Artefact Design

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Course: BSC (Hons) in Computer Science

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Artefact

A tangible deliverable or by product produced during a project's development, especially in software engineering and project management is called an artefact. A paper, model, diagram, source code, test case, or any other type of material that aids in system design, construction, testing or management can be used. Throughout a project's lifecycle, artifacts are crucial for tracking progress, preserving organization, and maintaining effective communication among team members.

Product Backlog:

Product backlog is a prioritized list of all the work that needs to be done to create, improve, or maintain a product. (Radigan, 2025)

Student Module	As a student, I want to login securely so that I can access my account and resources	-Implement login form -Integrate login with the database for credential verification -Create a session for authenticated users	Must be
	As a student, I want to upload my documents so that I can submit them for review	-Design document upload interface -Create functionality to upload and store files -Display confirmation of successful submission	Must be
	As a student, I want to view feedback and comments from teachers so that I can improve my work	-Fetch feedback data from the database -Display feedback in a user-friendly interface	Should be
Teacher Guide Module	As a teacher, I want to login securely so that I can access my assigned projects	-Same as Student Login	Must be
	As a teacher, I want to review student project so that I can provide detailed feedback	-Fetch assigned student projects -Create a review interface -Store feedback and comments in the database	Must be
	As a teacher, I want to participate in presentation panels so that I can evaluate student presentations	-Implement presentation -Provide real-time feedback and grades -Store evaluation data in the system	Should be
Project Coordinator Module	As a project coordinator, I want to login securely so that I can manage projects and schedules	-Same as Login Functionality	Must be

	As a project coordinator, I want to create and manage project drives so that students and teachers can collaborate	-Design project drive interface -Implement drive creation and user assignment functionality	Must be
	As a project coordinator, I want to schedule presentations so that the time and venue are clear	-Create a scheduling interface -Notify users about schedules	Should be
Collaboration and Communication Tools	As a user, I want to send messages so that I can communicate effectively with others	-Design messaging interface -Implement message sending and receiving functionality	Should be
	As a user, I want to share files so that I can collaborate with my team	-Design file-sharing interface -Create functionality for uploading and sharing files	Could be
Plagiarism Checking	As a user, I want to check my documents for plagiarism so that I can ensure originality	-Integrate document upload functionality -Connect to plagiarism detection service -Display plagiarism report	Must be
	As a user, I want to receive feedback on how to improve originality so that I can address plagiarism issues	-Generate feedback based on plagiarism report -Display recommendations for improvement	Should be
Security and Backup	As an admin, I want data to be backed up regularly so that I can recover it in case of issues	-Design a backup process -Implement automated backup and encryption -Create restore functionality for backup	Must be
Notification and Alerts	As a user, I want to receive real-time notifications so that I stay updated on important events	-Implement notification triggers -Design a notification interface	Could be

AI Checking	As a user, I want to check my document for AI-generated content so that I can ensure authenticity	-Implement document upload for AI analysis -Connect to AI detection system -Display AI analysis report	Must be
	As a user, I want feedback on AI-generated content so that I can improve content authenticity	-Generate actionable feedback -Display recommendations for content improvement	Should be

Figure 1;Product Backlog of Assignment Management System

Functional Decomposition Diagram (FDD):

A tool used to break down a complex task or system into smaller and simpler parts. (HAYES, 2021)
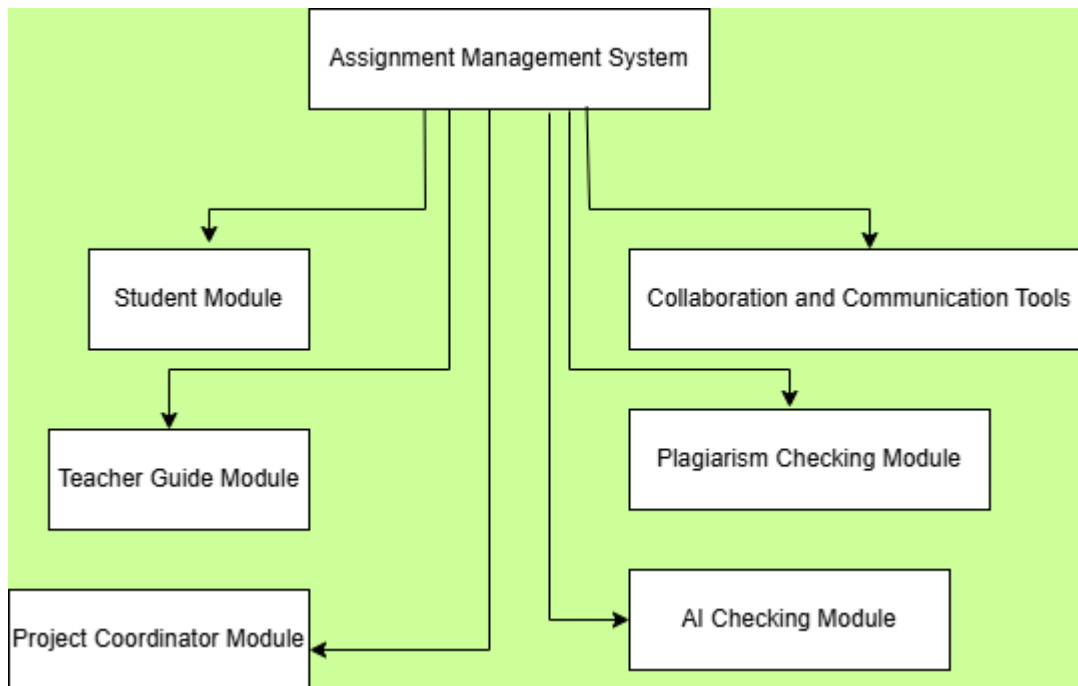
Figure 2:Functional Decomposition Diagram

Legend

SM – Student Module

TGM – Teacher Guide Module

PCM – Project Coordinator Module

ACM – AI Checking Module

PCM – Plagiarism Checking Module

CCT – Collaboration and Communication Tools

Requirement Types:

FR – Functional Requirement

NFR – Non-Functional Requirement

Student Module (SM)

Req. Code	Requirement Description	Use Case	Moscow Prioritization
R1-F-1.0	The system allows the student to login	Student Login	Must Have
R1-F-2.0	The system allows students to upload document for submission	Document Submission	Must Have
R1-F-3.0	Students can view feedback and remarks provided by teachers	Feedback Viewing	Should Have

Activity Diagram
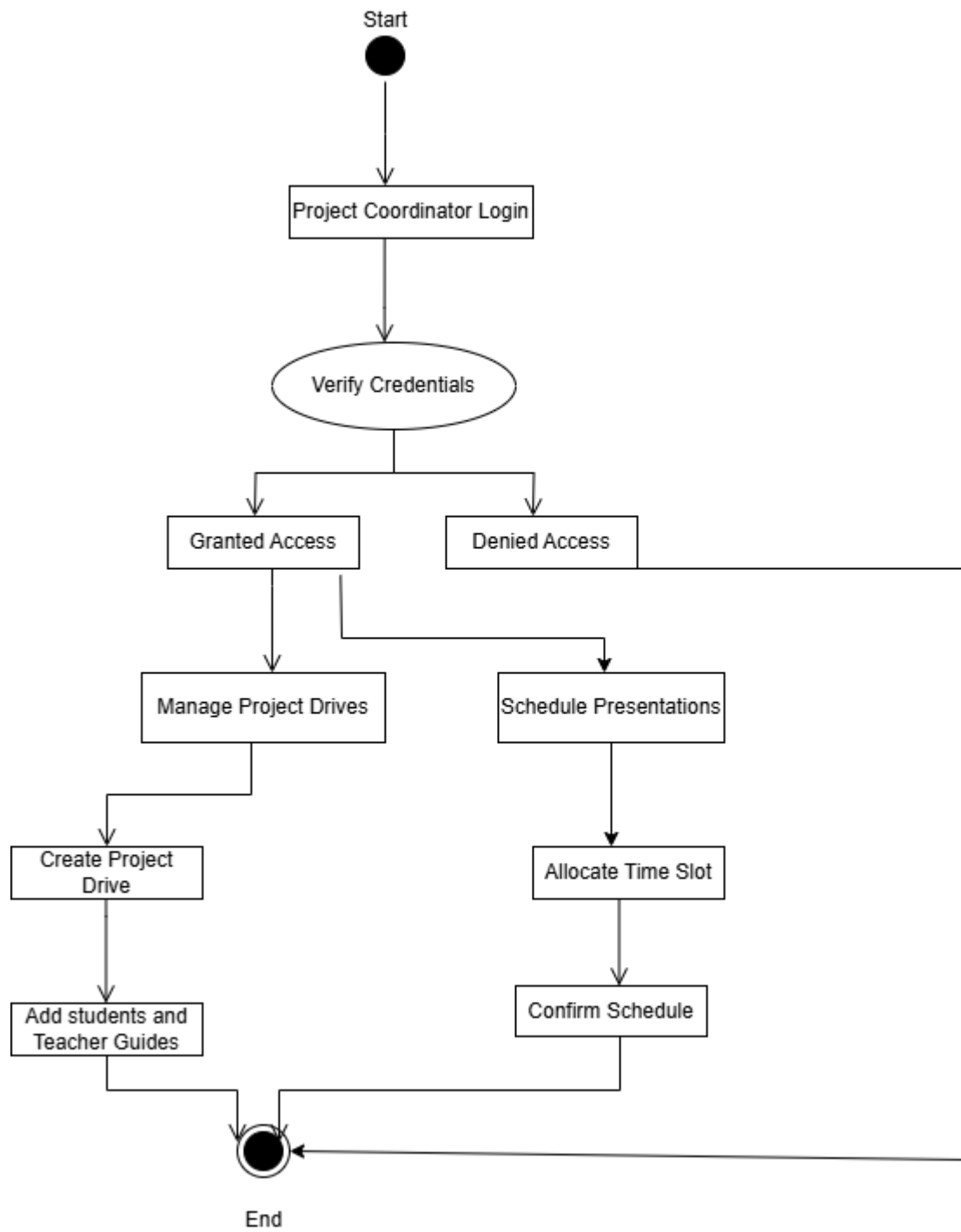
Figure 3:Activity Diagram for Student Module

