Dharmsinh Desai University, Nadiad

Faculty of Technology

Department of Computer Engineering

B. Tech. CE Semester – V

Subject: (CE – 515) Advanced Technologies

Project Title: Health-Fitness Management Web Application

By: Yug Rajani,
Roll No: CE-110,
College ID: 17ITUOS059,

Sani Ranpariya,
Roll No: CE-113,
College ID: 17CEUOF017,

Guided by: Prof. Ankit P. Vaishnav,

Department of Computer Engineering

Prof. Parth R. Dave,

Department of Computer Engineering

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Abstract

The project is based on Health-Fitness Management Web Application. As we all know that in this busy world with latest technologies and a lot of love for junk food where we are running short of time for our personal and professional lives, we tend to forget a major factor which we all know about very well, our "health". We generally do not get enough time to visit a personal trainer and discuss regarding our daily habits and how to improve them. So, Health-Fitness Management System will help the users to track their daily activities, water intake, sleep intake, their body measurements and the right amount of food they should be consuming during the different meals of the day. Using this, users will save their time as well as maintain a healthy lifestyle anywhere, anytime. This application will help the trainers to get a platform to represent themselves and reach their customers and the users to become fit and healthy along with their near and dear ones for a happy and sound health in the future.

Our vision: "Wellness that is truly inspired and enabled".

Introduction

The **"Health-Fitness Management Application"** is a web based project which helps to create awareness among the users regarding their health and helps them to live a fit and healthy lifestyle by tracking their daily activities, water intake, analyzing their sleep and body measurements. This application also provides a platform for the professional trainers to connect with the users so as to contact personally using the contact details and the profile of the trainers as shown in the web application so that the users can take advantage of personal training by professional certified trainers.

<table>
<tr><td>Technology Used</td><td>
<table>
<tr><th>Back End</th><th>Front End</th><th>Diagram</th></tr>
<tr><td>Angular CLI 8.3.4</td><td>HTML5</td><td>ERD Plus
https://erdplus.com/</td></tr>
<tr><td>NodeJS 10.16.3</td><td>CSS 4</td><td></td></tr>
<tr><td>MongoDB 4.2</td><td>Bootstrap 4</td><td></td></tr>
<tr><td>ExpressJS</td><td></td><td></td></tr>
<tr><td>TypeScript</td><td></td><td></td></tr>
<tr><td>XML</td><td></td><td></td></tr>
<tr><td>JSON</td><td></td><td></td></tr>
<tr><td>AJAX</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Platform</td><td>• Google Chrome
• Mozilla Firefox
• Microsoft Edge</td></tr>
<tr><td>Tools</td><td>• Visual Studio Code
• Sublime Text Editor
• MongoDB Shell
• MongoDB Compass Community Edition</td></tr>
</table>

Software Requirements Specification

R1: Sign In (Existing User)/Register (New)

R.1.1: Enter credentials

Input: User information.

Output: "Successfully logged in/signed up" message.

R.1.2: Forgot password

Description: In case if user forgets the password of his/her account, this function helps to retrieve the account by confirmation with the registered email.

Input: User selection.

Output: Status of user's account.

R.1.3: Logout

Description: When user is done with the work and wants to leave the site, then he may log out of his account.

Input: User selection.

Output: "Successfully logged out" message.

R.1.4: Manage Profile

Description: User is allowed to change any of the personal information of his/her profile, including the password.

Input: Data to be updated.

Output: Status of user's account

R2: Show Dashboard/Analysis

R.2.1: Weekly-Calendar as per To-Do List

Description: This tab shows a weekly schedule of the user's plan as per his weekly activities added by him/her into the day-wise to-do list.

Input: User selection.

Output: Selected day's list.

R.2.2: Water Analysis

Description: User is shown the graphical form of water intake by him/her on daily basis.

Input: User selection.

Output: Horizontal Bar Graph for Water Intake.

R.2.3: Sleep Analysis

Description: User is shown the graphical form of sleep by him/her on daily basis.

Input: User selection.

Output: Horizontal Bar Graph for Sleep Analysis.

R.2.4: Informative Food Intake Pie-Chart

Description: User is shown the graphical form of food intake that should be consumed by him/her on daily basis in the form of pie-chart representing the amount to be consumed during different meals of the day.

Input: User selection.

Output: Google's Informative Pie-Chart for ideal amount of food to be consumed during different meals of the day.

R3: Use Tools & Calculators (BMI/Body Fat /Ideal Weight)

R.3.1: Show Body Measurements

Description: User is shown his/her body measurements which are previously stored for his/her account to check if there is any update or not.

Input: ---

Output: Last entered data by user.

R.3.2: Update Body Measurements

Description: User can update the details of the body measurements every time before he/she starts using the tools for accurate analysis using the latest data.

Input: Details to be updated.

Output: Confirmation.

R.3.3: Select and Use Tool

Description: User may select the tool that he/she wishes to use and measure the required factors for his/her body from the list of available tools.

Input: User Selection.

Output: Confirmation.

R.3.4: Show Result

Description: User is shown the result of the calculation which he performed using the selected type of calculator.

Input: ---

Output: Results based on analysis. Also, the user is shown with the ideal classification so as to understand the result of the calculation and become aware about the further steps to be taken in order to improve/maintain the results

R4: Manage Water Intake & Sleep Tracking

R.4.1: Show Required Water

Description: User is shown the ideal amount of water he should intake in order to live a healthy lifestyle as per his particular body measurements.

