



Bilkent University
Department of Computer Science

CS 319: Object-Oriented Software Engineering

INTERNSHIP MANAGEMENT SYSTEM

Analysis Report
Second Iteration

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RIGEL

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1. Introduction

Bilkent University, which aims to develop students both academically and professionally, requires second and third-year engineering students to do summer training for twenty workdays. The summer training program has multiple steps from registering with the internship company to completing x299 or x399 courses in the related department. It is estimated that each fall semester 1300 students take their respective majors' 299 or 399 courses [1]. With this large number of students and multiple university policies, department secretaries undertake an overwhelming amount of organizational work.

The step concerning this report is the flow and completion of the x299/399 courses, which involves students registered for the course, their assigned instructors, and the department secretaries, TAs, and department administrations. It is required for students to write a report explaining what they have learned and contributed to during their summer training in order to both ensure students' involvement in the professional experience and the companies' reliability for future candidates. Internship reports are then evaluated by their instructors according to ABET criteria. Students whose reports do not fulfill all the criteria may be asked to revise their work one or multiple times by their assigned instructor. Finally, they receive satisfactory or unsatisfactory status regarding their summer training and x299/399 course.

Our aim in creating the Rigel Internship Evaluation System is to provide a convenient web-based application for department secretaries, evaluator instructors, and registered students. We intend to make organization easier for all actors by combining all aspects of the process in one platform. While creating it, object-oriented design and software engineering principles will be effectively used. This report addresses a further detailed analysis of our intended application.

2. Current System

The internship management system is heavily dependent on paperwork both on the instructors' side and the administration's side. Initially, the student brings the evaluation report from the company containing their supervisor's comments and the grading of student performance in the internship, which will be referred to as the *Summer Training Evaluation Form (Evaluation Form)*. This report is confidential and must be delivered as a sealed document or directly from the company email and is used to fill the first part of the grade report by the department secretary.

Students who take x299 and x399 classes will be listed and assigned to their respective department instructors initially by the department secretary for the grading of their internship reports. Secretary also fills in part A of the grade report. If the Summer Training Evaluation Form indicates that the student did not meet the minimum criteria for the internship performance (at least 7/10), then the student automatically fails the class and they have to repeat the internship next summer.

Students should write and upload an internship report summarizing the work they've accomplished in the internship. Throughout the semester, instructors will give feedback to the students about their internship reports and may request revisions. Due dates for the report revisions are set by the department secretary, except the initial one which is set by the department chair. Students, then, will have 2 weeks to edit their report and the explanation of what they have changed and send it to the instructor for further checks. Revisions must be completed before the semester ends, or the student report will be considered unsatisfactory. Another instance is when instructors decide that the report is unsatisfactory even after revisions and may fail the student during the semester. Students who receive an unsatisfactory grade (U) have to retake the class next term. If the reports are accepted, instructors will fill in Part B as satisfactory.

Part C of the grade report is for grading the final version of the internship report. Internship reports must meet certain criteria: Evaluation of the work: how related is the work they did in internships to their major (7/10), the content of the work (30/60), evaluation of report: (7/10). Otherwise, the students will receive an unsatisfactory grade (U) and have to retake the class next term.

Students who received an unsatisfactory grade in their internship reports can retake the class with a report mentioning the same internship. If they fail again, they will have to repeat the internship. If the student is repeating an internship for the x399 class and they have completed all other classes, they are allowed to graduate with the exception of taking the x399 class in summer school. In other cases, the x399 class is offered only in the fall and spring semesters.

There is additionally a criteria report in which instructors have to explain how they are grading internship reports and must refer to them to give specific examples. This criteria report is then stored with student reports for statistics and reporting purposes for ABET.

In cases where the student has completed two official internships within the same summer, they can take both x299 and x399 classes. In that case, since the prerequisite for x399 classes is a satisfactory grade (S) from x299 classes, the student must inform the course coordinator or department chair to be able to take both classes.

3. Proposed System

3.1 Overview

The current system is heavily paperwork and email oriented. Currently, instructors can give feedback to student reports on Moodle and by email. If the instructor finds a student's report satisfactory, they fill out a hard copy of the form to officiate the grade. Those forms should also pass through the department secretary to be valid, so the instructor sends them to the secretary via email. TAs and department chairs should also be included in the system, which only increases the current system's complexity. Considering the number of people involved

and the fact that each student may upload the report multiple times, this system can rapidly become confusing for everyone.

However, this process can be automated with the correct website design and implementation. Via Rigel, we aim to provide a web-based system with object-oriented design for engineering students, instructors, and everyone involved. Detailed information about Rigel's requirements and design is disclosed in the following parts of this report.

3.2 Non-Functional Requirements

3.2.1. Usability

Since up to 1000 people will be using our program and it will be used almost on a daily basis, it should have a very easy-to-use UI. Our aim is to design the website so that users will only need half an hour to understand how to use the website's functionalities. We plan to divide and label each of the profile, notification, reports, feedback, and validation segments distinctly so that users can understand the purpose of each part. We aim to design the website so that each user can reach any part of it in at most 5 mouse clicks. Also, most of the users' features will be visible or accessible from their main pages.

3.2.2. Maintainability

Our system must be flexible enough to adapt to unexpected changes and situations. If one instructor unexpectedly leaves, secretaries or department chairs should be able to arrange new instructors for his/her students. In addition, the current internship management system has TAs as actors. In the future, their responsibilities may be handled by external actors such as Turnitin, and Grammarly. Rigel software will adapt to those changes to maintain its functionality. Department chairs are not regular users of the system. However, their role and responsibilities may change over time due to ABET criteria. Therefore, Rigel software considers them active actors.

3.2.3. Reliability

Since x299 and x399 courses for mandatory internships are offered in fall and spring semesters, and in summer school for students who have not completed x399 courses before graduation, the website should be functional at all times. In addition, secretaries and department chairs are able to change student-instructor pairing if a currently evaluating instructor leaves. His/her students will be assigned to the remaining instructors. The previous pairings will be stored hence other students will not be affected. Also, our system accommodates corner case scenarios like course withdrawal or students taking both internship courses simultaneously.

3.2.4. Scalability

We expect about 1.000 students to use our system in one semester. Considering other actors in this process, it is safe to assume less than 2.000 people will use our website in total [2]. Our website should be able to handle all the data related to these users without crashing. However, since internship report evaluation is somewhat of a slow process, we don't expect more than 200 users to enter the website simultaneously.

3.3 Pseudo Requirements

- The internship management system is a web-based application and the main stakeholders are CS, ME, EE, IE departments, and the Department Chairs.
- This project will be implemented using Object Oriented Programming (OOP) principles.
- System design will integrate the basics of the software engineering process life cycle.
- Project codes will be available on GitHub and will be updated by the team regularly from Git.

3.4 System Models

3.4.1 Use Case Textual Descriptions & Functional Requirements

Use Case#0

1. Name: View Public Page
2. Participating Actor: Student, Instructor, TA, Secretary, Department Chair, Admin
3. Entry Condition: Reaching the web browser link of the web application.
4. Exit Condition: Logging in or changing the link to another website.
5. Flow of Events:
 1. The not registered user reaches the link of the web application.
 2. Clicks the Login button and is directed to the login page where they are asked for their credentials.
 3. Clicks the Announcement button where they view general deadline announcements and FAQ about the process.

Use Case#1

1. Name: Login / Logout
2. Participating Actor: Student, Instructor, TA, Secretary, Department Chair, Admin
3. Entry Condition: Reaching the website link in the browser and being signed up by the secretary.
4. Exit Condition: None
5. Flow of Events:
 1. User enters their Bilkent mail address and their password which is assigned when his/her user profile is created.
 2. System checks the user's credentials in the database.
 3. If their credentials are appropriate and exist in the database, the user is led to their main page.
 4. If the user is logged in to the system, he/she can log out by clicking the logout button.
6. Special Requirements: It is assumed that the admin user who is the initial user will have their credentials provided by developers. The users are only granted access to the system if their credentials match with those in the database. It is the admin's and faculty secretaries' responsibility to initialize the users' data and actively maintain that if a new user is added to the system.

Use Case#2

1. Name: View Main Page
2. Participating Actor: Instructor, Student, TA, Department Secretary, Department Chair, Admin
3. Entry Condition: Signing in with appropriate credentials. After the public page of the system, a login page will appear. Here the user will enter their email and password to access the main page.
4. Exit Condition: Clicking the logout button. This action will return the user to the public page. The user can log back in by clicking the login button.
5. Flow of Events:
 1. Users will enter their credentials on the login page.
 2. If the credentials match the data on the database, the user is granted access.
 3. System will open the main page according to their role.
 4. For each different actor, it is possible to see different actions. See mock-ups for further page designs.

Use Case#3

1. Name: Save/Submit Report
2. Participating Actor: Student
3. Entry Condition: Students can activate this functionality by clicking the submission icon on their main page. This icon is visible only when submission is needed. In a pop-up, students can upload their file by either choosing manually from a document search or dragging the file to the page area.
4. Exit Condition: When students click the save, submit or close button on the upload file pop-up, it closes.
5. Flow of Events:
 1. Users will enter their credentials on the login page.
 2. On the main page, students can open the submission pop up by clicking on the upload file icon, which is represented by an upload icon.
 3. Pop up enables students to upload their files by either dragging and dropping them or manually selecting them.
 4. User explains changes made or gives a brief description about the file in the text file of the pop up.
 5. Click either save or submit button. Clicking save button uploads report to the system but file is not submitted. If any file is not submitted, the system automatically submits the file saved. Clicking the submit button, submits the report.
6. Special Requirements: This functionality is exclusively available to student users. Furthermore, they are only permitted to upload their reports during the designated deadline period. Only pdf files are accepted.

Use Case#4

1. Name: Ask for Extension
2. Participating Actor: Student
3. Entry Condition: Students can click on the ask for extension button located on their main page. After clicking, a pop-up window will appear with the prompt: "Do you want to request a one-week extension? Yes/No". If the student chooses "Yes", they will be able to send a notification to their instructor.
4. Exit Condition: Students can exit the pop-up window by either clicking the "exit" button or the "no" button on the pop-up window.
5. Flow of Events:
 1. Students enter the report page through their main page.
 2. Students click the ask for extension button on the report page.
 3. A pop-up window saying "Do you want to request a one-week extension? Yes/No" appears.
 4. Students click the yes button on the pop-up window.
 5. A notification is sent to the instructor.
6. Special Requirements: This functionality is exclusively available to student users. Furthermore, they are only permitted to upload their reports during the designated deadline period. Students can not ask for an extension after the deadline.

Use Case#5

1. Name: View Internship Report
2. Participating Actor: Student, Instructor, TA, Department Secretary, Department Chair
3. Entry Condition: The student must have uploaded at least one report.
4. Exit Condition: Exiting page.
5. Flow of Events:
 1. From the main page, the user will select the "my report" or "previous report" buttons on their "summer training courses" part on their main page to see their last uploaded report. Instructors can reach a student's reports by clicking the "all reports" button on relevant students. Department Chairs and Department Chairs can see all of the student's internship reports.
 2. Actors can download the reports they have access to see if they wish to do so.
6. Special Requirements:

In order to view reports, the student must have submitted a report before.

Use Case#6

1. Name: View Progress
2. Participating Actor: Student

3. Entry Condition: Only the progress of students are tracked. The student must be on the main page. They can view their process from the section reserved for their courses.

4. Exit Condition: None.

5. Flow of Events:

1. All users will log in to the system.
2. Students will be able to view their progress from the section reserved for their courses.

6. Special Requirements: The progress of the students are initialized as %0 at the start of the term. Student progress will be calculated according to their report status (no report, submitted, under revision, revision requested, accepted, and denied).. Students who are taking both x299 and x399 courses have two different progress bars and statuses.

Use Case#7

1.Name: Evaluate Report

2.Participating Actor: Instructor

3. Entry Condition: Semester must have begun and instructor must have assigned students. Student should have submitted a report. Instructor should have logged into their Google Account.

4. Exit Condition:

5. Flow of Events:

1. After clicking one of the cards with their students' name on, feedback mode opens up where the instructor may answer questions about whether the internship and supervisor is related to their department.
2. On the same page, instructors can use all of the functionalities of Google Docs Commenter mode including highlighting and commenting. They may also enter feedback to the textfield.
3. Once the instructor is done with their feedback, they click the "Give Feedback" button where the report's evaluated version appears on the owner student's page with the feedback.
4. The following popup asks whether the instructor wants to fill the criteria report. If so, they are directed to the Criteria Report Page .
5. In Criteria Page, the instructor fills in the evidence and score sections with dual panels of the internship report in Google Docs View Only mode. If they are not over with the Criteria Report, they can save and exit the Evaluate Report page. Otherwise, they can submit the filled in Criteria Report. Then They will be informed of the sum of their given scores and asked to confirm the submission.
6. If instructor decides that the internship report should be revised, they can click "Ask for Revision" button which determines the student's status as 1st revision and sets the next submission deadline to two weeks later. If the button is not hit, the student's status is finalized with no further deadline.

6. Special Requirements: Workplace Evaluation Form must be arrived and satisfied to activate the student card button. If a student withdraws the course their card becomes deactivated and the status of the student becomes "withdrawn".

Use Case#8

1.Name: Give Extension

2.Participating Actor: Instructors

3. Entry Condition: Their assigned students have an upcoming / missed deadline or have asked for a deadline extension before their deadline has passed.

4.Exit Condition: Setting the new deadline to an appropriate date or declining the extension request (if there were any).

5. Flow of Events:

1. If the student has asked for a deadline extension, the instructor will receive a notification about this request. If there's no such request but the Instructor has decided to extend the student's deadline, Instructor clicks the due date of the next revision in their assigned student row.

2. Extension pop-up opens up (this happens only when the instructor accepts the extension request in the case where the student asks for an extension) and the instructor can choose to grant an extension. The system will automatically set the extended deadline to one week away, but the instructor can change the date with the calendar provided in the pop-up.

6. Special Requirements: Extended deadline date cannot be a date later than the last day of the semester.

Use Case#9

1.Name: View Announcement

2.Participating Actor: Student, Instructor, TA

3. Entry Condition: The participating actors can view announcements from their main page and from the public page. Users need not log in to view announcements.

4.Exit Condition: Clicking the left arrow on the browser

5. Flow of Events:

1. The first web page of the system is the public page. All actors can click on the announcement button to see the announcements.

2. If the users want to view announcements from the main page, they must log in. Users then must click on the announcement button and they will be sent to the announcement page. Otherwise, users can access the same information from the public page without logging in.

6. Special Requirements: None. The announcement page contains general information which can be accessed from the information page and from the main page.

Use Case#10

1.Name: Receive Notification

2. Participating Actor: Students and Instructors

3. Entry Condition: Please see state diagrams 5,6,7.

4. Exit Condition: None

5. Flow of Events:

1. Actors will receive a notification in the website and (if they have chosen to do so) in their webmail inbox.
2. Those who click the link in the mail are directed to the website's relevant page.
3. If the notification is a deadline extension request the Instructor will see a pop-up to accept or decline the request.

6. Special Requirements: The department secretary is responsible for entering each user's appropriate webmail address when signing them up. Users can delete their notifications from their inboxes. The information about notifications is detailed in the "State Diagrams" part of this report.

Use Case#11

1. Name: View Profile

2. Participating Actor: Instructor, Student

3. Entry Condition: Clicking the profile page button.

4. Exit Condition: Clicking out of the page.

5. Flow of Events:

1. Instructors can see their profile page by clicking on the profile icon in their main page.
2. They can upload their e-signature in order to use it in the forms.

6. Special Requirements: The information on instructors' profile pages can only be changed by the department secretary.

Use Case#12

1. Name: Make Announcements

2. Participating Actor: Admin, Instructors, Department Secretary, and Department Chair

3. Entry Condition: Actors must be logged into the system

4. Exit Condition: None

5. Flow of Events:

1. Actors click the make announcement icon.
2. They write their message.
3. They may set a deadline that would show up on the recipient's calendar.
4. They click "Announce"

6. Special Requirements: Instructors can only make announcements for students whereas the secretary and department chair's announcements' scope is everyone. Admin, Secretary and department chair announcements can be viewed from the public page without having to be logged in.

Use Case#13

1.Name: Create Semester

2.Participating Actor: Admin

3. Entry Condition: Admin logins for the first time.

4.Exit Condition: Exiting the page or successfully creating the semester

5. Flow of Events:

1. Admin will see a section to upload a file to create new users, and another section to provide add/drop, withdrawal, and semester end dates of the semester.
2. After entering the necessary information and files, the admin will press the "Create Semester" button to initialize the semester.
3. This action will create the new users from the file.
4. After creating the semester, admin will be directed to their updated main page (please refer to "Admin Main Page" from Screen Mock-ups for the updated main page).

6. Special Requirements: Initializing the semester is a specific task for the admin. After the admin creates secretary or department chair users, both these groups can create students and instructors into the system.

Use Case#14

1.Name: Create / Delete User

2.Participating Actor: Department Secretary, Admin

3.Entry Condition: Having a secretary/department chair account created and admin has created the semester.

4.Exit Condition: Completing the signing up process or exiting the page.

5. Flow of Events:

1. Actor logins to the system.
2. For secretary and department chairs, they click to the "Add New User" button (if there are no users) or (if there are existing users) to the blue plus sign to add a new user, which creates a new user pop-up. Admins can create a user directly from their main page.
3. Then the actor specifies the new user's course, role, name, and Bilkent webmail address. Admins should also specify the department.
4. By clicking the "create" button for the password, the actor creates the user.
5. Secretaries and department chairs can also create new users by uploading a file in the main page or in the pop-up.
6. It is also possible to see the users that are signed up in the system.

7. If a user needs to be deleted from the system, the actor may select the “more” button next to the user. This will reveal a drop-down information card where the user can be deleted via the “delete” button.
6. Special Requirements: The department secretary can only create users from their department. For student role users, the secretary needs to select whether they are taking xx299 or xx399. For instructors, the secretary needs to specify the upper limit of students that the instructor could have. In user deletion, if the deleted actor is an instructor, all of the instructor’s students will be reassigned to other instructors. Instructors can also be deleted from the “Matchings” page with a similar flow of events. All user deletions will be verified with a pop-up.

Use Case#15

- 1.Name: Start Courses
- 2.Participating Actor: Department Secretary
3. Entry Condition: Last day of Add/Drop must have passed.
- 4.Exit Condition: None.
5. Flow of Events:
 1. The student-instructor pairings are done automatically. The department secretary can change one of the pairings by clicking the change the pairing.
 2. After all the students are matched with an instructor, the department secretary starts the semester by clicking the Start Semester button.
6. Special Requirement: If one of the instructors did not get any students, a pop-up screen asks if the secretary wants to delete the instructor or not.

Use Case#16

- 1.Name: View User List
- 2.Participating Actor: Admin, Secretary, Department Chair, Instructor
3. Entry Condition: Participating actors must be logged in.
4. Exit Condition: None.
5. Flow of Events:
 1. The actor will log into the system to view their main page.
 2. The list of users will be displayed.
6. Special Requirements: The scope of the actors will determine the contents of the user list. Instructors will only see the list of students that are assigned to them while the department secretary will be able to view all users in their corresponding department. This feature will be implemented only after users are added to the system and the semester has started.

Use Case#17

1. Name: Change Student-Instructor Pairings

2. Participating Actors: Department Secretary

3. Entry Condition: Admin creates semester

4. Exit Condition: None

5. Flow of Events:

1. First, the secretary clicks the “Matching” button on the main page.
2. This button brings all instructors with their matched students.
3. When necessary, the Secretary clicks the dropdown option on the instructor section. Then, the Secretary can select a student to rearrange the pairings that need to change by clicking the “Rematch” button next to the student’s name.
4. After that, a Rematch popup appears where the Secretary selects the new instructor’s name from the dropdown menu.
5. Secretary hits the “Save” button to finalize the rematching and goes back to the “Matching” page with instructors’ updated student lists.

6. Special Requirements:

The admin can create all department secretaries and department chair users. Student/Instructor pairings can only be done if both of them are in the same faculty. Also, secretaries and admin can only see and edit pairings in their faculties.

