

# INTRODUCTION

## 1. Purpose

The purpose of this document is to explain the functioning of the Graduation Management System. This document outlines the features of the system, how it will be integrated into the graduation management process at various points, and the assumptions and dependencies on which it is built.

## 2. Scope

Graduation Management system is designed to evaluate students' graduation eligibility, track applications, send email notifications and automatically generate graduation certificates.

## 3. Definitions, acronyms, and abbreviations

Term	Definition
Student	The individual applying for graduation.
Advisor	The advisor reviews and approves students' academic progress electronically, with automated checks for graduation criteria.
UBYS	University Information Management System; the system where all academic records of students are stored and tracked.
Rectorate	The final stage of approval for graduation, where the rector or authorized personnel signs the official graduation documents.
Secretary	The administrative staff who acts as a key link between the advisor and the dean's office, forwarding graduation requests for approval.
Dean's Office	The office responsible for verifying students' academic and non-academic graduation requirements and granting approval if all conditions are met.
Transcript	A function that allows importing transcripts in PDF format and
Importer	converting them into usable data.

Graduation Petition	A document automatically generated by the system for students eligible for graduation.
Honor Certificates	Certificates awarded to students for achieving honors or high honors.
Disengagement Certificates	Certificates required from various departments (e.g., library, SKS, BIDB, OIDB) to clear non-academic obligations before graduation.
Faculty Ranking Sorter	A feature that generates faculty-wide ranking by consolidating and sorting student lists received from departments based on GPA.
Graduation Requirements Checker	A tool that automatically verifies whether students meet graduation criteria, such as GPA, credits, and completed courses
Graduation Petition Generator	A feature that compiles the names of eligible students and automatically generates their graduation petitions.
Certificate Determiner	A function that assigns honor, high honor, or achievement certificates to students based on predefined criteria.
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Importer	converting them into usable data.
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Certificate Determiner	A function that assigns honor, high honor, or achievement certificates to students based on predefined criteria.

## REFERENCES

IEEE Standard for Software Requirements Specification - IEEE Std 830  
İzmir Yüksek Teknoloji Enstitüsü Mezuniyet Yönergesi, 2024

## OVERVIEW

The next chapter, overall description, gives an overview about the functionality of the product. It mentions Product's perspective, User characteristics, Constraints and some assumptions and dependencies.

The third chapter, Specific requirements, describes the system in a technical way. It has detailed use cases, user interfaces and generic performance /software requirements.

## Overall Description

### 2.1 Product Perspective:

Graduation Management System is a web-based application developed to manage

**the graduation processes of Izmir Institute Of Technology.**

#### System Interfaces:

Communication with the Registrar's Office system for diploma printing and storage management.

User Interfaces: Web-based portals for student affairs, advisors, and administrative staff.

Notification systems to inform stakeholders about task statuses (e.g., pending signatures, completed documents).

**Hardware Interfaces: Compatibility with printers for diploma and certificate generation.**

Software Interfaces: Interaction with external ranking and accreditation systems.

Database management for storing graduation lists and ranking information.

Communication Interfaces: Email notifications for stakeholders.

Secure file transfer protocols for sharing ranking and certificate data.

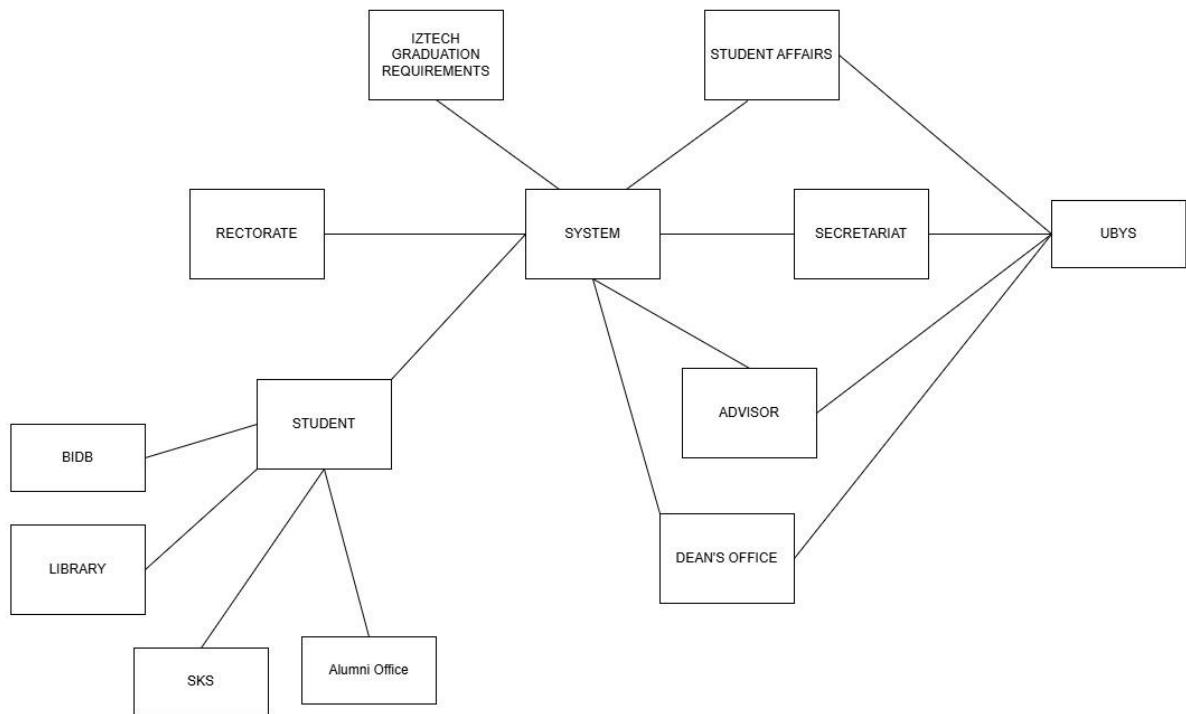
Memory and Operations: High-capacity data storage for managing large student databases.

Real-time processing for generating reports and validating signatures.

Site Adaptation Requirements: The system must adapt to changing academic policies and graduation requirements.

Localization features for supporting multiple languages in user interfaces.

**User Interfaces:Web-based portals for **deans, department secretaries**, and other administrative staff to manage graduation workflows and approvals.**



## 2.2 Product Functions:

**Document Management:** Generates and prints diplomas, certificates, and ranking lists. Maintains a repository of signed and stamped documents.

**Ranking and Certification:** Combines department and university rankings based on academic performance. Assigns certificates to eligible students.

**Graduation Eligibility Validation:** Verifies students' GPA, ECTS credits, and course completions. Checks for compliance with graduation requirements.

**Log In:** Allows users to log into the system.

**Importing Transcripts into the System:** Uploads student transcripts into the system.

**Generate Faculty Ranking List:** Creates a ranking list based on faculty performance.

**Generate Departmental Ranking List:** Produces a ranking list for specific departments.

**Generate University Ranking List:** Generates a ranking list for the entire

university.

**Automated Emails:** Sends automated emails triggered by the system.

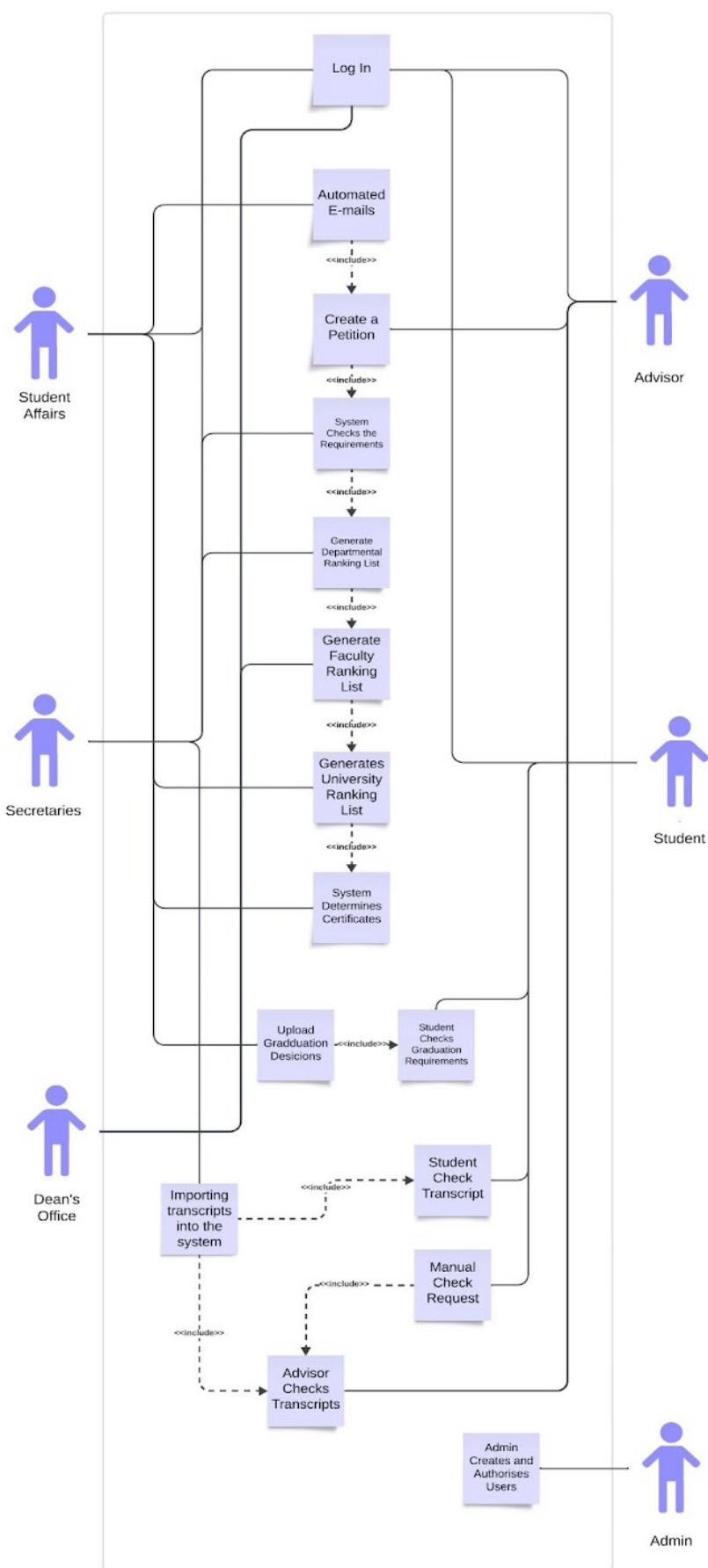
**Upload Graduation Decisions:** Adds graduation decisions to the system.

**System Checks the Requirements:** Validates whether requirements are met.

**System Determines Certificates:** Identifies and determines the types of certificates needed.

**Student Checks Graduation Requirements:** Allows students to review their graduation requirements.

**Advisor Checks Students Graduation Situation:** Allows advisors to check students graduation situation.



## 2.3 USER CHARACTERISTIC

All users must be able to use one of the popular web browsers (e.g., Chrome, Edge, etc.).

All users should have the ability to work with web-based systems.

Secretaries responsible for transcript import and export operations must possess the necessary technical proficiency to use the UBYS system.

## 2.4 CONSTRAINTS

Regulatory Policies: Compliance with university and government regulations for document validation. Adherence to data privacy laws (e.g., KVKK).

Parallel Operations: Concurrent processing of multiple tasks, such as ranking generation and diploma signing.

Audit Functions: Mandatory logging of all actions for compliance and accountability.

Criticality of the Application: High reliability required to avoid delays in graduation processes.

Safety and Security Considerations: Secure storage of signed documents and protection against unauthorized access

## 2.5 Assumptions and Dependencies

The system assumes that all input data (e.g., GPA, ECTS credits) is accurate and up-to-date.

Stakeholders, including the Dean's Office and Rectorate, are available for signing within the defined timeframe.

It is assumed that the system is connected to a functional email server.

It is assumed that all stakeholders has an active internet connection and a device which can runs a web browser.

## 6. Apportioning of Requirements

### Delayed Features:

Full automation of library debt checks.

Online approval processes of the offices listed in the disengagement form.

## **Guideline for Use Cases**

When writing Use Cases, examples are taken into consideration. While writing Normal Course, a title was created and the steps of the scenarios were written under this title. If there is an alternative course or exception after any step in the normal course, the number of that step is written and then an explanation is made by putting (A\*) for Alternative Course and (E\*) for Exception. In Exception and Alternative Courses, it is organized and written as a title and then steps, as in the normal part. For example: if there are 2 errors after step 3 of scenario 1 of normal course, the first error is called 1.3.E1 and the second error is called 1.3.E2.











# Use Case Template

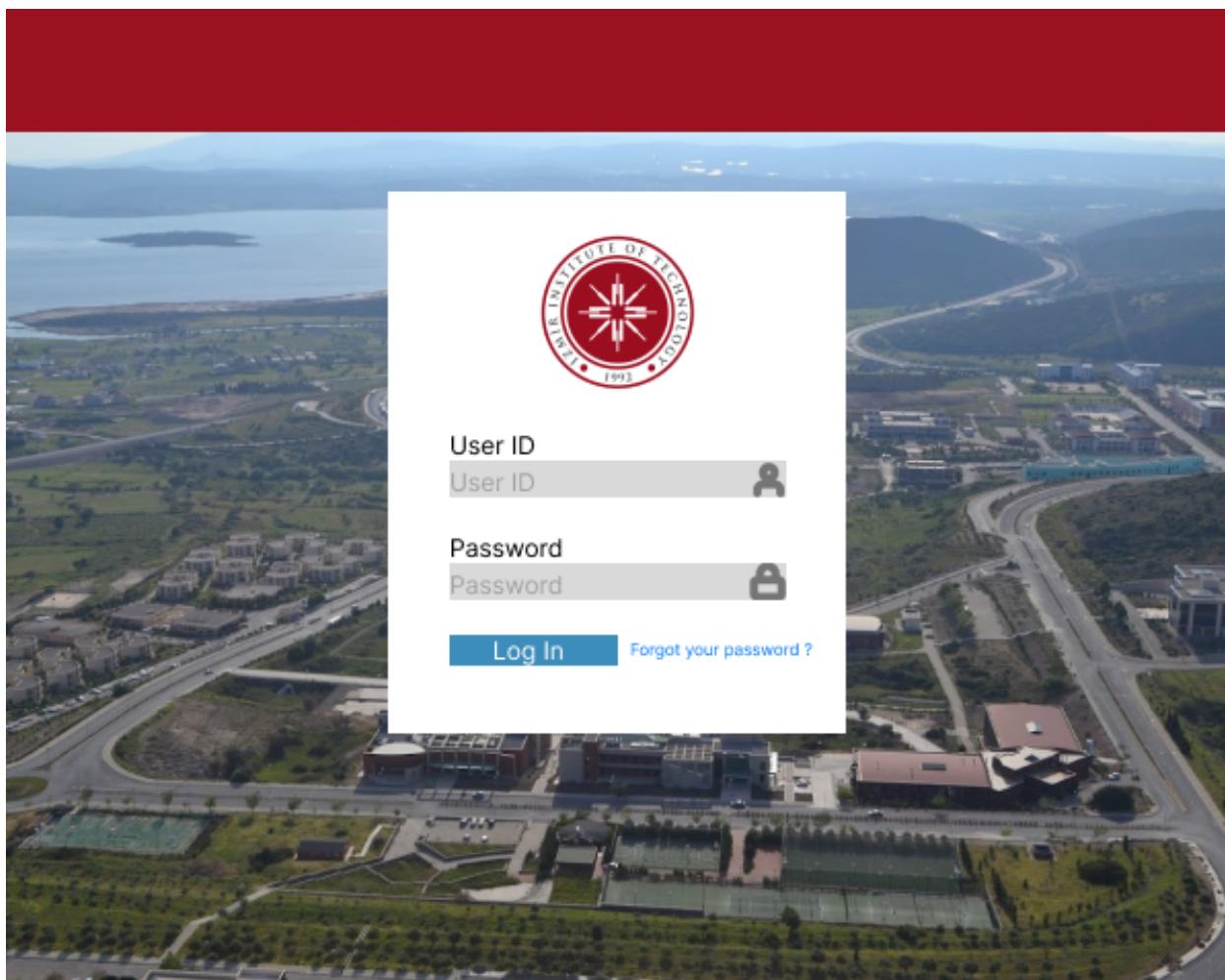
Use Case ID:	UC-1	
Use Case Name:	Log in	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Student Affairs Secondary Actors: Students, Dean's Office, Secretaries, Advisors
Description:	Log in to system.
Preconditions:	Actors need a registered username and password
Postconditions:	Each actor goes to its own home page
Priority:	High
Frequency of Use:	About 1200 times per year
Normal Course of Events:	1.0 Open log in page 1. user writes id and password 2. presses the log in button 3. System confirms the login id and password and redirects to the home page
Alternative Courses:	1. User forgets id or password 1.1 User presses the forgot password button 1.2 Password reset screen pops up 1.3 User enters their e-mail 1.4 An e-mail is sent to the user's e-mail address 1.5 User goes to the password change screen by clicking on the mail 1.6 User changes password 1.7 Return to step 1 of normal course
Exceptions:	1.2.E1 User has entered the id or password incorrectly 1. An error message appears on the screen 2. Return to step 1 of normal course
Includes:	-
Special Requirements:	Password minimum length (e.g., 8 characters) enforcement. Email addresses should be case-insensitive. Passwords must be stored hashed using a secure algorithm like sha256 in the database.
Assumptions:	Usernames and passwords are correctly defined in the system, and each actor is associated with their designated role.
Notes and Issues:	-

