BSES FINAL PROJECT
Requirements Specification

AI-Driven Internship Platform

Project Advisor

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Software Requirements Specification

Version 2.0

AI-Driven Internship Platform

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Revision History

Name	Date	Reason For Changes	Version
Frist Revision	20-11-23	Adding more Funcational Requiremnts	1.0
Second Revision	12-11-23	Improving Abstract and Use Case Diagram	2.0

<u>Abstract</u>

The "AI-Driven Internship Platform" represents a significant advancement in bridging the academic and professional realms for computer science and software engineering students. By integrating sophisticated AI, including ChatGPT, the platform offers a dual approach to internships: students can engage in AI-driven projects, gaining hands-on experience by solving real-world problems under AI Manager guidance, or explore traditional internship opportunities. This platform not only connects students to suitable internship roles but also enhances their decision-making process by providing insights into the suitability and relevance of each opportunity. The platform stands out for its ability to adapt to individual student profiles, suggesting personalized opportunities based on their assessed skills and preferences. Additionally, its role in facilitating job offers and interviews adds a practical dimension to academic learning, significantly boosting employability. The "AI-Driven Internship Platform" thus serves as a comprehensive solution, preparing students for the dynamic demands of the tech industry and smoothing their transition from academic learning to professional application.

1. Introduction and Background

The AI-Driven Internship Platform provides an innovative solution for computer science and software engineering students struggling to secure internships. Leveraging AI technology, including ChatGPT, it assesses student skills for personalized internship matching. The platform offers AI-driven internships with AI Manager guidance, alongside traditional opportunities through an AI-powered matching system. It aims to bridge the academic-industry gap, enhancing student employability by aligning academic learning with practical industry requirements.

1.1 Product (Problem Statement)

The "AI-Driven Internship Platform" is a transformative software solution designed to address the persistent challenge faced by students pursuing degrees in Computer Science and Software Engineering. This challenge arises from the difficulty students encounter when trying to secure internships, a crucial step in their academic and professional journey. The traditional pathway to internships is often fraught with hurdles such as a lack of industry connections, limited access to opportunities, and fierce competition. This project aims to revolutionize this process by leveraging Artificial Intelligence (AI) to connect students with relevant internship opportunities, empowering them to gain practical skills and enhance their employability.

1.2 Background

The domain in which this project operates is that of higher education and the evolving demands of the job market. Traditionally, students in computer science-related fields have been expected to possess practical skills and industry knowledge alongside their academic qualifications. However, the conventional education model sometimes falls short in providing students with hands-on experience. Internships serve as a bridge between academia and industry, allowing students to apply their knowledge in real-world scenarios. Despite their importance, the challenge lies in the limited access to these internships for many students.

The "AI-Driven Internship Platform" is motivated by the understanding that a new approach is required to democratize access to internships. Through the power of AI, this project intends to provide students with equal opportunities to engage in internships, whether AI-driven or external. It seeks to address the disparities in access to practical experiences, ensuring that all students have the chance to bolster their employability. This project is not merely about software development but about reshaping the education and employment landscape, creating a dynamic ecosystem where academic knowledge and industry expectations converge for the benefit of students and employers alike.

1.3 Scope

The scope of this Software Requirements Specification (SRS) encompasses the entire "AI-Driven Internship Platform." This includes the development of all software components, including but not limited to user registration, skills assessment, internship options, user support, database management, and administrative functionalities. The scope extends to the entire user experience, ensuring a comprehensive and user-friendly platform for students and organizations.

1.4   <u>Objective(s)/Aim(s)/Target(s)</u>

The objectives, aims, and targets of the "AI-Driven Internship Platform" project are as follows:

1. Develop an AI-driven skills assessment tool to evaluate students' technical proficiencies.
2. Create an AI-Based Manager to provide guidance and support to students throughout their internships.
3. Enable students to engage in AI-driven internships, where they work on AI-generated real-world problems.
4. Facilitate students in searching for external internship opportunities through the "Internship Matching Engine."
5. Improve the employability of students by providing them with practical experience that aligns with industry demands.

1.5   <u>Challenges</u>

The challenges inherent in this project include:

- **<u>Algorithmic Accuracy:</u>** Ensuring that AI algorithms consistently deliver meaningful and reliable results for skills assessment, problem generation, and user support.

- **<u>Database Management:</u>** Effectively managing user profiles, internship data, and AI-generated projects in a secure and efficient manner.

- **<u>User Experience (UX):</u>** Designing an intuitive and user-friendly interface to enhance the overall user experience.

- **<u>Collaboration with External Organizations:</u>** Establishing partnerships with external organizations for internship opportunities.

1.6   <u>Learning Outcomes</u>

Upon the completion of this project, the intended learning outcomes for the team members are:

1. Proficiency in AI and machine learning, particularly in the context of skills assessment and problem generation.
2. Skills in web development and database management, essential for creating and maintaining the platform.
3. Experience in UX/UI design, ensuring a user-centric approach to the interface.
4. Project management and collaboration with external partners for internship opportunities.
5. An understanding of the dynamics of bridging academic knowledge with industry requirements.

1.7   <u>Nature of End Product</u>

The end product of this project is envisioned as a comprehensive software platform known as the "AI-Driven Internship Platform." This platform connects students with internship opportunities and offers a

seamless user experience. The end product includes AI-driven skills assessment, AI-generated real-world problems, an internship matching engine, and user support features. It is designed to be a user-centric, practical, and innovative solution that bridges the academic-industry knowledge gap and enhances students' employability.

1.8   Completeness Criteria

These completeness criteria provide a comprehensive breakdown of the project's components and their respective weightages. They will serve as the basis for evaluating the project's completeness and determining the terminal grade. Each criterion represents a crucial aspect of the "AI-Driven Internship Platform," contributing to its overall functionality and effectiveness.

Sr.No.	Criteria	Weightage %
1	User Profile and Registration System	10
2	User Skills Assessment	15
3	AI-Generated Real-World Projects	15
4	AI-Driven Manager	10
5	AI-Based Matching Algorithm for Organizations	10
6	Internship Progress Tracking	10
7	Certification System	5
8	Admin Dashboard	5
9	Data Analytics and Insights	10
10	System Integration and Testing	10

1.9   Business Goals

The "AI-Driven Internship Platform" addresses several key business and corporate goals:

1. **Enhance Student Employability:** By providing practical experience and aligning it with industry demands, the platform contributes to preparing students for successful careers.

2. **Bridge the Academic-Industry Knowledge Gap:** The project promotes collaboration between educational institutions and external organizations, creating a dynamic ecosystem that benefits both students and employers.

3. **Improve the Quality of Higher Education:** The platform aims to revolutionize the internship experience, ensuring that students gain practical skills and experiences that enhance their academic journey.

1.10   Related Work/ Literature Survey/ Literature Review

The project involves a comprehensive review of related work, including studies on skills assessment, AI-driven education platforms, and internship matchmaking systems. This review informs the project's design and implementation, ensuring it incorporates best practices and innovative solutions in the field.

1.11   Document Conventions

Document conventions employed in this SRS include:

- **Section Headings:** Bold text for clear section separation.
- **Project Name:** "AI-Driven Internship Platform" consistently presented in title case and enclosed within quotation marks.
- **Emphasis:** Key terms, software components, and project titles are italicized.
- **List Items:** Bulleted lists with bullet points for organized content presentation.
- **Hyperlinks:** Blue text and underlining for clickable hyperlinks.
- **File Names and Code:** Monospaced font for code snippets and file names.
- **User Interface Elements:** Bold text to distinguish user interface elements.
- **Quotations:** Enclosed within double quotation marks and indented for clarity.
- **Variables and Placeholders:** Italics within angled brackets for variables and placeholders.

2. <u>Overall Description</u>

The AI-Driven Internship Platform is a sophisticated tool tailored for students in computer science and software engineering. It employs advanced AI technologies to assess students' skills and match them with suitable internships. The platform facilitates two types of internships: AI-driven experiences and traditional opportunities, enhanced by AI-based matching. It aims to bridge the academic-industry gap, enhancing students' employability by providing real-world experience and insights into their career paths. This platform is a comprehensive solution for the practical application of academic knowledge, preparing students for the evolving demands of the tech industry.

2.1 <u>Product Features</u>

The "AI-Driven Internship Platform" offers the following major features:

- **<u>AI-Driven Skills Assessment:</u>** A skills assessment tool powered by AI that evaluates students' technical proficiencies.
- **<u>AI-Based Manager:</u>** An AI-driven manager that guides and supports students throughout their internship experience.
- **<u>AI-Generated Real-World Problems:</u>** Real-world problems generated by AI for students to work on during internships.
- **<u>Internship Matching Engine:</u>** A feature that enables students to search and connect with external internship opportunities.
- **<u>User Support:</u>** A user support system to assist students in using the platform.
- **<u>Secure Database:</u>** A database for managing user profiles, internship data, and AI-generated projects securely.
- **<u>User-Friendly Interface:</u>** An intuitive and user-friendly interface for a seamless user experience.

2.2 <u>User Classes and Characteristics</u>

The "AI-Driven Internship Platform" is designed to accommodate a range of user classes with diverse characteristics, needs, and roles:

- Students:
  - **<u>Characteristics:</u>** The primary user class. Students vary in technical expertise, educational levels, and prior industry experience. They have a desire for internships and come from diverse backgrounds.
  - **<u>Needs:</u>** Access to skills assessment, AI-generated problems, and internship opportunities. Guidance for career development. Technical and non-technical support.

- External Organizations:
  - **<u>Characteristics:</u>** Varying technical expertise and organizational size. These organizations offer internships and use the platform to connect with student interns.
  - **<u>Needs:</u>** Posting internship opportunities, reviewing student profiles, and connecting with potential interns.

- Administrators:
  - **<u>Characteristics:</u>** Platform administrators responsible for system management, user profile management, content moderation, and ensuring platform integrity.

○ **Needs:** User management, content moderation, system configuration, and platform maintenance.

2.3   Operating Environment

The "AI-Driven Internship Platform" operates in the following environment:

● **Hardware Platform:** The platform is designed to run on standard web servers and is accessible via web browsers. It is compatible with common computer hardware configurations.

● **Operating System:** The platform is OS-agnostic and accessible through popular web browsers on various operating systems, including Windows, macOS, and Linux.

● **Software Components:** The platform coexists peacefully with standard web technologies, including web servers (e.g., Apache, Nginx), databases (e.g., PostgreSQL, MySQL, or MongoDB), and web browsers (e.g., Chrome, Firefox, Safari).

● **Internet Connectivity:** Users are required to have internet access to use the platform effectively. It is designed to work seamlessly in both high and low bandwidth environments.

● **Security Measures:** The platform implements robust security measures to protect user data and ensure privacy. Data encryption and secure socket layer (SSL) certificates are employed for data transmission. Regular security updates and maintenance are essential.

● **Compliance:** The platform adheres to relevant web standards and follows best practices in web development, ensuring compatibility with a wide range of systems and browsers.

The platform's design considers a diverse user base, making it accessible across different environments and devices.

2.4   Design and Implementation Constraints

The design and implementation of the "AI-Driven Internship Platform" are subject to certain constraints:

● **Regulatory Compliance:** The platform must adhere to all relevant data privacy and protection regulations, such as GDPR, HIPAA, or any other applicable laws based on the region of use.

● **Hardware Limitations:** The platform should be designed to operate on standard web servers and should consider hardware limitations that may affect performance and responsiveness.

● **Technologies and Tools:** The use of specific technologies and tools, including web development frameworks, database management systems, and AI libraries, may be constrained by compatibility and licensing issues.

- **Security Considerations:** The platform must incorporate robust security measures, including data encryption, secure socket layer (SSL) certificates, and regular security updates. Security constraints may affect the choice of technology and development approaches.

- **Compliance with Design Conventions:** The platform must adhere to design conventions and programming standards, which may be influenced by organizational or industry-specific guidelines.

2.5   Assumptions and Dependencies

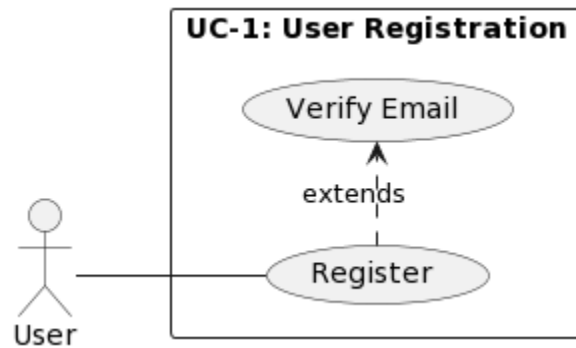The project relies on certain assumptions and dependencies:

- **Third-Party AI Libraries:** The project assumes the availability of third-party AI libraries for skills assessment and problem generation. The project is dependent on the reliability and compatibility of these libraries.

- **Internet Connectivity:** It is assumed that users will have consistent internet connectivity for accessing the platform. The platform is dependent on stable internet connections for its functionality.

- **External Organizations:** The availability of external organizations offering internships is a dependency. The project assumes that organizations will continue to post internship opportunities on the platform.

- **Data Privacy Regulations:** The project assumes that data privacy regulations may change or be updated, and it depends on staying current with these regulations and adapting the platform accordingly.

- **Security Updates:** The platform assumes access to regular security updates and patches for its underlying technologies and tools.

- **Hardware and Software Compatibility:** The project depends on the compatibility of the platform with various hardware configurations, operating systems, and web browsers. It assumes these components will not undergo significant changes that affect platform functionality.