Use Case#18

1.Name: Enter Summer Training Grade Average from Summer Training Evaluation Form

2.Participating Actor: Department Secretary

3. Entry Condition: The department secretary must be logged into the system and click on the student they want to enter the company grades from their main page.

4.Exit Condition: Logging off.

5. Flow of Events:

1. The secretary will log into their accounts and click on the student they want to enter company grades on their main page.
2. When they click on the student, an attribute named company grade will appear.
3. Secretary will enter the company grade and hit the save button next to it.
4. They can select other students to enter company grades.

6. Special Requirements: In the student list, there will be a status indicating whether the Summer Training Evaluation Form that is sent from the company is given to the secretary. If the student’s status is “waiting”, it will not be possible to enter the Summer training grade. Companies cannot directly access this system, therefore, in order to send the summer training grade average, they have to send it through students or send an email to the department secretary.

Use Case#19

- 1.Name: View Summer Training Grade Form
- 2.Participating Actor: Instructor, Department Secretary
3. Entry Condition: Clicking on the appropriate student from the users list in their main page
- 4.Exit Condition: Click the left arrow button on the browser
5. Flow of Events:
 1. Instructor clicks on the appropriate student from the users list in their main page.
 2. Then a pop up that has an internship report, criteria report and grade form button for that specific student.
 3. Instructor will click on the grade form button.
 4. Then the instructor can see what is written on the summer training grade form for that specific student or change the contents of what is written in the form.
6. Special Requirements: Only the Instructor and Department Secretary can see Summer Training Grade Form.

Use Case#20

- 1.Name: View Criteria Report
- 2.Participating Actor: Department Chair, Secretary
3. Entry Condition: Clicking on the appropriate student from the users list in their main page
- 4.Exit Condition: Click the left arrow on the browser
5. Flow of Events:
 1. Instructor clicks on the appropriate student from the users list in their main page.
 2. Then a pop up that has an internship report, criteria report and grade form button for that specific student.
 3. Instructor will click on the criteria report button.
 4. Instructors will then be directed to the Google Drive file that has criteria reports as PDF files. They can see what is written on the criteria report for that specific student or change the contents of the criteria report written previously by clicking on the report.
6. Special Requirements: Instructors can see only their assigned students' criteria Report. Instructors can always see the criteria report even for students with unfinished progress.

Use Case#21

- 1.Name: Set Initial Deadline
- 2.Participating Actor: Department Chair

3. Entry Condition: Having no current deadline for the first report submission

4. Exit Condition: Setting an appropriate date for the first report deadline

5. Flow of Events:

1. Department chair clicks on the edit button on their main page to change semester info and chooses a date that is after the day of initialization.
2. Department chair saves the date and instructors, students and TA get a related announcement, and the date appears on students' calendar.

6. Special Requirements: Initial deadline must be set to a date after the add/drop period.

Use Case#22

1. Name: View Statistics

2. Participating Actor: Department Chair, Instructor

3. Entry Condition: The department chair or instructor can access the statistics page from their respective main pages by clicking on the statistics logo, which will open the statistics page.

4. Exit Condition: Users can exit the statistics page by either clicking on the main page logo or selecting the left arrow icon on the browser.

5. Flow of Events:

1. Actors access the statistics page by clicking on the statistics logo located on their main page.
2. After clicking on the statistics logo, the statistics page will open.
3. On the statistics page, users can view various types of statistics such as the number of students who have completed their progress, the average time taken to upload revisions, or ABET statistics of the semester if the semester has ended.

6. Special Requirements: Only the department chair and instructor can see statistics in the system. At the end of every semester statistics of the semester are added to the semester folder.

Use Case#23

1. Name: Check Submitted Report

2. Participating Actor: TA

3. Entry Condition: The TA should be logged into the system. They will see a list of students they are assigned to and the internship report status (passed, failed, ask revision).

4. Exit Condition: Logging off

5. Flow of Events:

1. The TA will log into the system.

2. The main page will include the list of students they are assigned to and the student report status.
 3. Students have a reports button on the side. TA can open the report file with this button.
 4. Student reports will be displayed and TA can check the reports and give feedback.
6. Special Requirements: TAs responsibilities are checking report formatting and detecting plagiarism. TAs do not have specific deadlines to give feedback to the student reports. TA checking is not a prerequisite to the instructor grading, therefore, a report can be graded when its TA checking status is no.

Use Case#24

1. Name: Change Withdrawal Status
2. Participating Actor: Department Secretary
3. Entry Condition: Click the white square under “W” on the view user list page. After that, a pop-up appears and asks for further approval.
4. Exit Condition: Click the no button on the pop-up.
5. Flow of Events:
 1. Secretary clicks the white square under “W” on the view user list page.
 2. Secretary clicks the “confirm” button on the confirmation pop-up that appeared.
 3. Withdrawal status of the student is changed and the student's instructor receives a notification.
6. Special Requirements: Only the Department Secretary can change the withdrawal status of students.

Use Case #25

1. Name: View Calendar
2. Participating Actor: Student
3. Entry Condition: Students will have to be logged into the system as the calendar will be on their main page.
4. Exit Condition: None.
5. Flow of Events:
 1. Actors log into the system with their appropriate credentials.
 2. The calendar will be on the left side of their main page.
 3. It contains report submission deadlines and the system will automatically update these deadlines if an extension is granted.
6. Special Requirements: Students must be logged in as the calendar for each student is unique.

3.4.2 Use Case Model

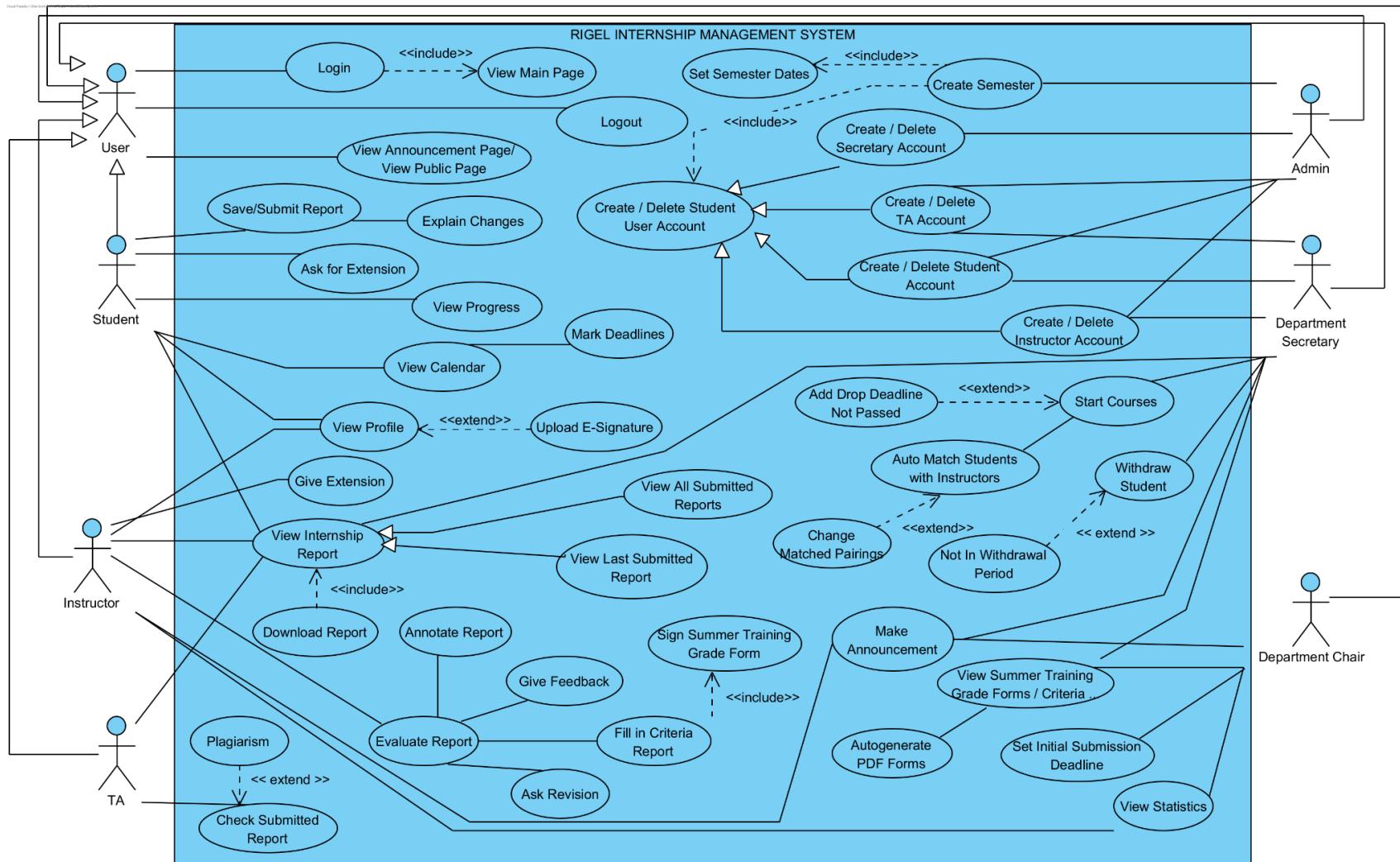


Figure 1: Use Case Model

ACTORS

Admin - This user will create the department chair and secretary users and will have access to view all other users. The main focus of this role is assigning login credentials for all users.

Department Chair - This user will be able to view all users within the department scope. They can make student assignments to instructors, and view grades and criteria forms. The primary task of this role is setting an initial deadline for internship report submission.

Department Secretary - This user will add students, instructors, and TAs to the system and make student assignments to instructors. They also will enter company grades for students which is a prerequisite for instructors to grade internship reports. Once they create accounts for all the users taking XX299 and XX399 courses, they can start the semester.

TA- The TA users will check submitted student reports.

Instructor - This user will grade the student reports, and will fill in the criteria report according to internship reports. During this process, they can make announcements, request revisions, and grant deadline extensions. They will finalize the grading by submitting the grading and criteria report with their e-signature and the final version of the student internship report.

Student - This type of user submits Summer internship reports to the system. They are bound by deadlines and can request extensions that update these deadlines. They can view all iterations of their internship reports, and choose to download their reports.

3.4.3 Object and Class Model

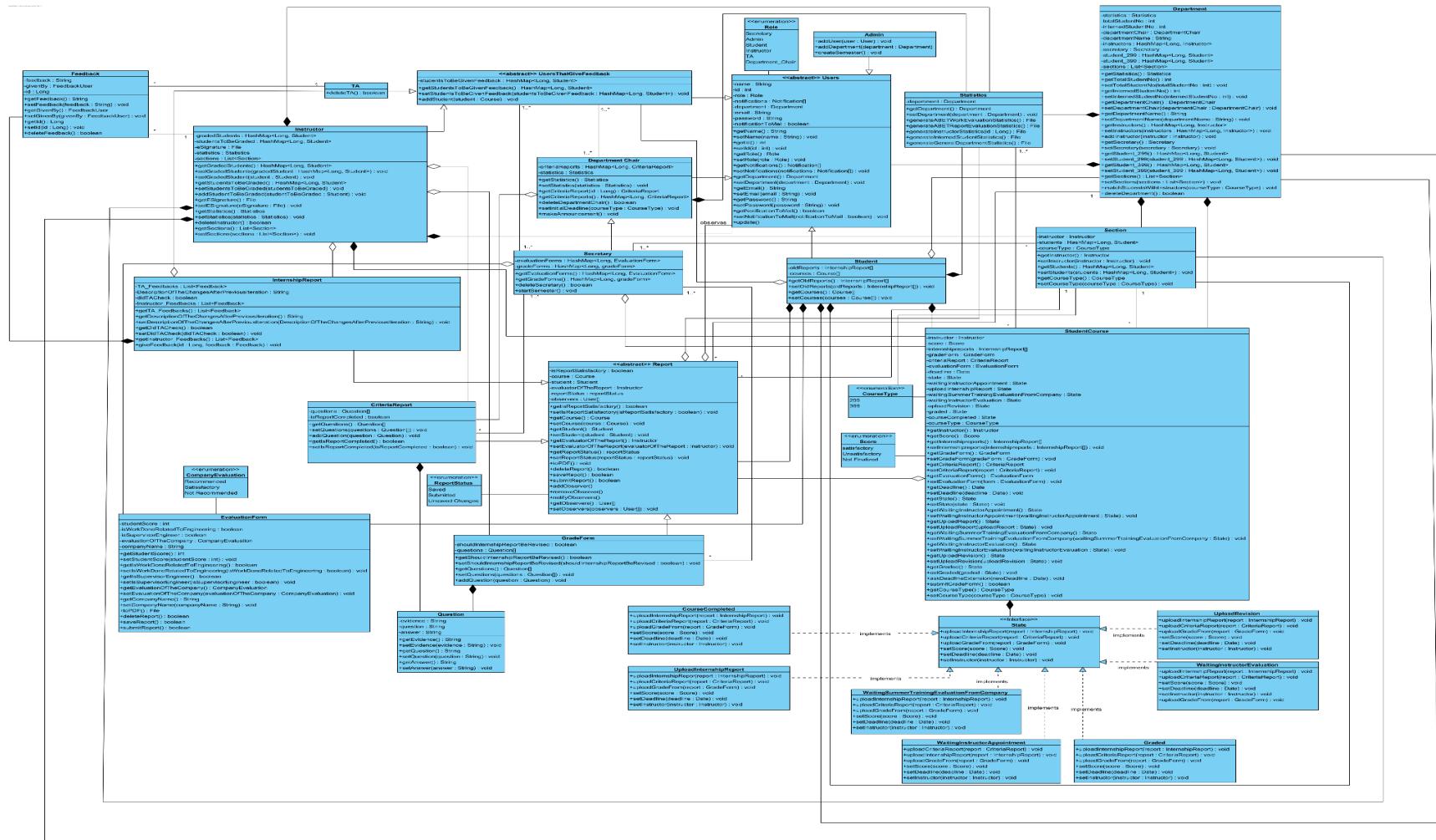


Figure 2: Object and Class Model

Diagram Link: <https://imgur.com/6OHNuUD>

Visual Paradigm Diagram Link: [Rigel Class Diagram.vpp](#)

User Class: The user class is the parent class of all the logged-in users that contains the fundamental requirements. Each user has a role and a department so that the system can distinguish them correctly.

Role Enumeration: "Role" enumerates the possible roles of a user.

Student Class: Student class is where students' old reports and current courses are held.

StudentCourse Class: StudentCourse class is where the student's internship-related reports are held. It also has the student's current status and deadlines. The system automatically assigns deadlines for each revision, but students can ask for extensions. It has multiple states related to the status of the student's progress.

State Interface: State is an interface that contains the functions that change functionality between StudentCourse's different states.

CourseCompleted Class: CourseCompleted is one of the StudentCourse's states, it implements "State" interface. It represents the state where the semester ends, and the course is completed for everyone. In this case, students that are still ungraded will be given "unsatisfactory" grade.

UploadInternshipReport Class: UploadInternshipReport is one of the StudentCourse's states, it implements "State" interface. It represents the state where the system expects the first upload of the Internship Report.

WaitingSummerTrainingEvaluationFromCompany Class:

WaitingSummerTrainingEvaluationFromCompany is one of the StudentCourse's states, it implements "State" interface. It represents the state where the student-instructor matching is made but the summer training evaluation form from the student's internship company. In this state student may upload the internship report, but instructor cannot finalize the grade of the student.

WaitingInstructorAppointment Class: WaitingInstructorAppointment is one of the StudentCourse's states, it implements "State" interface. It represents the state where student-instructor matchings aren't completed. The student cannot upload an internship report in this state.

Graded Class: Graded is one of the StudentCourse's states, it implements "State" interface. It represents the state where the student's grade is finalized by their instructors. Students cannot upload any more reports in this state.

WaitingInstructorEvaluation Class: WaitingInstructorEvaluation is one of the StudentCourse's states, it implements "State" interface. It represents the state where the student has uploaded the report for the StudentCourse object, but their instructor hasn't yet evaluated the report.

UploadRevision Class: UploadRevision one of the StudentCourse's states, it implements "State" interface. It represents the state where the system expects the revised version of the previous iteration of the internship report.

Admin Class: Admin creates the initial secretaries and users. It also initializes faculties (which have student and instructor lists). Also, they can make announcements.

Priority Enumeration: Priority enumerates the possible importance level of the notifications.

Statistics Class: Statistics class calculates several statistics about instructors, students, and faculties. Only TAs and the students can't reach this object. Other users can see any of the mentioned statistics on their profile page.

Faculty Class: The faculty class represents the engineering faculties at Bilkent. Each user has a faculty and can only interact with the users sharing the same faculty. The faculty class holds students, instructors, the department chair, and the faculty secretary.

Report Class: Report class is the parent class of the main three reports of the system, which are grade form, internship report, and criteria report. It contains the main elements of all three classes, like courseName and the grade status of the form. Those reports can be saved or submitted. All reports are initially set to "changeable" status. When a report is submitted its status becomes "unchangeable".

GradeForm Class: The grade form represents the form an instructor (or sometimes faculty secretary) fills to evaluate a student's internship. This report's outcome mainly decides each student's status. First, the summer training evaluation form from the company is examined. If the faculty secretary finds the evaluation form satisfactory, the student's instructor evaluates the student's internship report. When unsatisfactory, the student receives feedback and is expected to update their report, or they may fail the class. If satisfactory, the instructor fills out the criteria report to justify why the internship report was satisfactory. If the score from the criteria report is high enough, that student receives a "satisfactory" grade for the related course.

InternshipReport Class: Internship Report is the report a student prepares after their internship. In this report, students talk about the work they accomplished and the experiences they gained during the internship. The student's instructor decides whether the report is satisfactory or needs revision. This part is used in the second part of the grade form.

CriteriaReport Class: Criteria Report is where the instructor describes the parts they thought made the report satisfactory and rates it according to specific criteria. For each question, the instructor needs to explain the rating they've given.

Question Class: Question class is used for questions on the criteria report and the grade form. The "Evidence" part of the class is optional and might not be used (for example, it'll be used in criteria form but not in grade form).

EvaluationForm Class: Summer Training Evaluation Form is the evaluation of a student's work during the internship period. The student's employer rates the student according to

some criteria unbeknownst to the student. Those ratings are used in the first part of the grade form.

UsersThatGiveFeedback Class: CompanyEvaluationclass is the parent class of the users who give feedback: TAs and instructors. It contains base elements of the two classes, like students or giving feedback.

Instructor Class: The instructor class is responsible for filling out the criteria form and (most of) the grade form. Each instructor has multiple students. They can approve the internship reports or send them back for revision. They can sign the forms with eSignatures. Also, they can view the statistics related to their faculty and make announcements.

TA Class: TA class' main purpose is to supply feedback to students' internship reports. TAs are independent of the instructors.

Feedback Class: Feedback represents the feedback given by TAs and the instructor to students' internship reports.

CompanyEvaluation Enumeration: CompanyEvaluation enumerates the possible options and how satisfactory the company a student interned in can be.

Department Chair Class: Department chair symbolizes the administration part of each faculty. We will not use a separate class for department chairs. They can view the instructors' finalized criteria reports and their faculty's statistics. They can sign forms with eSignature. Also, they can change the student/instructor pairings within their faculties. They also set the initial joint deadline. In addition, they can make announcements.

Secretary Class: Secretary is a child class of the "Department Chair" class. They handle the initialization and the completion of the grade form. They fill out the initial part of the grade form and finalize the student's grade. They can see the statistics of their faculty and view finalized evaluationForms and gradeForms of instructors. They can sign forms with eSignature.

Section Class: Section represents an instructor's section in XX299 or XX339 courses. It has a "students" HashMap representing the students of the instructor in that section and a courseType variable to signify whether it is XX299 or XX399.