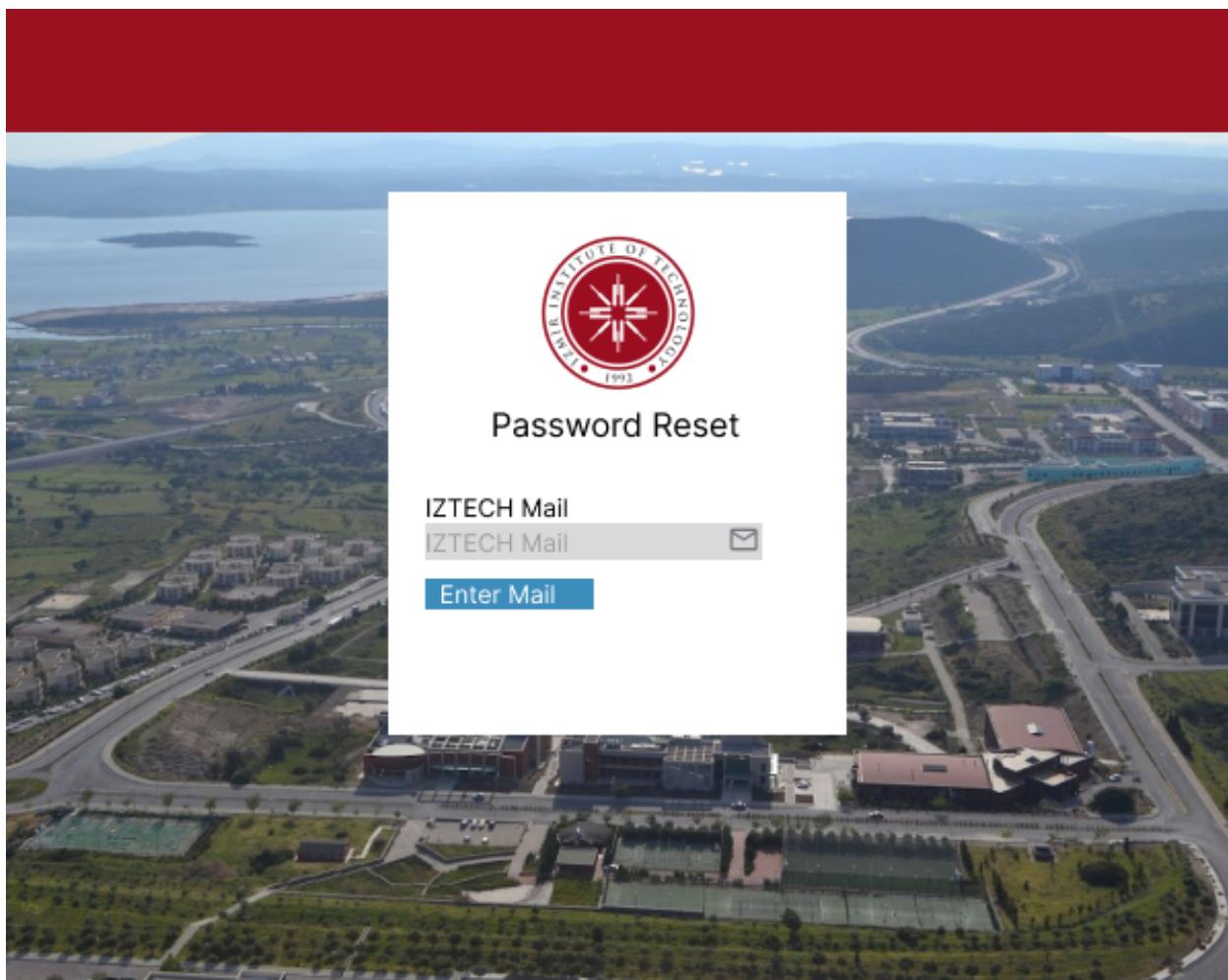
## Software Requirements:

### Authentication System:

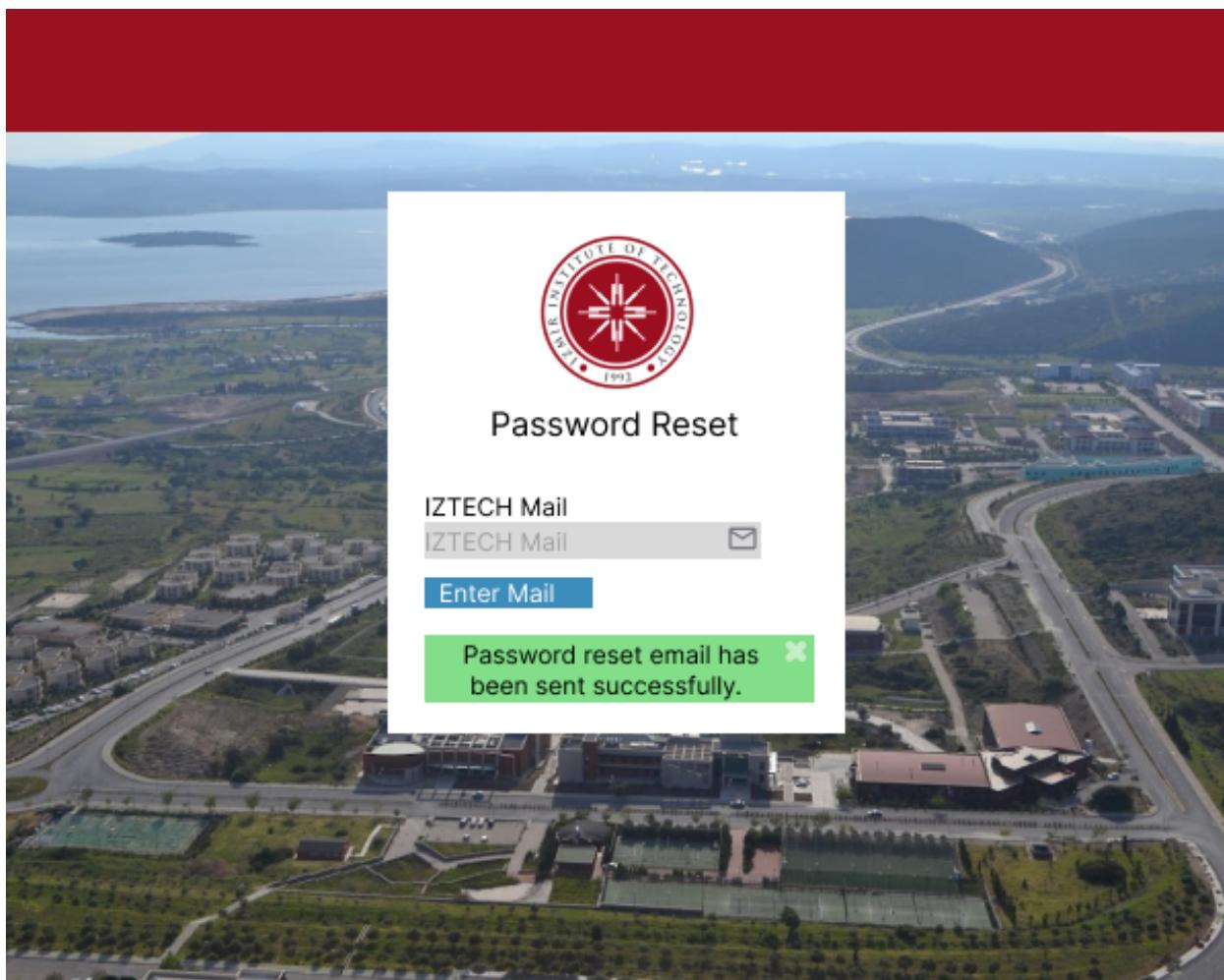
The system must implement a secure authentication mechanism using encrypted passwords (e.g., bcrypt) and session management through tokens (e.g., JWT or OAuth 2.0).