Input: Body measurements and season.

Output: Results based on analysis.

R.4.2: Show Required Sleep

Description: User is shown the ideal amount of sleep he should intake in order to live a healthy lifestyle as per his age.

Input: Current age of the user.

Output: Results based on analysis.

R.4.3: Add One Glass Water

Description: User can add a glass of water to the existing water drank by him during the day.

Input: Selection of glass from three different sizes available.

Output: Details added.

R.4.4: Enter sleep duration

Description: User can enter the number of hours he/she slept during the previous night.

Input: Time duration in hours/minutes.

Output: Details added.

R5: Contact Professional Trainer

R.5.1: Show Available Trainers

Description: End User is shown the options for different available trainers to contact as per the needs of the user.

Input: User selection.

Output: List of trainers in the form of cards.

R.5.2: Select Trainer & See Profile

Description: End User may select any trainer out of the available options to view the complete profile of the trainer. User is also provided with the links to the LinkedIn and Facebook profile of the trainer for ease of access.

Input: User selection.

Output: Profile of the trainer is shown in detail along with the educational qualifications and the details regarding the specialization achieved by the trainer.

R.5.3: Add/Update Trainer

Description: Administrator of the application can add or update the details of the professional trainers.

Input: Details to be added or updated.

Output: Confirmation.

R.5.4: Delete Trainer

Description: Administrator of the application can delete the profile of professional trainers.

Input: Details to be added or updated.

Output: Confirmation.

R6: Contact the developers

R.6.1: Email the developers

Description: User is given a link to mail the feedback or report a bug observed by him/her which may help to improve the application by suggestions from everyone.

Input: User selection.

Output: Opens the default email application in the user's machine.

R.6.2: Talk to the developers

Description: User may talk to the developers via a phone call for reporting a bug or suggesting some improvements for the application or for the professional trainer hired by him/her.

Input: User selection.

Output: A permission for choosing a suitable app for calling from the device (if supported).

R.6.3: Meet the developers in person

Description: User is provided with a link for directions using Google Maps embedded feature so that he/she may meet the developer(s) in person being a technical person so as to improve our application and make it the highest used and loved by the users.

Input: User selection for 'Reach Us' and a basic knowledge of Google Maps.

Output: Directions to the main developer head location.

Database Tables

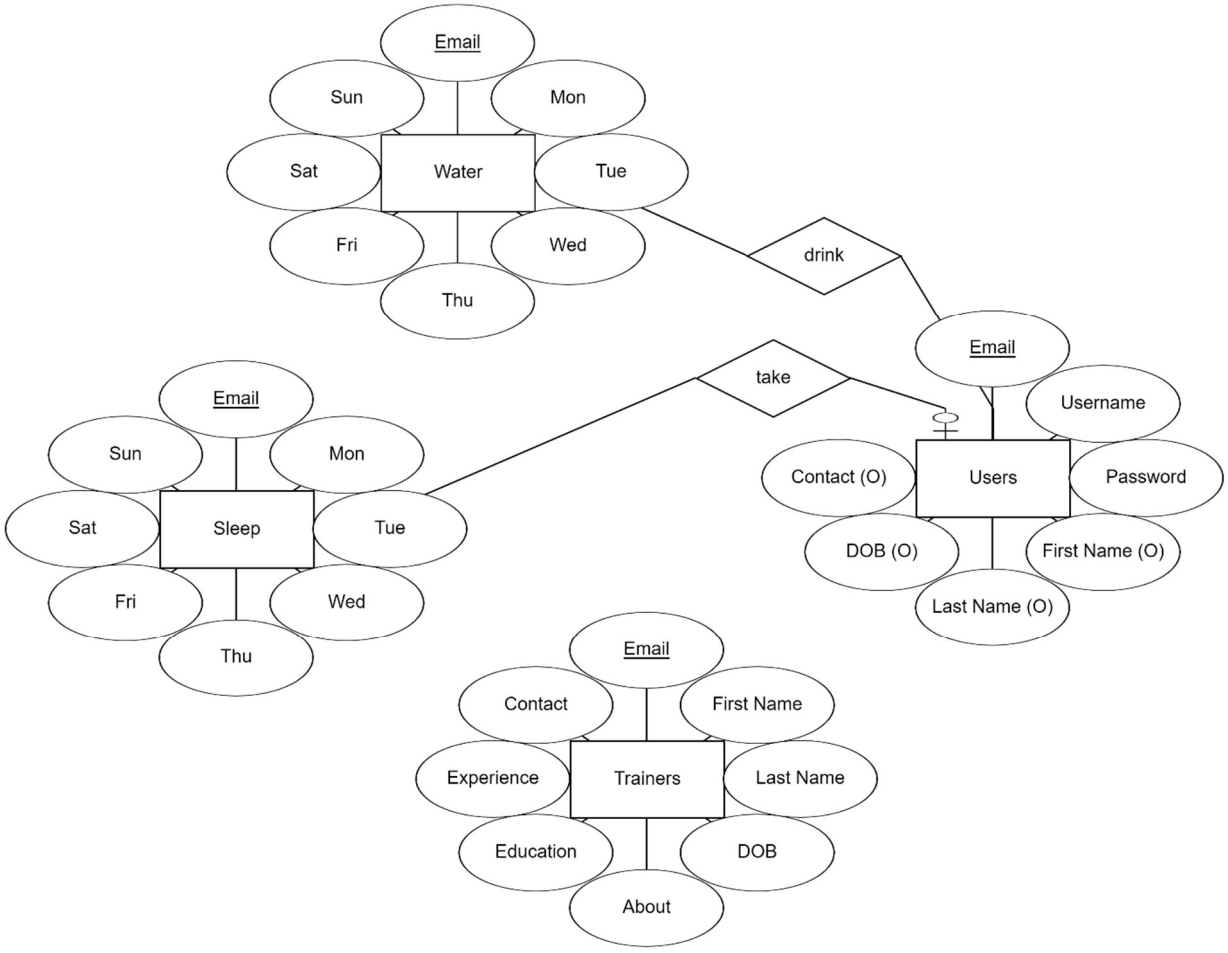
Users							
Sr. No.	**Field Name**	**Data Type**	**Width**	**Required**	**Unique**	**PK/FK**	**References**
1	Email	Varchar2	20	Yes	Yes	PK	
2	Username	Varchar2	20	Yes	Yes		
3	Password	Varchar2	20	Yes	No		
4	First Name	Varchar2	30	No	No		
5	Last Name	Varchar2	20	No	No		
6	DOB	Date		No	No		
7	Contact No	Number	10	No	Yes		

