Ticket 4 (Use Case For User Authentication And Authorization) Group B

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1 Introduction

This document presents a Use Case for the Authentication and Authorization processes within the Capstone Management System, a pivotal component for ensuring secure and regulated access to the platform's functionalities. It delineates the framework for user registration, login procedures, and the implementation of role-based access controls for various stakeholders, including students, faculty, and company representatives. The objective is to provide a comprehensive overview of how users are authenticated and authorized, ensuring that system access is both secure and user-friendly, while also complying with necessary standards and policies. This Use Case serves as a foundational element for the development and maintenance of the system's security architecture.

2 EXPLANATION OF USE CASE CONTENTS

This explanation section clarifies the contents of the Authentication and Authorization use case for the Capstone Management System. It begins by identifying the actors involved, namely students, faculty, and company representatives, and the preconditions necessary for engaging with the system, such as the system's availability and the actor's access to a compatible device and the internet.

- **Actors:** The individuals or entities who interact with the system. In our case, these include Students, Faculty, and Company Representatives who need to access the Capstone Management System.
- **Preconditions:** Conditions that must be true or met before the use case is initiated. For authentication, this typically includes the system being online and the user having the necessary credentials ready.
- **Postconditions:** Conditions that must be true once the use case has been completed. This ensures that the user is either successfully logged in and granted access based on their role or provided with an appropriate error message if authentication fails.
- **Main Flow:** The standard process that describes the sequence of events to achieve the use case under normal circumstances. It typically starts with the user entering their credentials and the system validating them, followed by access being granted.
- **Alternative Flows:** These are paths that diverge from the main flow due to certain conditions or choices. An example might be the user forgetting their password and initiating a password reset flow.
- **Exceptions:** Unusual or unexpected events that can occur during the execution of the use case and require handling, such as entering incorrect credentials or attempting to access unauthorized features.
- **Special Requirements:** Any non-functional requirements or constraints that are applicable, such as security protocols for data encryption and compliance with data protection regulations.

3 Description

The Use Case for User Authentication and Authorization outlines a secure method for managing user access within the Capstone Management System. It includes processes for registering users, logging in, and controlling access based on different roles such as students, faculty, and company representatives. This summary highlights the necessary preconditions for accessing the system, the steps involved in the authentication and authorization process, and how the system handles exceptions. It aims to ensure that access management is secure, compliant with standards, and user-friendly for everyone involved in the capstone project.

4 Actors

- Primary Actors: Students, Faculty, Company Representatives
- Secondary Actors: System Administrator

5 Preconditions

1. The system is operational and accessible.
2. The actor has access to the internet and a compatible device.
3. System User Roles Defined: The system has predefined roles (e.g., Student, Faculty, Company Representative) with associated permissions.
4. Registration Approval Process: For certain roles, such as Faculty and Company Representatives, a manual approval process or verification by a system administrator or other authorized personnel is required after initial registration.
5. Compliance with Policies: The actor agrees to the system's terms of use, privacy policy, and any other relevant policies during registration.
6. Security Measures: Adequate security measures (e.g., firewalls, antivirus software) are in place to protect the system and user data.
7. System Maintenance and Updates: The system undergoes regular maintenance and updates to ensure operational efficiency and security, which may temporarily affect accessibility.

6 Postconditions

1. The actor is authenticated and authorized to access appropriate system features based on their role.
2. Customizing User Experience: After logging in, the system automatically adjusts settings and preferences based on the user's role, creating a unique and tailored experience.
3. Logging Login Activities: The system records each user's login details in an access log. This helps keep track of who logs in and out, important for safety and following rules.
4. Setting a Time-out for Sessions: To keep the system secure, it logs users out if they are inactive for too long, asking them to log in again to continue.

7 Main Flow

- User Registration:

1. 1- The actor selects the "Register" option.
2. The actor provides necessary details (e.g., name, email, role-specific information).