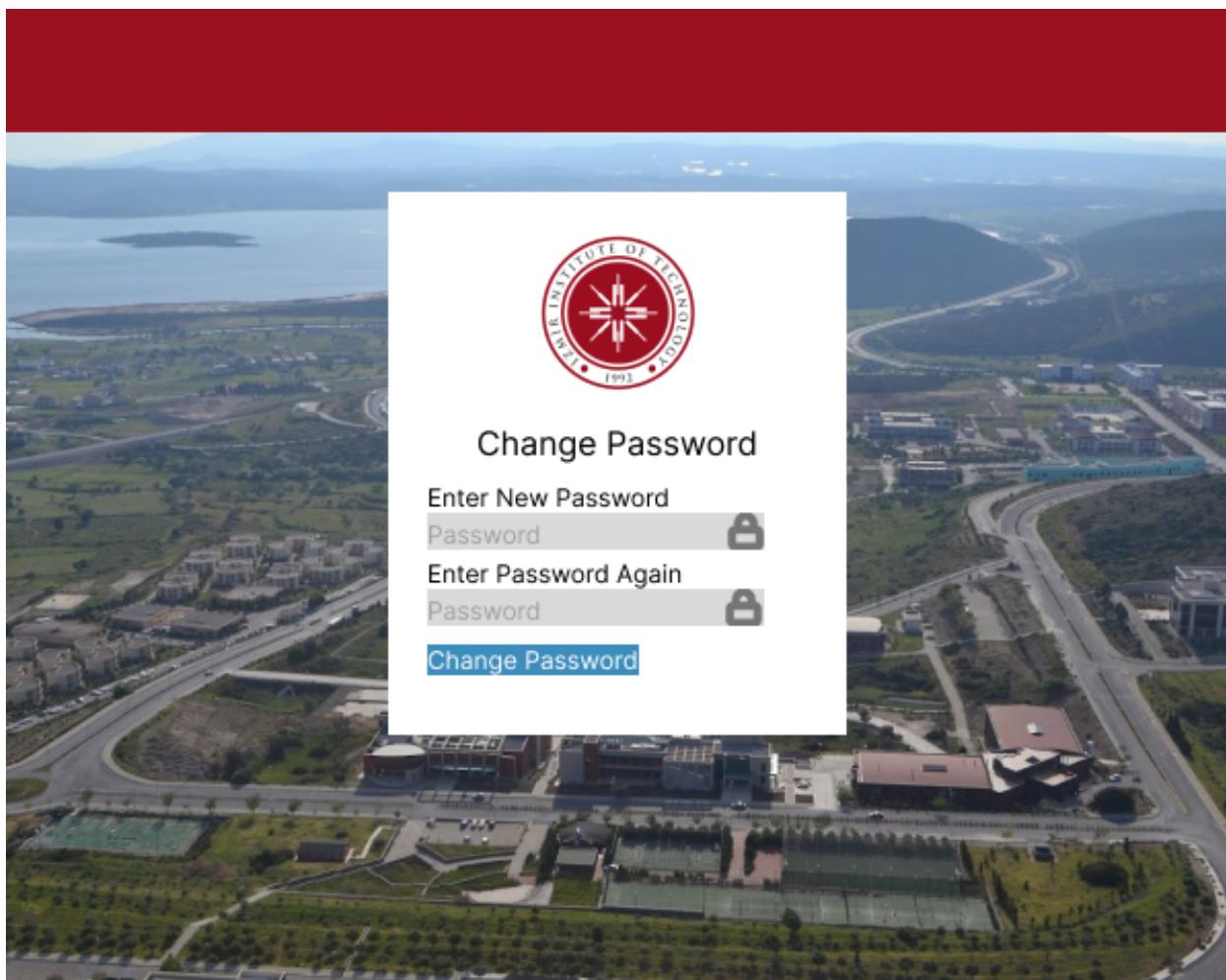
UC-1 1.0



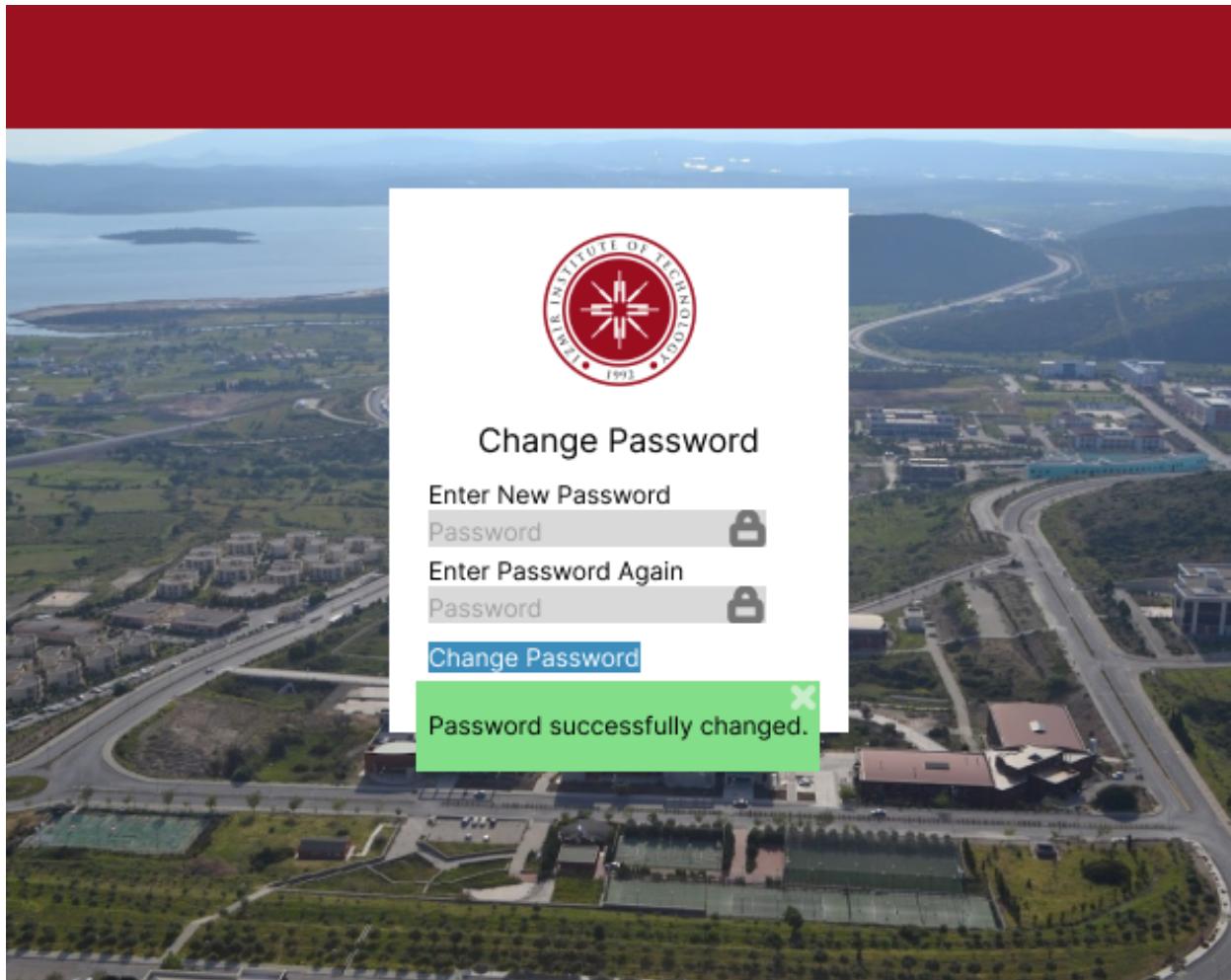
UC-1 Alternative 1.2



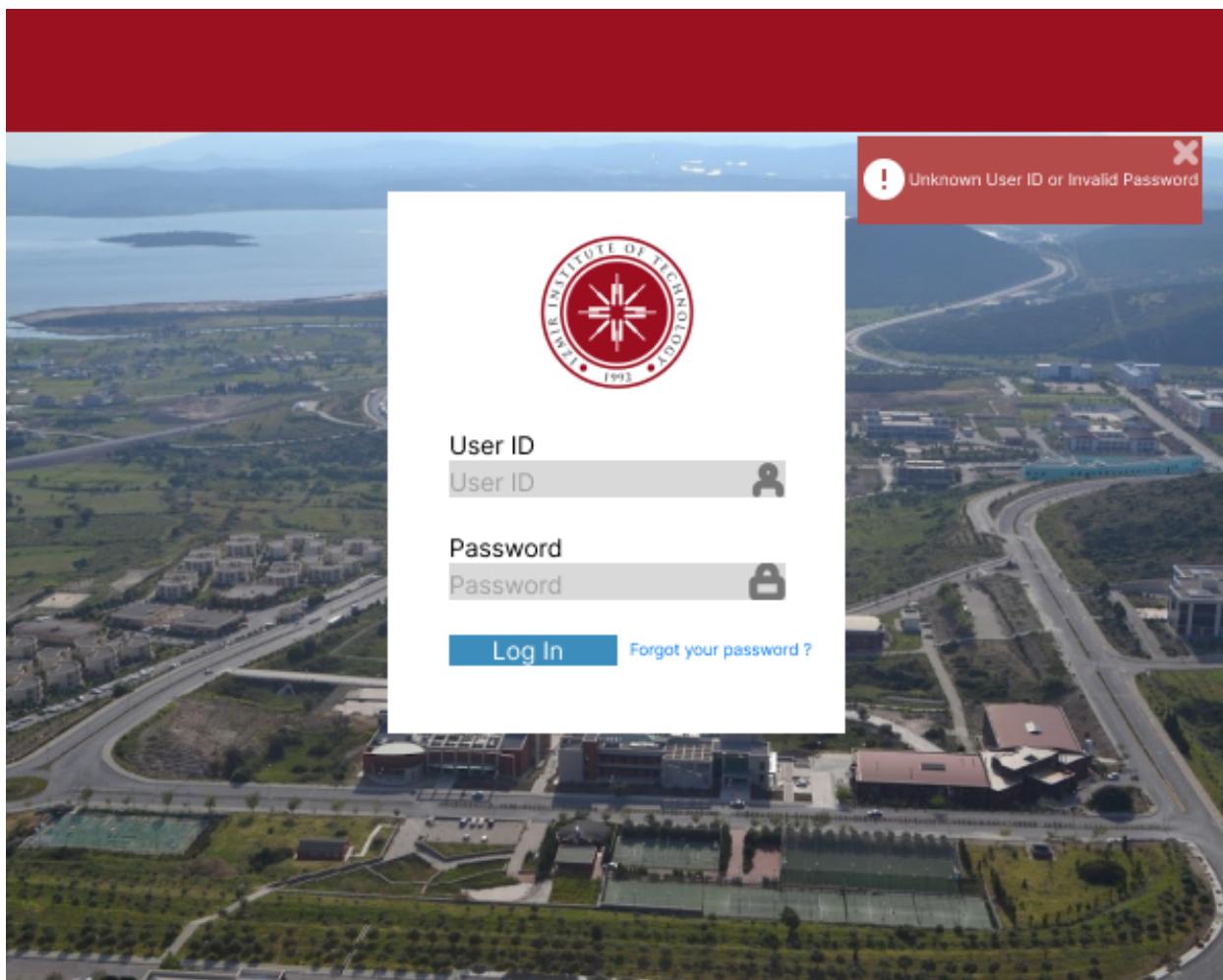
## UC-1 Alternative 1.4



UC-1 Alternative 1.5



UC-1 Alternative 1.6



UC-1 1.2.E1.1

# Use Case Template

Use Case ID:	UC-2	
Use Case Name:	Send Automated E-mails	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Student Affairs
Description:	Student Affairs sends an automatic email to the department secretaries via the system to initiate the graduation process.
Preconditions:	The time determined by the Student Affairs for Graduation has arrived
Postconditions:	send an e-mail to the advisors
Priority:	High
Frequency of Use:	once a year
Normal Course of Events:	<p>1.0 Entering the automatic mail sending screen</p> <p>1. press the send mail button</p> <p>2. Notification comes from the system that the mail has been successfully sent</p>
Alternative Courses:	<p><b>1. Email template is incomplete:</b></p> <ul style="list-style-type: none"> <li>a. The system prompts the user to complete missing fields in the email template before sending.</li> <li>b. User completes the required fields and retries sending the email.</li> </ul> <p><b>2. Recipient list is invalid:</b></p> <ul style="list-style-type: none"> <li>a. The system notifies the user if there are issues with email addresses.</li> <li>b. User reviews and corrects the recipient list before sending.</li> </ul>
Exceptions:	<p>1.1.E1. System does not send the mails</p> <p>1. System sends a notification that the mails have not been sent</p> <p>2. Return to step 1 of normal course</p>
Includes:	*
Special Requirements:	<p>The system must be connected to the mail server to ensure email delivery.</p> <p>The email template should be pre-configured and verified before the scheduled time.</p>
Assumptions:	<p>The email server is functional during the scheduled time for sending emails.</p> <p>Student Affairs personnel are trained to operate the system.</p>
Notes and Issues:	-



## Initiate The Graduation Process

[Start Graduation Process](#)

UC-2 1.0



## Initiate The Graduation Process

[Start Graduation Process](#)



Failed to send mails

UC-2 1.2.E1.1



## Initiate The Graduation Process

[Start Graduation Process](#)



The mails have been successfully sent

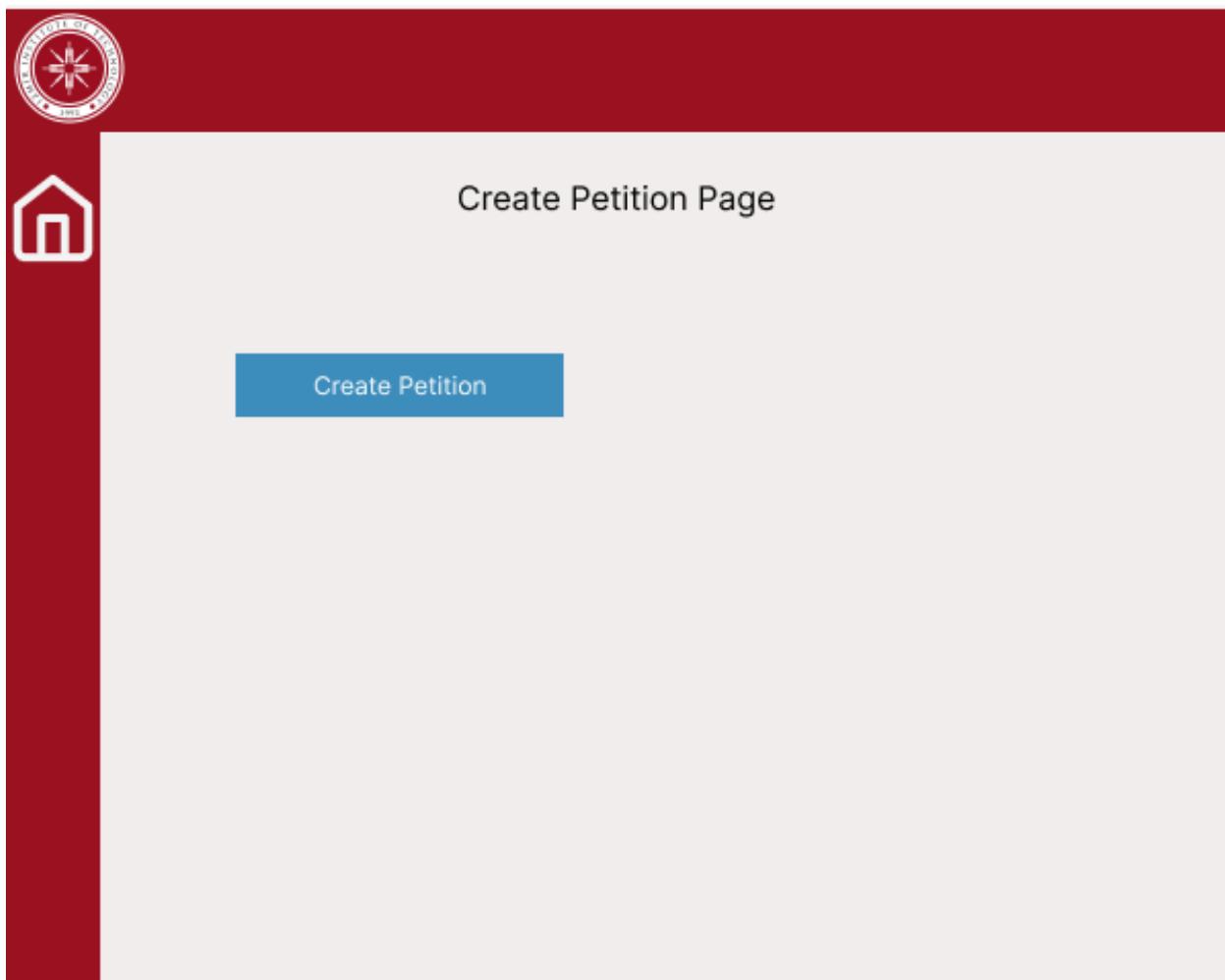
UC-2 1.2

# Use Case Template

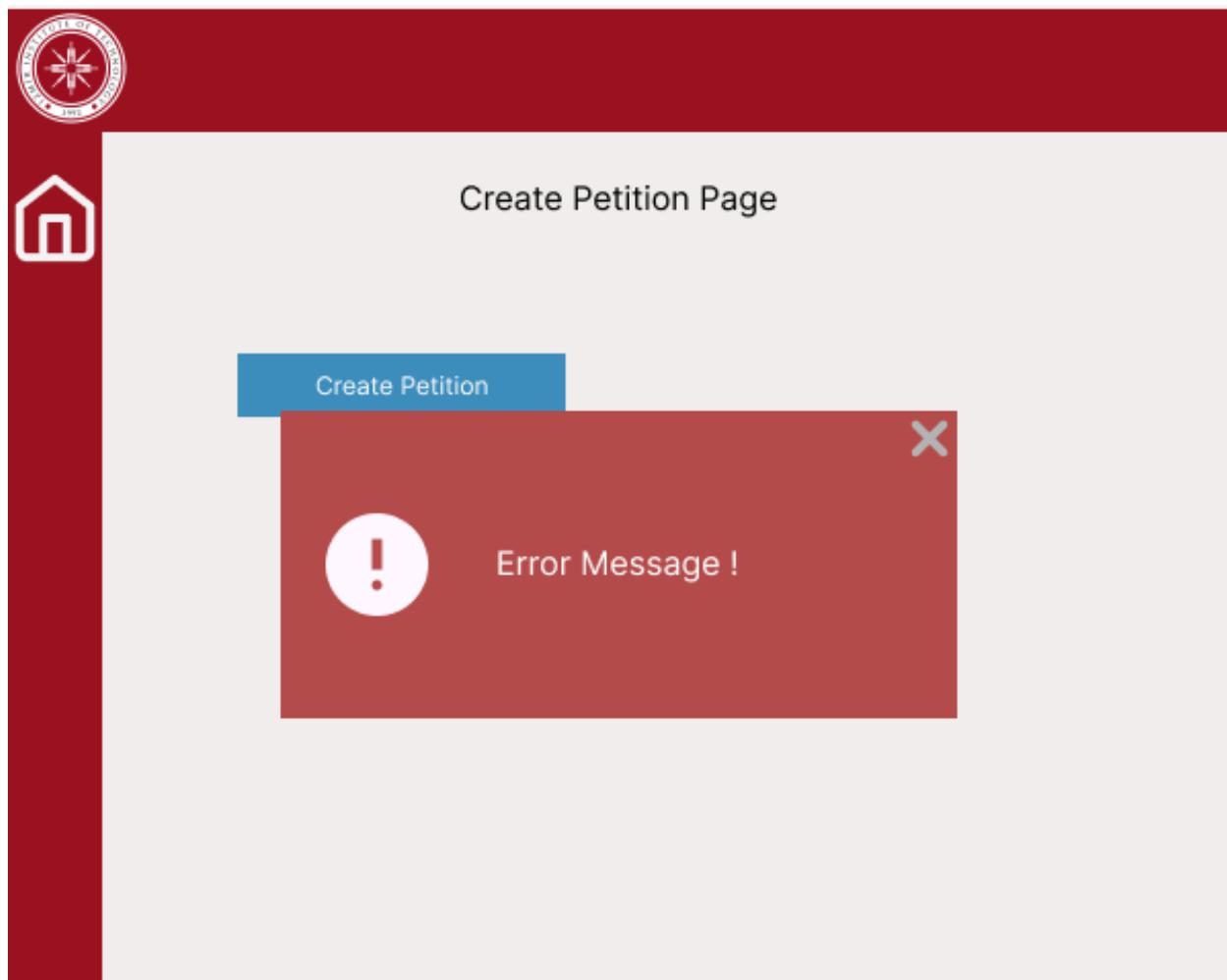
Use Case ID:	UC-3	
Use Case Name:	Create a Petition	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Advisor
Description:	The advisor creates a petition to send to the secretary.
Preconditions:	The advisor receives an email from student affairs to initiate the procedures. The petition template must be available in the system.
Postconditions:	The petition has been sent to the secretary.
Priority:	High
Frequency of Use:	About 200 times in a year
Normal Course of Events:	<p>1.0 Advisor enters the system for petition</p> <p>1. Advisor clicks on the petition creation button</p> <p>2. System directs the counsellor to the petition template page</p> <p>3. Advisor fills in the blank spaces in the template and presses the download button</p> <p>4. The system generates the petition in a <b>PDF format</b> and notifies the advisor that the document has been downloaded.</p>
Alternative Courses:	<p>If the advisor makes a mistake while filling out the petition:</p> <p>1.1 Advisor clicks the "Reset" button to clear the fields and starts over.</p> <p>If the system experiences a temporary error in downloading:</p> <p>2.1 The system retries the download automatically up to three times.</p> <p>2.2 If the download still fails, an error notification is displayed, and the advisor is prompted to try again later.</p>
Exceptions:	<p>1.1.E1 System does not redirect the Advisor to the template page</p> <p>1. System gives an error notification</p> <p>2. Return to step 1 of normal course</p> <p>1.4.E1 Failure to download the petition</p> <p>1. System gives a notification that the file could not be downloaded</p> <p>2. Return to step 3 of normal course</p>
Includes:	*
Special Requirements:	Template version of the petition must be entered into the system one time
Assumptions:	-
Notes and Issues:	-





UC-3 1.0



UC-3 1.1.E1.1



## Petition Template Page

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[Download Petition](#)

