

CHAPTER 1

INTRODUCTION

CHAPTER 1

1. INTRODUCTION

1.1 PROJECT DESCRIPTION:

The BMI Fitness Web Application is a simple, web-based tool designed to calculate a user's Body Mass Index (BMI) based on their height and weight. The application provides instant results along with basic fitness recommendations, helping users assess whether they are underweight, normal weight, overweight, or obese. It operates entirely on the client side, ensuring quick performance, ease of use, and privacy.

This application is intended for individuals who want a quick and reliable way to monitor their BMI and gain basic insights into their health. It features a clean, interactive interface, making it accessible for users of all ages.

1.2 SCOPE OF THE PROJECT:

- BMI calculation based on user input (height and weight)
- Categorization of BMI results (Underweight, Normal, Overweight, Obese).
- Basic fitness and health recommendations based on BMI category.
- Fully client-side functionality (no database or backend).
- Responsive design for desktop and mobile devices.
- Lightweight and fast-loading for better user experience.
- General users interested in monitoring their BMI.
- Fitness enthusiasts who want a quick BMI reference.
- -Health-conscious individuals looking for basic fitness advice.

CHAPTER 2

SYSTEM ANALYSIS

CHAPTER 2

2.SYSTEM ANALYSIS

2.1 FEASIBILITY STUDY

A feasibility study is conducted to determine the practicality and viability of developing a BMI Fitness Web Application using HTML, CSS, and JavaScript without any backend technologies. This study evaluates the project's technical, operational, economic, and social aspects to ensure its successful implementation.

2.1.1 TECHNICAL FEASIBILITY

The project utilizes front-end technologies:

HTML: Structure of web pages

CSS: Styling and layout

JavaScript: Logic implementation and user interaction

The selected technologies are lightweight, easy to use, and widely supported across various browsers and devices. Since no backend or database is required, the system becomes more reliable and secure, reducing complexities. The project can be hosted on GitHub Pages or any static web hosting platform without additional server infrastructure.

2.1.2 ECONOMIC FEASIBILITY

The project is highly cost-effective because:

- It uses free and open-source technologies
- No backend or external APIs are required
- Free web hosting services can be used. The application requires minimal maintenance, as the static web pages will not need frequent updates or technical upgrades.

2.1.3 SOCIAL FEASIBILITY

The application is designed to be accessible to everyone without any subscription or payment, promoting health awareness for all age groups. By offering personalized diet plans and exercise routines, the system encourages users to adopt a healthier lifestyle.

2.2 EXISTING SYSTEMS

Popular fitness platforms like Fitbit offer BMI calculations and fitness guidance. However, these platforms often require registration, subscriptions, or paid memberships to access premium features. Additionally, most applications focus solely on BMI calculations without comparing body fat percentage, which limits their accuracy in categorizing users' health conditions.

DISADVANTAGES:

- Based on the analysis of existing systems, the following gaps were identified:
- Lack of body fat percentage comparison with BMI
- Paid access to diet and exercise plans
- Limited personalized diet options (vegan, vegetarian, non-vegetarian)
- Absence of a feedback system to evaluate user satisfaction
- Subscription-based access to premium resources

2.3 PROPOSED SYSTEM

The proposed BMI Fitness Web Application aims to overcome these limitations with the following features:

BMI calculation based on Age, Weight, Height, and Gender, with categorization by comparing both BMI and Body Fat Percentage

- Weekly Diet Plans for Underweight, Normal weight, and Overweight users in Vegan, Vegetarian, and Non-Vegetarian options
- Exercise Tutorials in both Video and Textual formats for Cardio, HIIT, and Strength Training
- Feedback Form to collect user opinions, which can only be accessed by the admin using an authenticated password system
- Completely Free Access without any subscription or registration

CHAPTER 3

SYSTEM DESIGN

CHAPTER 3

3. SYSTEM DESIGN

3.1 SYSTEM REQUIREMENTS

3.1.1 HARDWARE REQUIREMENTS

To ensure smooth functionality and performance of the **BMI Fitness Web Application**, the following hardware requirements are recommended:

Processor: Intel Core i3 12th Generation or higher

RAM: 8GB

Storage: 512GB SSD

Display: 15.6’’ FHD Screen

OS: Windows 11

Browser: Google Chrome (Latest Version) or other

Pre-installed Software: MS Office 2021

3.1.2 SOFTWARE REQUIREMENTS

The BMI Fitness Web Application is developed using the following software tools :

Visual Studio Code(VS Code): Latest Version

VS Code Extensions: Prettier

Web Browser Used: Google Chrome

VS Code :

Visual Studio Code (VS Code) is a free, lightweight, and powerful code editor developed by Microsoft, designed for writing, debugging, and managing code across multiple languages. It features IntelliSense for smart autocompletion, built-in Git integration, a powerful debugger, and a terminal for command-line operations. With a vast marketplace of extensions, VS Code can be customized for various frameworks and tools. It supports real-time collaboration through Live Share and offers a highly customizable interface with themes and keybindings. Its speed, efficiency, and flexibility make it a popular choice for developers working on web development, software projects, and more.

Prettier:

The Prettier extension for VS Code is a popular code formatter that automatically enforces consistent styling by formatting code according to predefined rules. It supports multiple languages, including JavaScript, TypeScript, HTML, CSS, and JSON, ensuring clean and readable code by handling indentation, spacing, and line wrapping. Prettier integrates seamlessly with VS Code, allowing developers to format code on save or manually with a shortcut. It helps maintain code consistency across projects, reducing the need for manual formatting and improving collaboration by enforcing a standard coding style.

Google Chrome:

Google Chrome is a fast, secure, and widely used web browser developed by Google. Built on the Chromium engine, it offers a clean and user-friendly interface, seamless synchronization across devices, and strong integration with Google services. Chrome is known for its speed, robust security features like automatic updates and phishing protection, and extensive support for extensions through the Chrome Web Store. It also includes a powerful developer console, making it a preferred choice for web developers. With features like tab management, built-in password storage, and cross-platform compatibility, Chrome provides a smooth and efficient browsing experience.

Other browsers:

Several web browsers offer unique features tailored to different user needs. **Mozilla Firefox** prioritizes privacy and security with strong customization options, while **Microsoft Edge**, built on Chromium, provides fast performance and deep Windows integration. **Safari**, optimized for Apple devices, offers smooth performance and energy efficiency. **Opera** includes a built-in VPN and ad blocker, enhancing security and convenience. **Brave** focuses on privacy by blocking ads and trackers by default, while **Vivaldi** caters to power users with extensive customization and tab management. Each browser balances speed, security, and usability to suit different browsing preferences.

