

Chapter 01 – Introduction

Fitness as one's ability to execute day-to-day exercises with optimal execution, perseverance, and strength with the management of infection, exhaustion, and stress and decreased inactive way of behaving. People should have three types of fitness. They are, Aerobic fitness, muscle strength, and flexibility. People can make sure these types of fitness from attain the fitness and health centers.

Now a day, fitness and health is more important to every people. Because, some of new technology, new inventions, and foods make people weak and sick. As people are becoming wellbeing cognizant these days, a critical increment should be visible among the individuals at different Fitness and Health Centers.

In the Sri Lanka Fitness centers use manual system for their works. Nonetheless, it is challenging for the fitness centers proprietors to physically deal with the affirmation sections, keep information of new and old individuals, booking occasions, and so forth.

Using this application, new members can easily get registered with the fitness center by selecting the desired membership program & completing the payment procedure. The members can then access the app by using login credentials. The users can select a goal for themselves & set a target. The app will notify the users of the upcoming events for which they can get themselves registered if interested. In this project, fitness and health center means gym. Client can check the nearest fitness center location from using this application.

This Smart Fitness and Health Management system can have used school leaver to elders. They can choose their best schedule from using this application unique feature. It helps to give default workout schedule for client who used this application at home. They can add their Height, Weight, and Age after login this application. Then they can choose their own and suitable workout schedule from the defaults schedules. And also, fitness center coach get notification about that client and workout schedule. If it is good coach can approve the workout schedule or if it is not good for that client coach can reject that schedule using this application.

This application can used clients, coaches, and fitness and health center owners. The fitness center management team can view the list of all the members & can filter them as per their membership program. The fitness center owners can add new events for the members. Thus, this Application will provide a user-friendly experience to both the members & the fitness team.

Key Words – Web Application, PHP, HTML, CSS, Java Script, BMI (Body Mass Invent) Rate,

1.1 Background

The ultimate artifact mobile responsive web application that has modern and unique facilities and will be a fully smart automated system. There are three main user categories. They are clients, coaches, and gym owners. Clients can use this application via Google Sign-In. Coaches can approve the workout schedules for a client that they selected by themselves.

The project artifact helps the academic question “How to create a User-friendly and Smart Fitness and Health Management System?”

HTML and PHP are selected for the front-end languages of the Smart Fitness and Health Management System. CSS, and JS help to colorful the frames. The backend languages are still to be defined. SQL is the as best able to interact with a database and recall information. Furthermore, XAMPP and Visual Studio are selected for other software components. And also, MySQL chooses for designing the database, and SQLyog chooses for designing the ER diagram for system.

When considering the functions of this Smart Fitness and Health Management System. There are many functions are selected to include.

1. Google Sign-In
2. Online Registrations and accept user registration
3. BMI rate calculation using Artificial Intelligence (AI) technology, and can choose suitable default workout schedule for it
4. SMS and Email alert service. (Send notifications to users)
5. GPS technology
6. Online Payment Method
7. Meal Plan & Diet Schedule
8. Online Workout Schedule
9. Request for a time plan
10. Online Review of vacant time
11. View reports regarding the members’ details and attendance report
12. Mobile Responsive

Google Sign-In

Today, Google Sign-In is trending in the world. Because client can Sign-In for web application anytime, anywhere by register with google sign-in. It is most reliable, and flexible method for Sign-In. Sign-In with Google helps to rapidly and effectively manage user authentication and sign-in to the web application.

Online Registrations and accept user registration

Online registrations and accept the user registration is most important facility of this system. Client can register by using this web application quickly and easily. And also, once client is registered the application, coach could view their registration form in details.

BMI rate calculation using Artificial Intelligence (AI) technology, and can choose suitable default workout schedule for it

Once client register the application, they should input their height, and weight to the registration form. After that, system has BMI calculator and it will calculate BMI Rate of that client and show it in the page. According to the BMI rate, system shows default workout schedule for client, and client can select one schedule from it. According to the selected default schedule, it shows to coach as a notification. After that, coach can approve that schedule or ignore it, and reschedule it. Coach can schedule workout plan for weekly, monthly, or yearly. When the client follows that workout plan, and after the time period should check height and weight to check again their BMI, rate and should change the workout plan, and meal plan. This is the main, and unique point of this system. There are many similar applications like this application, but except this point. This BMI rate is created by using Artificial Intelligence(AI).

SMS and Email alert service. (Send notifications to users)

This is the basic function of this system. Because, most web application has this function. It helps to send alert to client, and coach can view register form after client is registered.

GPS technology

GPS technology is used for check the nearest locations of fitness centers,

Online Payment Method

Client can register and join the online classes using this system. So that, clients want online payment method. It is quickly, and easily to handle.

