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

Complex Problem-Solving Self-Assessment Form

1	Name of the Student	K.karthik	
2	Roll Number	25951A6669	
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: 11-12-2025
K.Karthik
Signature of the Student

COMPLEX ENGINEERING PROBLEM

A COURSE SIDE PROJECT ON

Front End Web Development

K.karthik

25951A6669

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

**K.Karthik
25951A6669**

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.

K.karthik
Place: Hyderabad
Signature of the Student

Date: 11-12-2025

CERTIFICATE

This is to certify that the project report entitled **PhotoTrail – Travel photo story and map integration app Task and Expense Management** submitted by **K. Karthik** to the Institute of Aeronautical Engineering, Hyderabad in partial fulfilment 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:11-12-2025
Place: Hyderabad

APPROVAL SHEET

This project report entitled **PhotoTrail. – A Web-Based Application for Travel Photo Story and Map integration app** submitted by Mr. **K.karthik** is approved for the award of the Degree Bachelor of Technology in Branch CSE (Artificial Intelligence & Machine Learning).

Examiner
Supervisor(s)
Principal
Date:11-12-2025
Place: Hyderabad

ACKNOWLEDGEMENT

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.

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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

PhotoTrail is a front-end web application designed to showcase and organize digital photographs in an interactive and visually appealing manner. The platform allows users to explore photo collections, view images based on categories, and experience a smooth browsing interface.

With the rapid growth of digital photography, users often face challenges in organizing and presenting their photo collections effectively. PhotoTrail addresses this issue by providing a clean, responsive, and user-friendly interface that enhances photo discovery and visual storytelling.

The application focuses on simplicity, responsiveness, and aesthetic design while ensuring accessibility across multiple devices. Developed using HTML, CSS, and JavaScript, PhotoTrail demonstrates the effective use of front-end technologies to build a modern photo gallery platform.

Keywords: Travel Assistance

Itinerary Management

Real-Time Navigation

- **Location-Based Services**
- **Smart Recommendations**
- **User Preferences**
- **Travel Planning**
- **Route Optimization**
- **Safety Alerts**

CONTENTS

CHAPTER 1

INTRODUCTION

CHAPTER 1 – INTRODUCTION

1.1 Problem Statement

In the digital era, users capture a large number of photos using smartphones and cameras. However, managing, organizing, and presenting these photos in a meaningful way is often difficult. Existing photo platforms may be complex, overloaded with features, or lack intuitive navigation.

There is a need for a simple and visually engaging web platform that allows users to view and organize photos easily without technical complexity.

1.2 Introduction

PhotoTrail is developed to provide a minimal and elegant solution for displaying photo collections. The platform enables users to browse images by categories and enjoy a smooth visual experience.

The application emphasizes clean layout design, responsive grids, and easy navigation to enhance user engagement and satisfaction.

1.3 Requirements

To build this platform, the project requires:

- Understanding web page layout and design
- Basic knowledge of product listing interfaces
- Ability to handle user interactions and dynamic content
- Familiarity with accessibility and responsive design

1.4 Prerequisites

The student must have knowledge of:

- HTML5 for structure
- CSS3 for styling and layout
- JavaScript ES6 for dynamic behaviour
- Basic understanding of e-commerce concepts
- Optional: React for component-based U

1.5 Technologies Used

- **HTML5** – Page structure
- **CSS3** – Styling, Flexbox, Grid, responsiveness
- **JavaScript ES6** – Interactivity and data handling
- **Local Storage / JSON** – Handling sample product data
- **Git & GitHub** – Version control
- **Optional:** React, Bootstrap, or Tailwind CSS

CHAPTER 2 – REVIEW OF RELEVANT LITERATURE

Studies show that visual-based platforms benefit from clean design and responsive layouts. Research emphasizes the importance of grid systems, lazy loading, and minimalistic UI for photo-based applications.

