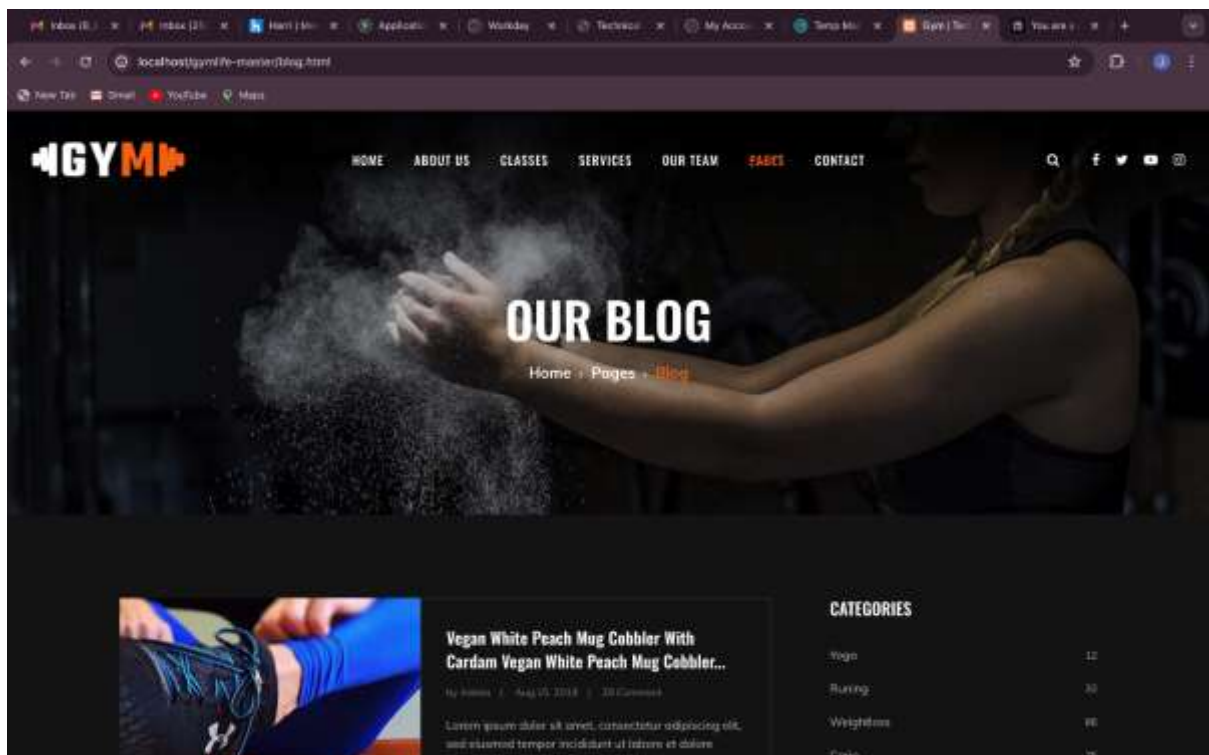
Here we integrated the BMI calculation chart along with the function to calculate the BMI using given parameters such as Height, Age, Weight and Sex.

- If the user clicks on Gallery, then he is redirected to Gallery page.

