INSTITUTE OF AERONAUTICAL ENGINEERING
(AUTONOMOUS)
Dundigal - 500 043, Hyderabad, Telangana

Complex Problem-Solving Self-Assessment Form

1	Name of the Student	A.LAXMAN	
2	Roll Number	25951A6681	
3	Branch and Section	CSE-(AI&ML) - B	
4	Program	B. Tech	
5	Course Name	Front End Web Development	
6	Course Code	ACSE04	
7	Please tick (✓) relevant Engineering Competency (ECs) Profiles		

EC	Profiles	(✓)
EC 1	Ensures that all aspects of an engineering activity are soundly based on fundamental principles - by diagnosing, and taking appropriate action with data, calculations, results, proposals, processes, practices, and documented information that may be ill-founded, illogical, erroneous, unreliable or unrealistic requirements applicable to the engineering discipline	✓
EC 2	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models.	✓
EC 3	Support sustainable development solutions by ensuring functional requirements, minimize environmental impact and optimize resource utilization throughout the life cycle, while balancing performance and cost effectiveness.	
EC 4	Competently addresses complex engineering problems which involve uncertainty, ambiguity, imprecise information and wide-ranging or conflicting technical, engineering and other issues.	✓
EC 5	Conceptualizes alternative engineering approaches and evaluates potential outcomes against appropriate criteria to justify an optimal solution choice.	✓
EC 6	Identifies, quantifies, mitigates and manages technical, health, environmental, safety, economic and other contextual risks associated to seek achievable sustainable outcomes with engineering application in the designated engineering discipline.	
EC 7	Involve the coordination of diverse resources (and for this purpose, resources include people, money, equipment, materials, information and technologies) in the timely delivery of outcomes	
EC 8	Design and develop solution to complex engineering problem considering a very perspective and taking account of stakeholder views with widely varying needs.	✓

	EC 9	Meet all level, legal, regulatory, relevant standards and codes of practice, protect public health and safety in the course of all engineering activities.	

	EC 10	High level problems including many component parts or sub-problems, partitions problems, processes or systems into manageable elements for the purposes of analysis, modelling or design and then re-combines to form a whole, with the integrity and performance of the overall system as the top consideration.	✓
	EC 11	Undertake CPD activities to maintain and extend competences and enhance the ability to adapt to emerging technologies and the ever-changing nature of work.	✓
	EC 12	Recognize complexity and assess alternatives in light of competing requirements and incomplete knowledge. Require judgement in decision making in the course of all complex engineering activities.	✓
8	Please tick (✓) relevant Course Outcomes (COs) Covered		
	CO	**Course Outcomes**	(✓)
	CO 1	Describe language basics like alphabet, strings, grammars, productions, derivations, and Chomsky hierarchy, construct DFA, NFA, and conversion of NFA to DFA, Moore and Mealy machines and interpret differences between them.	✓
	CO 2	Recognize regular expressions, formulate, and build equivalent finite automata for various languages.	✓
	CO 3	Identify closure, and decision properties of the languages and prove the membership.	✓
	CO4	Demonstrate context-free grammars, check the ambiguity of the grammar, and design equivalent PDA to accept the context-free languages.	
	CO 5	Uses mathematical tools and abstract machine models to solve complex problems.	✓
	CO 6	Analyze and distinguish between decidable and undecidable problems.	✓
9	Course ELRV Video Lectures Viewed	**Number of Videos**	**Viewing time in Hours**
		-	-
10	Justify your understanding of WK1	-	
11	Justify your understanding of WK2 – WK9	-	
12	How many WKs from WK2 to WK9 were implanted?	-	
	Mention them	-	

Date: 11-11-2025
A.LAXMAN

Signature of the Student

COMPLEX ENGINEERING PROBLEM

A COURSE SIDE PROJECT

ON

Front End Web Development

A.LAXMAN

25951A6

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HOME HUB Based on FEWD

**A Project
Report
submitted in
partial
fulfillment of
the
requirements for the award of the degree of**

**Bachelor of
Technology in
CSE (Artificial Intelligence & Machine Learning)**

By

**A.LAXMAN
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Department of CSE (Artificial Intelligence & Machine Learning)

INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal, Hyderabad – 500 043, Telangana

November, 2025

DECLARATION

I certify that

a. The work contained in this report is original and has been done by me under the guidance of my supervisor (s).

b. The work has not been submitted to any other Institute for any degree or diploma.

c. I have followed the guidelines provided by the Institute for preparing the report.

d. I have conformed to the norms and guidelines given in the Code of Conduct of the Institute.

e. Whenever I have used materials (data, theoretical analysis, figures, and text) from other sources, I have given due credit to them by citing them in the text of the report and giving their details in the references. Further, I have taken permission from the copyright owners of the sources, whenever necessary.