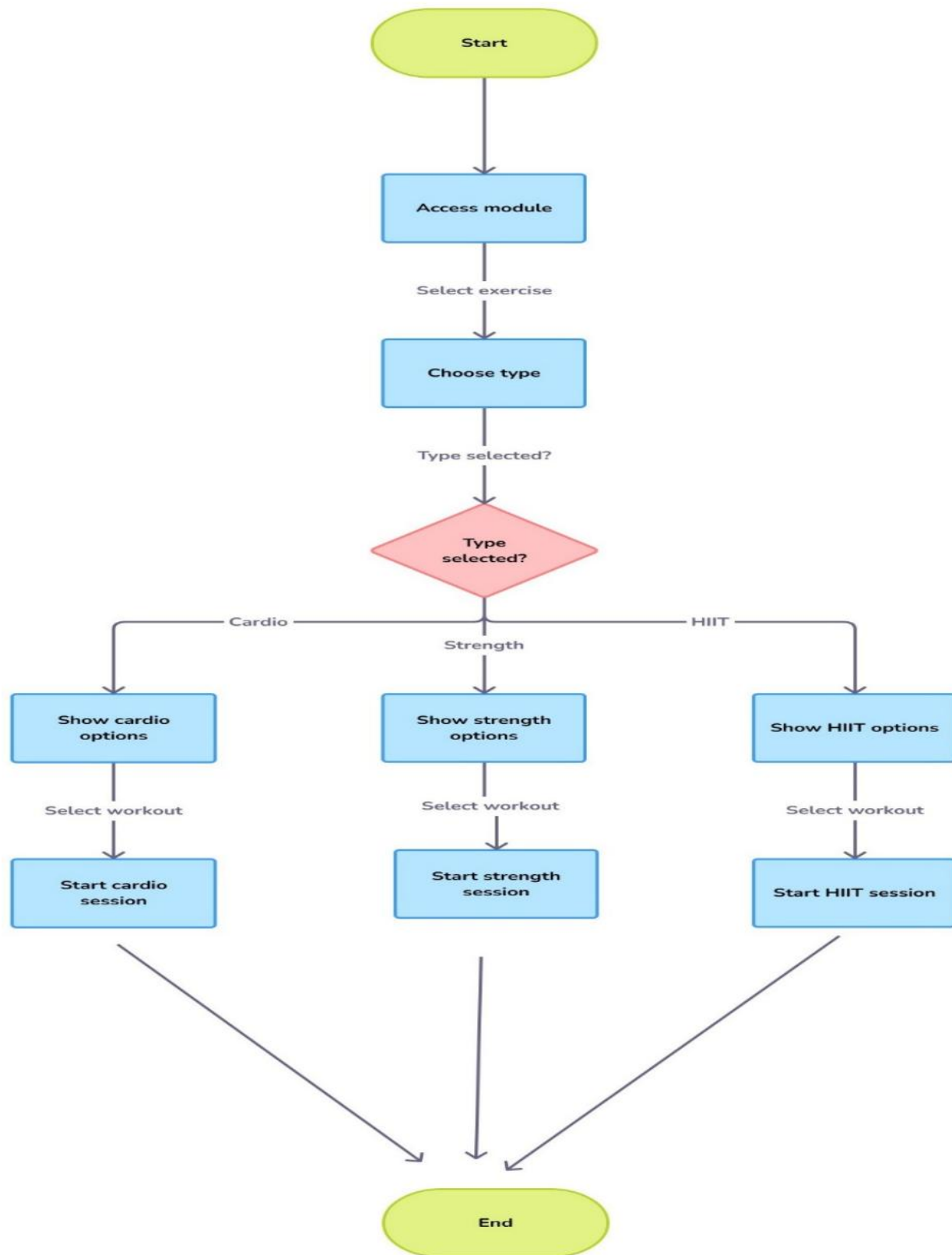
3.2 DATA FLOW DIAGRAMS

The Data Flow Architecture of the BMI Web Application outlines how data is transmitted through various components to deliver accurate health insights and personalized recommendations. The process begins with the user interface, where individuals provide their height, weight, age, and gender. After validating this information, the system processes the BMI calculation using a standard formula to determine the appropriate health category. The resulting data is then used to fetch relevant diet and exercise recommendations, as well as track BMI history for ongoing health monitoring. Additionally, a feedback mechanism collects user responses to continuously refine and improve the provided suggestions. External services, including cloud hosting and potential AI-based health analysis, further enhance the application's functionality and scalability. This structured approach ensures a seamless user experience, efficient data management, and reliable health insights.

