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Requirement Analysis and Specification Document

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1 Introduction

1.1 Purpose

The Students & Companies (S&C) platform simplifies the internship process by connecting university students with companies offering internship opportunities. Students can search for internships, while companies can advertise their openings. The platform identifies and recommends matches, facilitating direct contact between students and companies. Once contact is made, S&C supports the selection process by managing interview scheduling and finalizing decisions. Additionally, it provides tools for tracking the progress and outcomes of internships, handling complaints, and ensuring effective communication. Universities can also monitor ongoing internships to maintain oversight and support their students.

1.1.1 Goals

The platform will be used by three types of users: Students (ST), Companies (CO), and Universities (UN). Below there is the table of goals that the platform will achieve:

G#	Goal
G1	Student shares his CV
G2	Company shares its internship opportunities
G3	University manages internships
G4	Student visualizes company's opportunities
G5	Company visualizes student's CVs
G6	Student can improve his CV
G7	Company can improve its internship descriptions
G8	Student receives the recommendations on internships made by the platform
G9	Company receives student recommendations made by the platform
G10	Student can send an application to a company of his choice
G11	Student can accept the platform's recommendation
G12	Company can create contact with a student of its choice
G13	Company can accept the platform's recommendation
G14	Company manages the selection process
G15	Company schedules and manages interviews with the selected students
G16	Student provides suggestions and feedback about the internship
G17	Student provides suggestions and feedback about the platform
G19	Company provides suggestions and feedback about the platform
G19	University provides suggestions and feedback about the platform
G20	University can end internships between students and companies

Table 1: List of Goals

1.2 Scope

Students&Companies (S&C) platform is developed to streamline the internship search experience for STs attending UN and facilitates the process of offering internships to them. To access the platform, each user (ST, CO, UN) must register into the system. For each User, different requirements and information will be asked, due to security and privacy.

When logged in, ST Users will have access to tailored internship opportunities that align with their expertise and search preferences. In addition, they will see requests from COs to establish contacts for new potential opportunities. On the other hand, the platform will present COs with curated suggestions

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of students whose interests and experience align with their job postings. It will also display applications submitted by STs for their opportunities.

When both parties identify and accept a suitable recommendation, a contact is established, marking the beginning of the selection process. At this point, the ST will receive the questionnaire from the CO, which is intended to provide more information to the CO. S&C supports the selection process by managing key activities, such as setting up interviews, finalizing the selection of candidates, and providing spaces where interested parties can complain and communicate problems.

In general, S&C provides Users with mechanisms to track and monitor the progress and results of the hiring process. Since the platform is used by STs from various UNs, UNs play a key role in monitoring internship situations, particularly when handling complaints that may lead to the interruption of an internship.

Additionally, S&C provides guidance to both STs and COs on improving their applications, advising STs on enhancing their CVs and helping COs refine their internship descriptions to attract potential candidates.

Ultimately, S&C provides a comprehensive solution for managing the internship process, ensuring that all parties — STs, COs, and UNs — are supported throughout the experience. In case of issues with the internship, the UN can intervene to terminate it. Additionally, when COs select a ST for the internship, the UN can review and either accept or reject the contract terms offered to the ST.

1.2.1 World Phenomena

- **WP1:** CO interviews ST.
- **WP2:** ST attends a UN subscribed to the platform.
- **WP3:** ST prepares a CV.
- **WP4:** CO prepares the internship offer.
- **WP5:** CO prepares the questionnaire.

1.2.2 Shared Phenomena - World Controlled

- **SP1:** ST registers an account on the platform.
- **SP2:** CO registers an account on the platform.
- **SP3:** UN registers an account on the platform.
- **SP4:** ST logs into the UN's account to log into the platform.
- **SP5:** CO logs on the platform.
- **SP6:** UN logs on the platform.
- **SP7:** ST accepts the first contact with CO.
- **SP8:** UN accepts the first contact with ST.
- **SP9:** ST requests the contact with CO.
- **SP10:** CO requests the contact with ST.

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- **SP11:** CO plans an interview.
- **SP12:** ST accepts or refuses the interview.
- **SP12:** CO provides a questionnaire for ST.
- **SP13:** ST fills the questionnaire.
- **SP14:** CO compiles the questionnaire.
- **SP15:** CO ends the interview process.
- **SP16:** CO accepts or refuses ST for the internship.
- **SP17:** ST accepts or refuses the internship of CO.
- **SP18:** UN accepts or refuses the internship.
- **SP19:** ST gives feedback about the internship.
- **SP20:** CO gives feedback about the internship.
- **SP21:** UN interrupts the internship.

1.2.3 Shared Phenomena - Machine Controlled

- **SP22:** S&C suggests CVs of ST to CO.
- **SP23:** S&C suggests internships from CO to ST.
- **SP24:** S&C sends notifications to ST.
- **SP25:** S&C sends notifications to CO.
- **SP26:** S&C sends notifications to UN.
- **SP27:** S&C creates a contact between CO and ST.
- **SP28:** S&C starts the selection process between CO and ST.
- **SP29:** S&C starts the internship.
- **SP32:** S&C gives suggestions for CV to ST.
- **SP33:** S&C gives suggestions for internship description of CO.
- **SP34:**S&C updates the suggestions.

1.3 Definitions, Acronyms, Abbreviations

1.3.1 Definitions

- **User:** Anyone interacting with the system, such as a Student (ST), Company (CO), or University (UN).
- **Manage:** To create, supervise, and edit a certain element of the process.
- **S&C:** Students&Companies platform to ease internship searches.

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1.3.2 Acronyms

- **ST:** Student
- **CO:** Company
- **S&C:** Students&Companies
- **RASD:** Requirements Analysis and Specification Document

1.3.3 Abbreviations

- **WPX:** World Phenomena X
- **SPX:** Shared Phenomena X
- **UCX:** Use Case X

1.3.4 Document structure

The document is divided into five main sections, described as follows:

1. **Introduction:** This section introduces the goals of the project, its purpose, and the analysis of world and shared phenomena. It also contains the definitions, acronyms, and abbreviations used in the document.
2. **Overall Description:** This section presents the general factors that affect the product. It includes the analysis of the scenarios and functions of the platform, as well as the domain assumptions.
3. **Specific Requirements:** This section contains the functional and non-functional requirements of the platform. It also includes a more detailed analysis of the use cases and the mapping between goals and requirements. Furthermore, it provides a description of the interfaces necessary for the platform to implement all its functionalities.
4. **Formal Analysis using Alloy:** This section describes the model and the world generated by the Alloy Analyzer. It is a crucial part of the document, as it proves the correctness of the model described in the previous sections.
5. **Effort Distribution:** This final section details the effort spent by each member of the group to write this document.

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2 Overall Description

2.1 Product Perspective

2.1.1 Scenarios

The following scenarios provide a general description on how the main functions of the system will be executed by the users:

Scenario 1
Stefano Berrettini is a final-year student pursuing a Bachelor's degree in Figurative Arts and Literature at Harvard University. As he approaches graduation, Stefano is eager to gain hands-on experience in the field to better understand his career options and make an informed decision about which Master's program to pursue. Through the University's career services, Stefano discovers the S&C platform. Stefano decides to create an account. Using his university credentials, he registers on the platform and completes his profile, including uploading an updated version of his CV. Once logged in, Stefano provides additional information to personalize his profile. He specifies the fields he is interested in, such as art, culture, and creative industries, and highlights his preferences, including location, internship duration, and availability, so that the platform can suggest the most relevant opportunities. After completing his profile, Stefano explores the dashboard, which showcases curated internship opportunities tailored to his preferences. Stefano identifies several promising positions offered by reputable organizations in the arts and culture sector. After careful consideration, he applies to three internships that align closely with his interests and goals. By leveraging S&C, Stefano gains greater confidence in taking the next steps in his career journey. The platform not only helps him find relevant opportunities, but also ensures the process is efficient and tailored to his unique needs.

Scenario 2
Amelia Ferretti is a Computer Science student at ETH Zurich. Passionate about innovative technology and company culture, "Amelia deeply admires the ideals and values upheld by Bending Spoons. Upon discovering an internship opportunity with the company on the S&C platform, she feels eager to apply and strives to make a lasting impression. To maximize her chances, Amelia decides to use the platform's "Improve CV" tool. This feature analyzes her existing CV and suggests improvements to better align her experiences and skills with the specific requirements of the Bending Spoons internship. Amelia follows the suggestions, such as highlighting her programming expertise, teamwork experiences, and familiarity with agile methodologies, which she knows are highly valued by the company. Once satisfied with her updated CV, Amelia submits her application through the platform. Amelia now awaits confirmation of her interview date. By leveraging S&C, Amelia feels confident in showcasing her best self and pursuing an opportunity with her dream company.

Scenario 3
Mohammed Jaquise is the HR manager at Gamma, a company specializing in event organization. Recently, Gamma secured exciting contracts to host several high-profile, large-scale events. To meet the demands of these projects, Mohammed has been tasked with recruiting fresh talent—individuals who may not necessarily have extensive experience in the field but possess enthusiasm, a willingness to learn, and strong interpersonal skills. While exploring recruitment options, Mohammed discovers the S&C platform and decides to give it a try. After registering, Mohammed uploads the available internship positions, ensuring the job descriptions emphasize the key traits they are seeking: energy, adaptability, and engagement. Within a short time, the platform's smart matching system identifies suitable candidates, and Mohammed begins receiving applications from students at renowned universities located near Gamma's headquarters. He is impressed by the diversity and quality of the applicants, many of whom demonstrate a strong passion for event management despite being at the beginning of their careers.

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Scenario 4
Esselunga, a leading Italian retail company, has been using the S&C platform to streamline its internship programs. As part of its ongoing efforts to innovate in the advertising and marketing sector, Esselunga decides to post new internship opportunities in these fields. The HR team logs into the S&C platform and navigates to the "Post an Offer" section. They prepare a detailed job description tailored for students pursuing degrees in marketing, communications, or data analysis, emphasizing the chance to work on real-world projects in a dynamic retail environment. Once the opportunity is published, the S&C platform automatically recommends it to students whose profiles and preferences match the requirements. Esselunga receives notifications as interested students begin applying. Using the platform's intuitive dashboard, the HR team efficiently reviews applications, comparing candidates based on their skills, academic achievements, and career interests.

Scenario 5
Camillo Sammarzano, a student at IED University, was selected through the S&C platform for an open internship position at Ferrero. Using the platform, he could manage and track the interview process. Camillo completed his first interview with Ferrero's HR representative, Marco Poretti, and his second with the Manager of the Product Design department. He later logged into the platform to check for updates on the selection process. There, he found a notification informing him of the outcome. Unfortunately, he received a rejection message from the HR team, which included detailed feedback explaining the decision. Thanks to S&C's feedback form, compiled by the company, Camillo learned that the primary reason for the rejection was his status as a first-year student. Ferrero decided to prioritize candidates in the final year of their Master's program, facilitating a smoother transition to a potential long-term role after the internship. Despite the rejection, Camillo appreciated the clarity and transparency provided through the platform, which helped him understand the decision and identify areas for growth.

Scenario 6
Giuseppa Gucci is an intern at Feltrinelli and a Literature student at the University of Milan (Statale). She applied for the position, seeing it as a wonderful opportunity to combine her passion for books and literature with practical work experience. However, after two months, Giuseppa realized that the work environment was not suitable for her. Her challenges stem from difficulties with her supervisor and the HR team. Her manager is particularly demanding, requiring her to work at least 11 hours a day and assigning her responsibilities far beyond her role as an intern. When she approached HR to discuss the situation and requested a transfer to another department, she was informed that such a move was not an option. Feeling unsupported, Giuseppa decided to use the S&C platform to report her concerns. She submitted a formal complaint through the platform, notifying her university about the challenging situation and expressing her desire to terminate the internship. The university reviewed her report, intervened to address the issues with the company, and ultimately decided to end the internship. Through the university's involvement, the situation was resolved, and steps were taken to ensure similar issues would not occur in future internships.

2.1.2 Domain class diagram

The UML class diagram provides a visual representation of the main elements of the S&C domain, including how students, companies, and universities interact through the platform with each other.

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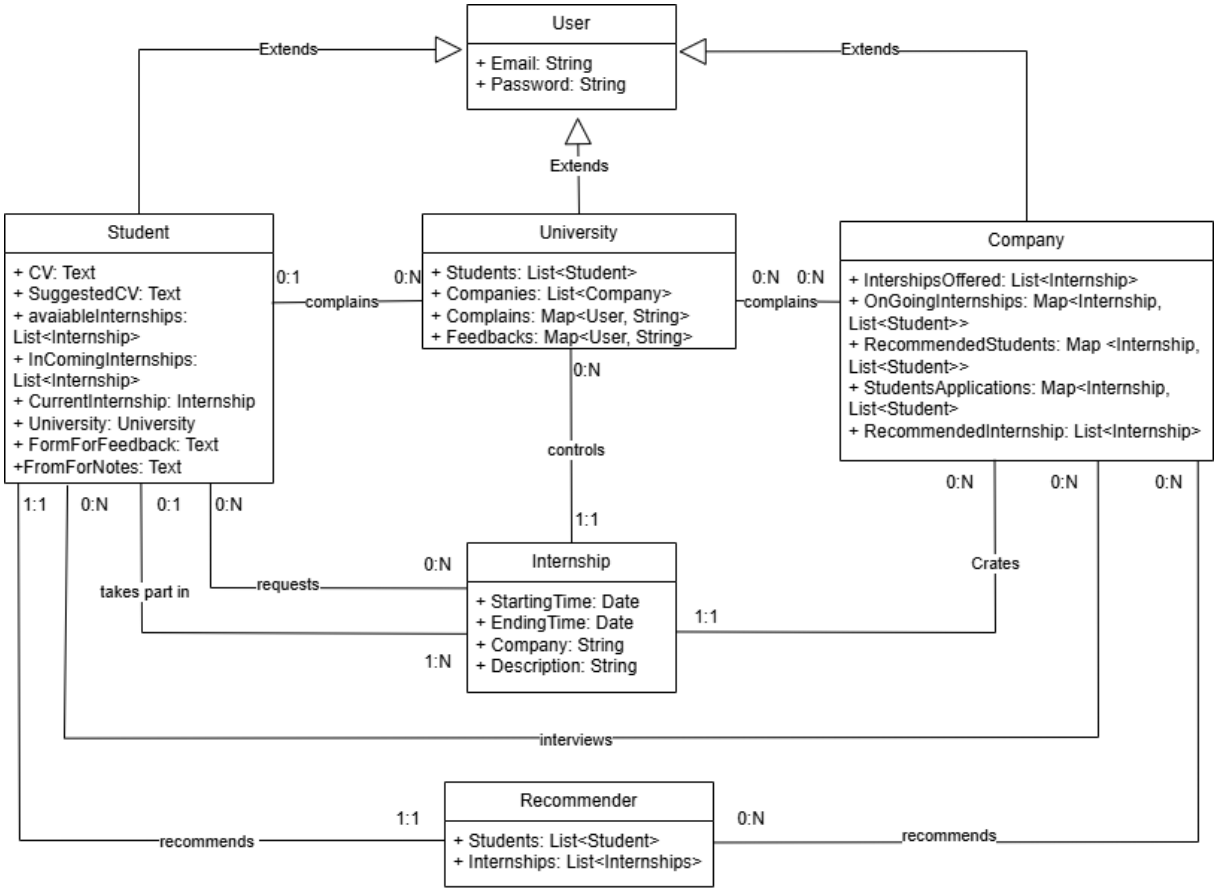

Figure 1: UML of S&C Platform

In order to have a more comprehensive overview of the platform's mechanism, here are some explanations about the relationships among the classes.

The **University** can receive complaints and feedback from students collecting them in a list. Moreover, it can oversee its students' internships accessing them through the list of `Student`.

The most important attributes of the `Student` class are:

- `avaiableInternships`: Represents the list of all possible internships on the platform and is updated every time a new internship is added.
- `incomingInternships`: Contains all internships that are currently in the selection process.
- `currentInternships`: Keeps track of whether the student is currently participating in an internship at the time they access the platform.

The most important attributes of the `Company` class are:

- `internshipsOffered`: Represents the list of internships offered by the company. This attribute is updated every time a new internship is created or when an internship expires.
- `recommendedStudents`: Contains a list of students recommended by the system for each internship offered by the company.
- `studentsApplications`: Tracks the list of applications submitted by students for internships offered by the company.

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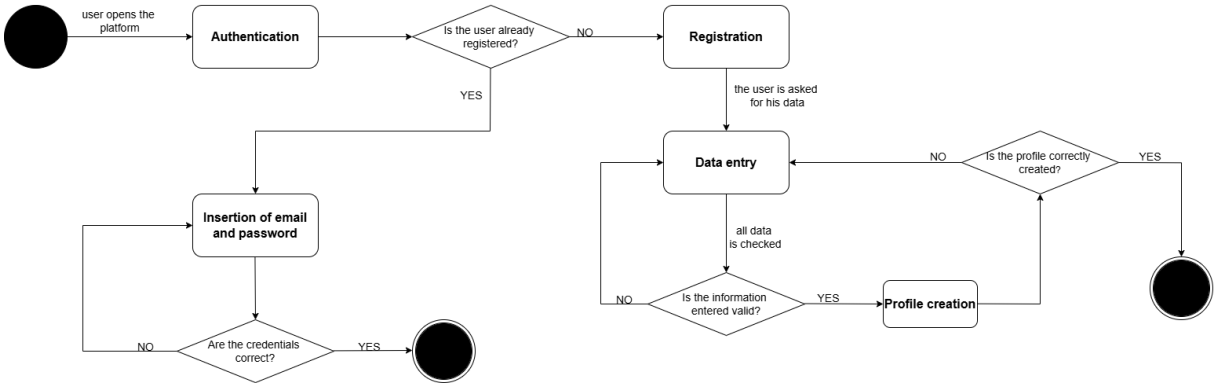
To handle recommendations, there is a dedicated `Recommender` class that manages the matching between students' CVs and internship proposals. This class can suggest improved CVs to students. It also recommends suitable students for the companies' internships and gives suggestions about their internship offers.

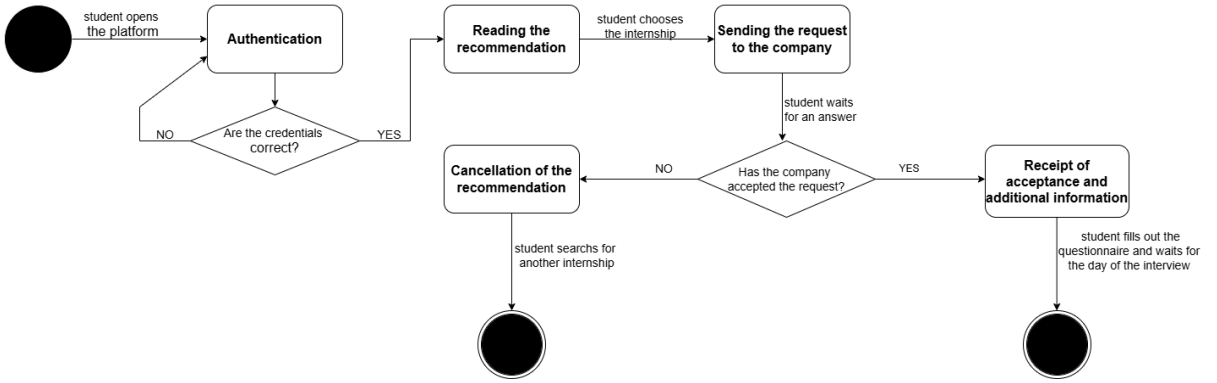
2.1.3 State diagrams

The following state diagrams provide a general understanding about the life cycle of different elements of the system:

Sign in and login Users can register or authenticate to the platform if they already have a profile. In the case of a student, profile creation will also include two-factor authentication to verify that the academic information provided is correct and truthful.



Recommendation for the student The student can view the internships in two ways: through the recommendations provided by the platform or independently. In the first case, the student can decide which to eliminate and which to keep, based on his work objectives. Once you have chosen a recommendation, you will send the request to the company and wait for a possible confirmation or rejection.



