2024-2025 SPRING SEMESTER

CS319 – Object-Oriented Software Engineering

Deliverable #1

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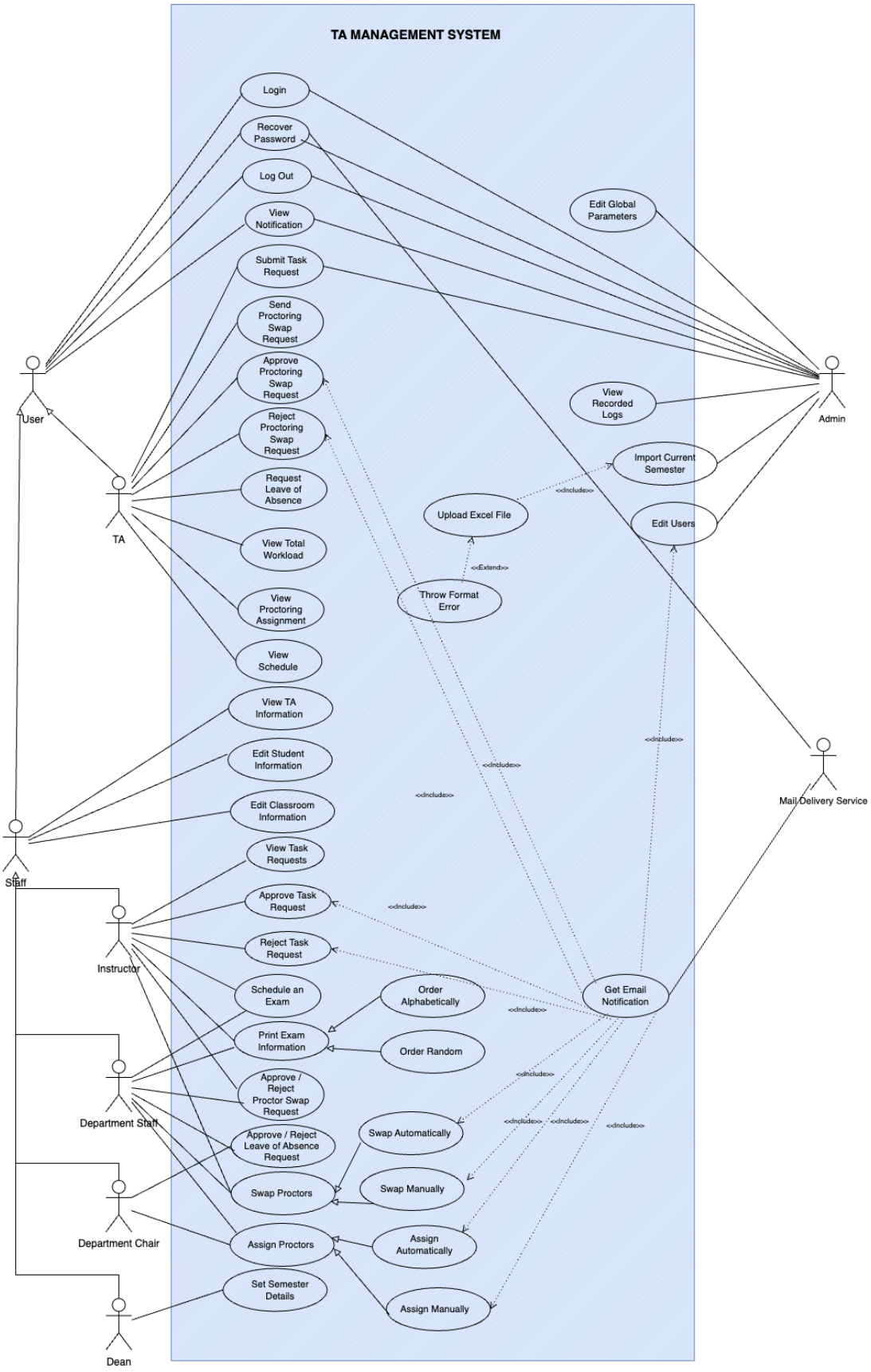
1. Use Cases



[Link to the diagram]

1.1 Common Workflow

1.1.1 Login

1. Name: Login

2. Participating actor: TA, Instructor, Department Staff, Department Chair, Dean, Admin

3. Entry condition: User enters account information (username, password) for login.

4. Exit condition: After checking the account information from the server, the user either enters the site or the system denies the access request.