Meal Plan & Diet Schedule

After check the workout plan and BMI rate, coach can share the meal plan and die plan for client.

Online Workout Schedule

Most of people are busy with their daily routine. They do not have time to think about their health. Then this function is most suitable of them. Because, they can select their schedule and do it in their place. It is easy and save their time. And also, very flexible, and feasible.

Request for a time plan

Client can request time for workout in their free time using this application.

Online Review of vacant time

Because of Covid'19, people cannot attain the physical fitness and health centers as they want. So, using this application client can check the vacant time, and attain the physical training center. It is more reliable for that type of situations.

View reports regarding the members' details and attendance report

Coach, owner and also client can check their review of workout schedule after effects using this application, and change their current plan. Also, coach can look clients' attendance.

Mobile Responsive

Client can check this system on any mobile devices. This system is response to mobile.

There are non-functional requirements are included.

1. Accurate
2. Integrity
3. Reliable
4. User-friendly environment.

All the events & membership programs are added by the admins alone, facilitate the work of a Fitness Center admins, increased efficiency, more accurate information can be obtained, preservation of information, can manage human resources well and time managing and saving are main benefits of this application.

Furthermore, client should be trust their selves, and should add true details for register page when they are registered to this system. Because, this system depends on the clients' true details. Smart Fitness and Health Management Application is most challenging project. So that, client should be take responsible of the events. Also, owner, and coach should take side responsibility of the all actions.

1.2 Aims of the Project

1. To conduct a primary and secondary research to identify requirements
2. To design the proposed artifact
3. To implement the proposed system
4. To test and fine-tune the system before the launch.

1.3 Academic Questions and Objective

1.3.1 Academic Questions

How to create a user-friendly Smart Fitness and Health Management System?

1.3.2 Objectives

1. To conduct a primary and secondary research to identify requirements

- i. Conduct interviews with Fitness Center owners and coaches to identify their current issues.
- ii. Conduct interviews with regular clients of the fitness centers
- iii. Conduct a background study to get an idea about the existing solutions.
- iv. Conduct a compressive literature review to identify similar projects, techniques and tools used

2. To design the proposed artifact

- i. Select the best suitable hardware and software
- ii. Prepare the preliminary design
- iii. Prepare the detail/architectural design

3. To implement the proposed system

- i. Write code for each module
- ii. Perform the unit tests

4. To test and fine-tune the system before the launch.

- i. Develop a set of test cases/ test scenario
- ii. Testing the prototype based on the test cases



Smart Fitness & Health Management Application

Hello everyone,

I am Sanduni Perera and currently following a BSc (Hons) Computer Science in Software Engineering, University of Wolverhampton, UK (Undergraduate).

I am expecting to create a web-based application using Artificial Intelligence (AI) Technology, who are willing to use and gain the online experience as a member of a gym for the purpose fitness & health management and boost endurance. Furthermore through this app, a coach will be provided individually each member to get the guidance and check the progress. This implementing online application will be much more valuable for the people for are troubling with the lack of time and transportation problem. This app will be better solution for them.

This form is an online survey that created for information gathering selected range of people for Smart Fitness & Health Management Application. I am looking for collect information about fitness centers, and your experience to make best user-friendly and

smart application.

Please, Feel free to fill this form and share.

 sandunipereraofficial17@gmail.com (not shared)
[Switch accounts](#)



*Required

Name *

Your answer

Age *

- ☐ 15 and below
- ☐ 16 - 25
- ☐ 26 - 35
- ☐ 36 - 50
- ☐ 51 - 65
- ☐ 65 and up

Gender *

- ☐ Male
- ☐ Female

Do you know your BMI Rate? *

- ☐ Yes
- ☐ No

What is your general health like? *

- ☐ Above average
- ☐ Average
- ☐ Below Average

What is your general health like? *

- ☐ Above average
- ☐ Average
- ☐ Below Average

Do you go to the Fitness Center(Gym)? *

- ☐ Yes
- ☐ No

Next

Clear form

About Your Fitness Center Experience

How often do you go to the gym? *

- ☐ Less than 1 time per week
- ☐ 1 time per week
- ☐ 2-3 times per week
- ☐ 4-5 times per week
- ☐ 6+ times per week

Why do you go to the gym? *

- ☐ Lifestyle
- ☐ Rehabilitation
- ☐ Weight Loss
- ☐ Health Improvement
- ☐ Social Environment

What time do you normally prefer to attend the gym? *

- ☐ Morning
- ☐ Afternoon
- ☐ Evening

How inclined would you be to become a member of this facility if it contained the services chosen above? *

- ☐ Very
- ☐ Somewhat
- ☐ Not Very
- ☐ Not at all

Select the facilities you use in the gym and how often you use them *

	always	usefully	sometimes	rarely	never
Machines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Group Classes (Yoga, Pilates, Spinning, Aerobics, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Free weights	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardio Equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you ever use Online workout schedule or fitness app? *

☐ Yes

☐ No

If do you have use any online fitness app previously, what did you use?