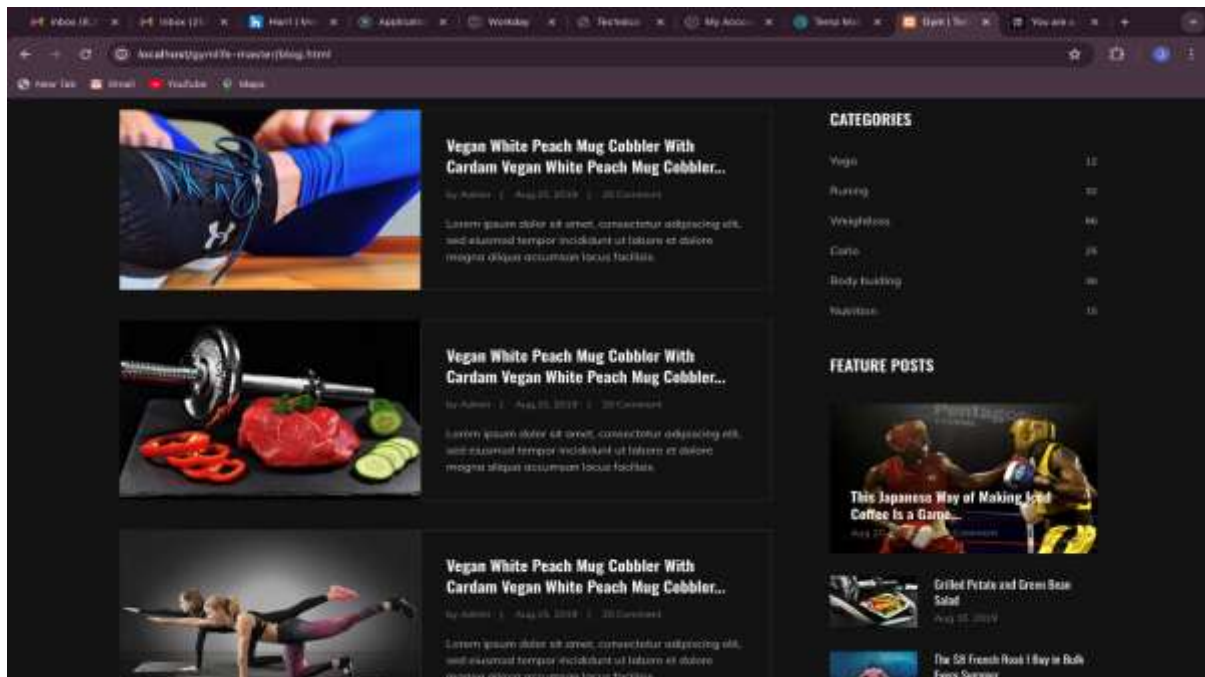


We included different images of our trainers for our users to view to give them a glimpse of their achieved target.

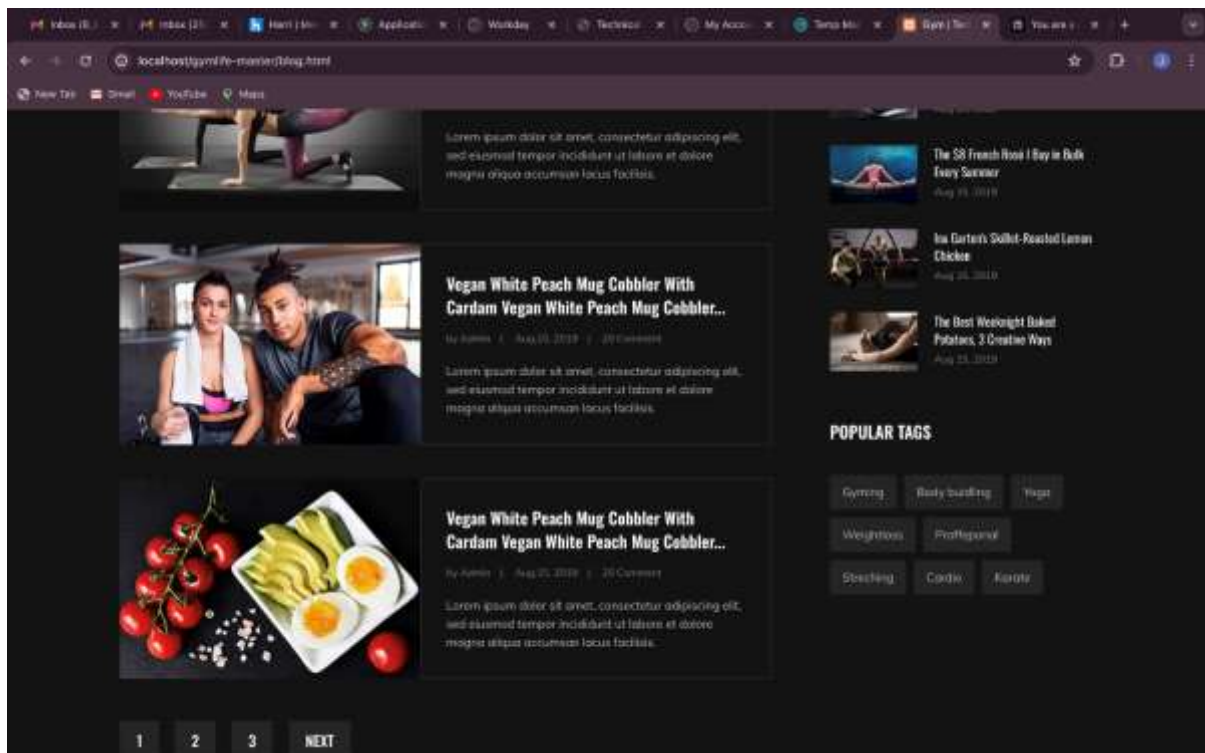
- If the user clicks on “blog”, then he is redirected to our BLOG page.