5. Flow of events:

5.1. The user is directed to the login panel.

5.2. The user types the necessary information (username, password) and clicks the "Login" button.

5.3. Information entered by the user is checked by the server for authentication.

5.3.1. If the server validates the authentication, the user has access to the system with the acquired role.

5.3.2. If the server doesn't validate the authentication, an error message prompts the user to enter accurate account information.

1.1.2 Recover Password

1. Name: Recover Password

2. Participating actor: TA, Instructor, Department Staff, Department Chair, Dean, Admin, Mail Delivery System (secondary actor).

3. Entry condition: User asks for a password recovery via email in the login screen.

4. Exit condition: After entering the code sent via email, the user returns to the login screen.

5. Flow of events:

5.1. The user is directed to the login panel.

5.2. The user clicks at the change password button.

5.3. The user is directed to the change password screen.

5.4. The user is asked to enter the code sent to users email available at the system.

5.5. The user enters the code.

5.6. The code entered by the user is checked by the system.

5.6.1. If the code entered is correct, the user is asked to enter the new password.

5.6.2. If the code entered is incorrect, validate the authentication, an error message prompts the user to enter the correct code.

5.7 The user is directed to the login screen with the newly acquired password.

1.1.3 Log Out

1. Name: Log Out

2. Participating actor: TA, Instructor, Department Staff, Department Chair, Dean, Admin.

3. Entry condition: The user currently logged in clicks the “Logout” button on the dashboard.

4. Exit condition: The user’s session is terminated and the user directed to the login panel.

5. Flow of events:

5.1. The user clicks to the “Logout” button.

5.2. A request for ending the session is sent to the backend.

5.3. The request is processed and session ending changes sent to user interface and browser cookies.

1.1.4 View Notification

1. Name: View Notification

2. Participating actor: TA ,Instructor, Department Chair, Department Staff, Dean.

3. Entry condition: The user wants to view their received notifications.

4. Exit condition: The user successfully views all received notifications sorted by date and sender.

5. Flow of events:

5.1. The user navigates to the "Notifications" section in the system.

5.2..The system displays a list of all received notifications, sorted by date (newest to oldest).

5.3. Each notification includes the sender (TA, Instructor, Department Staff, etc.) , receiving date and time, and a brief description of the message.

5.4. The user can filter notifications by date.

5.5. The user can click on a notification to view full details.

5.6. The user can mark notifications as read or unread.

5.7. If a notification requires action, the system provides a direct link to the relevant task or page.

5.8. Exceptional Flow:

5.8.1. If the user has no notifications, the system displays a message: "No new notifications."

1.2 Admin Duty Workflow

1.2.1 View Recorded Logs

1. Name: View Recorded Logs
2. Participating actor: Admin.
3. Entry condition: The admin asks for the recorded logs such as previous semesters, TA records, etc. in the main site pages sidebar.
4. Exit condition: The admin clicks to return the main page button.
5. Flow of events:

5.1. The admin is directed to the recorded records screen.
5.2. The admin chooses the semester he/she wants to check.
5.3. The admin can examine various information such as the TAs worked that semester.
5.4. The admin clicks to return the main page button.

1.2.2 Edit Global Parameters

1. Name: Edit Global Parameters
2. Participating actor: Admin.
3. Entry condition: At the start of a semester, the admin sets the necessary global parameters such as semester date after being directed to editing the global parameters page from the main site page.
4. Exit condition: The admin can click to return to the main page button.
5. Flow of events:

5.1. The admin is directed to editing the global parameters page.
5.2. The admin enters the parameter values.
5.3. The admin clicks to return the main page button.

1.2.3 Import Current Semester

1. Name: Import Current Semester
2. Participating actor: Admin.
3. Entry condition: At the start of a semester, the admin sets the necessary information such as courses, TAs, and Instructors after being directed to enter the global parameters page from the main site page.
4. Exit condition: The admin can click to return to the main page button.

5. Flow of events:

5.1. The admin is directed to editing the global parameters page.

5.2. The admin enters the parameter values.

5.3. The admin clicks to return the main page button.

1.2.4 Edit Users

1. Name: Edit Users

2. Participating actor: Admin, Mail Delivery System (secondary actors).

3. Entry condition: The admin can delete or add a user when needed by clicking the admin main page sidebars edit users button.