Trainers							
Sr. No.	**Field Name**	**Data Type**	**Width**	**Required**	**Unique**	**PK/FK**	**References**
1	Email	Varchar2	20	Yes	Yes	PK	
2	First Name	Varchar2	20	Yes	No		
3	Last Name	Varchar2	20	Yes	No		
4	DOB	Date	30	Yes	No		
5	About	Varchar2	20	Yes	No		
6	Education	Varchar2	30	Yes	No		
7	Experience	Varchar2	10	Yes	No		
8	Contact	Number	10	Yes	No		

Sleep							
Sr. No.	**Field Name**	**Data Type**	**Width**	**Required**	**Unique**	**PK/FK**	**References**
1	Email	Varchar2	20	Yes	Yes	PK	
2	Mon	Number	2	No	No		
3	Tue	Number	2	No	No		
4	Wed	Number	2	No	No		
5	Thu	Number	2	No	No		
6	Fri	Number	2	No	No		
7	Sat	Number	2	No	No		
8	Sun	Number	2	No	No		

Water							
Sr. No.	**Field Name**	**Data Type**	**Width**	**Required**	**Unique**	**PK/FK**	**References**
1	Email	Varchar2	20	Yes	Yes	PK	
2	Mon	Number	2	No	No		
3	Tue	Number	2	No	No		
4	Wed	Number	2	No	No		
5	Thu	Number	2	No	No		
6	Fri	Number	2	No	No		
7	Sat	Number	2	No	No		
8	Sun	Number	2	No	No		

ER Diagram



The above figure represents the ER diagram of the system. There are 4 basic entities used in the system namely, Users, Trainers, Sleep and Water. Users is used to keep a track of users of the web application, in a similar way, Trainers keeps track of the trainers added by the administrator of the system and Sleep and Water entities are used to measure the sleep and water intake of the user of system.

Design – XML and XSD

XML for Trainer

```
<?xml version="1.0" encoding="UTF-8"?>
<Trainer >
        <email></email>
        <fname></fname>
        <lname></lname>
        <contact></contact>
        <dob></dob>
        <education></education>
        <experience></experience>
        <about></about>
</Trainer>
```