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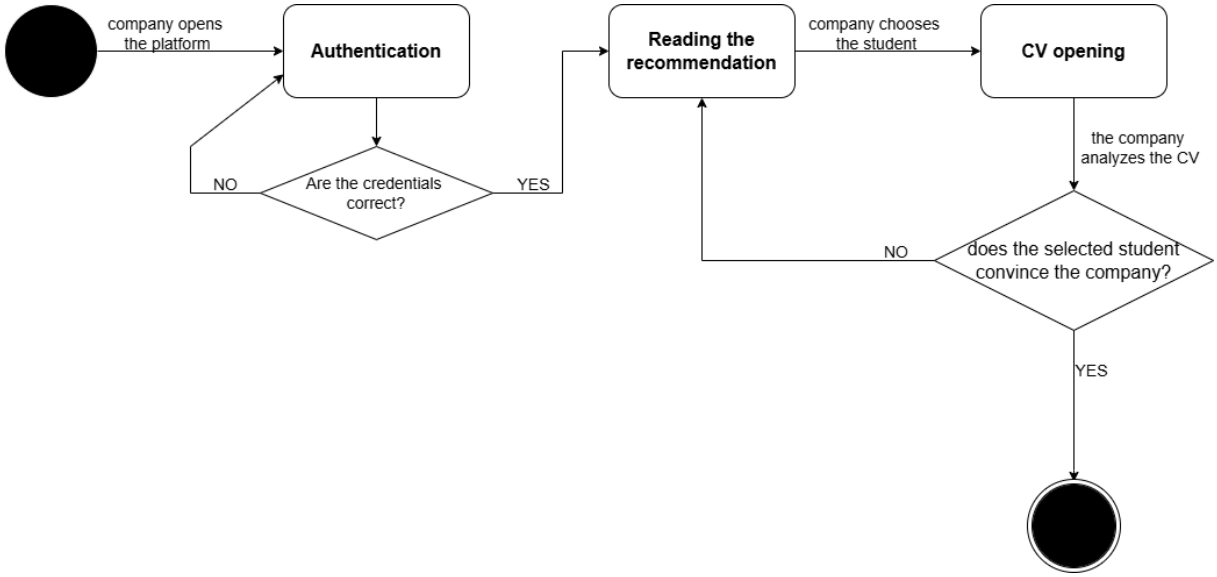
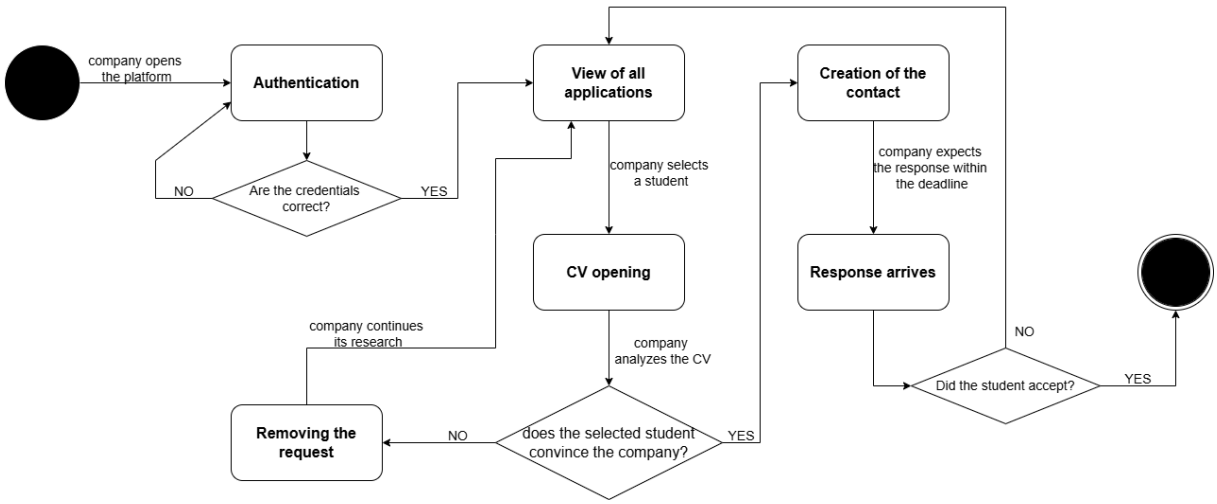
Recommendation for the company The company can view students through the recommendations provided by the platform in the dedicated section: from here it views their curriculum and analyzes it. Once a student has been chosen, we have the interview management.



Selection process This process is a specification of the process that the company carries out after receiving recommendations from the platform along with students' self-application requests. Specifically, the company, again through the CV of the interested students, can decide whether to send the rejection notification to a student or whether to schedule an interview with him. In the second case, the company carries out the steps in the previous state diagram.



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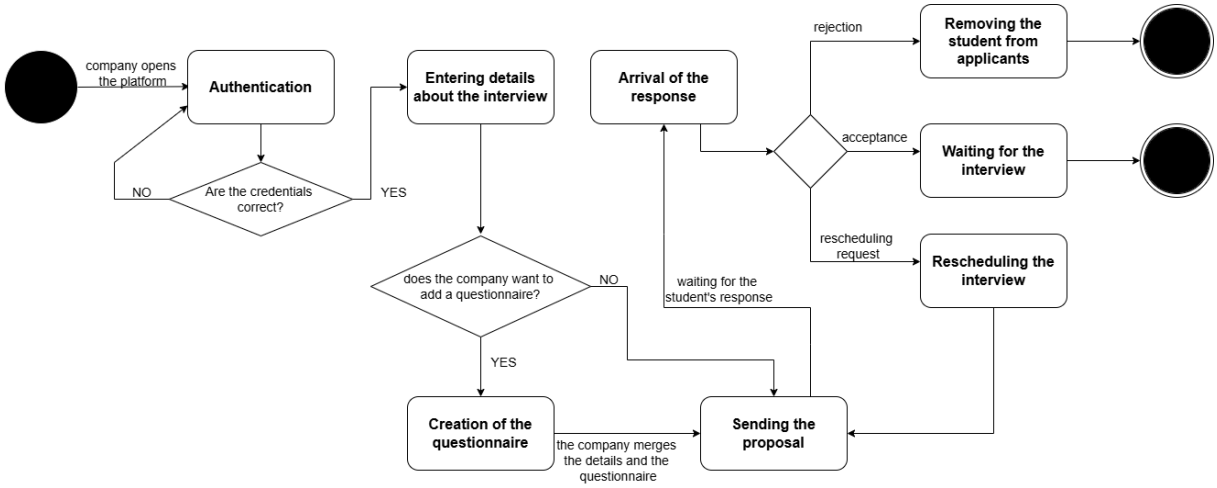
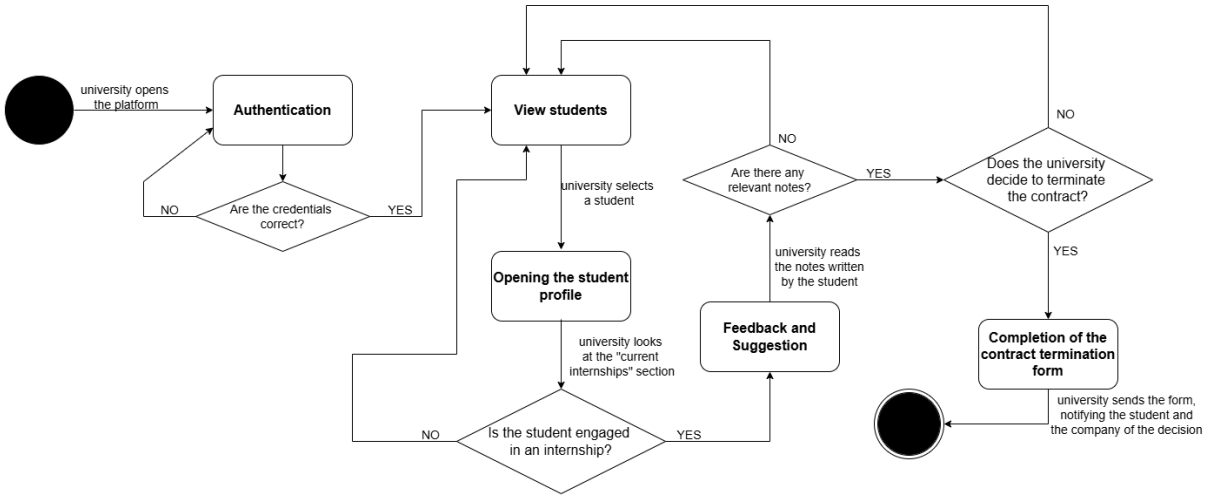
Interview Management This process occurs following a student's choice, either through a recommendation from the platform or through independent selection by the company. At this stage, the company invites the student to participate in the interview for the internship, attaching all the necessary details and a possible questionnaire. Based on the student's response, which can be of three types (acceptance, refusal, rescheduling request), the company responds accordingly.



Internship management The university can monitor students' activities with companies: they have the power to close an internship between a student and a company based on feedback written by the student during the internship.



2.2 Product functions

Sign up and log in This function is available for all users who want to access the platform. To use all features, users must create an account by entering the required information. When registering, they can choose between three account types:

- Student: the student must access the platform from a device connected to the internet. Next, they need to click on the "For Student" option. Here, they will have two choices: either log in to the platform if they have already created an account or create their own personal account. If they choose to log in, they will be asked to enter their personal email and corresponding password to access the platform. If they choose to register, they must click on this option and follow the steps below:

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1. Enter the first name, last name, address, city, postal code, phone number, institutional email associated with the university, and a secure password. Once these details are entered, they can click "Proceed."
2. Provide information about the academic program: select the university, degree program, and the year he is currently enrolled in at the time of registration. Finally, click "Proceed."
3. Log in using two-factor authentication through the University's portal to verify the accuracy of the academic details provided. Once authentication is successfully completed, the user will be redirected to the next page.
4. On the next page, he will need to upload his CV.

- University: The university's IT and Career Service department must access the platform from a device connected to the internet. Next, they need to click on the "For University" option. Here, they will have two choices: either log in to the platform if they have already created an account or create a new account. If they choose to log in, they will be asked to enter the university's general email and corresponding password to access the platform. If they choose to register, they must click on this option and follow the following steps:

  1. Enter the university's official name, VAT number, unique institutional code (if applicable), registered office address, type of institution (public university, private university, online university, etc.), institutional email, phone number, personal details of a designated representative, and the official website. Finally, click "Proceed."
  2. Upload the founding charter or an official document confirming the institution's legitimacy. Once uploaded, click "Proceed." Before accessing and navigating the platform, the system will review and verify the submitted document.

- Company: The company must access the platform from a device connected to the internet. Next, they need to click on the "For Company" option. Here, they will have two choices: either log in to the platform if they have already created an account or create a new personal account. If they choose to log in, they will be asked to enter their official email and corresponding password to access the platform. If they choose to register, they must click on this option and enter the official name of the company, the industry sector (e.g., IT, marketing, engineering, etc.), VAT number and tax code, the address of the main office, and the company website. Finally, click "Proceed." Before being able to access and navigate the platform, it will verify and confirm the accuracy of the information provided.

Publication of CVs This function is available to students. Once the registration with their personal data is complete, the student must upload their CV. The resume must meet the following requirements:

- It should not be longer than two pages, it must be readable and organized with clear sections (e.g., experience, education, skills, etc.).
- It must be in PDF format.
- Only relevant information should be included to the field of interest for which the applicant is seeking an internship.
- All information must be truthful.

The platform can provide suggestions for improving CVs, helping students make them more attractive to companies. Students retain complete control over their data, with the ability to edit or withdraw their CV at any time.

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Internship offer This function is reserved for companies. Companies can create and publish internship offers in the following way:

1. Once logged into the platform, click on the "Post an Offer" option.

2. After clicking, you will be directed to a page where you can enter all the necessary details to post the internship: title, description (about the tasks and activities the student will need to carry out), duration, working hours (number of weekly hours expected), flexibility of working hours (part-time or full-time), and workplace location. Once these fields are filled out, click "Proceed."

3. Next, you will be directed to a page where you need to provide additional information that will serve as a "filter": required qualifications (skills and qualifications needed for the application), compensation (whether the internship is paid or not), and any potential opportunities for employment after the internship. Additionally, you can fill in an optional field requesting any documents required from the student for the application (CV, motivation letter, portfolio, etc.). Finally, click on "Publish internship," and your offer will be visible to all users on the platform.

Recommendation This feature is available for students and companies. Using a recommendation system based on matching techniques, the platform suggests:

- To students: the internships best suited to their skills and preferences. For students, the platform displays the recommended company under the "View Recommendation" section. By clicking on this option, the student can see the list of suggested internships. Clicking on any of these internships allows the student to view both the details of the opportunity and visit the company's profile to access any additional information. The student can access CV recommendations by clicking on the "CV Recommendations" option. Upon doing so, the system displays the student's current CV, accompanied by suggestions for improvement in each section. The student navigates through the "CV Recommendations" section to review and act upon these suggestions. The student may use the "Ask Questions" bar to request additional details about specific recommendations. Based on the student's input, the system updates and refines the suggestions for each section of the CV. When the student finishes making changes to a particular section, they can click "Done," prompting the system to provide updated suggestions for the remaining sections.

  Once the student has reviewed and improved all sections, they confirm the revised version of the CV by clicking "Confirm." The system then updates the student's CV with the new improved version.

- For companies: The platform recommends the CVs of students who best match the requirements of their internship offers. When a company selects an internship opportunity from the "Incoming Internships" section and clicks the "Explore" button, the platform displays a curated list of matching students. From this list, the company can click on a student's name to access their CV and detailed profile. The company can receive suggestions to improve their internship offers by navigating to the "Recommendations" section. In this section, the system displays the selected internship offer along with suggestions for improving each part of it. The company can use the "Ask Questions" bar to request additional details or clarification about specific suggestions. Based on the company's input, the system refines and updates the recommendations for each section of the offer. After reviewing and making changes to a specific section, the company clicks "Done," prompting the system to generate updated suggestions for the remaining sections.

  Once all sections of the internship offer have been reviewed and improved, the company confirms the revised version by clicking "Confirm." The system then updates the company's internship offer with the new improved version.

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Selection process This function allows companies to manage the phases following contact with students. The company can receive applications either through platform recommendations or direct requests from students. In the first case, they must click on "Explore", while in the second case, they must click on "Requests". Once either option is selected, they will see a list of students (either those recommended or those who applied independently). From this list, the company can click on any student they wish. After selecting a student, the company will be directed to student's CV. Once reviewed, they can return to the list, where they must choose between clicking "Accept" or "Reject" next to the student's name.

- If "Reject" is selected, the student's request will be removed from the previous page's list, and the student will receive a notification of the rejection.
- If "Accept" is selected, the company will be taken to a new screen where they must enter the necessary details for the interview, and the student will receive a notification of the acceptance.

Interview management This function is designed for companies to manage the interview process with candidates. After completing the selection process, the company must input all necessary details for the interview. These details include:

- Whether the interview will be remote or in person.
- The date, time and location, which could either be a physical address or a web link.
- The deadline by which the student must respond to the invitation.

Additionally, the company has the option to attach a custom questionnaire for the student to complete before the interview. Once all details are filled in, the company clicks the "Confirm" button, which sends the interview invitation to the student. The student must then either accept the invitation or decline it, providing an option to request a reschedule. The process then follows one of these paths:

- If the student accepts the interview, the company receives a notification confirming the acceptance. If a questionnaire was attached, the company also receives the student's responses along with the confirmation.
- If the student refuses, the company receives a notification of the refusal and the name of the student in question is eliminated from the list of candidates for the relevant internship.
- If the student asks to reschedule the interview because he is not available in the proposed one, the company receives a rescheduling notification and sends a new interview proposal to the student through the "reschedule" section, where the company will have to select the name of the student, select the internship in question, and enter the new date/time for the interview.

This function also enables the company to handle post-interview actions. After the interview has taken place, the company must communicate the final decision to the student. This involves sending one of the following:

- A hiring notification if the interview was successful.
- A rejection message if the interview did not meet expectations. The rejection message includes a brief comment about the interview, providing constructive feedback to the student.

If the student fails to respond by the deadline, the company can either extend the deadline or cancel the invitation.

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Interviews participation This function is reserved for students. If a student is selected for an internship by a company, they see the acceptance notification via the notifications icon. Clicking on it opens a sliding popup that displays all the acceptances received from various companies. By clicking on one of these notifications in the "My interview" section, the student can view all the details about the interview provided by the company. Here, the student can click either "Accept" or "Decline."

- If they click "Decline", a "Comments" section is displayed where the student can suggest an alternative date, time, or location for the interview. The interview request is removed from their notifications and the company is notified of the refusal.
- If they click "Accept," they are presented with a questionnaire to complete. Once completed, the student must click "Submit" and the completed questionnaire will be sent back to the company.

The student must respond to the interview request by the deadline decided by the company.

Monitoring of internships This function is available exclusively for universities. Universities can monitor the progress of internships, address any issues or reports, and intervene if necessary, such as managing complaints or terminating an internship. The university can check if a student is engaged in an internship by clicking on the "View Students" option. Once clicked, they are directed to a page listing all the students from that university who are registered on the platform. For each name, clicking on it will take them to the student's profile. On student's profile, the university can see the "Current Internship" section:

- If the student is not engaged in any internship, the message "This student is currently not engaged in any internship" will appear.
- If the student is participating in an internship, a link to the internship on company's page will be displayed, along with a "Feedback and Complaints" section.

By clicking on the "Feedback and Suggestions" section, the university can read all the notes the student has submitted regarding their internship experience. After reviewing these notes, the university must decide whether the student should continue with the internship or terminate it.

Feedback and Suggestions This function is available to students, companies and universities.

- For students: On the platform, they see the "Feedback and Suggestions" option. Clicking on it provides two choices:
    1. "About the Internship": The student is directed to a screen that tracks their various comments throughout the internship. Here, they can record both positive and negative notes about their ongoing work. The screen displays a list of comments, including the date and time they were written. To add a new comment, the student clicks the "+" icon, which opens a text bar where they can write their note. Once written, clicking "Submit" adds the comment to the list, which is also visible to their university.
    2. "About the Platform": The student is directed to a page with various questions about the functionality of the website. They can respond to these questions, and upon completion, clicking "Submit" sends their answers to the platform's system. The system analyzes the feedback to implement potential improvements to the site and improve the recommendation system.
- For companies: on the platform, companies see the "Feedback and Suggestions" option. Clicking on it directs them to a page with various questions about the functionality of the website. After completing these questions, clicking "Submit" sends their responses to the platform's system. The system analyzes the feedback to implement potential improvements to the site and improve the recommendation system.

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- For universities: as for companies, on the platform, universities see the "Feedback and Suggestions" option. Clicking on it directs them to a page with various questions about the functionality of the website. After completing these questions, clicking "Submit" sends their responses to the platform's system. The system analyzes the feedback to implement potential improvements to the site and improve the recommendation system.

End of contract This function denotes the completion of the matching process and the internship, including the official termination of the collaboration between the student and the company. This feature is available for all three types of users:

1. For students: Through their profile, students can close their collaboration with the company by clicking on the internship they are participating in, which they can view under the "View My Internships" section. Here, they can see both past and ongoing internships. Next to the title of the ongoing internship, there is the option "Close Collaboration." Clicking on it redirects them to a screen where they must answer two questions:
    - "Why are you ending the contract?"
    - "Would you like to provide any suggestions to improve the platform's predictions?" (optional)
    - "Are you sure you want to give up the internship?" Clicking "No" closes the request, and the student is redirected to the main screen. Clicking "Yes" shows the message "Your internship X with company Y is concluded." The platform then notifies both the company and the university about the student's decision to withdraw from the internship.
2. For companies: Through the list of their ongoing internships, visible from their profile under the "Ongoing Internships" section, companies can click on one to see the students involved. Next to each student's name, there is the option "Dismiss." Clicking on it redirects the company to a screen with questions similar to those asked to students:
    - "Why are you ending the contract?"
    - "Would you like to provide any suggestions to improve the platform's predictions?" (optional)
    - "Are you sure you want to terminate the contract with this student?" Clicking "No" closes the request, and the student is redirected to the main screen. Clicking "Yes" displays the message "Your internship X with student Y is concluded." The platform then notifies both the student and the university of the dismissal.
3. For universities: After reading various feedback and complaints from a student regarding an internship, the university can decide to close the contact. To do so, the university must go to the student's profile, where the "View Ongoing Internships" option appears. Once clicked, the university can view the internship the student is participating in. Next to the internship title, the university must click on the "Close Contract" option. Clicking on it redirects them to a screen with questions similar to those for companies and students:
    - "Why are you ending the contract?"
    - "Would you like to provide any suggestions to improve the platform's predictions?" (optional)
    - "Are you sure you want to close the contract?" Clicking "No" closes the request, and the university is redirected to the main screen. Clicking "Yes" shows the message "Contract successfully closed." The platform then notifies both the student and the company of the closure.

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2.3 User characteristics

There are three types of user that interact with the platform: students, universities and companies.

2.3.1 Student

The student can register and log in to the platform, upload their CV, search for internships that align with their skills, interests, and career goals. He can have access to suggestions to improve his CV and monitor the status of the application. He can wait for the recommendation, which he can decide whether to accept. If he accepts, he will be interviewed by the company in question. He can provide feedback and suggestions, as well as complaints.

2.3.2 Company

The company can register and login to the platform. It can publish internship offers, find suitable candidates based on specific requirements (technical skills, soft skills, etc.), manage the selection process and collect structured feedback. The company can accept or reject the recommendation proposed by the system and if it accepts, it has to manage the interviews and must evaluate whether the student is suitable for their requests.

2.3.3 University

The university can register and login to the platform. It can monitor internships to ensure they are in line with academic standards and manage issues or complaints that require action, such as the suspension of an internship. Forward can ensure that students have adequate tools to present themselves to companies.

2.3.4 Unregistered users

The unregistered user can are all users who are neither logged in as a student or an university or a company, their actions are restricted to only signing up, registering and browsing the platform. All unregistered users can log in or sign up to become either

2.4 Assumptions, dependencies and constraints

2.4.1 Regulatory policies

It is important to outline the privacy and security policies that protect the users of the platform. This goal has been achieved through the following platform design choices:

- **Students**: can view all available internships but cannot access the private information of the companies offering them.
- **Companies**: can only view the students recommended by the platform for each internship they offer, as well as those who have applied to participate in an internship. However, they can only access the students' CVs, not other personal information.
- **Universities**: have access to student data but cannot access private information of companies. Additionally, universities have full access to the selection process, allowing them to monitor and oversee all its stages.
- **Students and companies**: can only manage the phases of the selection process that pertain to their respective roles.

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2.4.2 Domain Assumptions

The domain is based on the following assumptions. These represent properties or conditions that the system will consider as given. Verifying them is essential to ensure that the platform operates correctly.

[D1] Users have access to devices connected to the Internet to use the platform.

[D2] Students upload CVs in a readable and standard format and must keep them updated at all times.

[D3] Companies must provide comprehensive internships and adequately describe them.

[D4] The student must attend a university that is registered on the platform.

[D5] Universities will act as active supervisors, but will not directly deal with the selection of candidates.

[D6] The data provided by the users must be accurate and reliable.

[D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates.

[D8] Students cannot apply for an internship after the deadline for the offer set by the company.

[D9] Students are not allowed to accept two or more internships that overlap over time.

