



Software Design and Analysis

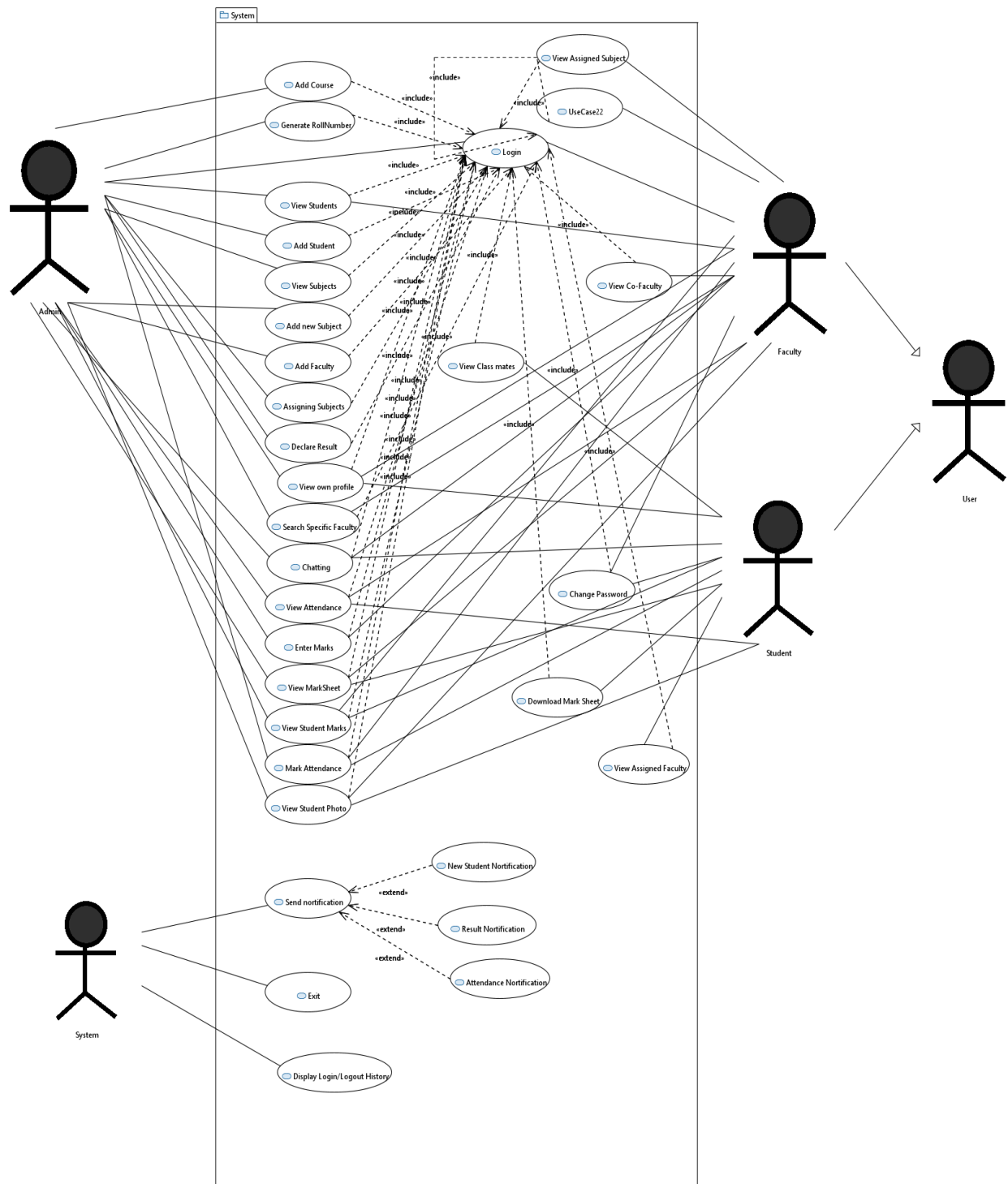
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Use Case Diagram