UC-3 1.2



## Petition Template Page

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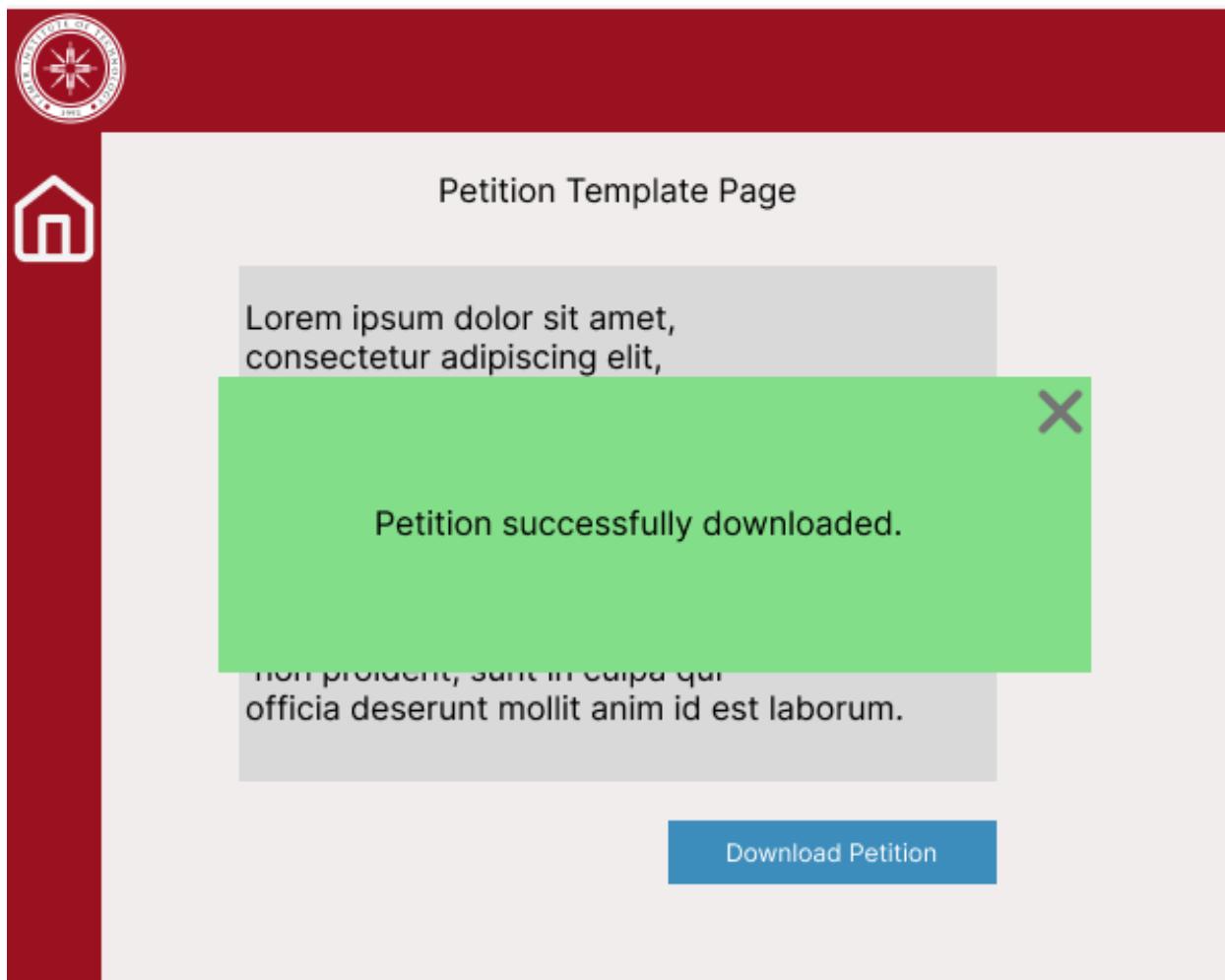
X

n,

ut

The file could not be downloaded.

[Download Petition](#)



The image shows a user interface for a petition template page. On the left, there is a vertical red sidebar with a circular logo at the top and a house icon below it. The main content area has a light gray header with the text "Petition Template Page". Below the header is a gray box containing placeholder text: "Lorem ipsum dolor sit amet, consectetur adipiscing elit," followed by a green box with a close button ("X") containing the message "Petition successfully downloaded." At the bottom of the gray box is another placeholder text: "Non proident, sunt in culpa qui officia deserunt mollit anim id est laborum." A blue button labeled "Download Petition" is located at the bottom right of the main content area.

Petition Template Page

Lorem ipsum dolor sit amet,  
consectetur adipiscing elit,

Petition successfully downloaded.

Non proident, sunt in culpa qui  
officia deserunt mollit anim id est laborum.

Download Petition

UC-3 1.4



# Use Case Template

Use Case ID:	UC-4	
Use Case Name:	System Checks the Requirements	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

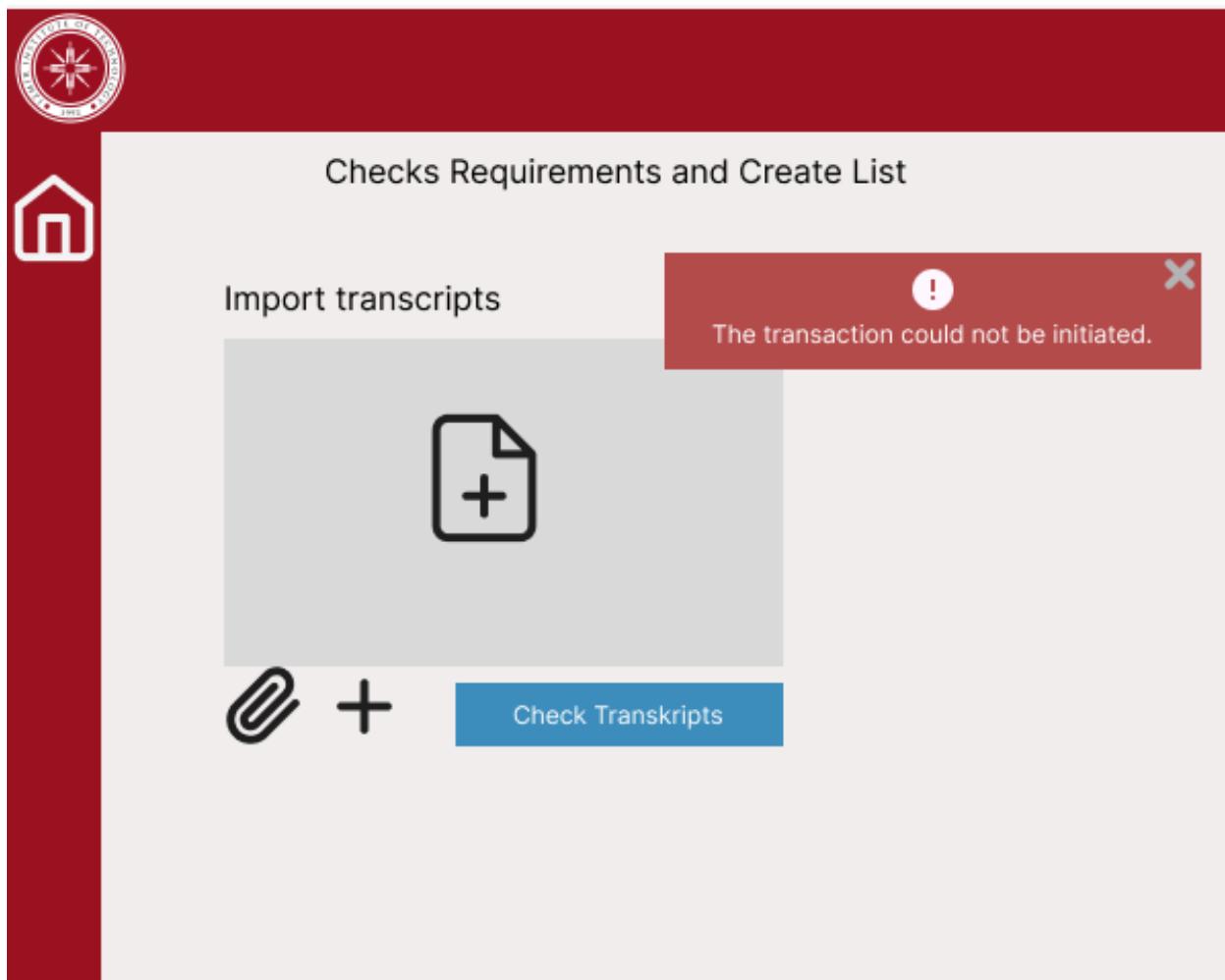
Actor:	Secretary
Description:	System checks the transcripts of the students to see if they are eligible for graduation and gives a list of students who will graduate
Preconditions:	Secretary receives a petition from the advisor, Secretary exports transcripts from UBYS
Postconditions:	Secretary receives the list of students who will graduate from the system
Priority:	High
Frequency of Use:	About 40 times in a year
Normal Course of Events:	<p>1.0 Secretary initiates the graduation control process</p> <ol style="list-style-type: none"> <li>1. Secretary clicks the import button</li> <li>2. Import screen opens</li> <li>3. Secretary selects the transcript files (e.g., in .csv format) and clicks the upload button. System displays a message that uploading succesfull</li> <li>4. Secretary presses the button for checking transcripts</li> <li>5. System checks students transcripts</li> <li>6. System prepares a list of students who fulfil the graduation requirements</li> <li>7. System notifies the end of the process and shows the list to the secretary in the form of a file</li> </ol>
Alternative Courses:	-
Exceptions:	<p>1.3.E1 System may not accept transcripts entered</p> <ol style="list-style-type: none"> <li>1. System sends a notification that it does not accept the imported documents</li> <li>2. Secretary checks and corrects the documents</li> <li>3. Return to step 1 of normal course</li> </ol> <p>1.6.E1 System does not check students' transcripts</p> <ol style="list-style-type: none"> <li>1. System sends a notification that the transaction could not be initiated</li> <li>2. Return to step 2 of normal course</li> </ol>
Includes:	-
Special Requirements:	Secretary exports and imports transcripts between the two systems, Graduation requirements must be entered into the system
Assumptions:	-
Notes and Issues:	Since it is not possible to automatically pull transcripts from the Ubys system, someone has to work as a bridge between the 2 systems

The screenshot shows a mobile application interface. At the top left is a circular logo with a star and text. To its right is a red header bar. Below the header is a vertical red sidebar containing a circular icon with a star and a house-shaped icon. The main content area has a light gray background. At the top, the text "Checks Requirements and Create List" is displayed. Below this, the text "Import transcripts" is shown above a large gray rectangular button featuring a file icon with a plus sign. To the left of this button is a paperclip icon followed by a plus sign. To the right is a blue rectangular button labeled "Check Transcripts".

UC-4 1.0

The screenshot shows a mobile application interface. At the top left is a circular logo with a sunburst design and the text "UNIVERSITY OF TORONTO". On the far left, there is a vertical red sidebar containing a white house icon. The main content area has a light gray background. At the top center, the text "Checks Requirements and Create List" is displayed. Below this, on the left, is the text "Import transcripts" next to a large plus sign icon inside a document shape. To the right of this is a red rectangular callout box with a white exclamation mark icon and the text "It does not accept the imported documents". At the bottom left, there is a paperclip icon followed by a plus sign. To the right of this is a blue button labeled "Check Transcripts".

UC-4 1.3.E1.1



UC-4 1.6.E1.1



Checks Requirements and Create List

Import transcripts



Check Transcripts



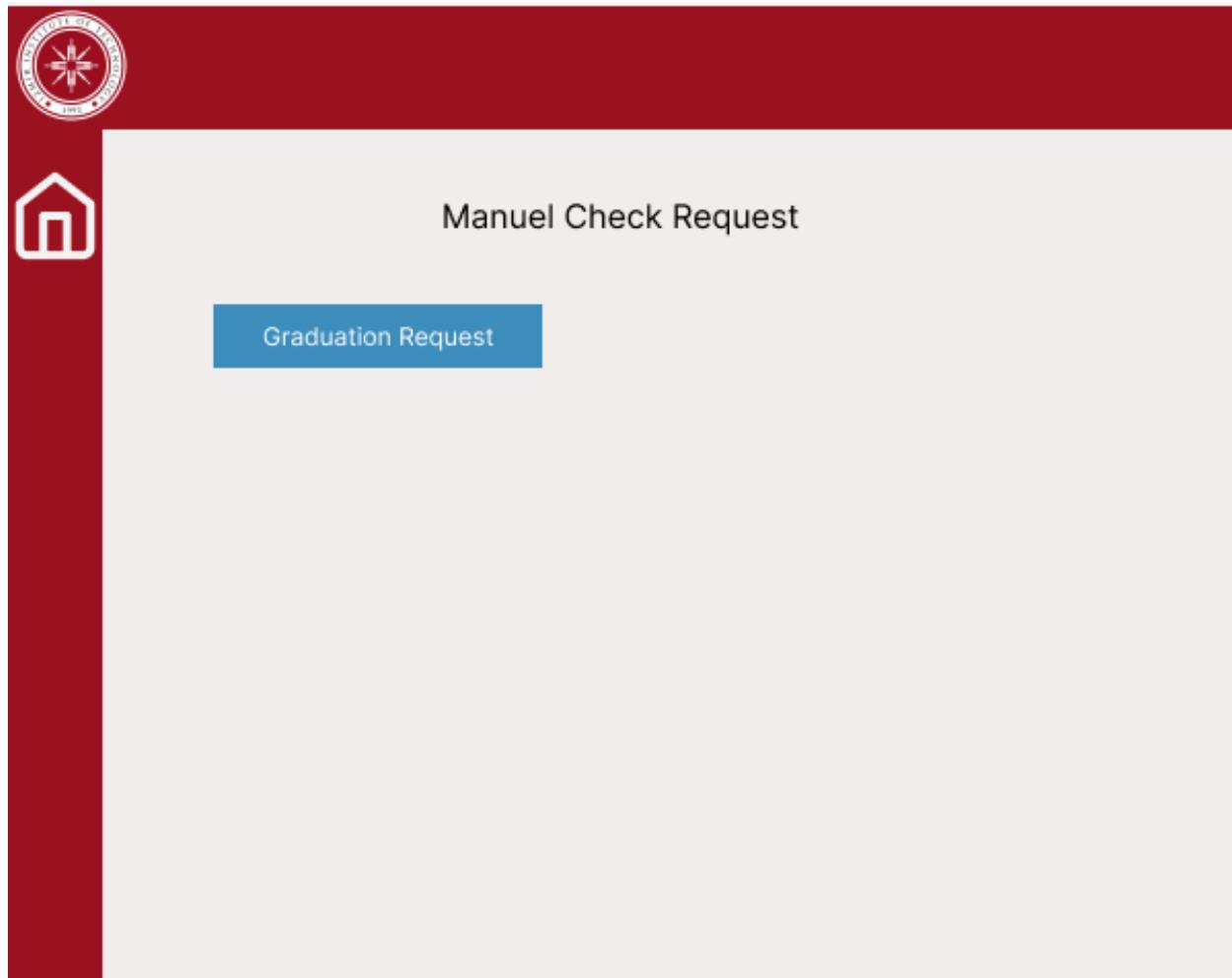
List of students who fulfil the graduations requirements

UC-4 1.8

# Use Case Template

Use Case ID:	UC-5	
Use Case Name:	Manual Check Request	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Student
Description:	If the student will graduate with Article 19 or summer school, he/she requests a manual transcript check through the system.
Preconditions:	Student thinks that he/she can graduate off-term
Postconditions:	Advisor manually checks the student's transcript
Priority:	High
Frequency of Use:	About 100 times in a year
Normal Course of Events:	<p>1.0 Student enters the system for graduation application</p> <p>1. Student presses the graduation request button</p> <p>2. System sends a notification to the advisor that a manual control request has been received</p> <p>3. System notifies the student that an e-mail has been sent to his/her advisor</p>
Alternative Courses:	-
Exceptions:	<p>1.2.E1 Failure to send mail</p> <p>1. System notifies the student that the mail has not been sent</p> <p>2. Return to step 1 of normal course</p>
Includes:	-
Special Requirements:	System must be connected to the mail service
Assumptions:	<p>The student has an active account in the system and is authenticated before initiating the graduation request.</p> <p>The advisor's email address is correctly stored and accessible in the system.</p> <p>The mail service is operational and has sufficient capacity to handle notifications.</p>
Notes and Issues:	-



UC-5 1.0

The screenshot shows a web application interface. At the top left is the University of Toledo logo. On the far left is a vertical red sidebar containing a house icon. The main content area has a light gray background. At the top center, it says "Manuel Check Request". Below that is a blue button labeled "Graduation Request". A large red rectangular box in the center contains a white exclamation mark icon and the text "Your request was not received." In the top right corner of this red box is a white "X".

UC-5 1.2.E1.1



## Manuel Check Request

Graduation Request



A manual request has been sent to your Advisor.

UC-5 1.3

## Performance Requirements

1. The notification to the advisor must be sent within **5 seconds** of the student submitting the graduation request.
2. The system must handle **up to 20 simultaneous requests** without performance degradation.
3. The system should be able to process **at least 100 requests per year** efficiently.