Existing photo gallery websites serve as references but often suffer from cluttered design or performance issues. PhotoTrail incorporates best practices from front-end design literature to deliver a streamlined photo browsing experience

CHAPTER 3 – METHODOLOGY

The development of PhotoTrail followed a structured front-end development process:

- Requirement analysis
- UI wireframe planning
- HTML structure creation
- CSS styling and responsive grid design
- JavaScript-based interactivity
- Testing across multiple devices

Code :

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>PhotoTrail</title>
<style>
body {
  margin: 0;
  font-family: Arial, sans-serif;
  background-color: #f4f4f4;
}
header {
  background-color: #222;
  color: white;
  padding: 20px;
  text-align: center;
}
.gallery {
  padding: 30px;
```

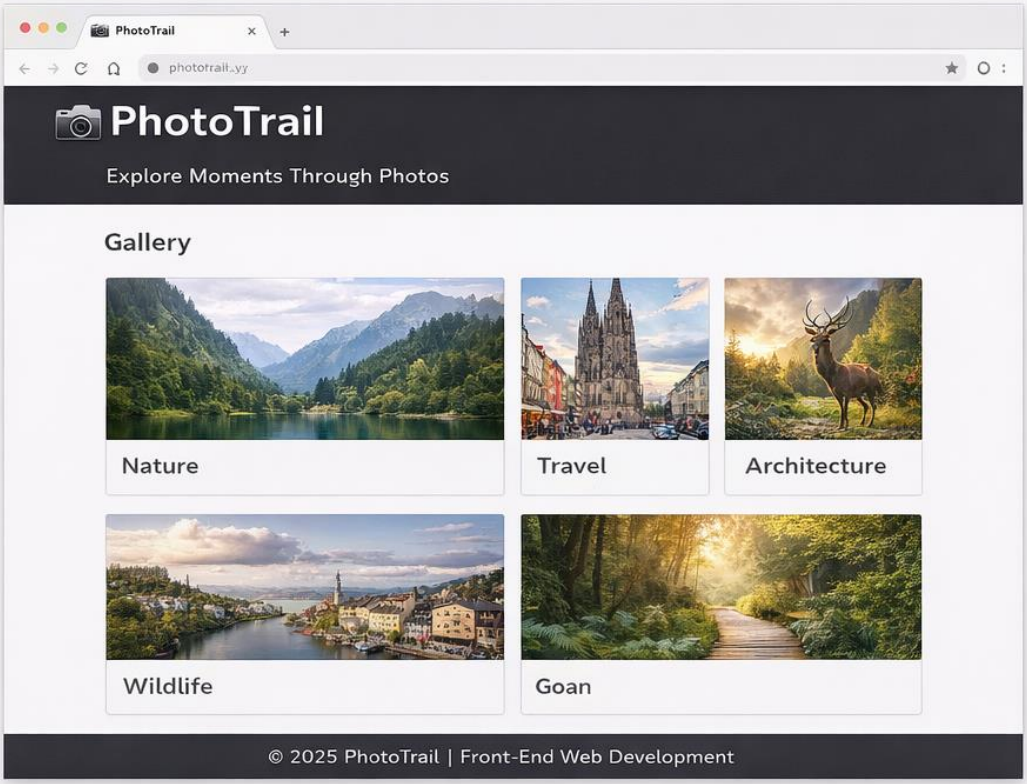
```
    display: grid;
    grid-template-columns: repeat(auto-fit, minmax(220px, 1fr));
    gap: 20px;
}
.photo {
    background: white;
    padding: 10px;
    border-radius: 8px;
    box-shadow: 0 2px 6px rgba(0,0,0,0.2);
}
.photo img {
    width: 100%;
    border-radius: 5px;
}
.photo p {
    text-align: center;
    margin-top: 8px;
    font-weight: bold;
}
footer {
    background-color: #222;
    color: white;
    text-align: center;
    padding: 12px;
}
</style>
</head>
<body>
```