Use case diagram
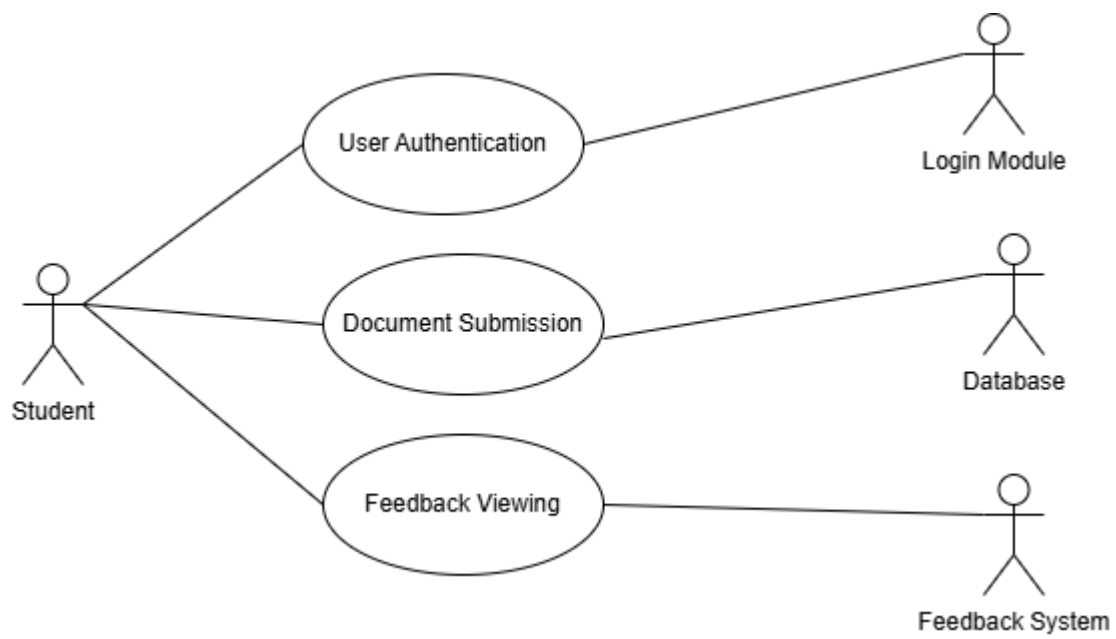
Figure 4:Use case diagram for Student Module

Sequence Diagram
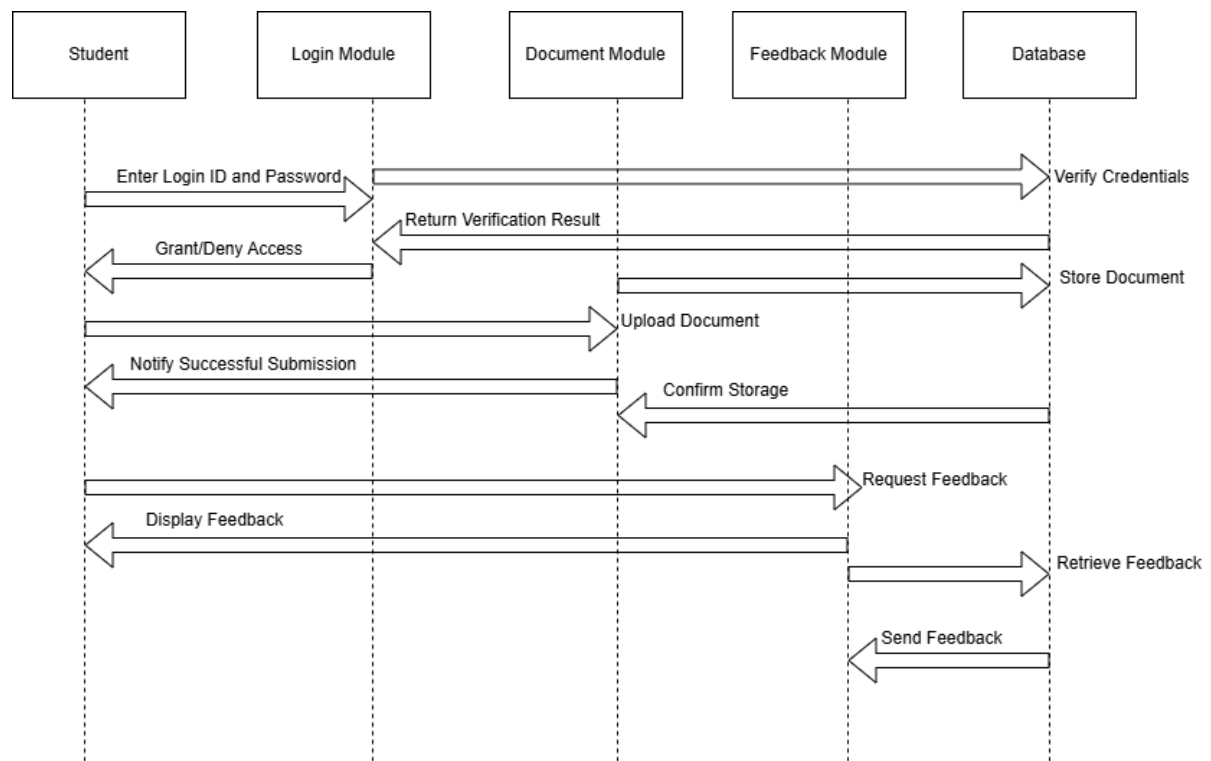
Figure 5:Sequence diagram for Student Module

Teacher Guide Module (TGM)

Req. Code	Requirement Description	Use Case	Moscow Prioritization
R2-F-1.0	The system allows the teacher to login	Teacher Login	Must Have
R2-F-2.0	Teachers can review student project reports and provide feedback	Student Project Review	Must Have
R2-F-3.0	Teachers can join presentations as a panel member and grade students	Panel Participation	Should Have

Activity Diagram
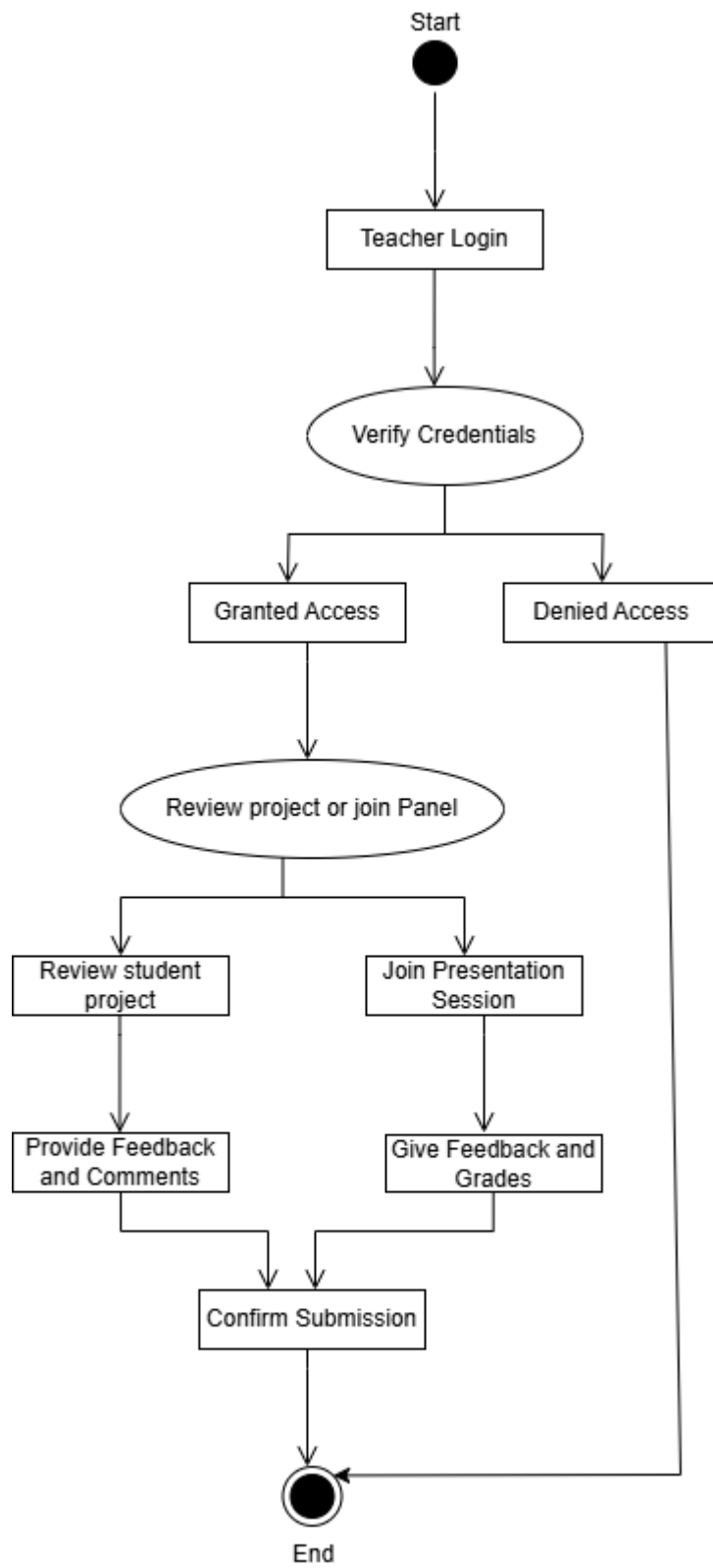
Figure 6:Activity diagram for Teacher Guide Module

