Complex Problem-Solving Self-Assessment Form

1	Name of the Student	G.ABHINAYA
2	Roll Number	25951A6606
3	Branch and Section	CSE-(AI&ML) - A
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	Conceptualises 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: 12-12-2025

G.Abhinaya

Signature of the Student

COMPLEX ENGINEERING PROBLEM

A COURSE SIDE PROJECT ON

Front-End Web Development

G.Abhinaya

25951A6606

Sytle Mate

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

G.Abhinaya

25951A6606

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.

G. AHINAYA

Place: Hyderabad **Signature of the Student**

Date: 12-12-2025

CERTIFICATE

This is to certify that the project report entitled Reverse pairs submitted by **G.ABHINAYA** to the Institute of Aeronautical Engineering, Hyderabad in partial fulfillment of the requirements for the award of the Degree Bachelor of Technology in **Computer Science and Engineering(AI/ML)** is a Bonafide record of work carried out by his 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**

Date: 12-12-2025

APPROVAL SHEET

This project report entitled **stylemate** submitted G.ABHINAYA is approved for the award of the Degree Bachelor of Technology in Branch **CSE (Artificial Intelligence & Machine Learning).**

Examiner **Supervisor(s)**

Principal

Date: 12-12-2025

Place: Hyderabad

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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

StyleMate is an intelligent fashion-assist web application designed to enhance the way users discover, select, and coordinate outfits based on their personal style preferences, body type, and current fashion trends. With the rapid growth of online shopping and digital wardrobe tools, users often struggle to choose the right clothing that matches their personality, occasion, and comfort. StyleMate addresses this challenge by providing a smart, personalized, and interactive styling experience.

The application integrates essential features such as outfit recommendations, virtual wardrobe management, color-combination guidance, and trend analysis. By analyzing user inputs and preferences, StyleMate suggests suitable outfits for daily wear, special events, or professional settings. The system also allows users to organize their clothing items, mix and match outfits, and preview combinations before making decisions.

Built with a clean and responsive interface, StyleMate ensures ease of use across devices, making it convenient for users to access styling tips anytime. Its design focuses on personalization, simplicity, and practical usability, offering an intuitive platform for both fashion-conscious users and beginners. The ultimate aim of StyleMate is to reduce confusion in wardrobe selection, boost user confidence, and promote smart, time-saving fashion choices through technology.

1.1 Problem Statement

People own several clothing items but lack a proper system to manage them. Problems commonly faced include:

- Difficulty remembering all available clothing items
- Repeating outfits unintentionally
- Wasting time selecting clothes for events
- No proper categorization like season, color, or style
- Lack of visualization before choosing an outfit
- Wardrobe clutter

These issues impact daily routine and reduce efficiency in lifestyle management.

StyleMate provides a structured digital solution to overcome these problems.

1.2 Introduction

In today's digital era, lifestyle choices are increasingly influenced by technology. Fashion, wardrobe planning, and outfit selection have become part of daily decision-making, and many individuals struggle with managing their clothing items efficiently. People often forget what clothes they own, repeat outfits unintentionally, and waste time choosing attire for different occasions.

StyleMate addresses these challenges by offering a **digital wardrobe management system** that organizes clothes, creates outfits, and helps users plan their fashion choices seamlessly. The application enables users to upload images of clothing items, categorize them, and create combinations to visualize how different items pair together.

The system promotes a more organized lifestyle by letting users maintain a virtual version of their wardrobe, eliminating clutter and making outfit planning effortless. StyleMate also reflects modern lifestyle trends where personalization, smart suggestions, and digital tools influence fashion habits.

The application underwent **testing** for functionality, responsiveness, and data persistence. User feedback guided refinements to ensure intuitive navigation and effective task management. Finally, the web application was deployed using **GitHub Pages**, with version control managed via **Git & GitHub**.

This methodology ensures a **lightweight, front-end focused solution** that supports student productivity through interactive planning, real-time reminders, and progress tracking, with potential for future enhancements such as analytics and AI-based study recommendations.

Methodology

```
<!DOCTYPE html>

<html>

<head>

<title>StyleMate (Simple)</title>

<style>

body{font-family:sans-serif;margin:20px;background:#f5f5f5}

h2{margin-top:0}

#wardrobe,#canvas,#outfits{padding:10px;border:1px solid #ccc;background:#fff;border-radius:6px;margin-top:10px}

.item{display:inline-block;margin:6px;text-align:center}

.item img{width:80px;height:80px;object-fit:contain;border:1px solid #ddd;border-radius:5px;background:#fafafa}

.canvas-item{position:relative;display:inline-block;margin:6px}
```

```
.canvas-item img{width:80px;height:80px;object-fit:contain;border-radius:5px;border:1px solid
#bbb;background:#fafafa}
.remove{position:absolute;top:-5px;right:-5px;background:red;color:#fff;border:none;border-
radius:50%;width:18px;height:18px;cursor:pointer}
.small{padding:5px 10px;margin-top:5px}
</style>
</head>
<body>

<h2>StyleMate – Simple Wardrobe</h2>

<!-- Upload -->
<input type="file" id="file" accept="image/*">
<input type="text" id="name" placeholder="Item name">
<button onclick="addItem()">Add</button>

<!-- Wardrobe -->
<h3>Wardrobe</h3>
<div id="wardrobe"></div>

<!-- Canvas -->
```