## Software Quality Attributes

1. **Maintainability:** The system should be modular enough to allow for future integration with additional features (e.g., automated graduation eligibility checks).
2. **Security:** The student's information and request details must be encrypted and protected against unauthorized access.
3. **Scalability:** The system should be designed to accommodate an increase in usage, such as handling 200 requests annually.

## Additional Considerations

1. **Integration with Email Service:** The system must be tested with different mail service providers to ensure compatibility and fallback options if one service fails.
2. **Failure Handling:** Implement a retry mechanism for failed email notifications, with a limit of **three retries** before informing the student of a persistent issue.
3. **Logging:** Maintain a detailed log of requests and notification statuses for auditing purposes and to debug issues.

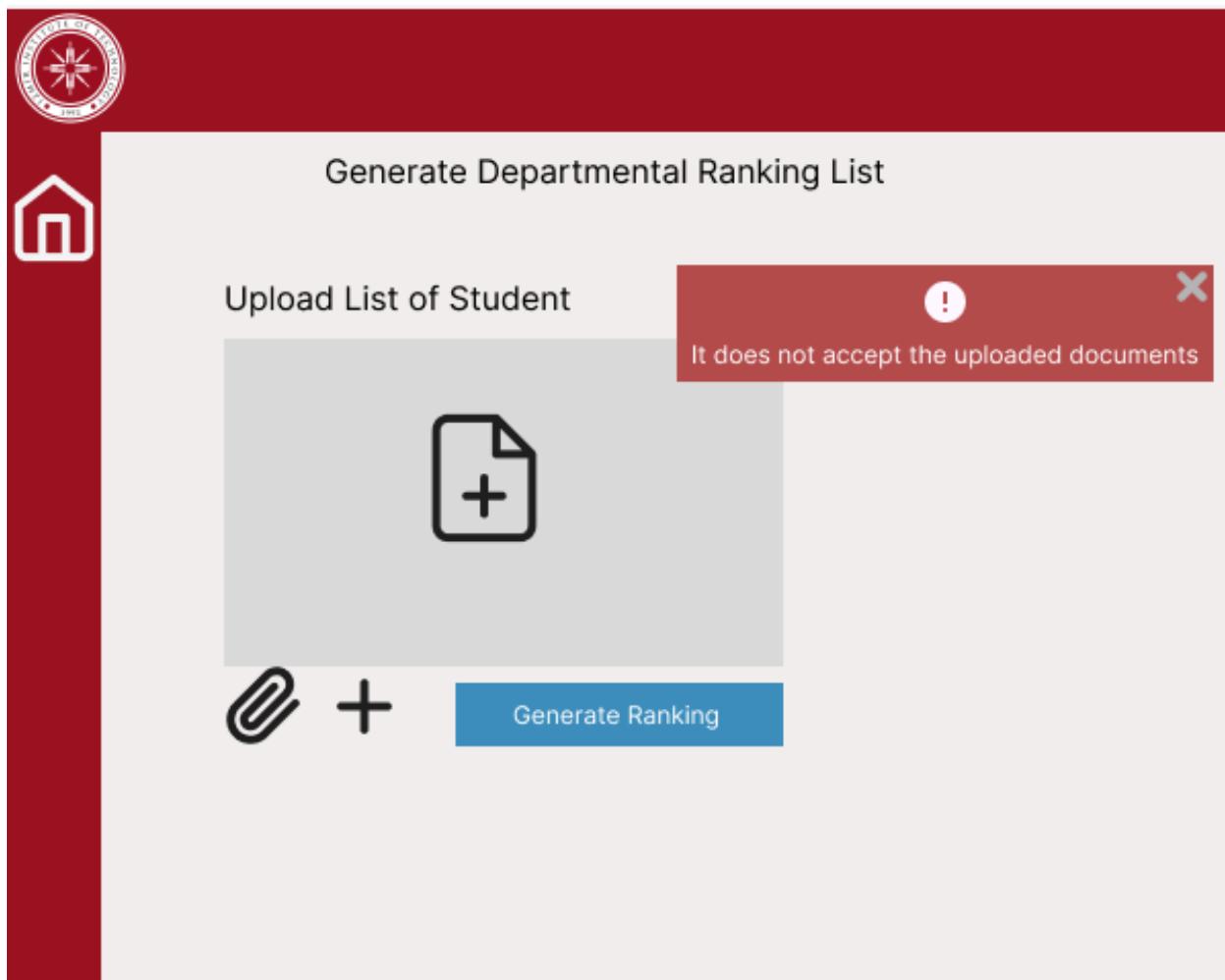
# Use Case Template

Use Case ID:	UC-6	
Use Case Name:	Departmental Ranking List	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Secretary
Description:	System creates a ranking for the department according to the GPA of the students
Preconditions:	Secretary receives the list of students who will graduate from the system
Postconditions:	Formation of department rankings
Priority:	High
Frequency of Use:	(18 times error count) in a year (department count is 18)
Normal Course of Events:	<p>1.0 Secretary enter the system to prepare the department rankings</p> <p>1. Secretary uploads the list of students who will graduate to the system and clicks on the prepare ranking button.</p> <p>2. System determines the ranking according to the GPA of the students</p> <p>3. System sends a notification that the rankings have been prepared and shows the rankings to the secretary in the form of a file</p>
Alternative Courses:	-
Exceptions:	<p>1.2.E1. System does not accept the list</p> <p>1. Secretary checks and corrects the list</p> <p>2. Return to step 1 of normal course</p>
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

The screenshot shows a user interface for generating a departmental ranking list. At the top left is the logo of the University of Illinois Urbana-Champaign. To its right is a red header bar. Below the header is a white content area. On the far left of the white area is a vertical red sidebar containing a house icon. The main content area has a title "Generate Departmental Ranking List". Below the title is a section titled "Upload List of Student" with a large gray upload field containing a plus sign icon. Below this field are two icons: a paperclip and a plus sign, followed by a blue button labeled "Generate Ranking".

UC-6 1.0



UC-6 1.2.E1.1

The screenshot shows a user interface for generating a departmental ranking list. At the top left is a circular logo with a sunburst design and the text "UNIVERSITY OF SOUTHERN CALIFORNIA". To its right is a red header bar. Below the header is a sidebar on the left containing a house icon and a circular arrow icon. The main content area has a light gray background. At the top center, the text "Generate Departmental Ranking List" is displayed. Below it, the text "Upload List of Student" is followed by a large gray rectangular input field with a plus sign icon inside. To the left of this field are icons for a paperclip and a plus sign. To the right is a blue button labeled "Generate Ranking". Below this section, there is another row with a file icon and the text "Ranking Departmental List".

UC-6 1.3

## Special Requirements

1. **Sorting Accuracy:** The ranking algorithm must sort students accurately based on their GPAs, with precise handling of ties (e.g., alphabetical sorting of names if GPAs are equal).
2. **Export Options:** The prepared ranking list should be exportable in commonly used formats (e.g., PDF, Excel, CSV) to meet various reporting needs.
3. **Notification:** The system must notify the secretary upon successful completion of the ranking process, with clear indications of any issues encountered during the process.
4. **Scalability:** The system should handle a large number of students (e.g., up to 100 students per department) without performance degradation.
5. **Audit Logging:** The system must maintain logs of ranking processes, including timestamps, the identity of the user, and the source of the uploaded data, for auditing purposes.
6. **Customizability:** The ranking criteria (e.g., handling specific GPA cases or weight adjustments) should be configurable if the department adopts different ranking policies in the future.

# Use Case Template

Use Case ID:	UC-7	
Use Case Name:	Generate Faculty Ranking List	
Created By:	Ardıl Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Dean's Office
Description:	System creates faculty rankings by combining department rankings
Preconditions:	Receipt of signed lists and cover letter by the Dean's Office
Postconditions:	Generates of faculty rankings
Priority:	High
Frequency of Use:	3 times in a year
Normal Course of Events:	<p>1.0 Dean's Office enters the system to generate faculty rankings,</p> <p>1. On the page that opens in front of the Dean's Office, click the Load Department Rankings button.</p> <p>2. File selection tab opens.</p> <p>3. Dean's Office selects departments files and click open files</p> <p>4. System sends notification that the files are loaded</p> <p>5. System sends notification of successful receipt of rankings</p> <p>6. Dean's Office presses the create faculty rankings button</p> <p>7. System combines section rankings</p> <p>8. System generates faculty rankings according to students GPA</p> <p>9. System gives notification of the end of the process and shows the faculty ranking to the dean's office as a file</p>
Alternative Courses:	-
Exceptions:	<p>1.2.E1. System does not accept files</p> <p>1. Dean's Office checks and corrects the files</p> <p>2. Return to step 1 of normal course</p> <p>1.4.E1 System does not start the process</p> <p>1. System sends a notification that the transaction could not be initiated</p> <p>2. Return to step 3 of normal course</p>
Includes:	-
Special Requirements:	<p>File Format Compatibility: The system must support specific file formats (e.g., Excel, CSV, PDF) for department rankings and validate them during upload to ensure compatibility.</p> <p>Data Integrity: The system must validate the uploaded files to ensure the data is accurate, complete, and consistent (e.g., no duplicate entries or missing GPAs).</p> <p>Ranking Algorithm: The system must use a standardized and transparent algorithm to combine department rankings and generate the faculty ranking based on students' GPAs.</p> <p>Tie-Handling: The system must include a clear method for handling ties in GPAs (e.g., alphabetical order by student name or department precedence).</p>
Assumptions:	-
Notes and Issues:	-

The screenshot shows a mobile application interface. At the top left is the university's logo. On the far left, there is a vertical red sidebar containing two icons: a house-like icon and a circular icon with a starburst pattern. The main content area has a light gray background. At the top center, the text "Generate Faculty Ranking List" is displayed. Below this, the text "Upload Departmental Rankings" is followed by a large, light-gray rectangular input field with a plus sign icon inside. To the left of this input field are a paperclip icon and a plus sign icon. To the right of the input field is a blue button labeled "Generate Ranking".

UC-7 1.0

The screenshot shows a user interface for generating a Faculty Ranking List. At the top left is the university seal. On the left side, there is a vertical red sidebar with a house icon. The main area has a light gray background. At the top center, it says "Generate Faculty Ranking List". Below that, a red banner displays the text "Upload Departmental Rankings" and a message "It does not accept the uploaded documents" with an exclamation mark icon. To the right of the banner is a close button (X). In the center, there is a large gray rectangular area with a plus sign icon inside a document shape, indicating where to upload files. Below this area are two buttons: a black paperclip icon followed by a plus sign, and a blue "Generate Ranking" button.

UC-7 1.2.E1.1

The screenshot shows a user interface for generating faculty ranking lists. At the top left is the University of Toledo logo. To its right is a red header bar. Below the header is a sidebar on the left featuring a house icon. The main content area has a light gray background. At the top center, the text "Generate Faculty Ranking List" is displayed. Below this, there is a section titled "Upload Departmental Rankings" with a file icon. To the right of this section is a red error message box containing the text "The transaction could not be initiated." with an exclamation mark icon. At the bottom left of the main area, there are icons for a paperclip and a plus sign. To the right of these icons is a blue button labeled "Generate Ranking".

UC-7 1.4.E1.1

The screenshot shows a user interface for generating faculty ranking lists. At the top left is the university seal. On the left side, there's a vertical red sidebar with a house icon. The main area has a light gray background. At the top center, it says "Generate Faculty Ranking List". Below that, on the left, is a button labeled "Upload Deparmental Rankings" with a paper icon. To its right is a green success message box with a close button: "Successfully received ranking lists". At the bottom left is a "clip + file" icon. Next to it is a blue button labeled "Generate Ranking".

UC-7 1.5

The screenshot shows a user interface for generating faculty ranking lists. At the top left is the university seal. On the far left is a vertical red sidebar with a house icon. The main area has a light gray background. At the top center is the title "Generate Faculty Ranking List". Below it is a section titled "Upload Deparmental Rankings" with a large gray placeholder area containing a document icon. To the left of this area are icons for a paperclip and a plus sign. To the right is a blue button labeled "Generate Ranking". Below this section is another section titled "Ranking Faculty List" with a document icon. At the bottom center is a yellow box containing the text "UC-7 1.9".

Generate Faculty Ranking List

Upload Deparmental Rankings

Generate Ranking

Ranking Faculty List

UC-7 1.9

# Use Case Template

Use Case ID:	UC-8	
Use Case Name:	Generate University Ranking List	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Student Affairs
Description:	System creates university rankings by combining faculty rankings
Preconditions:	Signed faculty ranking lists is imported to the system.
Postconditions:	Generates of university rankings
Priority:	High
Frequency of Use:	1 times in a year
Normal Course of Events:	<p>1.0 Student Affairs enters the system to generate university rankings,</p> <p>1. On the page that opens in front of the Student Affairs, click the Load Faculty Rankings button.</p> <p>2. File selection tab opens.</p> <p>3. Student Affairs selects Faculty files and click open files</p> <p>4. System sends notification that the files are loaded</p> <p>5. Student Affairs presses the create university rankings button</p> <p>6. System combines faculty rankings</p> <p>7. System generates university rankings according to students GPA</p> <p>8. System gives notification of the end of the process and shows the university ranking to the Students Affairs as a file</p>
Alternative Courses:	-
Exceptions:	<p>1.3.E1. System does not accept files</p> <p>1. Student Affairs checks and corrects the files</p> <p>2. Return to step 1 of normal course</p> <p>1.6.E1 System does not start the process</p> <p>1. System sends a notification that the transaction could not be initiated</p> <p>2. Return to step 5 of normal course</p>
Includes:	-
Special Requirements:	Student Affairs should upload the faculty rankings to the system
Assumptions:	<ul style="list-style-type: none"> <li>-Faculty ranking files are assumed to follow a predefined format that the system can process without errors.</li> <li>-The system is assumed to have a stable connection to retrieve faculty ranking files without delays.</li> </ul>
Notes and Issues:	-

The screenshot shows a user interface for generating a university ranking list. At the top left is the logo of the University of Illinois Urbana-Champaign. To its right is a red header bar. Below the header is a sidebar on the left containing a house icon. The main content area has a light gray background. At the top, it says "Generate University Ranking List". Below that is a section titled "Upload Faculty Rankings" with a large gray input field containing a plus sign icon. At the bottom left of this section are a paperclip icon and a plus sign icon. To the right of these is a blue button labeled "Generate Ranking".

UC-8 1.0

The screenshot shows a user interface for generating a university ranking list. At the top left is the logo of the University of Illinois Urbana-Champaign. On the far left, there is a vertical red sidebar with a house icon. The main area has a light gray background. At the top center, the text "Generate University Ranking List" is displayed. Below it, a section titled "Upload Faculty Rankings" contains a large gray rectangular input field with a plus sign icon inside. To the left of this field are icons for a paperclip and a plus sign. To the right of the input field is a red button with a white exclamation mark icon and the text "It does not accept the uploaded documents". At the bottom center is a blue button labeled "Generate Ranking".

UC-8 1.3.E1.1

The screenshot shows a user interface for generating university ranking lists. At the top left is a circular logo with a sunburst design and the text "UNIVERSITY OF SOUTHERN CALIFORNIA". To its right is a red header bar. Below the header is a white main area. On the far left of the white area is a vertical red sidebar containing a house icon. In the center of the white area, the text "Generate University Ranking List" is displayed above a form. The form includes a section labeled "Upload Faculty Rankings" with a file icon, a "Generate Ranking" button, and a "UC-8 1.4" link. A green success message box is visible, stating "Successfully received ranking lists" with a close button.

Generate University Ranking List

Upload Faculty Rankings

Generate Ranking

UC-8 1.4

Successfully received ranking lists

The screenshot shows a user interface for generating a university ranking list. At the top left is the University of Illinois seal. On the far left is a vertical red sidebar containing a house icon. The main area has a light gray background. At the top center is the title "Generate University Ranking List". Below it is a section titled "Upload Faculty Rankings" with a large gray file upload area containing a document icon. To the left of this area are a paperclip icon and a plus sign. To the right is a blue button labeled "Generate Ranking". A red error message box in the upper right corner contains the text "The transaction could not be initiated." with an exclamation mark icon.