Here is an overview of our Blog page.



We have inserted numerous articles related to fitness so that the users can view and analyze data to achieve their target. We have further categorized the topics so that the users can choose from them.



We have integrated Tags so that the users can view their preferred articles. If the user clicks on "NEXT" or the number of the page, he is redirected to that page.

## 7. Login Page:

LOGIN

Home Pages Login

**VIEW MEMBERSHIPS**

Location: Madam Gardens Faraday Road NG7 2EG

Phone: 125-711-811 : 125-658-888

Email: Support.gymcenter@bignak.com

new user

add1

add2

add3

add4

add5

SUBMIT

On this page, the member can login with the details provided when the user registered.

phpMyAdmin

Server: 127.0.0.1:3307 - Database: gymlog - Table: member

Showing rows 0 - 10 (11 total, Query took 0.0007 seconds.)

SELECT \* FROM 'member'

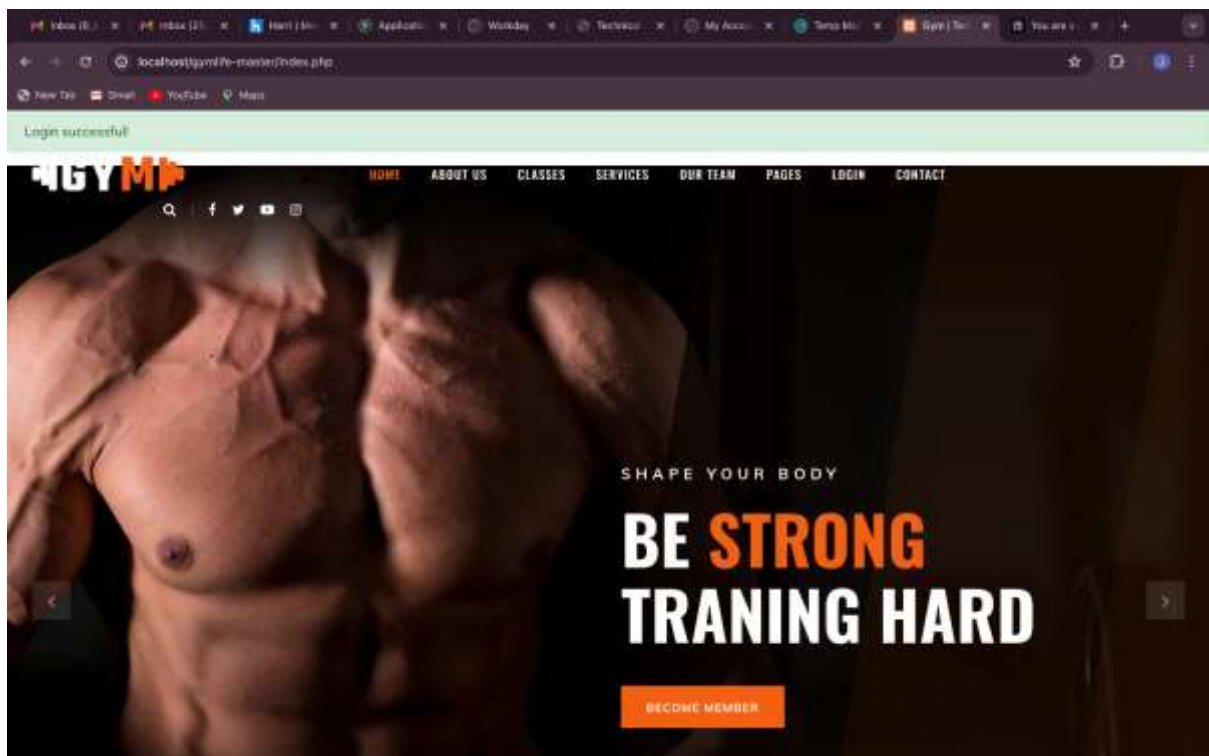
Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key: None