Use Case Diagram
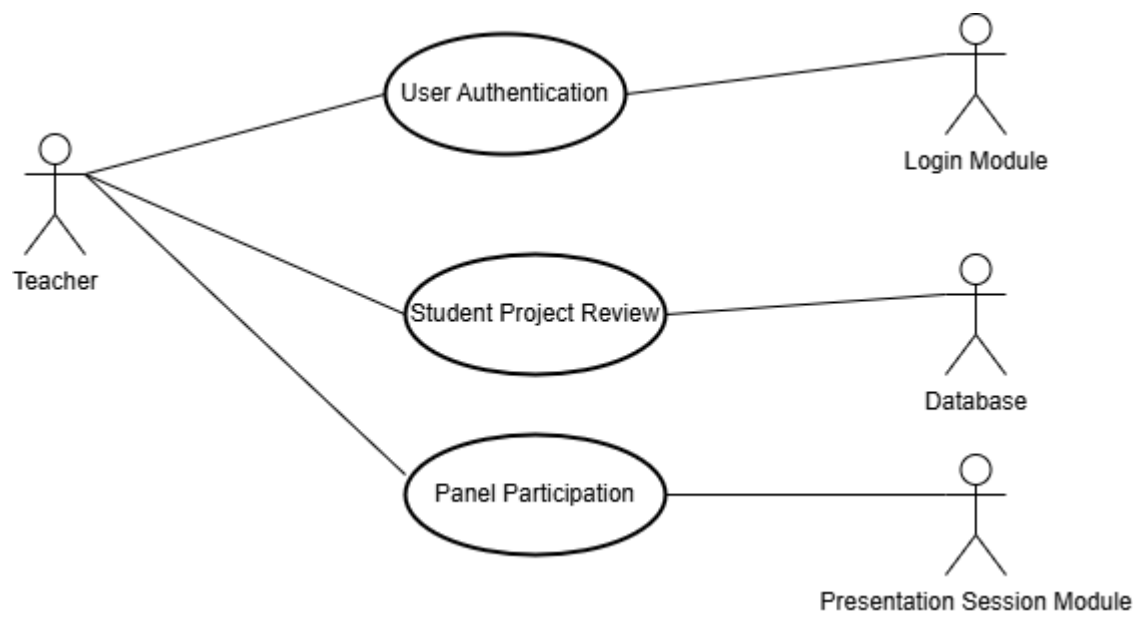
Figure 7:Use Case diagram for Teacher Diagram

Sequence Diagram
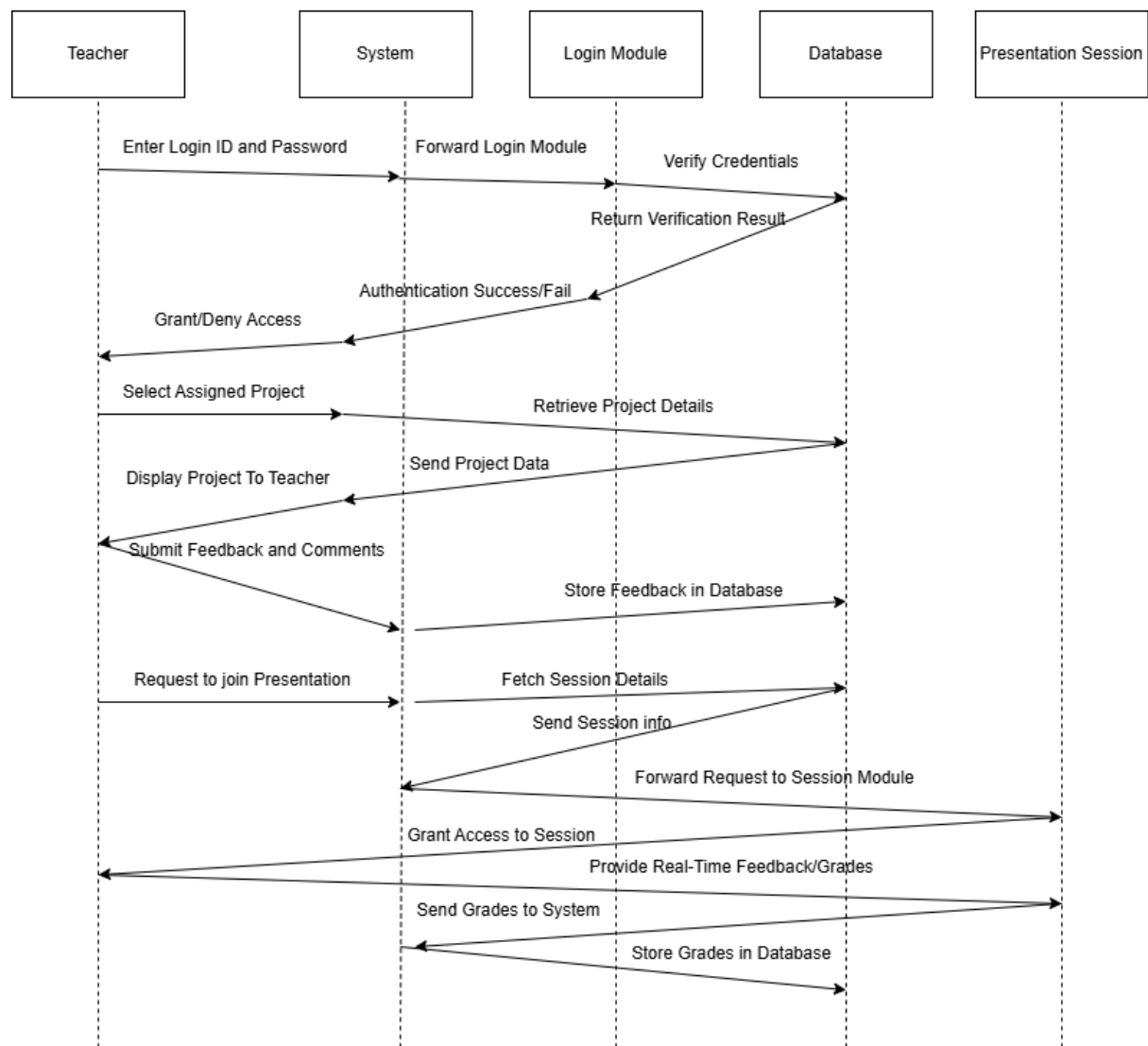
Figure 8:Sequence diagram for Teacher Module

Project Coordinator Module (PCM)

Req. Code	Requirement Description	Use Case	Moscow Prioritization
R3-F-1.0	The system allows the project coordinator to login	Coordinator Login	Must Have
R3-F-2.0	The system enables project coordinators to manage project drives	Project Drive Management	Must Have
R3-F-3.0	The system allows scheduling of presentation times and venues	Presentation Scheduling	Should Have