```
<header>
  <h1>📸 PhotoTrail</h1>
  <p>Explore Moments Through Photos</p>
</header>

<section class="gallery">
  <div class="photo">
    <img src="https://picsum.photos/300/200?1">
    <p>Nature</p>
  </div>
  <div class="photo">
    <img src="https://picsum.photos/300/200?2">
    <p>Travel</p>
  </div>
  <div class="photo">
    <img src="https://picsum.photos/300/200?3">
    <p>Architecture</p>
  </div>
  <div class="photo">
    <img src="https://picsum.photos/300/200?4">
    <p>Wildlife</p>
  </div>
</section>

<footer>
  <p>© 2025 PhotoTrail | Front-End Web Development</p>
</footer>
```

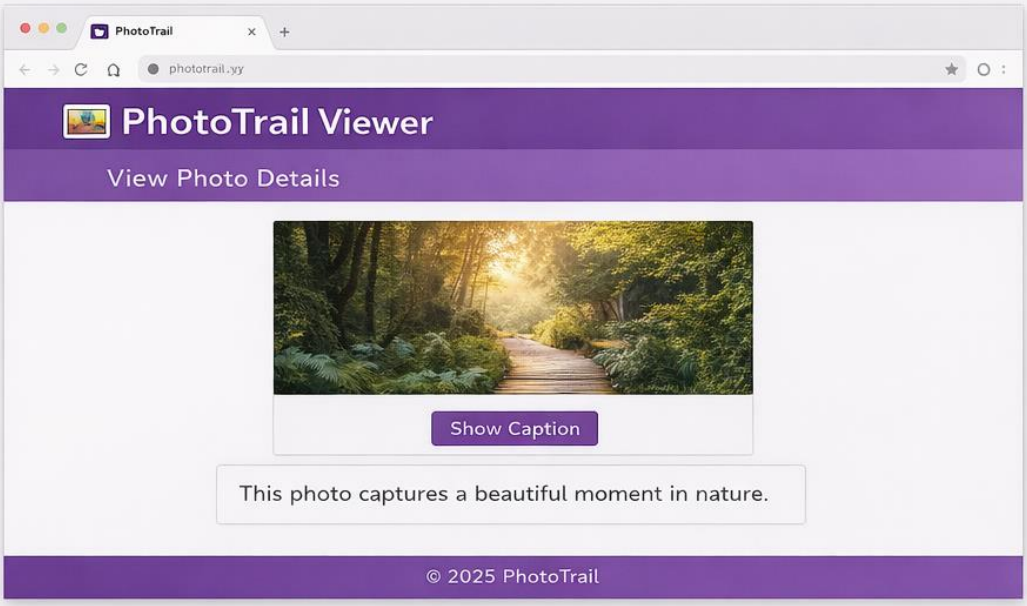
```
</body>
</html>
```

Output :

Output: **PhotoTrail Gallery Page**



Output: **PhotoTrail Viewer Page**



CHAPTER 4 – RESULTS AND DISCUSSIONS

The final implementation of PhotoTrail resulted in a responsive and visually attractive photo gallery application. Users can browse images easily through categorized layouts.

The application meets all functional and non-functional requirements. While backend features such as user accounts are not implemented, the front-end effectively demonstrates photo organization and presentation concepts.

CHAPTER 5 – CONCLUSIONS AND FUTURE SCOPE

5.1 Conclusion

PhotoTrail successfully demonstrates the application of front-end web development techniques to create a modern photo gallery platform. The project highlights the importance of user-centered design and visual aesthetics.

5.2 Future Scope

- Backend integration for user uploads
- Cloud storage support
- Image search and filtering
- AI-based photo tagging
- Mobile application development

REFERENCES

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3. React Documentation
4. Articles on Sustainable E-Commerce and Green Consumer Behavior
5. Research papers on Environmental Awareness and Eco-Friendly Product Markets