3.4.4 Dynamic Models

3.4.4.1 State Diagrams

State Diagram 1: Student State Diagram

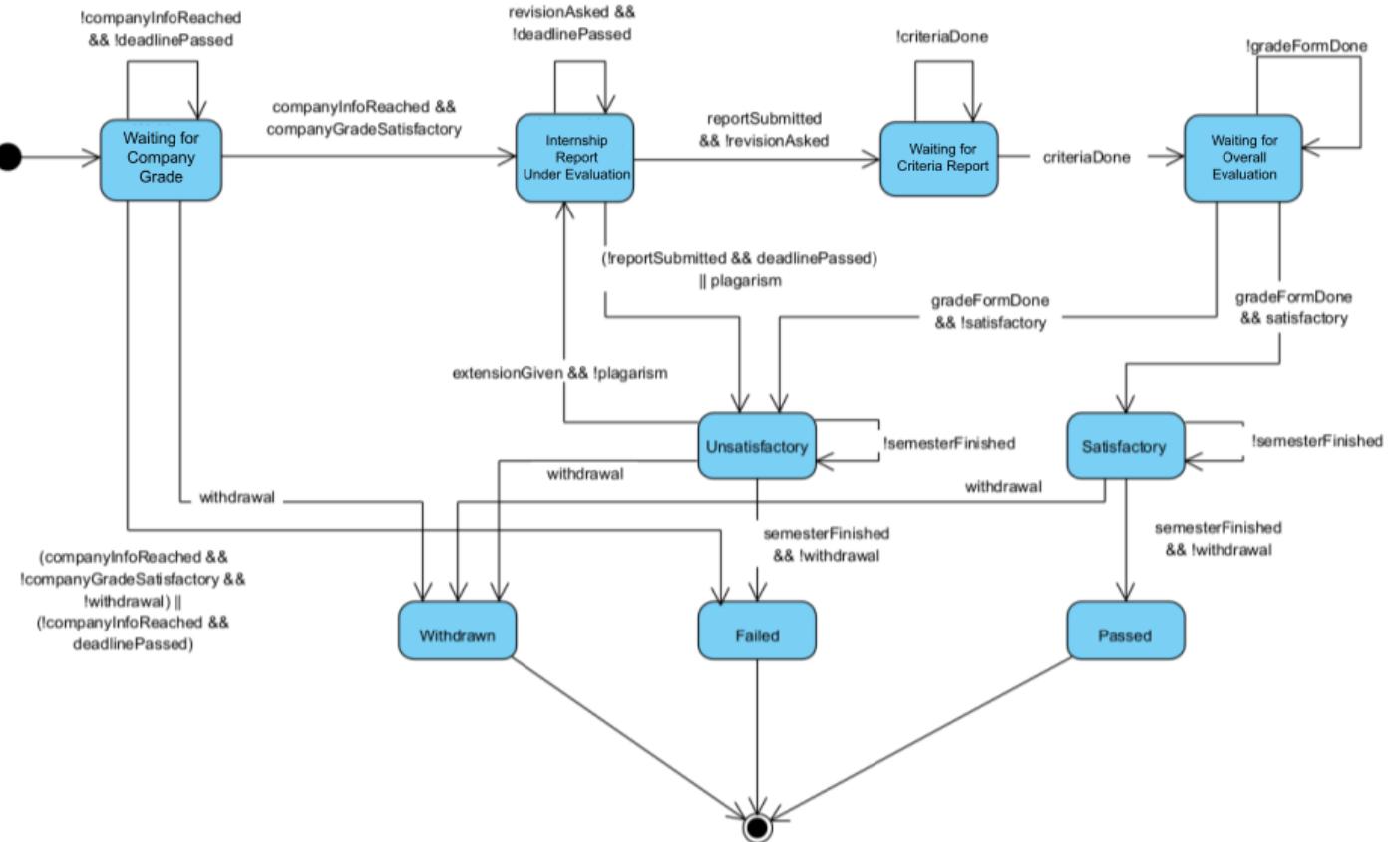


Figure 3: Student State Diagram

This diagram represents the student state at a higher level. The revision count is abstracted. States of students can be considered as states of students from the point of view of the administration. Also, note that this diagram displays the students who have only one course. If a student takes another internship course, the same procedure also applied to another course.

State Diagram 2: Internship Report State Diagram

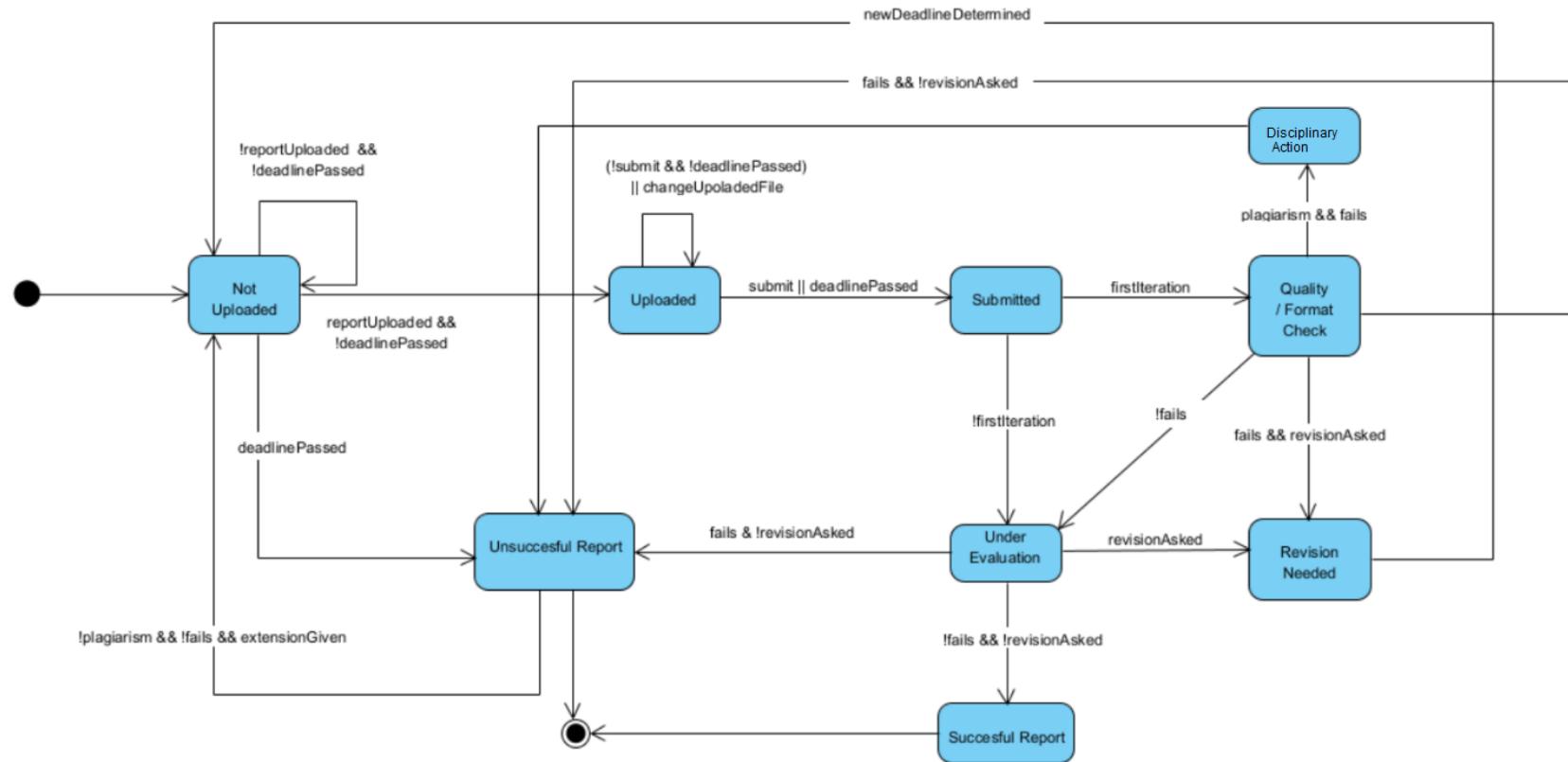


Figure 4: Internship Report State Diagram

Internship report is the report that is written for the x299/399 course of the related department, which is written about his/her internship experiences and workplace experiences in the previous summer. These states can be considered as states of the internship report as a point of the student. Note that a student is able to upload his/her form temporarily and when the deadline passes or the submit button is clicked it is ready to be evaluated.

State Diagram 3: Evaluation Criteria Report State Diagram of A Student

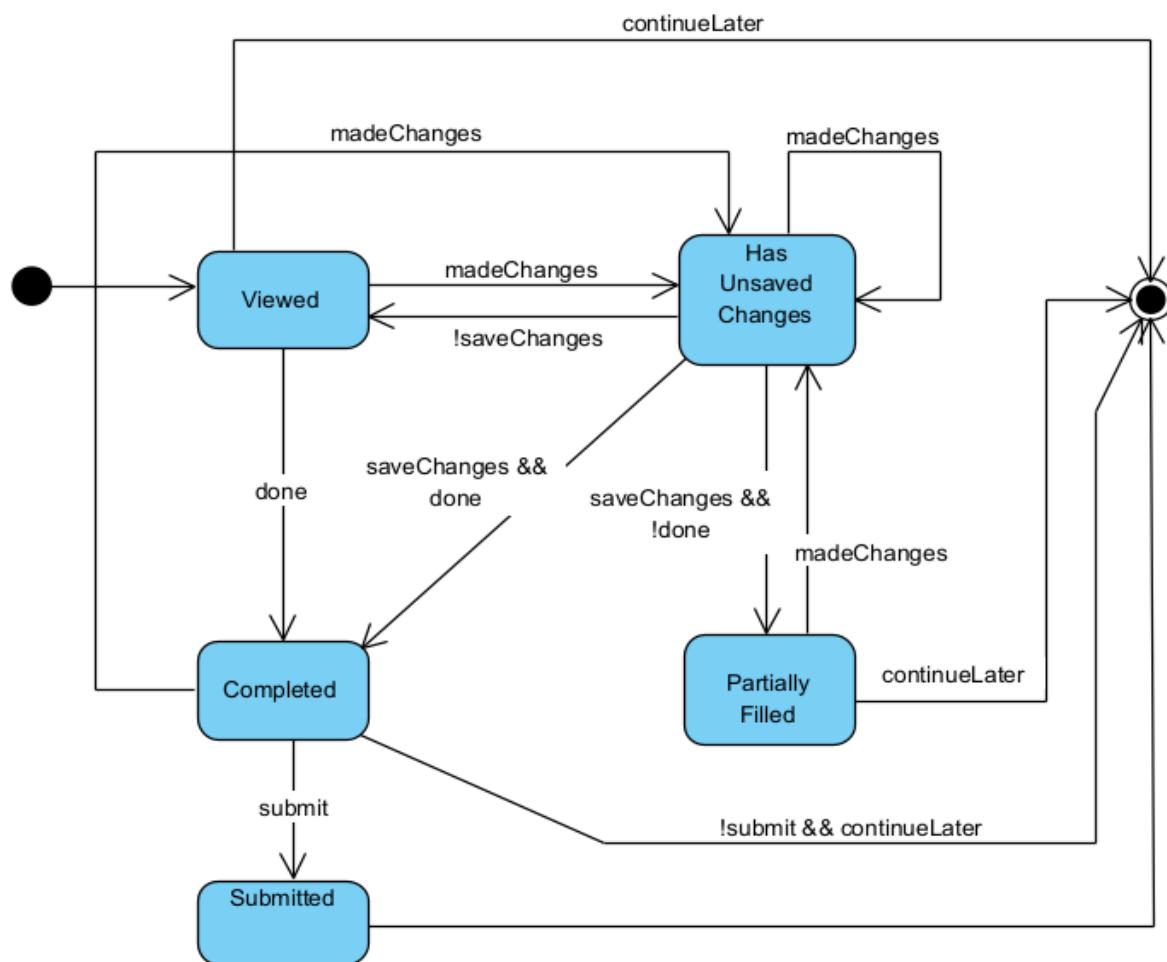


Figure 5: Evaluation Criteria Report State Diagram of A Student

Evaluation criteria report is the report that is required to be filled out with an evaluation of the work and evaluation of the report with evidence from the report and quality score by the instructor, which is required for ABET accreditation. Therefore, every student who is taking x299/399 courses has only one criteria report to be filled out by their instructor. Instructors might partially fill out this form, save their work and continue later. After all the questions are completed, the instructor can submit the report. Submitting the criteria report is an irreversible process and after that no changes can be made.

State Diagram 4: CS Summer Training Grade Form State Diagram

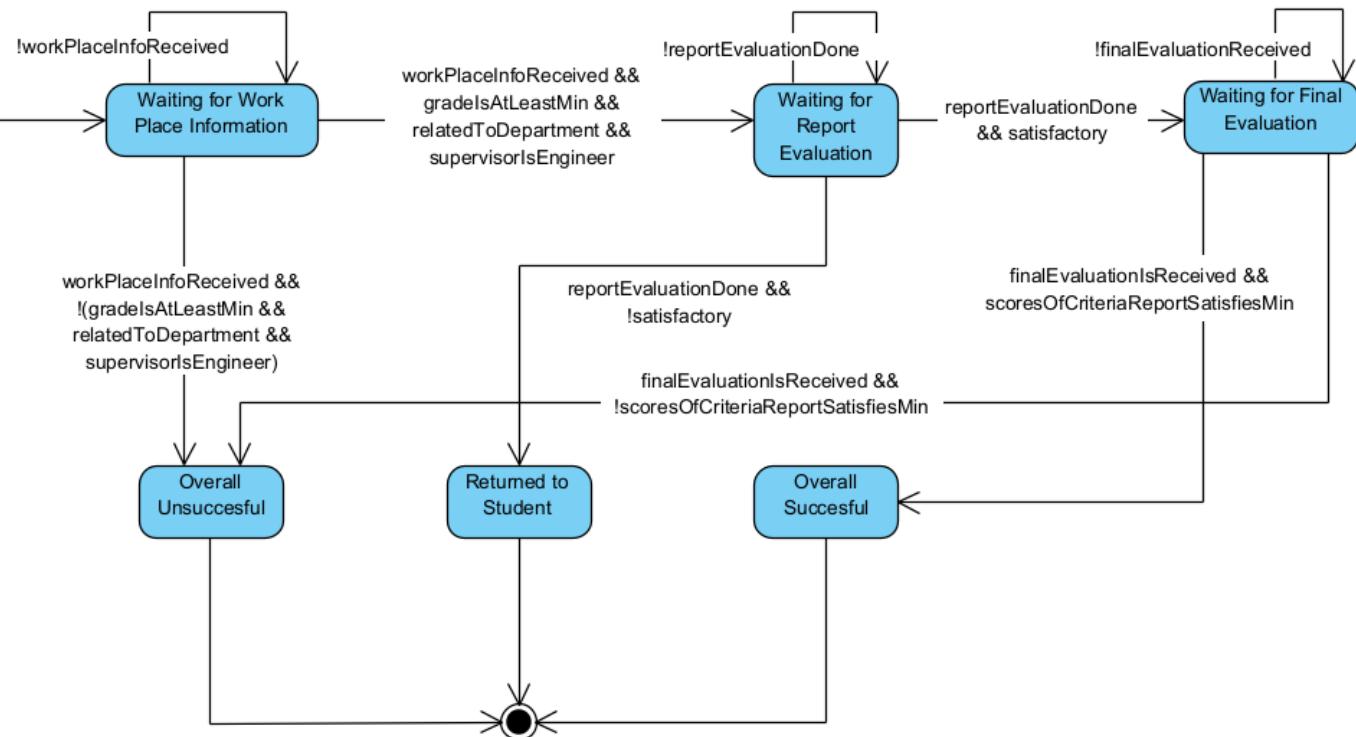


Figure 6: CS Summer Training Grade Form State Diagram

This state diagram describes the stages of the summer training grade form. Part A of the grade form is evaluated by the secretary according to the workplace information and students may be considered overall unsuccessful if the minimum criteria is not met. If they satisfy the minimum conditions, report evaluation is then done by the instructors and they may request revisions. This process is integrated into the report evaluation process.

State Diagram 5: Notification State Diagram for Student

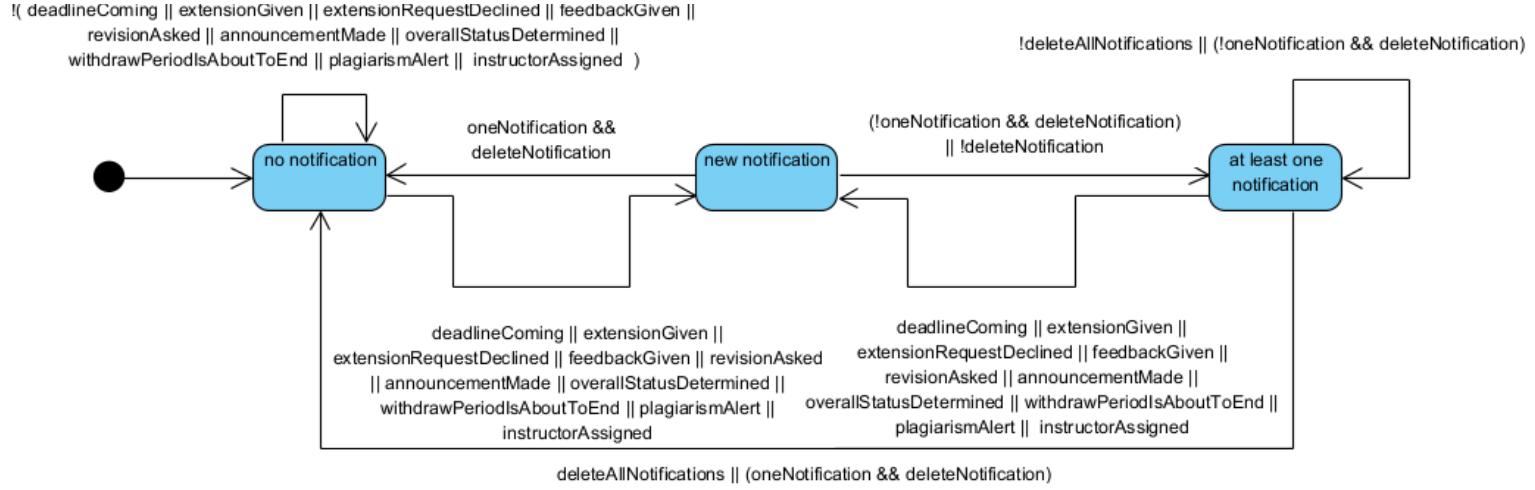


Figure 7: Notification State Diagram for Student

State Diagram 6: Notification State Diagram for Instructor

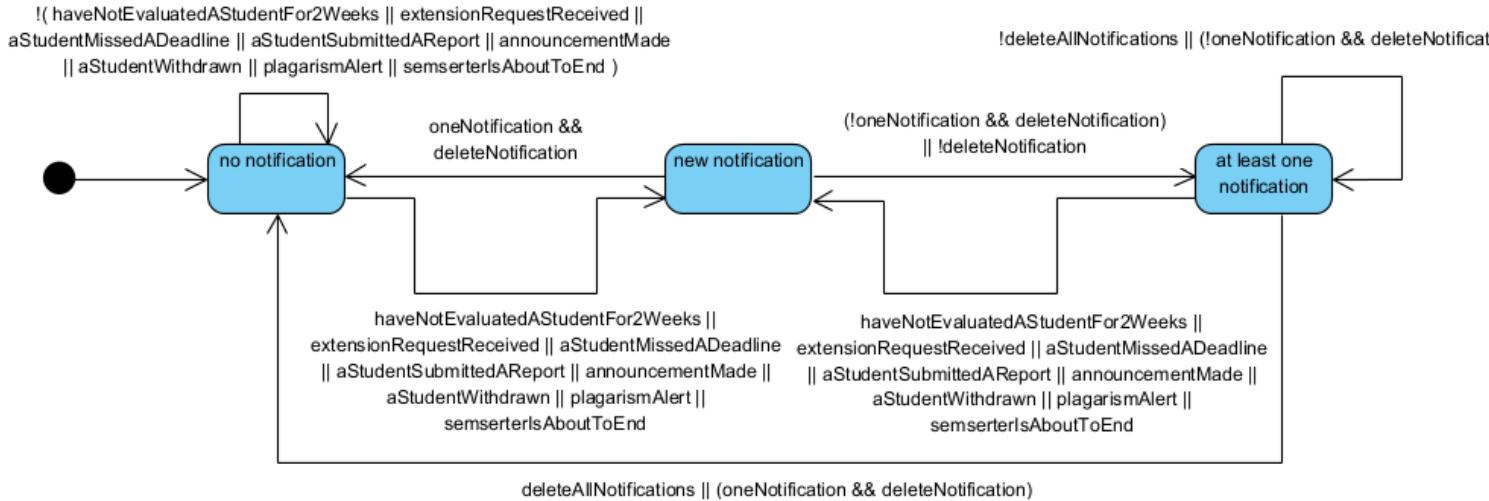


Figure 8: Notification State Diagram for Student

State Diagram 7: Notification State Diagram for Secretary

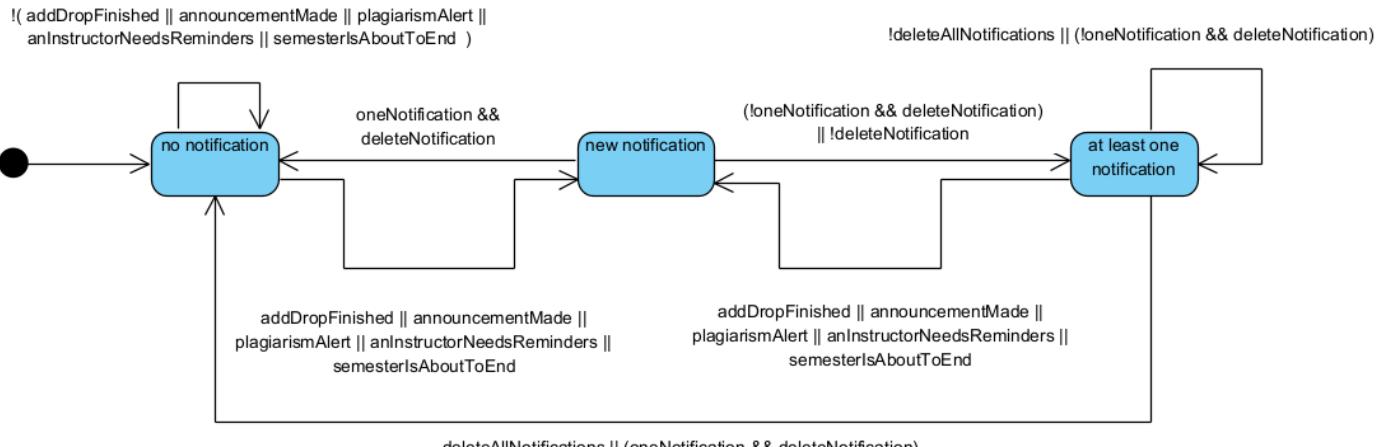


Figure 9: Notification State Diagram for Student

Notifications:

- ***deadlineComing*** | Receiver actor: Student
If an internship report of a student requires submission and the student hasn't submitted it, the system notifies the student in specified times (three days before submission deadline and the deadline day).
- ***extensionRequestReceived*** | Receiver actor: Instructor
If a student needs additional time to upload an internship report, he/she should request an extension before a determined deadline comes. Once he/she sends an extension request to the instructor who is responsible for him/her, the system notifies the instructor.
- ***extensionRequestDeclined*** | Receiver actor: Student
If an instructor receives an extension request, the instructor may decline the request and the deadline remains unchanged. The system notifies the student who has asked for an extension with this decision.
- ***extensionGiven*** | Receiver actor: Student
If an instructor receives an extension request, the instructor may approve the request and can determine a new deadline. Also, an extension can be given without the extension request, in both of cases the system notifies the student whose submission deadline is modified.
- ***aStudentMissedDeadline*** | Receiver actor: Instructor
If a student didn't submit his/her internship report and the deadline passed, then the instructor who is evaluating his/her report is notified.
- ***aStudentSubmittedAReport*** | Receiver actor: Instructor
If a submission is required and a student uploads his/her internship report to be evaluated, then the instructor who is evaluating his/her report is notified.
- ***feedbackGiven*** | Receiver actor: Student
When an instructor gives feedback about a report, the system notifies the student whose report is evaluated.
- ***revisionAsked*** | Receiver actor: Student
If an instructor asks for some changes in report accounting to his/her feedback, the system notifies the student of this decision and the new submission deadline whose report is evaluated.
- ***overallStatusDetermined*** | Receiver actor: Student
If a student report is eligible for evaluation (passed minimum Summer Training Evaluation Form threshold, not withdrawn, etc.) and after this report evaluation is done, the instructor confirms the overall status of the student whether he/she is satisfactory or unsatisfactory. Then this decision is made, and the system notifies the student.

- *semesterIsAboutToEnd* | Receiver actor: Instructor, Department Secretary
If the instructor hasn't finished all the criteria reports or all the grade forms of his/her assigned students and one month remains for the semester to end, the system notifies the related actors.
- *withdrawPeriodIsAboutToEnd* | Receiver actor: Student
All students who are registered in the system are notified by the system 2 days before the withdrawal period is ended.
- *aStudentWithdrawn* | Receiver actor: Instructor
If a student withdraws from one of the internship courses and the secretary updates the withdrawal status of the student in the system after the withdrawal period, then the instructor who is evaluating his/her internship report is notified.
- *haveNotEvaluatedAStudentFor2Weeks* | Receiver actor: Instructor
If an instructor has at least one student whose reports are available to evaluate for 2 weeks and he/she didn't give any feedback, the system reminds the instructor to evaluate these reports.
- *addDropFinished* | Receiver actor: Department Secretary
When the add/drop period ends, the secretary is notified by the system so that he/she is informed that there will be no more students to add or delete and can start the semester.
- *anInstructorNeedsReminders* | Receiver actor: Department Secretary
If an instructor gets *haveNotEvaluatedAStudentFor2Weeks* notification two times in a row, the department secretary is notified.
- *plagiarismAlert* | Receiver actors: Student, Instructor, Department Secretary & Chair
If the internship report is marked as plagiarized in Quality/Format check, the related actors are notified.
- *announcementMade* | Receiver actors: Student, Instructor, TA, Department Secretary, Department Chair
If an announcement is made, actors receiving it are notified.
- *instructorAssigned* | Receiver actor: Student
When the department secretary assigns an instructor to a student as an evaluator of the internship report or a change occurs in the evaluator and a new instructor is assigned, students are notified by the system.

3.4.4.2 Activity Diagrams

Activity Diagram 1: Instructor Activity Diagram

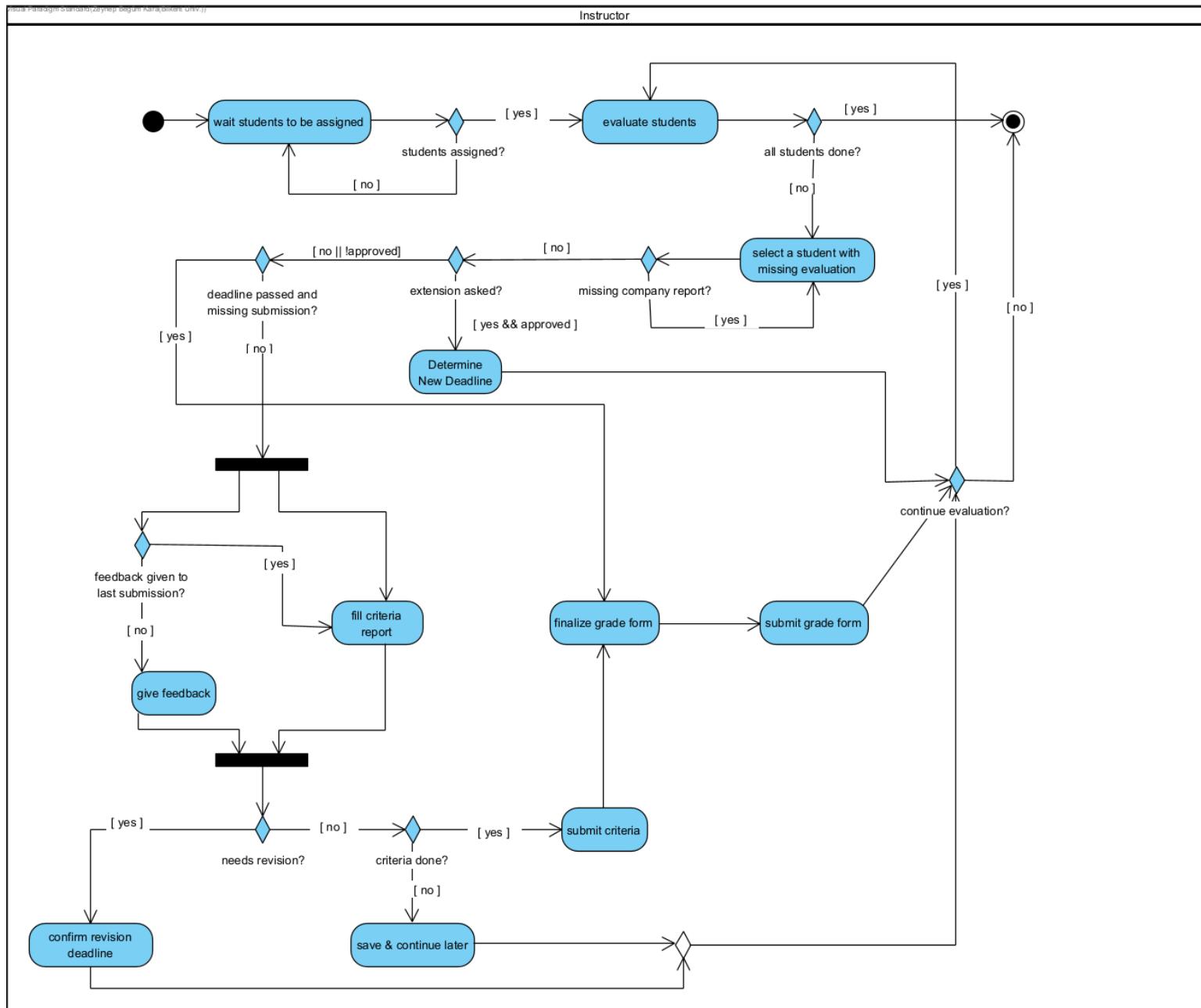


Figure 10: Instructor Activity Diagram

After the instructor profile is created by the secretary, they wait to be assigned to students. After assignments, instructors can start evaluating the student reports. During this process, instructors will select a student with missing evaluation. Here, students' company grade is a prerequisite for grading. Students may ask for extensions and if they are granted, the instructors will set the new deadline. Students cannot ask for extensions if the initial deadline has passed. They will be filling out the criteria report and depending on its status, instructors can choose between save & continue later or submit. Once they submit a criteria report, they will be directed to finalize the grade form with their e-signature. This cycle continues until every valid student report is graded.

Activity Diagram 2: Internship Report Evaluation Diagram

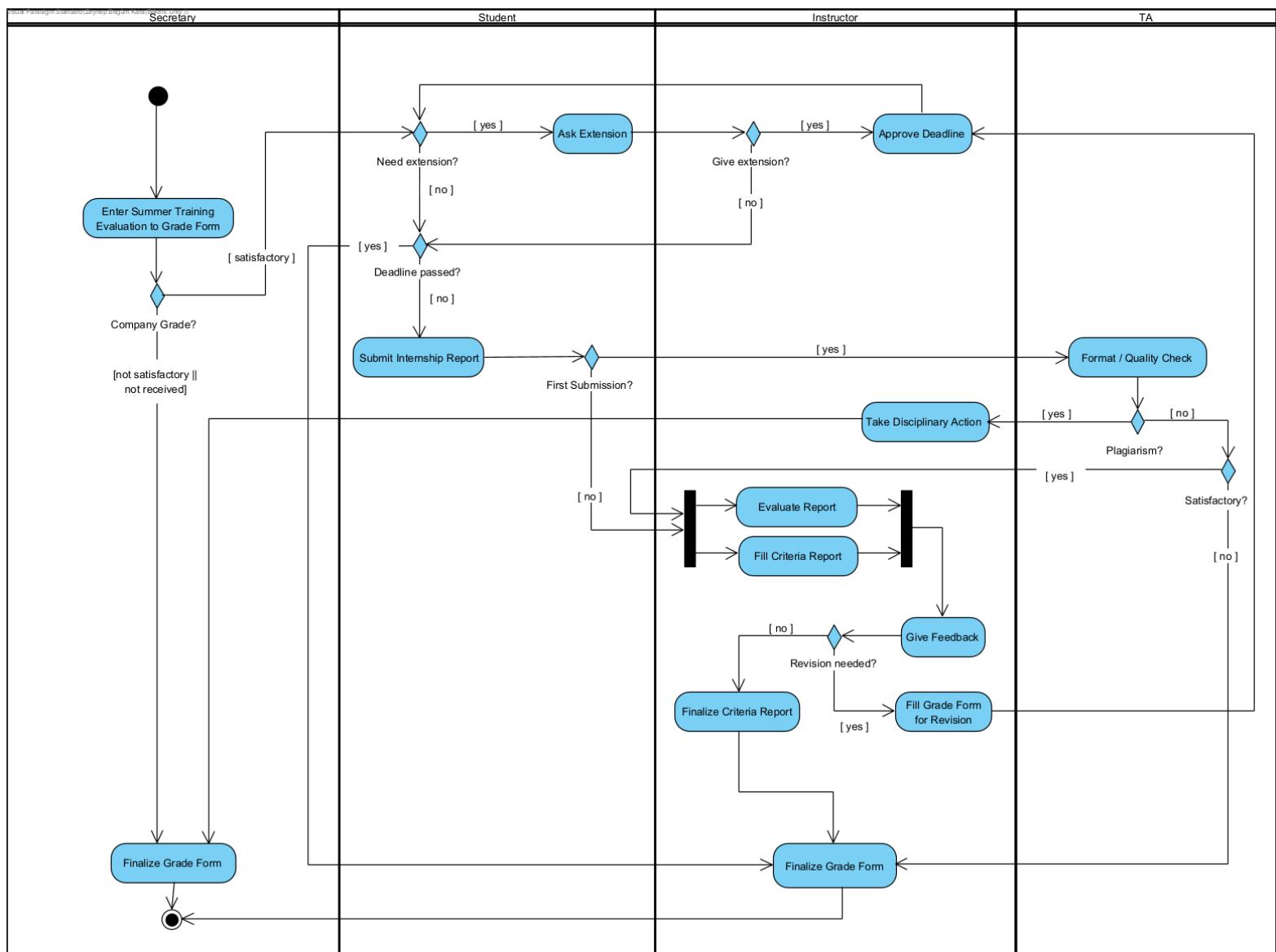


Figure 11: Internship Report Evaluation Diagram

As a design choice, filling criteria report option for instructors is available even if revision is needed in the internship report. This choice resulted from giving flexibility to instructors when evaluating reports especially when they asked for minor revisions in student internship reports. Finalizing grade form action includes submitting all related reports of the student, e-signing the document with name, date and e-signature. It is assumed that if a student fails because his/her Summer Training Evaluation Form threshold is not met or the report is plagiarized, then the department secretary finalizes the grade form. Otherwise, the instructor finalizes the form.

Activity Diagram 3: Student Assignment Activity Diagram

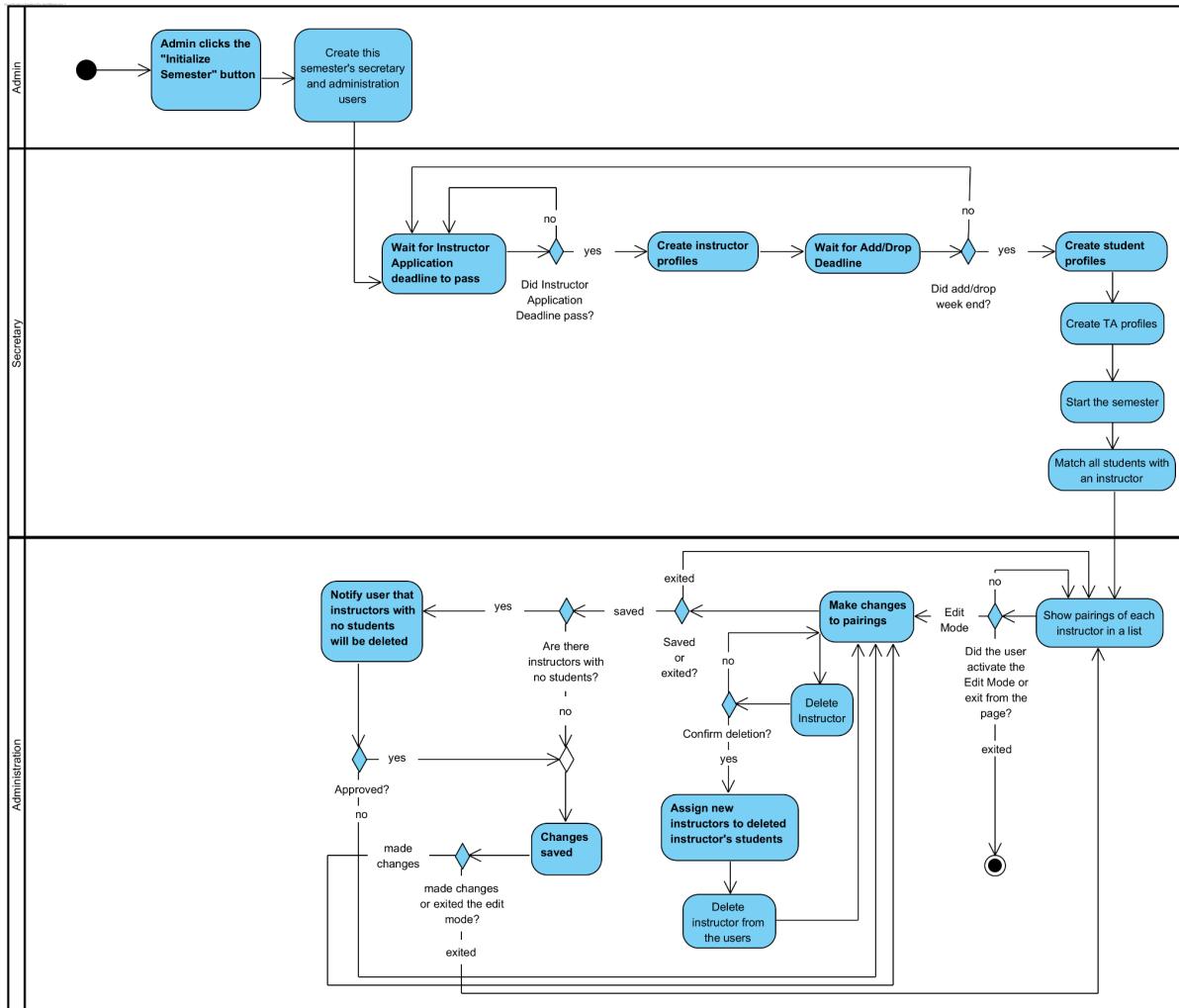


Figure 12: Student Assignment Activity Diagram

In Student Assignment, the system first waits for instructors and students of the courses to be finalized. After that, the secretary initializes the courses. Then, the system automatically assigns each student to an instructor. After the first initialization, the admin, and secretary can see the pairings on the related page. They can change the pairings in the edit mode by drag-and-drop functionality. If there are instructors left without students after the changes, the system deletes those instructors by first asking for confirmation from the user that made the changes.