Activity Diagram

Figure 9:Activity diagram for Project Coordinator Module

Use Case Diagram
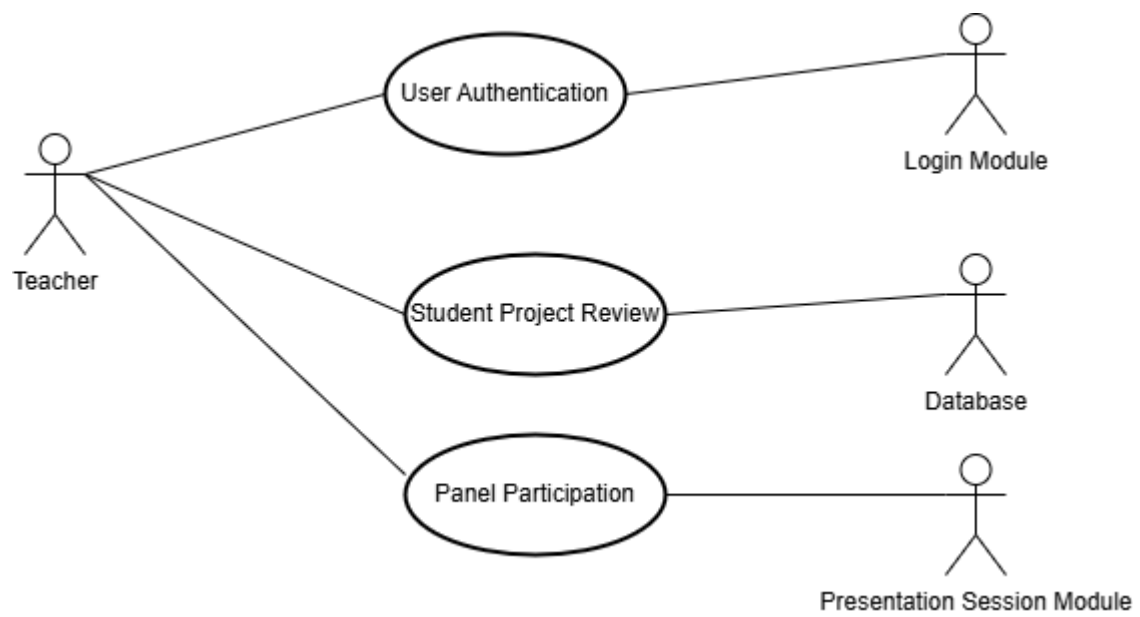
Figure 10:Use case diagram for Project Coordinator Module

Sequence Diagram
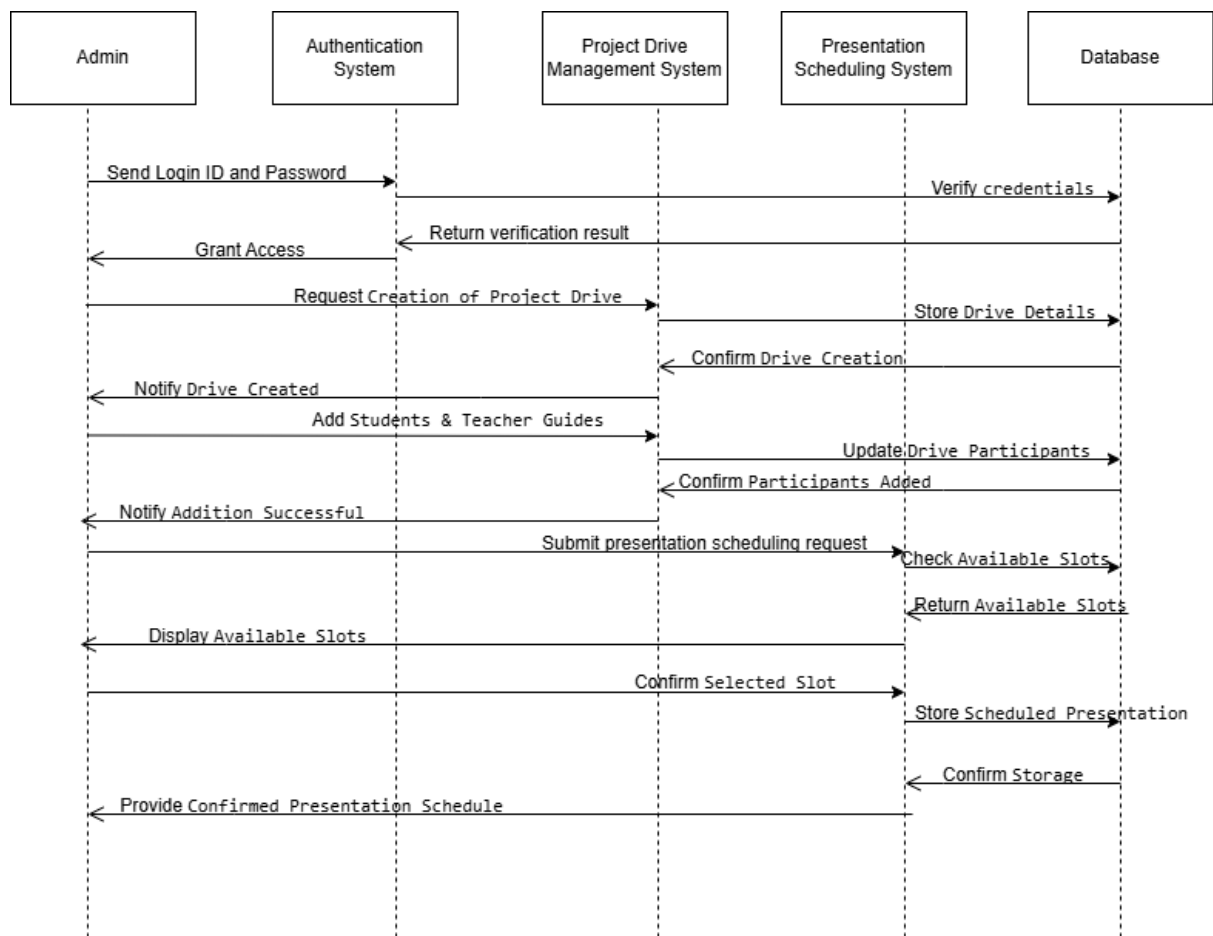
Figure 11:Sequence diagram for Project Coordinator Module

AI Checking Module

Req. Code	Requirement Description	Use Case	Moscow Prioritization
R4-F-1.0	The system allows users to upload documents for AI analysis	Document Submission	Must Have
R4-F-2.0	The system analyses the document for AI-generated text patterns and markers	AI Content Detection	Must Have
R4-F-3.0	The system generates a detailed report highlighting AI-generated sections	Report Generation	Must Have
R4-F-4.0	The system provides feedback and recommendations for improving content authenticity	Feedback and Recommendations	Should Have
R4-F-5.0	The system performs an overall AI checking process and evaluates AI-generated content percentage	Overall AI Checking	Must Have
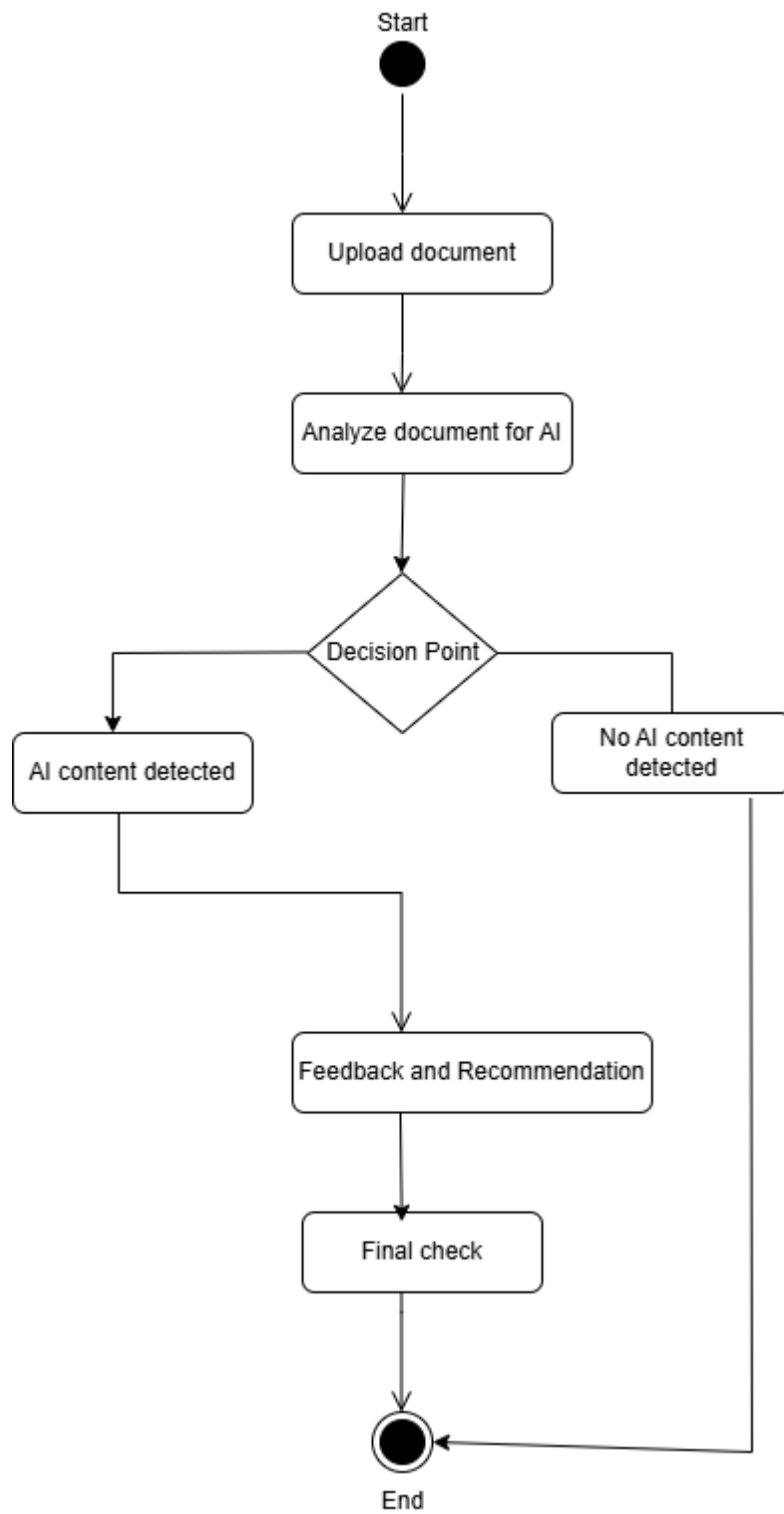
Activity Diagram