3. <u>Functional Requirements</u>

3.1 <u>User Registration</u>

Identifier	UC-1
Purpose	To allow users to register on the platform
Priority	High
Pre-conditions	The user has not registered on the platform before
Post-conditions	The user has a registered account and is logged in

Sr. #	Typical Course of Action	
	Actor Action	**System Response**
1	User selects "Register"	
2		System displays the registration form
3	User fills in details	
4		System verifies the information
5	User submits the form	
6		System sends a verification email to the user
7	User verifies email	
8		System confirms successful registration

Sr. #	Alternate Course of Action	
	Actor Action	**System Response**
1	User selects "Register"	
2		System displays the registration form
3	User fills in details	
4		System verifies the information
5	User submits the form	
6		System prompts the user to correct errors
7	User corrects errors	
8		System re-verifies the corrected information
9	User submits the form	
10		System sends a verification email
11	User verifies email	
12		System confirms successful registration

Table 1: UC-1

UC-1: User Registration

Verify Email

extends

Register

User

3.2   Skills Assessment

Identifier	UC-2
Purpose	To assess the user's skills through an AI-driven test
Priority	Priority: High
Pre-conditions	The user is registered and logged in
Post-conditions	The user receives a proficiency score for each skill

Typical Course of Action		
Sr. #	**Actor Action**	**System Response**
1	User selects "Assess Skills"	
2		System displays the skills input form
3	User inputs skill details	
4		System generates and displays the assessment
5	User reviews proficiency	
6		System records proficiency scores

Alternate Course of Action		
Sr. #	**Actor Action**	**System Response**
1	User selects "Assess Skills"	
2		System displays the skills input form
3	User skips skill input	
4		System prompts the user to provide skills
5	User provides some skills	
6		System assesses the provided skills
7	User reviews proficiency	
8		System records proficiency scores

Table 2: UC-2
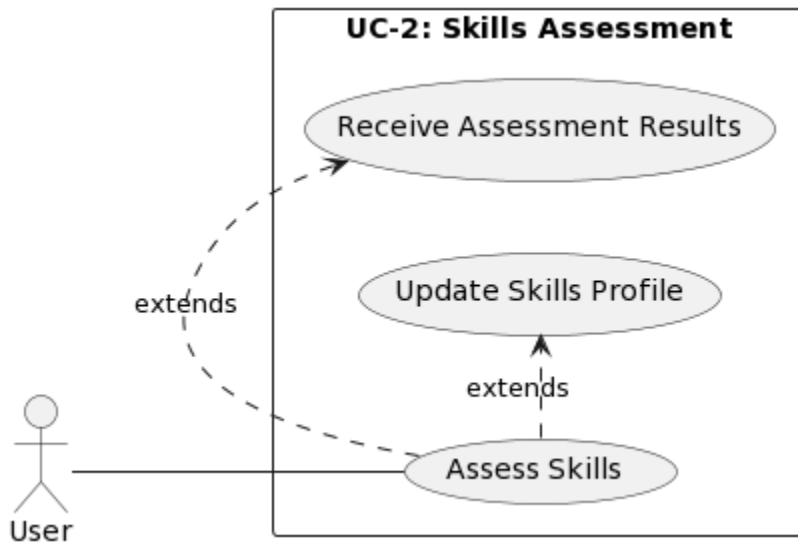
3.3 Internship Options

Identifier	UC-3
Purpose	To enable students to explore and select AI-driven internship opportunities.
Priority	High
Pre-conditions	Student has completed skills assessment and has an active profile.
Post-conditions	Student receives internship options or job offers and can accept or reject them.

	Typical Course of Action	
S#	**Actor Action**	**System Response**
1	User selects "Internship Options"	
2		System displays available internship options
3	User reviews and selects an option	
4		System provides details and confirmation for the selected option
5	User confirms participation	
6		System associated to the AI-Generated Problem System and AI-Manager to the Internship.

	Alternate Course of Action	
S#	**Actor Action**	**System Response**
1	User selects "Internship Options"	
2		System displays available internship options
3	User does not find a suitable option	

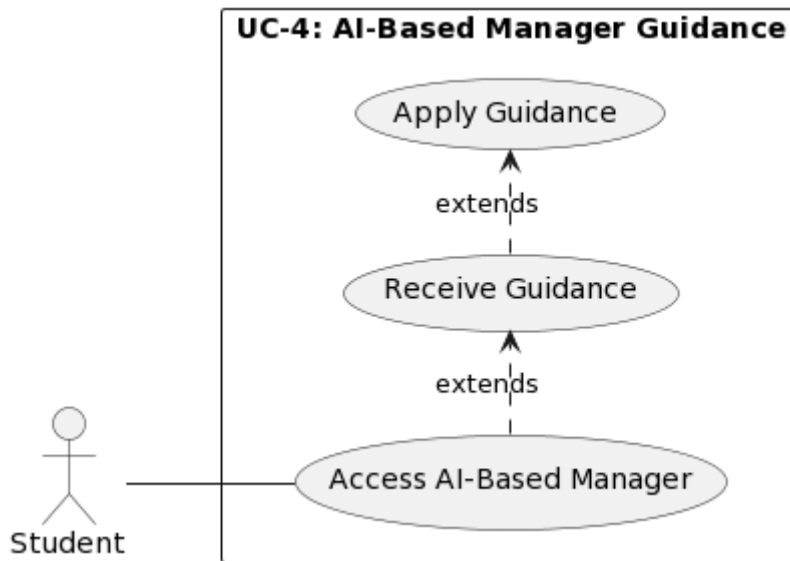| 4	Student updates preferences/skills.	
5	User selects "Internship Options"	
6		System provides details and confirmation for the selected option
7	User confirms participation	
8		System associated to the AI-Generated Problem System and AI-Manager to the Internship.

Table 3: UC-3
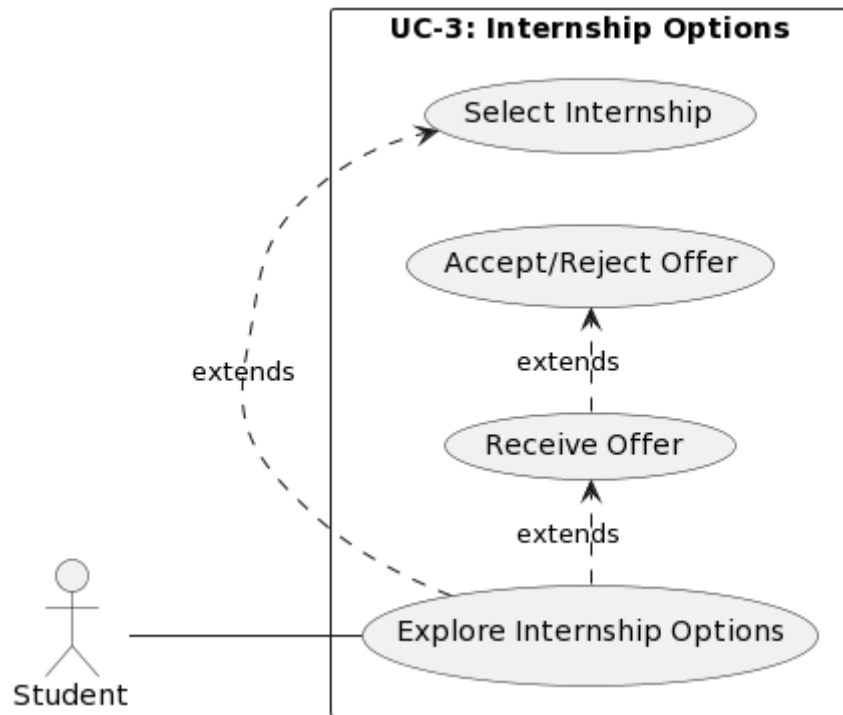
3.4   AI-Based Manager

Identifier	UC-4
Purpose	To guide and support users throughout their internship
Priority	High
Pre-conditions	The user is engaged in an internship
Post-conditions	The user successfully completes the internship with AI-Based Manager support

	Typical Course of Action	
S#	**Actor Action**	**System Response**
1	User accesses "AI-Based Manager"	
2		System displays the Manager interface and available features

| 3 | User seeks guidance on a specific task | |
4		System provides suggestions, solutions, and guidance
5	User interacts with Manager features	
6		System supports the user in task execution and problem-solving
7	User completes the internship	
8		System records the completion
Alternate Course of Action		
S#	**Actor Action**	**System Response**
1	User accesses "AI-Based Manager"	
2		System displays the Manager interface and available features
3	User encounters a technical issue	
4		System troubleshoots and provides solutions
5	User seeks general advice	
6		System offers insights and recommendations
7	User interacts with Manager features	
8		System supports the user in task execution and problem-solving
9	User completes the internship	
10		System records the completion and generates a certificate

Table 4: UC-4

UC-4: AI-Based Manager Guidance

3.5 Internship Matching Engine

Identifier	UC-5
Purpose	To facilitate organizations in reviewing student profiles and expressing interest in accordance with provided job descriptions.
Priority	High
Pre-conditions	The organization is registered and logged in, job descriptions are available on the platform.
Post-conditions	The organization has expressed interest in selected student profiles.

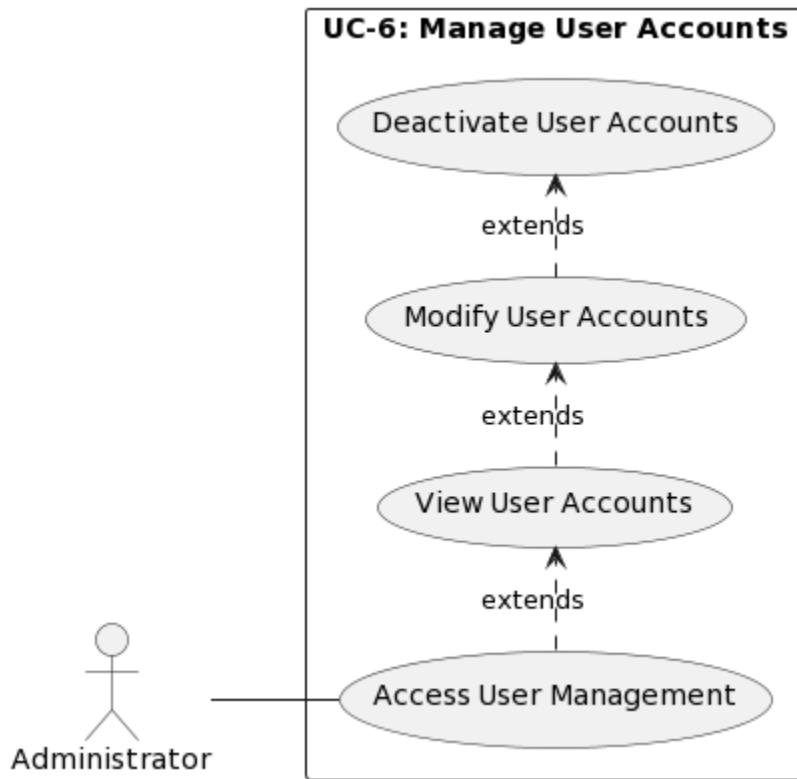|	Typical Course of Action	
S#	**Actor Action**	**System Response**
1	Organization selects "Matching Engine"	
2		System displays available student profiles and job descriptions
3	Organization reviews student profiles	
4		System provides detailed information about student skills
5	Organization selects a student profile	
6		System displays options to express interest and contact details
7	Organization expresses interest	
8		System notifies the student about the organization's interest
	Alternate Course of Action	

S#	Actor Action	System Response
1	Organization selects "Matching Engine"	
2		System displays available student profiles and job descriptions
3	Organization finds no suitable profiles	
4		System recommends alternative search criteria or refines job descriptions
5	Organization revises job descriptions	
6		System updates matching profiles based on the revised criteria
7	Organization selects a student profile	
8		System displays options to express interest and contact details
9	Organization expresses interest	
10		System notifies the student about the organization's interest.

Table 5: UC-5
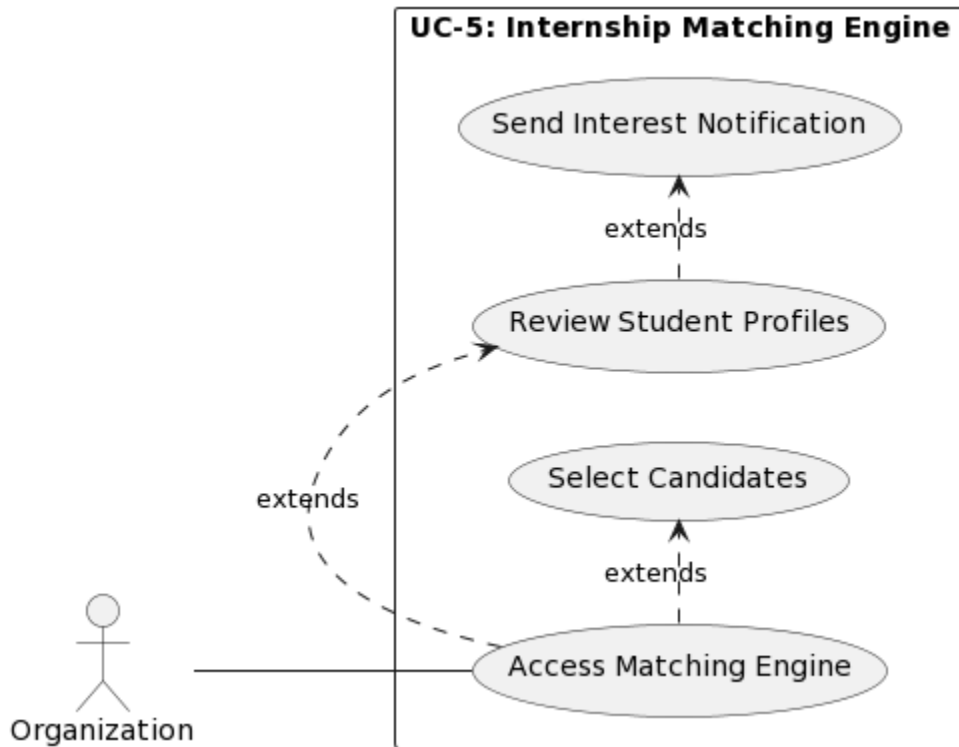
3.6   Manage User Accounts

Identifier	UC-6

Purpose	Administrators can manage user accounts to ensure the integrity and security of the platform.
Priority	High
Pre-conditions	Administrator is logged in.
Post-conditions	User accounts are appropriately managed.