3. The system validates the information and creates a new user account.
4. The system sends a verification email.
5. The actor verifies their email address.
6. The system confirms account activation.

- User Login:

1. The actor selects the "Login" option.
2. The actor enters their username/email and password.
3. The system authenticates the user.
4. The user is granted access based on their role.

- Role-Based Access Control:

1. The system retrieves the user's role and permissions.
2. Access to features and data is granted or denied based on the user's role (e.g., Student, Faculty, Company Representative).

8 Alternative Flows

- Forgotten Password:

1. The actor selects the "Forgot Password" option.
2. The actor provides their email address.
3. The system sends a password reset link.
4. The actor resets their password through the link.

- Email Not Verified:

1. The actor attempts to log in before verifying their email.
2. The system notifies the actor to verify their email first.

9 Exceptions

- Wrong Password or Username:

If the login information doesn't match, the system shows a warning and lets you try entering your details again.

- Trying to Enter Without Permission:

If there's an attempt to get into the system without the right access, it's recorded, and the people in charge might be alerted.

10 Special Requirements

1. Secure Data Transfer: The system must use safe ways to send data, like HTTPS, to protect information as it moves.
2. Safe Password Storage: Passwords need to be kept in a way that even if someone finds them, they can't read them. This is done using special methods like hash functions.
3. Following Privacy Rules: It's important to make sure the system follows laws that protect personal information. This means it must handle and store user data carefully and legally.
4. Regular Security Checks: The system should regularly check for and fix security weaknesses to keep user data safe.
5. User Data Control: Users should be able to see, change, or delete their personal information stored in the system, following privacy rights.
6. Training for Safe Use: People who use the system should learn about keeping information safe and the importance of using strong passwords and logging out when done.