Your answer

Do you satisfy with that application?

☐ Yes

☐ No

☐ Maybe

Do you like to try this new implementing - Smart Fitness & Health Management Application? *

☐ Yes

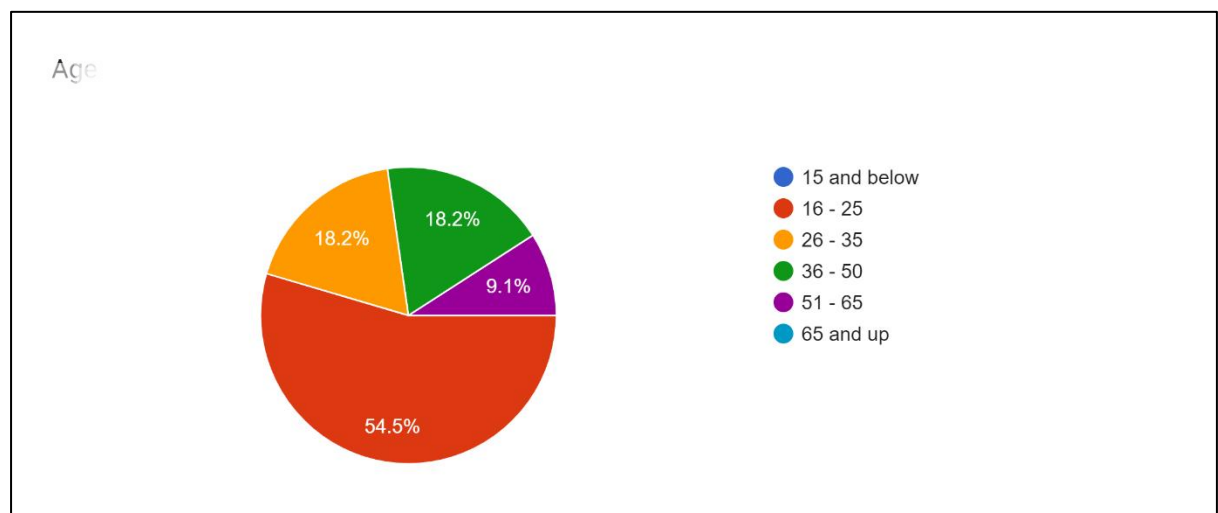
☐ No

Give your Additional Comments and Suggestions for improvement of this implementing Smart Fitness & Health Management Application? *

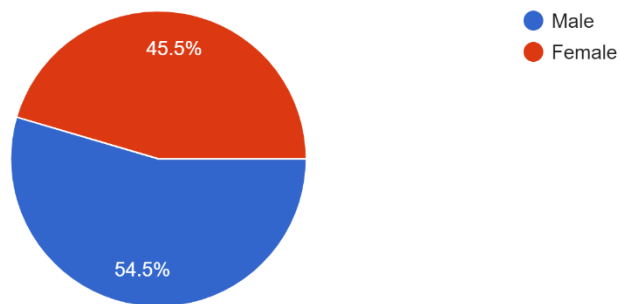
Your answer

[Back](#) [Submit](#) [Clear form](#)

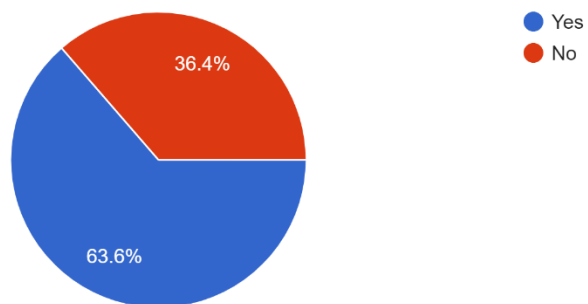
Responses



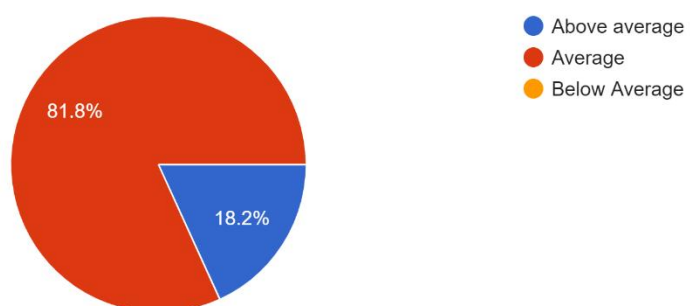
Gender



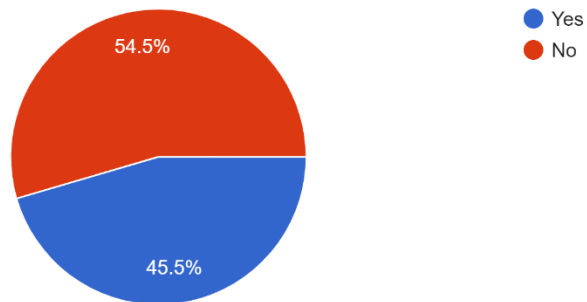
Do you know your BMI Rate?