-Created more than 60 use cases but for now just representing 32 use cases



Fully Dressed Format

• Use case name	Add course
• Scope the system under design	The system under design is a university management system that allows admins to manage courses for students, and faculty.
• Level	User goal
• Primary actor	Admin
• Stakeholders and interests	<ul style="list-style-type: none"> - Admin: wants to add a new course to the system with the relevant information, such as course code, name, description, credits, prerequisites, etc. - Students: want to enroll in the courses that are available and meet their requirements. - Faculty: want to teach the courses that are assigned to them and view the enrolled students.
• Preconditions	The admin is logged in to the system and has the permission to add courses.
• Postcondition	The new course is added to the system and can be viewed by the admin, students, and faculty.
• Main success scenario	<ol style="list-style-type: none"> 1. The admin selects the option to add a new course. 2. The system displays a form with the fields for the course information. 3. The admin enters the course information and submits the form. 4. The system validates the course information and adds the new course to the system. 5. The system displays a confirmation message to the admin and shows the details of the new course.
• Extensions	<ul style="list-style-type: none"> - 3a. The admin enters invalid or incomplete course information. - 3a1. The system displays an error message and prompts the admin to correct the input. - 3a2. The admin corrects the input and resubmits the form. - 3a3. The system repeats steps 4 and 5 of the main success scenarios.

• Use case name	Generate roll number
• Scope the system under design	The system under design is a university management system that allows admins to generate unique roll numbers for students based on their program, batch, and sequence number.
• Level	User goal
• Primary actor	Admin
• Stakeholders and interests	<p>- Admin: wants to generate roll numbers for students who have been admitted to the university and assign them to their respective programs and batches.</p> <p>- Students: want to have a unique roll number that identifies them in the system and use it for various purposes, such as registration, attendance, grades, etc.</p> <p>- Faculty: want to use the roll numbers of students to record their attendance, grades, feedback, etc.</p>
• Preconditions	The admin is logged in to the system and has the permission to generate roll numbers for students.
• Postcondition	The roll numbers are generated for students and assigned to their respective programs and batches.
• Main success scenario	<ol style="list-style-type: none"> 1. The admin selects the option to generate roll numbers for students. 2. The system displays a list of programs and batches that have admitted students without roll numbers. 3. The admin selects a program and a batch from the list. 4. The system generates unique roll numbers for each student in the selected program and batch based on a predefined format, such as <program code>-<batch year>-<sequence number>. 5. The system assigns the generated roll numbers to the students and updates their records in the system. 6. The system displays a confirmation message to the admin and shows the details of the students with their roll numbers.
• Extensions	<p>- 2a. There are no programs or batches that have admitted students without roll numbers.</p> <p>- 2a1. The system displays a message informing the admin that there are no students who need roll numbers.</p> <p>- 2a2. The use case ends.</p>

• Use case name	View student photo
• Scope the system under design	The system under design is a university management system that allows admins to view the photos of students that are stored in the system.
• Level	Subfunction
• Primary actor	Admin
• Stakeholders and interests	<ul style="list-style-type: none"> - Admin: wants to view the photos of students for verification, identification, or other purposes. - Students: want to have their photos stored in the system and displayed correctly when needed. - Faculty: want to view the photos of students for recognition, communication, or other purposes.
• Preconditions	The admin is logged in to the system and has access to view student photos.
• Postcondition	The photo of a student is displayed to the admin on request.
• Main success scenario	<ol style="list-style-type: none"> 1. The admin selects a student from a list or searches for a student by name or roll number. 2. The system displays the basic information of the selected student, such as name, roll number, program, batch, etc. 3. The admin clicks on a button or icon that indicates viewing photo. 4. The system retrieves the photo of the selected student from its storage location and displays it on a separate window or pop-up box along with some options, such as zooming, rotating, saving, printing, etc. 5. The admin views the photo and performs any of the available options as needed. 6. The admin closes the window or pop-up box when done.
• Extensions	<ul style="list-style-type: none"> - 1a. The admin does not find the student they are looking for in the list or by searching. - 1a1. The system displays a message informing the admin that no student matches their criteria. - 1a2. The use case ends. - 4a. The system fails to retrieve the photo of the selected student due to some error, such as file corruption, network failure, etc. - 4a1. The system displays an error message and