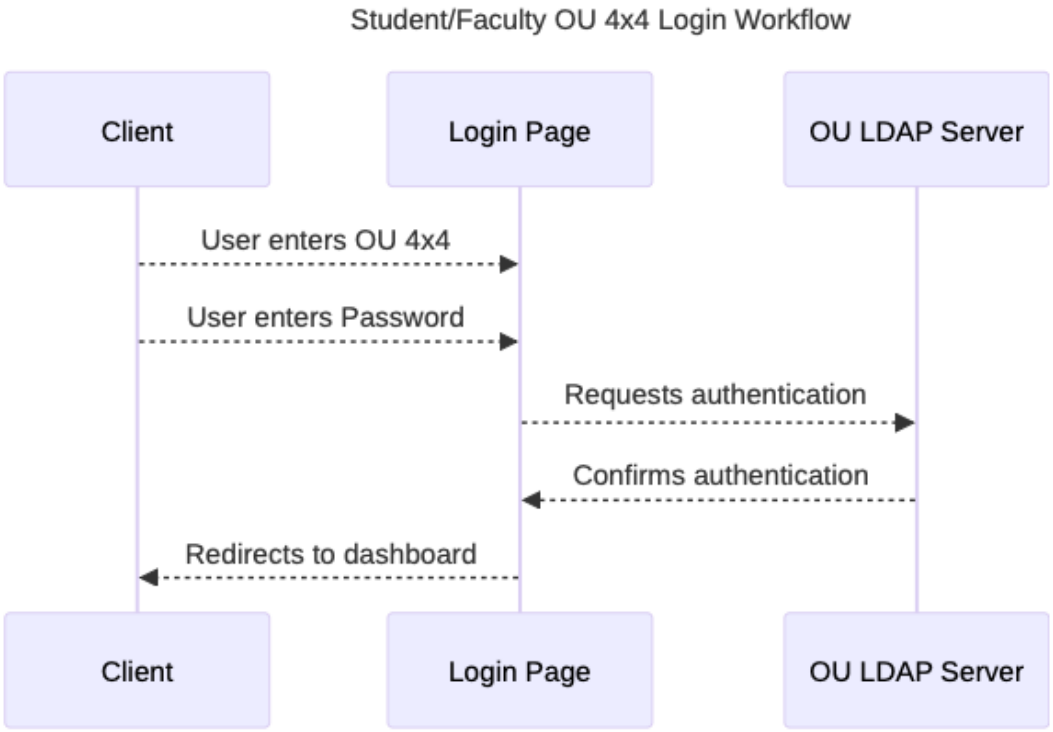

Figure 1: Student/Faculty OU 4x4 Login Workflow

Name Of Use Case :	User Authentication And Authorization		
Created By :	Ferial Najiantabriz	Last Updated By:	Ferial Najiantabriz
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Actors:	1- Primary Actors: Students, Faculty, Company Representatives 2- Secondary Actors: System Administrator		
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Main Flow :	User Registration: 1- The actor selects the "Register" option. 2- The actor provides necessary details (e.g., name, email, role-specific information). 3- The system validates the information and creates a new user account. 4- The system sends a verification email. 5- The actor verifies their email address. 6- The system confirms account activation. User Login: 1-The actor selects the "Login" option. 2-The actor enters their username/email and password. 3- The system authenticates the user. 4- The user is granted access based on their role. Role-Based Access Control: 1- The system retrieves the user's role and permissions. 2- Access to features and data is granted or denied based on the user's role (e.g., Student, Faculty, Company Representative).		
Alternative Flows	Forgotten Password: 1- The actor selects the "Forgot Password" option. 2- The actor provides their email address. 3- The system sends a password reset link. 4- The actor resets their password through the link. Email Not Verified: 1-The actor attempts to log in before verifying their email. 2- The system notifies the actor to verify their email first.		
Exceptions:	Wrong Password or Username: If the login information doesn't match, the system shows a warning and lets you try entering your details again. 2-Trying to Enter Without Permission: If there's an attempt to get into the system without the right access, it's recorded, and the people in charge might be alerted.		
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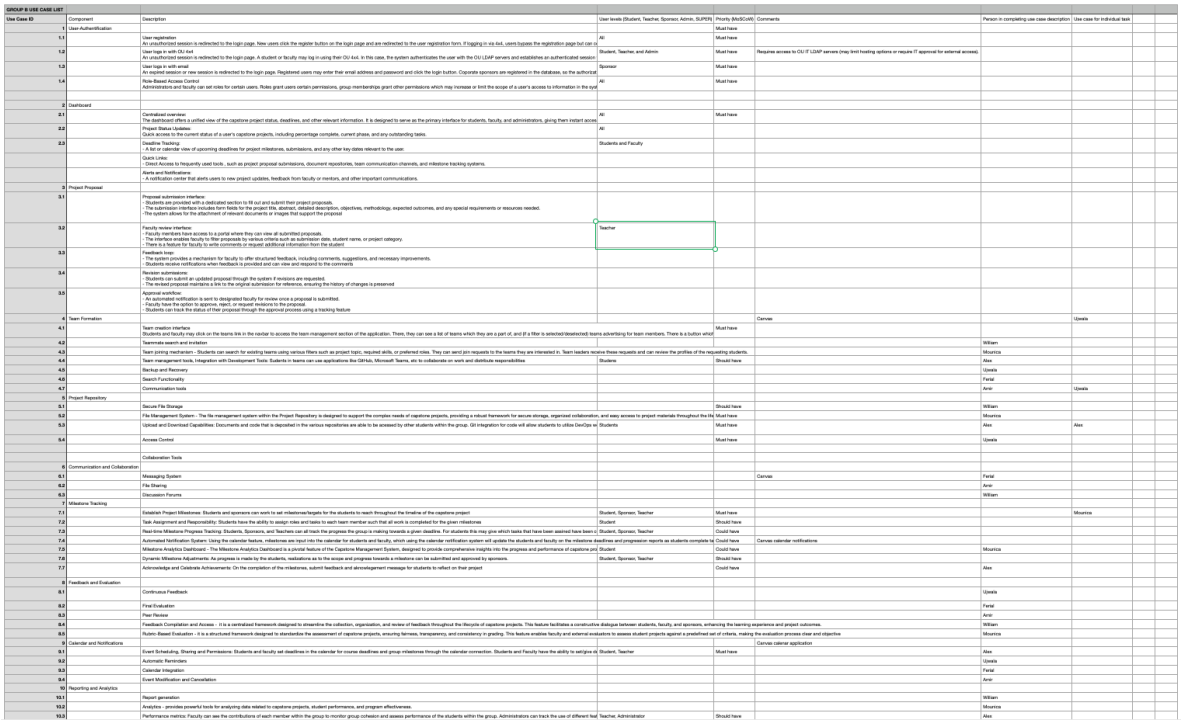
Figure 2: Use Case For User Authentication And Authorization