UC-8 1.6.E1.1

The screenshot shows a user interface for generating a university ranking list. At the top left is the logo of the University of Illinois at Urbana-Champaign. On the far left, there is a vertical red sidebar containing a house icon. The main area has a light gray background. At the top center, the text "Generate University Ranking List" is displayed. Below it, the text "Upload Faculty Rankings" is followed by a large gray rectangular input field containing a document icon. To the left of this input field are icons for a paperclip and a plus sign. To the right is a blue button labeled "Generate Ranking". Below this section, there is another row with a document icon and the text "Ranking University List". At the bottom center of the page, the text "UC-8 1.8" is highlighted with a yellow background.

UC-8 1.8

# Use Case Template

Use Case ID:	UC-9	
Use Case Name:	Determine the Certificates	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Student Affairs
Description:	System determines the certificate to be awarded according to the students' averages
Preconditions:	<ul style="list-style-type: none"> <li>The university rankings must be uploaded to the system in CSV format by Student Affairs.</li> <li>The process requires valid and complete ranking files.</li> </ul>
Postconditions:	<ul style="list-style-type: none"> <li>Two lists are generated: <ul style="list-style-type: none"> <li>One for "High Honors" (average above 3.5).</li> <li>One for "Honors" (average between 3.0 and 3.5).</li> </ul> </li> <li>The lists are saved as files and sent to Student Affairs for review.</li> </ul>
Priority:	High
Frequency of Use:	Once a year
Normal Course of Events:	<p>1.0 Student affairs logging into the system to determine the certificates</p> <p>1. On the page that opens in front of the Student Affairs, click the Load University Rankings button.</p> <p>2. File selection tab opens.</p> <p>3. Student Affairs selects university ranking file and click open files</p> <p>4. System sends notification that the files are loaded</p> <p>5. Student Affairs presses the determine certificates button</p> <p>6. System prepares two lists: high honors if the average of the students is above 3.5 and honors if the average is between 3 and 3.5.</p> <p>7. System gives notification of the end of the process and shows the certificate lists to the Students Affairs as a file</p>
Alternative Courses:	<p>The system identifies missing or invalid data in the ranking file:</p> <ul style="list-style-type: none"> <li>Notify the user to correct the file and re-upload it.</li> <li>Return to step 2 of the normal flow.</li> </ul>
Exceptions:	<p>1.3.E1. System does not accept files</p> <p>1. Student Affairs checks and corrects the files</p> <p>2. Return to step 1 of normal course</p> <p>1.6.E1 System does not start the process</p> <p>1. System sends a notification that the transaction could not be initiated</p> <p>2. Return to step 5 of normal course</p>
Includes:	-
Special Requirements:	<p>Student Affairs must upload the university rankings in CSV format before the process starts.</p> <p>The rankings must contain valid student data, including IDs, names, and averages.</p>
Assumptions:	<p>The university rankings are accurate and up-to-date.</p> <p>The Student Affairs team has access to the ranking files before starting the process.</p>
Notes and Issues:	-



**UC-9 1.3.E1**

**UC-9 1.6.E1**

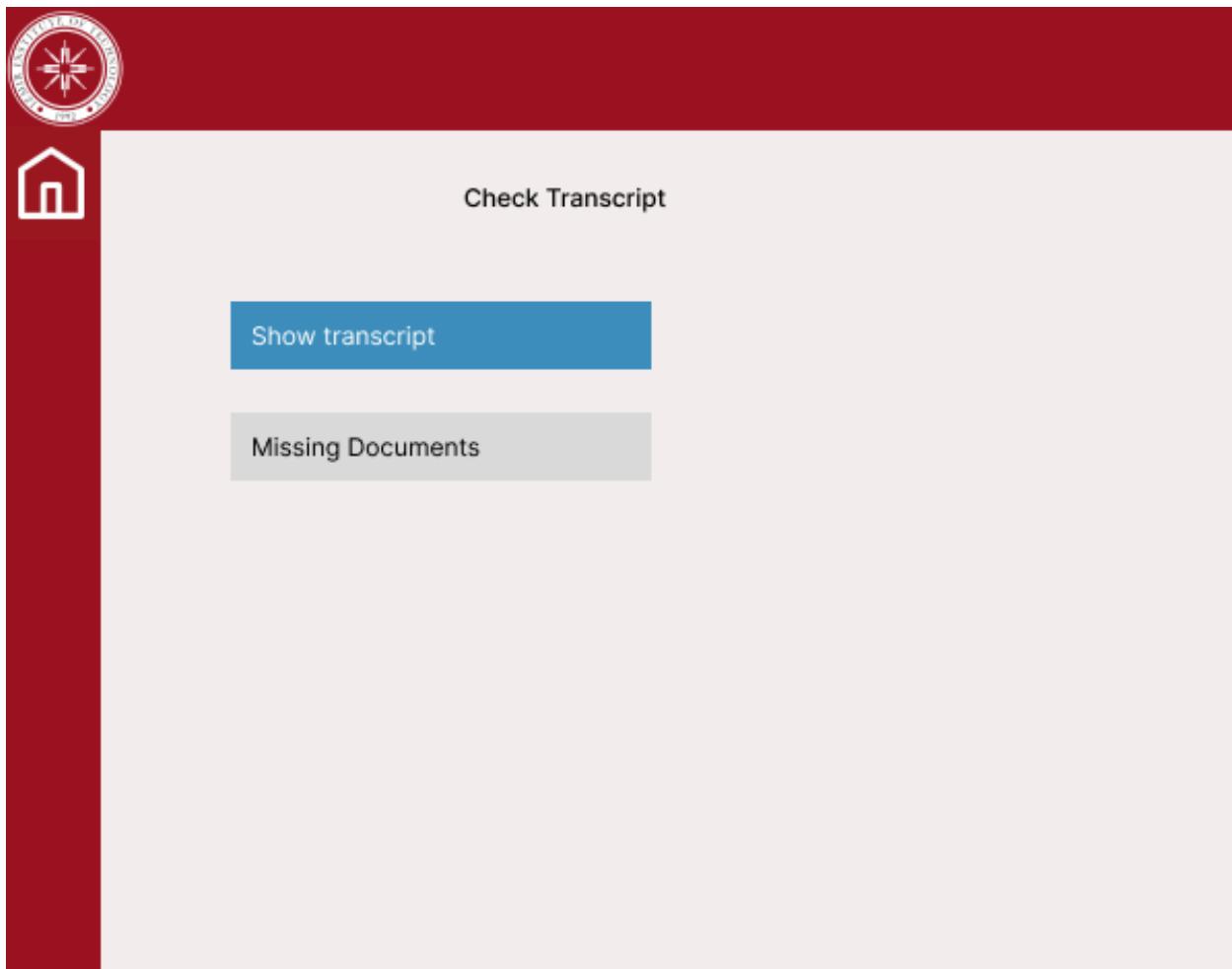
**UC-9 1.4**

**UC-9 1.7**

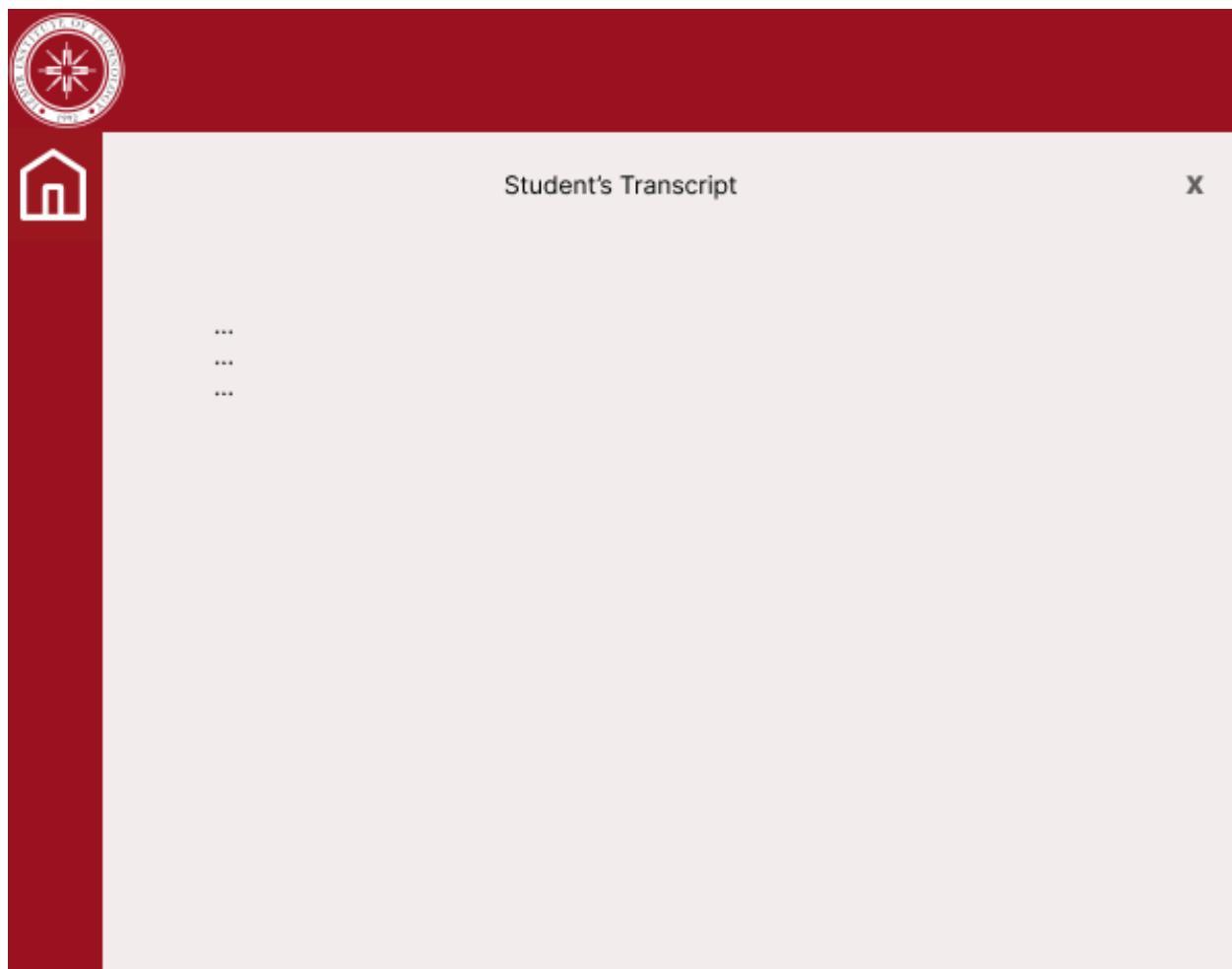
# Use Case Template

Use Case ID:	UC-10	
Use Case Name:	Student Check Transcript	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Student
Description:	Student can see their own transcript from the application
Preconditions:	Secretary to export the transcripts from UBYS and import them into the system
Postconditions:	Student verifies the transcript
Priority:	Low
Frequency of Use:	About 1500 times in a year
Normal Course of Events:	<p>1.0 Student logs in to the system to see his/her transcript</p> <p>1. Student presses the transcript button on the page that opens</p> <p>2. System opens the student's transcript</p> <p>Alternative Courses: 1.0 Student requests the transcript to be uploaded again (1.2.E1)</p> <p>1. Student presses the missing document button</p> <p>2. System sends an e-mail to the secretary that the student's transcript is missing</p> <p>3. System sends a notification to the student that an e-mail has been sent to the secretary</p>
Alternative Courses:	-
Exceptions:	1.2.E1 Student's transcript not be uploaded to the system
Includes:	-
Special Requirements:	In order for the student to see the transcript, the secretary must import the transcript into the system
Assumptions:	<p>The system has no interruptions during the transcript viewing process.</p> <p>The transcripts imported by the secretary are accurate and up-to-date.</p> <p>Students have valid login credentials and access to the system.</p>
Notes and Issues:	-



UC-10 1.0



UC-10 1.2

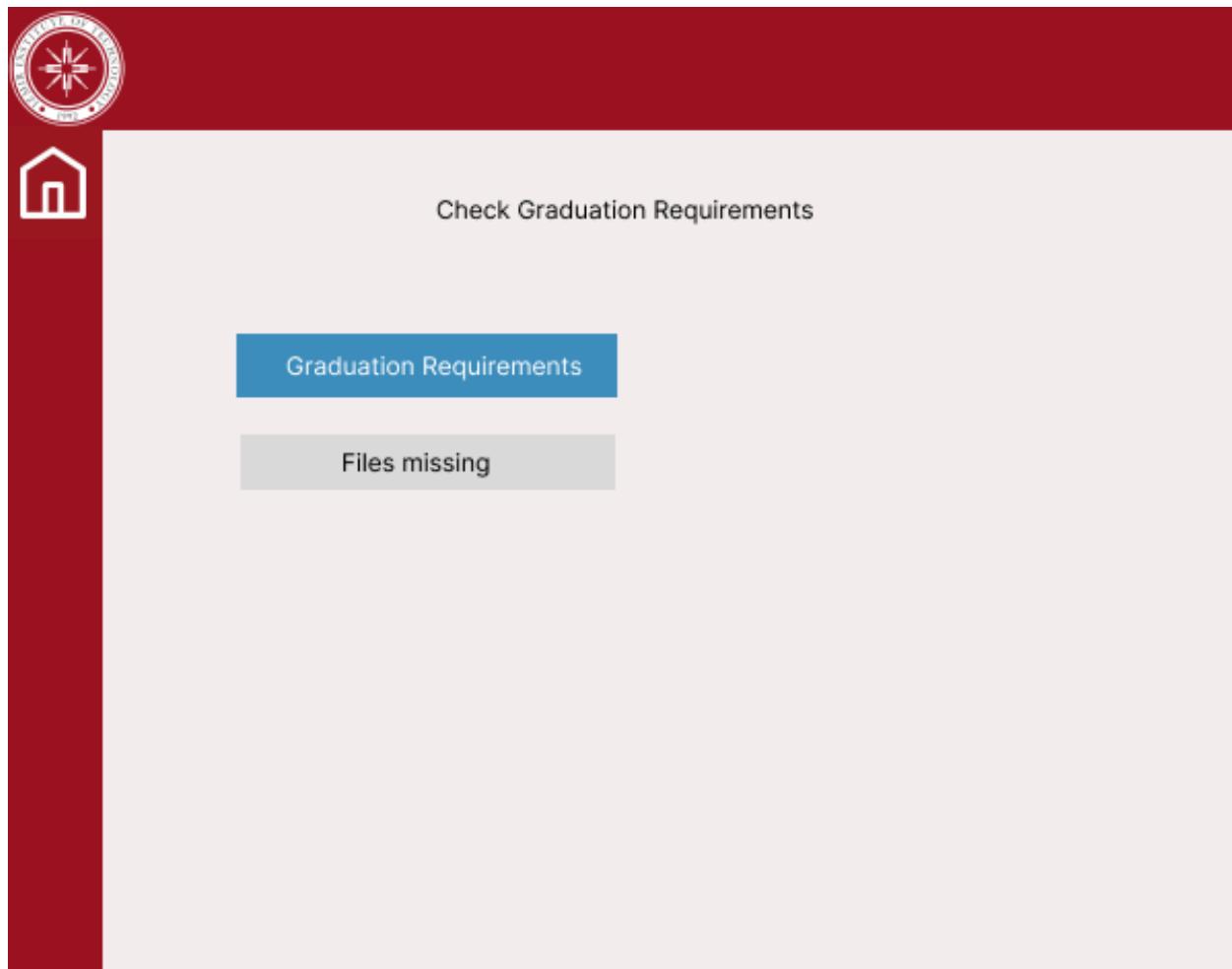
The screenshot shows a user interface for a web application. At the top left is a circular logo with a starburst design and the text "UNIVERSITY OF TORONTO". To its right is a red header bar. Below the header is a navigation menu with a house icon labeled "Check Transcript". A modal window is open in the center. It has a blue header bar with the text "Show transcript". In the top right corner of the modal is a white "X". The main body of the modal contains the text: "An email addressed to the secretary regarding the absence of the student's transcript." The background of the page is light gray.