[D10] Students are not allowed to read feedback on other students' internships.

[D11] Companies are not allowed to read student feedback on internships.

[D12] Users can only modify and/or view their own personal data.

[D13] Students must have a digital identity system.

[D14] The student is not included in a company's recommendation list for an internship if, during the period of the internship in question, they are already engaged in another one.

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3 Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interface

The S&C user interface will be a web page that will be accessed using a web browser. The Web page will be designed to be simple and easy to use with support for multiple screens and devices. Here, there are some examples of the main user's interfaces.

Figure 2: First Web Site Interface

Figure 3: Student Internships Recommendations Interface

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Figure 4: Student Internships Requests Interface.

Figure 5: Company Students Recommendation Interface.

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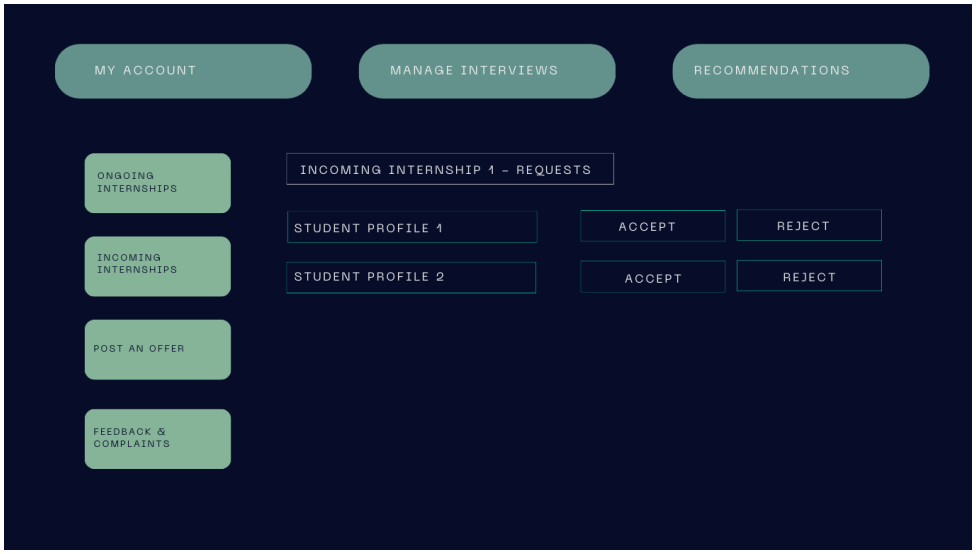

Figure 6: Company Student Requests Interface.

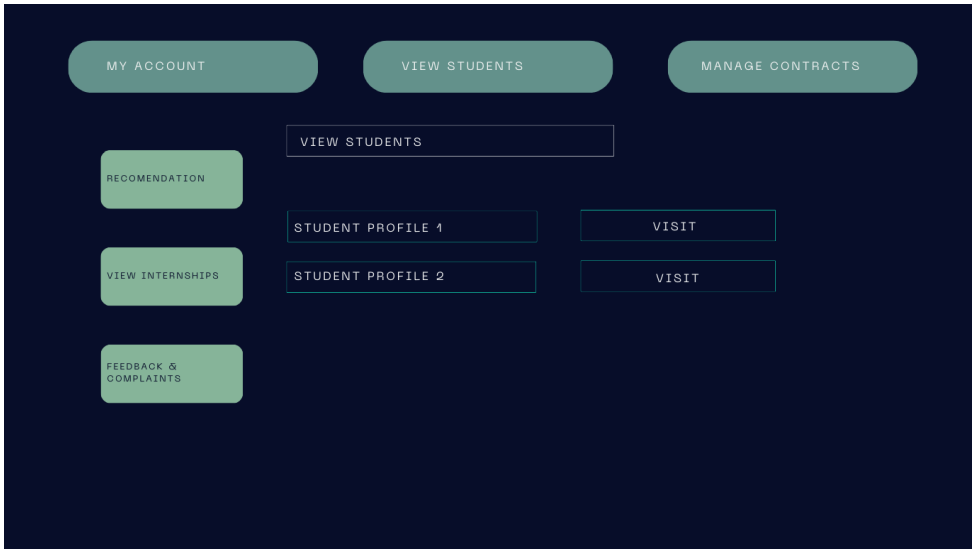

Figure 7: University First Interface

3.1.2 Hardware Interface

The platform requires a computer with a web browser and an internet connection to access the S&C web page.

3.1.3 Software Interface

This section describes the software interfaces that the system will use to provide the necessary functionality. These interfaces include mechanisms to verify the authenticity of users and generate personalized recommendations for students and companies.

University Authentication API The system will integrate with the university's authentication service to verify that a user (student or educator) is officially registered at the university. This ensures security, privacy, and compliance with institutional policies. The API will validate the user's credentials (e.g. university-provided username and password) against the university's internal database of autho-

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rized users. Upon successful verification, the API will return the user's status (e.g., active student, staff) and relevant details, such as the university ID or email.

Recommendation System Interface The platform will feature a recommendation engine that generates suggestions for both students and companies. These recommendations aim to improve the user experience by providing personalized guidance and opportunities.

3.1.4 Communication Interface

All the communications between S&C, the external interfaces, and the user will be done using the HTTPS protocol. (e.g., notifications, messaging, or protocols used)

3.2 Functional Requirements

List the specific functionality expected from the platform.

- **For All Users:**
  [R1] The system allows users to sign up.
  [R2] The system allows users to log in.
  [R3] The system allows users to log out.
  [R4] The system allows users to reset their password.
  [R5] The system sends automatic notifications to update all parties on relevant changes.
  [R6] The system allows users to provide feedback about the platform.
  [R7] The system allows users to delete their own account.

- **For Students (STs):**
  [R8] The system allows students to upload and manage their CVs.
  [R9] The system provides suggestions to students for improving their CVs.
  [R10] The system allows students to interrupt an internship with a company at any time.
  [R11] The system allows students to browse available internships.
  [R12] The system suggests internships to students based on their expertise and interests.
  [R13] The system allows students to accept, refuse or request the reorganization of interviews proposed by companies.
  [R14] The system allows students to request contact with a company for an internship.
  [R15] The system allows students to accept or decline an interview.
  [R16] The system allows students to view and complete questionnaires provided by companies.
  [R17] The system allows students to accept or reject an internship offer.
  [R18] The system allows students to provide feedback about an internship.
  [R19] The system allows students to edit their CV.

- **For Companies (COs):**
  [R20] The system allows companies to manage internship offers.
  [R21] The system provides suggestions to companies for refining their internship descriptions.
  [R22] The system allows companies to edit their internship descriptions.
  [R23] The system informs companies when candidates that match their needs are available.
  [R24] The system allows companies to search for students for an internship independently.
  [R25] The system allows companies to request contact with a student for an internship.
  [R26] The system allows companies to provide questionnaires to students.
  [R27] The system allows companies to review completed questionnaires from students.
  [R28] The system allows companies to schedule and manage interviews with students.
  [R29] The system allows companies to monitor the progress of internships.

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[R30] The system allows companies to accept or reject a student for an internship.
[R31] The system allows companies to interrupt an internship with a student at any time.

- **For Universities (UNs):**
  [R32] The system allows universities to monitor the status of ongoing internships.
  [R33] The system allows universities to read student feedback on an internship.
  [R34] The system allows universities to interrupt an internship in case of complaints and negative feedback from students.

- **System-Level Functionalities:**
  [R35] The system verifies the veracity of the information entered by students, companies and universities who register.
  [R36] The system supports the recommendation process by using statistical analyzes to match students and internships.
  [R37] The system collects feedback from students, companies and universities to improve the recommendation mechanisms and optimize the system.
  [R38] The system creates contacts between students and companies after mutual acceptance.
  [R39] The system starts and manages the internship selection process.

3.2.1 Use Case Diagrams

Provide graphical representations of the system's interactions with users and other systems.

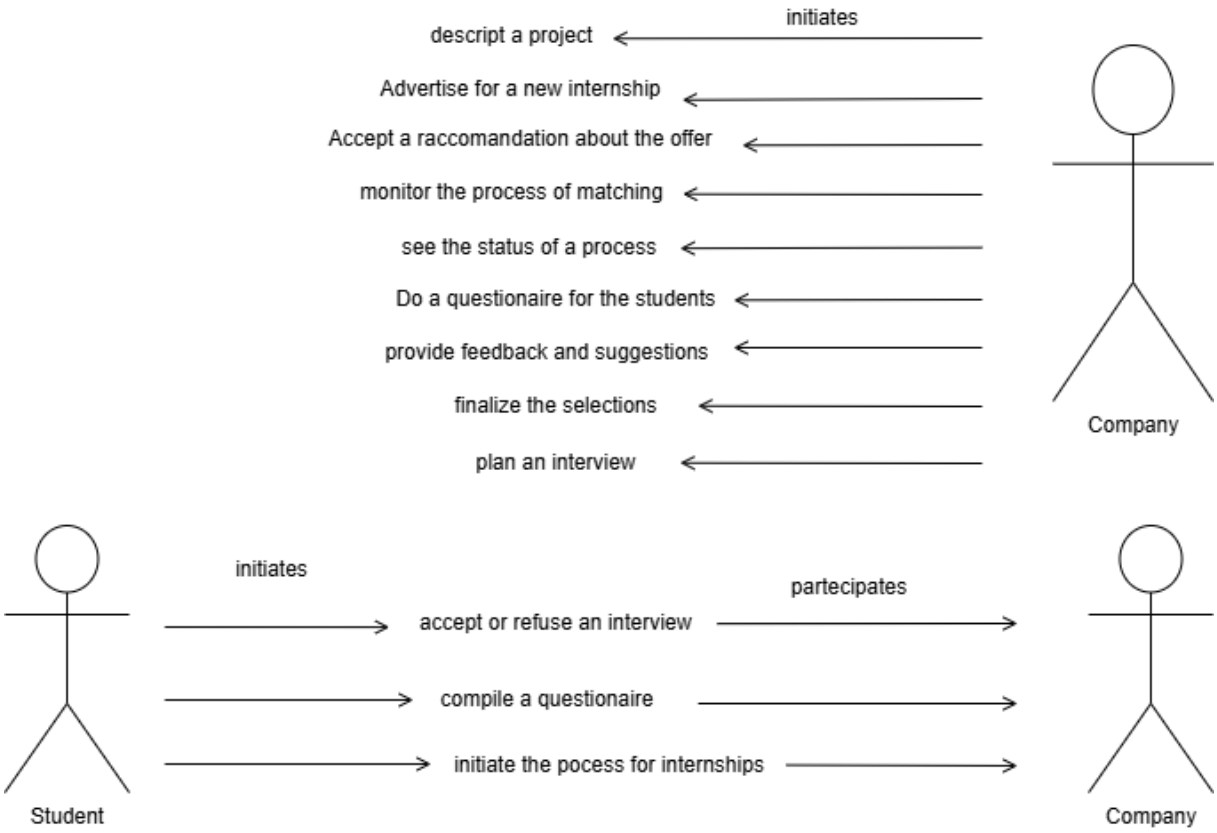

Figure 8: Use case Diagram 1

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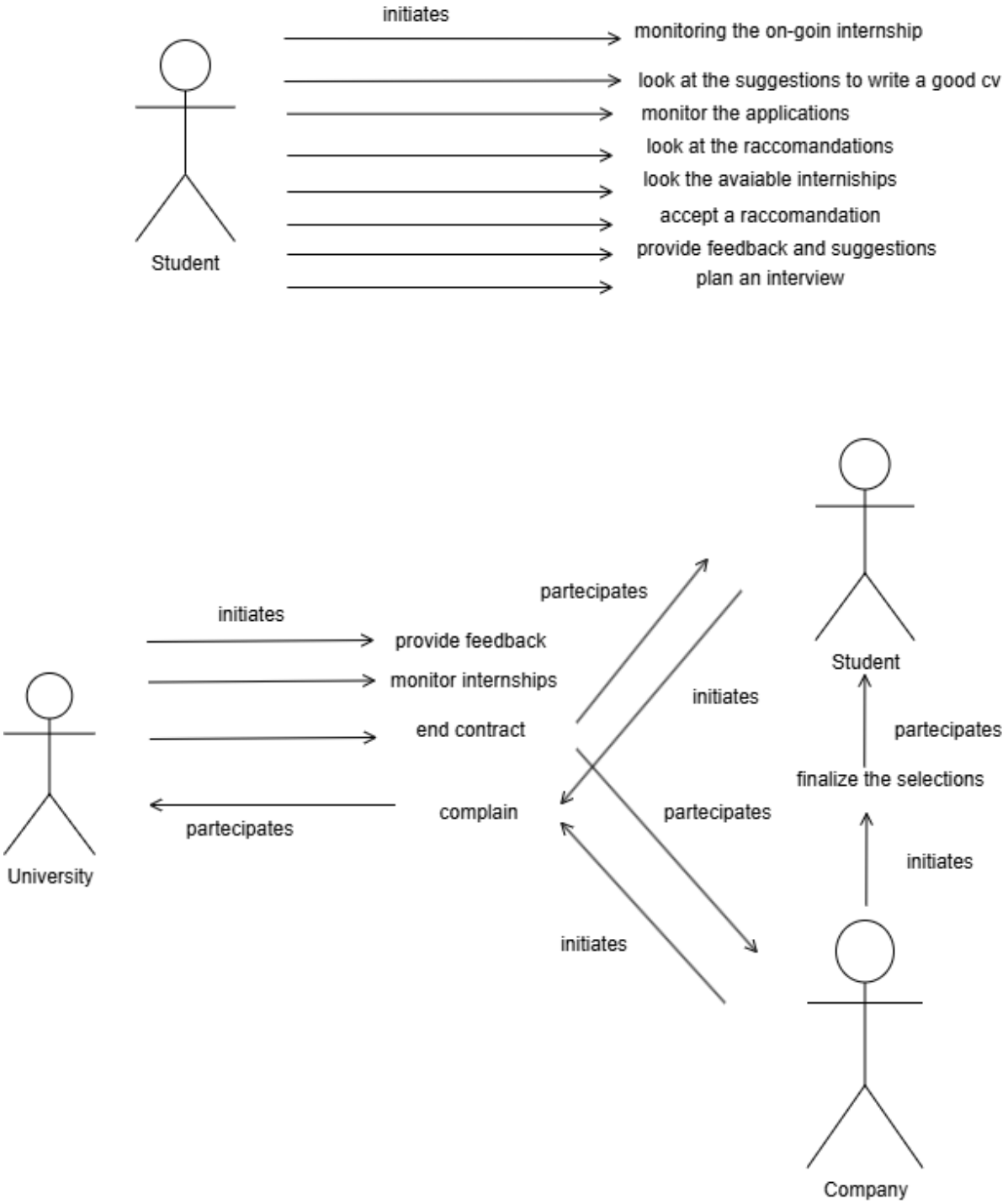

Figure 9: Use case Diagram 2

3.2.2 Use Cases

Describe the detailed use cases for each functionality, including actors, triggers, preconditions, main success scenarios, and exceptions.

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Name	**Student Registration Process**
Actors	Student, University, System
Entry Condition	The student has accessed the platform.
Event Flow	a) The student clicks on the "For Student" option. b) The system displays the Student options for login. c) The student selects the "Register" option. d) The system prompts the student to enter the following details: • First name, last name, address, city, postal code, phone number, institutional email, and a secure password. e) The student clicks "Proceed" and provides information about their academic program, including: • University, degree program, and current academic year. f) The system requests two-factor authentication via the University's portal to verify the academic details. g) Once authentication is successful, the student is redirected to upload their CV. h) The registration process is complete after the CV is uploaded.
Exit Condition	The student is successfully registered and can log in to the platform.
Exception	f) The academic details do not match the University records. h) The CV upload fails.

Table 2: Student Registration Process

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Name	**Company Registration Process**
Actors	Company
Entry Condition	The company has accessed the platform.
Event Flow	a) The student clicks on the "For Company" option. b) The system displays the Company options for login. c) The company selects the "Register" option. d) The system prompts the company to enter the following details: • Official name, industry sector, VAT number, tax code, main office address, and company website. e) The company clicks "Proceed." f) The system verifies the provided information before granting access to the platform.
Exit Condition	The company is successfully registered and can log in to the platform.
Exception	d) The VAT number or tax code is invalid. f) The system fails to verify the provided details.

Table 3: Company Registration Process

Name	**University Registration Process**
Actors	University
Entry Condition	The university has accessed the platform.
Event Flow	a) The student clicks on the "For University" option. b) The system displays the Company options for login. c) The university selects the "Register" option. d) The system prompts the university to enter the following details: • Official name, VAT number, institutional code (if applicable), registered office address, type of institution, institutional email, phone number, representative's details, official website, and a secure password. e) The university uploads the founding charter or official document confirming its legitimacy. f) The system verifies the submitted documents.
Exit Condition	The university is successfully registered and redirected to the home page.
Exception	d) The university's VAT number or institutional code is invalid. f) The uploaded document is invalid or unverifiable.

Table 4: University Registration Process

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Name	**Login Process**
Actors	User (Student, Company, University), UniversitySystem
Entry Condition	The user is registered in the system.
Event Flow	a) The user navigates to the login page. b) The user enters the required login credentials: • Email • Password c) If the credentials are valid: • The user is logged in. • The system redirects the user to the home page.
Exit Condition	The user is successfully logged in and redirected to the home page.
Exception	b) The email is not registered. b) The password is incorrect.

Table 5: Login Process

Name	**Upload CV Process**
Actors	Student
Entry Condition	The student is logged into the platform.
Event Flow	a) The student navigates to the "My Account" section. b) The student clicks on the "Upload CV" section of the platform. c) Once the CV is uploaded, the student clicks on "Confirm".
Exit Condition	If the CV is successfully uploaded, the system confirms the update, and the student's CV is saved.
Exception	c) The uploaded file is in an unsupported format. c) The file exceeds the allowed size. c) There is a system error during the upload process.

Table 6: Upload CV Process

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Name	**Internship Offer Process**
Actors	Company, Student
Entry Condition	The company is registered and logged into the platform.
Event Flow	a) The company navigates to the "Post Internship" section of the platform. b) The company enters the required details for the new internship: • Start date • End date • Description of the internship c) The system validates the entered details. d) If the details are valid, the new internship is posted on the platform. e) After the internship is posted: • **Student-side:** If the internship matches characteristics of student CVs, the list of suggested internships for those students is updated. • **Company-side:** The company's "My Internships" page is updated to include the new internship. For the new internship, the list of suggested students (based on CV matches) is also updated.
Exit Condition	The new internship is successfully posted, and the system updates the suggestions for both companies and students.
Exception	c) The start date is earlier than the current date. c) The end date is earlier than the start date. c) The description does not meet the system's requirements (e.g., too short or invalid content).

Table 7: Internship Offer Process

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Name	**Recommendation - Student about Internships**
Actors	Student, Company
Entry Condition	The student is registered and logged into the platform.
Event Flow	a) The student navigates to the "View Recommendations" section. b) The system displays a list of open internships that match the student's profile and interests. c) The student clicks on an internship opportunity. d) The system displays detailed information about the internship and the company. e) The student returns to the list of open internships. f) The student clicks "Apply" next to the selected internship opportunity.
Exit Condition	The system notifies the company that the student has applied for the internship. The system refreshes the "Recommendations" page and removes the applied internship from the list.
Exception	b) If no matching internships or candidates are found, the system displays a message: "No recommendations available at this time. Please check back later or update your preferences."

Table 8: Selection Process - Recommendation for Students

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Name	**Recommendation - Student about CV**
Actors	Student
Entry Condition	The student is registered and logged into the platform.
Event Flow	a) The student navigates to the "CV Recommendations" section. b) The system displays the student's current CV along with suggestions for improvement for each section. c) The student can use the "Ask Questions" bar to request more details about specific suggestions. d) The system updates and refines the suggestions for each section of the CV based on the student's input. e) The student clicks "Done" for a particular section of the CV after making changes. f) The system provides updated suggestions for the remaining sections of the CV. g) The student confirms the improved version of the CV by clicking "Confirm." h) The system updates the student's CV with the new version.
Exit Condition	The system successfully updates the student's CV with the new version.
Exception	d) If a mandatory section is left empty, the system will not accept the updates and will redirect the student back to the "Recommendations" page to address the issue. e) If the student does not confirm the changes, the system will not modify the CV and will maintain the current version.

Table 9: Recommendation - Student about CV

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Name	Recommendation - Company about the Internship Offer
Actors	Company
Entry Condition	The company is registered and logged into the platform.
Event Flow	a) The company navigates to the "Recommendations" section. b) The system displays the company's current internship offers. c) The company selects the internship offer they want to review. d) The system displays the selected internship offer along with suggestions for improving each section. e) The company can use the "Ask Questions" bar to request additional details about specific suggestions. f) The system refines and updates the suggestions for each section of the internship offer based on the company's input. g) The company clicks "Done" for a specific section of the offer after reviewing and making changes. h) The system generates updated suggestions for the remaining sections of the internship offer. i) The company confirms the revised version of the offer by clicking "Confirm." j) The system updates the company's internship offer with the new version.
Exit Condition	The system successfully updates the company's internship offer with the revised version.
Exception	f) If a mandatory section is left incomplete, the system will reject the updates and redirect the company back to the "Recommendations" page to address the missing information. g) If the company does not confirm the changes, the system will retain the current version of the offer without any modifications.