GROUP B USE CASE LIST								
Use Case ID	Component	Description	User levels (Student, Teacher, Sponsor, Admin, SUPER)	Priority (MoSCoW)	Comments	Person in completing use case description	Use case for individual task	
1	User Authentification			Must have				
1.1		User registration An unauthorized session is redirected to the login page. New users click the register button on the login page and are redirected to the user registration form. If logging in via 4x4, users bypass the registration page but can st	All	Must have				
1.2		User logs in with OIU 4x4 An unauthorized session is redirected to the login page. A student or faculty may log in using their OU 4x4. In this case, the system authenticates the user with the OU LDAP servers and establishes an authenticated session	Student, Teacher, and Admin	Must have	Requires access to OU IT LDAP servers (may limit hosting options or require IT approval for external access).			
1.3		User logs in with email An expired session or new session is redirected to the login page. Registered users may enter their email address and password and click the login button. Coporate sponsors are registered in the database, so the authorizat	Sponsor	Must have				
1.4		Role-Based Access Control Administrators and faculty can set roles for certain users. Roles grant users certain permissions, group memberships grant other permissions which may increase or limit the scope of a user's access to information in the syst	All	Must have				
2	Dashboard							
2.1		Centralized overview: The dashboard offers a unified view of the capstone project status, deadlines, and other relevant information. It is designed to serve as the primary interface for students, faculty, and administrators, giving them instant acces	All	Must have				
2.2		Project Status Updates: Quick access to the current status of a user's capstone projects, including percentage complete, current phase, and any outstanding tasks.	All					
2.3		Deadline Tracking: - A list or calendar view of upcoming deadlines for project milestones, submissions, and any other key dates relevant to the user.	Students and Faculty					
		Quick Links: - Direct Access to frequently used tools , such as project proposal submissions, document repositories, team communication channels, and milestone tracking systems.						
		Alerts and Notifications: - A notification center that alerts users to new project updates, feedback from faculty or mentors, and other important communications.						
3	Project Proposal							
3.1		Proposal submission interface: - Students are provided with a dedicated section to fill out and submit their project proposals. - The interface includes forms that includes form fields for the project title, abstract, detailed description, objectives, methodology, expected outcomes, and any special requirements or resources needed. - The system allows for the attachment of relevant documents or images that support the proposal						
3.2		Faculty review interface: - Faculty members have access to a portal where they can view all submitted proposals. - The interface enables faculty to filter proposals by various criteria such as submission date, student name, or project category. - There is a feature for faculty to write comments or request additional information from the student	Teacher					
3.3		Feedback loop: - The system provides a mechanism for faculty to offer structured feedback, including comments, suggestions, and necessary improvements. - Students receive notifications when feedback is provided and can view and respond to the comments						
3.4		Revision submissions: - Students can resubmit an updated proposal through the system if revisions are requested. - The revised proposal maintains a link to the original submission for reference, ensuring the history of changes is preserved						
3.5		Approval workflow: - An automated notification is sent to designated faculty for review once a proposal is submitted. - Faculty have the option to approve, reject, or request revisions to the proposal. - Students can track the status of their proposal through the approval process using a tracking feature						
4	Team Formation				Canvas		Ujwala	
4.1		Team creation interface Students and faculty may click on the teams link in the navbar to access the team management section of the application. There, they can see a list of teams which they are a part of, and (if a filter is selected/deselected) teams advertising for team members. There is a button which		Must have				
