Software Design Specifications For Student -Faculty Project Management & Collaboration System

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1 Introduction

1.1 Purpose

The purpose of this document is to provide a detailed software design specification for the "Student-Faculty Project Management & Collaboration System." It targets students and faculty of Mahindra University, aiming to provide a centralized portal for managing academic and research project collaborations.

1.2 Scope

This document outlines the architectural and design aspects of the web-based system. It covers front-end and back-end technologies, data structures, system modules, and interactions.

1.3 Definitions, Acronyms, and Abbreviations

- CSV: Comma-Separated Values
- UI: User Interface
- DB: Database
- JWT: JSON Web Token
- MU: Mahindra University

1.4 References

- Internal design notes and planning document
- Web technology documentation (Node.js, Express.js, HTML/CSS)

2 Use Case View

2.1 Use Case

- Login (Student/Faculty)
- Project Posting (Faculty)
- Project Discovery & Application (Student)
- Application Review (Faculty)
- Meeting Scheduling (Faculty)
- Meeting Tracking (Student)
- Profile Viewing

3. Design Overview

3.1 Design Goals and Constraints

- Modular front-end and back-end separation
- CSV-based lightweight database structure
- Future scalability to MongoDB
- Basic authentication without encryption (extendable to JWT)

3.2 Design Assumptions

- All emails follow university domain patterns
- No real-time messaging initially
- Meetings manually entered by faculty

3.3 Significant Design Packages

- Auth Module
- Student Dashboard Module
- Faculty Dashboard Module
- CSV Data Access Layer
- UI Components (Bootstrap)

3.4 Dependent External Interfaces

External Application	Interface Name	Description
Google Forms	Application Link	Used for student applications to projects

3.5 Implemented Application External Interfaces

Interface Name	Module Implementing	Description
Login API	Auth Module	Authenticates student/faculty using CSV lookup
Project API	Project Module	Reads/Writes to projects.csv

4 Logical View

4.1 Design Model

- Student Module: Handles application tracking, meeting schedules, and project views
- Faculty Module: Manages project posting, application review, and meetings

4.2 Use Case Realization

Sequence diagram of: Login → Dashboard → View/Update CSV → Render UI

5. Data View

5.1 Domain Model

- Core entities: Student, Faculty, Project, Application, Meeting

5.2 Data Model (persistent data view)

- Data stored as CSV files

5.2.1 Data Dictionary

- Provided under "Data Storage Format" in the project summary.

6 Exception Handling

- Invalid login → Error message
- CSV read/write failures → System alert
- Missing application → Graceful fallback UI

7 Configurable Parameters

Configuration Parameter Name	Definition and Usage	Dynamic?
CSV File Path	Path to each CSV file	Yes
Session Timeout	Login session expiry	No

8.Quality of Service

8.1 Availability

- High availability during academic hours
- Downtime may be required during CSV migrations or upgrades

8.2 Security and Authorization

- Role-based login control
- Email domain validation
- Passwords stored as plain text (to be encrypted later)

8.3 Load and Performance Implications

- CSV read/write performance suitable for limited university-scale usage
- Future MongoDB migration planned

8.4 Monitoring and Control

- Logs to be written to server console and log files
- Admin role in roadmap for usage audits