	<p>informs the admin that the photo cannot be displayed.</p> <p>- 4a2. The use case ends.</p>
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• Use case name	Add student
• Scope the system under design	The system under design is a university management system that allows admins to add new students to the system with their personal and academic information.
• Level	User goal
• Primary actor	Admin
• Stakeholders and interests	<p>- Admin: wants to add new students to the system who have been admitted to the university and assign them to their respective programs and batches.</p> <p>- Students: want to have their personal and academic information stored in the system and be able to access and update it as needed.</p> <p>- Faculty: want to have access to the personal and academic information of students who are enrolled in their courses or under their supervision.</p> <p>- Preconditions: The admin is logged in to the system and has the permission to add students.</p> <p>- Postcondition: The new student is added to the system and can be viewed by the admin, faculty, and the student themselves.</p>
• Preconditions	The admin is logged in to the system and has the permission to add students.
• Postcondition	The new student is added to the system and can be viewed by the admin, faculty, and the student themselves.
• Main success scenario	<ol style="list-style-type: none"> 1. The admin selects the option to add a new student. 2. The system displays a form with the fields for the personal and academic information of the student, such as name, date of birth, gender, email, phone number, address, program, batch, etc. 3. The admin enters the personal and academic information of the student and submits the form. 4. The system validates the information and adds the new student to the system. 5. The system generates a unique roll number for the new student based on their program, batch, and sequence number and assigns it to them. 6. The system displays a confirmation message to the admin and shows the details of the new student along with their roll number.

<ul style="list-style-type: none"> Extensions 	<ul style="list-style-type: none"> - 3a. The admin enters invalid or incomplete information of the student. <ul style="list-style-type: none"> - 3a1. The system displays an error message and prompts the admin to correct the input. - 3a2. The admin corrects the input and resubmits the form. - 3a3. The system repeats steps 4, 5, and 6 of the main success scenarios.
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<ul style="list-style-type: none"> Use case name 	Add faculty
<ul style="list-style-type: none"> Scope the system under design 	The system under design is a university management system that allows admins to add new faculty members to the system with their personal and professional information.
<ul style="list-style-type: none"> Level 	User goal
<ul style="list-style-type: none"> Primary actor 	Admin
<ul style="list-style-type: none"> Stakeholders and interests 	<ul style="list-style-type: none"> - Admin: wants to add new faculty members to the system who have been hired by the university and assign them to their respective departments and roles. - Faculty: want to have their personal and professional information stored in the system and be able to access and update it as needed. - Students: want to have access to the personal and professional information of faculty members who are teaching their courses or supervising their projects or research.
<ul style="list-style-type: none"> Preconditions 	The admin is logged in to the system and has the permission to add faculty members.
<ul style="list-style-type: none"> Postcondition 	The new faculty member is added to the system and can be viewed by the admin, faculty, and students.
<ul style="list-style-type: none"> Main success scenario 	<ol style="list-style-type: none"> 1. The admin selects the option to add a new faculty member. 2. The system displays a form with the fields for the personal and professional information of the faculty member, such as name, date of birth, gender, email, phone number, address, department, role, qualification, experience, etc. 3. The admin enters the personal and professional information of the faculty member and submits the form. 4. The system validates the information and adds the new faculty member to the system.

	<p>5. The system generates a unique employee ID for the new faculty member based on their department, role, and sequence number and assigns it to them.</p> <p>6. The system displays a confirmation message to the admin and shows the details of the new faculty member along with their employee ID.</p>
<ul style="list-style-type: none"> Extensions 	<ul style="list-style-type: none"> - 3a. The admin enters invalid or incomplete information of the faculty member. <ul style="list-style-type: none"> - 3a1. The system displays an error message and prompts the admin to correct the input.