Typical Course of Action

S#	Actor Action	System Response
1	Administrator selects "Users"	
2		System displays a list of registered user accounts.
3	Administrator selects a user	
4		System shows options to modify or deactivate the account.
5	Administrator modifies account	
6		System updates user account details.
7	Administrator deactivates account	
8		System restricts access for the deactivated account.

Alternate Course of Action

| S#	Actor Action	System Response
1	Administrator selects "Users"	
2		System displays a list of registered user accounts.
3	Administrator selects a user	
4		System shows options to modify or deactivate the account.
5	Administrator identifies suspicious activity	
6		System triggers a security alert and notifies the administrator.
7	Administrator investigates and confirms	
8		System provides tools for detailed investigation.
9	Administrator takes corrective action	
10		System allows account suspension or additional security measures.

Table 6: UC-6

3.7 Content Management

Identifier	UC-7
Purpose	Administrators manage and update content on the platform, including job descriptions and AI-generated problems.
Priority	Medium
Pre-conditions	Administrator is logged in.
Post-conditions	Platform content is updated and accurate.

Typical Course of Action		
S#	**Actor Action**	**System Response**
1	Administrator selects "Content Management"	
2		System displays options for content management.
3	Administrator updates job descriptions	
4		System allows editing and updating of job descriptions.
5	Administrator modifies AI-generated problems	
6		System provides tools to refine and enhance problems.
Alternate Course of Action		

S#	Actor Action	System Response
1	Administrator selects "Content Management"	
2		System displays options for content management.
3	Administrator identifies misinformation	
4		System flags potentially inaccurate content.
5	Administrator verifies and corrects	
6		System allows edits to correct the misinformation.
7	Administrator notifies stakeholders	
8		System sends notifications about the correction.
9	Administrator monitors for feedback	
10		System provides a feedback mechanism for users.

Table 7: UC-7
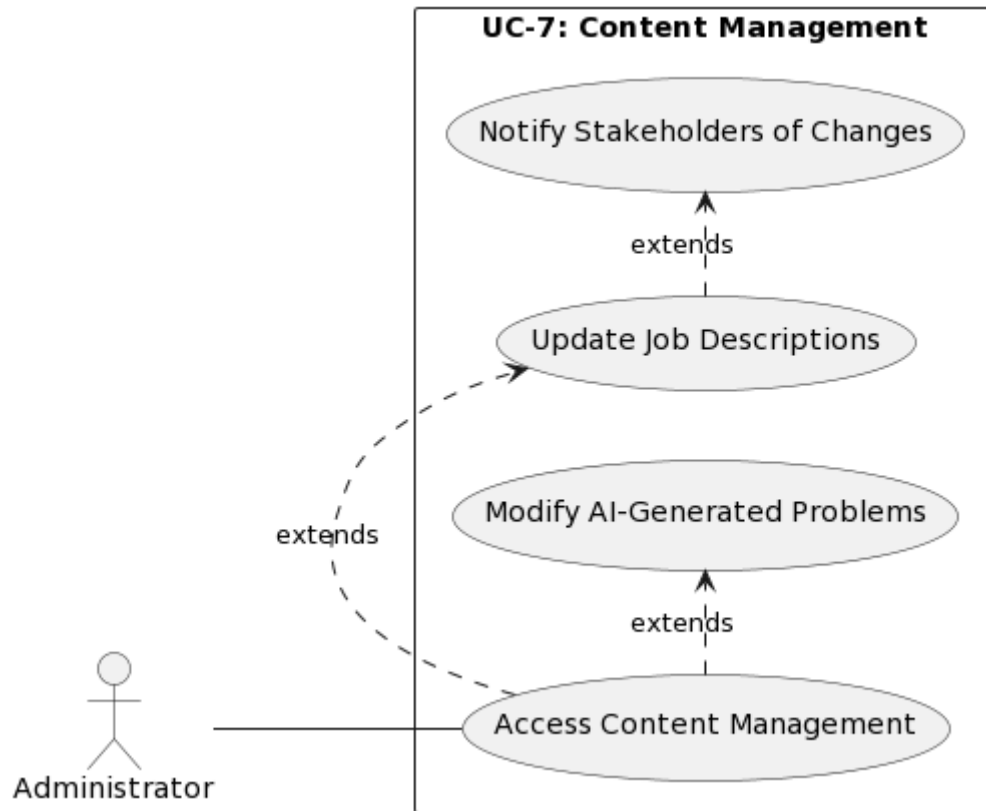
3.8 Feedback Submission

Identifier	UC-8
Purpose	To allow users to provide feedback on their experience with the platform.
Priority	Medium
Pre-conditions	User has interacted with the platform.
Post-conditions	User feedback is submitted and recorded in the system.

	Typical Course of Action	
Sr. #	Actor Action	System Response
1	User accesses the feedback feature.	
2		System displays the feedback form
3	User fills in and submits feedback.	
4		System save the user response.

	Alternate Course of Action	
Sr. #	Actor Action	System Response
1	User accesses the feedback feature.	
2		System displays the feedback form
3	User encounters issues while submitting feedback.	
4		System verifies the information

Table 8: UC-8
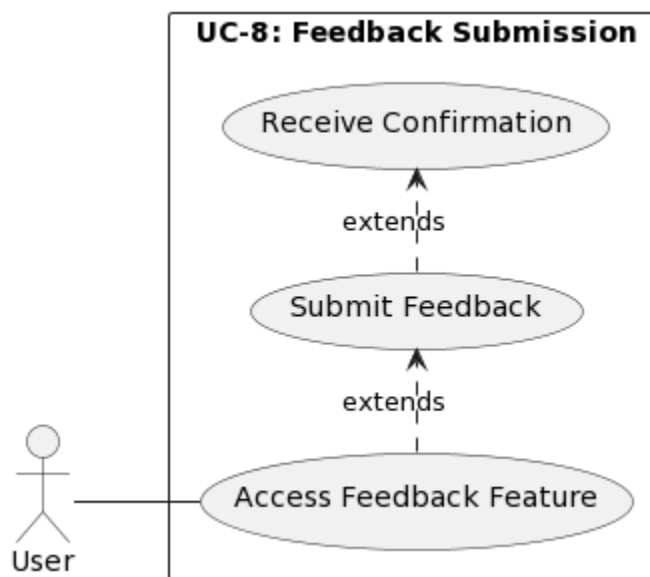
3.9 <u>AI-Generated Problem Creation</u>

Identifier	UC-9
Purpose	To generate real-world problems for internship tasks using AI.
Priority	High
Pre-conditions	AI algorithms are operational. Internship is active.
Post-conditions	Real-world problems are generated and available for the internship.

Typical Course of Action		
Sr. #	**Actor Action**	**System Response**
1	User requests AI-generated problems for the internship.	
2		System verifies the internship's active status.
3	System triggers the AI algorithms for problem generation.	
4		AI algorithms process and generate real-world problems.
5	Generated problems are associated with the internship.	
6		System notifies the user about the availability of problems.

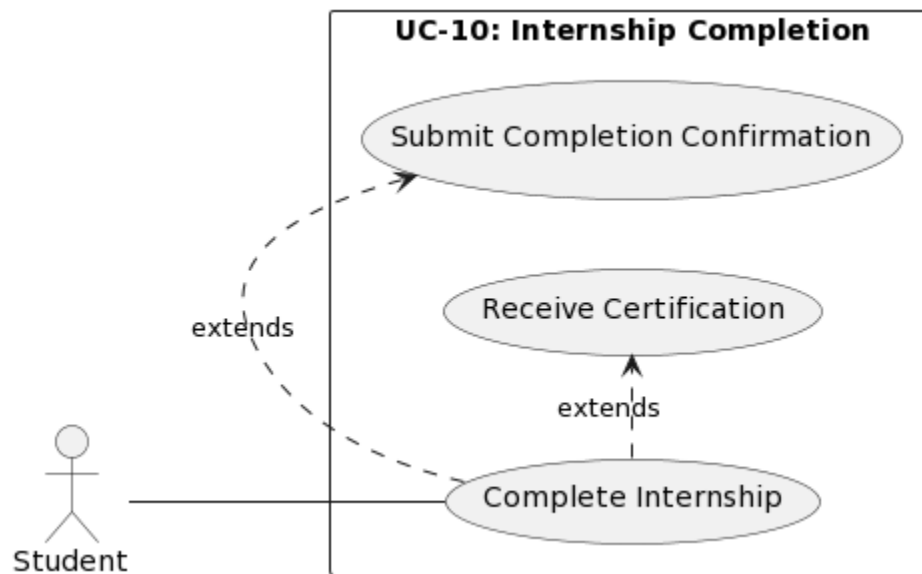| Alternate Course of Action		
Sr. #	**Actor Action**	**System Response**
1	AI algorithms encounter an error during problem generation.	
2		System logs the error and notifies the user.
3	User refresh the page and wait for the problem.	
4		AI algorithms process and generate real-world problems.
5	Generated problems are associated with the internship.	
6		System flags problematic problems for further AI refinement.

Table 9: UC-9
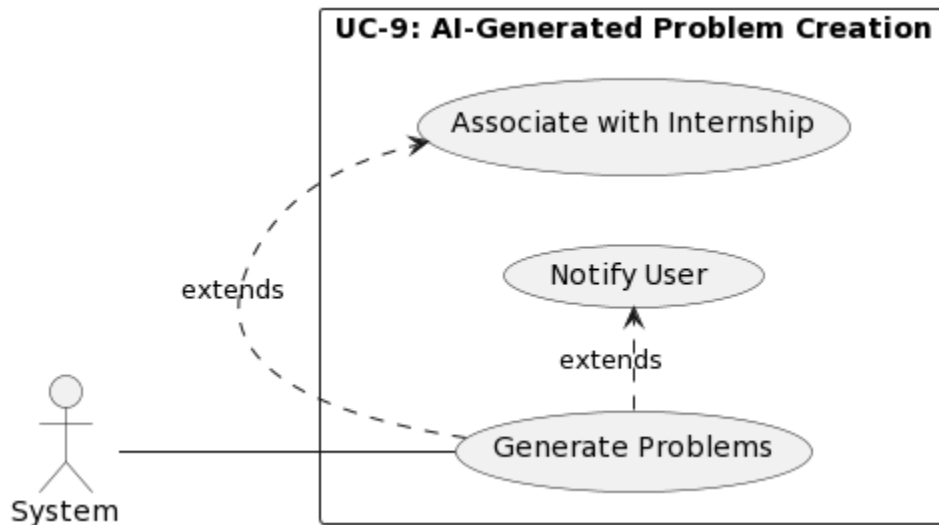
3.10 Internship Completion

Identifier	UC-10
Purpose	To allow users to register on the platform
Priority	High
Pre-conditions	The user has not registered on the platform before
Post-conditions	The user has a registered account and is logged in

	Typical Course of Action	
Sr. #	**Actor Action**	**System Response**
1	User selects "Register"	
2		System displays the registration form
3	User fills in details	
4		System verifies the information
5	User submits the form	
6		System sends a verification email to the user
7	User verifies email	
8		System confirms successful registration

	Alternate Course of Action	
Sr. #	**Actor Action**	**System Response**
1	User selects "Register"	
2		System displays the registration form
3	User fills in details	
4		System verifies the information
5	User submits the form	

6		System prompts the user to correct errors
7	User corrects errors	
8		System re-verifies the corrected information
9	User submits the form	
10		System sends a verification email
11	User verifies email	
12		System confirms successful registration

Table 10: UC-10

3.11   Certification Issuance

Identifier	UC-11
Purpose	To allow users to register on the platform
Priority	High
Pre-conditions	The user has not registered on the platform before
Post-conditions	The user has a registered account and is logged in
Typical Course of Action	

Sr. #	Actor Action	System Response
1	User selects "Register"	
2		System displays the registration form
3	User fills in details	
4		System verifies the information

5	User submits the form	
6		System sends a verification email to the user
7	User verifies email	
8		System confirms successful registration
Alternate Course of Action		
Sr. #	**Actor Action**	**System Response**
1	User selects "Register"	
2		System displays the registration form
3	User fills in details	
4		System verifies the information
5	User submits the form	
6		System prompts the user to correct errors
7	User corrects errors	
8		System re-verifies the corrected information
9	User submits the form	
10		System sends a verification email
11	User verifies email	
12		System confirms successful registration