Table 10: Recommendation - Company about the Internship Offer

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Name	**Recommendation - Company about Students**
Actors	Company
Entry Condition	The company is registered and logged into the platform.
Event Flow	a) The company navigates to the "Incoming Internships" section. b) The system displays a list of open internships offered by the company. c) The company selects a specific internship offer. d) The system displays a list of student profiles that match the selected offer. e) The company clicks on a student's profile. f) The system displays the student's CV. g) If the company decides to proceed, it clicks the "Match" button to request a match with the student.
Exit Condition	The system updates the "Recommendations" page and removes the matched student's profile from the list. The student is notified about the match request.
Exception	f) If the student's CV is unavailable or corrupted, the system displays the message: "The selected student's CV is unavailable. Please try again later." g) If the student has already been matched for another internship, the system displays the message: "The student is no longer available for this internship." g) If there is a system error during the matching process, the system notifies the company with the message: "An error occurred while processing your request. Please try again."

Table 11: Recommendation Process - Company about Students

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Name	**Selection Process - Company**
Actors	Company, Student
Entry Condition	The company is registered and logged into the platform.
Event Flow	a) The company navigates to the "Incoming Internships" section. b) The system displays the list of open internship opportunities posted by the company. c) The company selects the "Requests" option for a specific internship. d) The system displays a list of student profiles who have applied for the selected internship. e) The company reviews the student profiles and has two options: • **Accept**: The company will be put in contact with the student. • **Refuse**: The company will not be put in contact with the student.
Exit Condition	The "Requests" page is updated to remove the accepted/refused student. If the company accepts a student's application, the system notifies the student that they are now in contact with the company.
Exception	d) If there are no applications in "Requests" section, the system displays: "No applications available at this time." e) If the system fails to send a acceptance (rejection) notification to a student, an error message is logged, and the company is notified: "Failed to notify the student of acceptance (rejection). Please try again."

Table 12: Selection Process - Company

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Name	**Selection Process - Student**
Actors	Company, Student
Entry Condition	The student is registered and logged into the platform.
Event Flow	a) The student navigates to the "New Requests" section. b) The system displays a list of open internship opportunities from companies that are interested in matching with the student. c) If the student clicks on an "Internship Opportunity," the system displays the company profile and detailed information about the internship. d) The student has two options next to the selected "Internship Opportunity": • **Accept**: The student will be put in contact with the company. • **Refuse**: The student will not be put in contact with the company.
Exit Condition	The "New Requests" page is updated to remove the accepted/refused internship opportunity. If the student accepts the company's offer, the system notifies the company that they are now in contact with the student and shares the student's personal information.
Exception	d) If the internship is no longer available, the system displays the message: "The internship is no longer available."

Table 13: Selection Process - Student

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Name	Interviews Management
Actors	Student, Company
Entry Condition	The company has completed the candidate selection process and has identified a student to invite for an interview.
Event Flow	a) The company selects a student and clicks on the "Schedule Interview" option. b) The company fills in the interview details, including:type (remote or in-person), date, time, and location (physical or online link), deadline for the student to respond and (optional) a questionnaire for the student to complete. c) The company clicks "Confirm," sending the interview details to the student. d) The student receives the invitation and either: • **Accepts**: the company is notified of the acceptance and if a questionnaire was attached, the company also receives the completed responses. • **Decline**The platform notifies the company of the student's refusal and the student is removed from the candidate list for the internship. • **Request Reschedule**: the system notifies the company of the rescheduling request, the company navigates to the "Reschedule" section, selects the student and internship, and proposes a new date/time for the interview.Then the system sends the new proposal to the student. e) After the interview, the company communicates the result to the student by sending either: an hiring notification or A rejection message with a brief comment on the interview.
Exit Condition	The interview process is concluded, and the student is either: 1. Selected for the internship and notified. 2. Rejected with feedback. 3. Removed from the candidate list due to a declined invitation or failure to respond.
Exception	b) If the company fails to provide necessary details (e.g., missing date or location), the system prompts the company to complete all required fields before confirming the invitation. c) If there are technical issues (e.g., inability to send notifications), the company retries sending the invitation or contacts platform support for assistance. d) If student fails to respond within the deadline, the company can cancel the invitation or extend the deadline and notify the student again.

Table 14: Interviews Management

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Name	Interviews Participation
Actors	Student, Company
Entry Condition	The student has received one or more interview acceptance notifications from companies.
Event Flow	a) The student clicks on the notifications to view their notifications. b) The system displays a sliding popup listing all interview acceptance notifications received from companies. c) The student navigates to the "My Interview" section by selecting one of the notifications. d) The system displays the details of the interview provided by the company. e) The student has two options: "Accept" or "Decline." f) If the student clicks "Decline," a "Comments" section is displayed where the student can suggest an alternative date, time, or location for the interview. g) The student fills in the comments and submits the suggestion, and the system notifies the company of the proposed changes. h) If the student clicks "Accept," the system presents a questionnaire for the student to complete. i) The student fills out the questionnaire and clicks "Submit." j) The system sends the completed questionnaire back to the company.
Exit Condition	The system successfully processes the student's decision: • If the student declines, the system sends the student's comments with proposed changes (if any) to the company. • If the student accepts, the completed questionnaire is sent to the company.
Exception	j) If the student does not complete the questionnaire, the system will not send it to the company. A message will be displayed: "You must complete every section of the questionnaire before submitting it."

Table 15: Interviews Participation

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Name	**Monitoring of internships**
Actors	University
Entry condition	The university is logged to the S&C platform
Event flow	a) The university goes to the "View Students" section. b) The system shows the university the list of registered students. c) The university selects a student from the list. d) The system redirects the university to the student's profile. e) The university enters the "Current Internships" section. f) The system shows the university the link to the internship on the company's page, if the student is engaged in an internship. g) The university clicks on the "Feedback and Suggestions" section. h) The system shows any notes written by the student on the internship he is carrying out. i) The university reviews the notes provided by the student regarding their internship experience. j) Based on the feedback, the university has to decide whether to allow the student to continue with the internship or terminate it.
Exit condition	The university decides whether the student continues or terminates the internship.
Exception	f) The selected student is not currently engaged for an internship, and the message "his student is currently not engaged in any internship" appears. h) The student has not provided any feedback or suggestions, leaving the university unable to make an informed decision.

Table 16: Monitoring of internships

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Name	**Feedback and Suggestion For Students** (About the Internship)
Actors	Student
Entry condition	The student is logged to the S&C platform
Event flow	a) The student selects "Feedback and Suggestions" b) The system offers the student the choice between "About the Internship" and "About the Platform". c) The student selects "About the Internship" d) The system shows the student the list of his previous comments. e) The student clicks on "+" to add a comment. f) The system opens a text bar where the student can write his note. g) The student writes the comment and clicks "Submit". h) The system updates the list of comments, visible to the university.
Exit condition	The new comment is successfully added to the list.
Exception	d) There are no comments made previously. h) If an error occurs (e. g. connection issue), the comment is not saved, and an error message is displayed.

Table 17: Feedback and Suggestion For Students (About the Internship)

Name	**Feedback and Suggestion For Students** (About the Platform)
Actors	Student
Entry condition	The student is logged to the S&C platform
Event flow	a) The student selects "Feedback and Suggestions" b) The system offers the student the choice between "About the Internship" and "About the Platform". c) The student selects "About the Platform" d) The system redirects the student to a page with various questions about the platform's functionality. e) The student answers the questions. f) The student clicks "Submit", which sends his responses to the platform's system. g) The system receives the responses. h) The system saves the feedback and sends it to the platform's analysis module for review and potential improvements..
Exit condition	The feedback is successfully submitted and stored in the platform's system for analysis.
Exception	g) and h) If an error occurs (e. g. connection issue), the feedback is not submitted, and an error message is displayed.

Table 18: Feedback and Suggestion For Students (About the Platform)

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Name	**Feedback and Suggestion For Companies**
Actors	Company
Entry condition	The company is logged to the S&C platform
Event flow	a) The company selects "Feedback and Suggestions" b) The system redirects the company to a page with various questions about the platform's functionality. c) The company answers the questions provided on the page. d) The company clicks "Submit", which sends his responses to the platform's system. e) The system receives the responses. f) The system saves the feedback and sends it to the platform's analysis module for review and potential improvements.
Exit condition	The feedback is successfully submitted and stored in the platform's system for analysis.
Exception	e) and f) If an error occurs (e. g. connection issue), the feedback is not submitted, and an error message is displayed.

Table 19: Feedback and Suggestion For Companies

Name	**Feedback and Suggestion For Universities**
Actors	University
Entry condition	The university is logged to the S&C platform
Event flow	a) The university selects "Feedback and Suggestions" b) The system redirects the university to a page with various questions about the platform's functionality. c) The university answers the questions provided on the page. d) The university clicks "Submit", which sends his responses to the platform's system. e) The system receives the responses. f) The system saves the feedback and sends it to the platform's analysis module for review and potential improvements.
Exit condition	The feedback is successfully submitted and stored in the platform's system for analysis.
Exception	f) If an error occurs (e. g. connection issue), the feedback is not submitted, and an error message is displayed.

Table 20: Feedback and Suggestion For Universities

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Name	**End of contract for Students**
Actors	Student
Entry condition	The student is logged to the S&C platform and has an ongoing internship listed under the "View My Internships" section.
Event flow	a) The student accesses the "View My Internships" section through their profile. b) The system redirects the student to a page with both past and ongoing internships. c) The student identifies their ongoing internship and clicks on the "Close Collaboration" option. d) The system redirects the student to a screen with the following questions: • Why are you ending the contract?" • Would you like to provide any suggestions to improve the platform's predictions?" (optional) • "Are you sure you want to give up the internship?" e) The student, at the last question, selects "Yes" to confirm the termination f) The system displays the message: "Your internship X with company Y is concluded." g) The system sends notifications to the company and to the university about the termination.
Exit condition	The collaboration between the student and the company is officially terminated.
Exception	e) If the student cancels the termination by clicking "No," the request is closed without further actions. f) If there are technical issues during the process (e.g., notification failure, server error): the termination may not be completed and the system informs the student of the error, prompting them to try again later.

Table 21: End of contract for Students

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Name	**End of contract for Companies**
Actors	Company
Entry condition	The company is logged to the S&C platform and has ongoing internships listed under the "Ongoing Internships" section.
Event flow	a) The company accesses the "Ongoing Internships" section through their profile. b) The system redirects the company to a page with the list of their ongoing internships. c) The company selects an internship and views the list of students participating in it. d) The company clicks on the "Dismiss" option, next to the desired student's name. e) The system redirects the company to a screen with the following questions: • Why are you ending the contract?" • Would you like to provide any suggestions to improve the platform's predictions?" (optional) • "Are you sure you want to terminate the contract with this student?" f) The company selects "Yes" to confirm the dismissal. g) The system displays the message: "Your internship X with student Y is concluded." h) The system sends notifications to the student and tovthe university about the termination.
Exit condition	The collaboration between the student and the company is officially terminated.
Exception	f) If the company cancels the dismissal by clicking "No," the request is closed without further actions. g) If there are technical issues during the process (e.g., notification failure, server error): the termination may not be completed and the system informs the company of the error, prompting them to try again later.

Table 22: End of contract for Companies

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Name	**End of contract for Universities**
Actors	University
Entry condition	The university is logged to the S&C platform and has accessed the student's profile and read feedback or complaints regarding the internship.
Event flow	a) The university navigates to the student's profile on the platform. b) The university clicks on the "View Ongoing Internships" option. c) The system displays the internship the student is currently participating in. d) The university clicks on the "Close Contact" option, next to the internship title. e) The system redirects the university to a screen with the following questions: • Why are you ending the contract?" • Would you like to provide any suggestions to improve the platform's predictions?" (optional) • "Are you sure you want to close the contract?" f) The university selects "Yes" to confirm the closure. g) The system displays the message: "Contract successfully closed." h) The system sends notifications to the student and to the company about the termination.
Exit condition	The contract between the student and the company is officially closed.
Exception	f) If the university cancels the closure by clicking "No," no further actions are taken, and the platform redirects back to the main screen. g) If there are technical issues during the process (e.g., notification failure, server error), the closure may not be completed and the system informs the university of the error, prompting them to try again later.

Table 23: End of contract for Universities

3.2.3 Sequence Diagrams

This section illustrates how objects interact in a time-sequenced manner during the execution of key processes.

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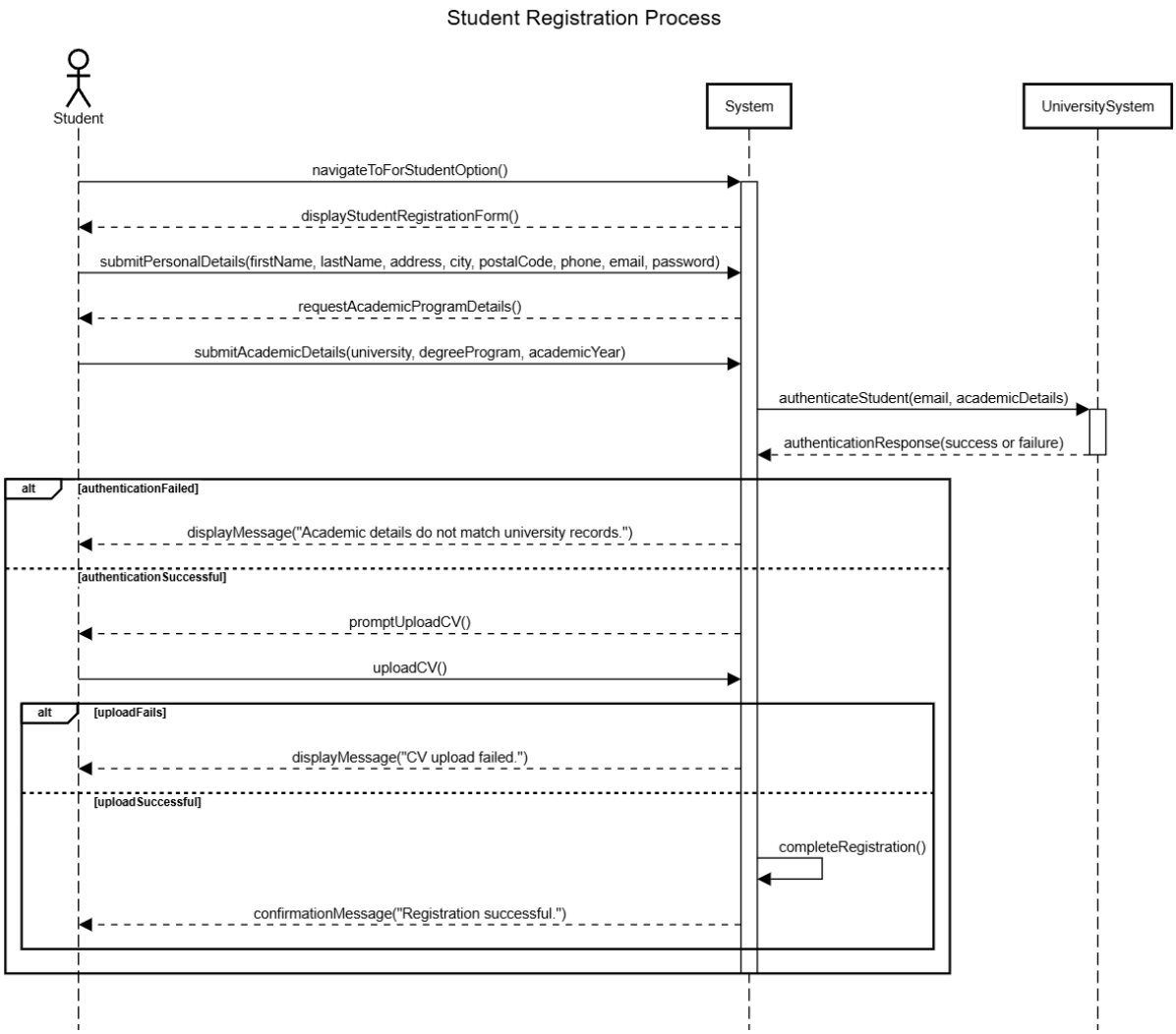

Figure 10: Sequence Diagram: Student Registration Process

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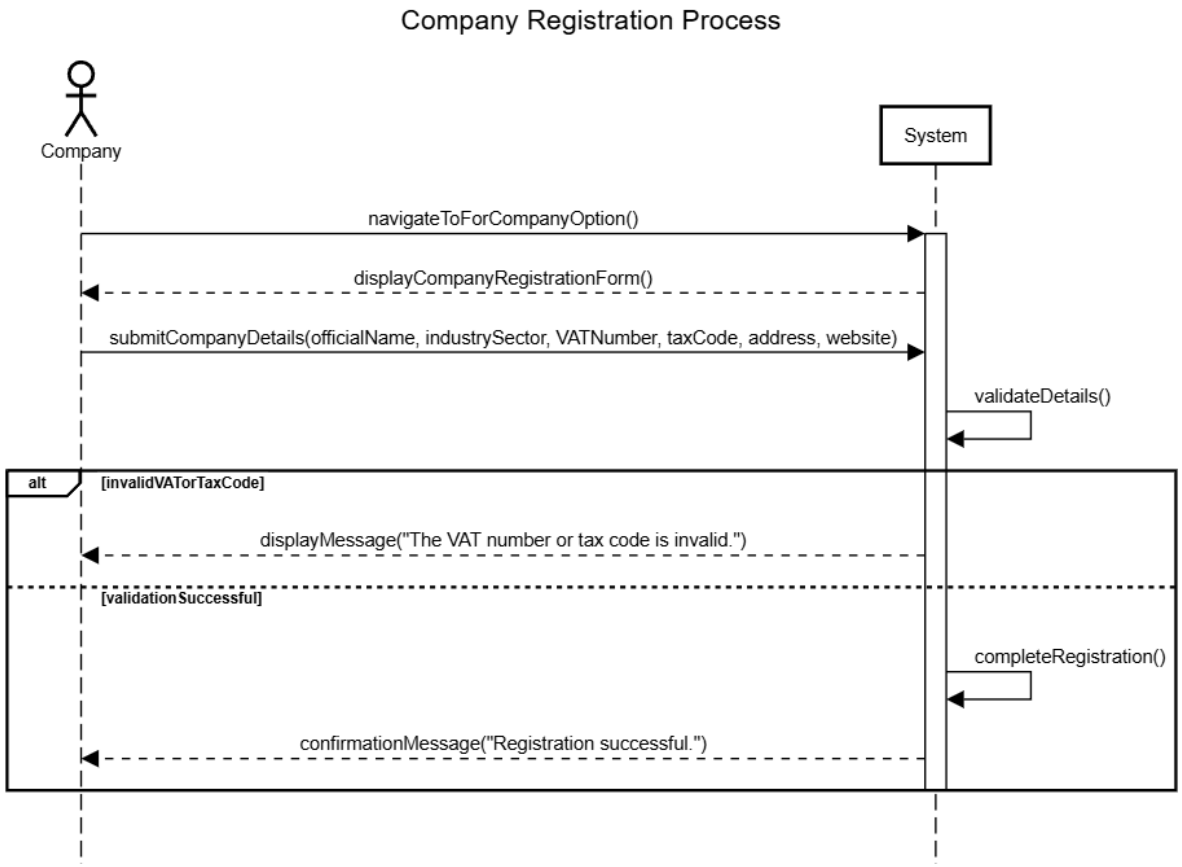

