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

Complex Problem-Solving Self-Assessment Form

1	Name of the Student	Mohammed Irfan
2	Roll Number	25951A6662
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: 05-12-2025

Mohammed Irfan
Signature of the   Student

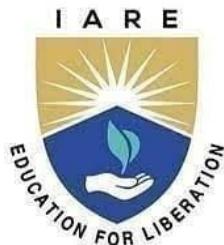**COMPLEX ENGINEERING PROBLEM**

A COURSE SIDE PROJECT

ON

Front-End Web Development

Mohammed Irfan

25951A6683

Forge *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

Mohammed Irfan

25951A6662

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.

Mohammed Irfan

Place: Hyderabad   **Signature of the Student**

Date: 05-12-2025

CERTIFICATE

This is to certify that the project report entitled TaskForge submitted by **Mohammed Irfan** 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 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: 05-12-2025

Principal

APPROVAL SHEET

This project report entitled Task Forge submitted by **Mohammed Irfan** is approved for the award of the Degree Bachelor of Technology in Branch **CSE (Artificial Intelligence & Machine Learning).**

Examiner   **Supervisor(s)**

Principal

Date: 05-12-2025

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

TaskForge is a comprehensive web-based platform designed to manage tasks, projects, and team workflows efficiently. In academic and professional environments, teams often face challenges such as poor task organization, lack of visibility into progress, and inefficient coordination among members. TaskForge addresses these challenges by providing a centralized dashboard where tasks can be created, assigned, tracked, and analyzed in real time.

The platform follows a Kanban-style workflow that visually represents task progress through different stages such as To Do, In Progress, and Done. Users can assign tasks to team members, set priorities and deadlines, and monitor overall project completion using progress indicators and charts. The system supports features such as drag-and-drop task movement, search, filtering, sorting, and responsive design for both desktop and mobile devices.

TaskForge is developed using HTML, CSS, and JavaScript and operates entirely on the client side. Task data is stored using browser localStorage, eliminating the need for backend infrastructure. This project demonstrates the practical application of front-end technologies to build an efficient, interactive, and user-friendly task management system.

CONTENTS

CHAPTER 1
INTRODUCTION

1.1 Problem Statement

Effective task and project management is essential for ensuring productivity, meeting deadlines, and maintaining team coordination. However, many students and teams rely on unstructured tools such as handwritten notes, spreadsheets, or messaging applications to manage tasks. These approaches lack proper prioritization, progress visibility, and workflow organization.

As projects grow in size and complexity, it becomes difficult to track task status, responsibilities, and deadlines accurately. This often leads to missed deadlines, duplication of work, and reduced efficiency. Hence, there is a need for a simple, intuitive, and visually organized task management platform that helps teams manage their workflow efficiently.

1.2 Introduction

Forge is a web-based task and project management system designed to simplify the organization and tracking of tasks within a team. The platform provides a structured interface that allows users to create tasks, assign them to team members, define priorities, set deadlines, and monitor progress through a centralized dashboard.

The application uses a Kanban-style task board that visually categorizes tasks into different stages such as To Do, In Progress, and Done. Users can move tasks between these stages using drag-and-drop interactions. Forge is developed entirely using front-end technologies and stores data locally within the browser, making it lightweight and easy to deploy without server-side dependencies.

1.3 Requirements

The requirements of the TaskForge system are categorized as functional and non-functional requirements.

Functional Requirements:

• The system should allow users to create, edit, and delete tasks and projects.

• Each task should include details such as title, project name, assignee, priority, status, and due date.

• Users should be able to assign tasks to team members.

• The system should support task status tracking using visual indicators.

• Tasks should be searchable, filterable, and sortable by priority, status, or due date.

• Drag-and-drop functionality should be provided for task movement.

Non-Functional Requirements:

• The application should be responsive across different devices.
• The user interface should be intuitive and easy to use.
• Task updates should reflect immediately without page reloads.
• The system should handle dynamic task data efficiently.

1.4 Prerequisites
To use or develop the TaskForge application, the following prerequisites are required:
• Basic knowledge of HTML, CSS, and JavaScript
• A modern web browser such as Chrome, Firefox, or Edge
• A code editor such as Visual Studio Code
• Understanding of basic project management concepts

1.5 Technologies Used
The following technologies were used in the development of TaskForge:
• HTML5 – for structuring the web interface
• CSS3 – for styling, layout, and responsive design
• JavaScript – for implementing application logic and interactivity
• Browser localStorage – for storing task data persistently

CHAPTER 2
REVIEW OF RELEVANT LITERATURE

Task management and project tracking tools have evolved significantly with the growth of web technologies. Traditional tools such as spreadsheets and paper-based systems provide limited flexibility and visualization. Modern task management systems such as Trello, Asana, and Jira use Kanban boards and interactive dashboards to enhance productivity.

Studies show that visual task representation improves team collaboration and task completion rates. Kanban methodology emphasizes continuous workflow and visibility, making it suitable for task tracking applications. TaskForge draws inspiration from these systems while implementing a simplified version using only front-end technologies for academic demonstration purposes.

CHAPTER 3
METHODOLOGY

The development of TaskForge followed a modular and iterative approach. The methodology involved designing the user interface, defining data structures, implementing task logic, and testing functionality.

Steps involved:
• Requirement analysis and feature planning
• UI design for dashboard and task board
• Implementation of task CRUD operations
• Integration of drag-and-drop functionality
• Implementation of search, filter, and sorting logic
• Testing for responsiveness and usability

All features were developed using client-side scripting without backend integration.

CHAPTER 4
RESULTS AND DISCUSSIONS

The TaskForge application successfully fulfills all defined requirements. The Kanban-style board provides clear visibility of task status and progress. Drag-and-drop functionality improves usability and allows users to manage tasks intuitively.

The filtering and sorting features help users quickly locate tasks based on priority, status, or deadlines. Progress indicators and summary panels provide insights into overall project completion. Testing confirmed that the application performs well across different screen sizes and browsers.

CHAPTER 5
CONCLUSIONS AND FUTURE SCOPE

5.1 Conclusion
TaskForge is an efficient and user-friendly task and project management platform developed using front-end web technologies. The project demonstrates how structured workflows, visual task boards, and interactive features can significantly improve task organization and productivity.
By eliminating backend dependencies, TaskForge remains lightweight and easy to deploy, making it suitable for academic projects and small teams.

5.2 Future Scope
The following enhancements can be added in the future:
• Backend integration for multi-user support
• User authentication and role management
• Task notifications and reminders
• File attachments and comments for collaboration
• Dark and light mode interface
• Advanced analytics and reporting features

REFERENCES
• MDN Web Docs – HTML, CSS, and JavaScript
• W3C Web Standards Documentation
• Kanban Methodology Resources
• Front-End Web Development Tutorials