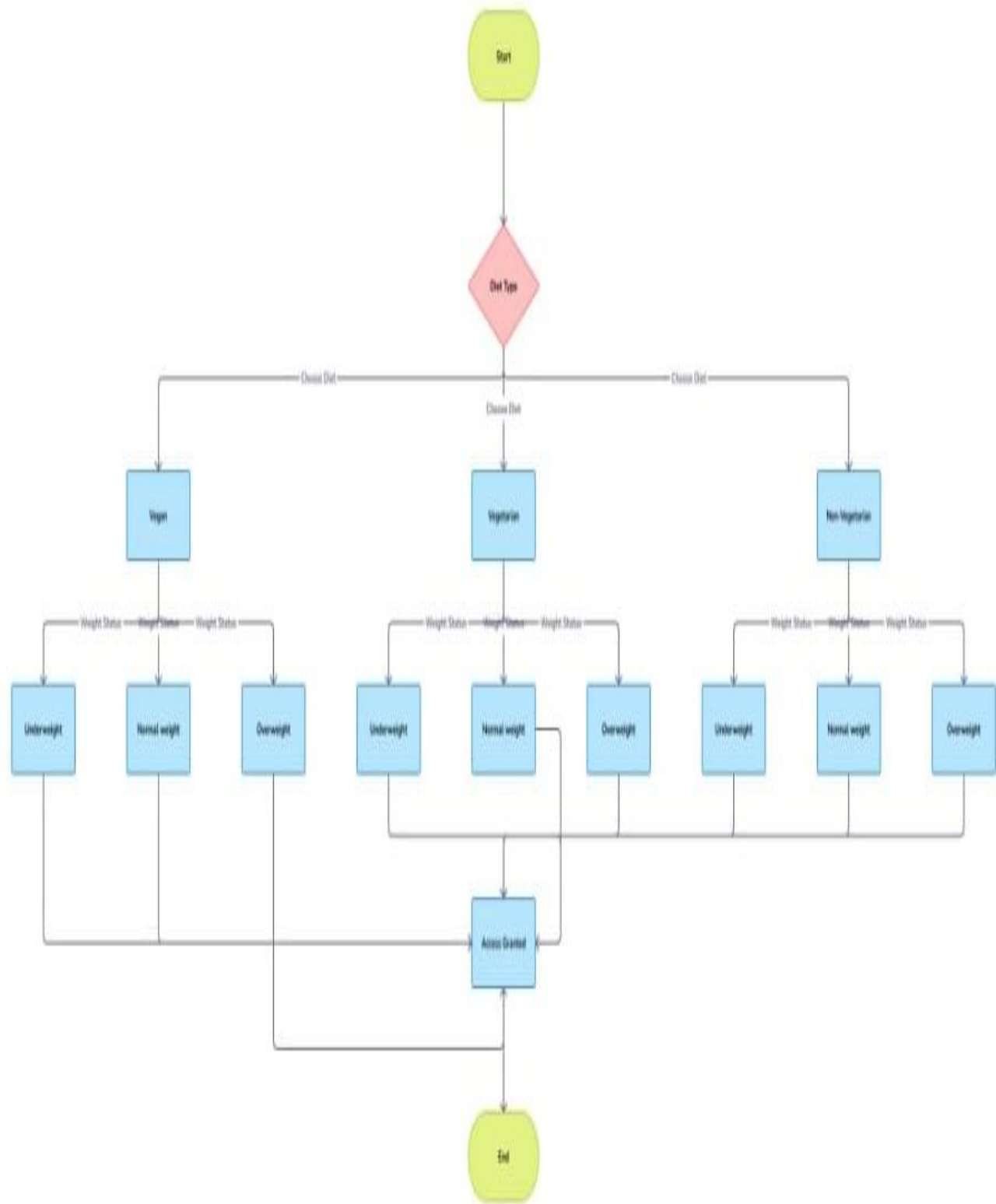
FLOWCHART OF THE BMI CALCULATION AND CATEGORIZATION



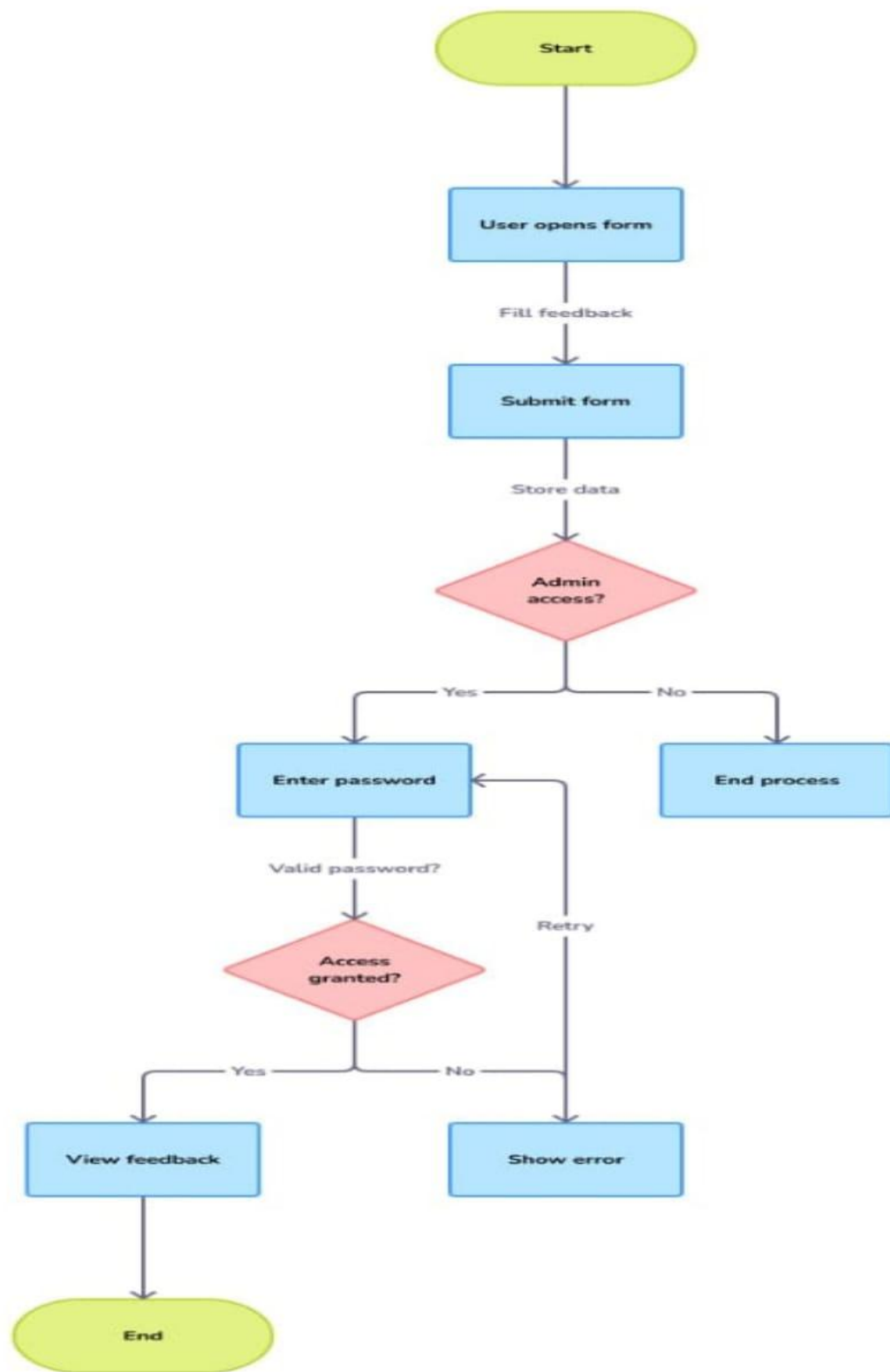
FLOWCHART OF EXERCISE MODULE



FLOW CHART OF DIET MODULE



FLOWCHART OF FEEDBACK PROCESSING



3.3. SYSTEM TESTING

System Testing ensures the entire BMI Fitness Web Application works correctly as a whole. It verifies functionality, performance, and user interactions across different devices and browsers.

3.3.1 UNIT TESTING

A] BMI Calculation Function:

- Correct formula implementation ($BMI = \text{weight} / \text{height}^2$).
- Valid input handling (e.g., 50kg, 1.6m).
- Edge case testing (very low/high values, non-numeric input).

B] UI Behavior:

- Input validation (accepts only numbers).
- Dynamic result updates.
- Error handling for missing or incorrect inputs.

