NUTRITION MANAGEMENT SYSTEM

21CSS101J – PROGRAMMING FOR PROBLEM-SOLVING

Mini Project Report

Submitted by

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BONAFIDE CERTIFICATE

Certified that Mini project report titled **NUTRITION MANAGEMENT SYSTEM** is the bonafide work of [**Reg No RA2311003010274] SHIVI GUPTA** who carried out the minor project under my supervision. Certified further, that to the best of my knowledge, the work reported herein does not form any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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1. Problem Statement

Development of a BMI-Based Personalized Health and Fitness Recommender System in Python

Despite the growing awareness of the importance of maintaining a healthy lifestyle, individuals often struggle to find practical and personalized guidance to achieve their fitness objectives. Existing solutions may lack customization and fail to consider individual variations in body types and health goals. This project addresses the need for a user-centric, technology-driven approach to health and fitness by developing a BMI-based recommender system.

2. Methodology / Procedure/ Algorithm

Development of a BMI-Based Personalized Health and Fitness Recommender System in Python

This code combines HTML for a BMI Calculator webpage with Flask, a Python web framework, to create a web application. Here's a breakdown of the methodology:

1. ***HTML Structure:****

- The HTML document defines the structure of a webpage, including the necessary metadata, styling using CSS, and a form for BMI calculation.

- It uses a gradient background, a centered container with rounded corners, and various text styles for aesthetics.

2. ***Form and Input Fields:****

- The form with the id "bmiForm" contains input fields for name, age, height, food habits, and a dropdown for selecting the goal (weight loss or weight gain).

- Styling is applied using CSS to make the form visually appealing

3. *JavaScript Functionality:*

- The script at the end of the HTML document handles form submission.

- It prevents the default form submission behavior, retrieves input values, calculates BMI, and updates the result in the HTML dynamically.

4. *Flask Integration:*

- The Python Flask framework is used to create a web application.

- Two routes are defined:

  - '/' renders the initial HTML template (index.html).

  - '/calculate' is triggered by a form submission and calculates BMI based on user input.

5. *Flask Route Functions:*

- The index() function renders the initial HTML template when the user accesses the root URL.

- The calculate() function is triggered by a form submission (methods=['POST']). It retrieves user input, calculates BMI, and renders a template based on the diet goal.

6. *BMI Calculation:*

- The BMI calculation is performed in the calculate() function.

- Height is converted to meters, and BMI is calculated using the formula: BMI = weight / (height^2).

7. *Rendering Templates:*

- Depending on the diet goal chosen by the user, different templates (output.html or output2.html) are rendered to display the BMI result.

- An error template (error.html) is rendered if any exception occurs during the calculation process.