4. Exit condition: The admin can click to return to the main page button from the edit users page.

5. Flow of events:

5.1. The admin is directed to the edit users screen.

5.2. The admin selects the delete or the add option.

5.2.1. If the admin selects the delete option, he/she should enter the ID of the user he/she wants to delete.

5.2.1.1 If the ID is correct, the user is deleted, and a notification is sent to the deleted user's email. If the ID is incorrect, the system asks for the correct ID.

5.2.1.2 If the ID is incorrect, the system asks for the correct ID.

5.2.2. If the admin selects the add option, he/she should enter the added user information such as name, surname, ID, and role. Based on the role, role specific information is asked from the admin such as the courses that are instructed by the new Instructor if the user is an Instructor. After the addition is done, a notification is sent to the newly added user's email.

`**5.3.** The admin returns to the main administration page by clicking the return to main page button.

1.3 TA Duty Workflow

1.3.1 View Schedule

1. Name: View Schedule

2. Participating actor: TA.

3. Entry condition: The TA wants to view their weekly schedule.

4. Exit condition: The TA successfully views their schedule in a calendar format.

5. Flow of events:

5.1. The TA navigates to the "Schedule" section in the system.

5.2. The system displays the TA's schedule in a calendar view.

5.3. The TA can switch between weekly, daily, or monthly views.

5.4 The TA exits the schedule section.

1.3.2 Send Proctoring Swap Request

1. Name: Send Proctoring Swap Request

2. Participating actor: TA.

3. Entry condition: The user chooses “Proctor Swap Request” from the menu.

4. Exit condition: The request successfully sent

5. Flow of events:

5.1. The user choses “Proctor Swap Request” option from the menu.

5.2. The user fills necessary information (Date of the proctoring assignment, Person the user wants to swap, Date of the proctoring assignment the user wants)

5.3. The user clicks the button to send request to server

5.4. Backend processes the request and informs the instructor and The proctor planned for swap with notification.

1.3.3 Approve Proctoring Swap Request

1. Name: Approve Proctoring Swap Request

2. Participating actor: TA.

3. Entry condition: Another user has sent a request to swap proctors.

4. Exit condition: User successfully approves swap request.

5. Flow of events:

5.1. User navigates to the notifications menu.

5.2. User selects a swap request.

5.3. User approves the swap request.

5.4. Both the current user and the user who sent a request to swap proctors gets notifications via email.

1.3.4 Reject Proctoring Swap Request

1. Name: Reject Proctoring Swap Request

2. Participating actor: TA.

3. Entry condition: Another user has sent a request to swap proctors.

4. Exit condition: User successfully rejects swap request.

5. Flow of events:

5.1. User navigates to the notifications menu.

5.2. User approves the swap request.

5.3. User successfully rejects swap request.

1.3.5 View Proctoring Information

1. Name: View Proctoring Information

2. Participating actor: TA.

3. Entry condition: The TA wants to view their assigned proctoring duties' information.

4. Exit condition: The TA successfully views their assigned proctoring tasks and the TA is able to see exam details, assigned classroom, and student information.

5. Flow of events:

5.1. The TA navigates to the "Proctor Information" section in the system.

5.2. The system displays a list of assigned proctoring duties.

5.2.1. TA can be able to see course name, exam date and time, classroom assignment, number of students, exam duration and the student list.

5.3. If the TA's assigned exam schedule changes, the system automatically updates and notifies the TA.

5.4. The TA exits the proctoring information section.

5.5. Exceptional Flow:

5.5.1. If there is a schedule conflict with another task, the system highlights the conflict and suggests a resolution.

5.5.2. If the exam location or time changes, the system sends an automatic notification to the TA.

1.3.6 Request Leave of Absence

1. Name: Request Leave of Absence Request

2. Participating actor: TA.

3. Entry condition: The TA must be logged into the system and TA wants to indicate that they will be unavailable for a specific task or time period.