Figure 11: Sequence Diagram: Company Registration Process

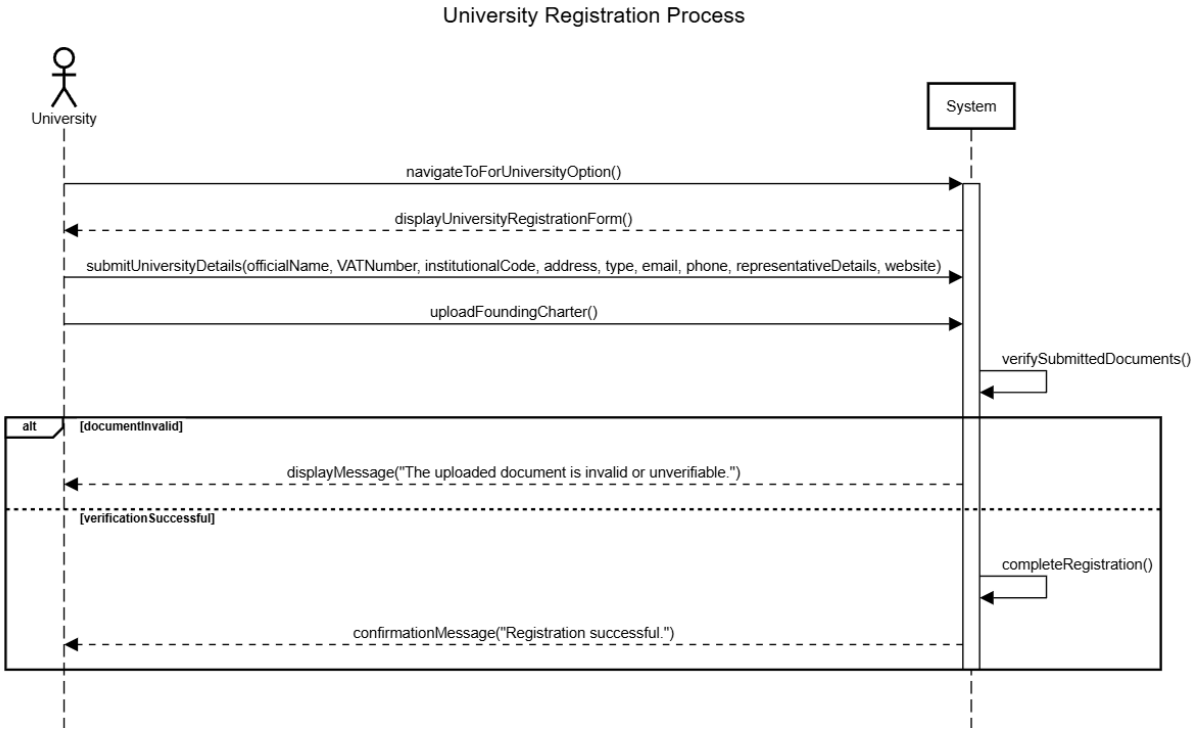

Figure 12: Sequence Diagram: University Registration Process

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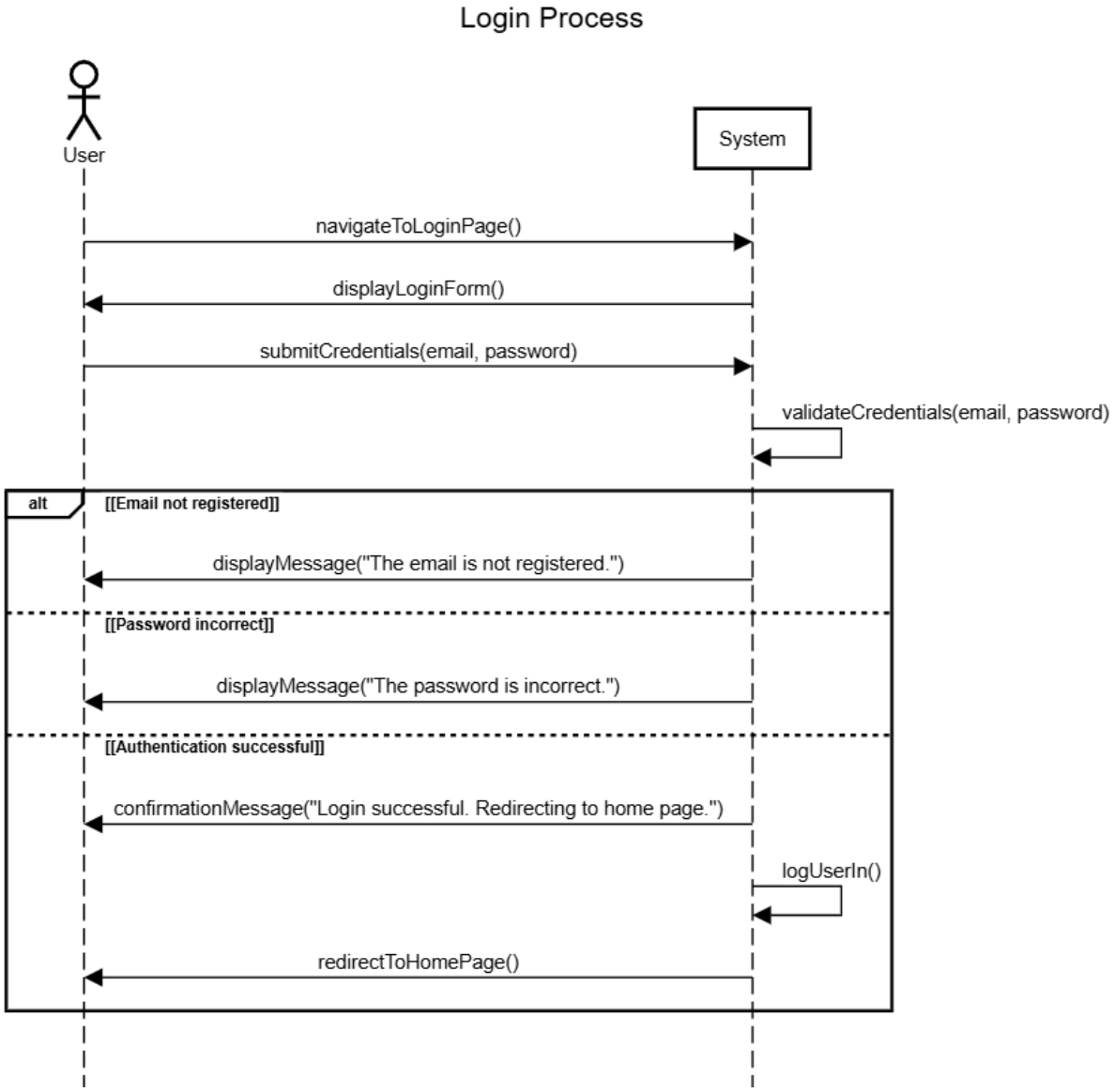

Figure 13: Sequence Diagram: User Login Process

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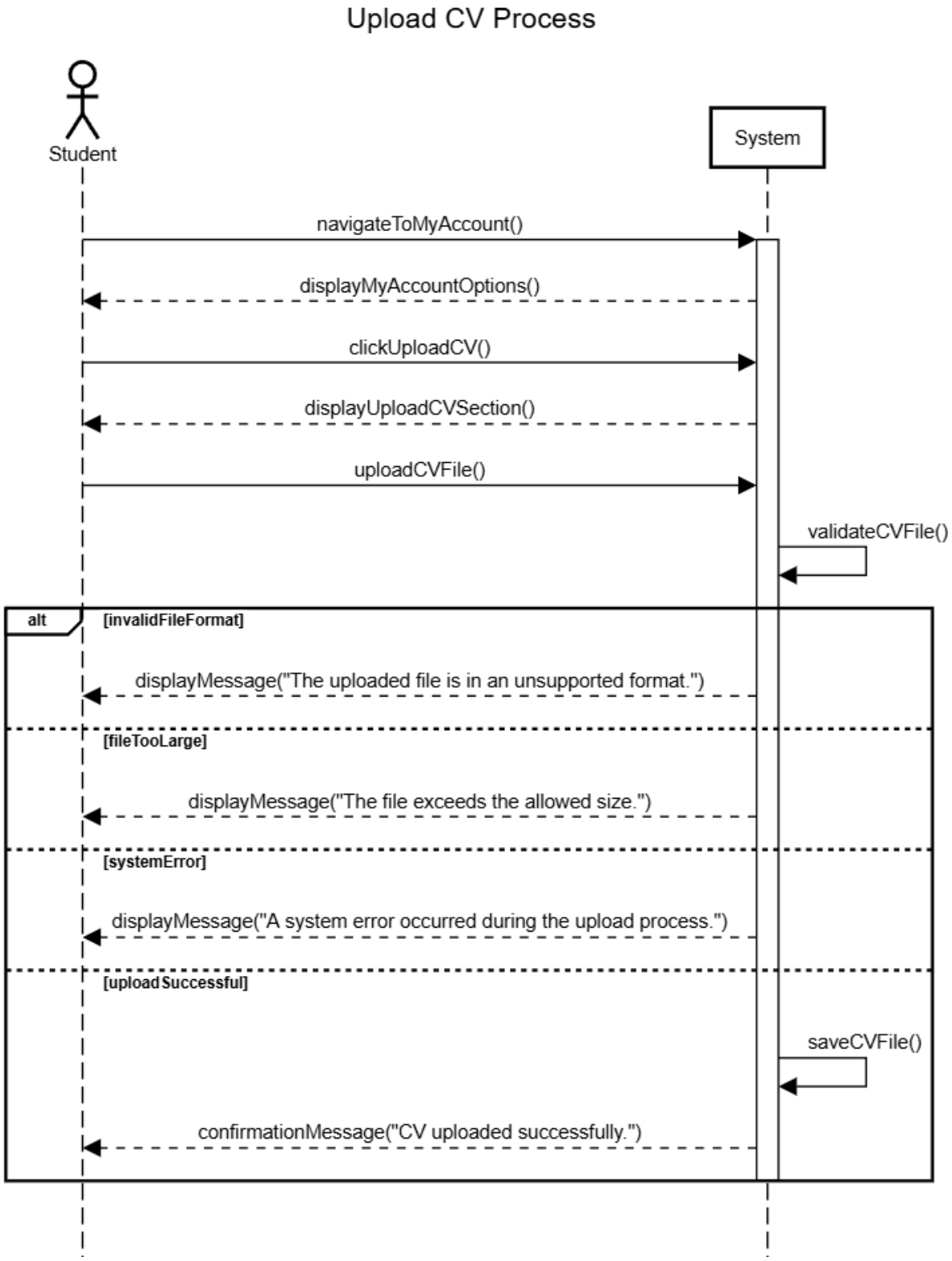

Figure 14: Sequence Diagram: Upload CV Process

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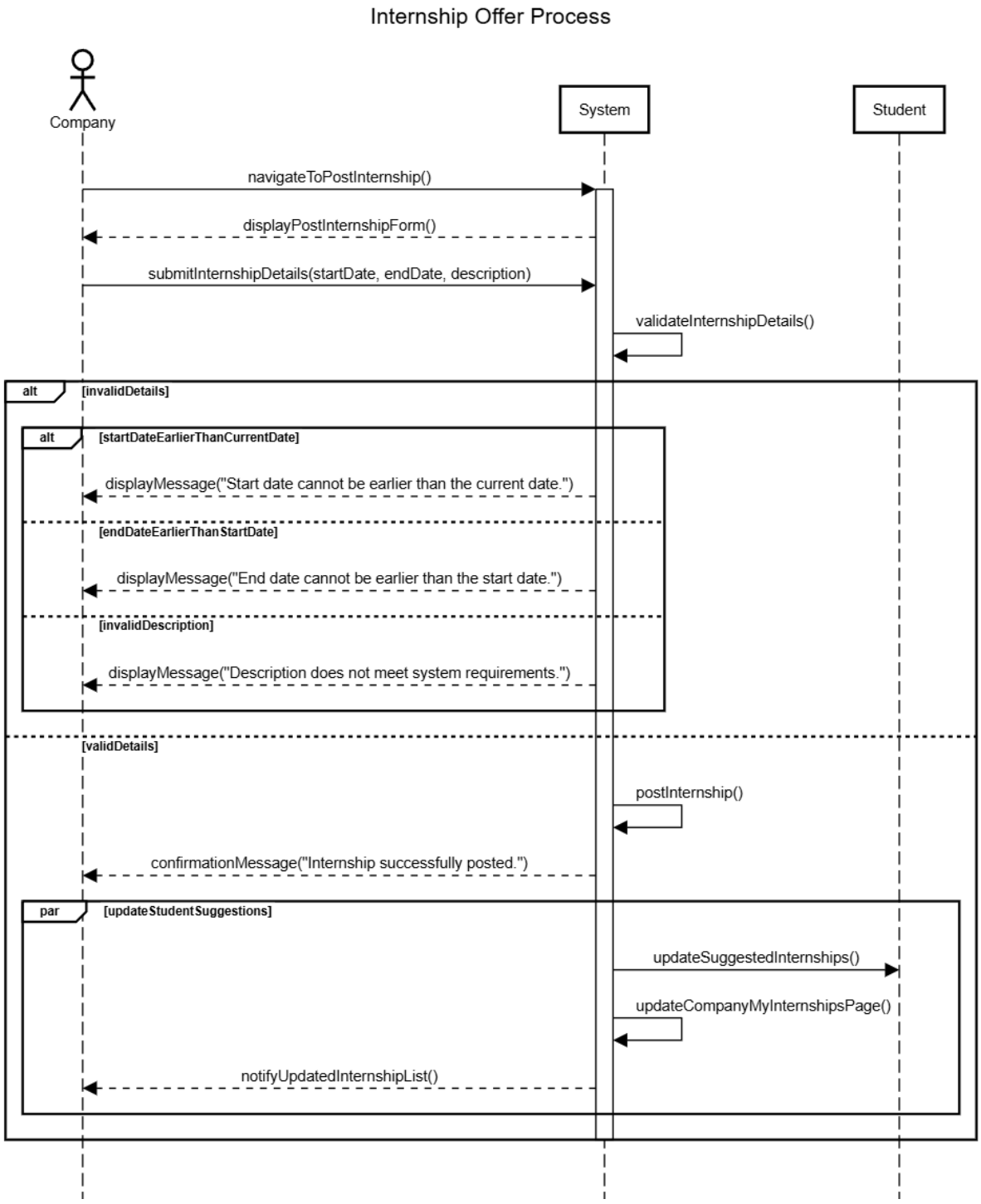

Figure 15: Sequence Diagram: Internship Offer Process

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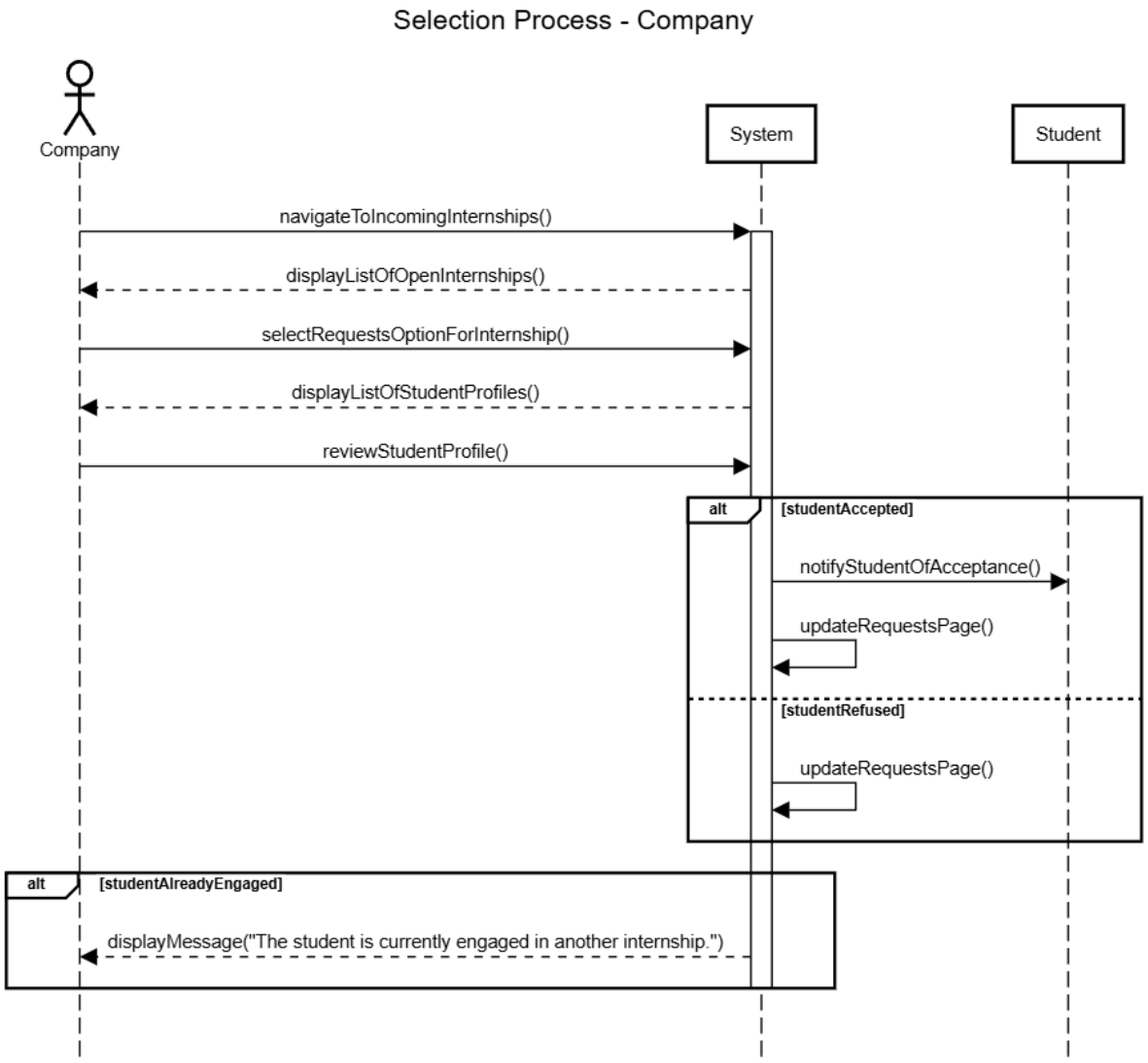

Figure 16: Sequence Diagram: Selection Process - Company

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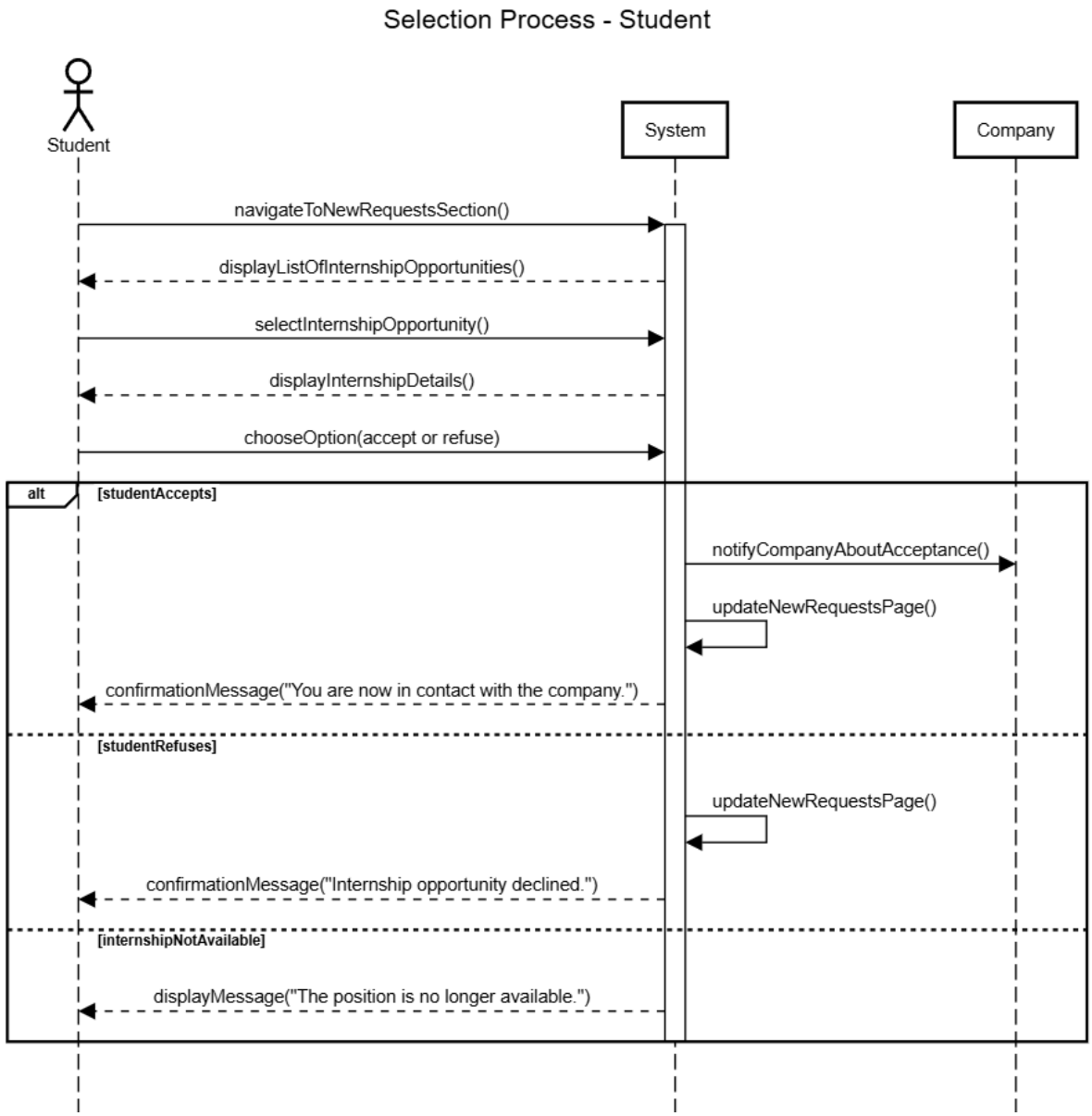

Figure 17: Sequence Diagram: Selection Process - Student

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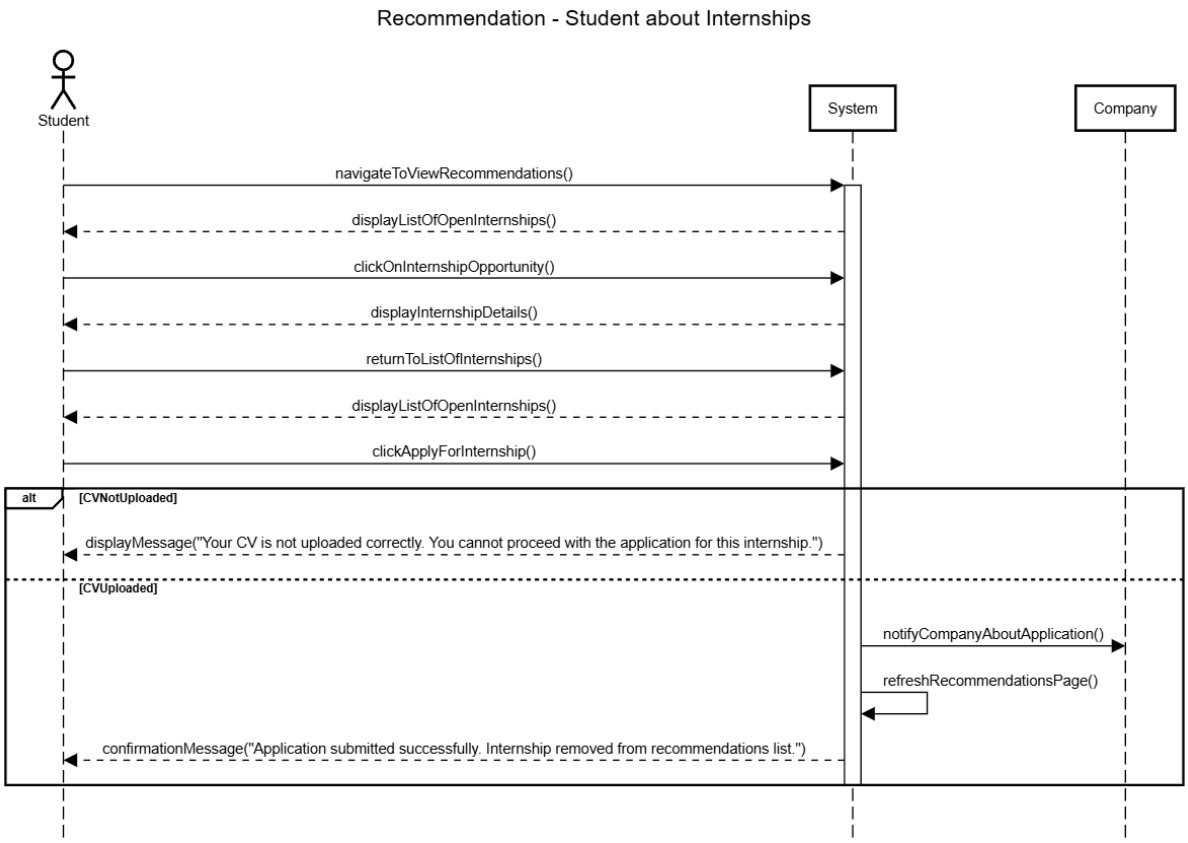