3.3.2 VALIDATION TESTING

A] Functional Testing:

Correct BMI category and fitness recommendations displayed.

Proper button functionality.

B] UI & UX Testing:

- Responsive design across devices.
- Clear labels, buttons, and instructions.

C] Cross-Browser Compatibility:

- Testing on Chrome, Firefox, Edge, and Safari.

D] Error Handling:

- Proper messages for invalid or missing inputs.

CHAPTER 4

MODULE DESCRIPTION

CHAPTER 4

4. MODULE DESCRIPTION

4.1 LISTS OF MODULES

- **Home**
- **Creators and Contact**
- **Blog**
- **Diet Plans**
- **Exercise**
- **Feedback**

4.2 MODULES DESCRIPTION

HOME

The Home page serves as the main interface of the BMI Web Application. It provides users with an input form to enter their height and weight for instant BMI calculation. The result is displayed with a color-coded category (underweight, normal, overweight, or obese) and a brief health tip. The page is designed with a clean, responsive layout to ensure a smooth user experience across different devices.

CREATORS AND CONTACT

The Creator page gives credit to the developer(s) behind the BMI Web Application. It includes details about the creator's name, background, and motivation for building the application. Additionally, this page may feature links to the creator's portfolio. We provide a phone number and mail ID for contact.

BLOG

The Blog section contains articles and informative content related to BMI, health, fitness, and wellness. Topics may include how BMI is calculated, its importance, common misconceptions, and tips for maintaining a healthy lifestyle. This section helps users stay informed about health and fitness trends while encouraging regular engagement with the application.

DIET PLANS

The Diet Plan page provides personalized dietary recommendations based on the user's BMI category. It includes:

- Underweight: High-calorie, nutrient-rich foods for healthy weight gain.
- Normal weight: Balanced meal plans for maintaining a healthy lifestyle.
- Overweight & Obese: Low-calorie, high-fiber diets with portion control tips.

EXERCISE

The Exercises page offers fitness recommendations based on BMI results. It includes:

- Underweight: Strength training and resistance exercises for muscle gain.
- Normal weight: A balanced mix of cardio, strength, and flexibility workouts.
- Overweight & Obese: Low-impact exercises like walking, swimming, and beginner-friendly workouts to reduce weight safely.

FEEDBACK

This page gathers user feedback on how this application was useful for them and these data will be accessed only by admin using password that is not known to the user. This really enable us to upload new features to the application to make it more efficient as it plays a key role for the progress of every application.

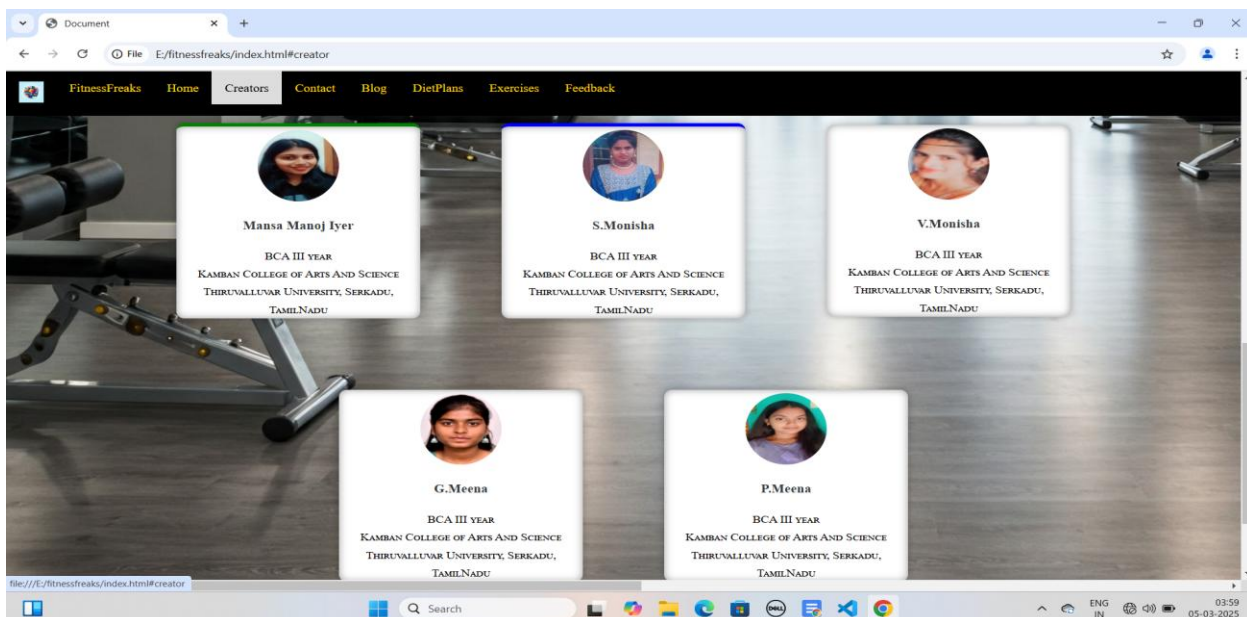
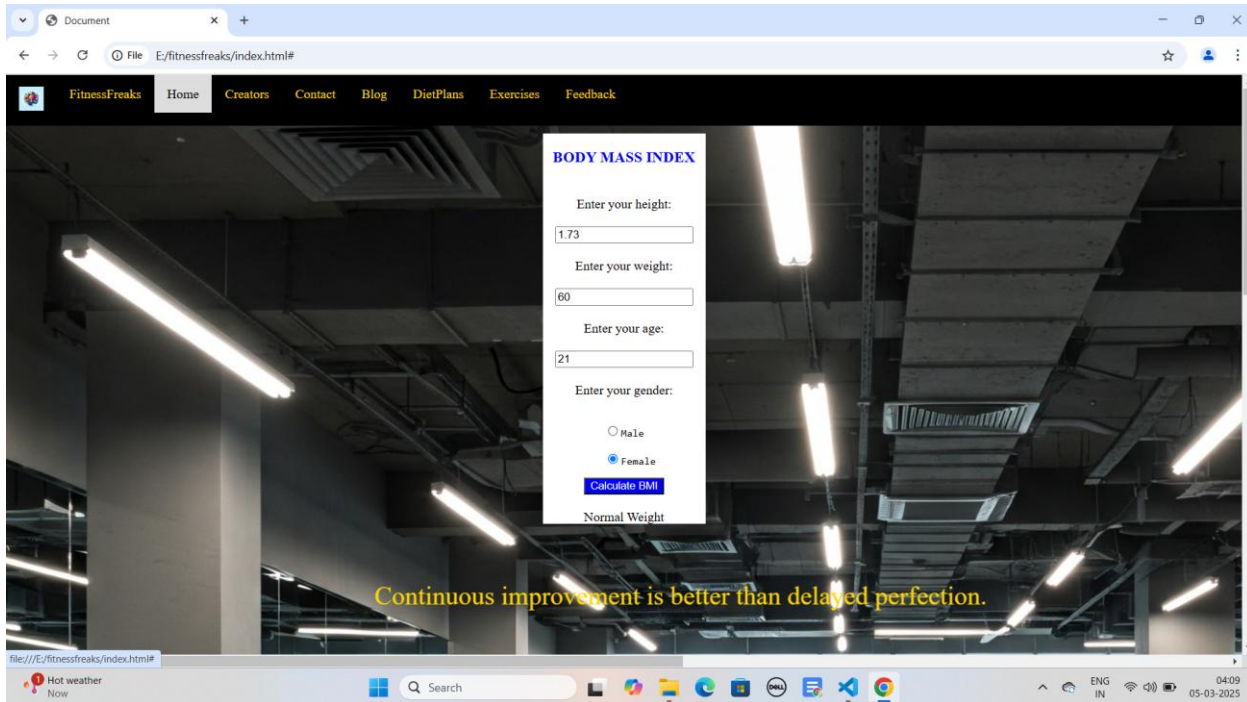
CHAPTER 5