4. Exit condition:

4.1. The TA's leave request is recorded in the system.

4.2. The Instructor and necessary system units are notified.

5. Flow of events:

5.1. The TA navigates to the "Leave of Absence Request" section in the system.

5.2. The TA enters the leave dates and provides a reason for the request.

5.3. The TA confirms and submits the request.

1.3.7 Submit Task Request

1. Name: Submit Task Request

2. Participating actors: TA, Mail Delivery Service (secondary actor).

3. Entry condition: A TA needs to request approval for a completed task.

4. Exit condition: The task request is submitted for instructor approval.

5. Flow of events:

5.1. The TA navigates to the task submission page.

5.2. The TA fills in details about the task, including hours worked and description.

5.3 The System submits the request for instructor review. As The instructor receives a notification about the request.

1.3.8 View Total Workload

1. Name: View Total Workload

2. Participating actor: TA.

3. Entry condition: The TA wants to view their weekly tasks and workload.

4. Exit condition:

4.1. The TA successfully views their weekly assigned tasks.

4.2. The TA can see the total workload in terms of time commitment and task distribution.

5. Flow of events:

5.1. The TA navigates to the "Total Workload" section in the system.

5.2. The system displays the TA's weekly tasks in a list or calendar format.

5.3. The TA can click on a task to view detailed information.

5.3.1 The system displays the TA duties, the name and date of task, the task description and the assigned course or project in detail.

5.4 If the TA has overlapping tasks, the system visually marks conflicts.

5.5 The TA exits the schedule section.

5.6. Exceptional Flow

5.6.1. If the TA has no assigned tasks, the system displays a message: ″No tasks assigned for this period.″

5.6.2. If the TA's schedule has been recently updated, the system refreshes to show the latest workload calculations

1.4 Proctoring Duty Workflow

1.4.1 View All Proctoring Tasks

1. Name: View All Proctoring Tasks

2. Participating actors: Department Chair, Dean.

3. Entry condition: The proctoring schedule has been created and assigned.

4. Exit condition: The list of all proctoring tasks is displayed.

5. Flow of events:

5.1. The user (Department Chair or Dean) navigates to the proctoring tasks page through the top menu of the website.

5.2. The System retrieves all assigned proctoring tasks of TAs and those tasks that are unassigned.

5.3 Exceptional Flow:

5.3.1 The user may filter the proctoring tasks based on dates, assigned proctors, and courses.

6. Special /quality requirements: The System ensures that only users with the appropriate permissions can view all proctoring tasks.

1.4.2 Automatically Assign Proctoring Tasks

1. Name: Automatically Assign Proctoring Tasks

2. Participating actors: Department Chair, Mail Delivery Service (secondary actor).

3. Entry condition: The proctoring schedule is due to be assigned, and there are enough proctors available in the System.

4. Exit condition: The proctoring tasks are assigned automatically based on predefined rules.

5. Flow of events:

5.1. The user (Department Chair or Dean) navigates to the proctoring tasks page through the top menu of the website.
5.2. The System retrieves all assigned proctoring tasks of TAs and those tasks that are unassigned.
5.3 The System applies predefined rules (e.g., availability, workload balancing) to assign proctors to tasks automatically.
5.4 Exceptional Flow:
5.4.1 If there is a lack of proctors to be assigned for the tasks, the System overwrites some of the constraints and predefined rules to ensure the correct automatic assignment solution.
5.4.2 The automatic assignment allocates the proctoring tasks to those with the least workload,
5.5 Once the assignments are done, the System notifies

6. Special /quality requirements: The System ensures fairness and prevents conflicts in scheduling. The automatic assignment also requires TAs to accept the proctoring assignment as soon as possible to ensure compatibility of the distributed tasks with TA schedules.

1.4.3 Manually Assign Proctoring Tasks

1. Name: Manually Assign Proctoring Tasks

2. Participating actors: Department Chair, Mail Delivery Service (secondary actor).

3. Entry condition: The proctoring schedule is due to be assigned, and there are enough proctors available in the System.

4. Exit condition: The proctoring tasks are assigned manually to selected proctors.

5. Flow of events:

5.1. The user (Department Chair or Dean) navigates to the proctoring tasks page through the top menu of the website.

5.2. The System retrieves all assigned proctoring tasks of TAs and those tasks that are unassigned.
5.3 The user selects an unassigned proctoring task.
5.4 The System updates the assignment and notifies the assigned proctor.

6. Special /quality requirements: The system ensures that the selected proctor does not have schedule conflicts.

1.4.4 Swap Proctors Automatically

1. Name: Swap Proctors Automatically

2. Participating actors: Instructor, Department Staff**,** Department Chair, Mail Delivery Service (secondary actor).

3. Entry condition: A proctoring task has already been assigned, but a change is needed due to availability, schedule conflicts, or special requests.