Figure 18: Sequence Diagram: Recommendation - Student about Internships

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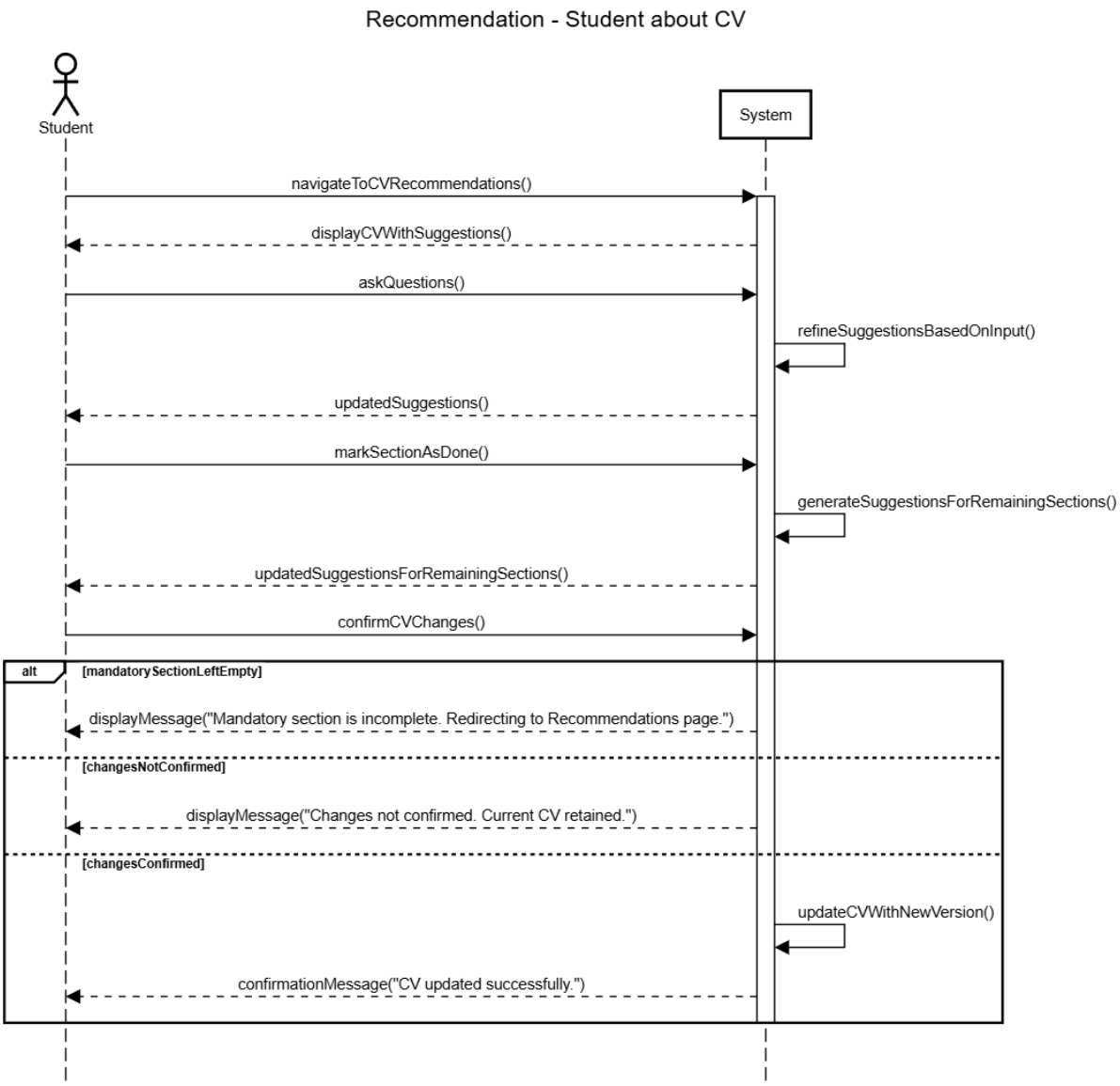

Figure 19: Sequence Diagram: Recommendation - Student about CV

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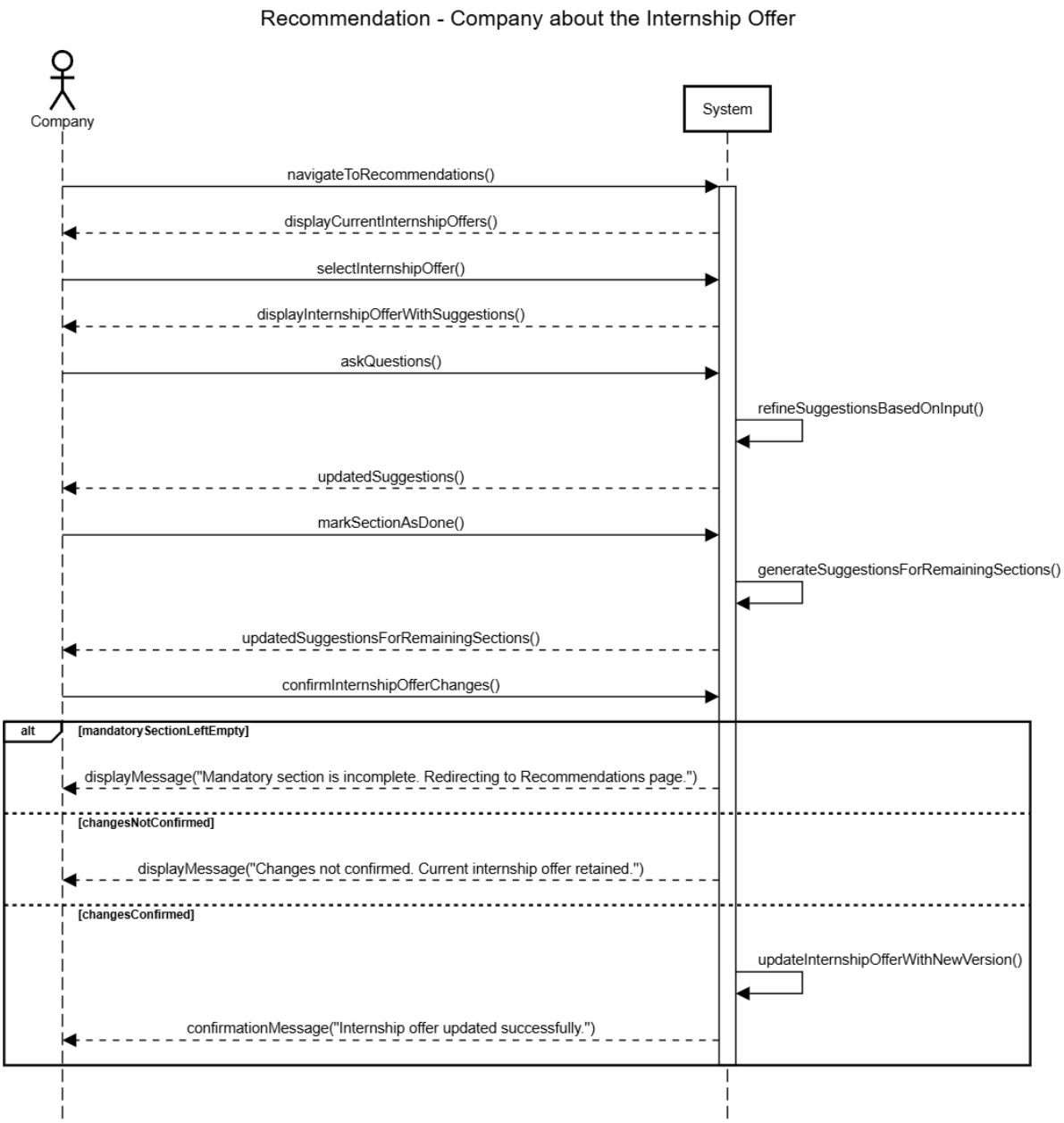

Figure 20: Sequence Diagram: Recommendation - Company about offer

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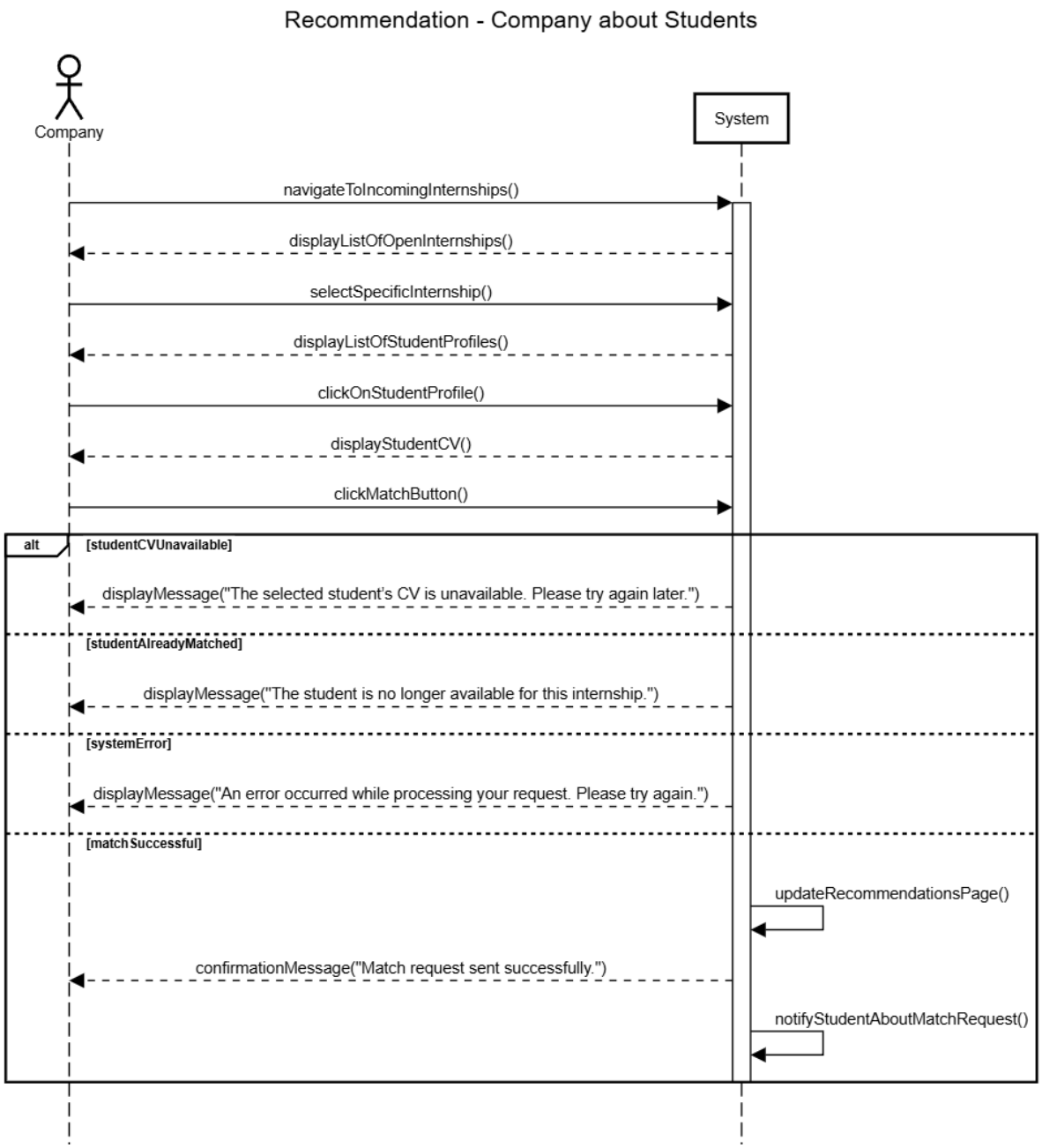

Figure 21: Sequence Diagram: Recommendation - Company about student

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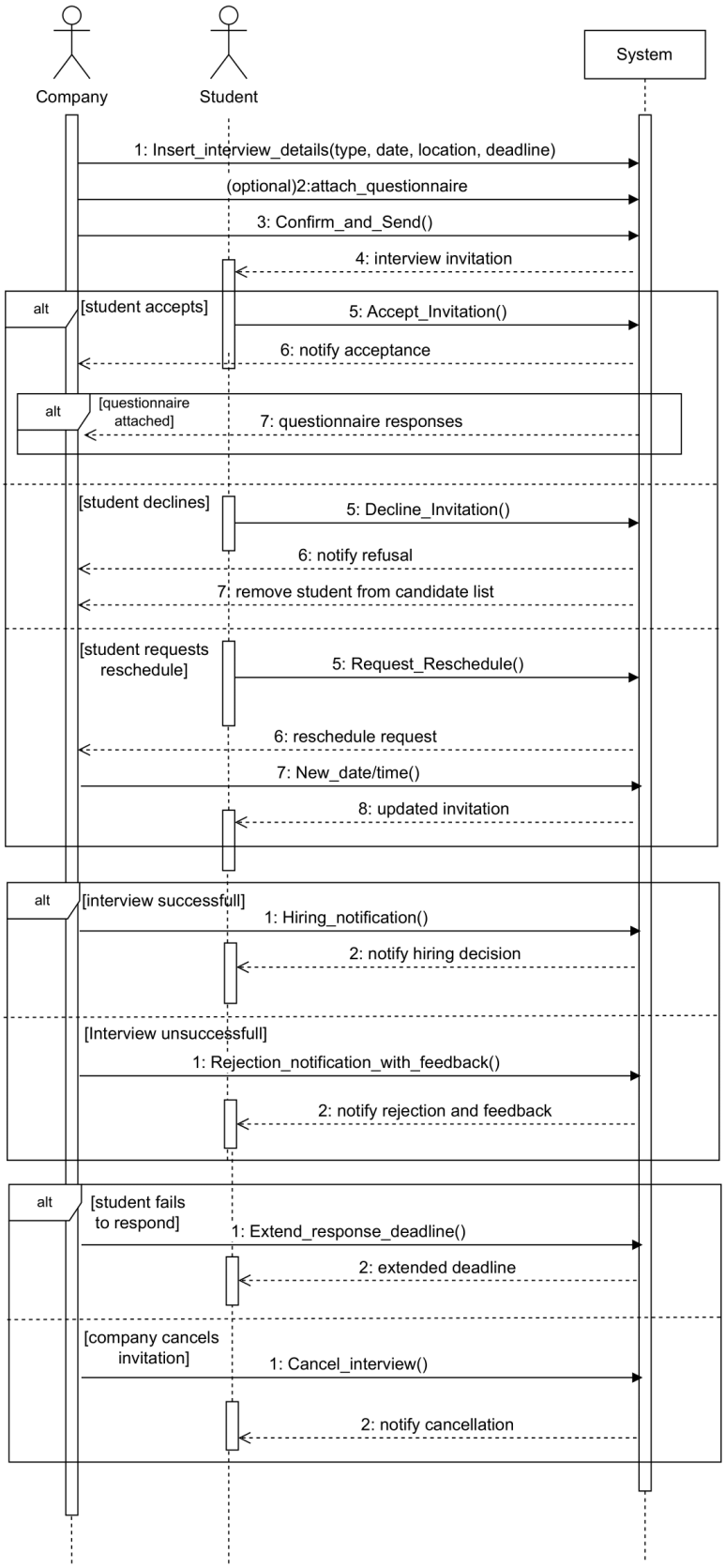

Figure 22: Sequence Diagram: Interview Management

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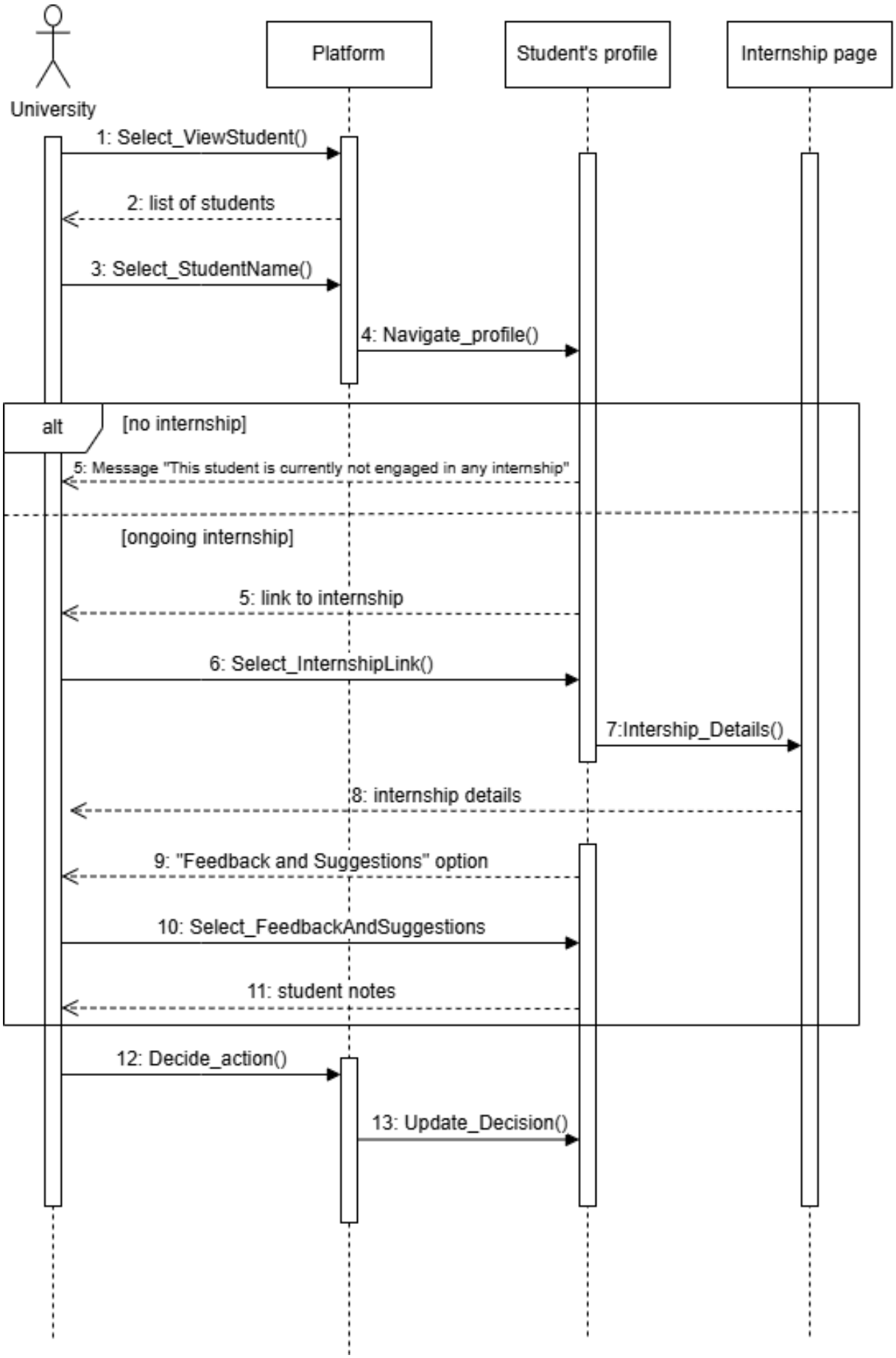