Activity Diagram 4: Revision Activity Diagram

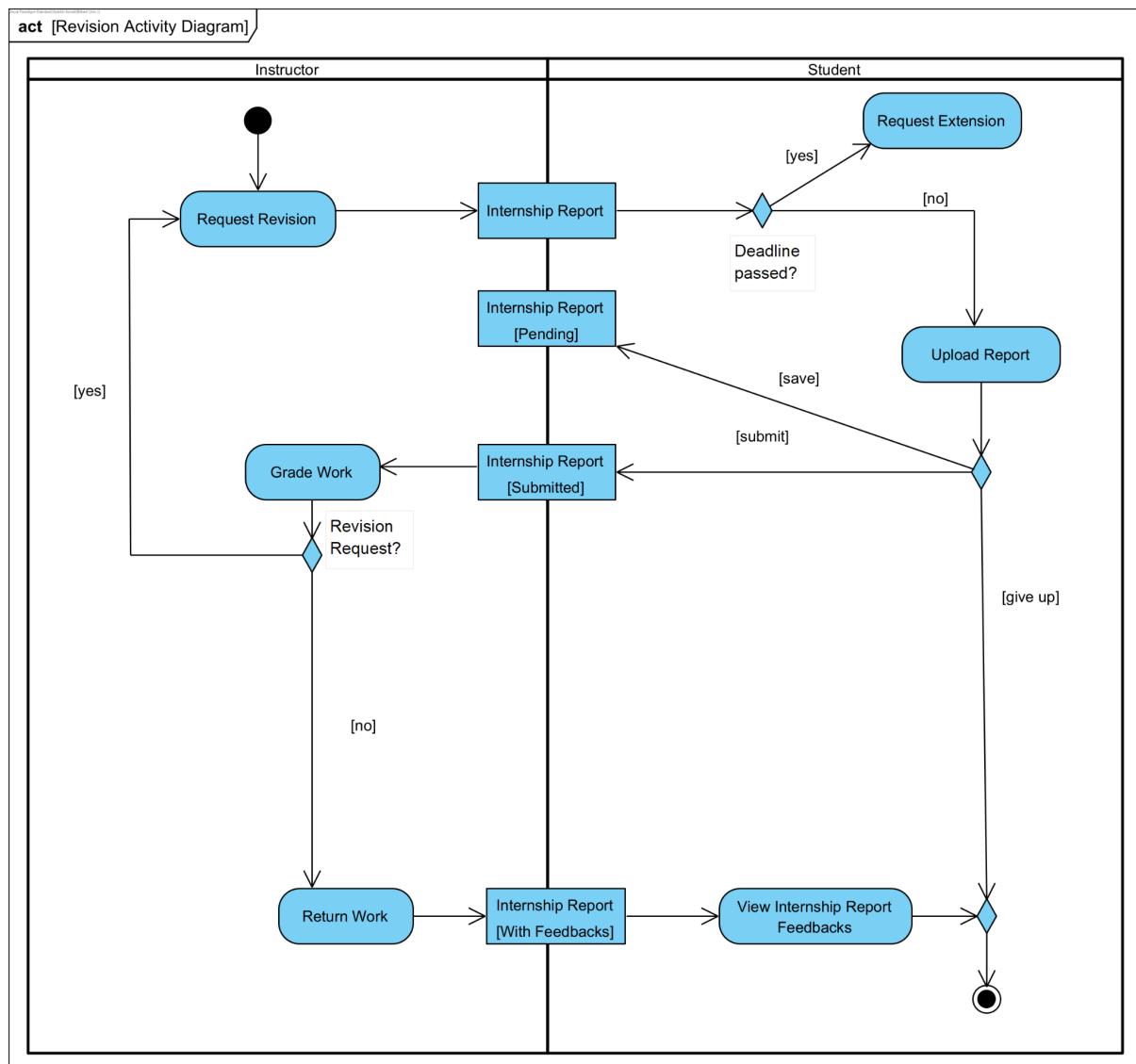


Figure 13: Revision Activity Diagram

Once the instructor requests for revision, students will be able to see their reports with feedback. They will update their report according to the feedback and may choose to save their draft in the system. Once they complete and submit the revision within the deadline confirmed by the instructor, their reports are graded. Instructors can request further revisions, or conclude that no revision is needed. If there is no revision needed, the instructor will return the final version of the student report to the system with feedback.

Activity Diagram 5: Report Archiving Activity Diagram

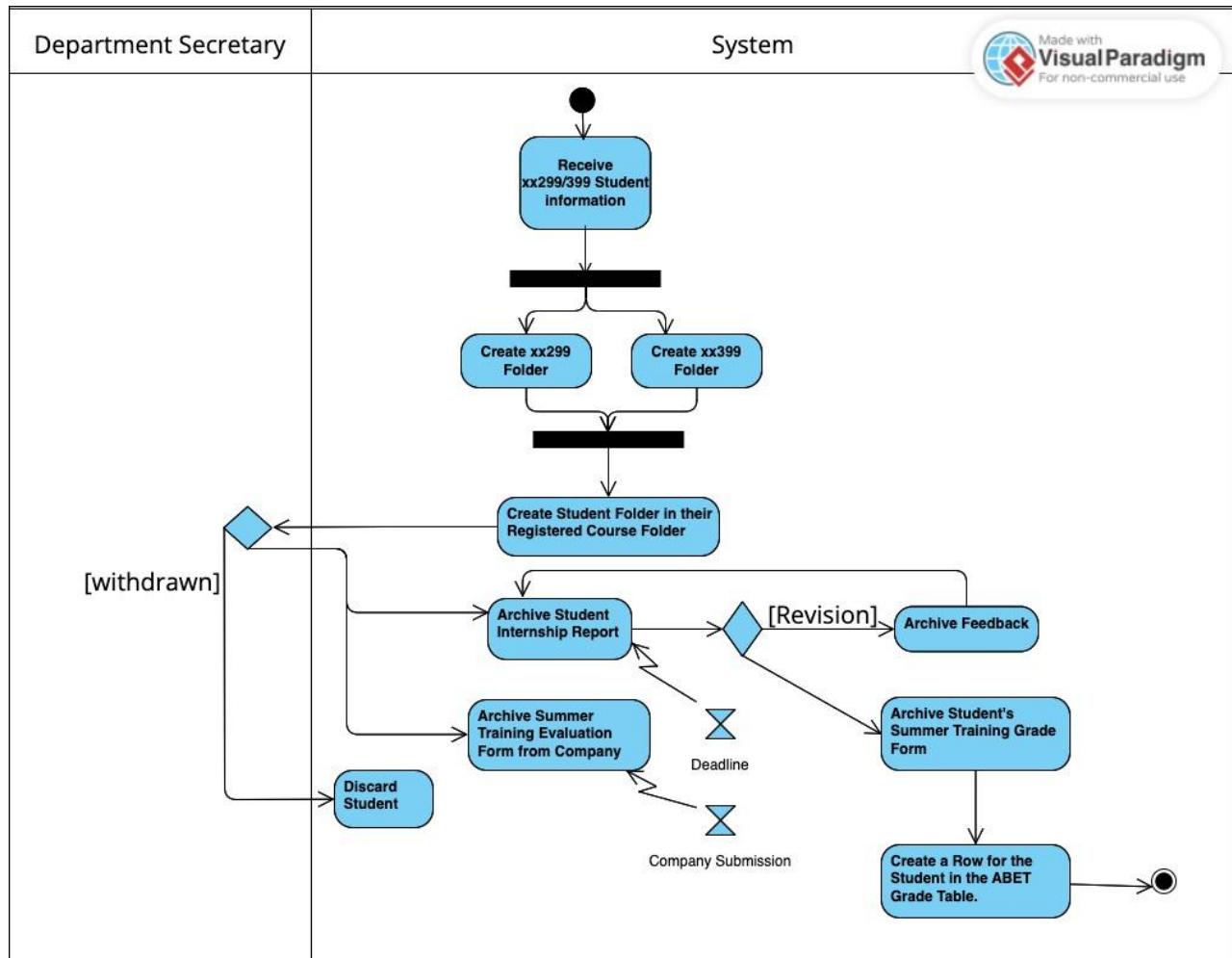


Figure 14: Report Archiving Activity Diagram

All of the activity stages above are done by department secretaries. It demonstrates the specified feedback taken in order to update the students' archive where student Summer Training Evaluation Form from their company, their internship reports with each version, and their respective feedback are stored. At last, the secretary archives the Summer Training Grade Form sent by the instructors. After the students' forms are archived, a row in the ABET student grade table is created for the student with their grades received for each component of the criteria report.

Activity Diagram 6: Secretary User's Autogenerate Form Activity Diagram:

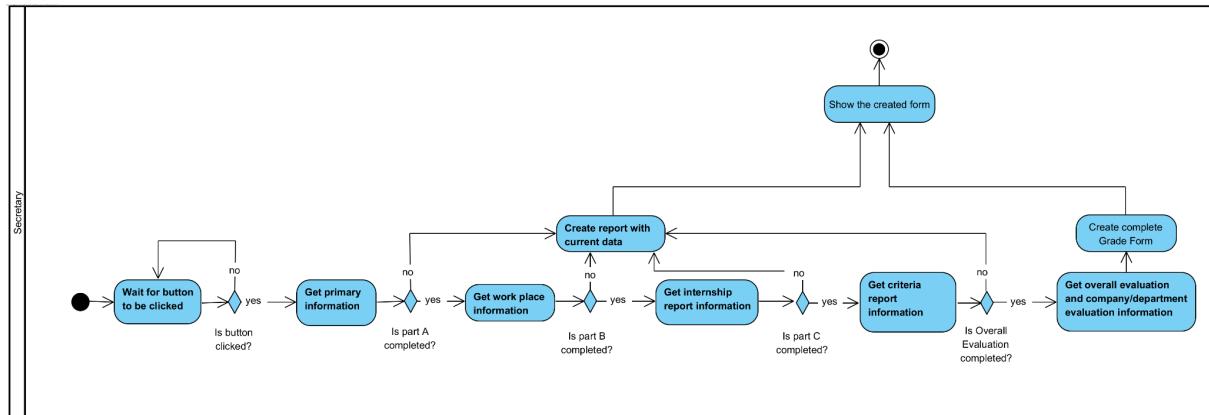


Figure 15: Secretary User's Autogenerate Form Activity Diagram

Users except TAs and students can generate the forms in order to print and sign them. After a related button is clicked for a form, the system collects the data entered so far to fill the form. The generated form then appears to the user as a PDF file.

Activity Diagram 7: Student Report Upload Activity Diagram:

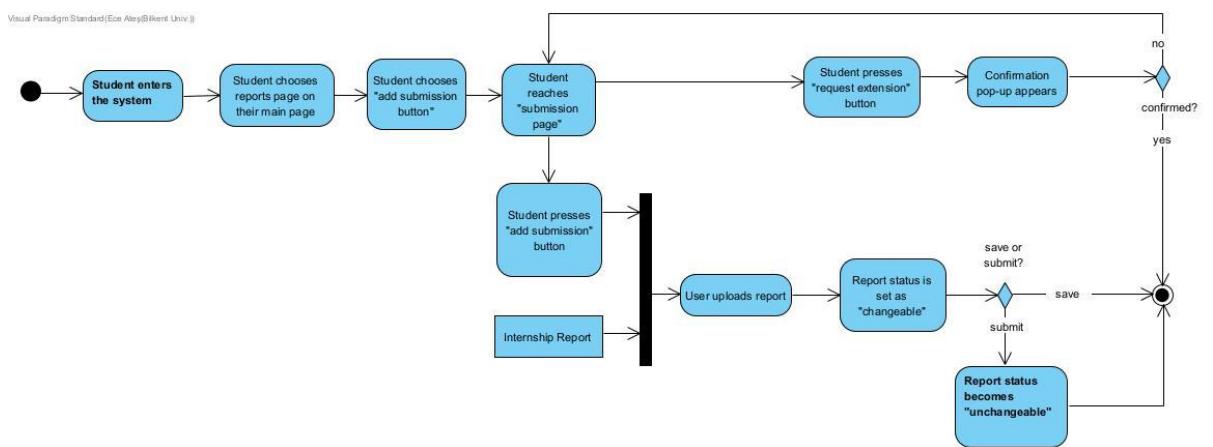


Figure 16: Student Report Upload Activity Diagram

To upload a report, students must reach the “submission page” from their main page. There students can either ask for a deadline extension from the instructor or they can upload an internship report. If a student uploads a report, the report’s status is set as “changeable”. If the user decides to submit the report, this status becomes “unchangeable”. Otherwise, the status stays the same.

3.4.5 User Interface - Navigational Paths and Screen Mock-ups

Public Page

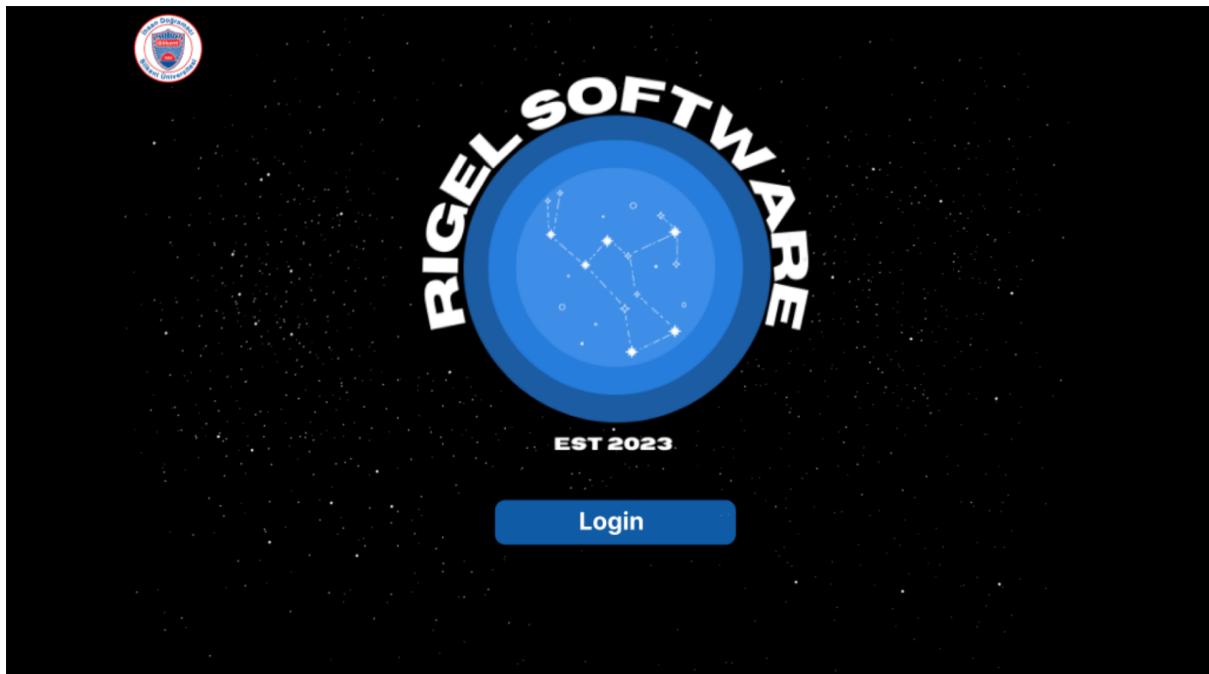


Figure 17: Public Page

Login Page

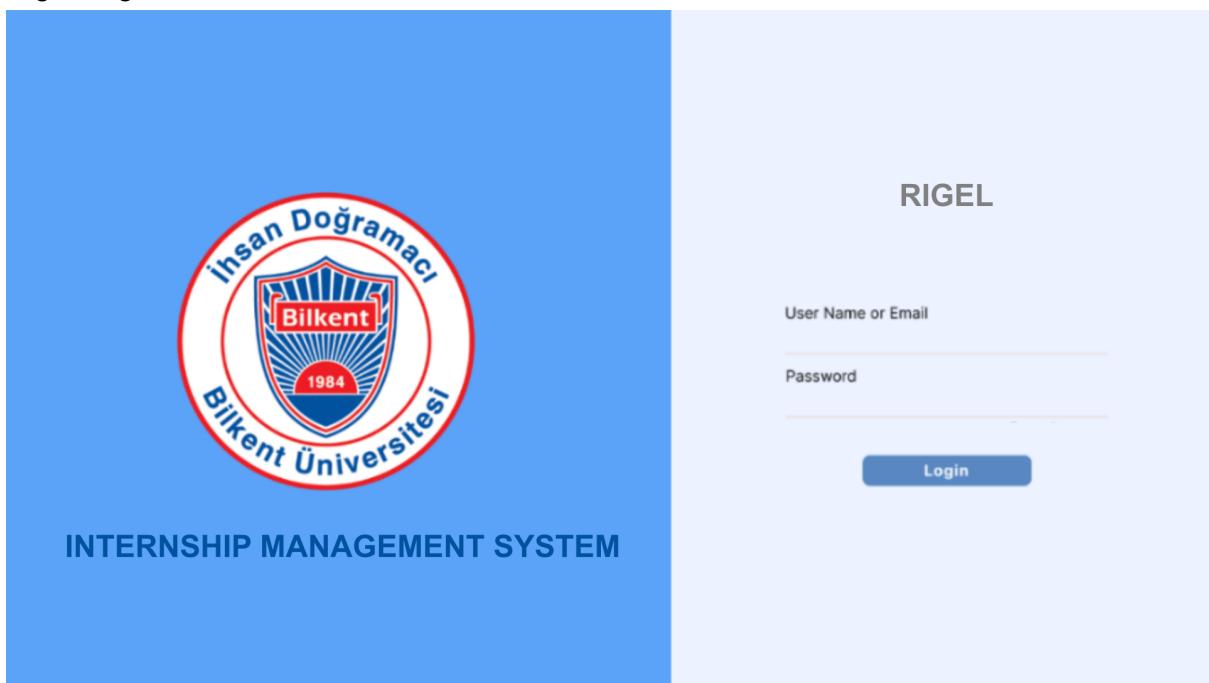


Figure 18: Login Page

Admin Main Page - Semester Not Created

The screenshot shows the Internship Management System's admin interface. At the top left is the Bilkent University logo. To its right is the title "INTERNSHIP MANAGEMENT SYSTEM". On the far right is a "Logout" icon. Below the title, a blue bar displays the greeting "Hello Admin!". The main content area features a message "Semester has not been started" in blue text. A dark blue rectangular box contains a "SEMESTER INFO" section with fields for "Semester", "Add Drop Period Finishes" (set to "Date"), "Withdrawal Period Finishes" (set to "Date"), and "Semester Finishes" (set to "Date"). To the right of this box is a button with an upward arrow icon labeled "upload user list". Below these elements is a blue button labeled "CREATE SEMESTER".