Figure 12:Activity diagram for AI Checking Module

Use Case diagram
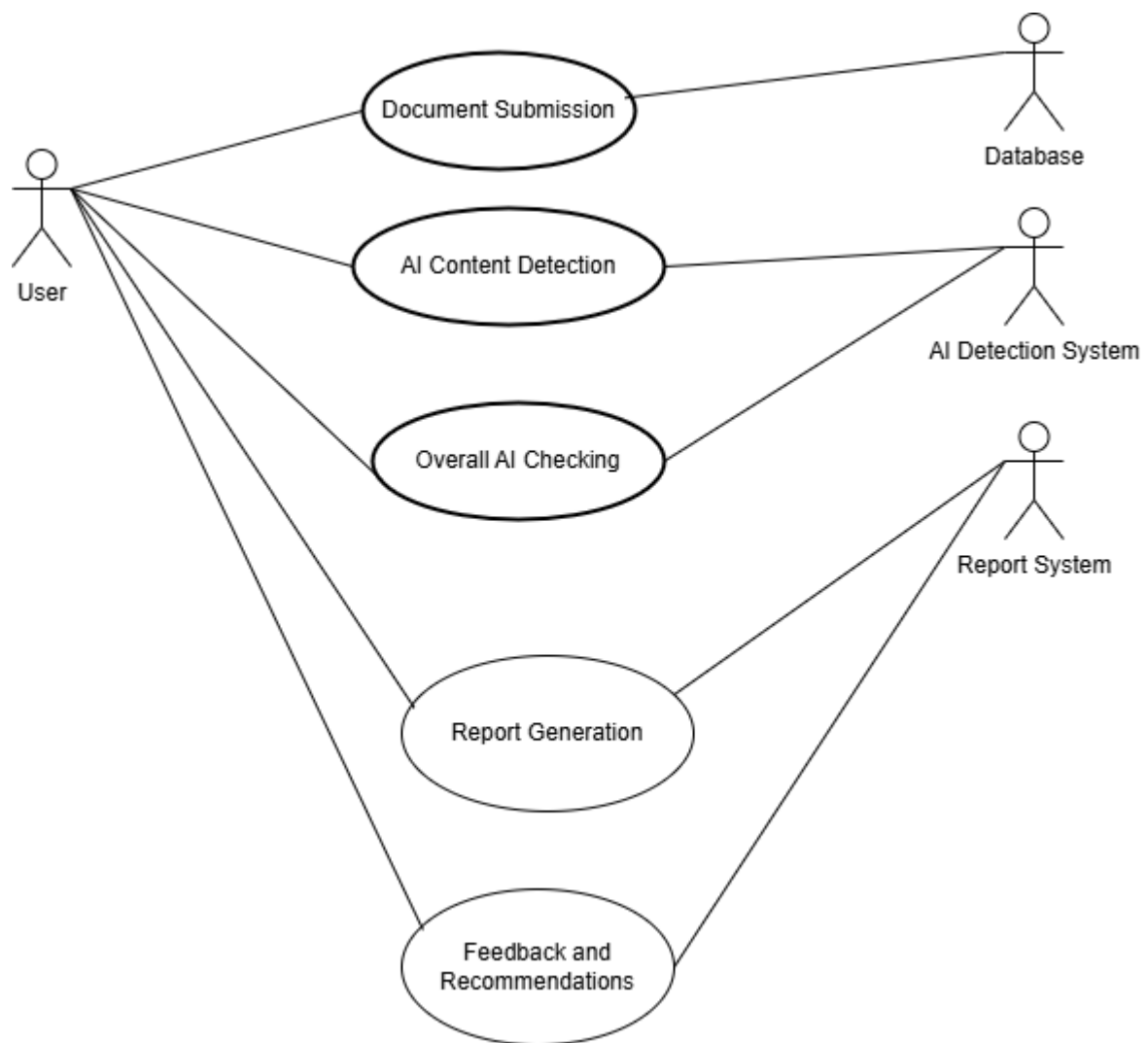
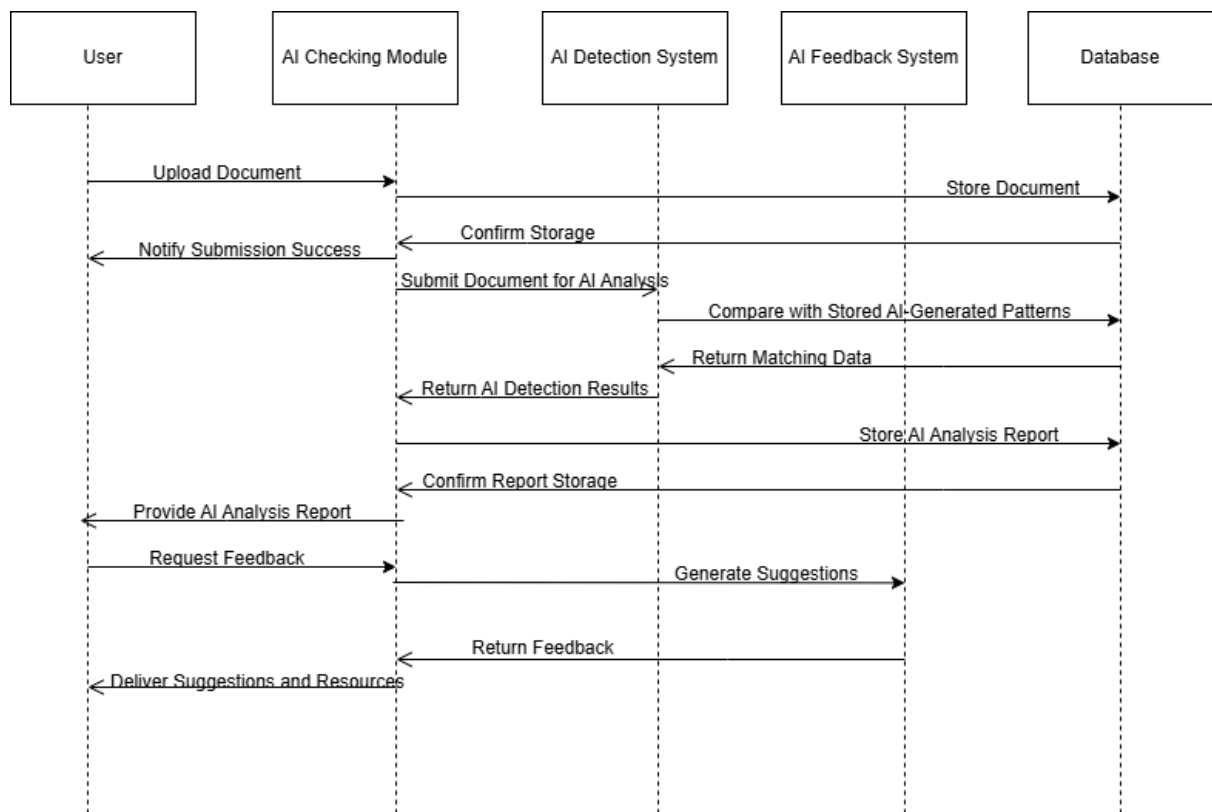*Figure 13:Use Case diagram of AI Checking Module*

Sequence Diagram

Figure 14:Sequence diagram for AI Checking Module

Plagiarism Checking Module

Req. Code	Requirement Description	Use Case	Moscow Prioritization
R5-F-1.0	The system allows users to upload documents for plagiarism detection	Document Submission	Must Have
R5-F-2.0	The system analyses the document by comparing it with a database and online sources to detect plagiarism	Plagiarism Detection	Must Have
R5-F-3.0	The system generates a detailed plagiarism report, including matching sources and percentage of plagiarism	Report Generation	Must Have
R5-F-4.0	The system provides feedback and recommendations to improve originality and avoid plagiarism	Feedback and Recommendations	Should Have
R5-F-5.0	The system performs overall plagiarism checking and evaluates the percentage of plagiarized content	Plagiarism Checking	Must Have