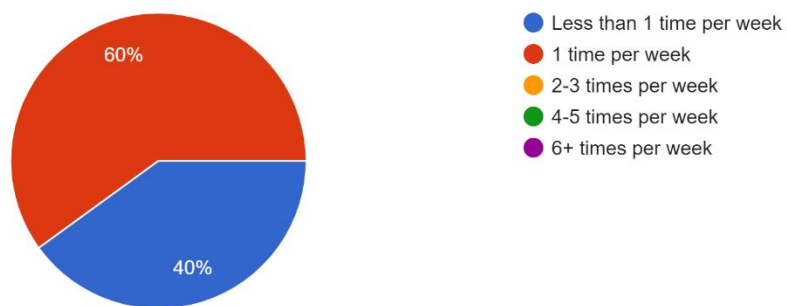
What is your general health like?



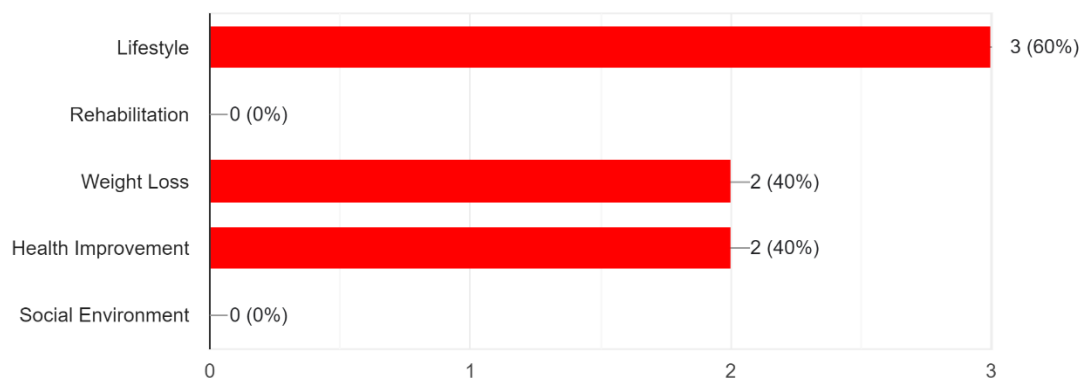
Do you go to the Fitness Center(Gym?)



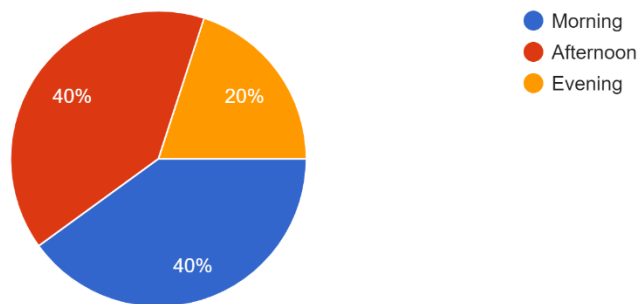
How often do you go to the gym?



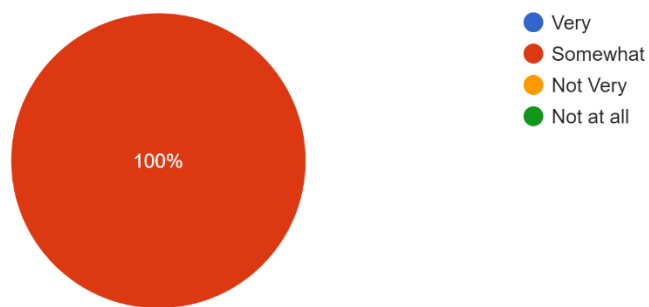
Why do you go to the gym?