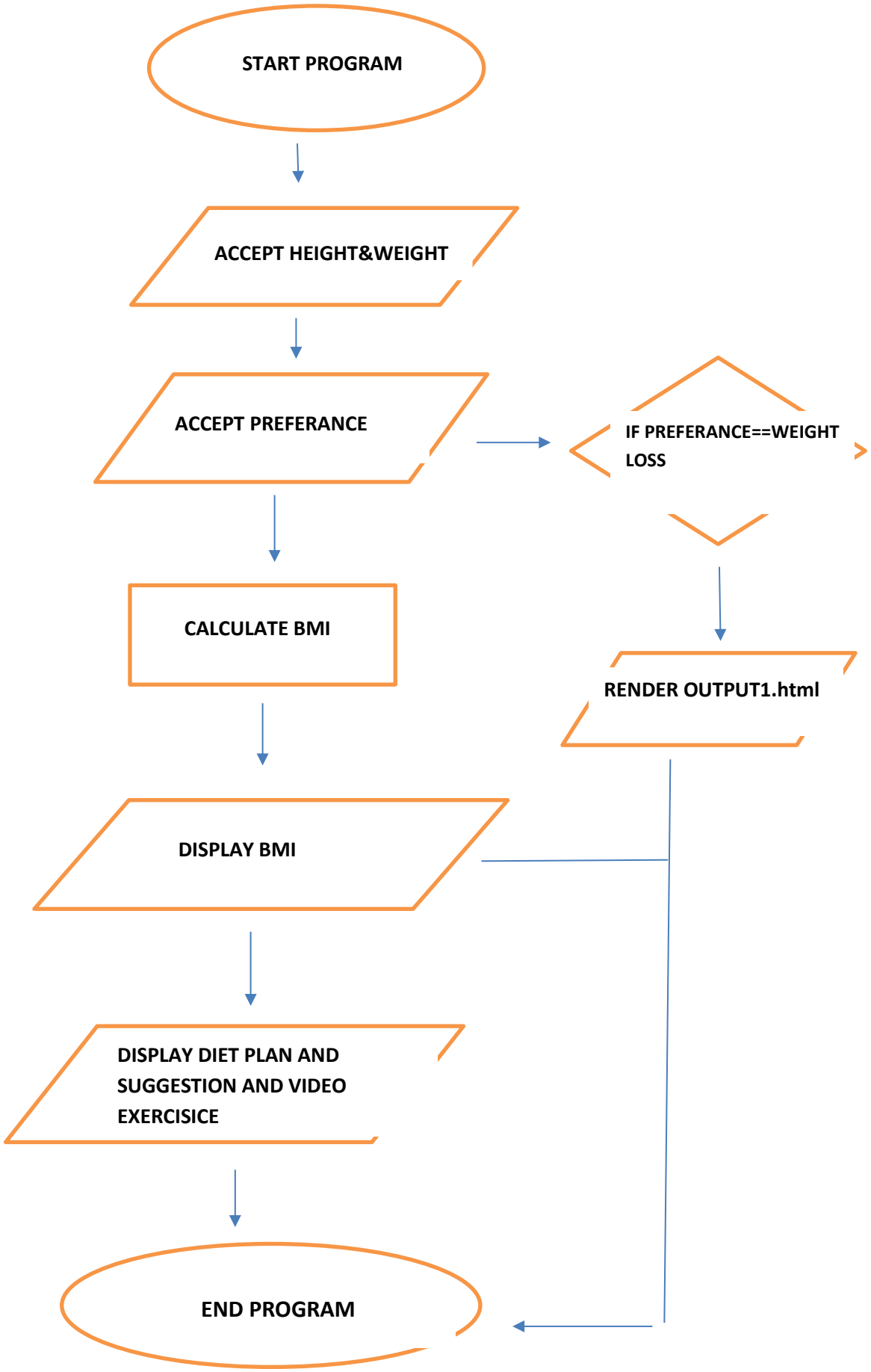
8. *Run the Flask App:*

- The if __name__ == '__main__': block ensures that the Flask app runs when the script is executed directly.

- The app runs in debug mode, allowing for easier debugging during development.

Overall, this code integrates front-end (HTML, CSS, JavaScript) with back-end (Flask, Python) to create a BMI calculator web application. The user can input their information, receive a BMI result, and see advice based on their chosen diet goal.

3. Flow chart


START PROGRAM
ACCEPT HEIGHT&WEIGHT
ACCEPT PREFERANCE
IF PREFERANCE==WEIGHT LOSS
CALCULATE BMI
RENDER OUTPUT1.html
DISPLAY BMI
DISPLAY DIET PLAN AND SUGGESTION AND VIDEO EXERCISICE
END PROGRAM

4.Coding (C/Python) : BACKEND

```
from flask import Flask, render_template, request
app = Flask(_name_)


@app.route('/')
def index():
    return render_template('index.html')


@app.route('/calculate', methods=['POST'])
def calculate():
    try:
        # Get the values from the frontend
        height = float(request.form['height'])/100
        weight = float(request.form['weight'])
        diet_goal = request.form['goal']


        # Perform a simple calculation
        bmi = round((weight)/(height**2),2)
        if diet_goal == 'weightLoss':
            # Render another template with the result as a parameter
            return render_template('output2.html', result=bmi)
        else:
            # Render another template with the result as a parameter
            return render_template('output.html', result=bmi)
    except Exception as e:
        return render_template('error.html', error=str(e))
if _name_ == '_main_':   app.run(debug=True)
```