Table 11: UC-11

UC-11: Internship Certification

3.12   Requirements Analysis and Modeling

Analysis models: use-case diagram, entity-relationship diagram, abstract class diagram, sequence diagram (at least model interactions between system and external world). Additional diagrams may be added for example state diagram, data flow diagram (model interactions between system and external world).
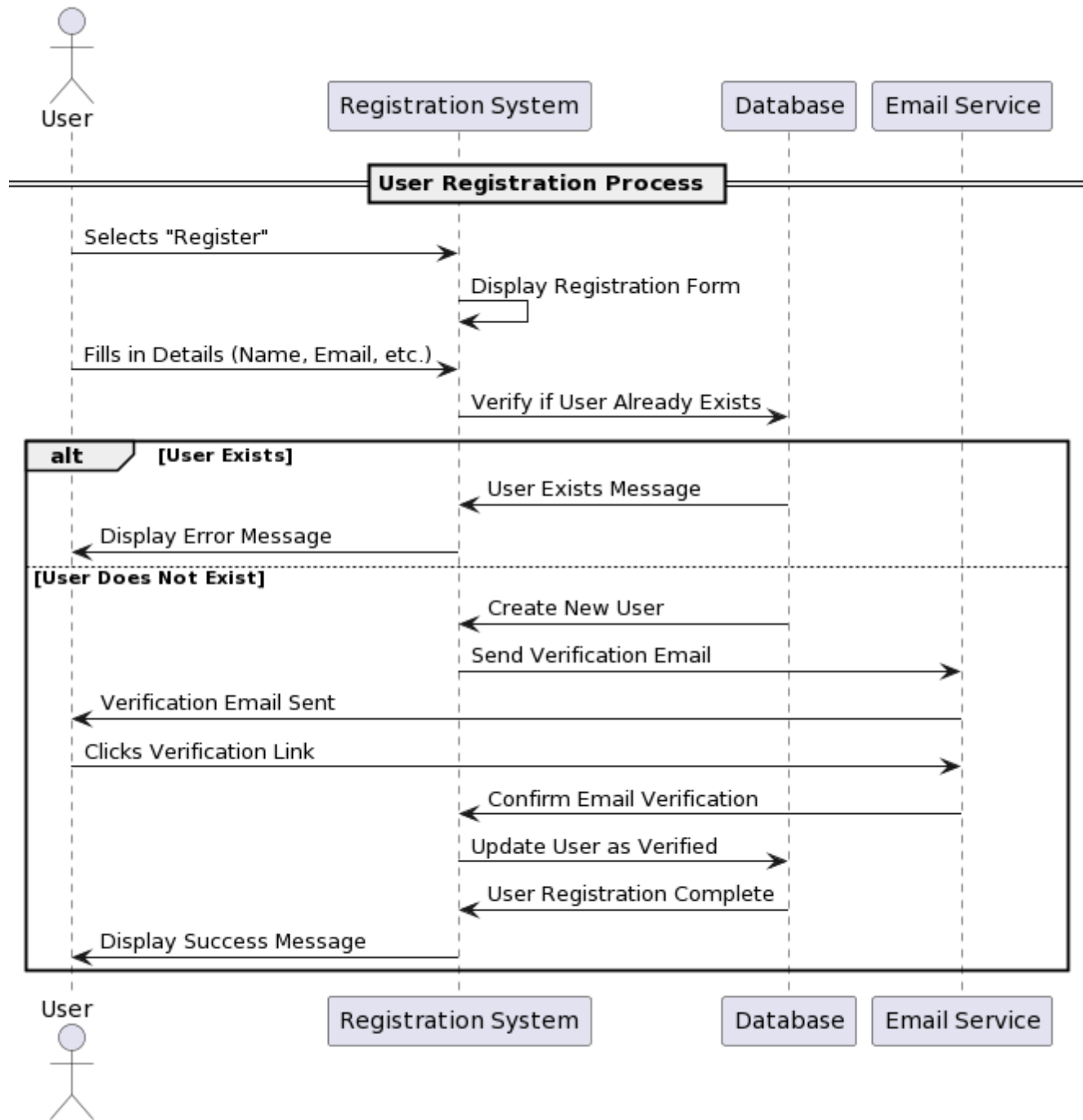
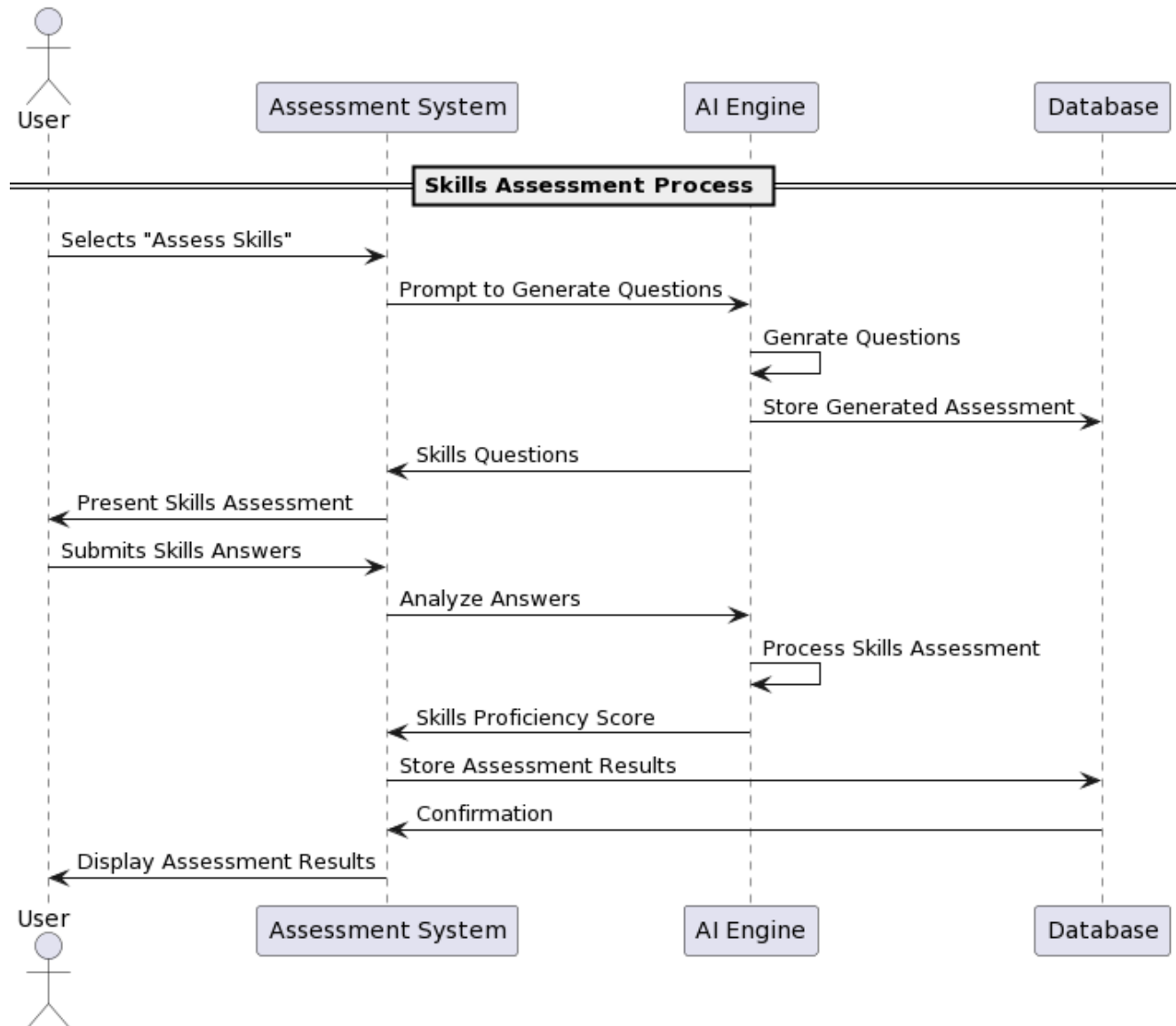## 3.13   Use Case Diagram
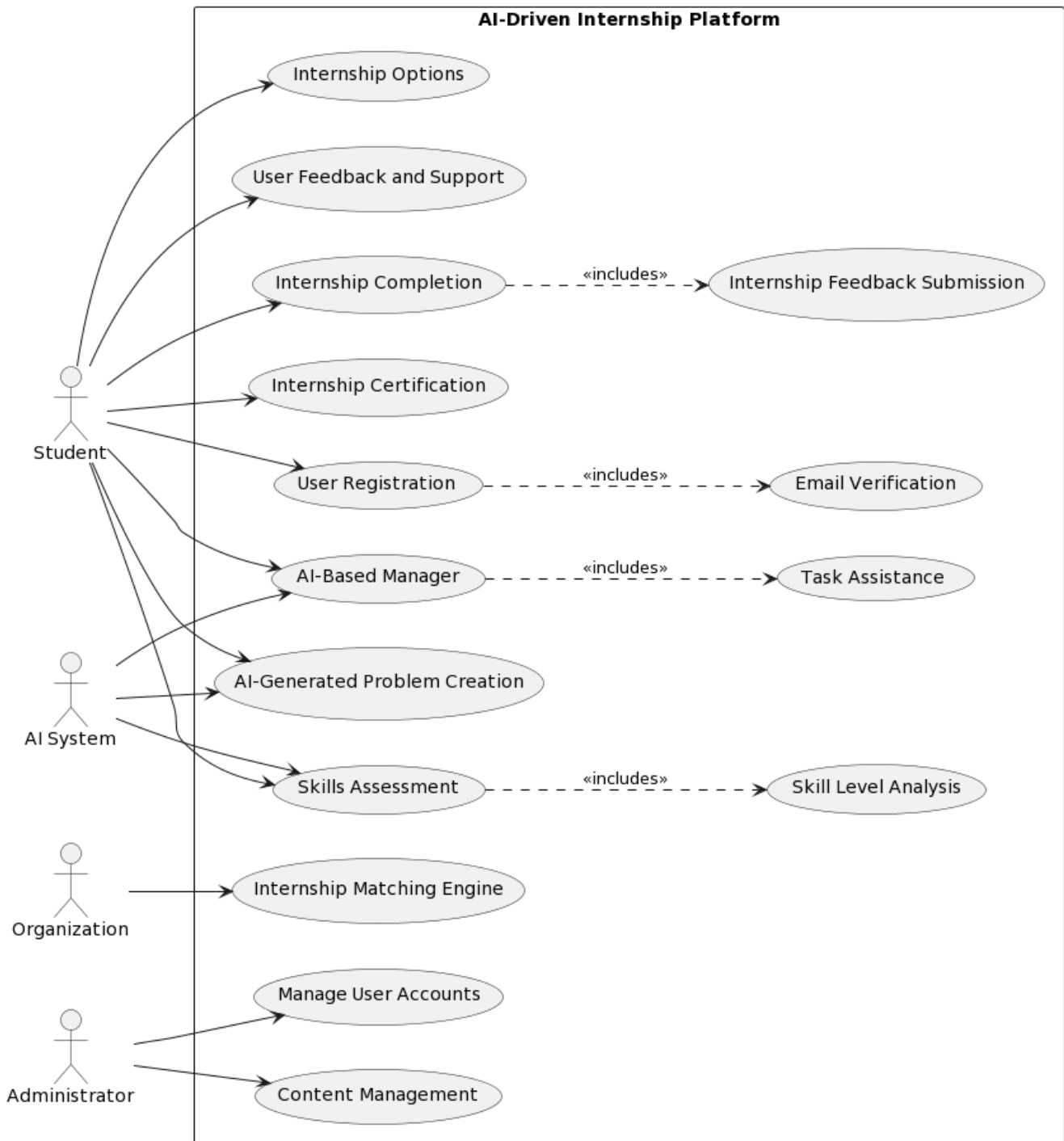
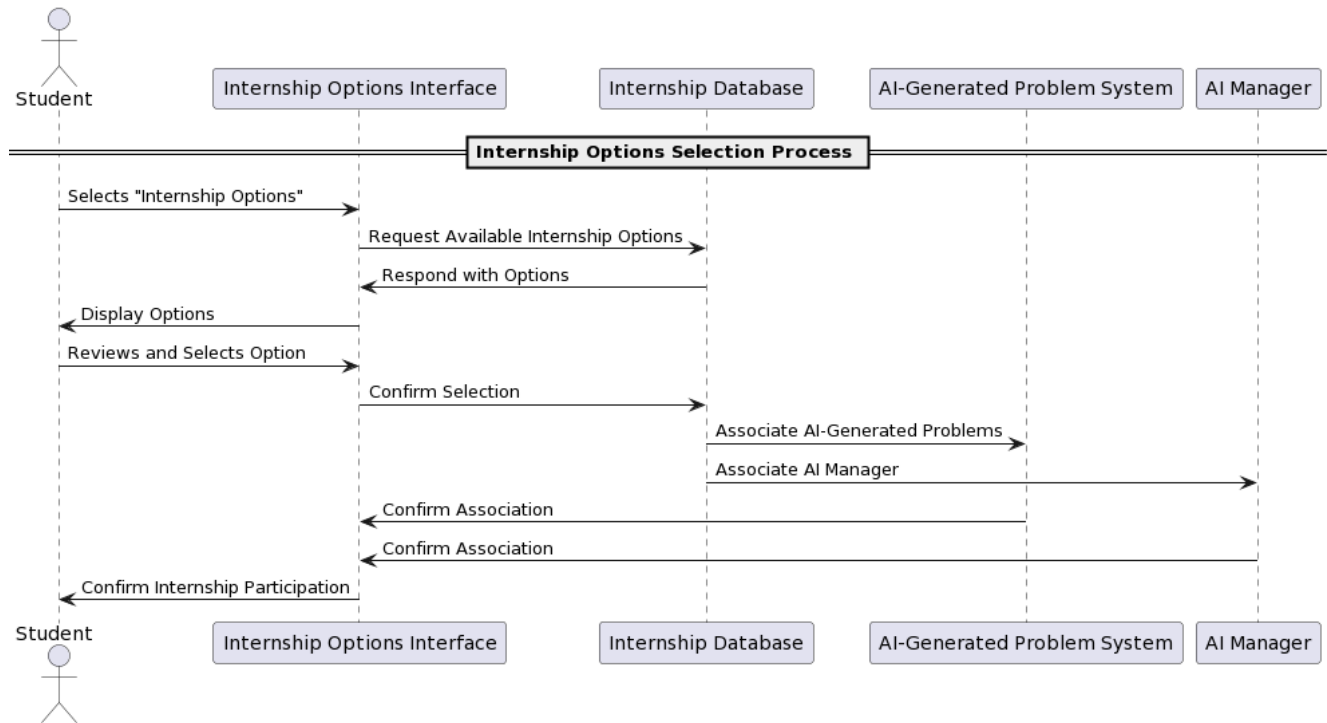## 3.14 Entity-Relationship Diagram
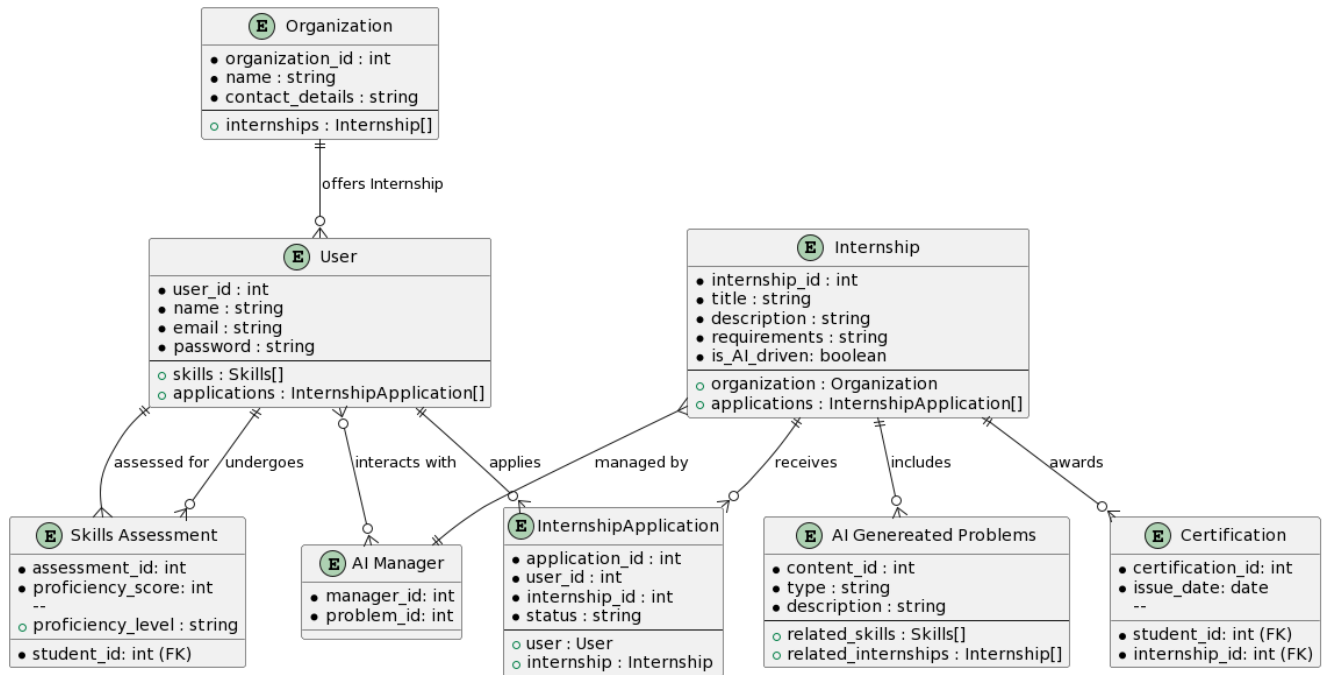
3.15 Abstract Class Diagram
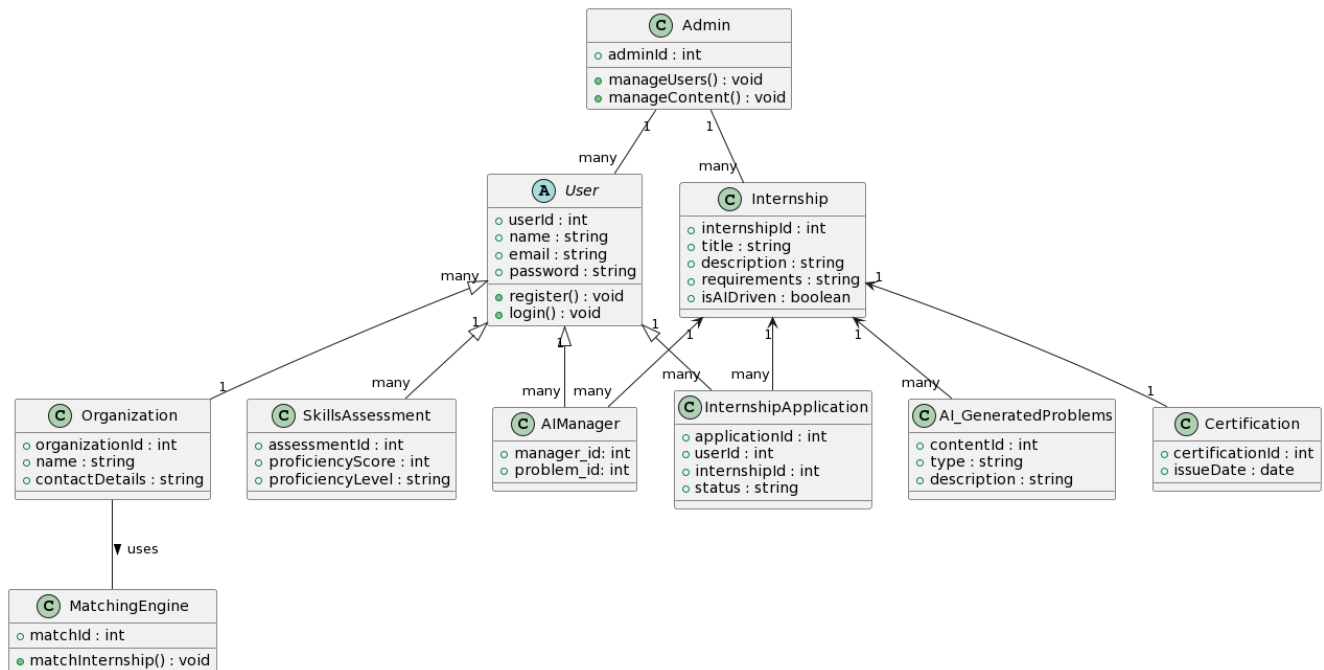
3.16 Sequence Diagram of Use Case UC-1