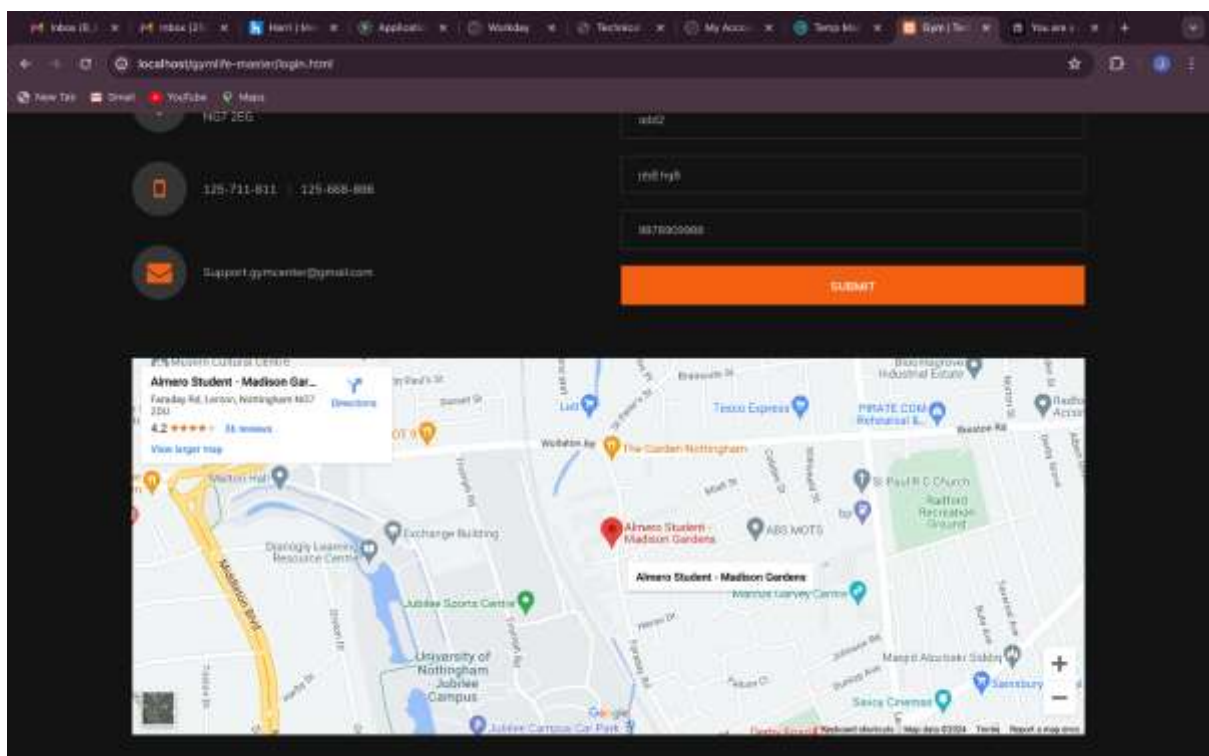
|                          | mid | mname         | address1              | address2        | postcode | phone       |
|--------------------------|-----|---------------|-----------------------|-----------------|----------|-------------|
| <input type="checkbox"/> | 1   | Robert Pasley | C22, Si Yuan Building |                 | ng8 1bb  | 01234433333 |
| <input type="checkbox"/> | 2   | Jeevesh kumar | Flat24                | Faraday road 45 | NG7 2EG  | 989876766   |
| <input type="checkbox"/> | 9   | hola          | not1                  |                 | ng7 2du  | 988767890   |
| <input type="checkbox"/> | 11  | new user      | add1                  | add2            | nh8 hg8  | 9878909988  |
| <input type="checkbox"/> | 12  | new user      | add1                  | add2            | nh8 hg8  | 9878909988  |
| <input type="checkbox"/> | 13  | new user      | add1                  | add2            | nh8 hg8  | 9878909988  |
| <input type="checkbox"/> | 14  | hwlo          | asw                   | dsw             | 78ujhu67 | 997898080   |
| <input type="checkbox"/> | 15  | hwloo         | ofe3                  | nhgg56          | nhj78lu8 | 98989909    |
| <input type="checkbox"/> | 16  | new user1     | agtr                  | asgt2           | kk876    | 9800088     |
| <input type="checkbox"/> | 17  | anuj          | notts                 | n2              | njhku9   | 88876789    |
| <input type="checkbox"/> | 18  | new user      | add1                  | add2            | nh8 hg8  | 9878909988  |

As you can see, we have highlighted the data for new user which exists in our database.