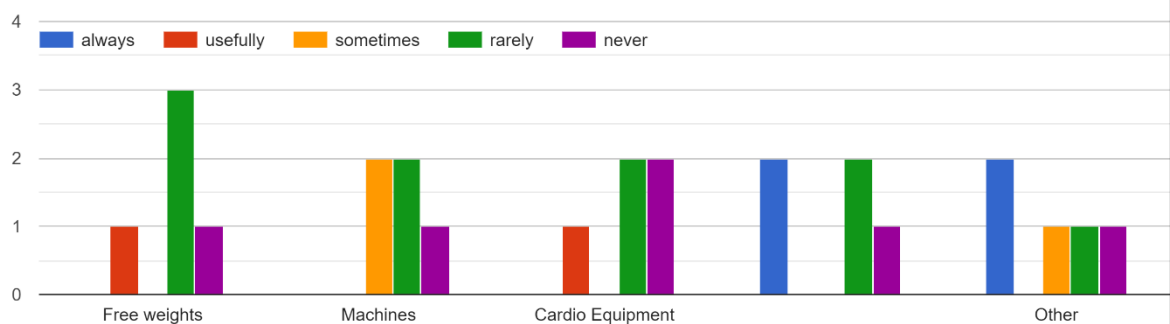
What time do you normally prefer to attend the gym?



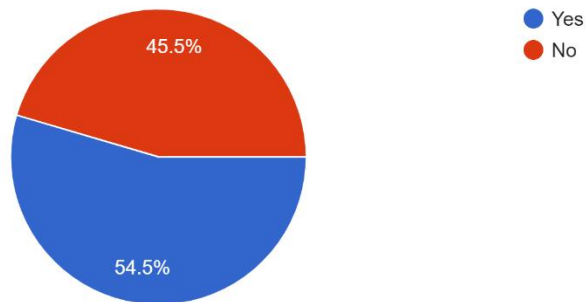
How inclined would you be to become a member of this facility if it contained the services chosen above?



Select the facilities you use in the gym and how often you use them



Do you ever use Online workout schedule or fitness app?



If do you have use any online fitness app previously, what did you use?

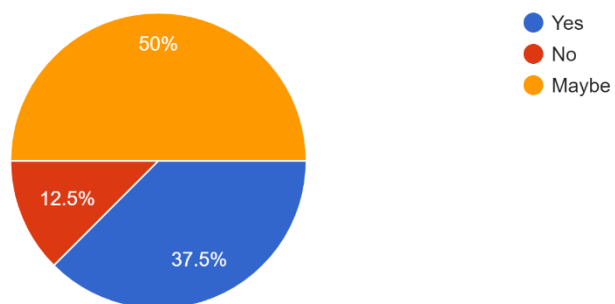
Fitness

Nike Training Club: Fitness and McGregor FAST

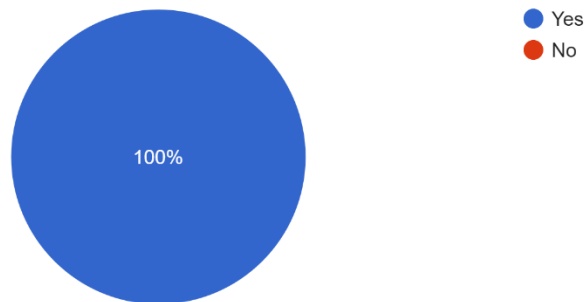
No.

Fitness

Do you satisfy with that application?



Do you like to try this new implementing - Smart Fitness & Health Management Application?



Give your Additional Comments and Suggestions for improvement of this implementing Smart Fitness & Health Management Application?

No comment

Good

Easy app

Should have features like heart rate and blood oxygen.