Figure 19: Admin Main Page - Semester Not Created

Admin Main Page - Semester Created

The screenshot shows the Internship Management System's admin interface after a semester has been created. The layout is similar to Figure 19, with the Bilkent University logo, "INTERNSHIP MANAGEMENT SYSTEM" title, and "Logout" icon at the top. The "Hello Admin!" bar is replaced by "Welcome Admin!". The main content area includes a "SEMESTER INFO" box showing "2022 – 2023 Spring Semester", "Add Drop Period Finishes: 28.02.2023", and "Withdrawal Period Finishes: 17.04.2023". There is also an "ANNOUNCEMENT" box with a placeholder "Type your announcement..." and a "MAKE" button. A "NEW USER" box contains fields for "Role" (select dropdown), "Department" (select dropdown), "Course" (select dropdown), and three input fields for "name", "surname", and "email", followed by a "CREATE" button. To the right is a "USERS" table listing seven users:

Name	Surname	Dept	Role	More
Begüm	Çınar	CS	Secretary	MORE
Eray	Tüzün	CS	Instructor	MORE
Ece	Ateş	CS	Student	MORE
Ömer	Doğan	CS	Student	MORE
Sevde	Güney	IE	Student	MORE
Gökay	Balcı	EE	Student	MORE

Figure 20: Admin Main Page - Semester Created

Admin Main Page with User Info Pop-up

The screenshot shows the Admin Main Page of the Internship Management System. At the top, there is a logo of Bilkent University and the title "INTERNSHIP MANAGEMENT SYSTEM". Below the title, a welcome message says "Welcome Admin!". On the left, there are two main sections: "SEMESTER INFO" and "ANNOUNCEMENT". The "SEMESTER INFO" section displays the "2022 – 2023 Spring Semester", "Add Drop Period Finishes: 28.02.2023", and "Withdrawal Period Finishes: 17.04.2023". The "ANNOUNCEMENT" section has a text input field placeholder "Type your announcement..." and a "MAKE" button. In the center, a modal window titled "USER INFO" is open, showing details for a user named "Zeynep Begüm": Name : Zeynep Begüm, Surname : Kara, E-Mail : begum.kara@ug.bilkent.edu.tr, Department: CS, Role: Student, Course(s): CS299. It includes "EDIT USER" and "DELETE USER" buttons. Below the modal, there is a "CREATE" button. To the right, there is a table showing department users:

Name	Dept	Role	More
CS	Secretary		MORE
CS	Instructor		MORE
CS	Student		MORE
CS	Student		MORE
IE	Student		MORE
Gökay	Balcı	EE	Student

Figure 21: Admin Main Page with User Info Pop-up

Department Chair- Main Page

The screenshot shows the Department Chair Main Page of the Internship Management System. At the top, there is a logo of Bilkent University and the title "INTERNSHIP MANAGEMENT SYSTEM". Below the title, a welcome message says "Welcome Selim Aksoy!". On the left, there are three main sections: "SEMESTER INFO", "SEMESTER STATISTICS", and "ALL REPORTS". The "SEMESTER INFO" section displays the "2022 – 2023 Spring Semester", "Add Drop Period Finishes: 28.02.2023", "Withdrawal Period Finishes: 17.04.2023", and "Initial Submission Date: not-determined". The "SEMESTER STATISTICS" and "ALL REPORTS" sections are currently empty. On the right, there is a table titled "CS DEPARTMENT USERS" showing department users:

Name	Surname	Role	Mail	Actions
Begüm	Çınar	Secretary	begum.cinar@bilkent.edu.tr	
Eray	Tüzün	Instructor	eray.tuzun@bilkent.edu.tr	PROGRESS
Ece	Ateş	Student	ece.ates@ug.bilkent.edu.tr	REPORTS
Ömer	Doğan	Student	omer.dogan@ug.bilkent.edu.tr	REPORTS
Can	Alkan	Instructor	calkan@bilkent.edu.tr	PROGRESS
Aytürk	İsmail	Student	aytürk.ismail@ug.bilkent.edu.tr	REPORTS

Figure 22: Department Chair- Main Page

Department Chair- Semester Statistics

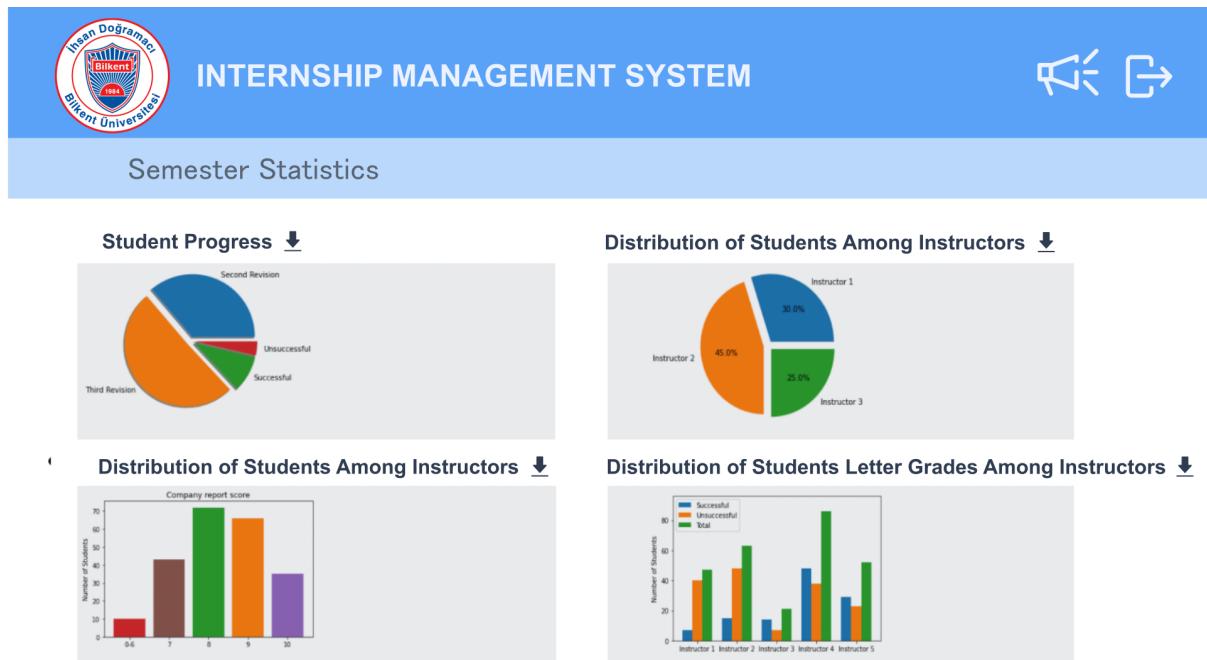


Figure 23: Department Chair- Semester Statistics

Department Chair- All Reports

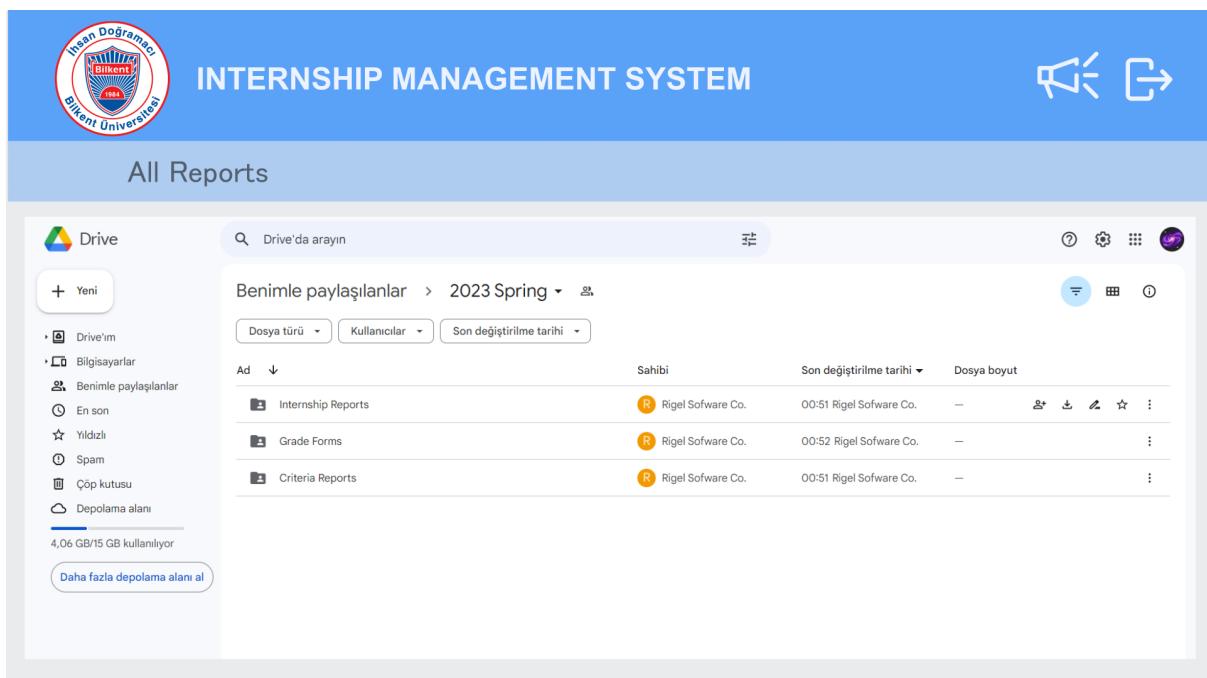


Figure 24: Department Chair- All Reports

Department Chair- Progress of an Instructor

The screenshot shows the 'INSTRUCTOR PROGRESS' section for Eray Tüzün. It displays the following information:

- Total Students: 21
- Graded Students: 7
- Asked Revision: 3
- Last Access Date: 23.04.2023

On the left, there is a sidebar with 'SEMESTER INFO' (2022 – 2023 Spring Semester) and 'SEMESTER STATISTICS'. At the bottom, there are buttons for 'CREATE', 'ALL REPORTS', and 'REPORTS'.

Figure 25: Department Chair- Progress of an Instructor

Department Chair- See Reports of a Student

The screenshot shows the 'STUDENT REPORTS' section for Ece Ates. It displays the following information:

- Internship Report(s)
- Criteria Report
- Grade Form

On the left, there is a sidebar with 'SEMESTER INFO' (2022 – 2023 Spring Semester) and 'SEMESTER STATISTICS'. At the bottom, there are buttons for 'CREATE', 'ALL REPORTS', and 'REPORTS'.

Figure 26: Department Chair- See Reports of a Student

Department Chair- Internship Reports of a Student

The screenshot shows a Google Drive interface. At the top, there's a blue header bar with the Bilkent University logo and the text "INTERNSHIP MANAGEMENT SYSTEM". Below this, a sub-header reads "Internship Report(s) of Ece Ateş". The main area displays a list of files under the folder "EceAte_CS299". There are two PDF files listed:

Ad	Sahibi	Son değiştirilme tarihi	Dosya boyut
EceAte_CS299_Iter2.pdf	Rigel Sofware Co.	02:34 Rigel Sofware Co.	43 KB
EceAte_CS299_Iter1.pdf	Rigel Sofware Co.	02:34 Rigel Sofware Co.	43 KB

On the left sidebar, there are navigation links for "Drive'm", "Bilgisayarlar", "Benim paylaşılanlar", "En son", "Yıldızlı", "Spam", "Çöp kutusu", and "Depolama alanı". A message at the bottom of the sidebar says "Daha fazla depolama alanı al".

Figure 27: Department Chair- Internship Reports of a Student

Department Chair- Internship Report of a Student

The screenshot shows a web-based Internship Management System. The top navigation bar includes the Bilkent University logo and the text "INTERNSHIP MANAGEMENT SYSTEM". Below this, a sub-header reads "Internship Report(s) of Ece Ateş". The main content area displays a report titled "CS299: INTERNSHIP REPORT". The report content is as follows:

CS299: INTERNSHIP REPORT

... (Large amount of placeholder Latin text)

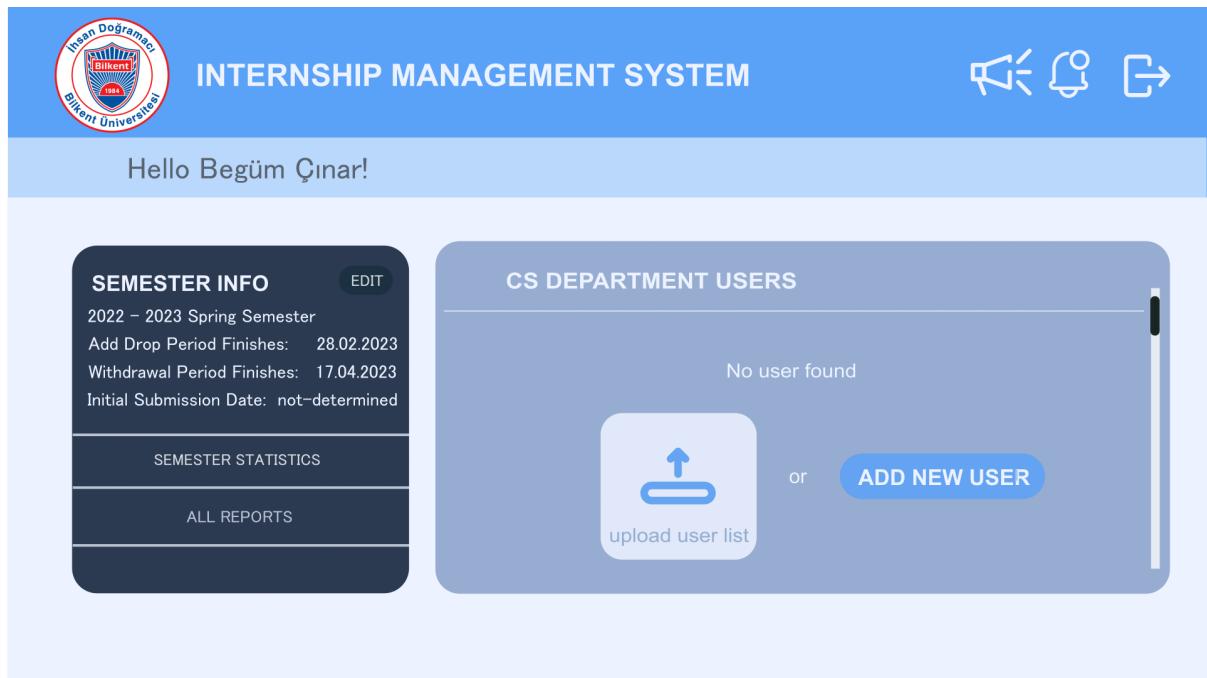
Ulriches integer quis auctor elit sed vulputate mi sit amet. Lorem ipsum dolor sit amet consetetur. Amet mattis nunc id diam aenean ultricies mi egest. Scelerisque felis imperdiet proin fermentum leo vel orci porta non. Consequeut interdum varius sit amet mattis vulputate enim. Morbi tincidunt augue interdum vel euismod in pellentesque massa placerat. Eleifend quam adipiscing vitae proin sagittis. Sollicitudin aliquam ultricies sagittis orci a. Suscipit tellus mauris a diam. Ac orci phasellus egestas tellus rutrum tellus pellentesque eu.

... (More placeholder Latin text)

At the bottom of the report, there are navigation links for "Sayfa 1 / 2 Element" and "Eğitimler", along with a "Daha fazla egestas sed" button.

Figure 28: Department Chair- Internship Report of a Student

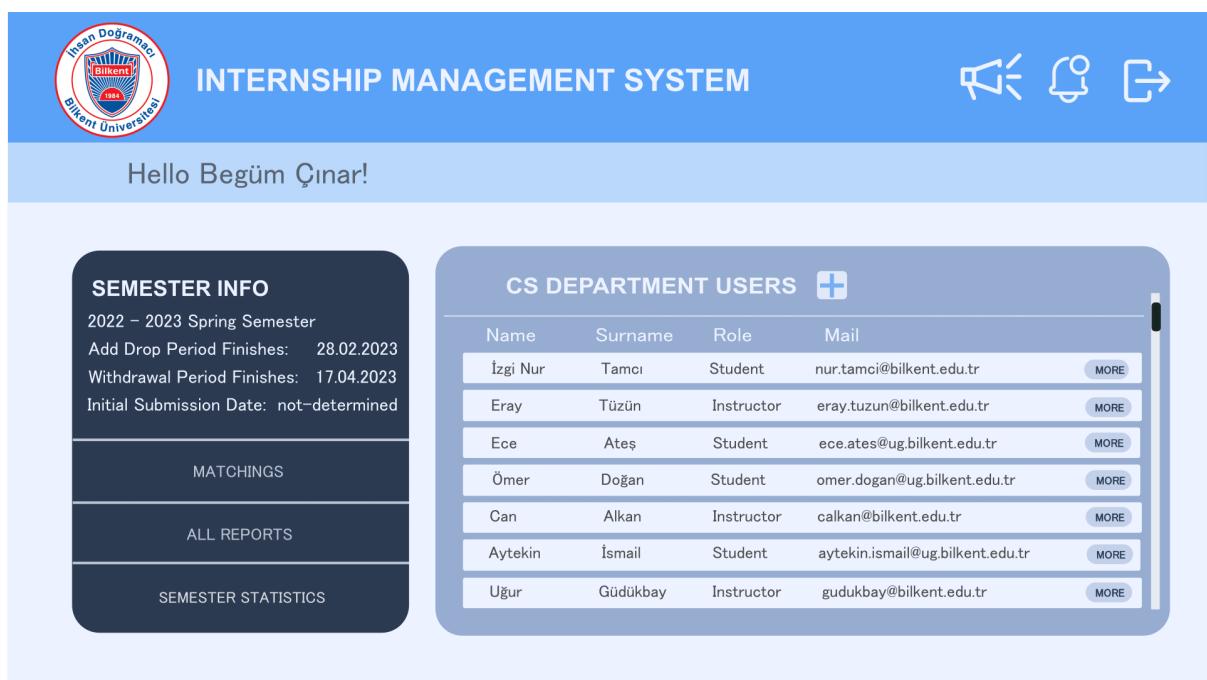
Secretary Main Page - no user



The screenshot shows the Internship Management System main page for a secretary with no users. At the top, the Bilkent University logo is displayed next to the title "INTERNSHIP MANAGEMENT SYSTEM". To the right are three icons: a megaphone, a bell, and a square with a right-pointing arrow. Below the title, a greeting "Hello Begüm Çınar!" is shown. On the left, a dark sidebar contains "SEMESTER INFO" (2022 – 2023 Spring Semester, Add Drop Period Finishes: 28.02.2023, Withdrawal Period Finishes: 17.04.2023, Initial Submission Date: not-determined), "SEMESTER STATISTICS", and "ALL REPORTS". On the right, a large blue box titled "CS DEPARTMENT USERS" displays the message "No user found" and includes a "upload user list" button with an upward arrow icon, an "or" link, and a "ADD NEW USER" button.

Figure 29: Secretary Main Page - no user

Secretary Main Page - with user

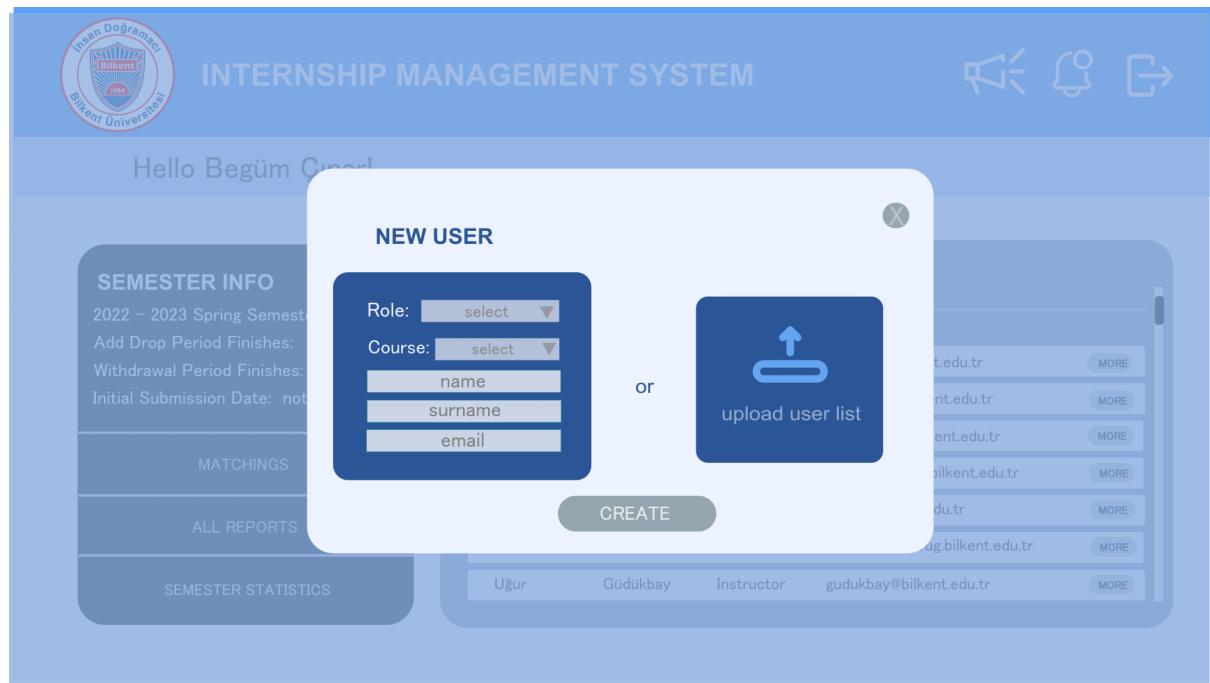


The screenshot shows the Internship Management System main page for a secretary with users. The layout is identical to Figure 29, with the Bilkent University logo, title, and icons at the top. The greeting "Hello Begüm Çınar!" is present. The "SEMESTER INFO" section remains the same. On the right, the "CS DEPARTMENT USERS" box now lists seven users:

Name	Surname	Role	Mail	More
İzgi Nur	Tamci	Student	nur.tamci@bilkent.edu.tr	MORE
Eray	Tüzün	Instructor	eray.tuzun@bilkent.edu.tr	MORE
Ece	Ateş	Student	ece.ates@ug.bilkent.edu.tr	MORE
Ömer	Doğan	Student	omer.dogan@ug.bilkent.edu.tr	MORE
Can	Alkan	Instructor	calkan@bilkent.edu.tr	MORE
Aytekin	İsmail	Student	aytekin.ismail@ug.bilkent.edu.tr	MORE
Uğur	Güdükbay	Instructor	gudukbay@bilkent.edu.tr	MORE

Figure 30: Secretary Main Page - with user

Secretary Main Page - create user



The screenshot shows the Internship Management System main page for a secretary. At the top, there is a logo for 'İnsan Doğramacı Bilkent Üniversitesi' and a header 'INTERNSHIP MANAGEMENT SYSTEM'. Below the header, a greeting 'Hello Begüm Çınar!' is displayed. On the left, a sidebar contains 'SEMESTER INFO' (2022 – 2023 Spring Semester, Add Drop Period Finishes: 28.02.2023, Withdrawal Period Finishes: 17.04.2023, Initial Submission Date: not-determined), 'MATCHINGS', 'ALL REPORTS', and 'SEMESTER STATISTICS'. In the center, a modal window titled 'NEW USER' is open, showing fields for 'Role' (select dropdown), 'Course' (select dropdown), 'name', 'surname', and 'email'. There is also a 'CREATE' button and an 'upload user list' button with an upward arrow icon. To the right of the modal, there is a list of users: Uğur, Gündükbay, Instructor, and gudukbay@bilkent.edu.tr. Each user has a 'MORE' link next to their name.