## UC-10 Alternative Course

# Use Case Template

Use Case ID:	UC-11	
Use Case Name:	Student Checks Graduation Requirements	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Student
Description:	Student can see the requirements for graduation and the courses he / she needs to take through the system
Preconditions:	Graduation requirements have been uploaded to the system
Postconditions:	Student can see the graduation requirements
Priority:	Low
Frequency of Use:	Regularly throughout the year.
Normal Course of Events:	<p>1.0 Student enters the system to see the graduation requirements</p> <p>1. Student presses the graduation requirements button</p> <p>2. System shows the file for the department the student is studying from the graduation requirements files to the student</p>
Alternative Courses:	<p>1.0 Student asks for the files to be uploaded again (1.2.E1)</p> <p>1. Student presses files missing key</p> <p>2. An e-mail is sent to student affairs that the files are missing</p> <p>3. System notifies the student that the situation will be corrected in the near future</p>
Exceptions:	1.2.E1 Files may not be uploaded to the system
Includes:	-
Special Requirements:	Student affairs must upload the graduation requirements for each department to the system
Assumptions:	-
Notes and Issues:	-



UC-11 1.0



## Graduation Requirements For Mathematics

X

...

...

...

...

...



UC-11 1.2



Check Graduation Requirements

X

An email sent to student affairs that the files are missing.  
The situation will be corrected in the near future.

UC-11 Alternative Course

# Use Case Template

Use Case ID:	UC-12	
Use Case Name:	Upload Graduation Decisions	
Created By:	Ardıl Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Student Affairs
Description:	Student Affairs upload the graduation requirements files required for each department to the system so that students can check their transcripts
Preconditions:	PRE1. Announcement of graduation decisions. PRE2. Student affairs logged into the system.
Postconditions:	Uploading graduation requirements to the system
Priority:	Low
Frequency of Use:	Rare
Normal Course of Events:	<ol style="list-style-type: none"> <li>1. Student Affairs logs in to the graduation requirements page from the system</li> <li>2. System opens a page with all department names, there is a file upload button under the department names</li> <li>3. Student Affairs presses the upload file button</li> <li>4. System sends file selection screen</li> <li>5. Student Affairs selects the graduation requirements file of the department with that name and presses the upload button</li> <li>6. System retrieves the file from the device and uploads it to its database</li> <li>7. System sends a notification that the file has been uploaded</li> </ol>
Alternative Courses:	-
Exceptions:	1.5.E1. System not accept the file to be uploaded 1. System sends a notification that the file is not accepted 2. Student Affairs checks and corrects the file 3. Return to step 2 of normal course
Includes:	-
Special Requirements:	Requirements must be up to date
Assumptions:	All sides have enough information of using the system
Notes and Issues:	-

The screenshot shows a user interface for uploading graduation decisions. At the top left is the logo of the University of Technology (UT). To its right is a red header bar. Below the header is a navigation menu with a house icon and the text 'Upload Graduation Decisions'. The main content area contains three columns of upload fields. Each column has a title: 'Computer Engineering', 'Physics', and 'Mathematics'. Under each title is a large grey rectangular area with three horizontal ellipsis dots (...). Below each of these areas is a blue button labeled 'Upload Files'. The entire interface is set against a light grey background.

Upload Graduation Decisions

Computer Engineering

Physics

Mathematics

Upload Files

Upload Files

Upload Files

...

...

...

Upload Files

Upload Files

Upload Files

...

...

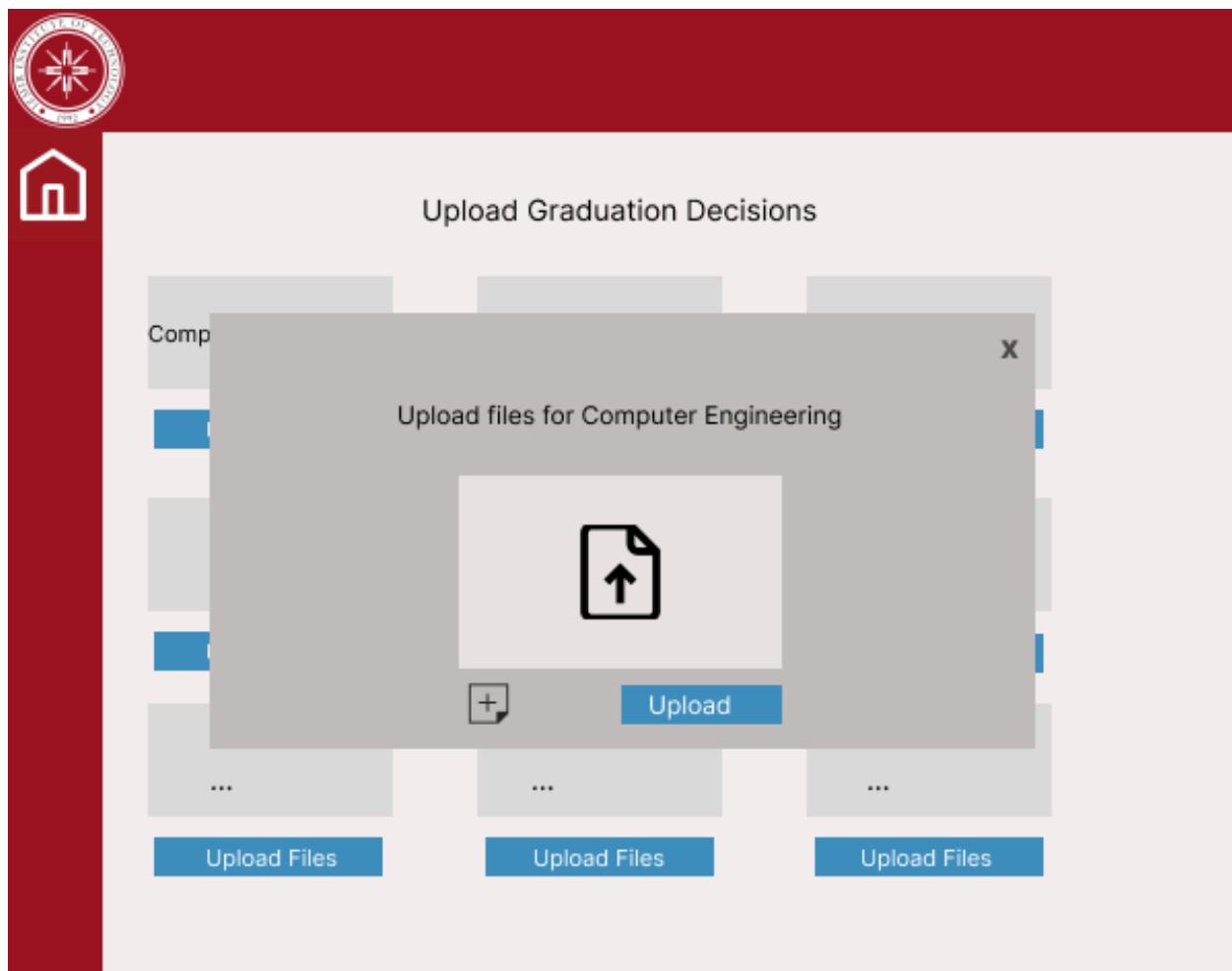
...

Upload Files

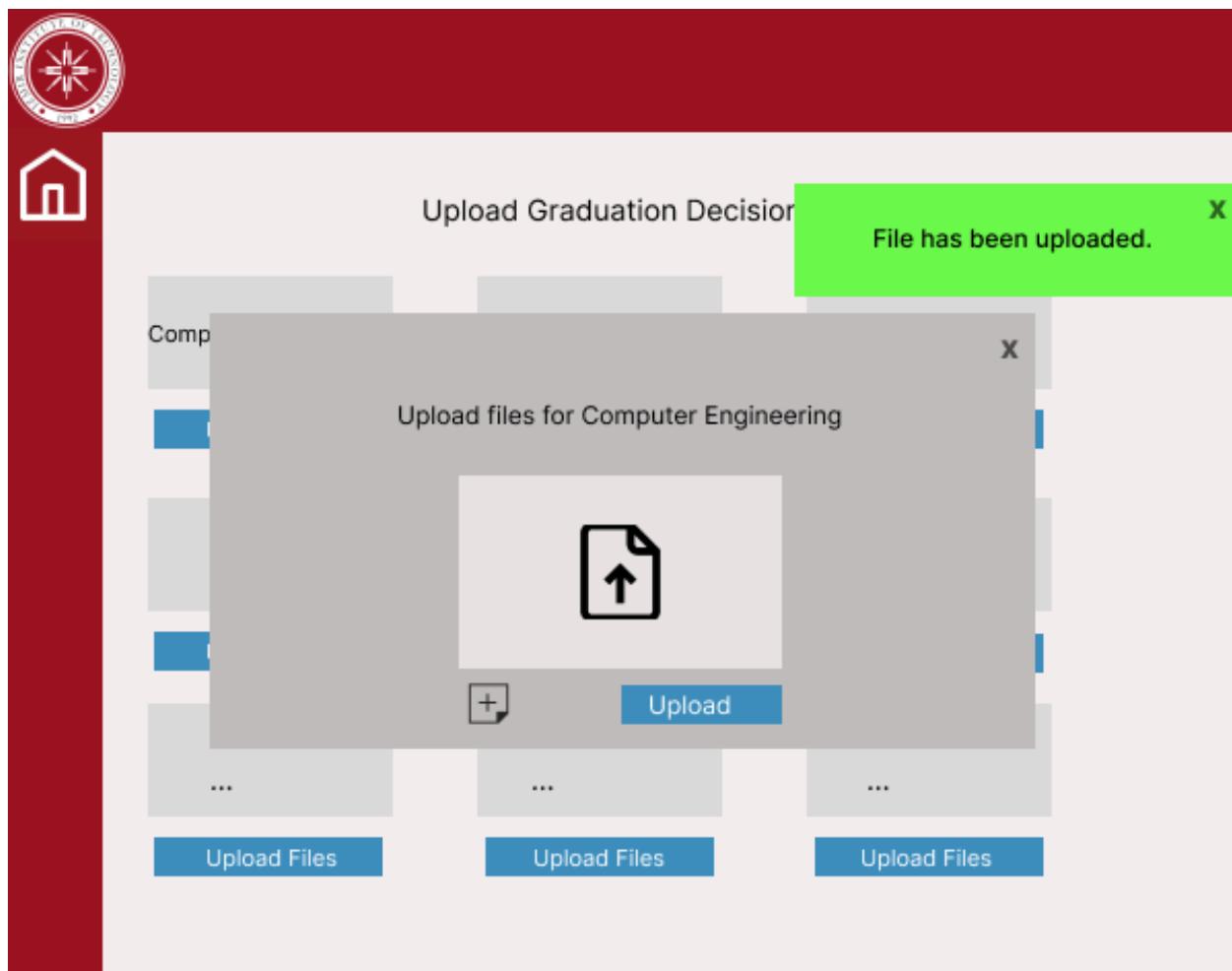
Upload Files

Upload Files

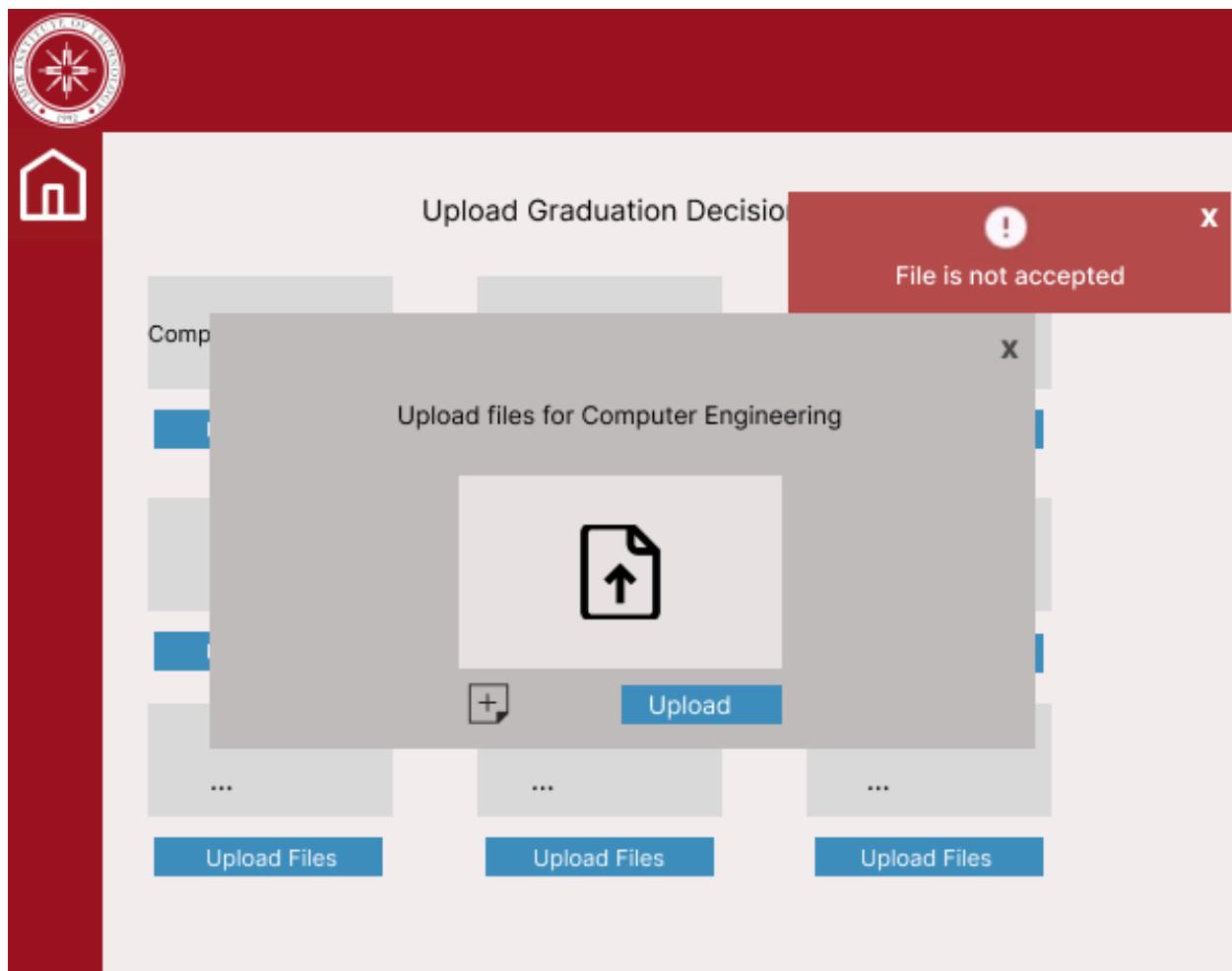
UC-12 1.0



UC-12 1.4



UC-12 1.7



UC-12 1.5.E1

# Use Case Template

Use Case ID:	UC-13	
Use Case Name:	Admin Creates and Authorises Users	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Admin
Description:	To set the different pages and authorisation levels that each user can access on the system, an admin account selects the authorisation levels on the accounts used by advisors, secretaries, students, student affairs and the dean's office.
Preconditions:	Select one admin
Postconditions:	Necessary authorisation levels are given for each user
Priority:	High
Frequency of Use:	About 10 times in a year.
Normal Course of Events:	<ul style="list-style-type: none"> <li>1. Admin clicks to authorization page</li> <li>2. Admin writes the id of the user he wants in the search bar that appears on the page.</li> <li>3. Admin clicks the role button next to the user</li> <li>4. System asks the admin which role to give to the selected person</li> <li>5. Admin selects the role to be given and clicks save</li> <li>6. System sends notification that the role has been granted successfully</li> </ul>
Alternative Courses:	-
Exceptions:	-
Includes:	-
Special Requirements:	Admin has the ability to granting authority
Assumptions:	Admin logged into the system
Notes and Issues:	-

The screenshot shows a user management application interface. At the top left is the University of Colorado Boulder logo. To its right is a search bar with the placeholder text "Search users by ID or name". On the far left is a vertical red sidebar containing a house icon. The main content area displays a table with four rows of user data. The columns are labeled "Id", "Name", and "Role". Each row contains three ellipsis ("...") placeholder cells. The "Role" column is highlighted with a blue background.