Figure 23: Sequence Diagram: Monitoring internships

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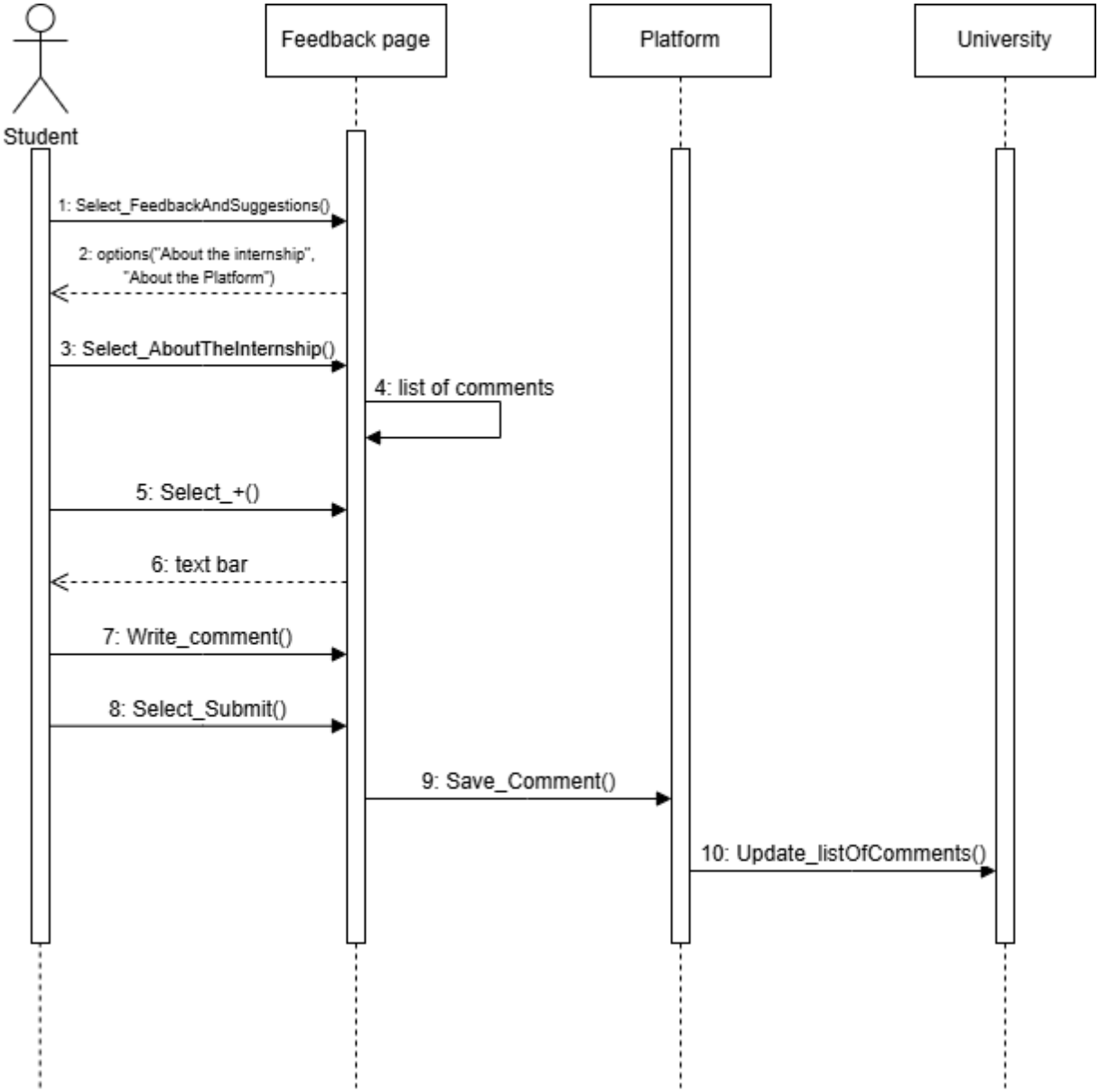

Figure 24: Sequence Diagram: Feedback and Suggestions for students about Internships

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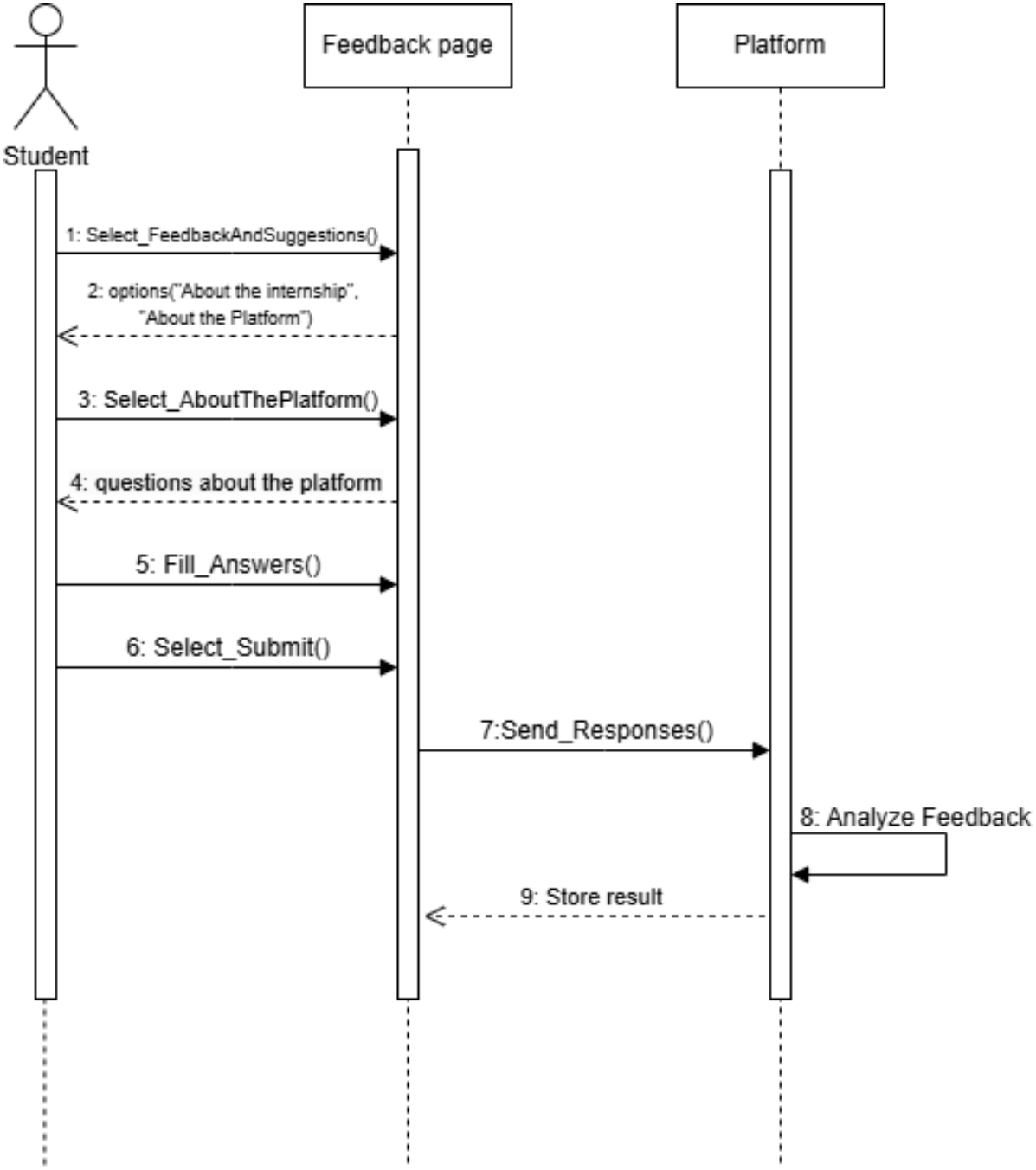

Figure 25: Sequence Diagram: Feedback and Suggestions for students about the platform

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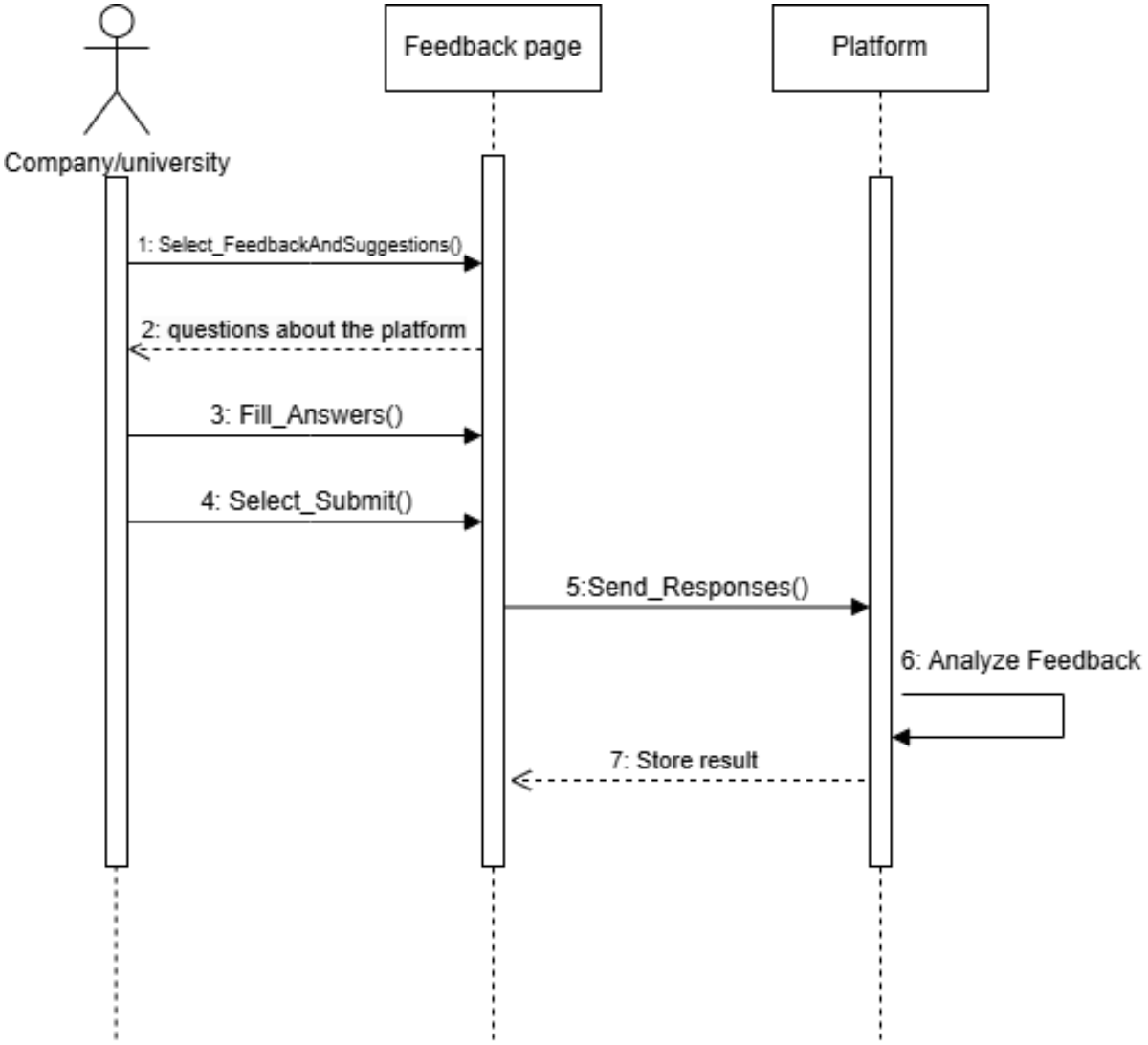

Figure 26: Sequence Diagram: Feedback and Suggestions for universities and companies

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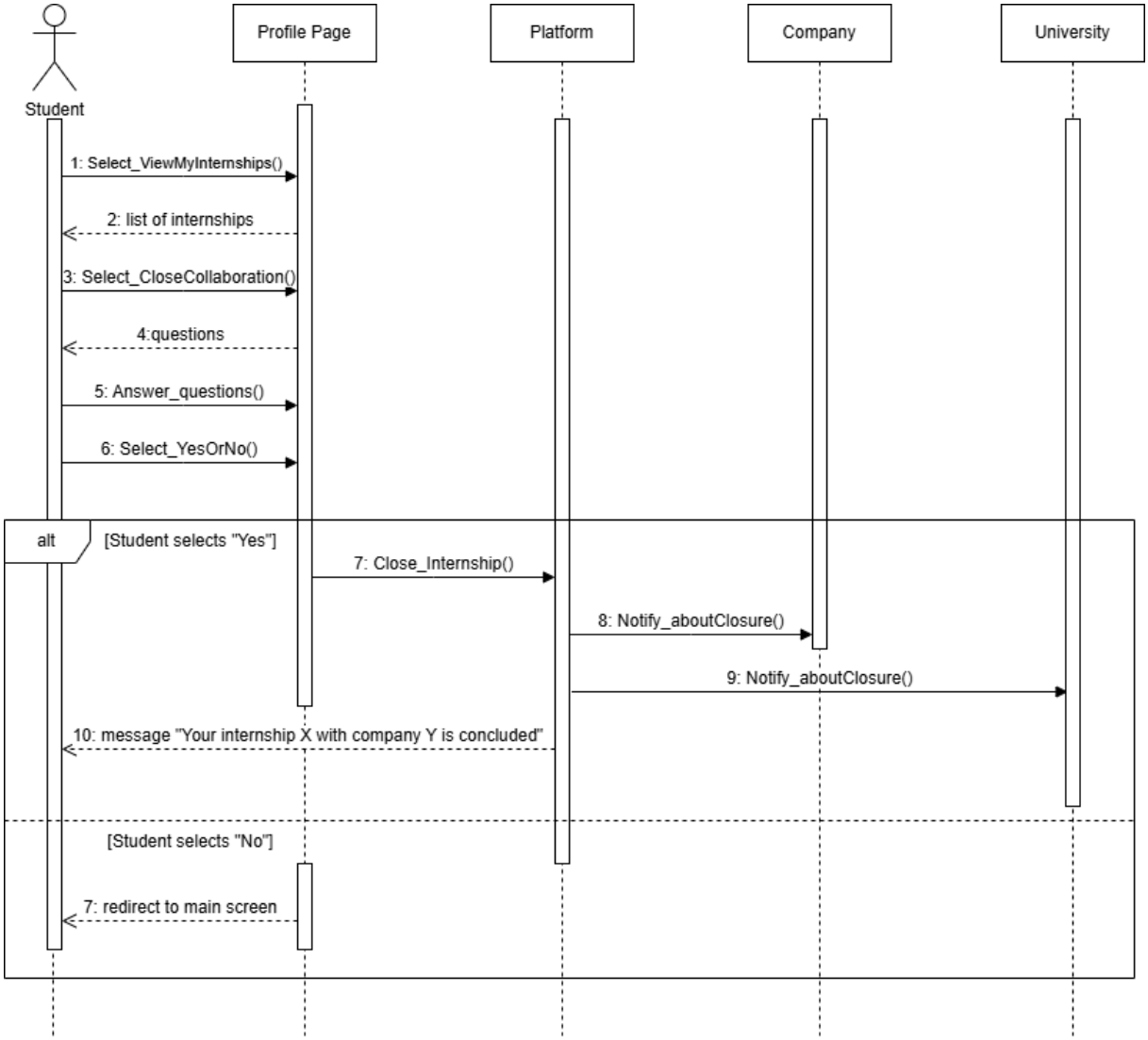

Figure 27: Sequence Diagram:End of contract for students

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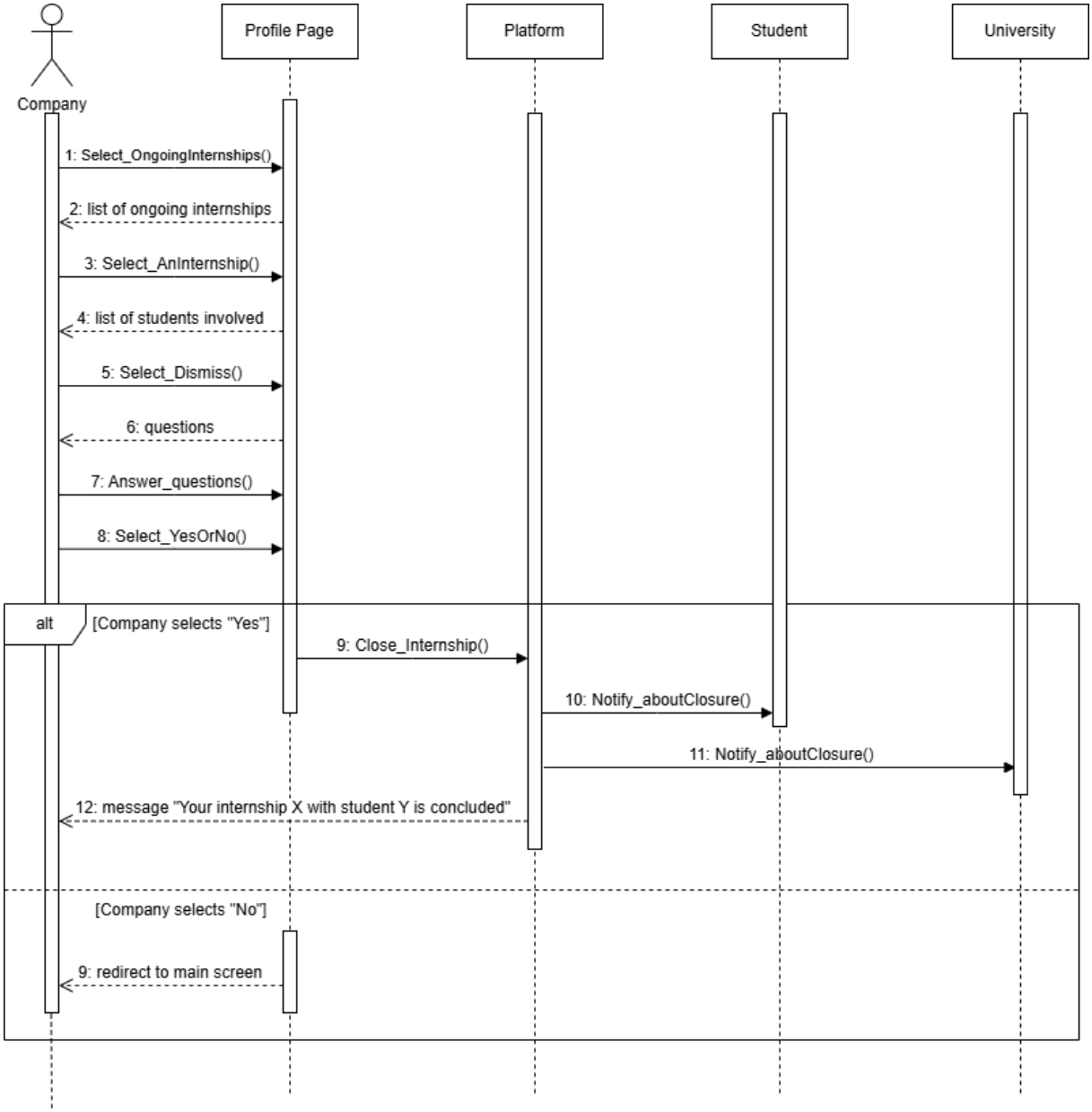

Figure 28: Sequence Diagram: End of contract for companies

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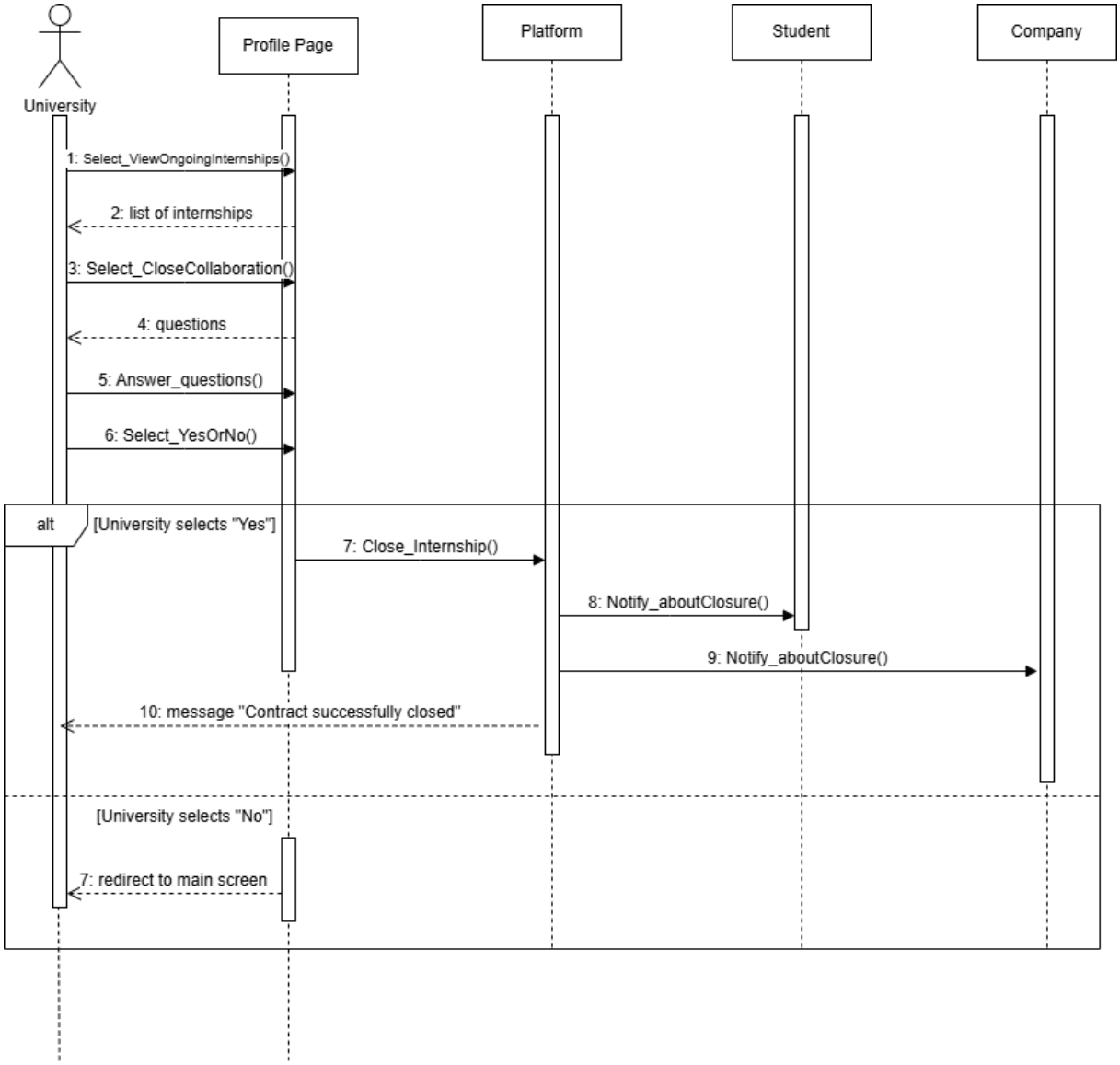