<ul style="list-style-type: none"> Use case name 	View student data
<ul style="list-style-type: none"> Scope the system under design 	The system under design is a university management system that allows faculty members to view the personal and academic data of students who are enrolled in their courses or under their supervision.
<ul style="list-style-type: none"> Level 	Subfunction
<ul style="list-style-type: none"> Primary actor 	Faculty
<ul style="list-style-type: none"> Stakeholders and interests 	<ul style="list-style-type: none"> - Faculty: wants to view the personal and academic data of students for various purposes, such as communication, evaluation, feedback, guidance, etc. - Students: want to have their personal and academic data stored in the system and be able to access and update it as needed. - Admin: wants to ensure that the personal and academic data of students is accurate, secure, and accessible only by authorized users.
<ul style="list-style-type: none"> Preconditions 	The faculty member is logged in to the system and has access to view student data.
<ul style="list-style-type: none"> Postcondition 	The personal and academic data of a student is displayed to the faculty member on request.
<ul style="list-style-type: none"> Main success scenario 	<ol style="list-style-type: none"> 1. The faculty member selects a course or a project from a list or searches for it by name or code. 2. The system displays the basic information of the selected course or project, such as name, code, description, credits, prerequisites, etc. 3. The faculty member selects a student from a list of enrolled or assigned students or searches for a student by name or roll number. 4. The system displays the personal and academic data of the selected student, such as name, roll number, email, phone number, address, program, batch, courses,

	<p>grades, attendance, feedback, etc.</p> <p>5. The faculty member views the personal and academic data of the student and performs any of the available actions as needed, such as sending an email, calling a phone number, giving feedback, etc.</p>
<ul style="list-style-type: none"> Extensions 	<ul style="list-style-type: none"> - 1a. The faculty member does not find the course or project they are looking for in the list or by searching. <ul style="list-style-type: none"> - 1a1. The system displays a message informing the faculty member that no course or project matches their criteria. - 1a2. The use case ends. - 3a. The faculty member does not find the student they are looking for in the list or by searching. <ul style="list-style-type: none"> - 3a1. The system displays a message informing the faculty member that no student matches their criteria. - 3a2. The use case ends.

<ul style="list-style-type: none"> Use case name 	View student photos
<ul style="list-style-type: none"> Scope the system under design 	The system under design is a university management system that allows faculty members to view the photos of students who are enrolled in their courses or under their supervision.
<ul style="list-style-type: none"> Level 	Subfunction
<ul style="list-style-type: none"> Primary actor 	Faculty
<ul style="list-style-type: none"> Stakeholders and interests 	<ul style="list-style-type: none"> - Faculty: wants to view the photos of students for recognition, communication, or other purposes. - Students: want to have their photos stored in the system and displayed correctly when needed. - Admin: wants to ensure that the photos of students are accurate, secure, and accessible only by authorized users.
<ul style="list-style-type: none"> Preconditions 	The faculty member is logged in to the system and has access to view student photos.
<ul style="list-style-type: none"> Postcondition 	The photo of a student is displayed to the faculty member on request.
<ul style="list-style-type: none"> Main success scenario 	<p>1. The faculty member selects a course or a project from a list or searches for it by name or code.</p> <p>2. The system displays the basic information of the selected course or project, such as name, code, description, credits, prerequisites, etc.</p>

	<p>3. The faculty member selects a student from a list of enrolled or assigned students or searches for a student by name or roll number.</p> <p>4. The system retrieves the photo of the selected student from its storage location and displays it on a separate window or pop-up box along with some options, such as zooming, rotating, saving, printing, etc.</p> <p>5. The faculty member views the photo and performs any of the available options as needed.</p> <p>6. The faculty member closes the window or pop-up box when done.</p>
<ul style="list-style-type: none"> Extensions 	<ul style="list-style-type: none"> - 1a. The faculty member does not find the course or project they are looking for in the list or by searching. <ul style="list-style-type: none"> - 1a1. The system displays a message informing the faculty member that no course or project matches their criteria. - 1a2. The use case ends. - 3a. The faculty member does not find the student they are looking for in the list or by searching. <ul style="list-style-type: none"> - 3a1. The system displays a message informing the faculty member that no student matches their criteria. - 3a2. The use case ends. - 4a. The system fails to retrieve the photo of the selected student due to some error, such as file corruption, network failure, etc. <ul style="list-style-type: none"> - 4a1. The system displays an error message and informs the faculty member that the photo cannot be displayed. - 4a2. The use case ends.