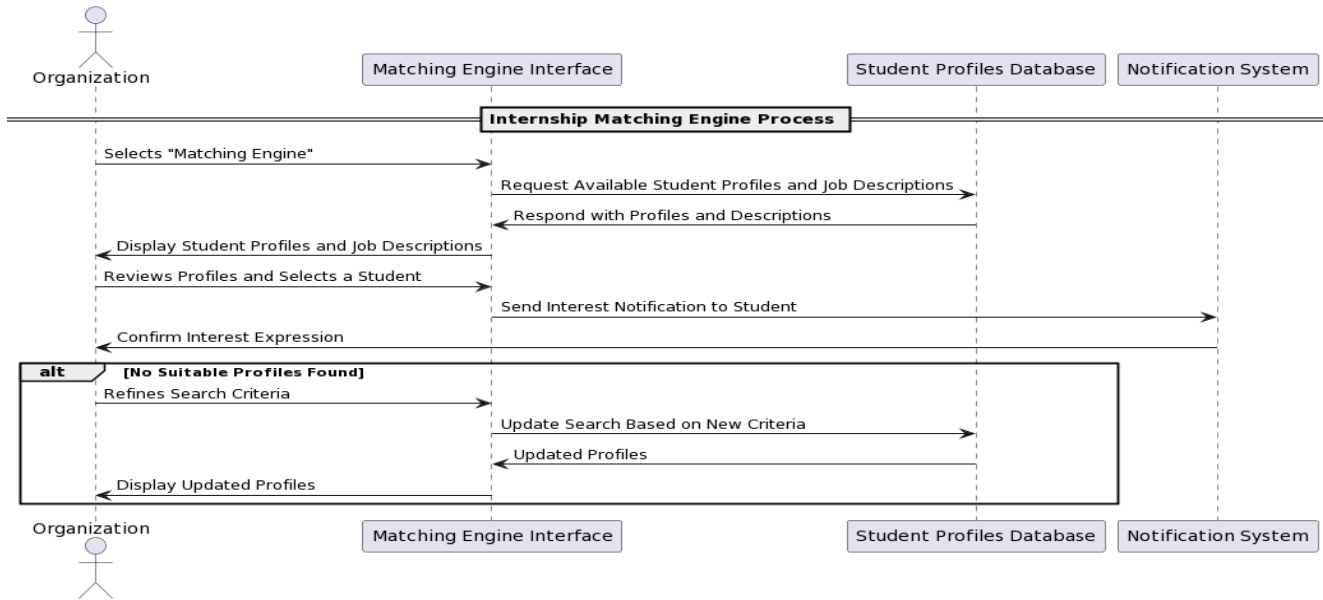## 3.17   Sequence Diagram of Use Case UC-2

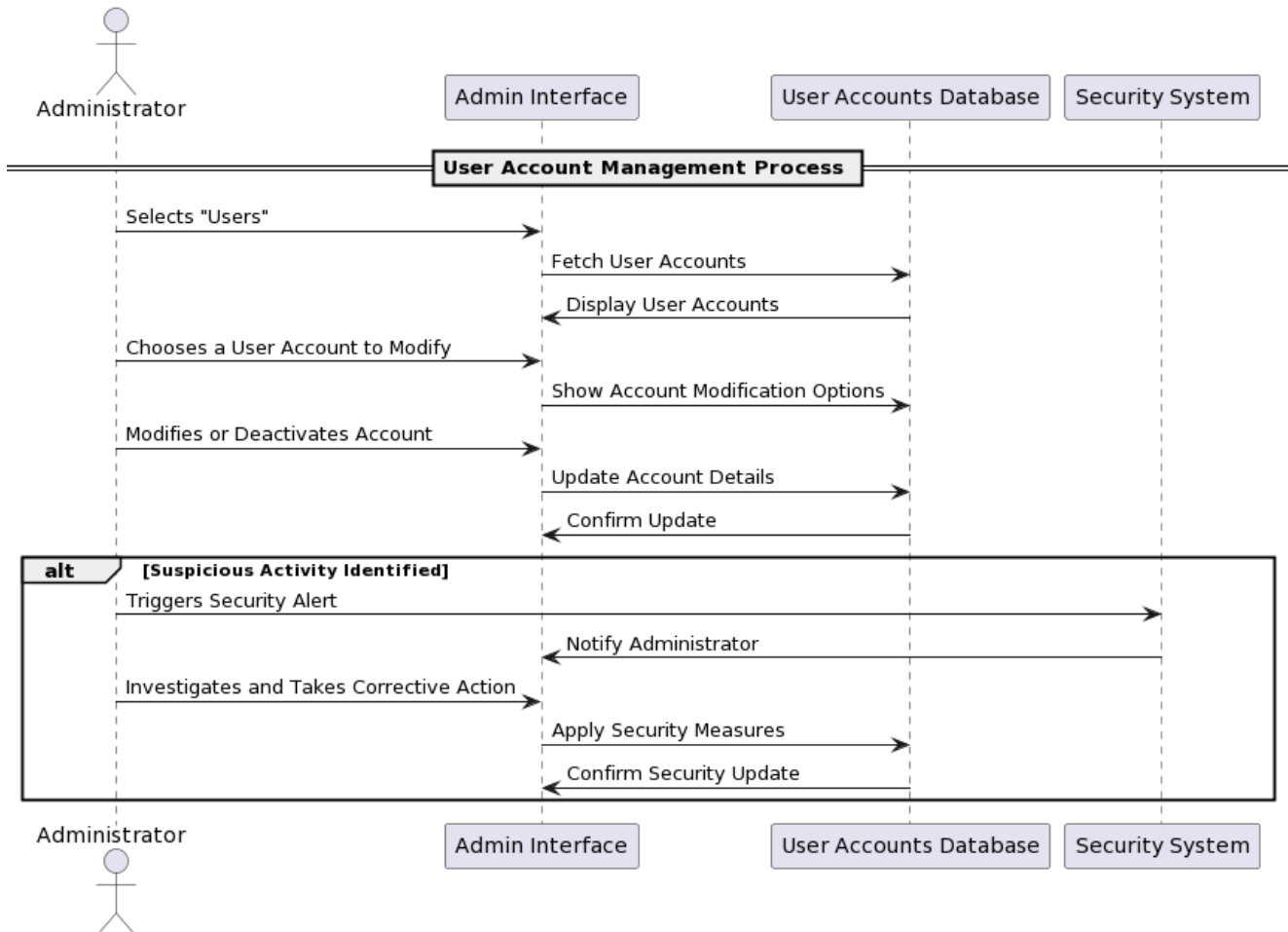## 3.18   Sequence Diagram of Use Case UC-3