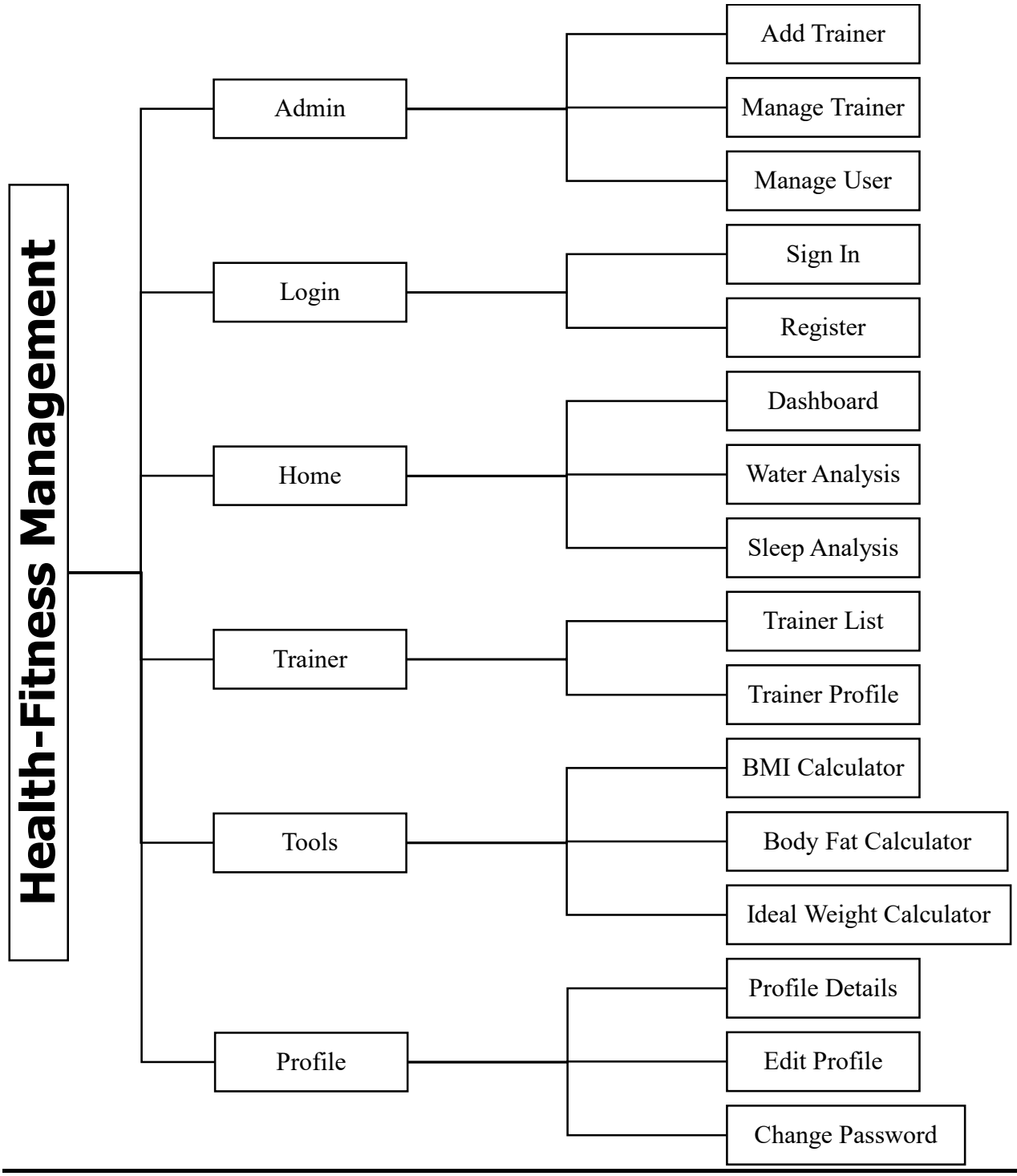
XSD for Trainer

```
<?xml version="1.0" encoding="UTF-8" ?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">

<xs:element name="trainer_list">
 <xs:complexType>
  <xs:sequence>
   <xs:element name="trainer">
    <xs:complexType>
<xs:sequence>
        <xs:element name="email" type="xs:string"/>
 <xs:element name="fname" type="xs:string"/>
        <xs:element name="lname" type="xs:string"/>
        <xs:element name="contact" type="xs:string"/>
        <xs:element name="dob" type="xs:string"/>
        <xs:element name="education" type="xs:string"/>
 <xs:element name="experience" type="xs:string" />
        <xs:element name="about" type="xs:string"/>
      </xs:sequence>
     </xs:complexType>
   </xs:element>
  </xs:sequence>
 </xs:complexType>
</xs:element>
</xs:schema>
```

Implementation Details

Tree Structure of Components



Admin Module:

This module has been designed for the administrator of the system who has special privileges to delete the existing trainers or users or manage the details of the trainer. The administrator must be logged into the system with administrator credentials. The credentials for the system administrator are as given below.

Username: admin@admin.com
Password: admin

Login Module:

In this module, a new user can register and an existing user can login using his credentials, in order to access the basic functionalities of the application. For registration, user needs to provide his/her personal details like user name, email and password. Using email and password, user can sign into site the next time he/she visits and wishes to use the application. User is also shown the usage instructions of the application along with screenshots and steps which are easy to understand and learn for everyone.

Home Module:

The home module of the application has been made in order to display a summary of To-Do list for the week on a per day basis, the analysis of sleep intake of the user in the last week as a percentage of the ideal amount of sleep required by an individual. In addition to that, the analysis of water intake by the user for the week on a per day basis has also been shown in the other tab. The user spends most of his time in the home module of the application.

Trainer Module:

The trainer module is utilized by users to get a list of professional and certified trainers whom they can contact by referring to the contact details provided and thus get the benefit of receiving personal training or coaching for a better schedule management and a helping hand for your health. The trainer card consists of the information regarding the educational qualification, the specialization as well as the link to social profiles of the trainer.

Tools Module:

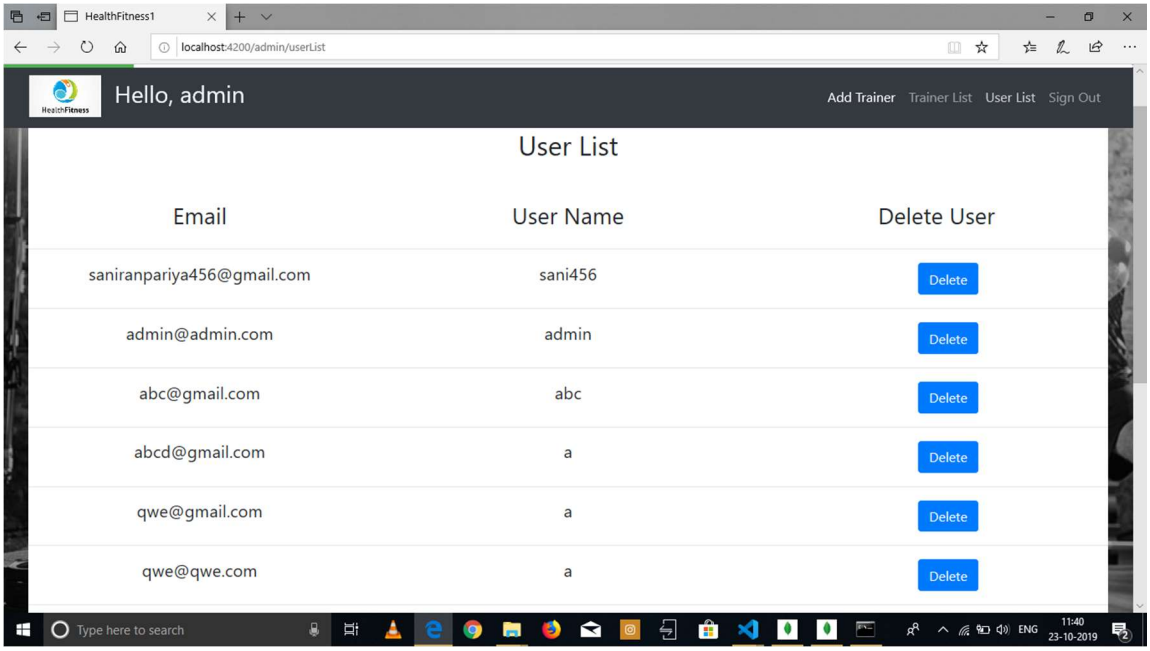
The tools module consists of some basic tools and body measurement calculators which can be used regularly to track your fitness and thus, after analyzing the results, make appropriate changes in the workouts or diet plans currently being adopted by the user. The calculators available in Tools Module comprise BMI (Body Mass Index) calculator, Ideal Weight Calculator and Body Fat Analyzer. The calculation formulae used for the calculation has been taken from some authentic sources including the latest information and classification of the results as per the calculation obtained.