Figure 31: Secretary Main Page - create user

Secretary Main Page - student more



The screenshot shows the Internship Management System main page for a student. The layout is similar to Figure 31, with the 'INTERNSHIP MANAGEMENT SYSTEM' header and 'Hello Begüm Çınar!' greeting. The sidebar on the left includes 'SEMESTER INFO' (2022 – 2023 Spring Semester, Add Drop Period Finishes: 28.02.2023, Withdrawal Period Finishes: 17.04.2023, Initial Submission Date: not-determined), 'MATCHINGS', 'ALL REPORTS', and 'SEMESTER STATISTICS'. The central area features a table titled 'CS DEPARTMENT USERS' with a '+' icon. The table lists three users: İzgi Nur Tamcı (Student, mail: nur.tamci@bilkent.edu.tr), Eray Tüzün (Instructor, mail: eray.tuzun@bilkent.edu.tr), and Ece Ateş (Student, mail: ece.ates@ug.bilkent.edu.tr). Each user row includes a 'MORE' link. The user 'İzgi Nur Tamcı' has additional details visible: Course: CS299, Company Name: Google, Company Grade: null, Assigned Instructor: -, Status: Waiting Summer Training Form from Company, and a 'Withdraw' button.

Figure 32: Secretary Main Page - student more

Secretary Main Page - student withdrawal

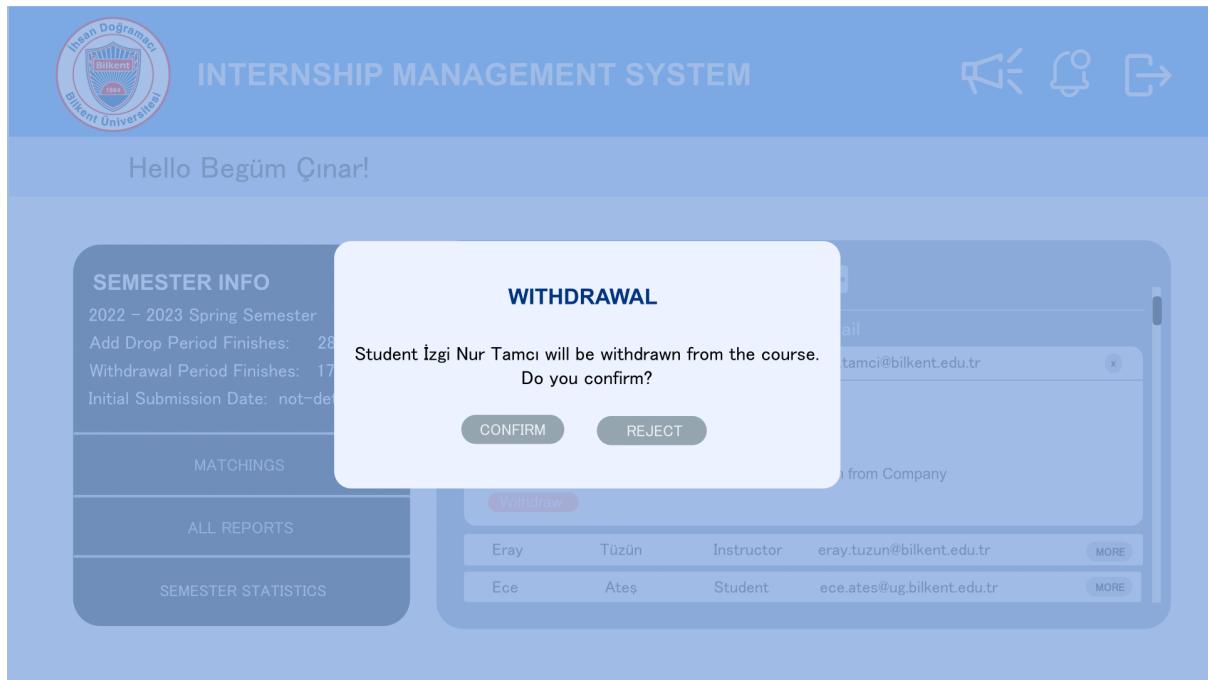


Figure 33: Secretary Main Page - student withdrawal (1)

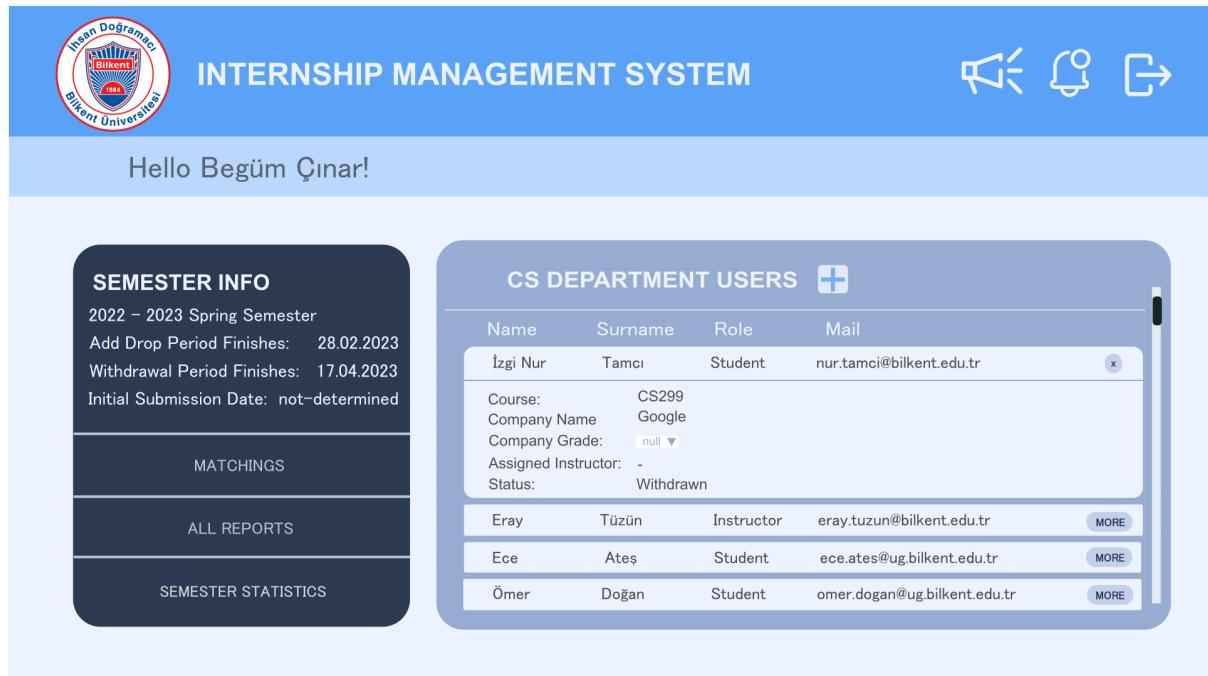


Figure 34: Secretary Main Page - student withdrawal (2)

Secretary Main Page - instructor more



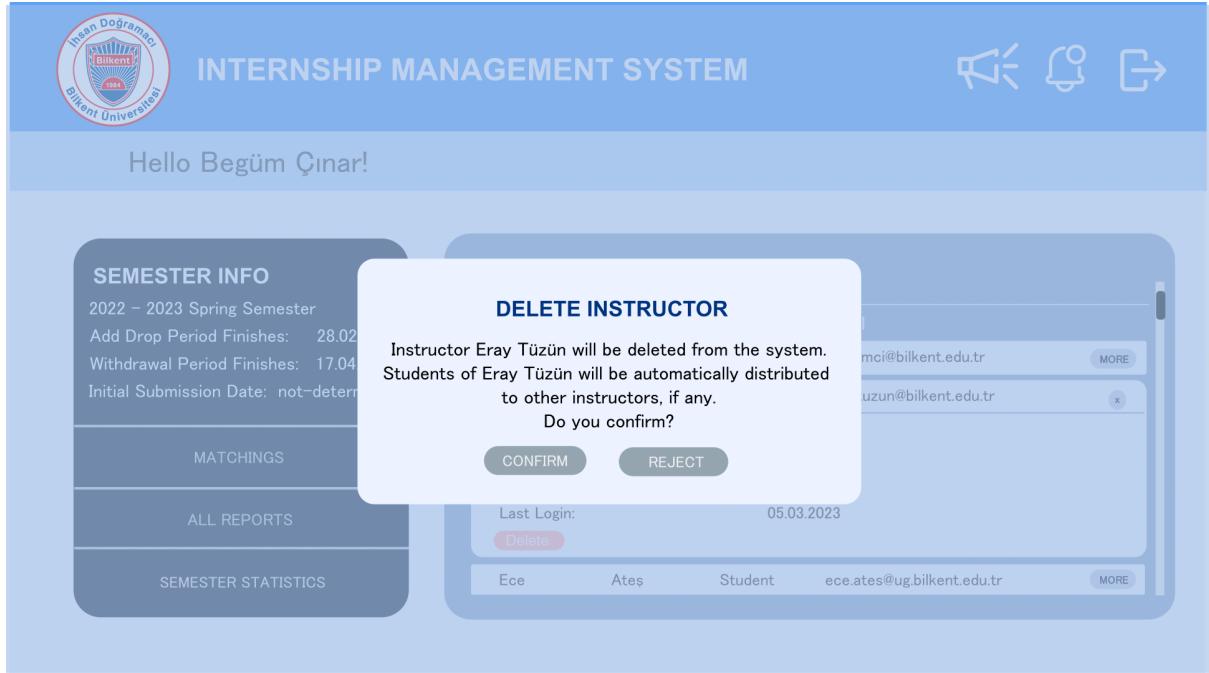
The screenshot shows the Secretary Main Page for an Instructor. At the top, there is a blue header bar with the Bilkent University logo, the text "INTERNSHIP MANAGEMENT SYSTEM", and three icons: a megaphone, a bell, and a square with a right-pointing arrow. Below the header, a light blue banner says "Hello Begüm Çınar!". On the left, a dark blue sidebar contains four buttons: "SEMESTER INFO", "MATCHINGS", "ALL REPORTS", and "SEMESTER STATISTICS". The main content area has a light blue background. It displays a table titled "CS DEPARTMENT USERS" with a plus sign icon. The table lists three users:

Name	Surname	Role	Mail	Actions
İzgi Nur	Tamci	Student	nur.tamci@bilkent.edu.tr	MORE
Eray	Tüzün	Instructor	eray.tuzun@bilkent.edu.tr	x
Ece	Ateş	Student	ece.ates@ug.bilkent.edu.tr	MORE

Below the table, there is some descriptive text and a "Delete" button. The text includes: "E – signature: Uploaded", "Number of Students: -", "Number of Completed Students: -", "Number of Students Revision Asked: -", and "Last Login: 05.03.2023".

Figure 35: Secretary Main Page - instructor more

Secretary Main Page - instructor deletion



The screenshot shows the Secretary Main Page for an Instructor, similar to Figure 35 but with a modal dialog. The modal is titled "DELETE INSTRUCTOR" and contains the following message:
Instructor Eray Tüzün will be deleted from the system.
Students of Eray Tüzün will be automatically distributed
to other instructors, if any.
Do you confirm?
At the bottom of the modal are two buttons: "CONFIRM" and "REJECT".
The background of the page shows the same layout as Figure 35, including the sidebar with "SEMESTER INFO", "MATCHINGS", "ALL REPORTS", and "SEMESTER STATISTICS" buttons, and the "CS DEPARTMENT USERS" table.

Figure 36: Secretary Main Page - instructor deletion

Secretary Main Page - all reports

The screenshot shows the 'All Reports' section of the Internship Management System. On the left, there's a sidebar for Google Drive with categories like 'Drive'm, 'Bilgisayarlar', and 'Depolama alanı'. The main area shows a list of files under 'Benimle paylaşılanlar > 2023 Spring'. The files are:

Ad	Sahibi	Son değiştirilme tarihi	Dosya boyut
Internship Reports	Rigel Software Co.	00:51 Rigel Sofware Co.	—
Grade Forms	Rigel Software Co.	00:52 Rigel Software Co.	—
Criteria Reports	Rigel Software Co.	00:51 Rigel Sofware Co.	—

Figure 37: Secretary Main Page - all reports

Secretary Main Page - statistics

The screenshot shows the 'Semester Statistics' section of the Internship Management System. It contains four data visualizations:

- Student Progress**: A pie chart showing student outcomes. The segments are labeled 'Successful' (green), 'Unsuccessful' (orange), 'Third Revision' (yellow), and 'Second Revision' (blue).
- Distribution of Students Among Instructors**: A pie chart showing the distribution of students among three instructors. The percentages are 45.0% for Instructor 2, 30.0% for Instructor 1, and 25.0% for Instructor 3.
- Distribution of Students Among Instructors**: A bar chart showing the number of students for each grade (0-6, 7, 8, 9, 10) across five instructors. The y-axis is 'Number of Students' and the x-axis is 'Instructor'.
- Distribution of Students Letter Grades Among Instructors**: A bar chart showing the number of students for each letter grade (Successful, Unsuccessful, Fail) across five instructors. The y-axis is 'Number of Students' and the x-axis is 'Instructor'.

Figure 38: Secretary Main Page - statistics

Secretary - matchings

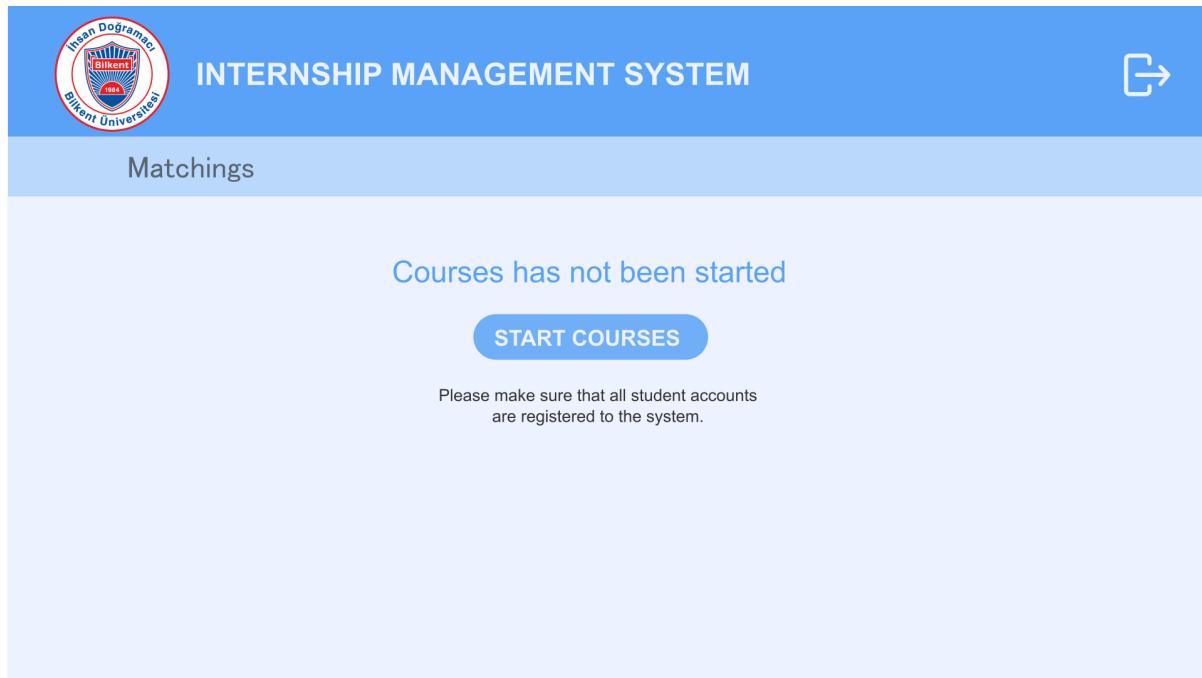


Figure 39: Secretary- matchings (1)



Figure 40: Secretary - matchings (2)

The screenshot shows the Internship Management System interface. At the top left is the Bilkent University logo. The title "INTERNSHIP MANAGEMENT SYSTEM" is centered at the top. On the right is a user icon. Below the title, the word "Matchings" is displayed. The main content area is titled "Can Alkan" with a close button (X). It lists pairs of students and their assigned courses and IDs, each with a "REMATCH" button:

İzgi	Tamci	CS299	22002634	REMATCH
Begüm	Kara	CS299	22005433	REMATCH
Ece	Ateş	CS299	22003773	REMATCH
Aytekin	İsmail	CS399	22006273	REMATCH
Ömer	Doğan	CS399	22003928	REMATCH
Ada	Lovelace	CS399	22009881	REMATCH

Below this section are two more sections with dropdown menus: "Eray Tüzün" and "Uğur Gündükbay".

Figure 41: Secretary - matchings (3)

This screenshot shows the same Internship Management System interface as Figure 41, but with a modal dialog open over the "Can Alkan" section. The dialog is titled "REMATCH" and contains the following information:

- Name : Ada
- Surname : Lovelace
- ID: 22009881
- Course: CS399

On the right side of the dialog, there is a "Instructor:" dropdown menu with the following options:

- Can Alkan
- Eray Tüzün
- Uğur Gündükbay
- Uğur Doğrusöz
- H. Alktay Güvenir

At the bottom of the dialog is a "SAVE" button.