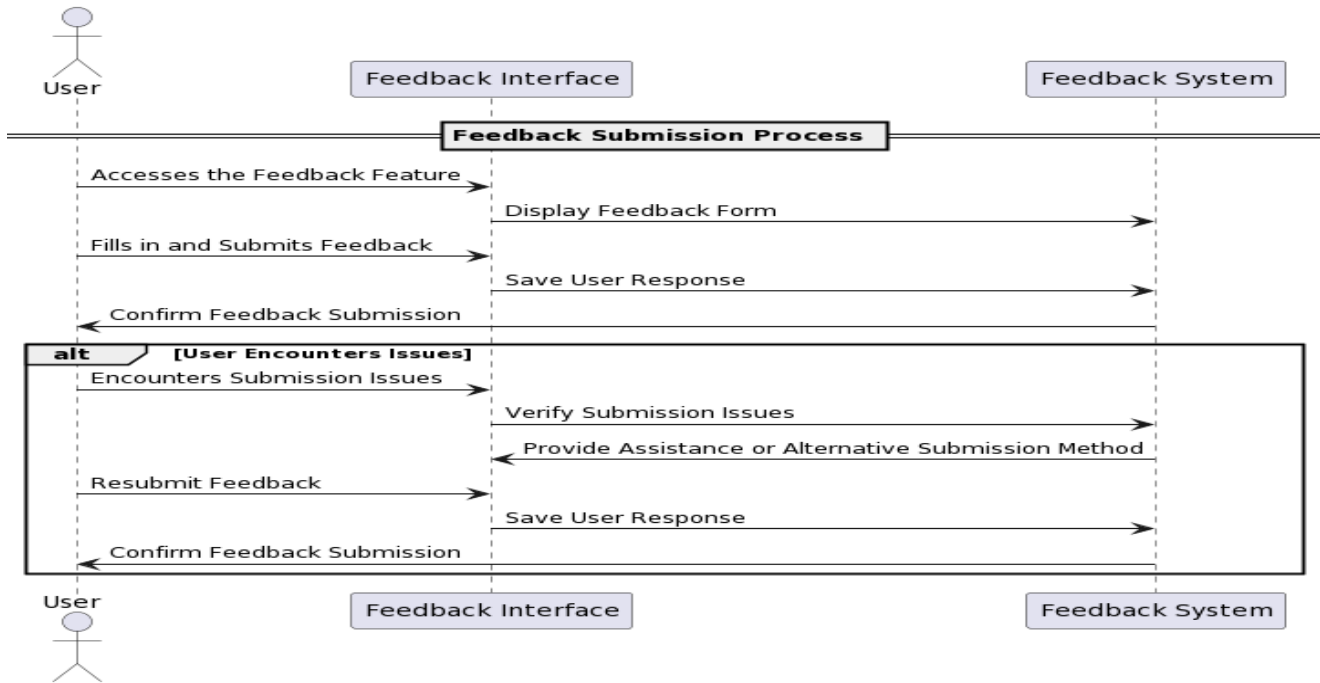## 3.19   Sequence Diagram of Use Case UC-4
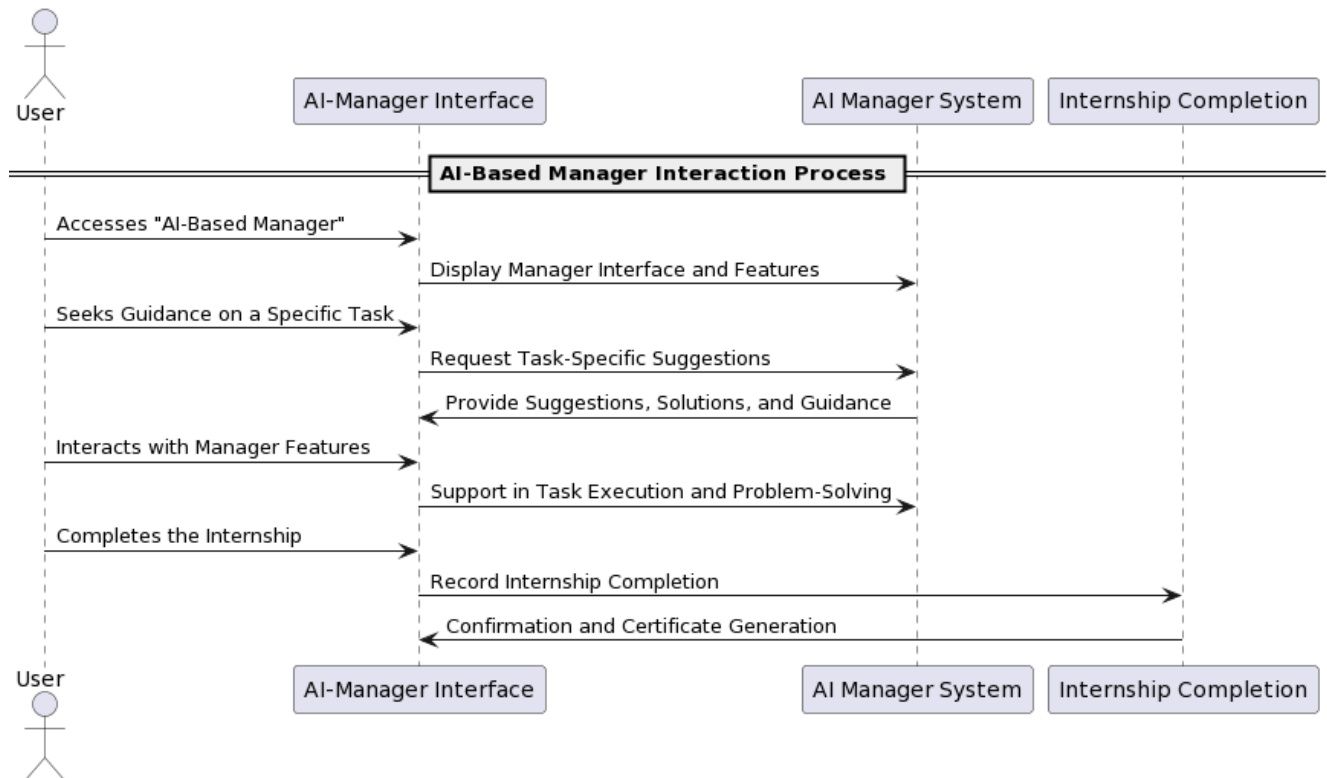
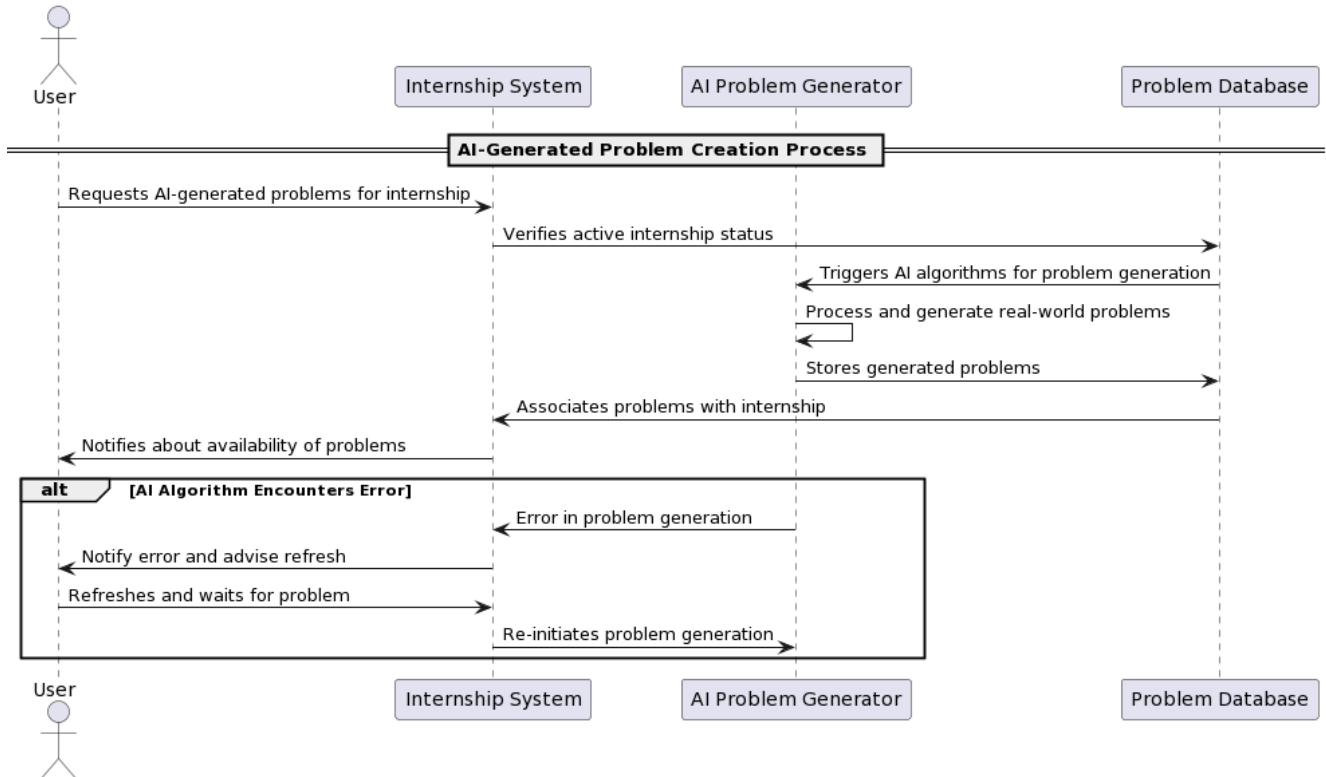## 3.20 Sequence Diagram of Use Case UC-5

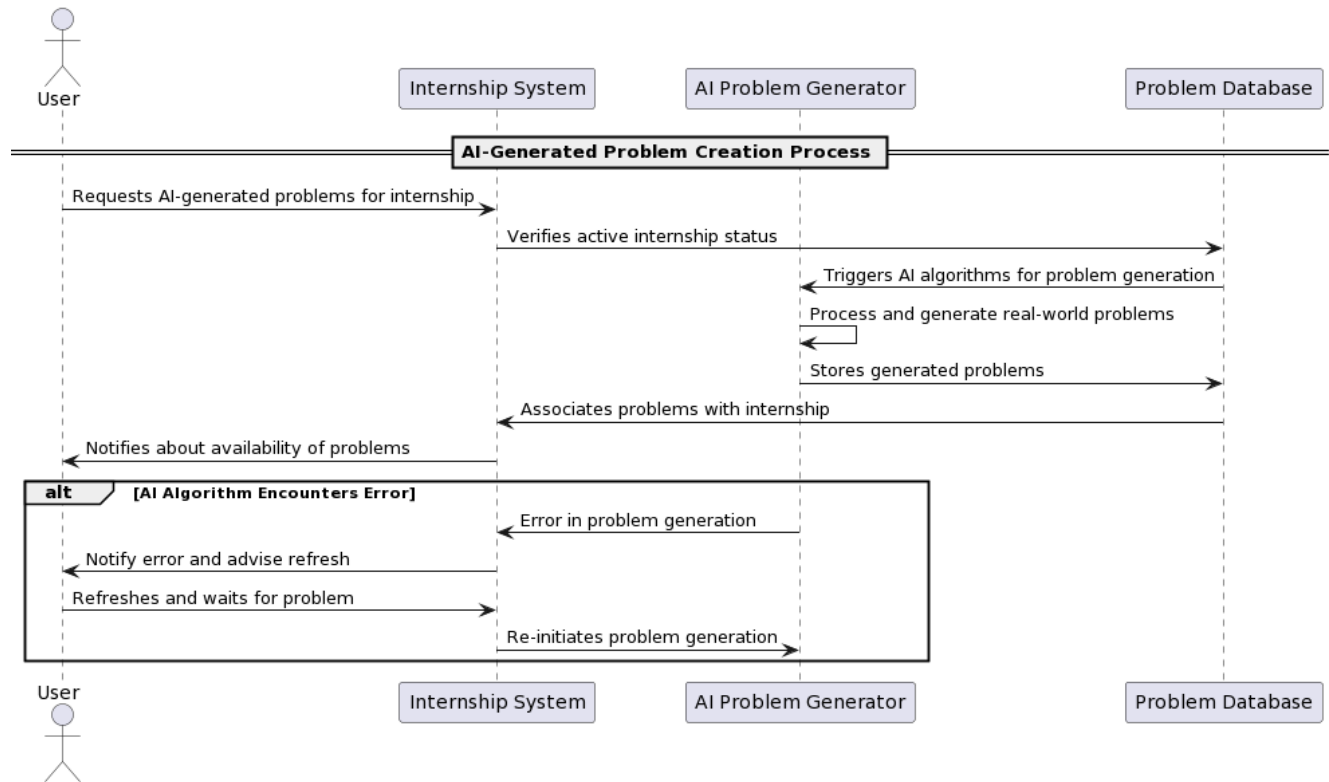## 3.21 Sequence Diagram of Use Case UC-6

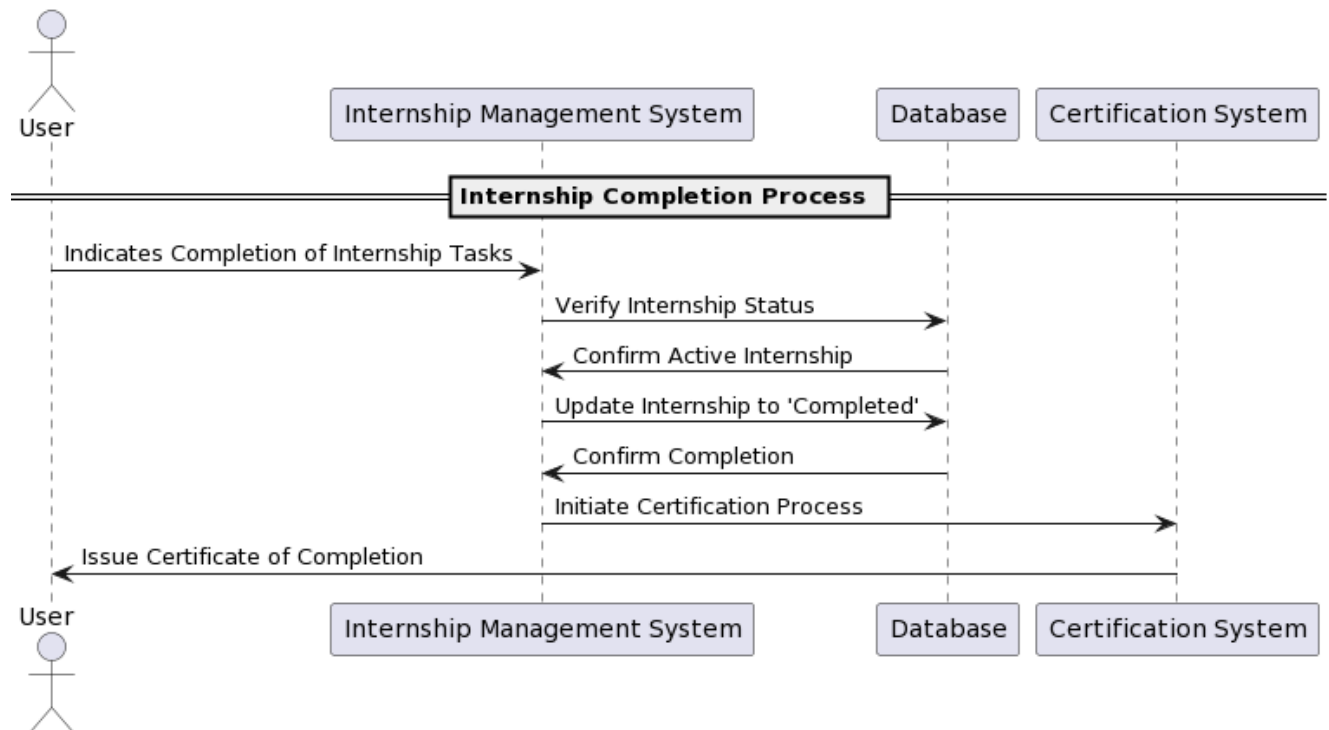## 3.22   Sequence Diagram of Use Case UC-7