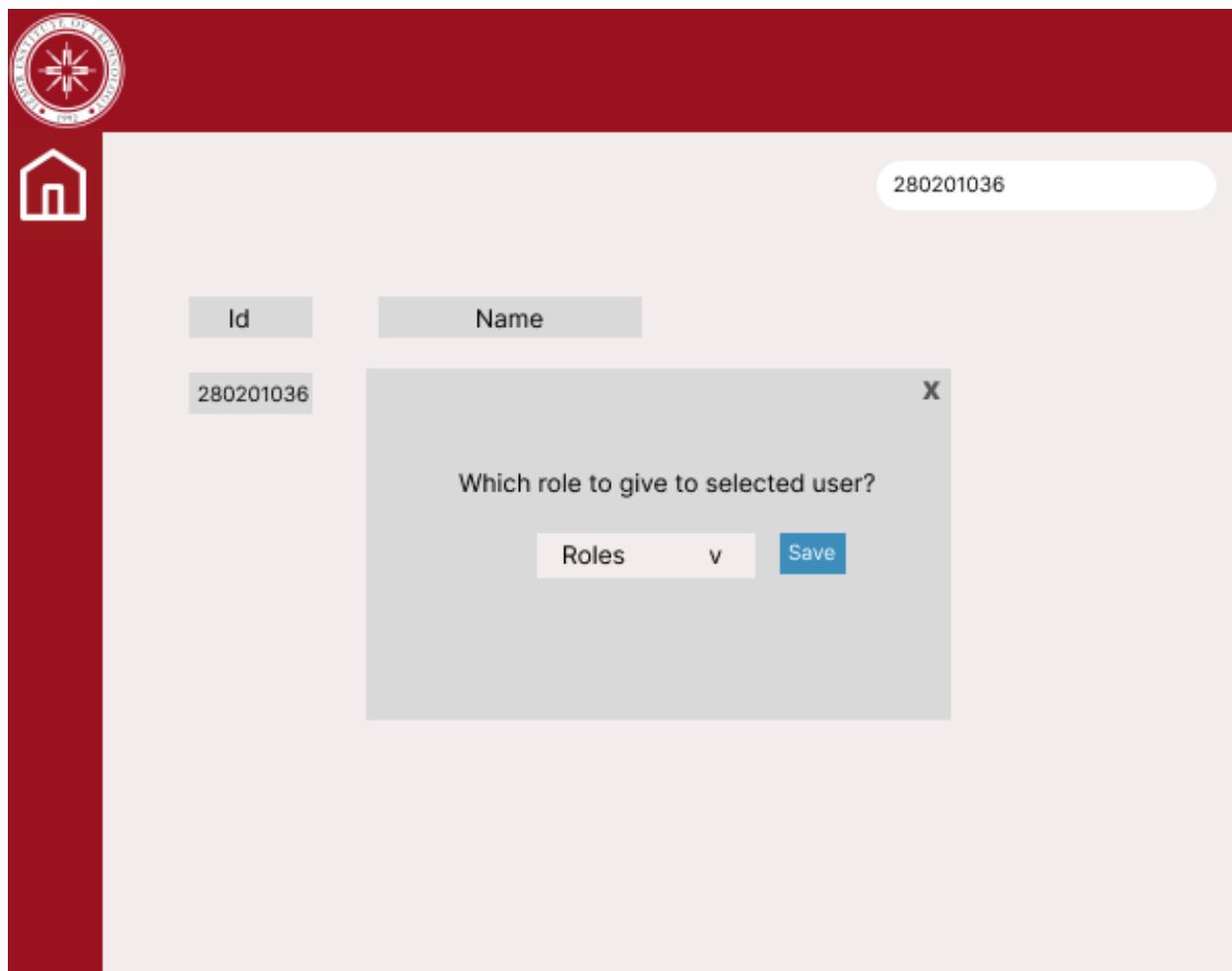
Id	Name	Role
...	...	Role
...	...	Role
...	...	Role

UC-13 1.1

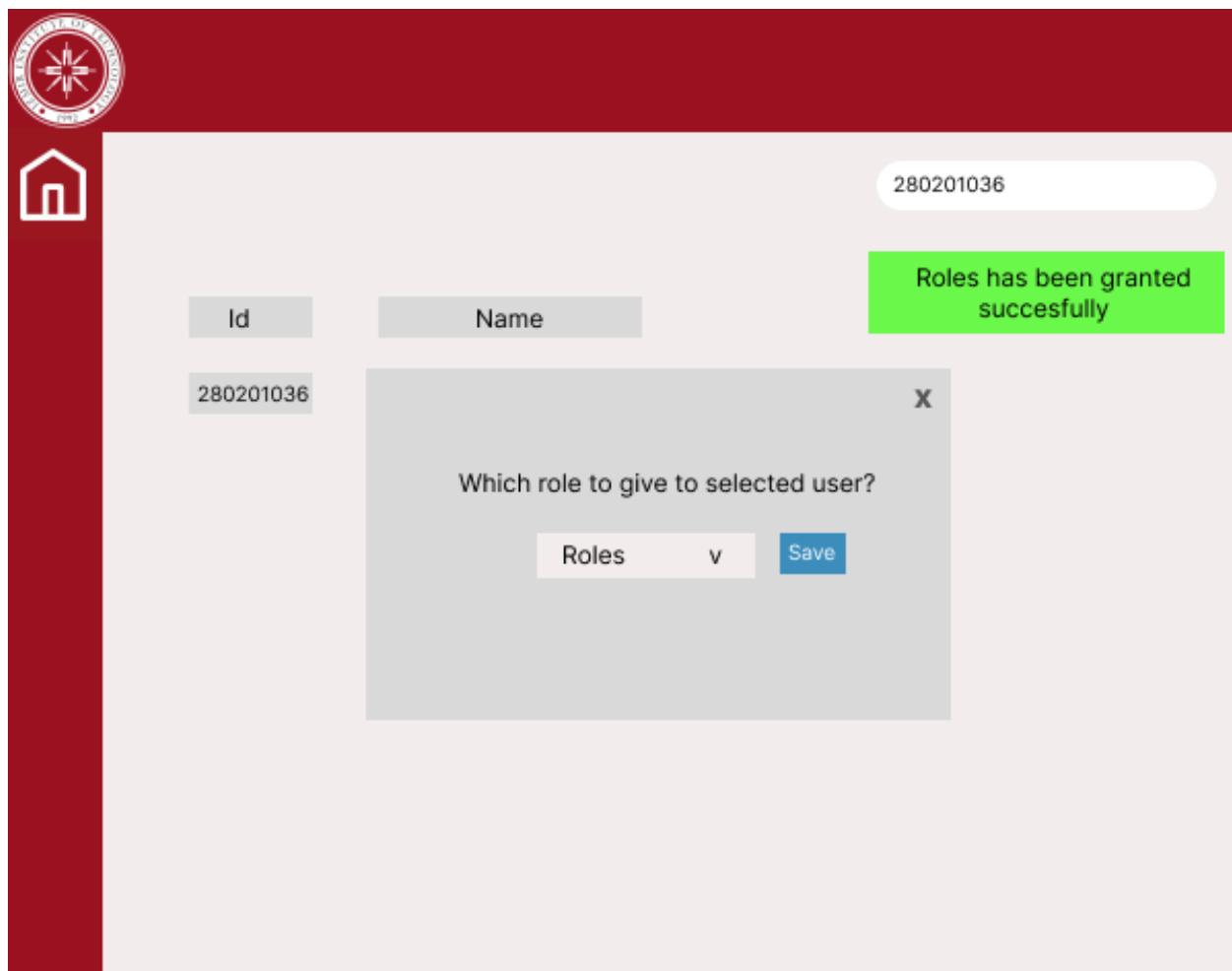
The screenshot shows a mobile application interface. At the top left is the logo of 'UNIVERSITY OF TORONTO'. On the far left is a vertical red sidebar containing a house icon. In the top right corner is a white rounded rectangle containing the text '280201036'. Below this, there is a table with three columns: 'Id', 'Name', and 'Role'. The 'Id' column contains '280201036', the 'Name' column contains 'Emir Kaldırımcı', and the 'Role' column is highlighted in blue.

Id	Name	Role
280201036	Emir Kaldırımcı	

UC-13 1.2



UC-13 1.4



UC-13 1.6

# Use Case Template

Use Case ID:	UC-14	
Use Case Name:	Advisor Checks Transcripts	
Created By:	Ardil Dede	Last Updated By:
Date Created:	21.11.2024	Date Last Updated:

Actor:	Advisor
Description:	Advisor checks the transcripts of their own students through the system
Preconditions:	The advisor must log in to the system Secretary to export the transcripts from UBYS and import them into the system
Postconditions:	Advisor checks transcripts
Priority:	High
Frequency of Use:	About 150 times in a year
Normal Course of Events:	1.0 Advisor logs in to the system to see the transcripts of the students 1. Advisor logs in to the transcripts tab 2. Advisor presses the see transcript button next to the name of the student whose transcript he/she wants to see 3. System displays the student's transcript
Alternative Courses:	1.0 Advisor request the student's transcript to be uploaded again (1.2.E1) 1. Advisor presses the student's transcript missing button 2. System sends an e-mail to the secretary that the student's information and transcript are missing 3. The system sends a notification to the secretary that an e-mail has been sent
Exceptions:	1.2.E1 Student's transcript may not be uploaded to the system
Includes:	-
Special Requirements:	-
Assumptions:	-
Notes and Issues:	-

**UC-14 1.3**

**UC-14 1.2.E1**

## 3.2 EXTERNAL INTERFACES

### Hardware Interfaces

#### 1. Servers

- **Purpose:** Hosting the application, database, and email services.
- **Requirements:**
  - Minimum specifications: 16-core CPU, 32GB RAM, 1TB SSD storage.
  - High availability and scalability.
  - Secure backups of student and system data.
  - Maintenance of services periodically.
  - There will be an area in the server where files are saved locally.

#### 2. Client Devices

- **Purpose:** Accessing the system interfaces via web or mobile browsers.
- **Requirements:**
  - Modern web browsers (e.g., Chrome, Firefox, Safari) with JavaScript enabled.
  - Mobile device compatibility (Android 11+, iOS 14+; responsive UI).

---

### Software Interfaces

#### 1. Email Service API

- **Description:** Used for sending notifications and password reset emails.
- **Protocol:** SMTP or REST API (e.g., SendGrid, Gmail API).
- **Security:** OAuth 2.0 for secure authentication.

#### 2. UBYS System Integration

- **Description:** Manual import/export of transcript files between the two systems.
- **Protocol:** File exchange via secure upload/download.

#### 3. Authentication Service

- **Description:** Verifies login credentials and manages session tokens.
- **Protocol:** OAuth 2.0 or JWT-based authentication.
- **Encryption:** Passwords stored using hashing algorithms (e.g., bcrypt).

---

### Communications Interfaces

#### 1. Network Requirements

- **Purpose:** Ensure reliable access to the system.

- **Protocols:**
  - HTTPS for secure web communication.
  - SMTP/IMAP for email integration.
- **Bandwidth:** Minimum of 10 Mbps for smooth operations.

## 2. Notifications

- **Purpose:** Send real-time alerts to actors regarding process status (e.g., failed ranking generation).
  - **Channels:** Email and on-screen pop-ups.
- 

### 3.3 Performance Requirements

#### Static Performance Requirements

##### 1. Number of Supported Terminals:

The software must support at least 500 terminal devices simultaneously.

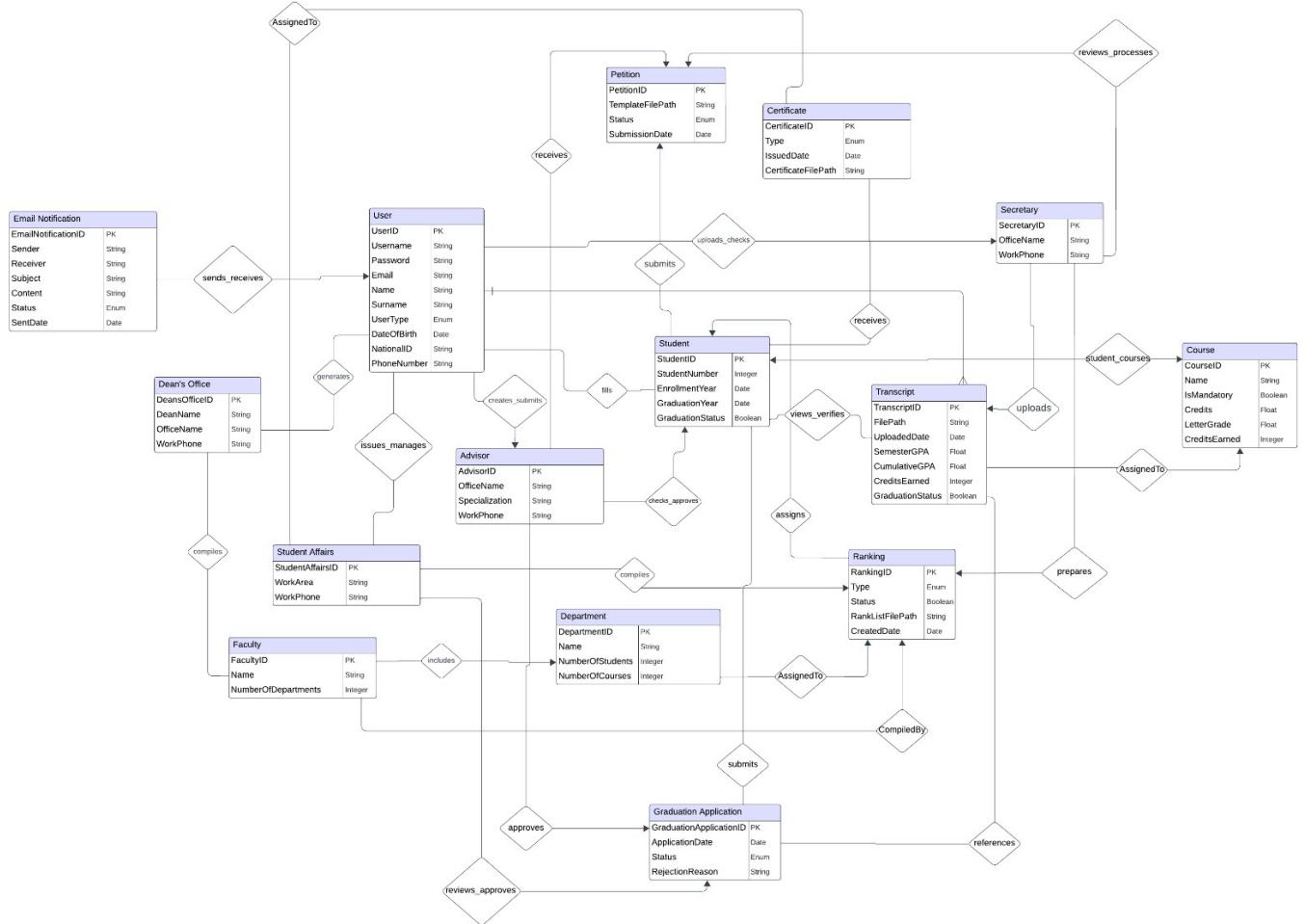
##### 2. Number of Simultaneous Users:

The system should handle a minimum of 1000 concurrent users without performance degradation.

#### Dynamic Performance Requirements

- The maximum login response time for users should not exceed 2 seconds.
- Data query operations should have an average response time of 1 second or less.
- The system must maintain a minimum success rate of 90% in responding effectively under dynamic conditions such as network latency.

### 3.4 ER DIAGRAM



### 3.5 Design Constraints

#### Scalability and Load Handling:

- The system must be designed to handle up to 2000 simultaneous users without performance degradation.
- The architecture should support horizontal scaling to accommodate increased user load during peak periods, such as graduation periods.

#### User Interface Constraints:

- The interface must adhere to WCAG 2.1 Level AA accessibility standards to ensure usability for all users.
- Multi-language support must be provided for both English and the local language (e.g., Turkish).

## **3.7 Other Requirements**

### **Data Backup and Recovery:**

- The system must provide daily automated backups of all critical data to ensure no data loss in case of a failure.
- Backup data must be stored in a secure, encrypted format and retrievable within 2 hours of any failure.

### **Audit Logs:**

- All actions performed by users (e.g., applying for graduation, modifying transcripts, and approving requests) must be logged for auditing purposes.
- Logs must include user ID, timestamp, action details, and IP address.

### **User Roles and Permissions:**

- The system must define distinct user roles, such as students, advisors, department secretaries, and system administrators, each with appropriate permissions.
- Role-based views and functionalities must be implemented to restrict unauthorized access.