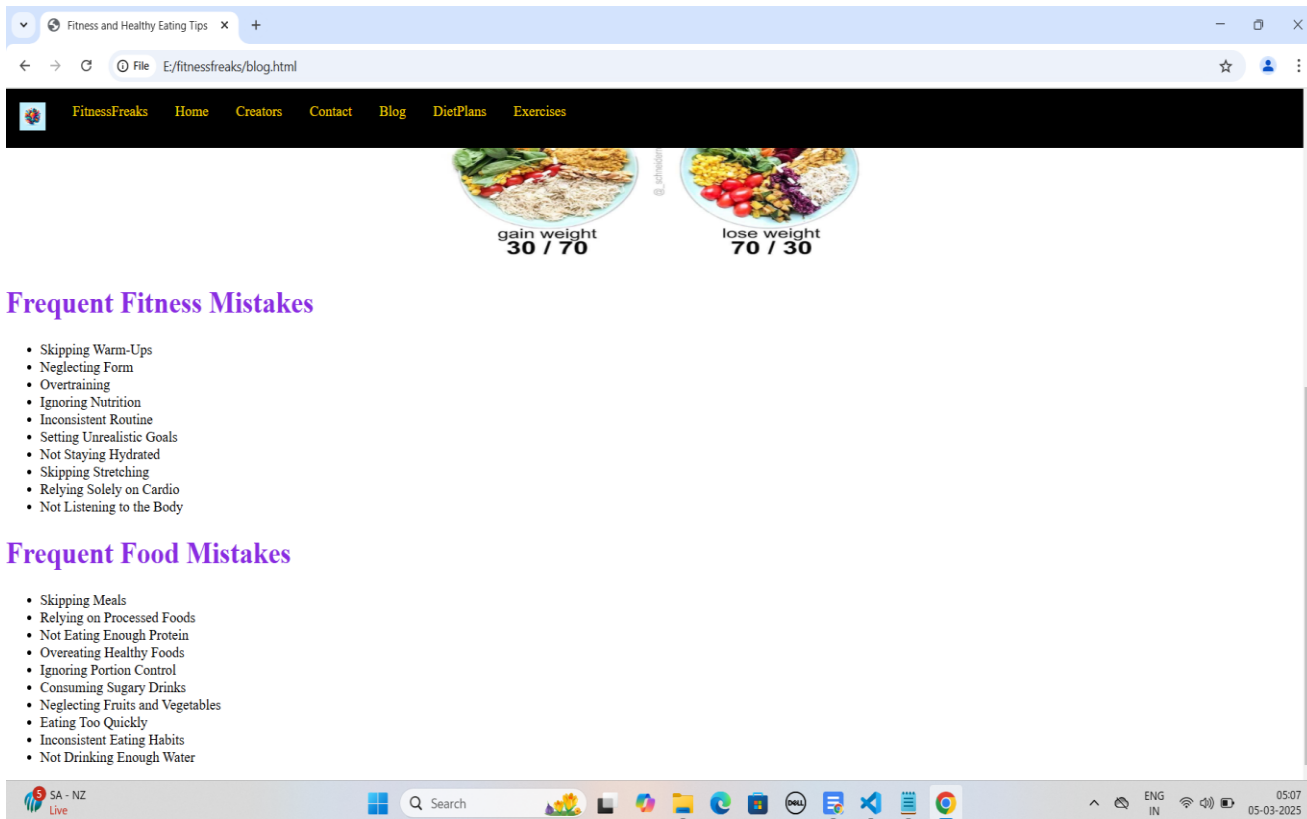
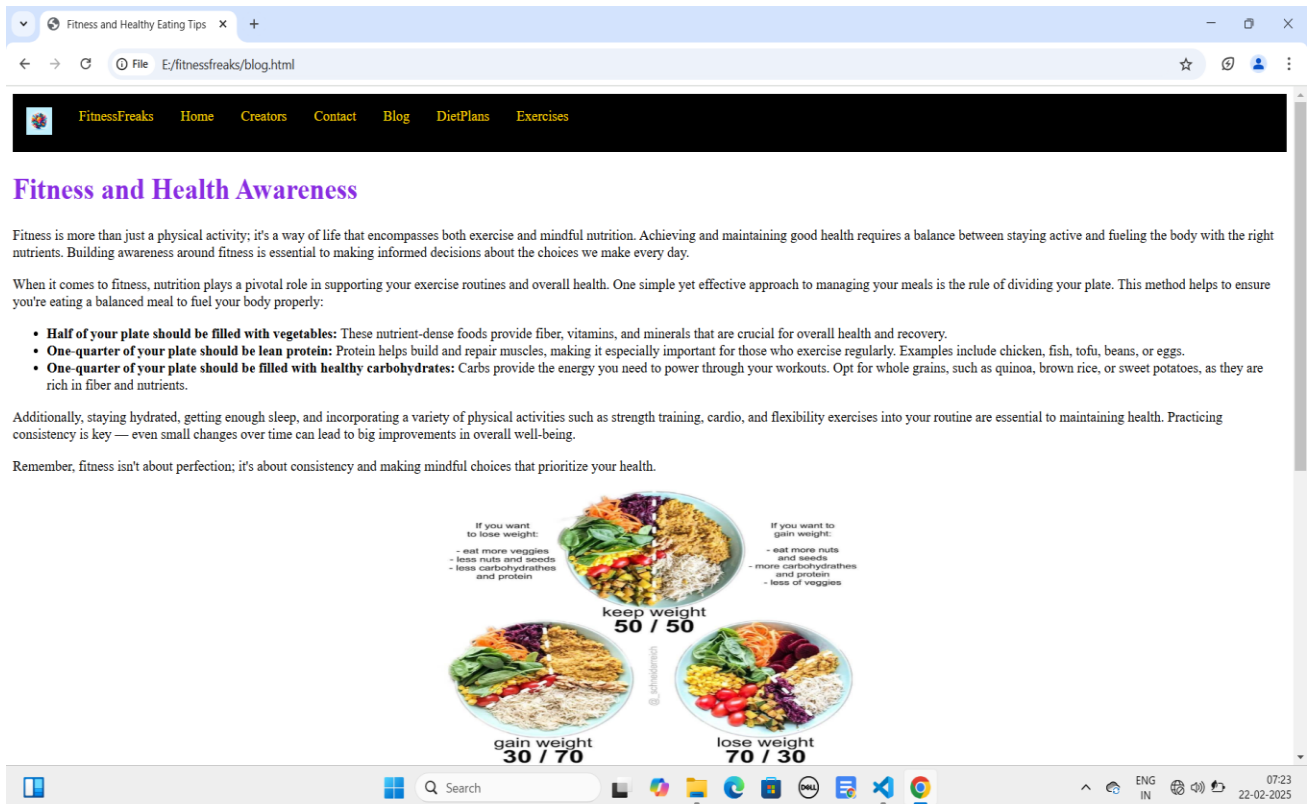
RESULTS AND CODING