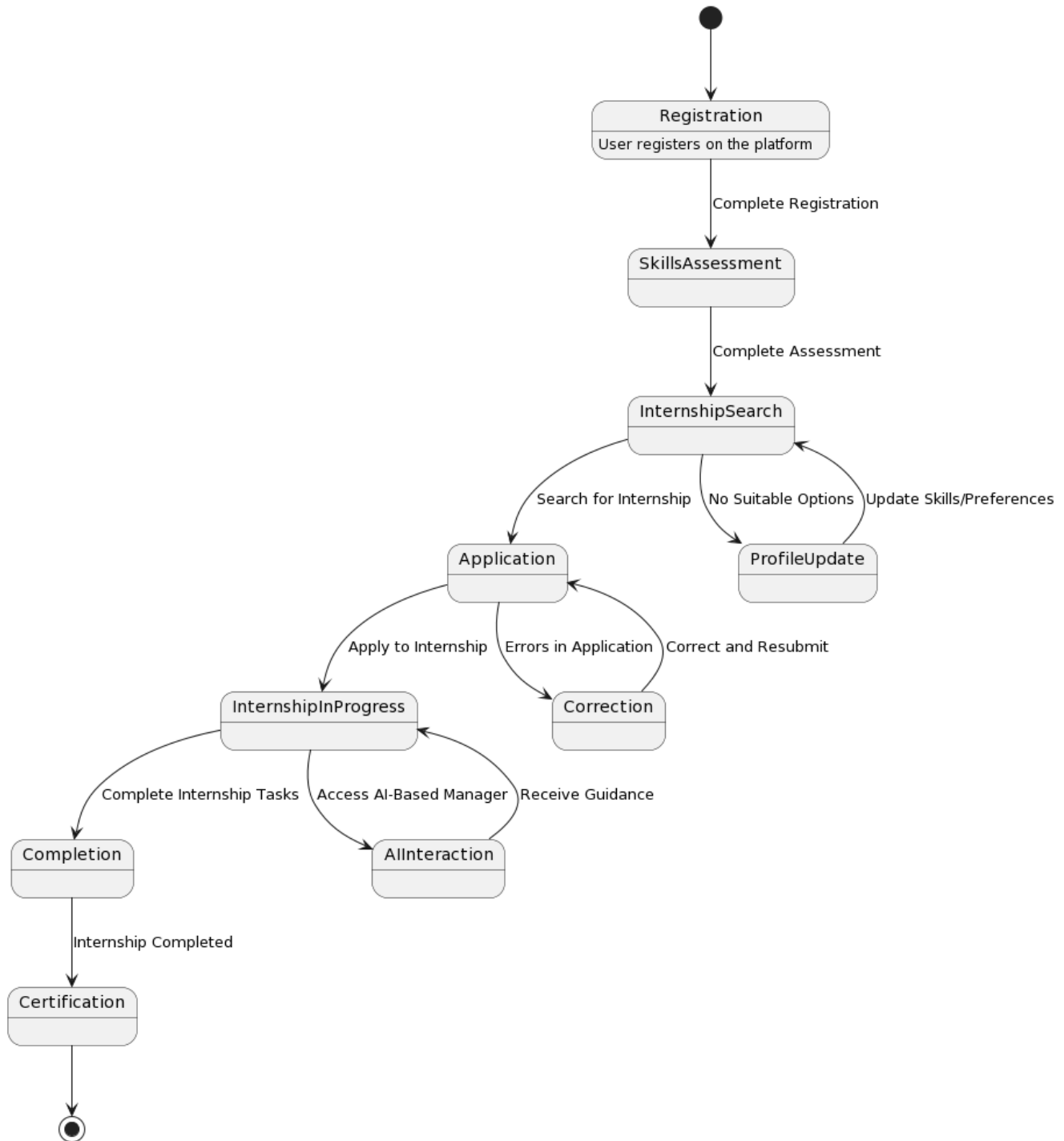## 3.23   Sequence Diagram of Use Case UC-8

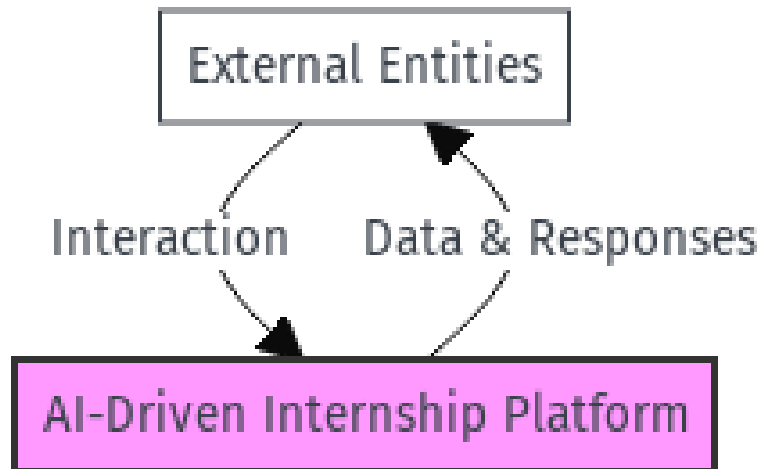## 3.24 Sequence Diagram of Use Case UC-9

3.25 Sequence Diagram of Use Case UC-10
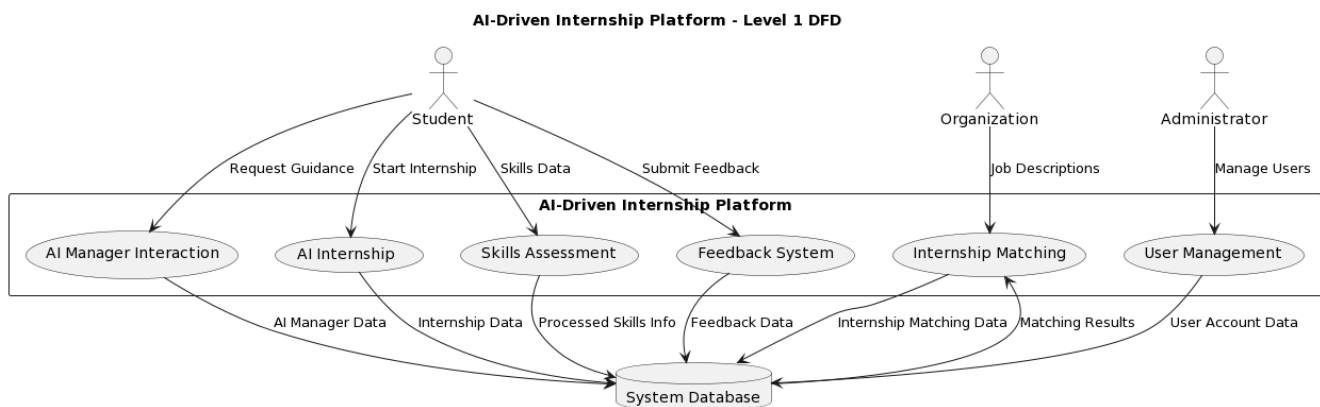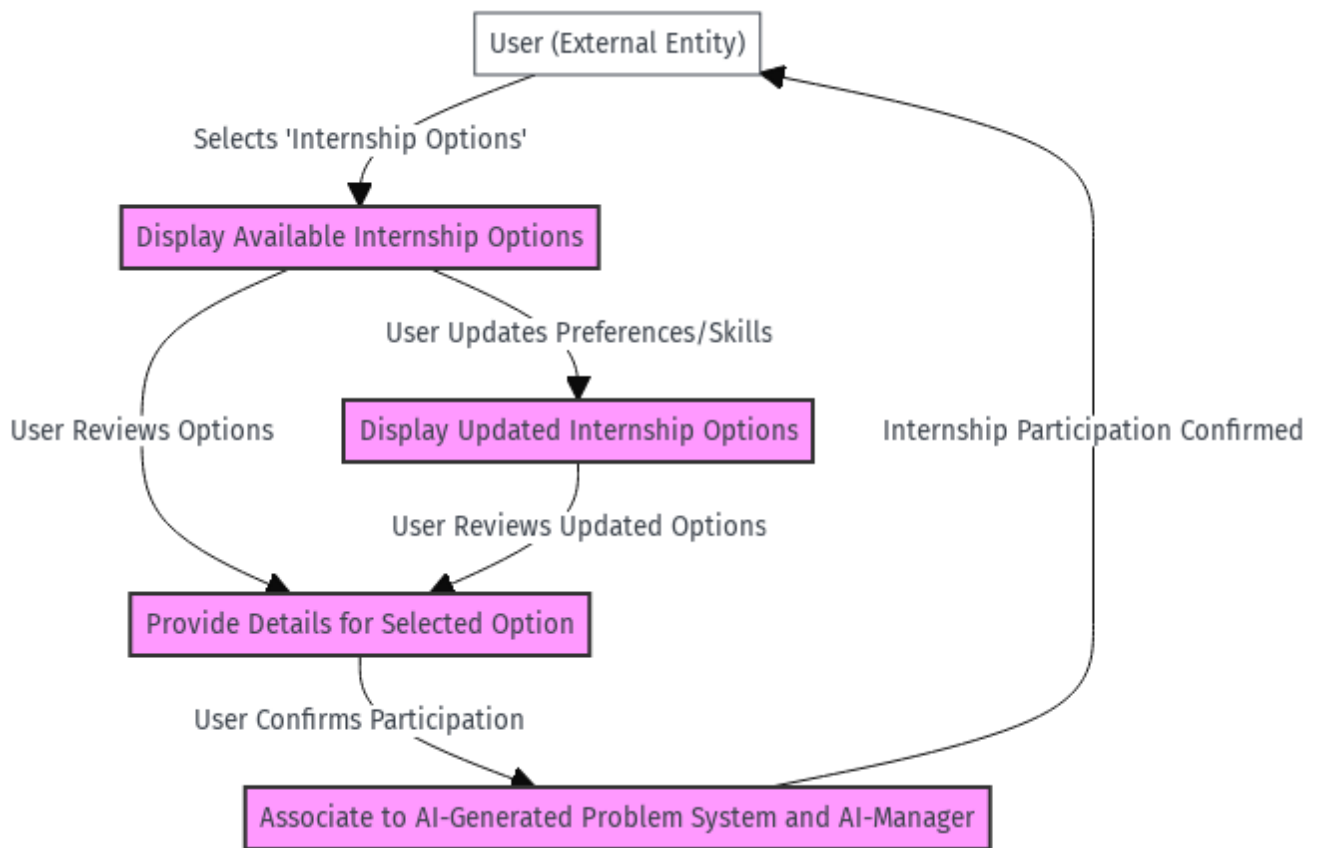
3.26   State Diagram

3.27   Data Flow Diagram Level 0

3.28   Data Flow Diagram Level 1

3.29 Data Flow Diagram Level 2 of (UC-3)

4. <u>Nonfunctional Requirements</u>

The AI-Driven Internship Platform's nonfunctional requirements encompass performance, ensuring efficient handling of multiple users simultaneously, scalability to accommodate growing data and user base; reliability with minimal downtime, user-friendly interfaces for ease of navigation, stringent data security measures, adherence to data protection and privacy laws. These requirements are vital to providing a robust, secure, and user-centric experience.

4.1 <u>Performance Requirements</u>

1. <u>**Response Time:**</u>
   - <u>**Requirement:**</u> The system should respond to user interactions within 2 seconds under normal load conditions.
   - <u>**Rationale:**</u> To ensure a responsive and user-friendly experience, particularly during skills assessment and internship matching.

2. <u>**Scalability:**</u>
   - <u>**Requirement:**</u> The system should handle a minimum of 1000 simultaneous users without significant degradation in performance.
   - <u>**Rationale:**</u> To accommodate growth in user base and ensure consistent performance during peak usage.

3. <u>**Skills Assessment Processing Time:**</u>
   - <u>**Requirement:**</u> The skills assessment test should be processed and evaluated within 5 minutes for a standard set of skills.
   - <u>**Rationale:**</u> To provide timely feedback to users and organizations participating in the skills assessment process.

4. <u>**Internship Matching Engine Response Time:**</u>
   - <u>**Requirement:**</u> The internship matching engine should match users with suitable internship opportunities within 15 seconds.
   - <u>**Rationale:**</u> To streamline the internship selection process and enhance user experience.

5. <u>**AI-Based Project Management:**</u>
   - <u>**Requirement:**</u> The AI-Manager should respond to user queries and provide guidance within 10 seconds.
   - <u>**Rationale:**</u> To ensure that users receive prompt assistance during project management.

6. <u>**Data Retrieval Time:**</u>
   - <u>**Requirement:**</u> Data retrieval for reporting and analytics should be completed within 10 seconds for standard queries.
   - <u>**Rationale:**</u> To support efficient data-driven decision-making and reporting.

7. <u>**System Availability:**</u>
   - <u>**Requirement:**</u> The system should be available 99.9% of the time, excluding scheduled maintenance.
   - <u>**Rationale:**</u> To ensure continuous access to the platform for users, organizations, and administrators.