• Use case name	View assigned students
• Scope the system under design	The system under design is a university management system that allows faculty members to view the list of students who are assigned to them for a course or a project.
• Level	Subfunction
• Primary actor	Faculty
• Stakeholders and interests	<p>- Faculty: wants to view the list of assigned students for a course or a project to manage their teaching or supervision activities, such as attendance, grades, feedback, etc.</p> <p>- Students: want to know which faculty member is assigned to them for a course or a project and be able to communicate with them as needed.</p> <p>- Admin: wants to ensure that the assignment of students to faculty members is done according to the university policies and regulations.</p>
• Preconditions	The faculty member is logged in to the system and has access to view assigned students.
• Postcondition	The list of assigned students for a course or a project is displayed to the faculty member on request.
• Main success scenario	<p>1. The faculty member selects a course or a project from a list or searches for it by name or code.</p> <p>2. The system displays the basic information of the selected course or project, such as name, code, description, credits, prerequisites, etc.</p> <p>3. The system displays the list of students who are assigned to the faculty member for the selected course or project, along with some details, such as name, roll number, email, phone number, etc.</p> <p>4. The faculty member views the list of assigned students and performs any of the available actions as needed, such as sorting, filtering, exporting, emailing, calling, etc.</p>
• Extensions	<p>- 1a. The faculty member does not find the course or project they are looking for in the list or by searching.</p> <p>- 1a1. The system displays a message informing the faculty member that no course or project matches their criteria.</p> <p>- 1a2. The use case ends.</p> <p>- 3a. There are no students who are assigned to the faculty member for the selected course or project.</p> <p>- 3a1. The system displays a message informing</p>

	<p>the faculty member that there are no assigned students for the selected course or project.</p> <p>- 3a2. The use case ends.</p>
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• Use case name	Enter marks
• Scope the system under design	The system under design is a university management system that allows faculty members to enter the marks of students who are enrolled in their courses or under their supervision for various assessments, such as quizzes, assignments, exams, projects, etc.
• Level	User goal
• Primary actor	Faculty
• Stakeholders and interests	<p>- Faculty: wants to enter the marks of students for various assessments and submit them to the system for calculation and recording purposes.</p> <p>- Students: want to have their marks entered by the faculty members and be able to view them in the system as soon as possible.</p> <p>- Admin: wants to ensure that the marks of students are entered by the faculty members accurately and timely and comply with the university policies and regulations.</p>
• Preconditions	The faculty member is logged in to the system and has access to enter marks for students.
• Postcondition	The marks of students for various assessments are entered by the faculty member and submitted to the system for calculation and recording purposes.
• Main success scenario	<ol style="list-style-type: none"> 1. The faculty member selects a course or a project from a list or searches for it by name or code. 2. The system displays the basic information of the selected course or project, such as name, code, description, credits, prerequisites, etc. 3. The system displays the list of assessments for the selected course or project, such as quizzes, assignments, exams, projects, etc., along with their details, such as name, date, weightage, etc. 4. The faculty member selects an assessment from the list or adds a new assessment if needed. 5. The system displays the list of students who are enrolled or assigned to the selected course or project along with their marks for the selected assessment if already entered or blank fields if not entered yet. 6. The faculty member enters or edits the marks for each student in the corresponding field and submits

	<p>them to the system.</p> <p>7. The system validates the marks and calculates the total marks and grades for each student based on the weightage of each assessment and other criteria.</p> <p>8. The system updates the records of each student with their marks and grades and displays a confirmation message to the faculty member along with some statistics, such as average, median, standard deviation, etc., of the marks distribution.</p>
<ul style="list-style-type: none"> Extensions 	<ul style="list-style-type: none"> - 1a. The faculty member does not find the course or project they are looking for in the list or by searching. - 3a1. The system displays a message informing the faculty member that there are no marks of students update for the selected course or project. - 3a2. The use case ends.