5. Front-end code (HTML, CSS, Javascript)

INPUT:

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>KNOW YOUR DIET-BMI Calculator</title>
   <style>
      body {
         font-family: Arial, sans-serif;
         background: linear-gradient(135deg, #3498db, #3ce756);
         margin: 0;
         padding: 0;
         color: #fff;
      }

      .container {
         max-width: 600px;
         margin: 0 auto;
         padding: 20px;
         box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
         background-color: rgba(255, 255, 255, 0.8);
         border-radius: 5px;
      }

      h1 {
         text-align: center;
         color: #333;
      }
      h2 {
         text-align: center;
         color: #340101;
      }

      .quote {
         text-align: center;
         font-style: italic;
         color: #666;
         margin: 20px 0;
      }

      form {
```

```
        text-align: center;
    }

    input[type="text"],
    select {
        width: 100%;
        padding: 10px;
        margin: 10px 0;
        box-sizing: border-box;
        border: 1px solid #ccc;
        border-radius: 5px;
    }

    select {
        background-color: #f4f4f4;
    }

    button {
        background: #4CAF50;
        color: white;
        padding: 15px 30px;
        text-align: center;
        text-decoration: none;
        display: inline-block;
        font-size: 16px;
        margin: 10px 2px;
        cursor: pointer;
        border: none;
        border-radius: 5px;
    }

    button:hover {
        background: #45a049;
    }

    #result {
        text-align: center;
        margin-top: 20px;
        font-size: 18px;
    }

    .captions {
        text-align: center;
        margin: 30px 0;
    }
</style>
```

```
</head>
<body>
  <div class="container">
    <H1><u><i>KNOW YOUR DIET PLAN</i></u></H1>
    <h2>BMI Calculator</h2>
    <form id="bmiForm">
      <input type="text" id="name" name="name" placeholder="Name" required>
      <input type="text" id="age" name "age" placeholder="Age" required>
      <input type="text" id="height" name="height" placeholder="Height (cm)" required>
      <input type="text" id="foodHabits" name="foodHabits" placeholder="Food Habits" required>
      <select id="goal" name="goal">
        <option value="">Select Goal</option>
        <option value="weightLoss">Weight Loss</option>
        <option value="weightGain">Weight Gain</option>
      </select>
      <button type="submit">Calculate</button>
    </form>
    <h2 id="result"></h2>

    <div class="captions">
      <p style="font-size: 16px;color: black;">"To eat is a necessity, but to eat intelligently is an art."</p>
      <p style="font-size: 14px;color: peru; ">"Your health is an investment, not an expense."</p>
    </div>
  </div>

  <script>
    document.getElementById('bmiForm').addEventListener('submit', function (e) {
      e.preventDefault();

      var name = document.getElementById('name').value;
      var age = document.getElementById('age').value;
      var height = document.getElementById('height').value;
      var foodHabits = document.getElementById('foodHabits').value;
      var goal = document.getElementById('goal').value;

      var bmi = weight / (height / 100) ** 2;

      document.getElementById('result').textContent = Hello ${name}, your BMI is ${bmi.toFixed(2)}
and your goal is ${goal}.;
    });   </script></body></html>
```

OUTPUT:

```
!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Weight Loss Program</title>
<body>
   <div class="container">