4. Exit condition: The proctoring task is reassigned automatically to another proctor.

5. Flow of events:
5.1. The user (Department Chair or Dean) navigates to the proctoring tasks page through the top menu of the website.
5.2. The user selects a proctoring task that requires reassignment.
5.3 The System automatically finds a replacement proctor based on predefined rules (e.g., availability, workload balancing, fairness constraints).
5.4 The System updates the assignment and notifies the affected proctors.

1.4.5 Swap Proctors Manually

1. Name: Swap Proctors Manually

2. Participating actors: Instructor, Department Staff**,** Department Chair, Mail Delivery Service (secondary actor).

3. Entry condition: A proctoring task has already been assigned, but a change is needed due to availability, schedule conflicts, or special requests.

4. Exit condition: The proctoring task is reassigned manually to another proctor.

5. Flow of events:
5.1. The user (Department Chair or Dean) navigates to the proctoring tasks page through the top menu of the website.
5.2. The user selects a proctoring task that requires reassignment.

5.3 The user manually selects a replacement proctor from the list of available proctors.
5.4 The System updates the assignment and notifies the affected proctors.

1.5 Exam Duty Workflow

1.5.1 Schedule Exam

1. Name: Schedule Exam

2. Participating actors: Instructor, Mail Delivery Service (secondary actor).

3. Entry condition: Exams need to be scheduled for the department's courses.

4. Exit condition: Exam dates, times, and locations are assigned and stored in the System.

5. Flow of events:
5.1. The information regarding the exams are imported via the top bar menu
5.2. The System saves the schedule and notifies relevant instructors and students.

1.5.2 Print Exam Information

1. Name: Print Exam Information

2. Participating actors: Instructor.

3. Entry condition: Exam schedules have been finalized.

4. Exit condition: Exam information is printed in either random or alphabetical order.

5. Flow of events:
5.1. The user (Department Chair) navigates to the exam information printing page.
5.2. The user selects the preferred order (random or alphabetical).
5.3 The System generates and formats the exam schedule accordingly. The user prints or downloads the formatted schedule.

1.6 Other Duty Workflow

1.6.1 View Task Requests

1. Name: View Task Requests

2. Participating actors: Instructor.

3. Entry condition: The Instructor User has courses assigned to them.

4. Exit condition: The submitted tasks are displayed.

5. Flow of events:

5.1. The user (Instructor) may view the submitted tasks page by navigating through the top menu of the website.

5.2. The server returns all the TA's submitted tasks depending on the courses the instructor is assigned to.

5.3 6. Special /quality requirements: Rejected tasks will not be shown on this page. Only the approved tasks will be displayed.

6. Special /quality requirements: Rejected tasks will not be shown on this page. Only the approved tasks will be displayed.

1.6.2 Approve Task Request

1. Name: Approve Task Request

2. Participating actors: TA, Instructor, Mail Delivery Service (secondary actor).

3. Entry condition: TA has completed and submitted a task related to the TA Duty Workflow. The user, with instructor privileges, can see the submitted task on the submitted tasks page. The Instructor User has access to the course to which the submitted task belongs.

4. Exit condition: The submitted task by the TA is approved and added to the total working hours of the TA.

5. Flow of events:

5.1. The user (Instructor) may view the submitted task by visiting the notifications page and clicking on the notification informing about the newly submitted task or by visiting the submitted tasks page.

5.2. The user (Instructor) reads the description of the submitted task report and evaluates the hours spent on the task, as well as the date and description of the task.

5.3. Once the Instructor User approves the submitted task report, the task is gone from the submitted tasks page.

5.3.1. The task can now be viewed by the user with instructor privileges on the completed tasks page.

5.3.2. The TA who submitted the form receives notification regarding the approval of the task.

6. Special /quality requirements: There is no set deadline for when the submitted task must be approved.

1.6.3 Reject Task Request

1. Name: Reject Task Request

2. Participating actors: TA, Instructor, Mail Delivery Service (secondary actor).

3. Entry condition: TA has completed and submitted a task related to the TA Duty Workflow. The user, with instructor privileges, can see the submitted task on the submitted tasks page. The Instructor User has access to the course to which the submitted task belongs.