Profile Module:

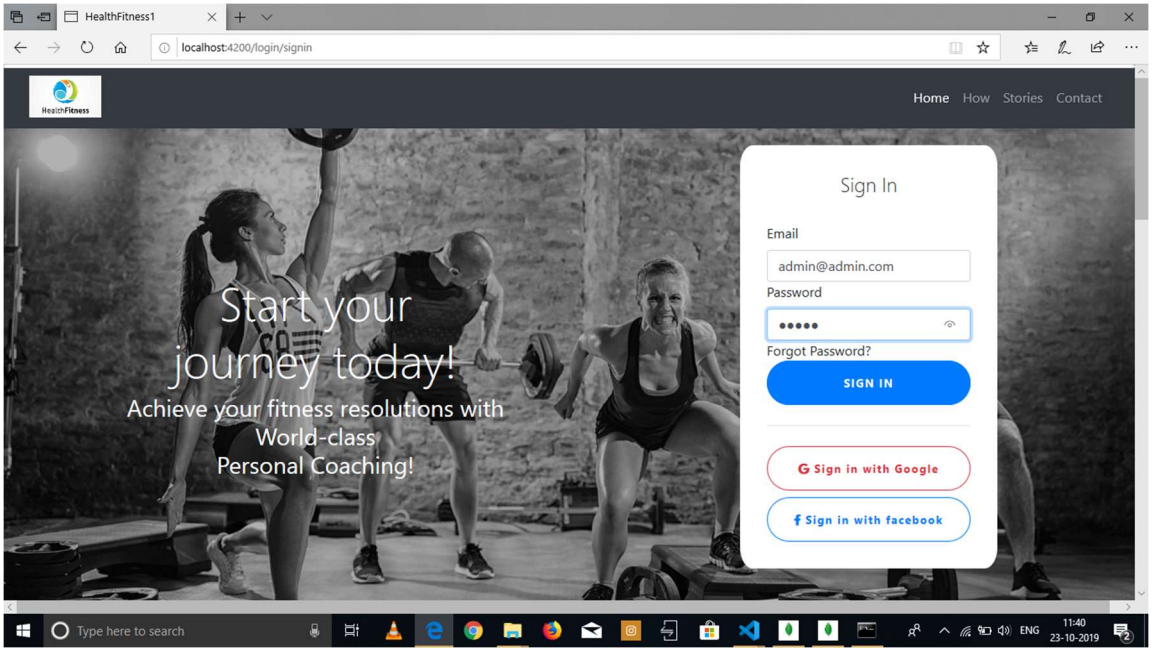
The profile module is made for the users of the application in case they want to manage their profile and their personal information. The users of the application, using the profile module, can add/update their personal details into their profile. The users can also change their password if they wish to do so just for their need or in case of some security reasons. To change their password, they need to enter their current password for verification of their identity. Apart from this, the users are allowed to view their profile.