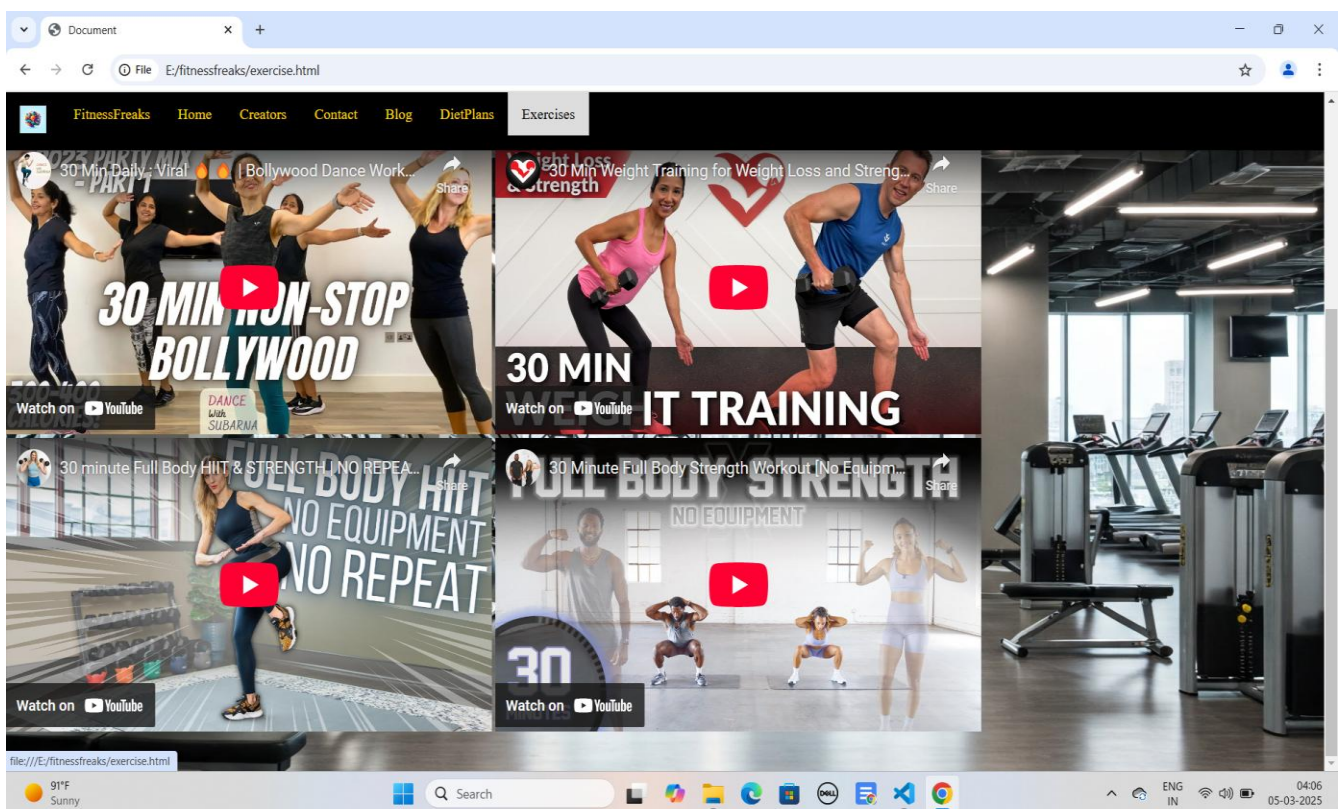
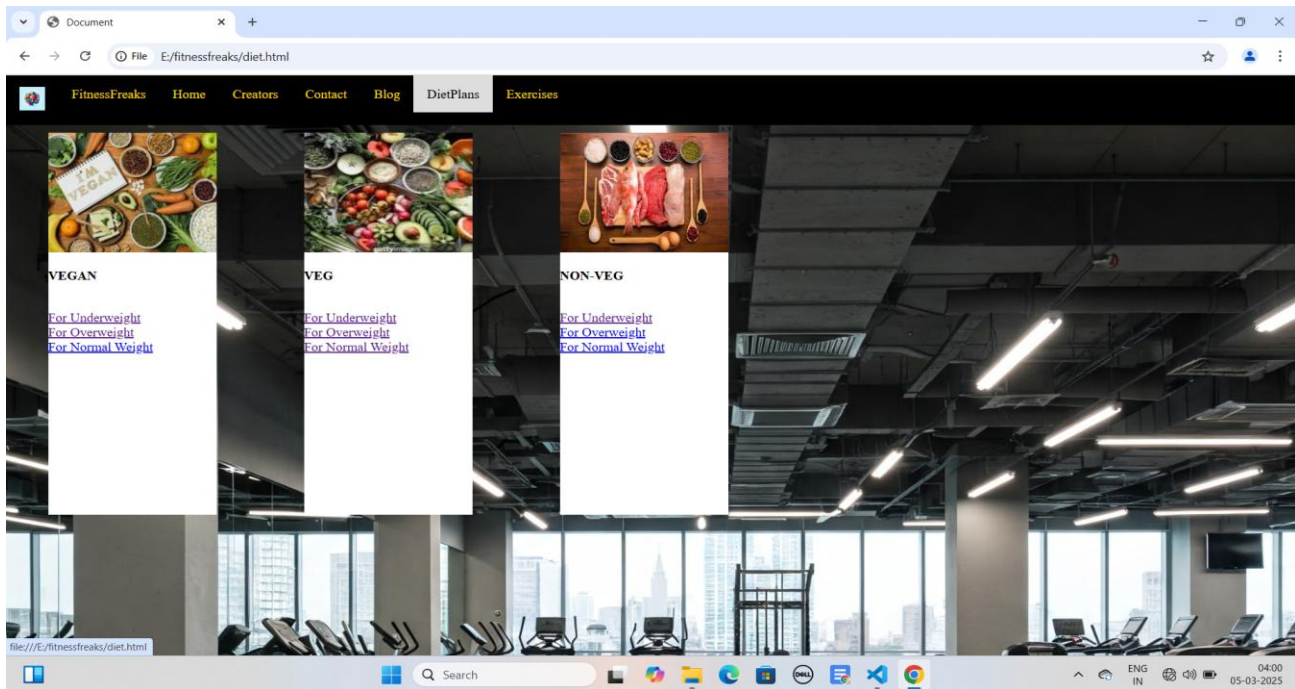
CHAPTER 5