Activity Diagram

Start

Document Submission

Plagiarism Detection

Report Generation

Feedback and Recommendations

Decision Node

Yes

No

End
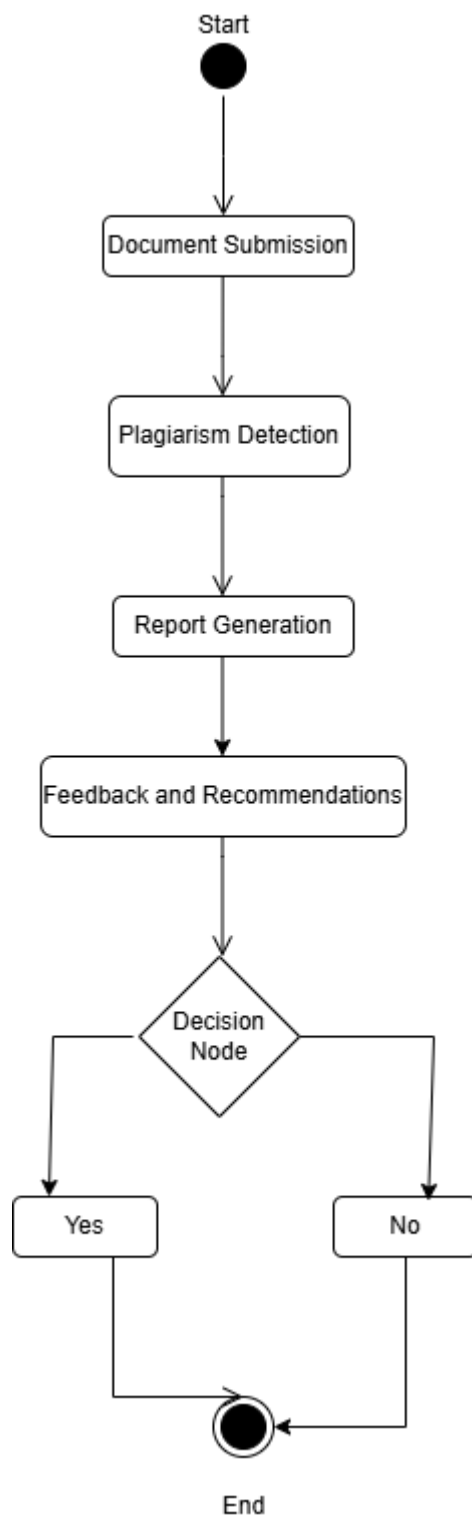
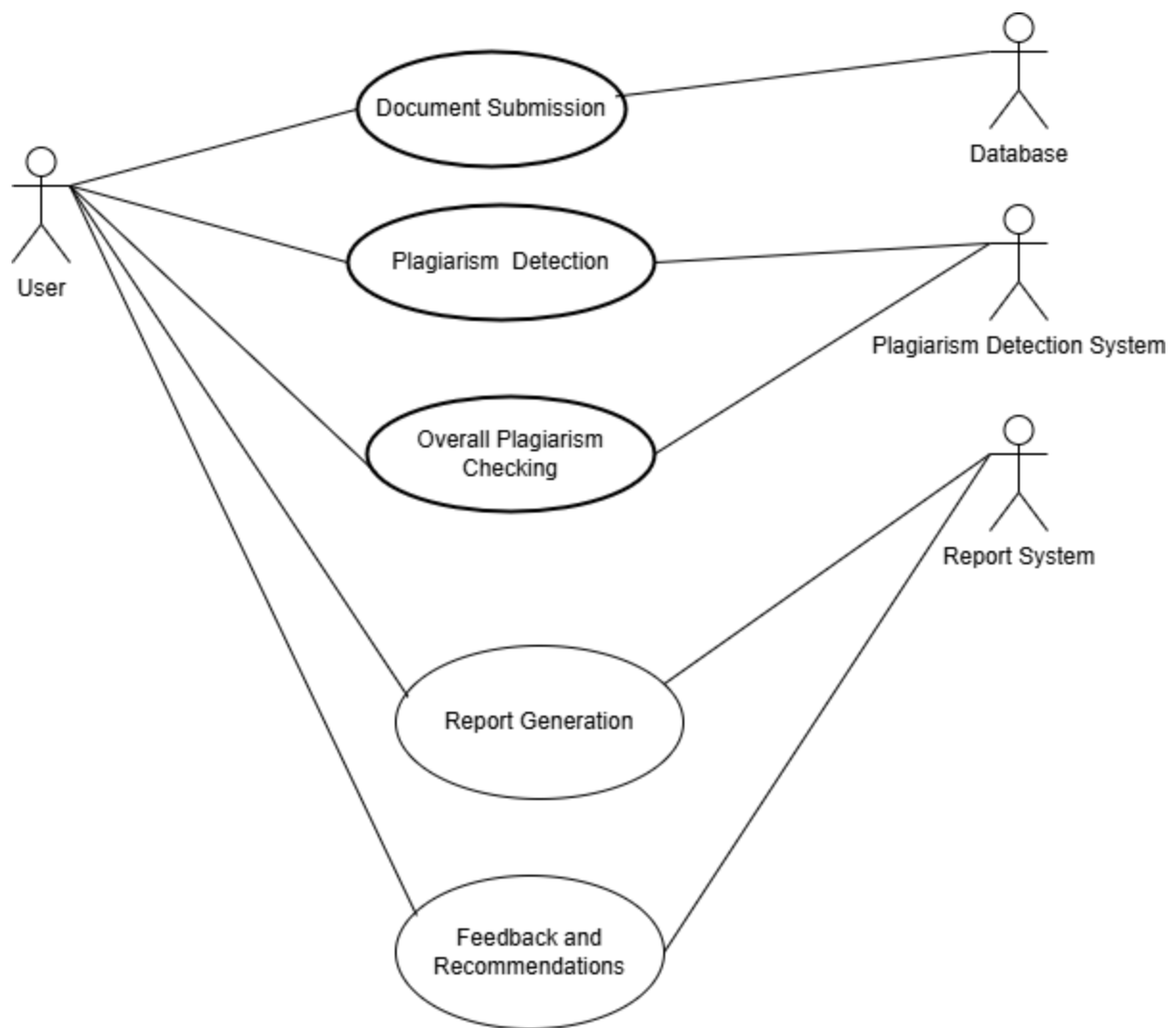*Figure 15:Activity diagram of Plagiarism Checking*

Use Case Diagram

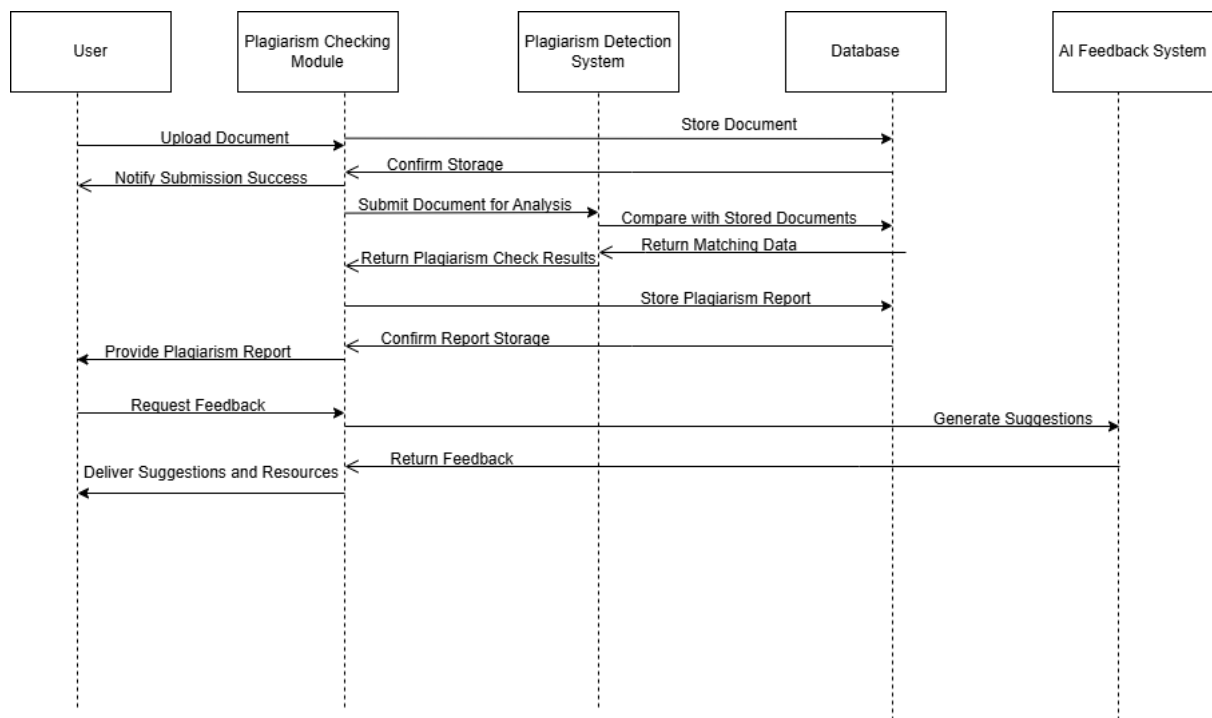*Figure 16:Use Case diagram of Plagiarism Checking*

Sequence Diagram

Figure 17:Sequence diagram of Plagiarism Checking

Collaboration and Communication Tools

Req. Code	Requirement Description	Use Case	Moscow Prioritization
R6-F-1.0	The system allows users to send messages to individuals or groups	Messaging System	Must Have
R6-F-2.0	The system enables users to upload and share files with designated users or groups	File Sharing	Must Have