      <h1>Your BMI is:</h1>
      <p style="color: darkgreen;size: 10cm;">We would suggest you with our WEIGHT LOSS PROGRAM</p><br><br>
      <h1>Weight Loss  Program</h1><br>
      <!-- Diet Plan Section -->
      <div id="dietPlan">
         <h2>Diet Plan for Weight Loss</h2>
         <p style="color: chocolate;">Follow this diet plan to achieve your weight loss goals:</p>
         <ul>
            <li>Calorie Control: Consume fewer calories than your body burns.</li><br>
            <li>Lean Proteins: Include poultry, fish, tofu, and legumes.</li><br>
            <li>Healthy Fats: Opt for avocados, nuts, and olive oil in moderation.</li><br>
            <li>Low-Fat Dairy: Choose options like skim milk, yogurt, and cheese.</li><br>
            <li>Veggies Priority: Emphasize non-starchy vegetables.</li><br>
            <li>Hydration: Drink plenty of water and consider herbal teas.</li><br>
            <li>Whole Grains: Prefer quinoa, barley, and bulgur over refined grains.</li>  </ul>
         <br><br><br>
         <!-- Diet Chart Image -->
```

```
        <div id="dietChart">
            <h3>Diet Chart Example</h3>
 <imgsrc="https://assets.lybrate.com/q_auto:eco,f_auto,w_1200,c_fill,g_auto/imgs/product/kwds/diet-chart/Weight-Loss-Diet-Chart-v1.jpg" alt="">
        </div>
    </div>
  <!-- Weight Gain Exercise Video Section -->
    <div id="exerciseVideo">
        <h2>Weight Loss Exercise Video</h2>
        <p>Combine your diet plan with effective exercises. Watch the video below for weight loss exercises:</p>
        <!-- Embed a YouTube video for weight gain exercises -->
        <!-- <video src="https://youtu.be/zlyqr9bNs1E?si=_HgEi5ujMe8tM0A0">exercise video</video> -->
        <iframe width="560" height="315" src="https://youtu.be/lS6qBCIVFws?si=n2CwiZg6zBuCyvpe" frameborder="0" allowfullscreen></iframe>