Screenshots

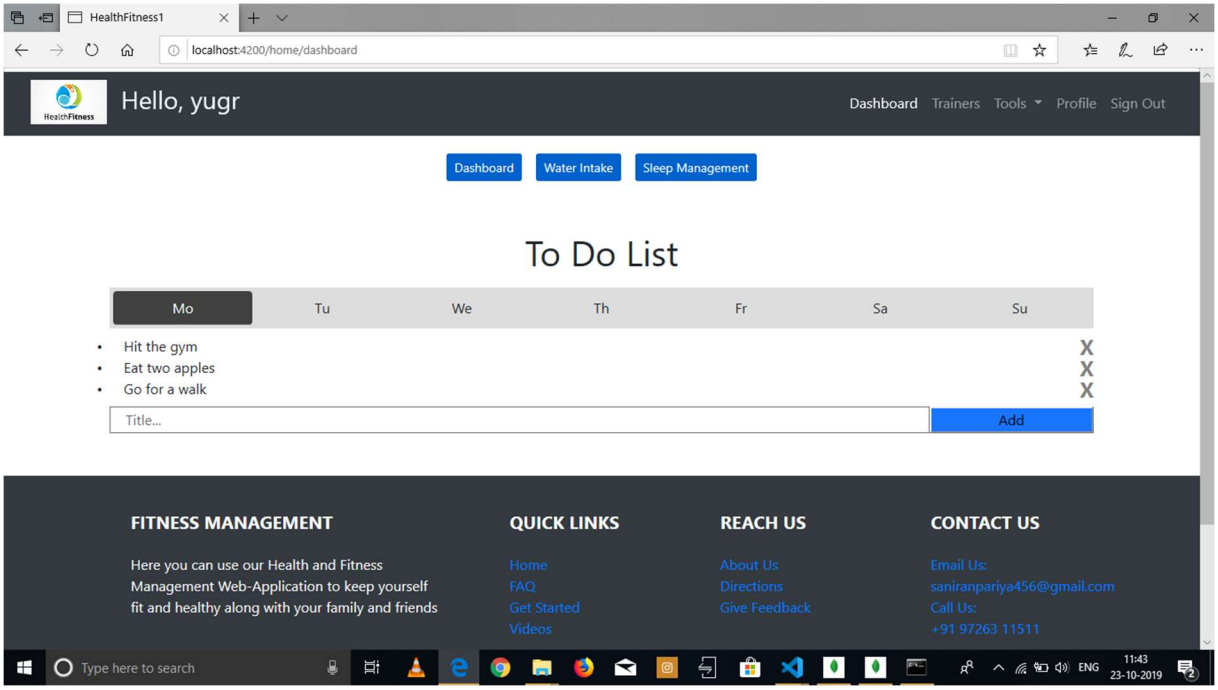
Admin Module



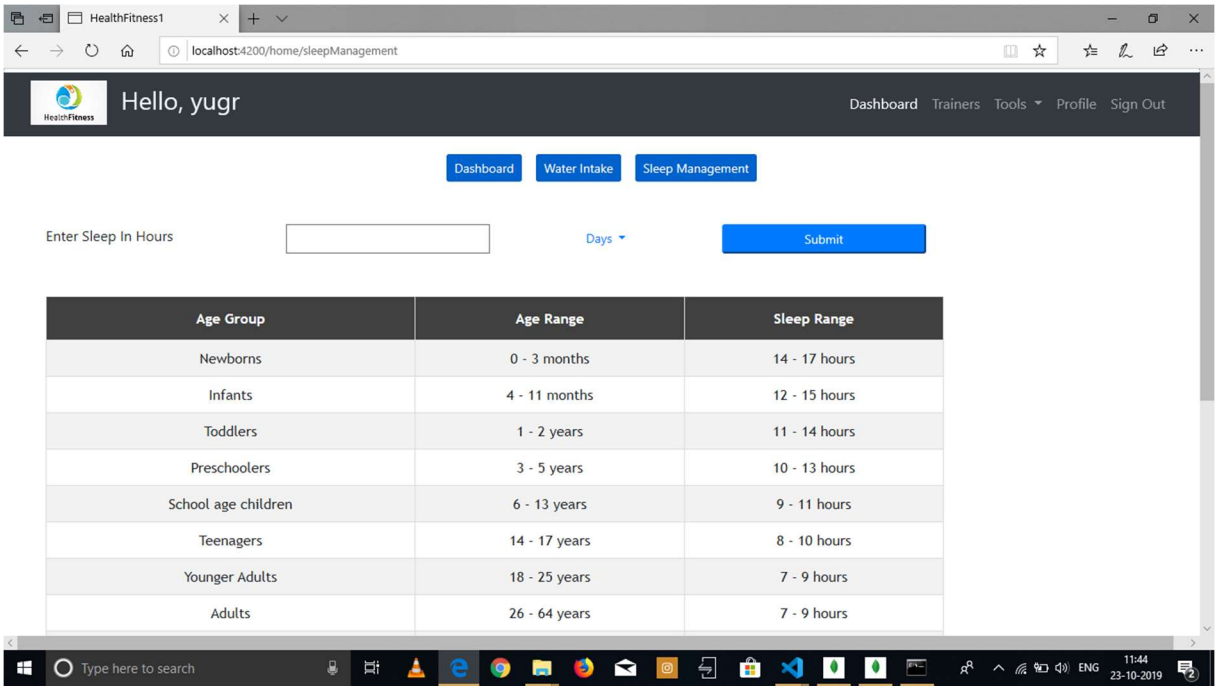
Login Module



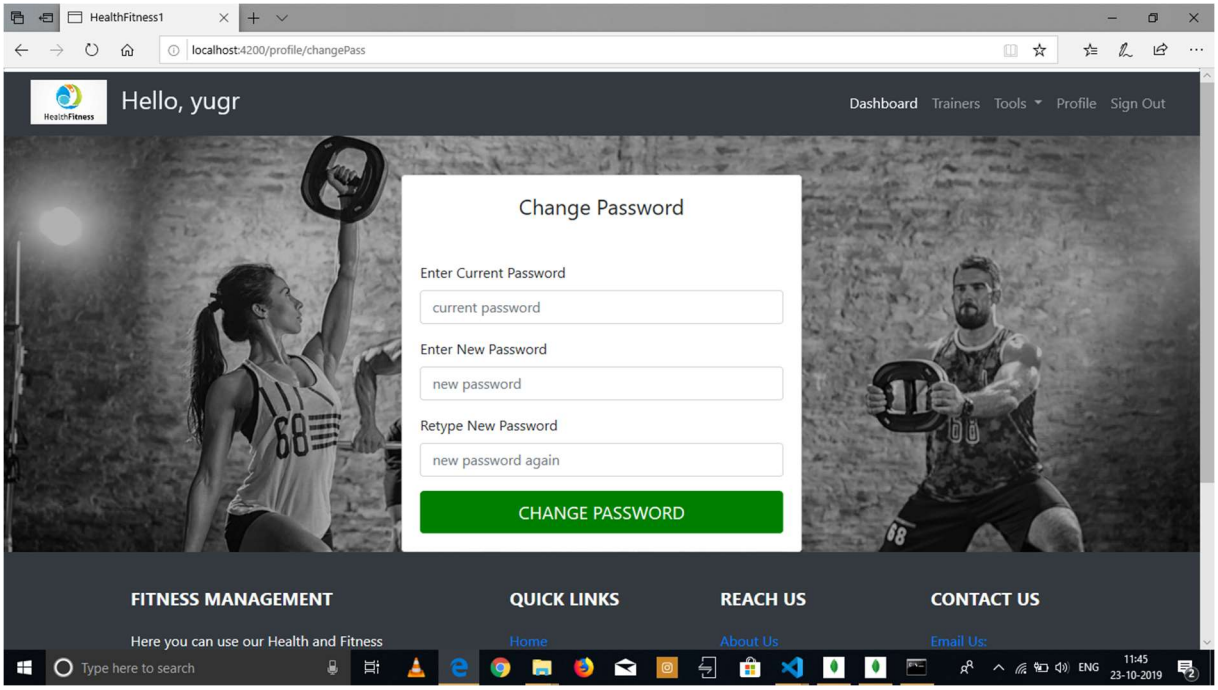
Home Module – To Do List



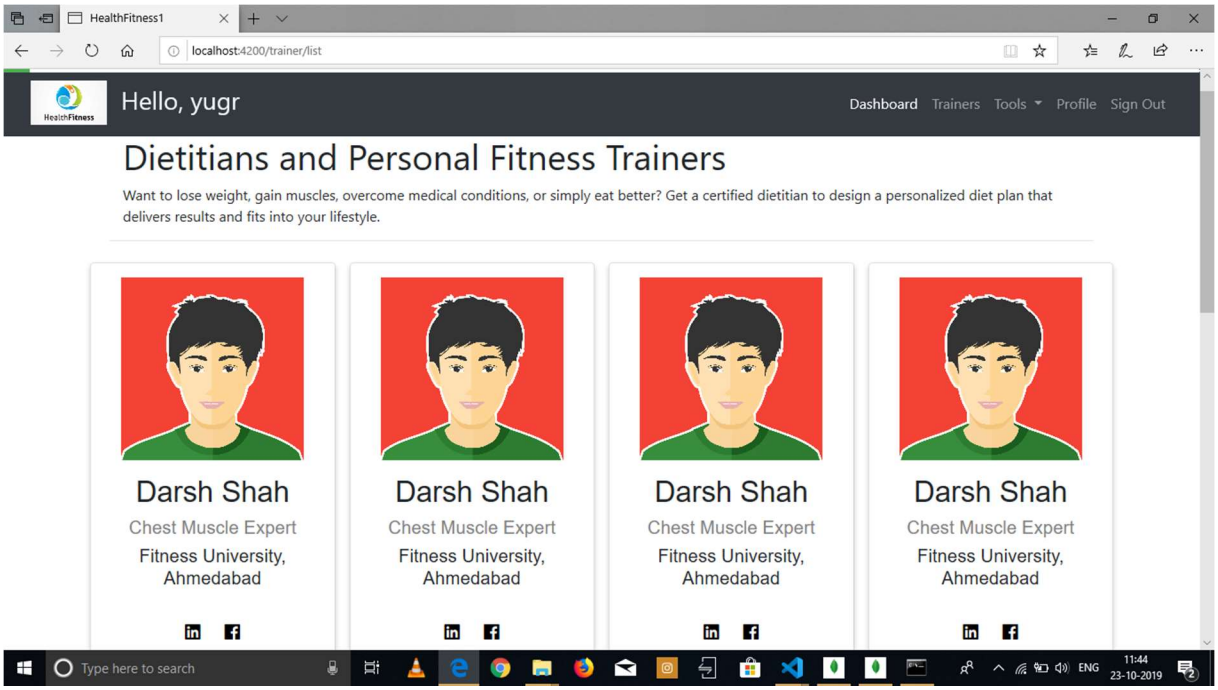
Home Module – Sleep Analysis



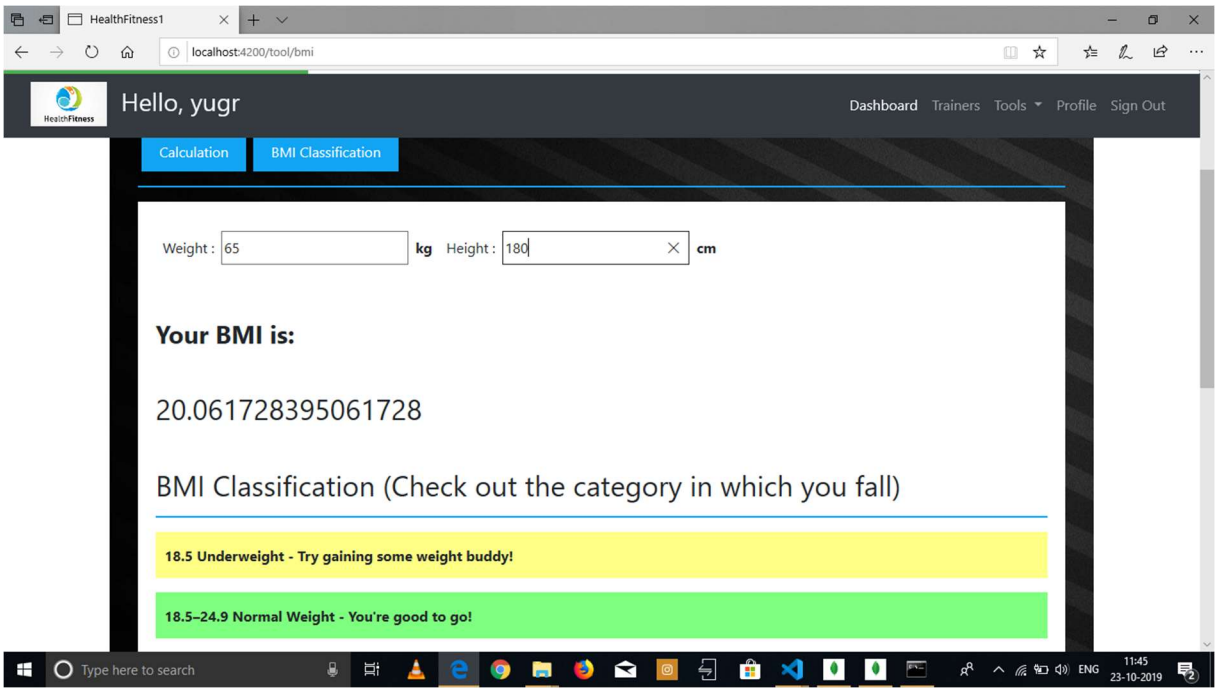
Profile Module – Change Password



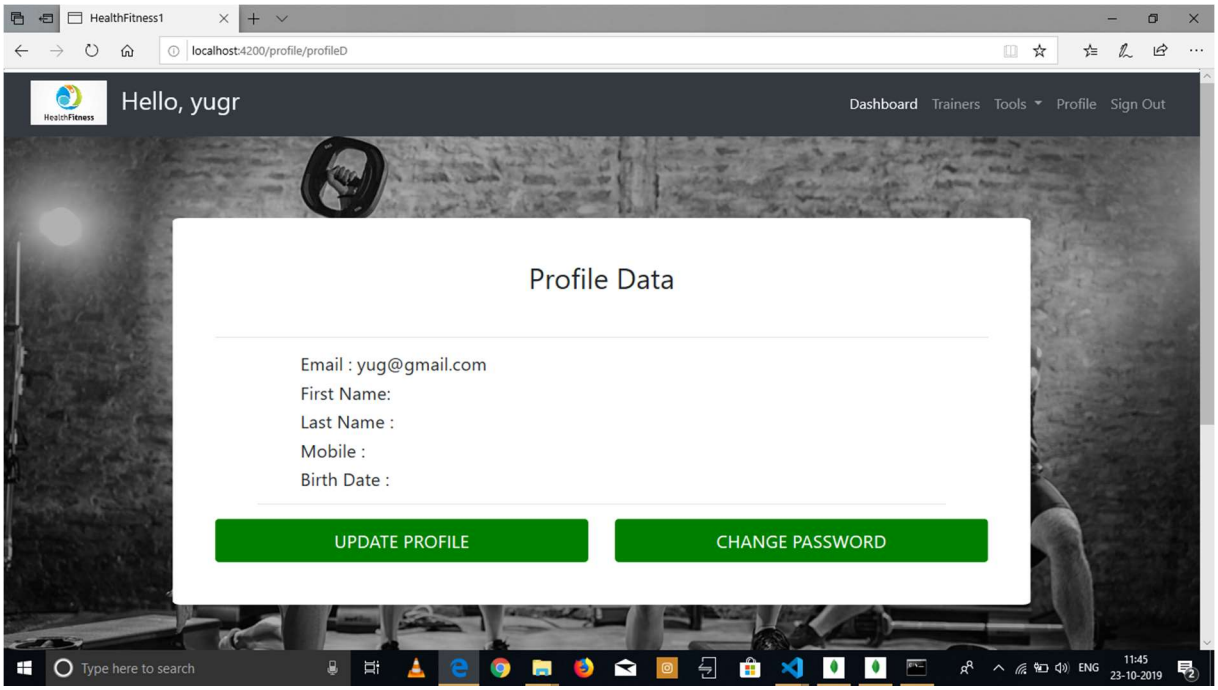
Trainer Module



Tools Module



Profile Module



Limitations

Web application has a limitation in synchronization while loading page.

Web application also lacks in security aspects.

Functionality not implemented:

- OTP or re-CAPTCHA verification during Sign Up or Login.
- Admin side analysis of users and functionalities used.
- Some pre-defined workouts or diet plans.
- Remember Me to store session data over multiple sessions
- Searching implementation.

Future Extension:

- Automatic addition of workouts in To-Do list by learning from past data.
- Efficient Database querying system.
- More User Attractive UI/UX.
- Monthly and Yearly Analysis of Water and Sleep Intake.
- Enhancing security aspect.

Bibliography

- https://cli.angular.io/
- https://www.w3schools.com/
- https://stackoverflow.com/
- https://github.com/
- https://medium.com/
- https://www.youtube.com/playlist?list=PLC3y8-rFHvwhBRAgFinJR8KHIrCdTkZcZ