Activity Diagram
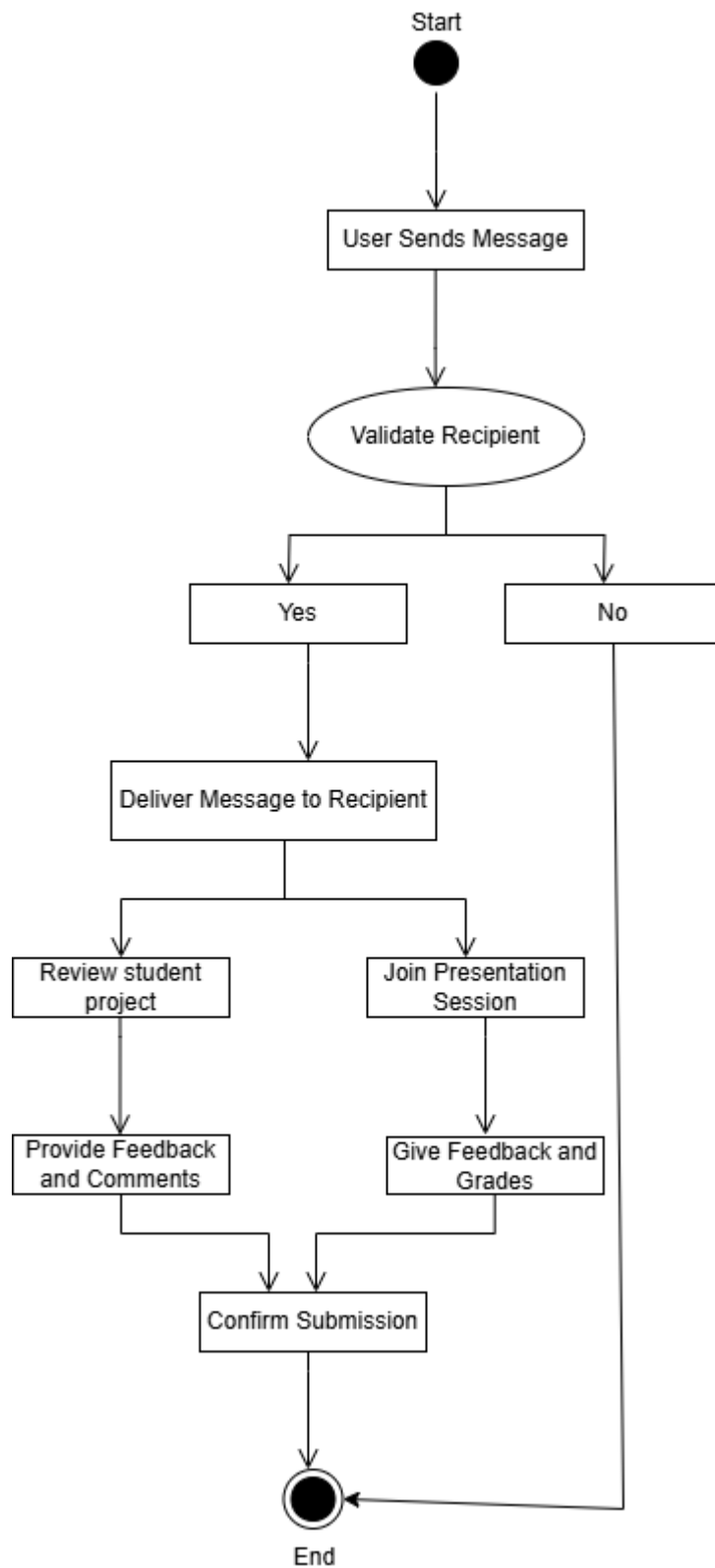
Figure 18:Activity diagram of Collaboration and Communication Tools

Use Case Diagram
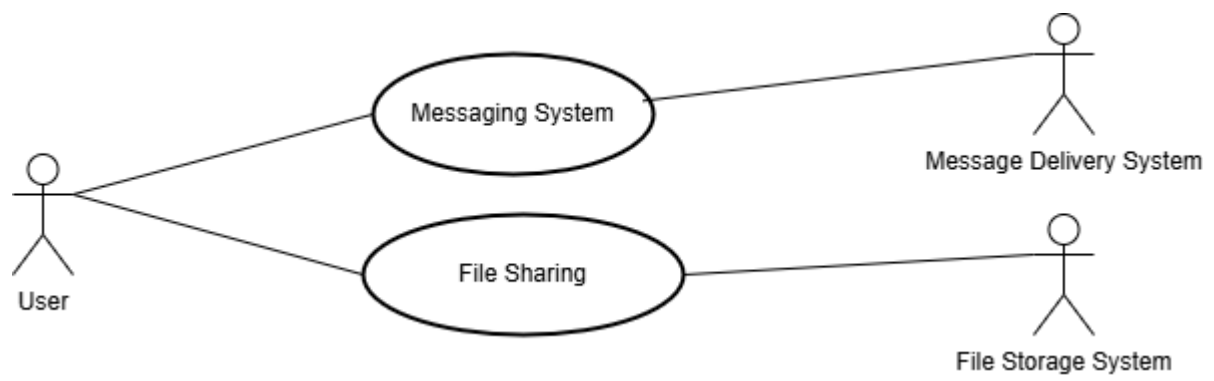
Figure 19:Use Case diagram of Collaboration and Communication Tools

Sequence Diagram
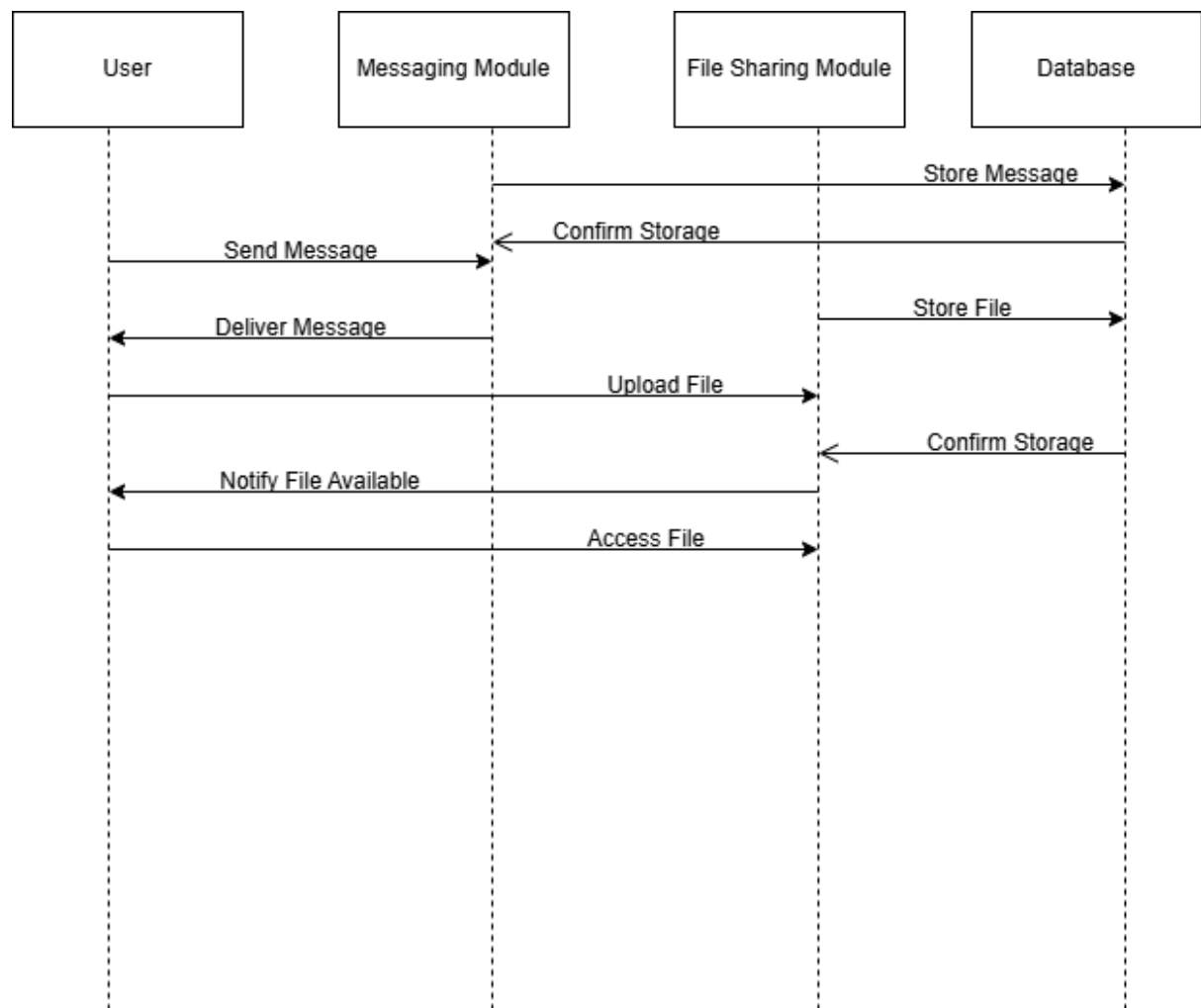
Figure 20:Sequence diagram of Collaboration and Communication Tools
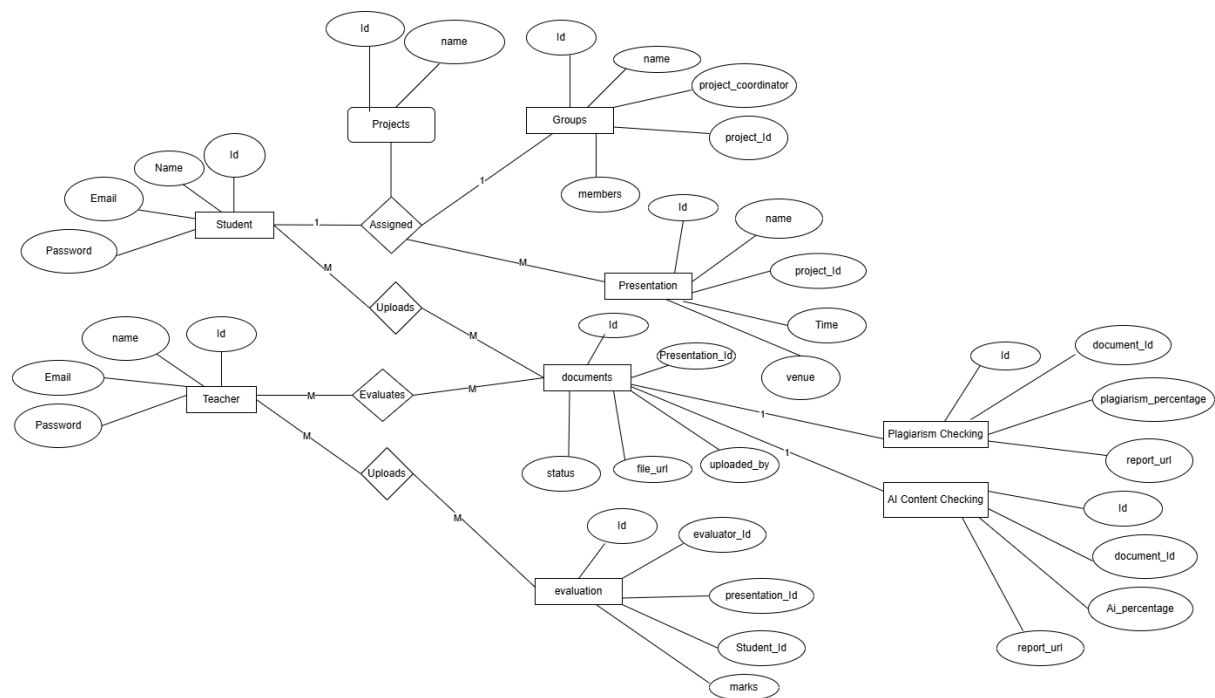
Entity-relationship Diagram:

Figure 21:ERD diagram for Project Management System

Test Case:

White Box Testing:

Sl. no.	Test Case	Expected Output	Test Result
1	Enter input for registration	Registration Successful message and redirect to homepage while storing the data in the database	Successful
2	Enter invalid input	Error message	Successful
3	Enter valid username and password and log-in	Login Successful message and redirect to homepage	Successful
4	Enter invalid	Error message	Successful
5	Upload Documentation Files	File Successfully uploaded	Successful
6	Read feedback provided by Teachers	Show feedback	Successful
7	Evaluate file and provide marks	Access to the file and marks uploaded	Successful
8	Provide feedback to students	Feedback uploaded	Successful

Figure 22:Test case for project management system

Wireframe

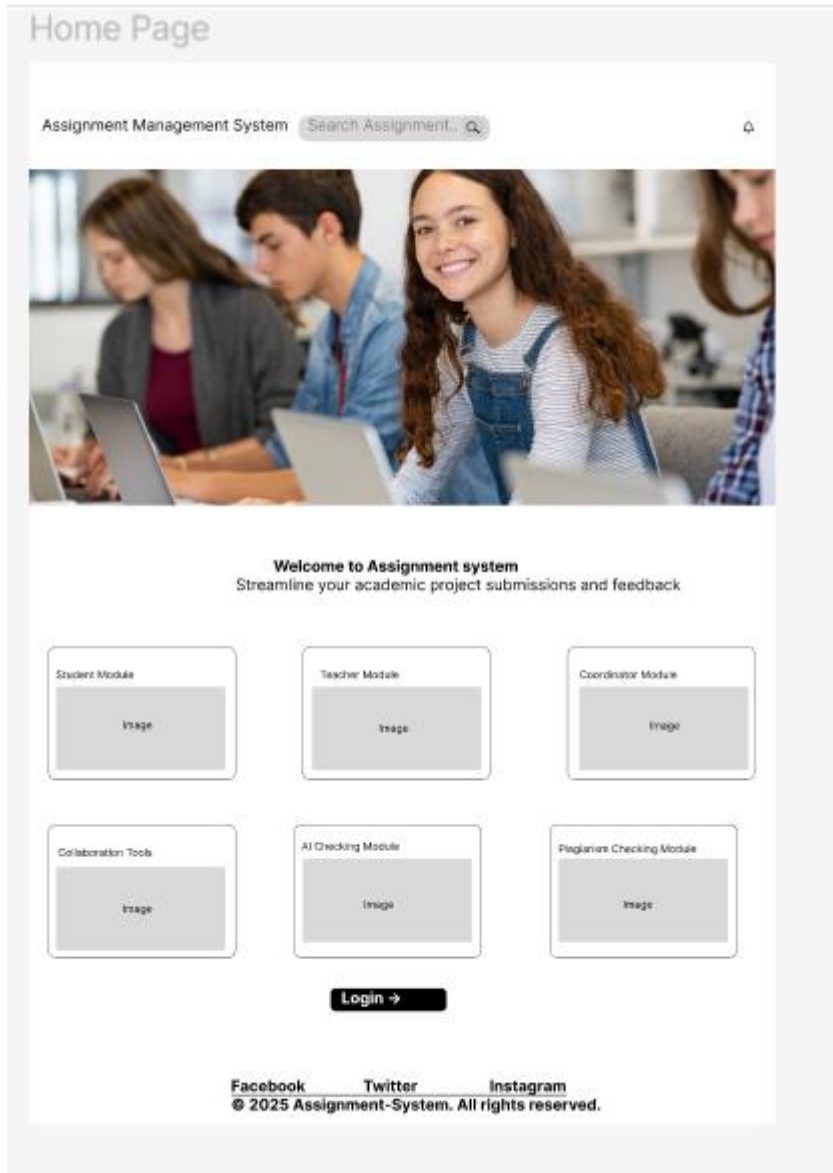A wireframe is a basic visual representation or blueprint of a webpage, application, or software interface.

Figure 23:Wireframe for homepage

Figure 24:Wireframe for Login page

Figure 25:Wireframe for Teacher Guide Module

Figure 26:Wireframe for Project Management System

AI Checking

Assignment Management System   Home   Messages File
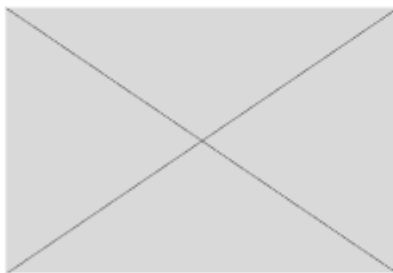
Document Submission   AI Content Detection

Text   Text

Report Generation   Feedback and Recommendations

Text   Text

Facebook   Twitter   Instagram
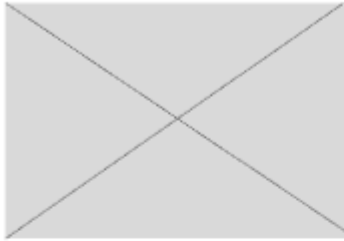© 2025 Assignment-System. All rights reserved.

Figure 27:Wireframe for AI Checking

Assignment Management System   Home   Messages   File

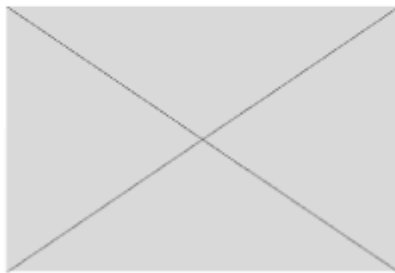Document Submission   Plagiarism Detection

Text   Text

Report Generation   Feedback and Recommendations

Text   Text

Figure 28:Wireframe for Plagiarism Checking

Collaboration and Communication Tools

Assignment Management System   Home   Messages   File

Messaging System Section
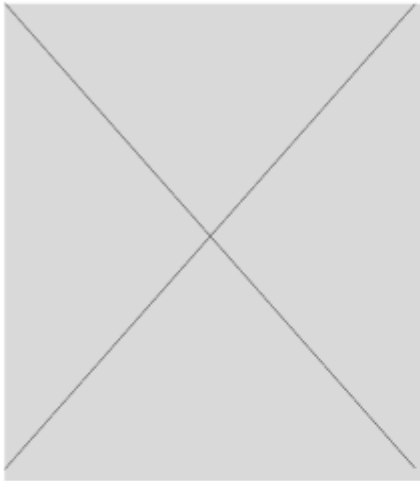
Text

File Sharing Section

Text

Figure 29:Wireframe for Collaboration and Communication Tools