   </div></body></html>
```

6. Modules of the proposed work

The proposed work includes two main modules: the front-end module (HTML, CSS, JavaScript) and the back-end module (Flask web application).

-> *Front-End Module:*

1. *HTML File (index.html):*

   - Defines the structure of the web page.

   - Includes a form for users to input their information.

   - Displays captions and quotes related to diet and health.

2. *CSS Styling:*

   - Defines the styling and layout of the web page.

   - Uses a linear gradient background, specific colors, and formatting for various elements.

   - Ensures responsiveness with styles for different screen sizes.

3. *JavaScript (Embedded in HTML):*

   - Handles form submission using an event listener.

   - Retrieves user input values (name, age, height, food habits, goal).

   - Calculates BMI based on the user's height (needs correction, as weight is not defined in the script).

   - Updates the result section with the calculated BMI and user's goal.

-> *Back-End Module (Flask Web Application):*

1. *Flask App (app.py):*

- Initializes a Flask application.

2. *Routes:*

- *'/' (Index Page):*

  - Renders the index.html template.

- *'/calculate' (POST Method):*

  - Handles the form submission and processes the BMI calculation.

  - Renders different templates ('output.html' or 'output2.html') based on the user's goal.

  - Handles exceptions and renders an error template if an error occurs during the calculation.

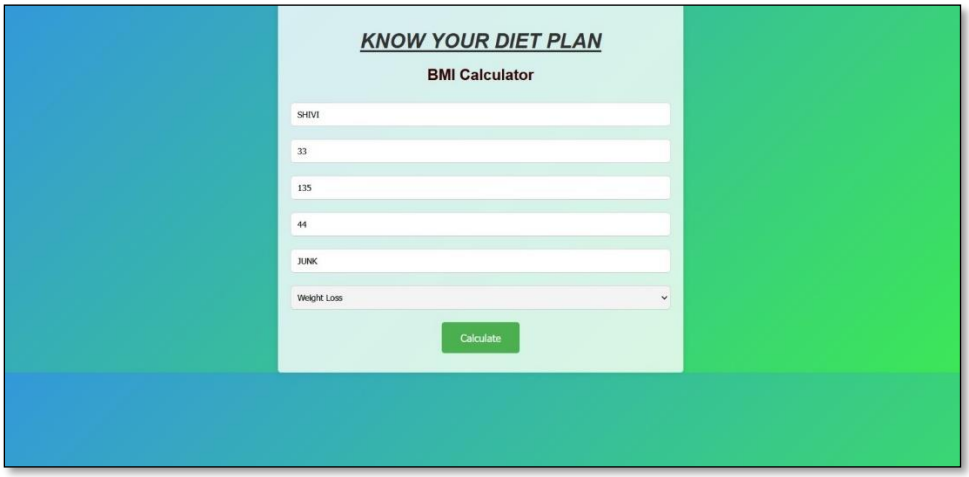
-> Note:

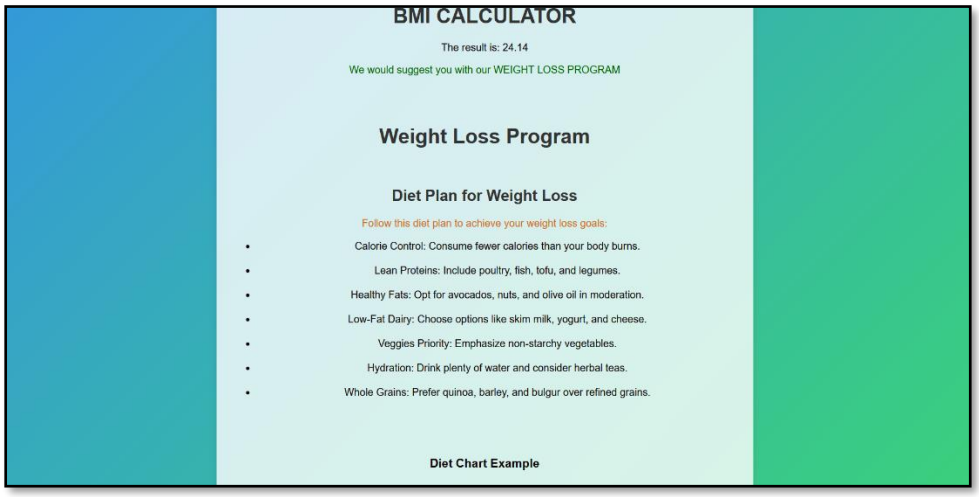
- There seems to be an issue in the JavaScript part where the variable 'weight' is not defined before using it in the BMI calculation. You might need to retrieve the weight from the form as well.

- The 'output.html' and 'output2.html' templates, as well as the 'error.html' template, are referenced in the Flask app but are not provided in your code snippet. Ensure they exist and have the necessary content.

These modules work together to create a web application that allows users to input their information, calculates their BMI, and displays the result based on their specified health goal.

7. Results/Screenshots





8. Conclusion

- By developing a BMI-based personalized health and fitness recommender system, this project aims to empower individuals to make informed decisions about their well-being, contributing to the promotion of healthier lifestyles in the digital age.

- In conclusion, the provided code combines HTML, CSS, and a bit of JavaScript to create a web page for a BMI calculator within a Flask web application.

- Users can input their information, and upon submission, the server calculates the BMI and directs the user to different output templates based on their weight loss or weight gain goal.

- The Flask app runs in debug mode, allowing for easy troubleshooting during development. To enhance this application, consider further validation and error handling, as well as refining the design and user experience.

9. References:

1. World Health Organization (WHO). "BMI Classification." Available at: https://www.who.int/en/news-room/fact-sheets/detail/obesity-and-overweight

2. Centers for Disease Control and Prevention (CDC). "About Adult BMI." Available at: https://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html

3. Wikepedia.

4. Youtube Content: Integration of flask to python (CodewithHarry) and linking of exercise videos.

5. GeeksforGeeks