Place: Hyderabad
A.LAXMAN
Signature of the Student

Date: 11-11-2025

CERTIFICATE

This is to certify that the project report entitled NutriWise – Smart Nutrition and Calorie Tracking System submitted by P. Sai Sushanth Reddy to the Institute of Aeronautical Engineering, Hyderabad in partial fulfillment of the requirements for the award of the Degree Bachelor of Technology in CSE (Artificial Intelligence & Machine Learning) is a Bonafide record of work carried out under my guidance and supervision. The contents of this report, in full or in parts, have not been submitted to any other Institute for the award of any Degree.

Supervisor
Head of the Department
Principal
Date:
Place: Hyderabad

APPROVAL SHEET

This project report entitled NutriWise – Smart Nutrition and Calorie Tracking System submitted by Mr. P. Sai Sushanth Reddy is approved for the award of the Degree Bachelor of Technology in Branch CSE (Artificial Intelligence & Machine Learning).

Examiner
Supervisor(s)
Principal
Date:
Place: Hyderabad

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The satisfaction that accompanies the successful completion of any task would be incomplete without introducing the people who made it possible and whose constant guidance and encouragement crowns all efforts with success.

I am extremely grateful and express my profound gratitude and indebtedness to my project guide **Mr. V Vidya Sagar, Assistant Professor, Department of CSE (AI & ML),** for his kind help and for giving me the necessary guidance and valuable suggestions for this project work.

I am grateful to **Dr. M. Purushotham Reddy**, **Professor** and **Head of the Department**, Department of **CSE (Artificial Intelligence & Machine Learning),** for extending his support to carry on this project work. I take this opportunity to express my deepest gratitude to one and all who directly or indirectly helped me in bringing this effort to present form.

I express my sincere gratitude to **Dr. L. V. Narasimha Prasad, Professor** and **Principal** who has been a great source of information for my work.

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I take this opportunity to express my deepest gratitude to one and all who directly or indirectly helped me in bringing this effort to present form.

ABSTRACT

NutriWise is a lightweight web application that helps users track daily nutrition and calories through an intuitive interface. Designed with HTML, CSS, and JavaScript, NutriWise enables users to log meals, compute calories per item, maintain a daily total, and view simple summaries to support healthy eating habits. The system emphasizes usability across devices and focuses on core features such as meal entry, calorie calculation, and basic visualization of daily intake. This project demonstrates how front-end technologies can be combined to build practical personal-health tools that are easy to use and extendable for future enhancements.

Keywords: Nutrition Tracking, Calorie Calculator, Web Application, Front-End Development, Health Monitoring.

CONTENTS

CHAPTER 1

INTRODUCTION

1.1 Problem Statement

Individuals often struggle to maintain consistent nutritional habits due to difficulty logging meals, estimating calories, and monitoring daily intake. Common issues include:

Lack of quick tools for recording meal items and calories

Difficulty seeing daily totals at a glance

No centralized, simple interface for quick tracking

Limited accessibility across devices

1.2 Introduction

NutriWise is a simple web-based nutrition and calorie tracking system that allows users to enter meal items, specify serving sizes, and compute calorie totals. The system focuses on usability and

speed so users can log food quickly. The dashboard displays daily totals and recent entries. Built with basic front-end technologies, NutriWise demonstrates how practical health tools can be created with minimal stack complexity and still provide meaningful user value.

1.3 Requirements

This project requires knowledge of:

Basic web development (HTML/CSS/JavaScript)

Simple arithmetic and data handling in JS

UI design for form input and lists

1.4 Prerequisites

To implement NutriWise, one should be familiar with:

HTML structure and form elements

CSS layout and responsive techniques

JavaScript DOM manipulation and event handling

1.5 Technologies Used

HTML — page structure and forms

CSS — styling and responsive layout

JavaScript — dynamic behavior calculations, and UI updates

CHAPTER 2

REVIEW OF RELEVANT LITERATURE

Existing nutrition tracking tools range from simple calorie calculators to full-featured apps that include food databases and meal planning. Research indicates that lightweight tools with minimal friction encourage higher adherence. Studies on user engagement suggest that quick-entry interfaces and immediate feedback (daily totals) improve consistent tracking. Literature also highlights privacy and simplicity as key drivers for personal health apps. NutriWise aims to provide the quick-entry and visual feedback features shown to improve user adoption.

CHAPTER 3

METHODOLOGY

The development of NutriWise follows a front-end centric approach: design the interface, implement input handling, compute calories, and render results.

3.1 Input & Interface Design

Design simple input forms for meal name, calories per serving, and number of servings. Display an entry list and a clear daily total.