Figure 29: Sequence Diagram: End of contract for universities

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3.2.4 Requirements Mapping

Goal	Requirements	Domain Assumptions
G1	R1 R2 R3 R8 R9	D1 D2 D4 D6 D13
G2	R1 R2 R3 R20 R21	D1 D3 D6
G3	R1 R2 R3 R5 R32 R33 R34	D1 D5 D6 D7
G4	R1 R2 R5 R11 R12	D1 D3 D4 D6
G5	R1 R2 R5 R23 R24	D1 D6
G6	R1 R2 R8 R9 R19	D1 D2 D6
G7	R1 R2 R20 R21 R22	D1 D3 D6
G8	D2 D5 D12 D36	D1 D7
G9	R2 R5 R23 R36	D1 D7 D14
G10	R2 R5 R11 R14 R38	D1 D5 D7 D8
G11	R2 R5 R14 R17 R38	D1 D7 D8 D9
G12	R2 R5 R24 R25 R38	D1 D5 D7
G13	R2 R5 R30 R38	D1 D5 D7
G14	R2 R5 R25 R28 R30 R38	D1 D5 D7
G15	R2 R5 R26 R27 R28 R30	D1 D5 D7
G16	R2 R5 R18 R33 R37	D1 D7 D10 D11
G17	R2 R5 R6 R37	D1 D7
G18	R2 R5 R6 R37	D1 D7
G19	R2 R5 R6 R37	D1 D7
G20	R2 R5 R32 R33 R34 R37	D1 D7

Table 24: Mapping between goals, requirements, and domain assumptions

[G1] Student shares his CV	
[R1] The system allows users to sign up [R2] The system allows users to log in [R3] The system allows users to log out [R8] The system allows students to upload and manage their CVs [R9] The system provides suggestions to students for improving their CVs.	[D1] Users have access to internet-connected devices to use the platform [D2] Students upload CVs in a readable and standard format and must keep it uploaded at all time [D4] The student must attend a university that is registered on the platform [D6] The data provided by users must be accurate and reliable [D13] Student must have a digital identity system

Table 25: Specific mapping on G1

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[G2] Company shares its internship opportunities	
[R1] The system allows users to sign up [R2] The system allows users to log in [R3] The system allows users to log out [R20] The system allows companies to manage internship offers [R21] The system provides suggestions to companies for refining their internship descriptions	[D1] Users have access to internet-connected devices to use the platform [D3] Companies must provide comprehensive internships and adequately described [D6] The data provided by users must be accurate and reliable

Table 26: Specific mapping on G2

[G3] University manages internships	
[R1] The system allows users to sign up [R2] The system allows users to sign in [R3] The system allows users to log out [R5] The system sends automatic notifications to update all parties on relevant changes [R32] The system allows universities to monitor the status of ongoing internships [R33] The system allows universities to read feedback on an internship [R34] The system allows universities to interrupt an internships in case of complaints and negative feedback from students	[D1] Users have access to internet-connected devices to use the platform [D5] Universities will act as active supervisors, but will not directly deal with the selection of candidates [D6] The data provided by users must be accurate and reliable [D7] User are expected to regularly check the notification and message on the platform to avoid missing important opportunities or updates

Table 27: Specific mapping on G3

[G4] Student visualizes company's opportunities	
[R1] The system allows users to sign up [R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R11] The system allows students to browse available internships [R12] The system suggests internships to students based on their expertise and interests	[D1] Users have access to internet-connected devices to use the platform [D3] Companies must provide comprehensive internships and adequately described [D4] The student must attend a university that is registered on the platform [D6] The data provided by users must be accurate and reliable

Table 28: Specific mapping on G4

[G5] Company visualizes a student's CV	
[R1] The system allows users to sign up [R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R23] The system inform companies when candidates that mach their needs are available [R24] The system allows companies to search for students for an internship independently	[D1] Users have access to internet-connected devices to use the platform [D6] The data provided by users must be accurate and reliable

Table 29: Specific mapping on G5

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[G6] Student can improve his CV	
[R1] The system allows users to sign up [R2] The system allows users to log in [R8] The system allows students to upload and manage their CV [R9] The system provides suggestion to student for improving their CV [R19] The system allows students to edit their CV	[D1] Users have access to internet-connected devices to use the platform [D2] Students upload CVs in a readable and standard format and must keep it uploaded at all time [D6] The data provided by users must be accurate and reliable

Table 30: Specific mapping on G6

[G7] Company can improve its internship descriprions	
[R1] The system allows users to sign up [R2] The system allows users to log in [R20] The system allows companies to manage internship offers [R21] The system provides suggestions to companies for refining their internship descriptions [R22] The system allows companies to edit their internship descriptions	[D1] Users have access to internet-connected devices to use the platform [D3] Companies must provide comprehensive internships and adequately described [D6] The data provided by users must be accurate and reliable

Table 31: Specific mapping on G7

[G8] Student receives the recommendations on internships made by the platform	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R12] The system suggests internships to students based on their expertise and interests [R36] The system supports the recommendation process by using statistical analyzes to match students and internships	[D1] Users have access to internet-connected devices to use the platform [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates

Table 32: Specific mapping on G8

[G9] Company receives the recommendations on students made by the platform	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R23] The system informs companies when candidates that match their needs are available [R36] The system supports the recommendation process by using statistical analyzes to match students and internships	[D1] Users have access to internet-connected devices to use the platform [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates [D14] Students are not included in a company's recommendation list for an internship if, during the period of the internship in question, they are already engaged in another one

Table 33: Specific mapping on G9

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[G10] Student can send an application to a company of his choice	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R11] The system allows student to browse alailable internships [R14] The system allows students to request contact with a company for an internship [R38] The system creates contacts between students and companies after mutual acceptance	[D1] Users have access to internet-connected devices to use the platform [D5] Universities will act as active supervisor, but will not directly deal with the selection of candidates [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates [D8] Students cannot apply for an internship after the deadline for the offer set by the company

Table 34: Specific mapping on G10

[G11] Student can accept the platform recommendation	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R14] The system allows students to request contact with a company for an internship [R17] The system allows students to accept or reject an internship offer [R38] The system creates contacts between students and companies after mutual acceptance	[D1] Users have access to internet-connected devices to use the platform [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates [D8] Students cannot apply for an internship after the deadline for the offer set by the company [D9] Students are not allowed to accept two or more internships that overlap over time

Table 35: Specific mapping on G11

[G12] Company can create contact with a student of its choice	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R24] The system allows companies to search for students for an internship independently [R25] The system allows companies to request contact with a student for an internship [R38] The system creates contacts between students and companies after mutual acceptance	[D1] Users have access to internet-connected devices to use the platform [D5] Universities will act as active supervisor, but will not directly deal with the selection of candidates [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates

Table 36: Specific mapping on G12

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[G13] Company can accept the platform's recommendation	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R30] The system allows companies to accept or reject a student for an internship [R38] The system creates contacts between students and companies after mutual acceptance	[D1] Users have access to internet-connected devices to use the platform [D5] Universities will act as active supervisor, but will not directly deal with the selection of candidates [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates

Table 37: Specific mapping on G13

[G14] Company manages the selection process	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R25] The system allows companies to request contact with a student for an internship [R28] The system allows companies to schedule and manage interviews with students [R30] The system allows companies to accept or reject a student for an internship [R38] The system creates contacts between students and companies after mutual acceptance	[D1] Users have access to internet-connected devices to use the platform [D5] Universities will act as active supervisor, but will not directly deal with the selection of candidates [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates

Table 38: Specific mapping on G14

[G15] Company schedules and manages interviews with the selected students	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R26] The system allows companies to provide questionnaires to students [R27] The system allows companies to review completed questionnaires from students [R28] The system allows companies to schedule and manage interviews with students [R30] The system allows companies to accept or reject a student for an internship	[D1] Users have access to internet-connected devices to use the platform [D5] Universities will act as active supervisor, but will not directly deal with the selection of candidates [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates

Table 39: Specific mapping on G15

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[G16] Student provides suggestions and feedback about the internship	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changess [R18] The system allows students to provide feedback about an internship [R33] The system allows universities to read student feedback on an internship [R37] The system collects feedback from students, companies and universities to improve the recommendation system and optimize the system	[D1] Users have access to internet-connected devices to use the platform [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates [D10] Students are not allowed to read feedback on other students' internships [D11] Companies are not allowed to read students feedback on internships

Table 40: Specific mapping on G16

[G17] Student provides suggestions and feedback about the platform	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R6] The system allows users to provide feedback about the platform [R37] The system collects feedback from students, companies and universities to improve the recommendation system and optimize the system	[D1] Users have access to internet-connected devices to use the platform [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates

Table 41: Specific mapping on G17

[G18] Company provides suggestions and feedback about the platform	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R6] The system allows users to provide feedback about the platform [R37] The system collects feedback from students, companies and universities to improve the recommendation system and optimize the system	[D1] Users have access to internet-connected devices to use the platform [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates

Table 42: Specific mapping on G18

[G19] University provides suggestions and feedback about the platform	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R6] The system allows users to provide feedback about the platform [R37] The system collects feedback from students, companies and universities to improve the recommendation system and optimize the system	[D1] Users have access to internet-connected devices to use the platform [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates

Table 43: Specific mapping on G19

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[G20] University can interrupt internships between student and companies	
[R2] The system allows users to log in [R5] The system sends automatic notifications to update all parties on relevant changes [R32] The system allows universities to monitor the status of ongoing internships [R33] The system allows universities to read student feedback on an internship [R34] The system allows universities to interrupt an internship in case of complaints and n egative feedback from students [R37] The system collects feedback from students, companies and universities to improve the recommendation system and optimize the system	[D1] Users have access to internet-connected devices to use the platform [D7] Users are expected to regularly check the notifications and messages on the platform to avoid missing important opportunities or updates

Table 44: Specific mapping on G20

3.3 Performance Requirements

Th Students&Companies web application must ensure a seamless user experience through fast response times and efficient handling of user interactions.The system should respond to user actions within 2 seconds under standard conditions and maintain an uptime of at least 99% over any given month. Server resources should be optimized to prevent CPU utilization from exceeding 70%, and memory usage should not surpass 80% to mask network variance.

3.4 Design Constraints

3.4.1 Standards Compliance

The system must comply with the privacy and data protection laws applicable in the country of use. Specifically, when operating in Europe, it must fully comply with GDPR requirements, including principles such as data minimization, user consent, and transparency. Furthermore, the system must ensure secure and lawful data handling practices during exchanges with third-party systems, maintaining confidentiality and protecting user rights.

3.4.2 Hardware Limitations

The system should be designed to operate seamlessly on any device equipped with a web browser and an Internet connection. It must be compatible with all major operating systems to ensure accessibility, regardless of the user's platform. To access the S&C platform, users must have the necessary hardware, including a stable Internet connection. This design prioritizes inclusivity and flexibility, allowing a wide range of devices and environments to support the system without compromising functionality or performance.

3.4.3 Any other constraints

There are no other constraints.

3.5 Software System Attributes

3.5.1 Reliability

The system will incorporate robust error-handling mechanisms to effectively manage unexpected events and prevent critical failures. To ensure reliability, regular automated testing and continuous monitoring

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will be employed to proactively detect and resolve potential issues. Furthermore, comprehensive backup procedures will be implemented to protect against data loss, ensuring the platform remains secure and dependable. This approach will provide users with a trustworthy environment for publishing and refining their profiles and information with confidence.

3.5.2 Availability

The system is not designed to provide emergency services, ensuring an availability target of approximately 99%, corresponding to a permissible downtime of 3.65 days per year. This level of reliability is maintained through redundant servers, load balancing, and scalable infrastructure. For instance, if a primary server fails, a backup server will take over to minimize disruption. Load balancing will also distribute user requests across multiple servers, ensuring optimal performance even during peak traffic periods.

3.5.3 Security

Security is a top priority for the S&C software, with robust measures in place to protect user data and defend against potential threats. The system ensures secure communication between users and the server through the use of the HTTPS protocol, safeguarding data during transmission. Sensitive information stored in the database is encrypted and access is strictly controlled to prevent unauthorized access. Secure authentication and authorization protocols will further enhance user account protection. Regular security audits will be conducted to identify and address vulnerabilities, while adherence to industry best practices and compliance standards will provide a safe and trustworthy environment for users to engage with the platform.

3.5.4 Maintainability

The system is designed with scalable and reusable modules to ensure ease of maintenance and seamless replacement in case of failure. Routine maintenance, including bug fixes and feature enhancements, is scheduled during low-traffic hours, typically at night, to minimize user disruption. Key principles of maintainability and modularity are thoroughly addressed and documented in the design specification.

3.5.5 Portability

The S&C platform is designed for portability, allowing users to access it through any web browser on a variety of devices, including desktops, laptops, tablets, and smartphones, regardless of the operating system. With responsive design techniques, the platform ensures an optimal user experience across different screen sizes and resolutions. Compatibility with major web browsers is a key focus, ensuring that users can effortlessly access the platform from anywhere with an Internet connection. This built-in portability enhances both accessibility and convenience, providing users with the flexibility to search for internships on their preferred devices.

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4 Formal Analysis Using Alloy

4.1 Alloy Code Structure

4.1.1 Signatures

```
// University, Company, Student, Internship, and Interview
sig University {
    has: set Student,
    collaboratesWith: set Company
}

sig Company {
    offers: set Internship
}

enum Status {Active, Unactive, Finished}// University,


sig SelectionProcess {
    student: one Student,
    interview: one Interview,
    internship: one Internship,
    var status: one Status
}

sig Student {}

sig Internship {
    owner: one Company,
    var participants: set Student,
    var participants: set Student,
    max_participants: one Int,
    var recommendedStudents: set Student
}

enum Boolean {Yes, No}

sig Interview {
    var accepted: one Boolean,
    var finished: one Boolean
}
```

4.1.2 Facts

```
// Each selection process is unique
fact allInternshipMappedOnce {
    all sp1, sp2: SelectionProcess |

        sp1 != sp2 implies (sp1.student != sp2.student
```

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```
                or sp1.internship != sp2.internship)
}

// Each pair of pair of student and  and internship can have only one state
fact justOneState {
    all sp1, sp2: SelectionProcess |
        (sp1.student = sp2.student and sp1.internship = sp2.internship)
            implies sp1 = sp2
}

// The number of participants in an internship can not exceed its maximum
fact maxParticipantsForInternship {
    all i: Internship |
        i.max_participants >= #i.participants
        and
        (i.max_participants = #i.participants
        implies #i.recommendedStudents = 0)
}

// An internship can not appear more times than its maximum number of students
fact maxPrivateAppearances {
    all i: Internship |
        #{sp: SelectionProcess | i in sp.internship} <= i.max_participants
}

// All interviews are associated with a SelectionProcess
fact notAloneInterview {
    all i: Interview | one s: SelectionProcess | s.interview = i
}

// Interview transitions depend on SelectionProcess status
fact manageInterview {
    all sel: SelectionProcess |
        always ((sel.status = Unactive implies sel.interview.finished = No) and
                (sel.status = Active implies (sel.interview.finished = Yes
                and sel.interview.accepted = Yes))
                and
                (sel.status = Finished implies (sel.interview.finished = Yes
                and sel.interview.accepted = Yes)))
}

// Students must match the correct state in internships
fact rightStudents {
    all sp: SelectionProcess |
        always ((sp.status = Active implies
                (sp.student in sp.internship.participants and
                not (sp.student in sp.internship.recommendedStudents))) and
                (sp.status = Unactive implies
                (sp.student in sp.internship.recommendedStudents and
                not (sp.student in sp.internship.participants))) and
```

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```
                (sp.status = Finished implies
                (sp.student in sp.internship.recommendedStudents and
                not (sp.student in sp.internship.participants))))
}



// Transitions must follow: Unactive -> Active -> Finished
fact enforceStateSequence {
    all sp: SelectionProcess |
        always (sp.status = Unactive implies eventually sp.status = Active) and
        always (sp.status = Active implies eventually sp.status = Finished) and
        always (sp.status = Finished implies always sp.status = Finished)
}

//  States can remain the same or change
fact selfLoops {
    all sp: SelectionProcess |
        sp.status' = sp.status or
        (sp.status = Unactive and sp.status' = Active) or
        (sp.status = Active and sp.status' = Finished)
}
```

4.1.3 Predicates

```
// Add a participant to an internship
pred addParticipant[i: Internship, s: Student] {
    s not in i.participants implies i.participants' = i.participants + s
}


// Remove a student from the recommended list
pred removeFromRec[i: Internship, s: Student] {
    s in i.recommendedStudents implies
    i.recommendedStudents' = i.recommendedStudents - s
}
```

4.2 Show Transitions

```
// Predicate to demonstrate temporal transitions
pred show[sp: SelectionProcess] {
    #Student = 1
    #Internship = 2
    #Company = 1
    #University = 1

    // Verify that there exists a process transitioning
    // from Unactive -> Active -> Finished
    some sp: SelectionProcess |
```

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```
        sp.status = Unactive and
        eventually sp.status = Active and
        eventually sp.status = Finished
}

run show for 3 but 3 SelectionProcess, 3 steps
```

4.3 Alloy Results

This section presents the results of the Alloy analysis through the following visualizations.

4.3.1 Analysis Result 1

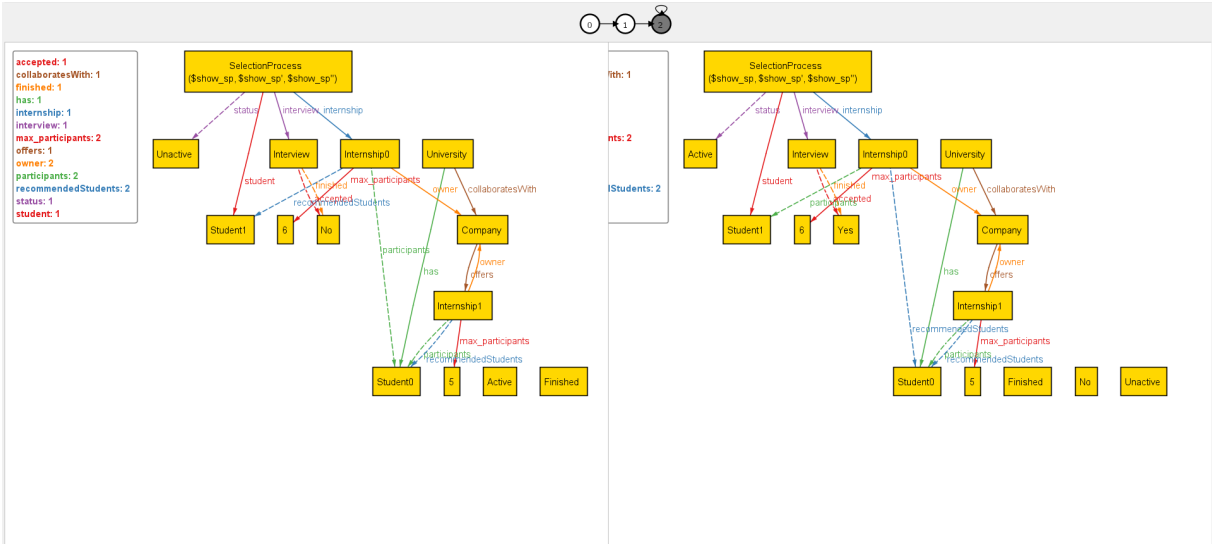

Figure 30: UML of S&C Platform

4.3.2 Analysis Result 2

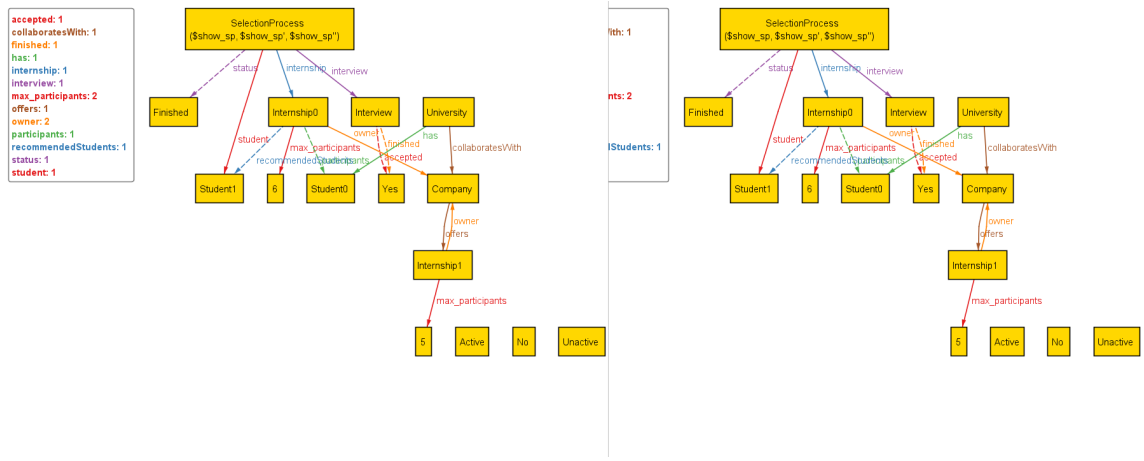

Figure 31: UML of S&C Platform

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5 Effort Spent

Members of group	Effort spent (hours)	
Chiara Barone	Introduction	$5h$
	Overall description	$10h$
	Formal analysis	$25h$
	Reasoning	$2h$
Ottavia Biagi	Introduction	$20h$
	Overall description	$25h$
	Formal analysis	$7h$
	Reasoning	$20h$
Myriam Caravaggio	Introduction	$10h$
	Overall description	$25h$
	Formal analysis	$2h$
	Reasoning	$20h$

Table 45: Effort spent by each member of the group

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6 References

- IEEE Standard on Requirement Engineering (ISO/IEC/IEEE 29148)
- Alloy Documentation: `https://alloytools.org/documentation.html`

Tool Used

- draw.io to draw the diagrams.
- sequencediagram.org to draw the sequence diagrams.
- GitHub to share and collaborate on the project.

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