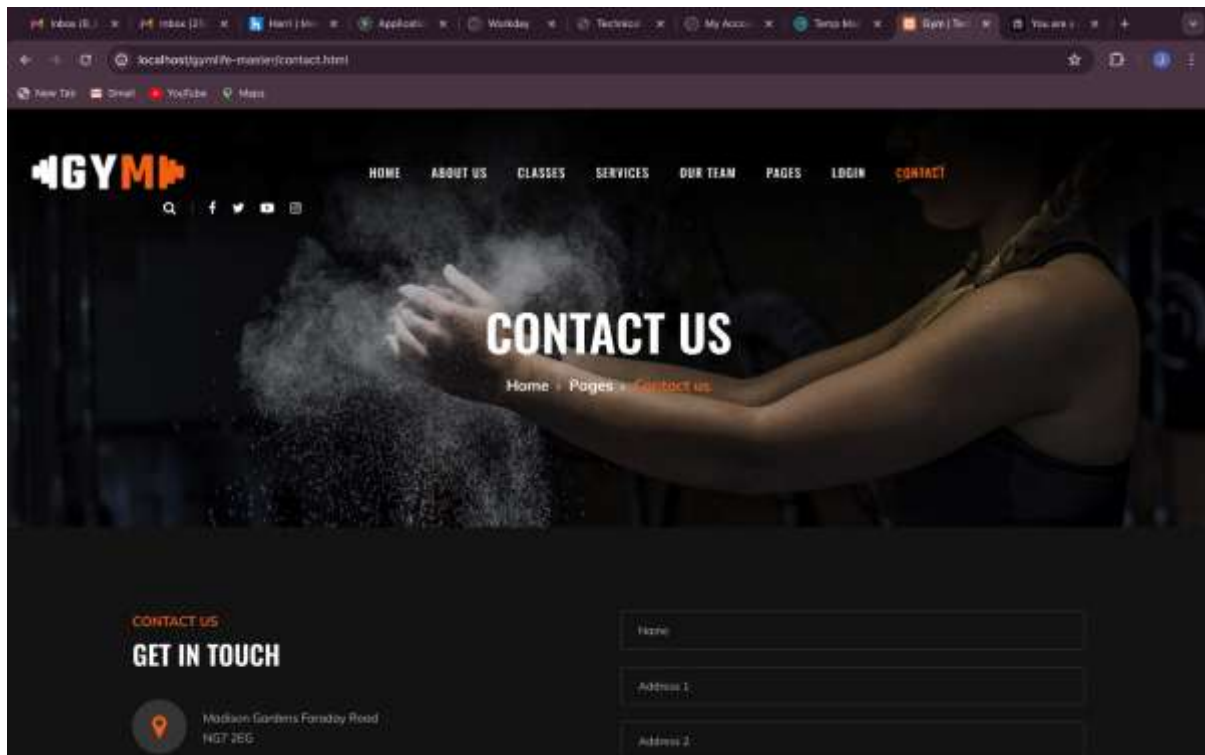


As the user logs in, if the login is successful, the pop up is displayed as "Login Successful!"



We have integrated maps where the locations of our gym can be displayed.

## 8. Contact/Register Page:



## 4. Prototype Description

Overview of the prototype implementation.

Discuss how the prototype uses HTML, SQL, and PHP to fulfil the requirements.

Include screenshots to illustrate how the prototype works.

## 5. Code Explanation

Provide examples of key HTML, SQL, and PHP snippets that are crucial for the system functionality (e.g., login process, member data amendment).

Explain the purpose of these code snippets and how they integrate into the overall system.

## 6. Conclusion

Summarise the capabilities of the gym membership management system.

Reflect on the technologies used and their effectiveness in meeting the system's requirements.

Suggest possible improvements or future enhancements.