No comment

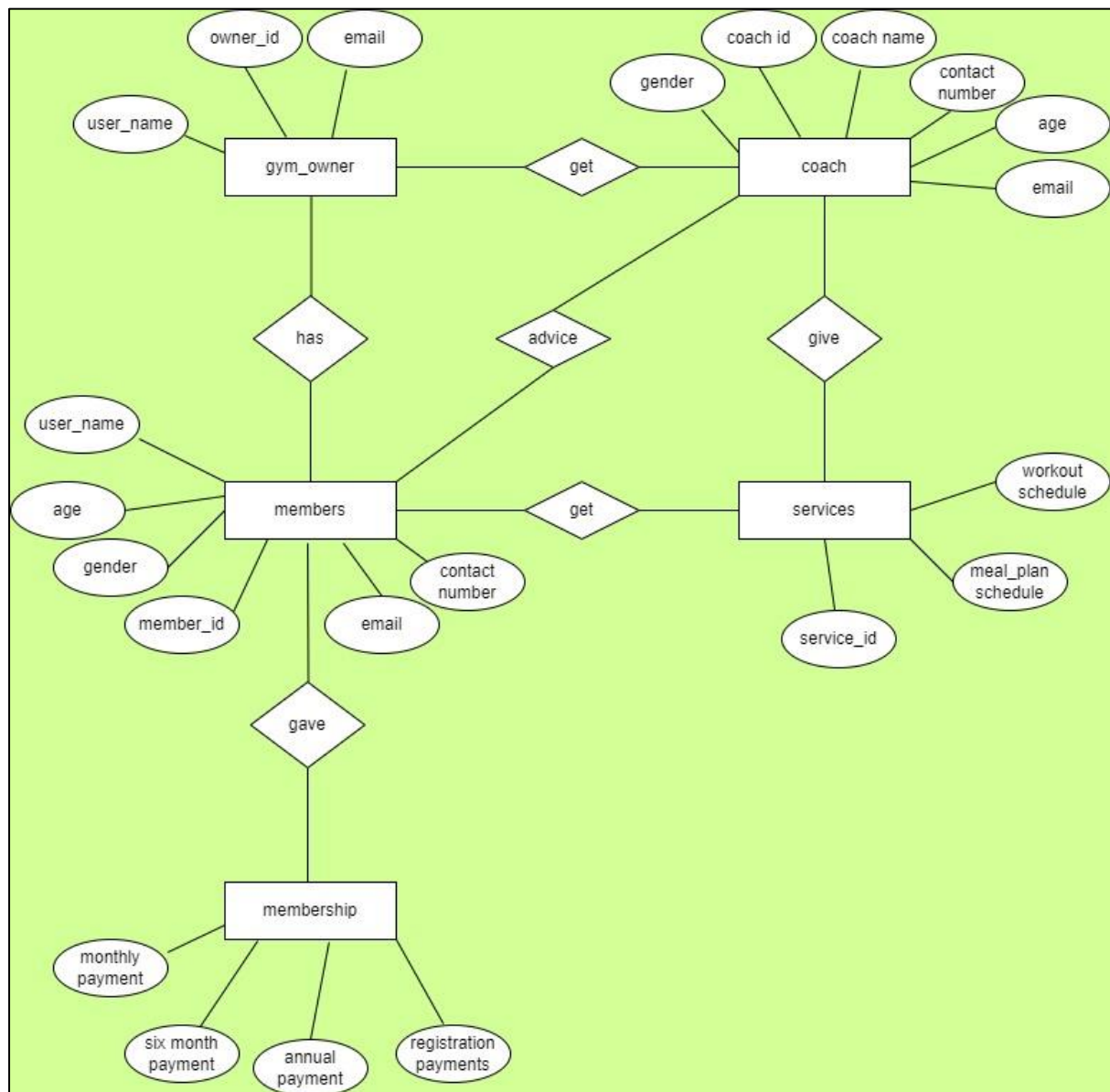
Giving health tips regarding food

How we see the time

Make it as a user friendly application

Good project

ER Diagram

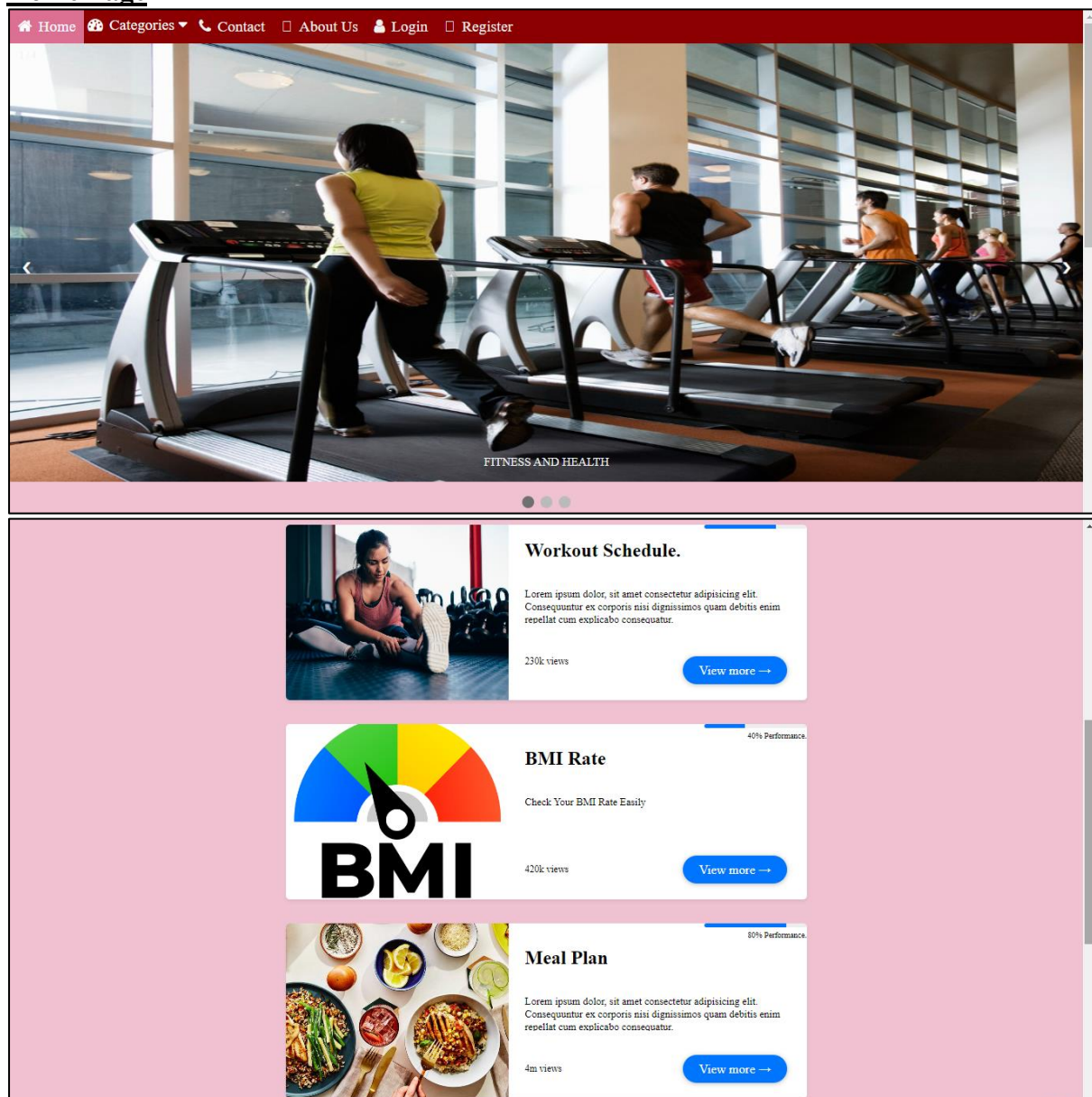


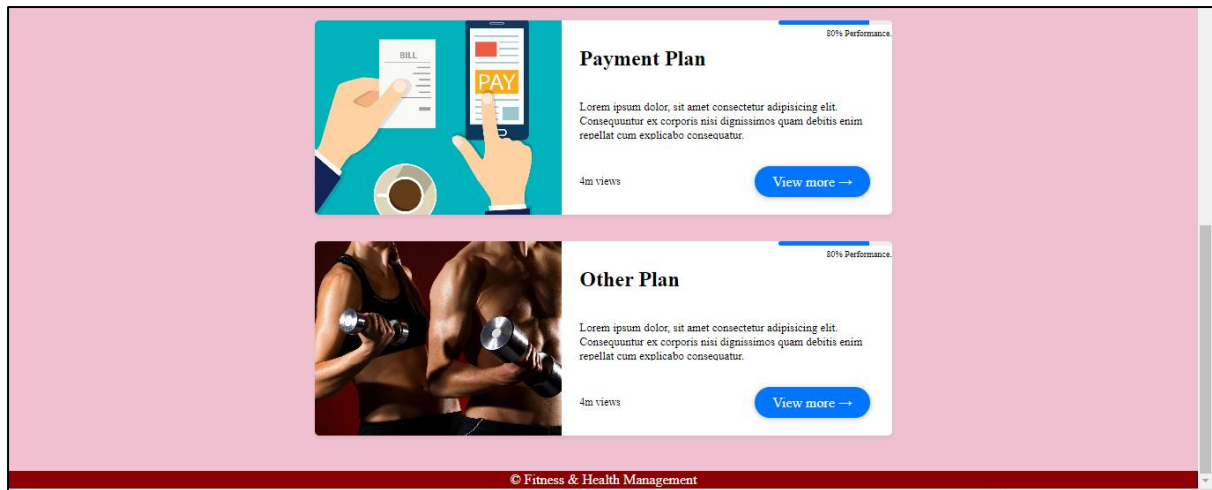
3.3.1 Interface Design

Interfaces are most important for system. Without an interface they can do nothing. Interfaces should colorful, and user-friendly. Because, when the user log to the system, if it is not colorful and user-friendly, they will be disappointed about it. So that, interface design helps to create good product.

Using the Visual Studio Code application this system interfaces were created. HTML, CSS, and JavaScript are used for it.

Home Page





Registration

[Home](#)
[Categories](#)
[Contact](#)
[About Us](#)
[Login](#)
[Register](#)

Register

Full Name

NIC

Email

Address

Date of Birth

Gender

☐ Female
 ☐ Male

Password

Contact

Emergency Contact

Weight

Height

Medical Condition

Allergies

Do You Need a Personal Training?

☐ Yes
 ☐ No

Confirm Password

☒ I will take fully resoonsible for my voluntary participation in this Gym, and I have agree with the terms and conditions.