5. RESULTS AND CODING

5.1 RESULTS







5.2 CODING

HTML Code:

index.html

```
<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Document</title>

<link rel="stylesheet" type="text/css" href="style.css">

</head>

<body id="first">

<nav>

<a id="logo"></a>

<a id="logo">FitnessFreaks</a>

<a class="active" href="#">Home</a>

<a href="#creator">Creators</a>

<a href="#contact">Contact</a>

<a href="blog.html">Blog</a>

<a href="diet.html">DietPlans</a>

<a href="exercise.html">Exercises</a>

<a href="feedback.html">Feedback</a>

</nav>

<center><div class="container">
```

<h3>BODY MASS INDEX</h3>

<label for="box1">Enter your height:</label>

<input type="text" id="box1" placeholder="in metres">

<label for="box2">Enter your weight:</label>

<input type="text" id="box2" placeholder="in kg">

<label for="box3">Enter your age:</label>

<input type="text" id="box3" placeholder="in years">

Enter your gender:

<pre><input type="radio" class="box4" name="options" value="m">Male

<input type="radio" class="box4" name="options" value="f" >Female
</pre>

<button onclick="getBMICategory()">Calculate BMI</button>

</center>

</div>

<p id="anim">Continuous improvement is better than delayed perfection.</p>

<div class="diffSection" id="creator">

<center><p style="font-size: 50px; padding-top: 100px; padding-bottom: 60px;color: red;">We're the
Creators</p></center>

<div class="totalcard">

<div class="card">

<center></center>

<center><div class="card-title">Mansa Manoj Iyer</div>

<div id="detail">

<p>BCA III year
Kamban College of Arts And Science
Thiruvalluvar University, Serkadu,
TamilNadu

</p>

<div class="duty"></div>

</div>

</center>

</div>

<div class="card">

<center></center>

<center><div class="card-title">S.Monisha</div>

<div id="detail">

<p>BCA III year
Kamban College of Arts And Science
Thiruvalluvar University, Serkadu,
TamilNadu</p>

<div class="duty"></div>

</div>

</center>

</div>

<div class="card">

<center></center>

<center><div class="card-title">V.Monisha</div>

<div id="detail">

<p>BCA III year
Kamban College of Arts And Science
Thiruvalluvar University, Serkadu,
TamilNadu</p>

<div class="duty"></div>

</div>

</center>

</div>

<div class="card">

<center></center>

<center><div class="card-title">G.Meena</div>

<div id="detail">

<p>BCA III year
Kamban College of Arts And Science
Thiruvalluvar University, Serkadu,
TamilNadu</p>

<div class="duty"></div>

</div>

</center>

</div>

<div class="card">

<center></center>

<center><div class="card-title">P.Meena</div>

<div id="detail">

<p>BCA III year
Kamban College of Arts And Science
Thiruvalluvar University, Serkadu,
TamilNadu</p>

<div class="duty"></div>

</div>

</center>

</div>

</div>

</div>

<!--Contact-->

```
<div id="contact">



Email: msquad@gmail.com<br><br>

Phone: +91 9834514757

</div>

<script src="script.js"></script>

</body>

</html>
```