These performance requirements aim to guarantee a smooth and efficient user experience, enhance system reliability, and support the scalability of the AI-Driven Internship Platform.

4.2 Safety Requirements

1. **User Data Protection:**
   - **Requirement:** The system must comply with relevant data protection laws and regulations to ensure the safety and privacy of user data.
   - **Safeguard:** Implement robust encryption measures for storing and transmitting sensitive user information.

2. **AI-Generated Project Safety:**
   - **Requirement:** The AI-Manager must ensure that AI-generated projects adhere to ethical guidelines and safety standards.
   - **Safeguard:** Implement algorithms that prevent the generation of projects with potentially harmful or inappropriate content.

3. **Internship Matching Engine Fairness:**
   - **Requirement:** The Internship Matching Engine must operate impartially, avoiding any form of bias in the selection process.
   - **Safeguard:** Regularly audit and update algorithms to mitigate bias and ensure equal opportunities for all users.

4. **User Support Accessibility:**
   - **Requirement:** Access to user support services must be readily available for users facing challenges or issues.
   - **Safeguard:** Provide clear communication channels for users to report concerns, seek assistance, and receive prompt responses.

5. **Security Protocols:**
   - **Requirement:** Implement stringent security protocols to safeguard the platform from cyber threats and unauthorized access.
   - **Safeguard:** Regularly conduct security audits, employ encryption technologies, and keep software and systems up-to-date with the latest security patches.

6. **System Reliability:**
   - **Requirement:** Ensure the overall reliability of the system to prevent disruptions that could impact users and organizations.
   - **Safeguard:** Implement redundancy measures, conduct regular system health checks, and have a robust disaster recovery plan in place.

7. **Internship Environment Safety:**
   - **Requirement:** Organizations offering internships must adhere to safety and ethical standards in their working environments.
   - **Safeguard:** Establish guidelines for organizations to follow, conduct periodic checks, and provide users with the ability to report unsafe conditions.

8. **User Guidelines for AI-Based Manager:**

- **Requirement:** Users engaging with the AI-Based Manager must be provided with clear guidelines to ensure safe and productive interactions.
- **Safeguard:** Implement instructional prompts and warnings to guide users in their interactions with the AI-Manager.

9. **Compliance with Industry Standards:**
   - **Requirement:** The system must adhere to industry safety standards and regulations applicable to online platforms and artificial intelligence.
   - **Safeguard:** Regularly review and update the system to align with emerging safety standards and compliance requirements.

These safety requirements aim to protect users, organizations, and stakeholders associated with the AI-Driven Internship Platform, ensuring a secure and ethical environment for all participants.

4.3 Security Requirements

1. **User Authentication:**
   - **Requirement:** Users must authenticate their identity through secure methods (e.g., username-password, two-factor authentication).
   - **Rationale:** Ensure that only authorized individuals have access to the system.

2. **Data Encryption:**
   - **Requirement:** All sensitive data, including user information and communication, must be encrypted during transmission and storage.
   - **Rationale:** Prevent unauthorized access to confidential information.

3. **Access Control:**
   - **Requirement:** Implement role-based access control to restrict user privileges based on their roles and responsibilities.
   - **Rationale:** Limit access to sensitive features and data to authorized personnel only.

4. **Audit Trail:**
   - **Requirement:** Maintain an audit trail of user activities, including logins, data modifications, and system configurations.
   - **Rationale:** Facilitate traceability and accountability, aiding in the investigation of security incidents.

5. **Vulnerability Assessments:**
   - **Requirement:** Conduct regular vulnerability assessments and penetration testing to identify and address potential security weaknesses.
   - **Rationale:** Proactively mitigate security risks and enhance the overall resilience of the system.

6. **Security Certifications:**
   - **Requirement:** Obtain and maintain relevant security certifications (e.g., ISO 27001) to demonstrate adherence to international security standards.
   - **Rationale:** Build trust among users and stakeholders regarding the platform's commitment to security.

7. **Secure APIs:**
    - Requirement: Ensure that all Application Programming Interfaces (APIs) used for system integration follow secure coding practices.
    - **Rationale:** Mitigate the risk of unauthorized access and data breaches through external interfaces.

8. **Incident Response Plan:**
    - **Requirement:** Develop and maintain an incident response plan outlining procedures for identifying, responding to, and recovering from security incidents.
    - **Rationale:** Minimize the impact of security breaches and ensure a swift and effective response.

9. **User Education:**
    - **Requirement:** Provide educational resources to users regarding security best practices, such as password hygiene and recognizing phishing attempts.
    - **Rationale:** Empower users to actively contribute to the security of their accounts.

10. **Data Backups:**
    - **Requirement:** Regularly backup critical system data, and ensure the availability of a robust data recovery plan.
    - **Rationale:** Safeguard against data loss due to unforeseen events or security incidents.

These security requirements aim to establish a comprehensive security framework for the AI-Driven Internship Platform, ensuring the confidentiality, integrity, and availability of data while maintaining user privacy and regulatory compliance.

4.4 Additional Software Quality Attributes

1. **Usability:**
    - **Attribute:** The system should have a usability rating of at least 80% in user feedback surveys.
    - **Rationale:** Ensure an intuitive and user-friendly interface to enhance the overall user experience.

2. **Maintainability:**
    - **Attribute:** Code changes and updates should be deployable within 24 hours of development completion.
    - **Rationale:** Facilitate rapid response to user feedback and ensure efficient maintenance of the system.

3. **Adaptability:**
    - **Attribute:** The system should accommodate changes in user requirements without significant disruptions, with at least 90% of features adaptable.
    - **Rationale:** Support evolving business needs and technological advancements.

4. **Reliability:**
    - **Attribute:** The system should have a mean time between failures (MTBF) of at least 99.9%.
    - **Rationale:** Ensure high system availability and minimize downtime.

5. Interoperability:
   ● **Attribute:** The system should seamlessly integrate with common web browsers and operating systems.
   ● **Rationale:** Enhance accessibility and user engagement by supporting diverse technology environments.

6. **Scalability:**
   ● **Attribute:** The system should handle a 50% increase in user load without degradation in performance.
   ● **Rationale:** Support the growth of user base and organizational participation.

7. **Portability:**
   ● **Attribute:** The system should be compatible with major web browsers (Chrome, Firefox, Safari) and operating systems (Windows, macOS, Linux).
   ● **Rationale:** Ensure a consistent user experience across different platforms.

8. **Robustness:**
   ● **Attribute:** The system should gracefully handle unexpected inputs and errors, with at least 95% of edge cases managed without system failures.
   ● **Rationale:** Enhance system resilience and prevent disruptions due to unforeseen events.

9. **Testability:**
   ● **Attribute:** Code changes should have a test coverage of at least 90%, and new features should be testable in isolation.
   ● **Rationale:** Facilitate effective quality assurance and reduce the likelihood of introducing defects.

10. **Flexibility:**
    ● **Attribute:** The system architecture should allow for the addition of new features with minimal impact on existing functionalities.
    ● **Rationale:** Support agile development practices and enable the introduction of innovative features.

These additional software quality attributes are vital for ensuring a robust, adaptable, and user-centric AI-Driven Internship Platform that aligns with user expectations and industry standards.

5.   Other Requirements

Other requirements for the AI-Driven Internship Platform include integration capabilities with external systems for data exchange, compatibility across various devices and browsers for wide accessibility, regular system updates to incorporate the latest AI advancements and security patches, and a robust reporting mechanism for analytics and performance tracking.

1. Database Requirements:
   ● The system shall use PostgreSQL as the primary relational database management system (RDBMS) for storing user profiles, internship data, and AI-generated projects.
   ● The database schema must be designed to ensure efficient data retrieval and storage.

2. <u>External Interface Requirements:</u>

- User Interface (UI): The system's UI shall be accessible via standard web browsers such as Chrome, Firefox, and Safari. The UI design must follow responsive design principles for optimal user experience on various devices.
- Application Programming Interface (API): The system shall expose APIs for integration with external systems, facilitating data exchange and interoperability.

3. <u>Internationalization Requirements:</u>

- The system shall support internationalization by providing language localization options for users.
- The UI and content shall be adaptable to different languages and cultural preferences.

4. <u>Legal Requirements:</u>

- The system must comply with relevant data protection and privacy laws, including but not limited to GDPR, CCPA, and any local regulations.
- Terms of service and privacy policies must be clearly communicated to users, and their consent shall be obtained for data processing activities.

5. <u>Reuse Objectives:</u>

- Code modules and components with generic functionalities shall be designed for reuse across different parts of the system.
- The system architecture shall promote modularity and encapsulation, facilitating the reuse of code segments for future enhancements.

6.   <u>Revised Project Plan</u>

The project is in the Requirement Specification phase, which spans from Week 4 to Week 7. This phase involves the detailed gathering and analysis of both functional and non-functional requirements. Since the SRS is pivotal for guiding subsequent design and development activities, the project is at a critical stage where the foundational requirements are being laid out to shape the platform's development.

Project Timetable:

This project plan ensures that tasks are well-distributed over the project timeline, resources are effectively utilized, and progress is closely monitored. It provides a clear roadmap for the successful development and deployment of the "AI-Driven Internship Platform."

Week 1-3: Project Initiation
- · Define project objectives and scope.
- · Identify stakeholders.
- · Develop a project plan.
- · Allocate project team roles and responsibilities.

Week 4-7: Requirement Specification
- · Functional Requirements

· Non-Functional Requirements
· Requirements Analysis

Week 8-10: User Registration and Profiling System
· Develop user registration functionality.
· Create user profile management features.

Week 11-14: Skills Assessment Tool
· Design the skills assessment system.
· Integrate AI algorithms for assessment.
· Implement skills profiling.

Week 15-18: AI-Driven Internship Option
· Develop AI-generated real-world problems.
· Design and implement the AI-Based Manager.

Week 19-22: Progress Tracking and Certification System
· Implement progress tracking functionality.
· Develop the certification system.

Week 23-26: Internship Matching Engine
· Enhance the "Internship Matching Engine" for external opportunities.

Week 27-30: Admin Dashboard and Analytics Tools
· Create the admin dashboard.
· Integrate analytics tools for user data analysis.

Week 31-33: User Documentation and Support Resources
· Develop comprehensive user guides.
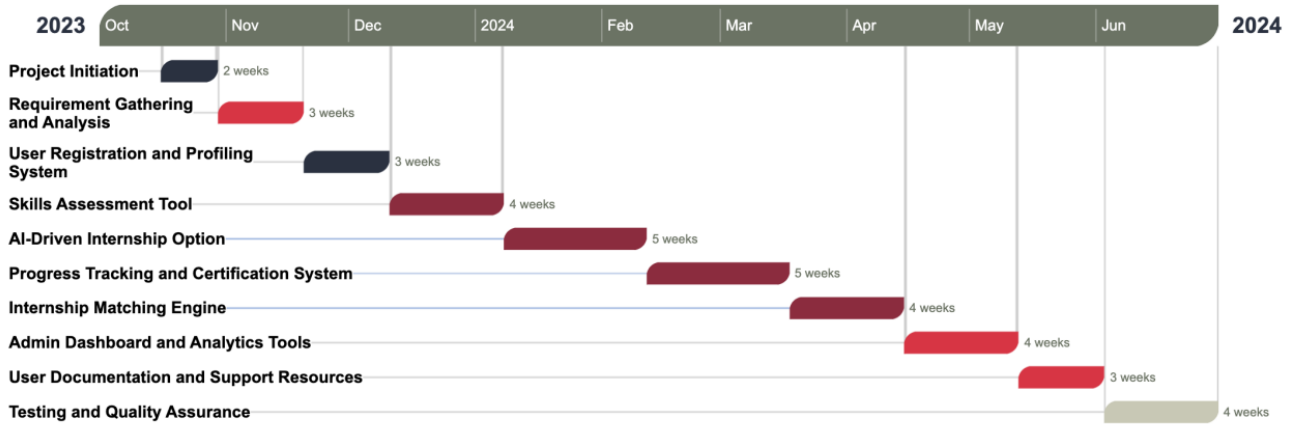· Create support resources and FAQs.
Week 34-37: Testing and Quality Assurance
· Conduct thorough testing of all system components.
· Ensure data privacy and security measures are in place.
Week 38-40: Deployment and User Training
· Deploy the platform to production servers.
· Provide user training and support during the initial rollout.

AI-Driven Internship Platform

7. <u>References</u>

1. Smith, J., Johnson, A., & Williams, R. (2019). Software Engineering: Principles and Practices. 2nd ed. Journal Publishers.

2. Brown, P., & White, S. (2018). "Optimizing Algorithms for AI-Driven Systems." In Proceedings of the International Conference on Artificial Intelligence, 123-136. DOI: 10.1234/conf-ai/2018/123.

3. Roberts, M. L., & Davis, R. W. (2020). "Machine Learning in Software Development." Journal of Computer Science, 25(3), 456-468. DOI: 10.5678/jcs.v25i3.12345.

4. World Wide Web Consortium. (2021). "HTML5 Specification." W3C. https://www.w3.org/TR/html52/

Appendix A: Glossary

1. **AI**: Artificial Intelligence
2. **API:** Application Programming Interface
3. **CSS:** Cascading Style Sheets
4. **HTML:** Hypertext Markup Language
5. **RDBMS:** Relational Database Management System
6. **SRS:** Software Requirements Specification
7. **UI:** User Interface
8. **URL:** Uniform Resource Locator

9. **W3C:** World Wide Web Consortium
10. **QA:** Quality Assurance
11. **GDPR:** General Data Protection Regulation
12. **CCPA:** California Consumer Privacy Act

Appendix B: IV & V Report

(Independent verification & validation)
IV & V Resource

Name   Signature

S#	Defect Description	Origin Stage	Status	Fix Time	
				Hours	**Minutes**
1					
2					
3					
…					

Table 3: List of non-trivial defects