[Register](#)
[Cancel](#)

Login

[Home](#) [Categories](#) [Contact](#) [About Us](#) [Login](#) [Register](#)

Login

Username

Password

☒ Remember Me [Forgot Password?](#)

[Login](#)

Create A New Account [Register](#)

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Contact




[Home](#) [Categories](#) [Contact](#) [About Us](#) [Login](#) [Register](#)

Contact Us

Location 50/B,
Kandy Rd,
Nittambuwa

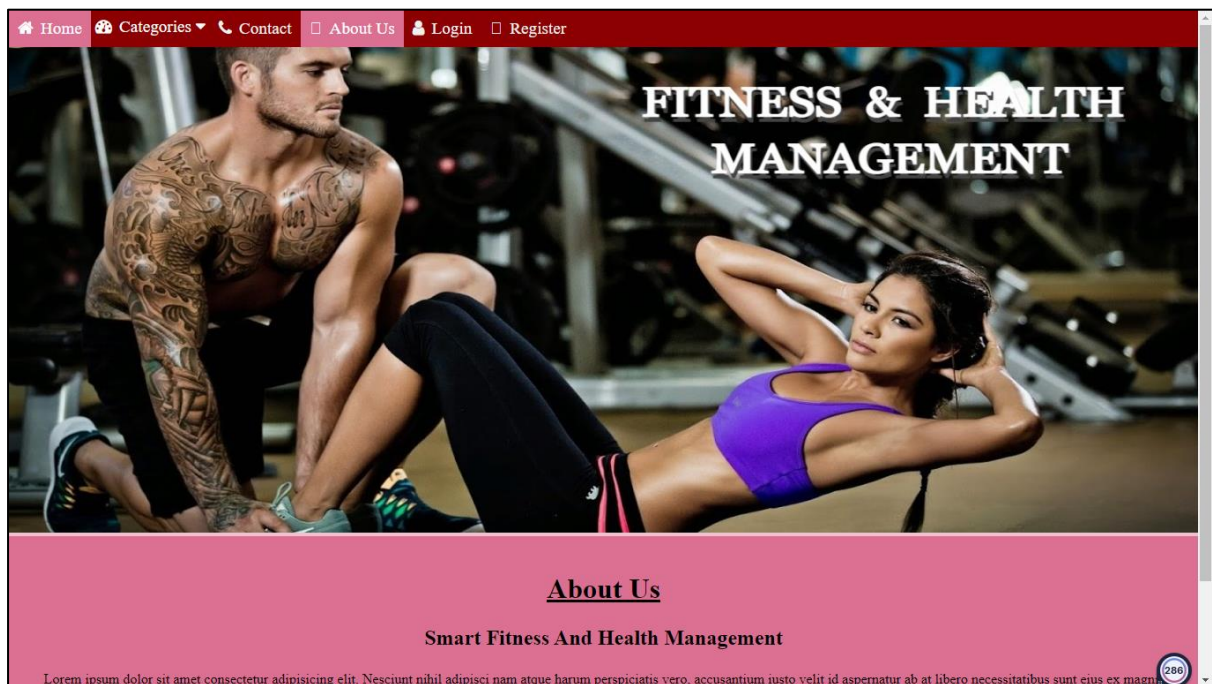
Contact 033 6594215

Email smfitness@gmail.com

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About Us



BMI Calculator

A screenshot of a BMI Calculator interface. The background is a vibrant gradient of pink, purple, and blue. In the center is a white rounded rectangle containing the calculator. The title 'BMI Calculator' is at the top. Below it are two input fields: 'Height' with the value '160' and 'Weight' with the value '53'. The result 'Your BMI is 20.70' is displayed below the inputs. A purple 'Calculate' button is positioned below the result. At the bottom, a small note reads 'Please enter height [cm] and weight [kg]'.

Payment Plan

[Home](#) [Categories](#) [Contact](#) [About Us](#) [Login](#) [Register](#)

Payment

Billing Address

Full Name
Qmin New

Email
qminnew@example.com

Address
75, New York

City
New York

State
NY

Zip
101

Payment

Accepted Cards
VISA AMERICAN EXPRESS MASTERCARD DISCOVER

Name on Card
Qmin Newhe

Credit card number
1111-2222-3333-4444

Exp Month
november

Exp Year
2023

CVV
123

Continue to checkout

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Meal Plan

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Mon 17

Tue 18

Wed 19

Thu 20

Fri 21

Sat 22

Sun 23

Plan

7 cups per day

Fruits
350 grams per day

Activity
30 minutes a day

Sleep
8 hours a day

Activity

© Fitness & Health Management

3.1 Implementation

3.2 Testing

3.5.1 Unit Testing

Home Categories Contact About Us Login Register

Login

Username

Sanduni

Password

Enter Password

☒ Remember Me

Please fill out this field. [Forgot Password?](#)

Login

Create A New Account [Register](#)

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3.5.2 Integration Testing

3.5.3 System Testing