4. Exit condition: The submitted task by the TA is rejected.

5. Flow of events:

5.1. The user (Instructor) may view the submitted task by visiting the notifications page and clicking on the notification informing about the newly submitted task or by visiting the submitted tasks page.
5.2. The user (Instructor) reads the description of the submitted task report and evaluates the hours spent on the task, as well as the date and description of the task.
5.3. Once the Instructor User rejects the submitted task report, the task is gone from the submitted tasks page.
5.3.1. The task from now on will be displayed on the rejected tasks page.
5.3.2. The TA who submitted the form receives notification regarding the rejection of the task report. Mail Delivery Service sends an email regarding the rejection with a full copy of the task report to provide a better context.

6. Special /quality requirements: There is no set deadline for when the submitted task must be approved. The Instructor User must fill in the blank text box “Reasons for rejection” to reject the task report.

1.6.4 Approve Leave of Absence Request

1. Name: Approve Leave of Absence Request

2. Participating actors: TA, Department Chair, Department Staff, Mail Delivery Service (secondary actor).

3. Entry condition: TA has submitted a request from the System for Leave of Absence. Users must have one of the following permission levels: Department Chair, and Department Staff, to access the Leave of Absence Request Page if they share a course with the TA who submitted the request. Must be affiliated with the TA that sent the Leave of Absence Request.

4. Exit condition: Approves the Leave of Absence request of TA and removes it from the Leave of Absence Page.

5. Flow of events:

5.1. The user (Department Chair, Department Staff) enters the Leave of Absence Request Page by navigating through the top menu of the website.
5.2. The server will retrieve Leave of Absence requests and display only those related to the user.
5.3 After approving the Leave of Absence Request the dates for when the Leave of Absence was requested is sent to the server and stored in TA's schedule data.
5.4 The TA receives a notification regarding the confirmation and sends an email via Mail Delivery Service.

1.6.5 Reject Leave of Absence Request

1. Name: Reject Leave of Absence Request

2. Participating actors: TA, Department Chair, Department Staff, Mail Delivery Service (secondary actor).

3. Entry condition: TA has submitted a request from the System for Leave of Absence. Users must have one of the following permission levels: Instructor, Department Chair, and Department Staff, to access the Leave of Absence Request Page if they share a course with the TA who submitted the request. Must be affiliated with the TA that sent the Leave of Absence Request.

4. Exit condition: Rejects the Leave of Absence request of TA and removes it from the Leave of Absence Page.

5. Flow of events:

5.1. The user (Department Chair, Department Staff) enters the Leave of Absence Request Page by navigating through the top menu of the website.
5.2. The server will retrieve Leave of Absence requests and display only those related to the user.
5.3 After the rejection of the Leave of Absence Request, TA receives a notification regarding the rejection of the Leave of Absence Request and sent an email via Mail Delivery Service and is sent an email regarding the rejection with a full copy of the task report to provide a better context.

6. Special /quality requirements: The User must fill in the blank text box "Reasons for rejection" to reject the Leave of Absence Request.

1.6.6 Edit Student Information

1. Name: Edit Student Information

2. Participating actors: Department Staff, Department Chair, Dean.

3. Entry condition: The user has appropriate permissions and needs to update a student's information.

4. Exit condition: The student's information is updated and saved in the System.

5. Flow of events:

5.1. The user (Department Staff, Department Chair, or Dean) navigates to the student management page.

5.2. The System retrieves the student records. The user selects a student and modifies their information

5.3 The updated information is saved, and the student record is updated.

2. Tech Stack

We will use the following technologies in the project:

1. Java Spring Boot

2. REST API

3. MySQL

4. JQuery

5. BootStrap

2.1 Java Spring Boot

Spring Boot is a Spring framework used for building user interfaces. It allows developers to create independent and efficient programs within Spring Library. We will mainly use Spring Boot for backend in our program.

2.2 REST API

REST API is an architecture that operates over the HTTP protocol, which enables communication between the client and server. It sends XML and JSON data to the client for the changes from the backend. We are planning to use it with spring boot backend for changes in HTML format.

2.3 MySQL

MongoDB is a NoSQL, document-oriented database that stores data in flexible, JSON-like documents. It's scalable and ideal for handling large volumes of unstructured data, including messages, tours and user information.

2.4 JQuery

JQuery is an open-source JavaScript library to make changes in HTML contents, HTML functionings, animations etc. We will mainly use JQuery for DOM. (Document Object Manipulation)

2.5 Bootstrap

Bootstrap is an open-source frontend library written by using HTML, CSS and JavaScript. IT provides functional templates for frontend design. It will contribute for admin panel and most parts of the user interface.