Figure 42: Secretary - matchings (4)

Secretary - Rematch, corner case

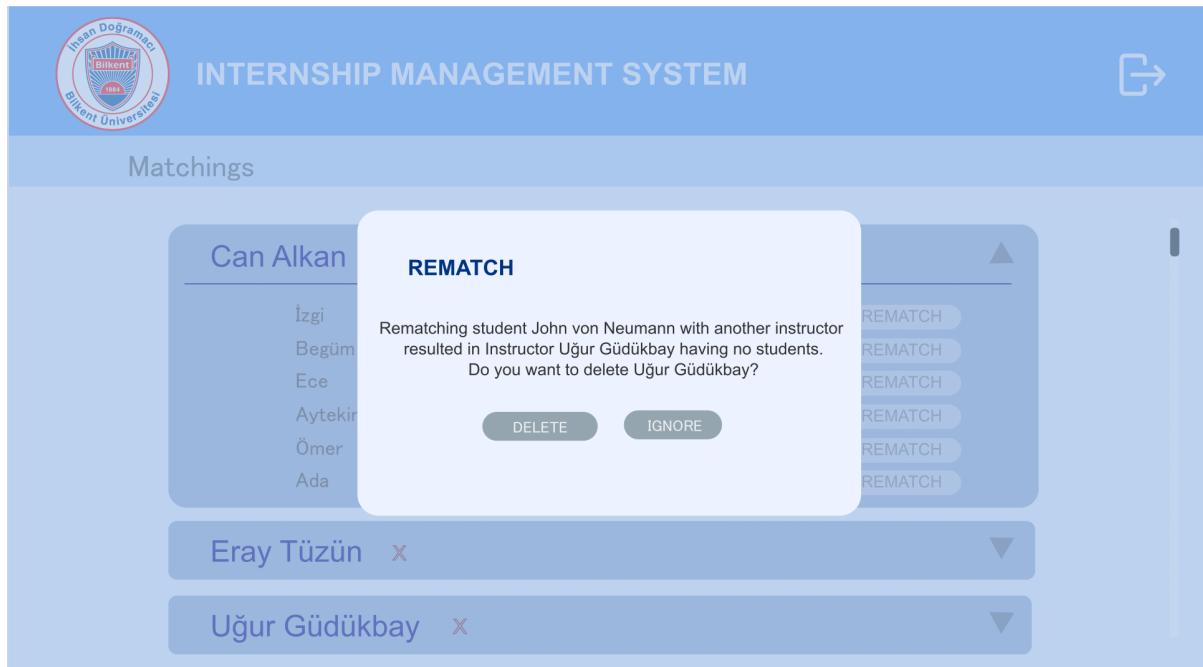


Figure 43: Secretary - Rematch, corner case

TA Main Page

The screenshot shows the TA Main Page. At the top, there is a logo for 'İhsan Doğramacı Bilkent Üniversitesi' and the title 'INTERNSHIP MANAGEMENT SYSTEM'. Below this, a greeting 'Hello TA!' is displayed. A section titled 'STUDENTS' contains a grid of nine cards, each representing a student:

- Name:** Jane Doe
Course: CS299
Initial Check: Passed
Actions: REPORTS, PASSED, FAILED, ASK REVISION, ⓘ
- Name:** Ada Lovelace
Course: CS299
Initial Check: Failed
Actions: REPORTS, PASSED, FAILED, ASK REVISION, ⓘ
- Name:** Grace Hopper
Course: CS299
Initial Check: Revision Asked
Actions: REPORTS, PASSED, FAILED, ASK REVISION, ⓘ
- Name:** John Nash
Course: CS299
Initial Check: Passed
Actions: REPORTS, PASSED, FAILED, ASK REVISION, ⓘ
- Name:** Bill Gates
Course: CS399
Initial Check: Failed
Actions: REPORTS, PASSED, FAILED, ASK REVISION, ⓘ
- Name:** John Doe
Course: CS299
Initial Check: Revision Asked
Actions: REPORTS, PASSED, FAILED, ASK REVISION, ⓘ
- Name:** Zeynep Kara
Course: CS299
Initial Check: Revision Asked
Actions: REPORTS, PASSED, FAILED, ASK REVISION, ⓘ
- Name:** İzgi Nur Tamci
Course: CS399
Initial Check: Passed
Actions: REPORTS, PASSED, FAILED, ASK REVISION, ⓘ
- Name:** Ece Ateş
Course: CS299
Initial Check: Passed
Actions: REPORTS, PASSED, FAILED, ASK REVISION, ⓘ

Figure 44: TA Main Page

TA - reports

The screenshot shows the Internship Management System interface. At the top, there is a logo for 'İhsan Doğramacı Bilkent Üniversitesi' and the title 'INTERNSHIP MANAGEMENT SYSTEM'. Below this, a blue header bar displays 'Internship Report(s) of Ece Ateş'. The main content area is a Google Drive interface. On the left, there is a sidebar with navigation links: 'Drive', '+ Yeni', 'Drive'm, 'Bilgisayarlar', 'Benimle paylaşılanlar', 'En son', 'Yıldızlı', 'Spam', 'Çöp kutusu', and 'Depolama alanı'. It also shows '4,06 GB/15 GB kullanılıyor'. The main area shows a list of files under 'Benimle paylaşılanlar > 2023 Spring > Internship Reports > EceAteş_CS299'. The list includes two PDF files: 'EceAteş_CS299_Iter2.pdf' and 'EceAteş_CS299_Iter1.pdf', both owned by 'Rigel Sofware Co.' and uploaded at 02:34 on 02/24/2023, with a size of 43 KB each.

Figure 45: TA - reports (1)

The screenshot shows the Internship Management System interface. At the top, there is a logo for 'İhsan Doğramacı Bilkent Üniversitesi' and the title 'INTERNSHIP MANAGEMENT SYSTEM'. Below this, a blue header bar displays 'Internship Report(s) of Ece Ateş'. The main content area shows the 'CS299: INTERNSHIP REPORT' document. The document content is as follows:

CS299: INTERNSHIP REPORT

... (Large amount of placeholder Latin text from the original image) ...

This is a dark-themed view of the report, with the main text area being white.

Figure 46: TA - reports (2)

Announcement Page

The screenshot shows the announcement page of the Internship Management System. At the top, there is a logo of Bilkent University and the text "INTERNSHIP MANAGEMENT SYSTEM". Below the logo, there is a blue bar with the word "Announcements" and a right-pointing arrow icon. A dark blue bar below it has the text "From the Faculty". Under these bars, there are two entries:

- Phone Number of Summer Training Division at Dean's Office**:
Phone number of Summer Training Division at Dean's Office is x1261.
Date: 28.08.2022 ~ 21.10.2023
- Summer Training Information**:
All the information together with the needed forms and statements are accessible at mf.bilkent.edu.tr under the heading "Summer Training".
Date: 11.05.2022 ~ 11.05.2023

A large dark blue bar at the bottom has the text "From the Instructor".

Figure 47: Announcement Page

Student Main Page - taking one course

The screenshot shows the student main page for Charles Babbage. At the top, there is a logo of Bilkent University and the text "INTERNSHIP MANAGEMENT SYSTEM". Below the logo, there is a blue bar with the text "Welcome Charles Babbage!" and a right-pointing arrow icon.

On the left, there is a sidebar with the following information:

- Charles Babbage
- ID: 22003881
- Courses: CS299
- babbage@ug.bilkent.edu.tr
- Notify me with mail

Below the sidebar, there is a section for "ANNOUNCEMENTS" which includes a calendar for "JANUARY 2023". The calendar shows dates from 1 to 31, with January 19th highlighted.

On the right, there is a section for "Summer Training Courses" featuring a course entry for "CS299". The course details are:

- Instructor: Uğur Doğrusöz
- Status: Succesful
- Uploaded: 31.01.2023

Next to the course details are two buttons: "See Feedback" and "My Report". To the right of these buttons is a large green button with a white checkmark icon.

Figure 48: Student Main Page - taking one course

Student Main Page - taking two courses

The screenshot shows the Internship Management System interface for a student named Alan Turing. At the top, the Bilkent University logo is displayed next to the title "INTERNSHIP MANAGEMENT SYSTEM". On the right side, there are icons for a bell and a square.

Welcome Alan Turing!

Alan Turing
ID: 22003880
Courses: CS299 – CS399
turing@ug.bilkent.edu.tr
Notify me with mail

ANNOUNCEMENTS

JANUARY 2023

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Summer Training Courses

CS299
Instructor: Uğur Doğrusöz
Status: Upload Revision
Deadline: 19.01.2023
● ● ○ ○ ○

CS399
Instructor: Eray Tüzün
Status: First Submission
Deadline: 25.01.2023
● ○ ○ ○ ○

upload revision

Figure 49: Student Main Page - taking two courses (1)

The screenshot shows the Internship Management System interface for a student named Alan Turing. At the top, the Bilkent University logo is displayed next to the title "INTERNSHIP MANAGEMENT SYSTEM". On the right side, there are icons for a bell and a square.

Welcome Alan Turing!

Alan Turing
ID: 22003880
Courses: CS299 – CS399
turing@ug.bilkent.edu.tr
Notify me with mail

ANNOUNCEMENTS

JANUARY 2023

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Summer Training Courses

CS299
Instructor: Uğur Doğrusöz
Status: Waiting Evaluation
Uploaded: 18.01.2023
● ● ○ ○ ○

CS399
Instructor: Eray Tüzün
Status: First Submission
Deadline: 25.01.2023
● ○ ○ ○ ○

My Report

upload report

Figure 50: Student Main Page - taking two courses (2)

Instructor Main Page

The screenshot shows the 'INTERNSHIP MANAGEMENT SYSTEM' main page. At the top left is the Bilkent University logo. To the right is a search bar with placeholder text 'Search Internship Reports'. On the far right are three icons: a megaphone, a bell, and a square with a right-pointing arrow.

Welcome H. Altay Güvenir!

Left sidebar:

- H. Altay Güvenir!
turing@ug.bilkent.edu.tr
- Notify me with
- upload signature
- ANNOUNCEMENTS
- SEMESTER STATISTICS

Student Reports (grid of 6 boxes):

Name: Ece Ateş Course: CS299 Initial Check: Passed Status: Revision Asked	Name: Ada Lovelace Course: CS399 Initial Check: Passed Status: Report Uploaded – 2 nd iteration
Name: Bill Gates Course: CS399 Initial Check: Failed Status: Waiting Final Confirmation	Name: Aytekin İsmail Course: CS299 Initial Check: Waiting Status: –
Name: İzgi Nur Tamci Course: CS399 Initial Check: Passed Status: Completed	Name: Aytekin İsmail Course: CS399 Initial Check: Passed Status: Waiting Company Grade

Figure 51: Instructor Main Page

Instructor - Evaluate Report

The screenshot shows the 'INTERNSHIP MANAGEMENT SYSTEM' evaluate report page. At the top left is the Bilkent University logo. To the right is a search bar with placeholder text 'Search Internship Reports'. On the far right are three icons: a megaphone, a bell, and a square with a right-pointing arrow.

Evaluate Ece Ateş

Report Content (left side):

CS299: INTERNSHIP REPORT

Content of the report: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Facilis magna etiam tempor orci eu lobortis elementum nibh tellus. Mauris rhoncus aenean vel elit scelerisque mauris. Maecenas sed enim ut sem viverra aliquet eget sit. Mattis enim ut tellus elementum sagittis vitae et leo duis. Urna cursus eget nunc scelerisque viverra mauris in aliquam sem. Dolor sit amet consectetur adipiscing. Nunc sed blandit libero voluptat sed cras ornare arcu du. Auctor elit sed vulputate mi sit amet mauris commodo. Non quam lacus suspendisse faubus interdum posuere lorem ipsum. Neque laoreet suspendisse interdum consectetur libero id faubus nisl tincidunt. Risus sed vulputate odio ut enim blandit voluptat. Amet mattis vulputate enim nulla aliquet porttitor lacus luctus. Sed felis eget velit aliquet. Nunc sed id semper risus in hendrerit gravida rutrum. Morbi Instique senectus et netus et malesuada fames ac turpis. Et molestie ac feugiat sed lectus vestibulum. Id aliquet risus feugiat in ante metus dictum at.

Feedback Options (right side):

Is the work done related to computer engineering?
 Yes No

Is the supervisor a computer engineer or has a similar background?
 Yes No

Your feedback here...

Feedback Examples (scrollable list):

- Zeynep Begüm Kara 16:57 Bugün fix here
- Zeynep Begüm Kara 16:58 Bugün I'm impressed
- Zeynep Begüm Kara 16:57 Bugün ooooffff

Buttons:

- GIVE FEEDBACK
- ASK REVISION

Figure 52: Instructor - Evaluate Report (1)

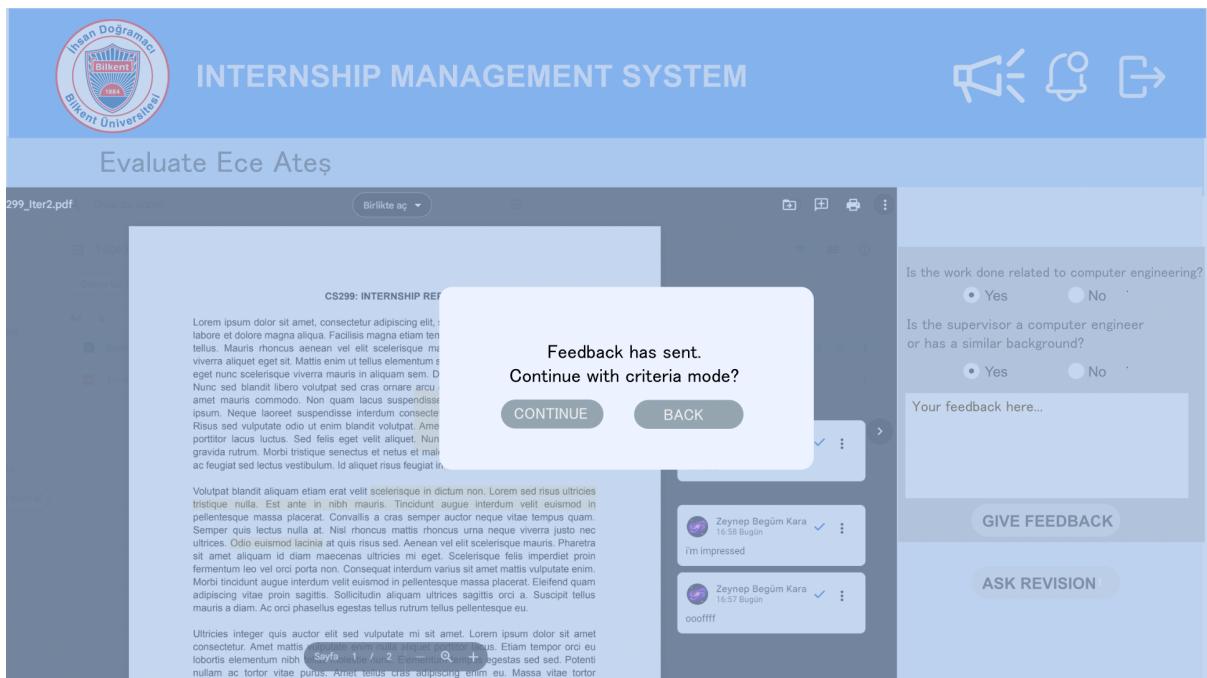


Figure 53: Instructor - Evaluate Report (2)

Instructor - Ask Revision

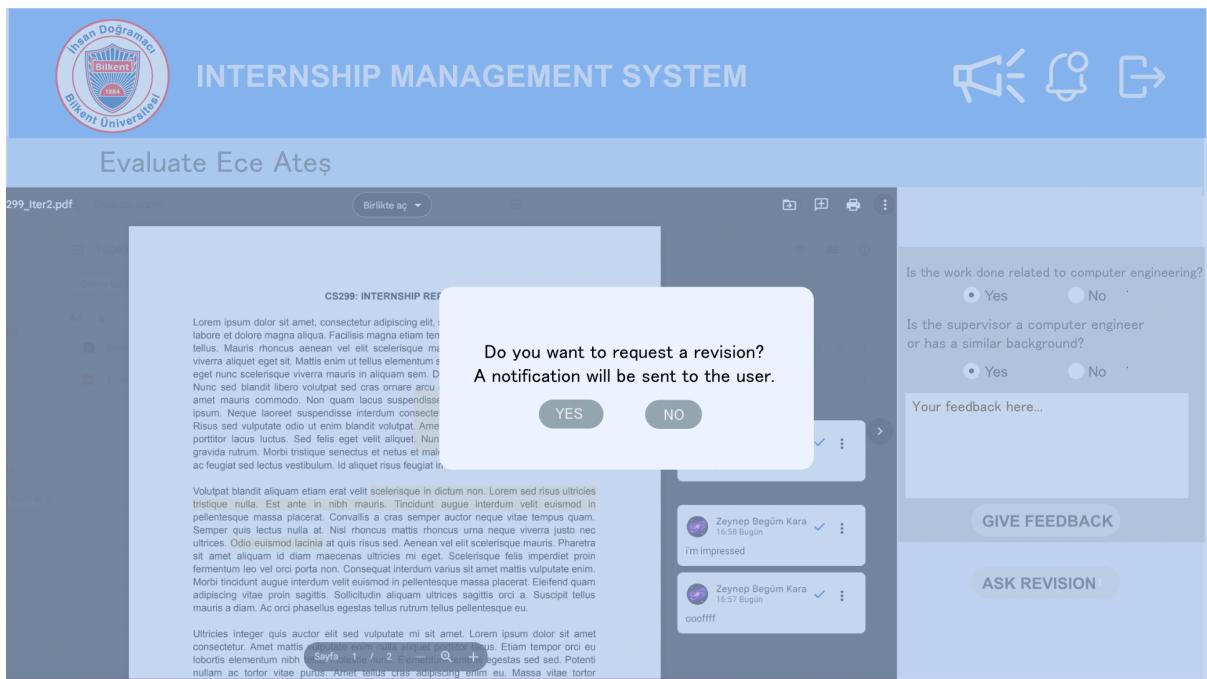


Figure 54: Instructor - Ask Revision

Instructor - Criteria Mode

The screenshot shows the Internship Management System interface. At the top, there is a logo for 'İlsan Doğramacı Bilkent Üniversitesi' and a navigation bar with icons for search, notifications, and export. The main title is 'INTERNSHIP MANAGEMENT SYSTEM'. Below it, the student's name 'Evaluate Ece Ateş' is displayed.

CS299: INTERNSHIP RE

CRITERIA REPORT SUBMISSION

Assessment/quality score of Evaluation of the Work - item 1 : 8
To be satisfactory, the score must be at least 7/10

Sum of The Assessment/quality score of Evaluation of the Work - item 2-7 : 58
To be satisfactory, the score must be at least 30/60

The Assessment / quality score of Evaluation of the Work - item 1 : 9
To be satisfactory, the score must be at least 7/10

Based on your evaluation student status is: **SATISFACTORY**

Confirm report submission?
This operation cannot be undone

CONFIRM **BACK**

page(s) of the evidence of d? :

page(s) of the evidence of d? :	Assessment/quality score (from 0=missing to 10=full)
um dolor sit amet, ut adipiscing elit, ismod tempor sit	10
um dolor sit amet, ut adipiscing elit,	10
um dolor sit amet, ut adipiscing elit,	10
um dolor sit amet, ut adipiscing elit, ismod tempor sit	8
um dolor sit amet, ut adipiscing elit,	10
(6) Able to apply new knowledge as needed. Page 9 Lorem ipsum dolor sit amet, consectetur adipiscing elit.	10
(7) Has awareness about diversity, equity, and inclusion. Page 9 Lorem ipsum dolor sit amet, consectetur adipiscing elit.	10

SAVE **SUBMIT**

Figure 55: Instructor - Criteria Mode

4. References

[1] "Staff," STARS. [Online]. Available: https://stars.bilkent.edu.tr/homepage/plain_offerings. [Accessed: 27-Mar-2023].

[2] "Bilkent University." [Online]. Available: https://w3.bilkent.edu.tr/web/kalite_guvencesi/faaliyet_raporu_2016-2017.pdf. [Accessed: 29-Mar-2023].

5. Improvement Summary

From the first iteration, we improved our analysis report according to feedback in three ways:

1) Updating the Use Case

Previously, we had a single use case for both viewing the calendar and announcements. As the entry conditions were different, we decided to make them separate.

We differentiated the two similar actions done at the start of the semester by the admin and the department secretary. Admin users **create semester** by signing up department secretary and department chair users. It is the department secretary that signs up the instructors and students into the system at the start of each semester. After all instructors and students are signed up, the system will auto-match them and the department secretary can **initialize semester**.

In the first iteration, there were two different lists such as instructor lists and student lists. We concluded that it is more appropriate to have a single user list use case. Depending on the actor that views this user list, the content of the user list will be filtered. For instance, instructors can only see the students who are assigned to them while the department secretary can see all the users in their department.

2) Design choices

In the first report, we stated that if the user is logged in and closes the tab or has not moved their cursor for the last 10 minutes, the system automatically logs out. We have decided that usability is a more significant priority than security in the project requirement. Therefore, the system will not have an automatic log-off functionality and users stay signed in.

To make this software more maintainable, we have decided not to include a notification functionality. If we have implemented the notifications feature, we would have to keep them in the user profile throughout the semester as long as the user does not explicitly delete them. This would lead to regular maintenance issues of clearing out the old users' notifications before a new semester.

3) Actors

Previously, we have considered that there will be several web pages introducing Rigel software by showing its general functionality without having to log into the system. For instance, announcements and FAQ pages were for general information about the x299/x399 courses. There were tutorials on how to upload and download reports in this system. All these web pages could be viewed by anyone and we have considered them as not registered users. However, we have decided that creating an actor solely for this purpose is redundant. In all other use cases where not registered users were actors are, therefore, switched to the list of our remaining user types.

4) Screen Mock-ups

Previously, due to using multiple different frameworks, the mock-ups were not consistent with each other. In this revised version, we have almost completely redesigned our user interface and made every page compatible and consistent with each other. Furthermore, we have greatly improved the usability of our front-end designs by making them much more intuitive for actors. Also, after getting feedback that stated that our designs were more convenient for mobile applications, we have changed our placement and design of our website components to make them more suited for a web application.