<ul style="list-style-type: none"> Use case name 	Download marksheet
<ul style="list-style-type: none"> Scope the system under design 	The system under design is a university management system that allows students to download their marksheet for a course or a semester in a PDF format.
<ul style="list-style-type: none"> Level 	User goal
<ul style="list-style-type: none"> Primary actor 	Student
<ul style="list-style-type: none"> Stakeholders and interests 	<ul style="list-style-type: none"> - Student: wants to download their marksheet for a course or a semester and save it or print it as needed. - Faculty: wants to ensure that the marks of students are accurate and consistent with the system records. - Admin: wants to ensure that the marksheets of students are secure and accessible only by authorized users.
<ul style="list-style-type: none"> Preconditions 	The student is logged in to the system and has access to download their marksheet.
<ul style="list-style-type: none"> Postcondition 	The marksheet of the student for a course or a semester is downloaded in a PDF format and saved to their device or printed as needed.
<ul style="list-style-type: none"> Main success scenario 	<ol style="list-style-type: none"> 1. The student selects the option to download their marksheet. 2. The system displays a list of courses and semesters that the student has completed or is currently enrolled in. 3. The student selects a course or a semester from the list.

	<p>4. The system generates a marksheet for the student for the selected course or semester, which contains their personal and academic information, such as name, roll number, program, batch, course name, code, credits, marks, grades, etc.</p> <p>5. The system converts the marksheet into a PDF format and downloads it to the student's device or prompts them to choose a location to save it.</p> <p>6. The system displays a confirmation message to the student and shows the downloaded marksheet on their device or gives them an option to open it or print it.</p>
<ul style="list-style-type: none"> Extensions 	<ul style="list-style-type: none"> - 2a. There are no courses or semesters that the student has completed or is currently enrolled in. <ul style="list-style-type: none"> - 2a1. The system displays a message informing the student that there are no marksheets available for them. - 2a2. The use case ends. - 4a. The system fails to generate a marksheet for the student for the selected course or semester due to some error, such as data inconsistency, network failure, etc. <ul style="list-style-type: none"> - 4a1. The system displays an error message and informs the student that the marksheet cannot be generated. - 4a2. The use case ends.

<ul style="list-style-type: none"> Use case name 	Chat with Principal
<ul style="list-style-type: none"> Scope the system under design 	Student interaction with the principal through a chat system.
<ul style="list-style-type: none"> Level 	Primary
<ul style="list-style-type: none"> Primary actor 	Student
<ul style="list-style-type: none"> Stakeholders and interests 	Student: To communicate with the principal for queries or concerns. Principal: To respond to student inquiries and address concerns.
<ul style="list-style-type: none"> Preconditions 	The student is logged into the system and has access to the chat feature.
<ul style="list-style-type: none"> Postcondition 	The student receives a response from the principal, or the conversation is marked as complete.
<ul style="list-style-type: none"> Main success scenario 	Student initiates a chat with the principal. Principal receives the chat request. Principal responds to the student's inquiry.

	<p>The student receives and reads the response.</p> <p>The conversation concludes.</p>
<ul style="list-style-type: none"> Extensions 	<p>If the principal is not available, an automated message informs the student and suggests alternative means of communication.</p> <p>If the conversation is complex, it may be escalated to a physical meeting.</p>

<ul style="list-style-type: none"> Use case name 	View Own Profile
<ul style="list-style-type: none"> Scope the system under design 	Student accessing and viewing their personal profile information.
<ul style="list-style-type: none"> Level 	Primary
<ul style="list-style-type: none"> Primary actor 	Student
<ul style="list-style-type: none"> Stakeholders and interests 	Student: To view and verify personal information.
<ul style="list-style-type: none"> Preconditions 	The student is logged into the system.
<ul style="list-style-type: none"> Postcondition 	The student successfully views their profile information.
<ul style="list-style-type: none"> Main success scenario 	<p>Student navigates to the profile section.</p> <p>System authenticates the student's access.</p> <p>The student's profile information is displayed.</p>
<ul style="list-style-type: none"> Extensions 	<p>If the student encounters issues accessing the profile, an error message is displayed.</p> <p>The student may have the option to edit/update certain profile details.</p>

<ul style="list-style-type: none"> Use case name 	Log Out
<ul style="list-style-type: none"> Scope the system under design 	Student ending the session and logging out of the system.
<ul style="list-style-type: none"> Level 	Primary
<ul style="list-style-type: none"> Primary actor 	Student
<ul style="list-style-type: none"> Stakeholders and interests 	Student: To securely end the session and protect privacy.