Code 3.1 — HTML: Interface Structure (Insert here in Chapter 3 under Interface Design)

```
<!-- Code 3.1: NutriWise HTML -->
<div class="nutriwise">
  <h2>NutriWise - Daily Nutrition Tracker</h2>

  <!-- Meal Entry -->
  <div class="entry">
    <input type="text" id="foodName" placeholder="Food Item (e.g., Apple)">
    <input type="number" id="calPerServing" placeholder="Calories per serving">
    <input type="number" id="servings" placeholder="Servings" step="0.5" value="1">
    <button id="addMealBtn">Add Meal</button>
  </div>

  <!-- List and Total -->
  <div class="summary">
    <h3>Today's Log</h3>
    <ul id="mealList"></ul>
    <p>Total Calories: <span id="totalCalories">0</span> kcal</p>
  </div>
</div>
```

3.2 Styling & Responsive Layout

Use simple CSS to keep the UI clean and responsive.

Code 3.2 — CSS: Basic Styling (Insert under Chapter 3 → Technologies Used / Styling subsection)

```
/* Code 3.2: NutriWise CSS */
.nutriwise {
  max-width: 420px;
  margin: 20px auto;
  padding: 14px;
  font-family: Arial, sans-serif;
  background: #ffffff;
  border-radius: 10px;
  box-shadow: 0 6px 18px rgba(0,0,0,0.08);
}

.entry input {
  width: 62%;
  margin: 6px 4%;
  padding: 8px;
  border-radius: 6px;
  border: 1px solid #ccc;
}
.entry button {
  display: block;
  width: 90%;
  margin: 8px auto;
  padding: 8px;
  background: #2b8aef;
  color: #fff;
  border: none;
  border-radius: 6px;
}

.summary ul {
  list-style: none;
  padding: 0;
}
```

3.3 Dynamic Behavior & Calculations

Implement JavaScript to add meal entries, compute calories per entry, update daily total, and allow simple removal of entries.

Code 3.3 — JavaScript: Core Logic (Insert under Chapter 3 → Dynamic Functionality)

```
// Code 3.3: NutriWise JavaScript
let totalCalories = 0;

document.getElementById('addMealBtn').addEventListener('click', addMeal);

function addMeal() {
  const name = document.getElementById('foodName').value.trim();
  const calPer = Number(document.getElementById('calPerServing').value);
  const servings = Number(document.getElementById('servings').value);

  if (!name || isNaN(calPer) || calPer <= 0 || isNaN(servings) || servings <= 0)
return;

const calories = calPer * servings;
  totalCalories += calories;

  const list = document.getElementById('mealList');
  const li = document.createElement('li');
  li.textContent = ${name} — ${servings} serving(s) × ${calPer} kcal =
${calories} kcal;

  // Add simple remove button
  const rem = document.createElement('button');
  rem.textContent = 'Remove';
  rem.style.marginLeft = '10px';
  rem.onclick = function () {
    totalCalories -= calories;
    document.getElementById('totalCalories').textContent = totalCalories;
    list.removeChild(li);
  };

  li.appendChild(rem);
  list.appendChild(li);

  document.getElementById('totalCalories').textContent = totalCalories;

  // clear inputs
  document.getElementById('foodName').value = '';
  document.getElementById('calPerServing').value = '';
  document.getElementById('servings').value = 1;
}
```

3.4 Testing & Validation

Manual testing by entering sample meals and verifying totals.
Edge case handling: reject zero/negative values, trim strings.

UI test on different screen widths to confirm responsiveness.

Where to include code in the report:

Place Code 3.1 after the Interface Design paragraph in Chapter 3.

Place Code 3.2 in the Technologies/Styling subsection (Chapter 3).

Place Code 3.3 in the Dynamic Functionality subsection (Chapter 3).

Optionally paste all code blocks again in Appendix – Full Source Code (after References).

CHAPTER 4

RESULTS AND DISCUSSIONS

Testing NutriWise with sample inputs showed accurate calorie calculations and dynamic updates of the daily total. The remove feature correctly subtracts calories and updates totals. Users can record multiple foods quickly; the responsive layout maintained readability on mobile views. The simplicity of the UI reduced input friction, supporting quick daily logging which is key to adoption. Limitations include lack of persistent storage and no integrated food database — both of which are suitable future improvements.

CHAPTER 5

CONCLUSION AND FUTURE SCOPE

5.1 Conclusion

NutriWise demonstrates that a practical nutrition tracker can be implemented using only HTML, CSS, and JavaScript. The system provides quick meal logging, accurate calorie aggregation, and an approachable interface that encourages consistent use.

5.2 Future Scope

Possible enhancements include:

Persistent storage using localStorage or a back end (Firebase)

Pre-populated food database with common items and portion sizes

Daily goal setting and progress charts

User authentication and multi-user support

Mobile app wrapper for offline use

REFERENCES

Jon Duckett, HTML & CSS: Design and Build Websites.

MDN Web Docs – JavaScript reference and DOM APIs.

Nielsen, J., "Usability Heuristics for User Interface Design."

W3C, "HTML Living Standard" and "CSS specifications."

Healthline & USDA food data pages (for calorie reference and best practices).