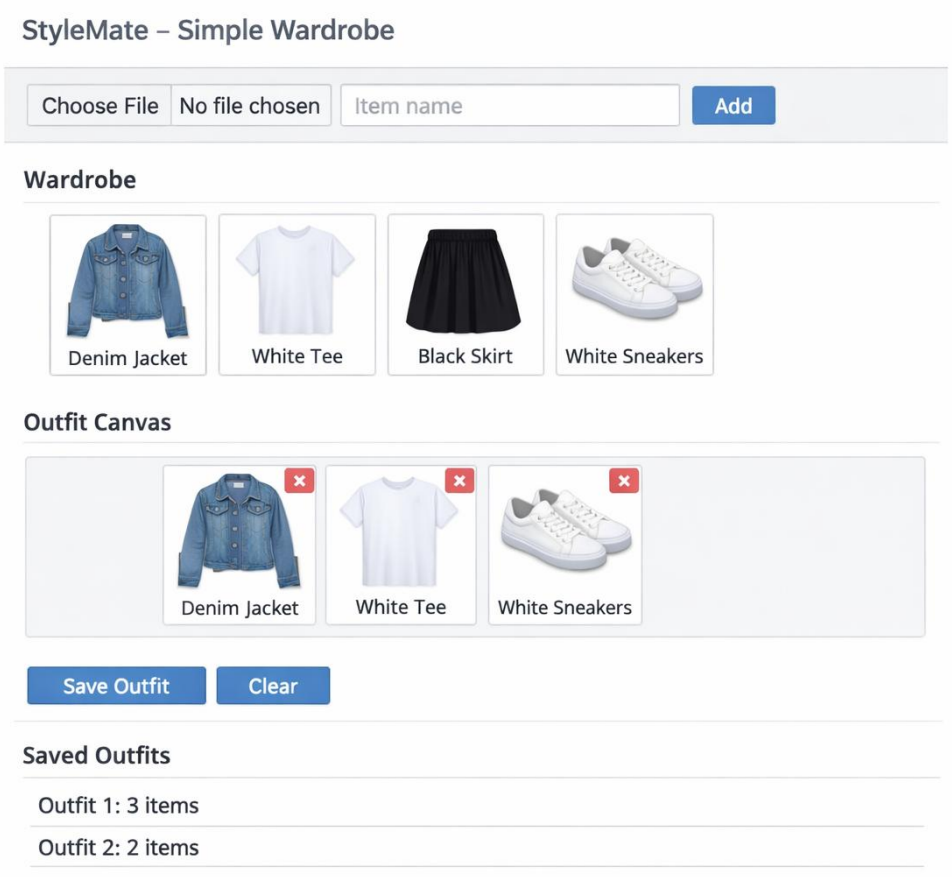
```
<h3>Outfit Canvas</h3>

<div id="canvas" ondragover="event.preventDefault()" ondrop="dropItem(event)"></div>

<button class="small" onclick="saveOutfit()">Save Outfit</button>

<button class="small" onclick="clearCanvas()">Clear</button>



<!-- Outfits -->

<h3>Saved Outfits</h3>

<div id="outfits"></div>



<script>

let items = [];

let canvas = [];

let outfits = [];



function addItem(){

  let file = document.getElementById("file").files[0];

  let name = document.getElementById("name").value || "Item";



  if(!file){ alert("Select image"); return; }
```

```
  let reader = new FileReader();
  reader.onload = e=>{
    items.push({ id: Date.now(), name, img:e.target.result });
    renderWardrobe();
  };
  reader.readAsDataURL(file);
}

function renderWardrobe(){
  let w = document.getElementById("wardrobe");
  w.innerHTML = "";
  items.forEach(it=>{
    w.innerHTML += `
      <div class="item" draggable="true" ondragstart="dragItem(${it.id})">
        <img src="${it.img}">
        <div>${it.name}</div>
      </div>`;
  });
}
```

```
function dragItem(id){ event.dataTransfer.setData("id", id); }

function dropItem(e){
  let id = e.dataTransfer.getData("id");
  let item = items.find(i=>i.id==id);
  canvas.push(item);
  renderCanvas();
}

function renderCanvas(){
  let c = document.getElementById("canvas");
  c.innerHTML = "";
  canvas.forEach((it,i)=>{
    c.innerHTML += `
      <div class="canvas-item">
        <img src="${it.img}">
        <button class="remove" onclick="removeCanvas(${i})">×</button>
      </div>`;
  });
}
```

```
function removeCanvas(i){
  canvas.splice(i,1);
  renderCanvas();
}

function clearCanvas(){
  canvas = [];
  renderCanvas();
}

function saveOutfit(){
  if(canvas.length==0){ alert("Canvas empty"); return; }
  outfits.push([...canvas]);
  renderOutfits();
}

function renderOutfits(){
  let o = document.getElementById("outfits");
  o.innerHTML = "";
```

```
  outfits.forEach((list,i)=>{
    o.innerHTML += `<div>Outfit ${i+1}: ${list.length} items</div>`;
  });
}
</script>


</body>
</html>
```



objectives **of the Project**

The main objectives of the StyleMate project are:

1. To design a user-friendly digital wardrobe application.
2. To allow users to upload, edit, and delete clothing items.
3. To categorize wardrobe items based on type, color, season, etc.
4. To enable users to mix and match clothing to form virtual outfits.
5. To build a responsive interface suitable for all devices.
6. To store wardrobe data efficiently using local storage or databases.
7. To provide optional features like outfit suggestions, filters, and themes.
8. To enhance lifestyle convenience through digital fashion planning.

---

4. Scope of the Project

The scope of StyleMate includes:

- Digital wardrobe creation and management
- Categorization and tagging of clothing items
- Outfit builder with drag-and-drop feature
- Client-side storage of wardrobe data
- Responsive UI for smartphones, tablets, and desktops
- Optional smart features such as weather-based outfit recommendations
- Personalized lifestyle enhancement through organized fashion planning

The project is limited to personal wardrobe management and does not include online shopping or AI-driven deep fashion analytics in its basic version.

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5. Existing System vs Proposed System

Existing System

- Manual wardrobe arrangement
- No digital backup of clothes
- Time-consuming outfit selection
- No tracking or reminders for events or seasons

- Repetitive usage of same outfits
- Lack of visualization before choosing attire

Proposed System (StyleMate)

- Digital wardrobe with picture uploads
- Categorized clothing items
- Easy mix-and-match outfit builder
- User-friendly and responsive interface
- Optional outfit suggestions
- Better planning for events, seasons, and daily lifestyle needs
- Enhances personal convenience and reduces decision fatigue

---

6. Features / Functional Requirements (Detailed)

6.1 Clothing Item Management

- Upload images of shirts, pants, dresses, accessories, etc.
- Add descriptions like color, season, size, or style.
- Edit details when needed.
- Delete items no longer needed.

6.2 Categorization System

- Automatic or manual categorization
- Filters based on:
    - Type
    - Color
    - Season
    - Brand
    - Occasion
- Helps simplify the search and selection process.

6.3 Outfit Builder / Virtual Outfit Creation

- Drag-and-drop components
- Combine tops, bottoms, footwear, and accessories
- Save multiple outfits such as:
    - Casual
    - Office wear
    - Traditional
    - Party wear
    - Winter wear
- Preview outfits visually before wearing them.

6.4 Responsive User Interface

- Built using HTML, CSS, and JavaScript (or React)
- Adjusts layout for devices of all screen sizes
- Smooth animations and modern design styles.

6.5 Storage System

- Local storage for quick retrieval
- Fast data access
- Offline usability
- Optional expansion with database (Firebase, MongoDB, etc.)

7. Optional Enhancements (Advanced Features)

7.1 Smart Outfit Suggestions

- Based on weather conditions
- Based on event type
- Based on past usage patterns
- Personalized recommendations

7.2 Seasonal and Event-Based Filters

- Winter, summer, monsoon wear

- Festival outfits
- Birthday, wedding, office meeting, college events

7.3 Dark Mode / Light Mode

- Customizable themes
- Better nighttime usability

7.4 Image Editing Tools (Optional)

- Auto background removal
- Adjusting brightness or cropping clothes

7.5 Cloud Storage Integration

- Save wardrobe items online
- Access from multiple devices

8. System Architecture (Description)

8.1 User Interface Layer

- Dashboard
- Wardrobe page
- Outfit creator
- Settings page

8.2 Logic Layer

- Handles upload, editing, deletion
- Sorting, filtering, categorizing
- Generating outfit previews
- Theme switching

8.3 Data Layer

- LocalStorage or database
- Stores all wardrobe items and user settings

This structure ensures clean separation of modules and easier maintenance.

9. Technologies Used

- **HTML5** – Structure of web pages
- **CSS3** – Styling and visual layout
- **JavaScript / React** – Functionality, interactivity, components
- **LocalStorage API** – Client-side data storage
- **Responsive Design Techniques** – Media queries, flexible layouts
- **Optional:** Firebase / Node.js for extended features

Conclusion

StyleMate is a highly useful lifestyle application designed to modernize wardrobe management. It bridges the gap between fashion and technology by offering a platform where users can effortlessly store, categorize, and visualize their clothing items. The project demonstrates effective use of web technologies and emphasizes user-centered design principles.

By implementing StyleMate, users can enhance their daily routine, reduce decision fatigue, maintain an organized digital wardrobe, and enjoy a more efficient lifestyle. The project has significant potential for real-world application and can be expanded into a full-fledged fashion assistant in the future.