CSS CODE

style1.css

```
html, body {

margin: 0;

padding: 0;

width: 100%;

}

* {

box-sizing: border-box;

}

nav{

background-color:black;

overflow:hidden;

margin:0;

padding: 0;
```

```
display:block;

position:sticky;

top:0;

z-index: 1000;

width:100%;

}

nav a{

display:block;

float: left;

color:gold;

text-align: center;

padding: 14px 16px;

text-decoration: none;

position:sticky;

}

nav a:hover{

background-color: #ddd;

color:black;

}

#anim{

animation: moveText 10s linear infinite ;

color:gold;

font-size: xx-large;

font-family: 'Times New Roman', Times, serif;
```

```
}

@keyframes moveText {

0%{ transform: translateX(0);}

100%{transform: translateX(100%);}

}

#logo:hover{

background-color: black;

color:gold;

}

@media screen and (max-width:600px){

nav a {

float:none;

display:block;

text-align: left;

}

}

body{

background-image: url("newbg.jpg");

background-repeat: no-repeat;

background-size: cover;

}

h3{

color:blue

}
```

```
button{

background-color: blue;

color: white;

}

.container {

display:inline-block;

align-items: normal;

background-color: white;

width:200px;

height: 480px;

margin-top: 10px;

}

input.box4{

text-align: left;

}

/*team*/

.totalcard {

width: 100%;

display: flex;

flex-wrap: wrap;

align-items: center;

justify-content: center;

margin-bottom: 50px;

}
```

```
.totalcard .card {  
margin: 50px;  
width: 300px;  
border-radius: 10px;  
background: #fff;  
}  
  
.totalcard .card{  
box-shadow: inset 0 0 10px rgba(0,0,0,0.4),  
0 0 10px rgba(0,0,0,0.3);  
}  
  
.card:nth-child(1){  
border-top: 5px solid green;  
}  
  
.card:nth-child(2){  
border-top: 5px solid blue;  
}  
  
.card:nth-child(1):hover {  
box-shadow: inset 0px 0px 10px rgba(0,255,0,0.5),  
1px 1px 30px rgba(0,255,0,0.5);  
}  
  
.card:nth-child(2):hover {  
box-shadow: inset 0px 0px 10px rgba(0,0,255,0.5),  
1px 1px 30px rgba(0,0,255,0.5);  
}
```

```
.totalcard .card img {  
  
width: 100px;  
  
height: 100px;  
  
margin-top: 5px;  
  
cursor: pointer;  
  
border-radius: 50px;  
  
transition-duration: .8s;  
  
}  
  
.totalcard .card img:hover {  
  
transform: scale(3.5);  
  
border-radius: 0;  
  
box-shadow: 0 0 20px rgba(0,0,0,0.5);  
  
}  
  
#detail p{  
  
font-size: 15px;  
  
line-height: 25px;  
  
font-variant: small-caps;  
  
text-align: center;  
  
margin: 25px;  
  
margin-bottom: 0px;  
  
margin-top: 0px;  
  
}  
  
#detail button {  
  
outline: none;
```

```
border-radius: 10px;

border-style: none;

border: 1px solid black;

padding: 9px 25px;

cursor: pointer;

transition-duration: .4s;

}

#detail a {

bottom: 80px;

text-decoration: none;

margin-bottom: 30px;

margin-top: 20px;

margin-left: 90px;

align-self: center;

}

.btn-roshan:hover {

background: rgba(0,255,0,0.7);

color: #fff;

}

.btn-roshan2:hover {

background: rgba(0,0,255,0.5);

color: #fff;

}

.card-title {
```



```
font-size: 17px;

color: #343A40;

padding: 20px;

font-weight: 700;

}

#contact{

background-color:grey;

color:gold;

width: auto;

height: 70px;

}
```

style2.css

```
body{

background-color: azure;

}

table {

width: 80%;

margin: 20px auto;

border-collapse: collapse;

background-color: bisque;

}

th, td {

border: 1px solid #ddd;
```

```
padding: 8px;

text-align: left;

}

th {

background-color: #efb7e8;

}

caption {

font-size: larger;

font-weight: bold;

margin-bottom: 10px;

color: navy;

text-align: center;

}
```

JavaScript Code:

```
script.js

var txt = document.querySelector("span");

function getBMICategory() {

var weight = document.querySelector("#box2").value; // Weight (kg)

var height = document.querySelector("#box1").value; // Height (m)

var age = document.querySelector("#box3").value; // Age (years)

var gender = document.querySelector('input[name="options"]:checked');

// Validate inputs

if (!weight || !height || !age || !gender) {

txt.innerText = 'Please fill all fields and select gender!';
```

```

return;

}

weight = parseFloat(weight);

height = parseFloat(height);

age = parseInt(age);

if (isNaN(weight) || isNaN(height) || isNaN(age)) {

txt.innerText = 'Please enter valid numbers!';

return;

}

// Calculate BMI

var bmi = (weight / (height * height)); // BMI = weight (kg) / height^2 (m^2)

console.log("BMI: ", bmi); // Log BMI for debugging

let ffat, mfat;

// Calculate Body Fat Percentage based on gender

if (gender.value === "f") {

ffat = ((1.20 * bmi) + (0.23 * age)) - 5.4;

// Female fat percentage formula

console.log("Female Fat Percentage (ffat): ", ffat); // Log body fat for debugging

female(ffat, bmi); // Call female function with body fat and BMI

} else if (gender.value === "m") {

mfat = ((1.20 * bmi) + (0.23 * age)) - 16.2; // Male fat percentage formula

console.log("Male Fat Percentage (mfat): ", mfat); // Log body fat for debugging

male(mfat, bmi); // Call male function with body fat and BMI

} else {

```

```

txt.innerText = 'Please select a valid gender.';

}

}

function female(ffat, bmi) {

console.log("Evaluating female category with BMI: ", bmi, " and body fat: ", ffat);

// For females: Normal weight BMI is between 18.5 and 24.9, and body fat between 18% and 30%

if (bmi >= 25 || ffat >= 32) {

txt.innerText = 'Overweight';

} else if (bmi >= 18.5 && bmi < 25 && (ffat >= 18 && ffat <= 30)) { // Adjusted fat percentage
range

txt.innerText = 'Normal Weight';

} else if (bmi < 18.5) {

txt.innerText = 'Underweight';

} else {

txt.innerText = 'Invalid Input'; // This case can catch any logic errors

}

}

function male(mfat, bmi) {

console.log("Evaluating male category with BMI: ", bmi, " and body fat: ", mfat);

// For males: Normal weight BMI is between 18.5 and 24.9, and body fat between 10% and 24%

if (bmi >= 25 || mfat >= 25) {

txt.innerText = 'Overweight';

}

}

```

```
else if (bmi >= 18.5 && bmi < 25 && (mfat >= 10 && mfat <= 24)) { // Adjusted fat percentage range  
txt.innerText = 'Normal Weight';  
  
} else if (bmi < 18.5) {  
  
txt.innerText = 'Underweight';  
  
} else {  
  
txt.innerText = 'Invalid Input'; // This case can catch any logic error
```

CHAPTER 6

CONCLUSION

CHAPTER 6

6. CONCLUSION

The BMI Web Application is a simple yet powerful tool for assessing body mass and promoting health awareness. Using HTML, CSS, and JavaScript, it offers a user-friendly experience with instant BMI calculations and easy-to-understand health classifications. This lightweight and responsive web application is suitable for anyone interested in monitoring their weight and improving their health. By delivering real-time feedback, users can gain valuable insights into their current health status and make informed decisions about their fitness journey.

Additionally, the application provides a seamless experience for users, making it easy to understand and navigate. Its design ensures that individuals from various backgrounds can effortlessly use the tool to monitor their health. Overall, the BMI Web Application effectively combines functionality and accessibility, making it a valuable resource for anyone looking to maintain a healthy lifestyle.

CHAPTER 7

FUTURE ENHANCEMENT

CHAPTER 7

7. FUTURE ENHANCEMENT

- Meetings with Dietitians – Users can book online consultations with professional dietitians for personalized health guidance.
- Advanced Categorization Algorithms – Implementing AI/ML-based models for more accurate BMI categorization and health analysis.

CHAPTER 8

BIBLIOGRAPHY

CHAPTER 8

8. BIBLIOGRAPHY

The following references were utilized in the development of the BMI Fitness Web Application to gather information and implement various features:

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