• Preconditions	The student is logged into the system.
• Postcondition	The student is successfully logged out.
• Main success scenario	Student selects the log-out option. System confirms the log-out action. The student is redirected to the login page.
• Extensions	If the student is engaged in an unsaved activity, the system may prompt for confirmation before logging out. Inactivity timeout may automatically log out the student for security reasons.

• Use case name	View Marksheet
• Scope the system under design	Student accessing and viewing their academic marks.
• Level	Primary
• Primary actor	Student
• Stakeholders and interests	Student: To review and assess academic performance.
• Preconditions	The student is logged into the system.
• Postcondition	The student successfully views their marksheet.
• Main success scenario	Student navigates to the marksheet section. System authenticates the student's access. The student's academic marks are displayed.
• Extensions	If there are grading schemes or explanations, they may be provided to help the student interpret the marks. The student may have the option to download or print the marksheet for reference.

• Use case name	Login/Logout
• Scope the system under design	Users (admin, faculty, and student) accessing and exiting the system securely.
• Level	System
• Primary actor	User (Admin, Faculty, Student)
• Stakeholders and interests	- Admin, Faculty, Student: To securely access and leave the system.
• Preconditions	The user is not logged in (for login) or is logged in (for logout).
• Postcondition	The user is successfully logged in or out.
• Main success scenario	<ol style="list-style-type: none"> 1. User enters valid credentials for login. 2. System verifies credentials and grants access. 3. User interacts with the system. 4. User initiates logout. 5. System logs the user out and ends the session.
• Extensions	<ul style="list-style-type: none"> - Failed login attempts may trigger security measures like account lockout. - Inactivity timeout may automatically log out users for security reasons.

• Use case name	Notification to Faculty on Adding Subject
• Scope the system under design	System notifying faculty members about the addition of a new subject by the admin.
• Level	System
• Primary actor	System (Admin)
• Stakeholders and interests	<ul style="list-style-type: none"> - Admin: To notify faculty about changes in the subject list. - Faculty: To be informed about the addition of a new subject.
• Preconditions	The admin adds a new subject to the system.
• Postcondition	Faculty members receive the notification about the new subject.
• Main success scenario	<ol style="list-style-type: none"> 1. Admin adds a new subject to the system. 2. System triggers a notification to all relevant faculty

	members. 3. Faculty members receive and can view the notification.
<ul style="list-style-type: none"> Extensions 	- The notification may include details about the new subject and any related information.

<ul style="list-style-type: none"> Use case name 	Notification of Message to All
<ul style="list-style-type: none"> Scope the system under design 	The system sending notifications to all system users, including admins, faculty, and students.
<ul style="list-style-type: none"> Level 	System
<ul style="list-style-type: none"> Primary actor 	System
<ul style="list-style-type: none"> Stakeholders and interests 	<ul style="list-style-type: none"> - Admin: To receive important system-wide messages. - Faculty: To be informed about updates and announcements. - Student: To stay updated on important information.
<ul style="list-style-type: none"> Preconditions 	The system has a message/notification to broadcast.
<ul style="list-style-type: none"> Postcondition 	All targeted users receive the notification.
<ul style="list-style-type: none"> Main success scenario 	<ol style="list-style-type: none"> 1. System initiates the notification process. 2. The message is sent to all admins, faculty, and students. 3. Users receive and can view the notification.
<ul style="list-style-type: none"> Extensions 	<ul style="list-style-type: none"> - Different notification channels (email, in-app, SMS) can be utilized based on user preferences. - Users may have the option to acknowledge receipt or respond to the notification.