4.2		Teammate search and invitation				William		
4.3		Team joining mechanism - Students can search for existing teams using various filters such as project topic, required skills, or preferred roles. They can send join requests to the teams they are interested in. Team leaders receive these requests and can review the profiles of the requesting students.				Mouricia		
4.4		Team management tools, Integration with Development Tools: Students in teams can use applications like GitHub, Microsoft Teams, etc to collaborate on work and distribute responsibilities	Students	Should have		Alex		
4.5		Backup and Recovery				Ujwala		
4.6		Search Functionality				Feriel		
4.7		Communication tools				Amir	Ujwala	
5	Project Repository							
5.1		Secure File Storage		Should have		William		
5.2		File Management System - The file management system within the Project Repository is designed to support the complex needs of capstone projects, providing a robust framework for secure storage, organized collaboration, and easy access to project materials throughout the life		Must have		Mouricia		
5.3		Upload and Download Capabilities: Documents and code that is deposited in the various repositories are able to be accessed by other students within the group. Git integration for code will allow students to utilize DevOps w	Students	Must have		Alex	Alex	
5.4		Access Control		Must have		Ujwala		
		Collaboration Tools						
6	Communication and Collaboration							
6.1		Messaging System			Canvas	Feriel		
6.2		File Sharing				Amir		
6.3		Discussion Forums				William		
7	Milestone Tracking							
7.1		Establish Project Milestones: Students and sponsors can work to set milestones/targets for the students to reach throughout the timeline of the capstone project	Student, Sponsor, Teacher	Must have			Mouricia	
7.2		Task Assignment and Responsibility: Students have the ability to assign roles and tasks to each team member such that all work is completed for the given milestones	Student	Should have				
7.3		Real-time Milestone Progress Tracking: Students, Sponsors, and Teachers can all track the progress the group is making towards a given deadline. For students this may give which tasks that have been assigned have been c	Student, Sponsor, Teacher	Could have				
7.4		Automated Notification System: Using the calendar feature, milestones are input into the calendar for students and faculty, which using the calendar notification system will update the students and faculty on the milestone deadlines and progression reports as students complete ta		Could have	Canvas calendar notifications			
7.5		Milestone Analytics Dashboard - The Milestone Analytics Dashboard is a pivotal feature of the Capstone Management System, designed to provide comprehensive insights into the progress and performance of capstone pro	Student	Could have		Mouricia		
7.6		Dynamic Milestone Adjustments: As progress is made by the students, realizations as to the scope and progress towards a milestone can be submitted and approved by sponsors.	Student, Sponsor, Teacher	Should have				
7.7		Acknowledge and Celebrate Achievements: On the completion of the milestones, submit feedback and acknowlegement message for students to reflect on their project		Could have		Alex		
8	Feedback and Evaluation							
8.1		Continuous Feedback				Ujwala		
8.2		Final Evaluation				Feriel		
8.3		Peer Review				Amir		
8.4		Feedback Compilation and Access - It is a centralized framework designed to streamline the collection, organization, and review of feedback throughout the lifecycle of capstone projects. This feature facilitates a constructive dialogue between students, faculty, and sponsors, enhancing the learning experience and project outcomes.				William		
8.5		Rubric-Based Evaluation - It is a structured framework designed to standardize the assessment of capstone projects, ensuring fairness, transparency, and consistency in grading. This feature enables faculty and external evaluators to assess student projects against a predefined set of criteria, making the evaluation process clear and objective				Mouricia		
9	Calendar and Notifications				Canvas calenar application			
9.1		Event Scheduling, Sharing and Permissions: Students and faculty set deadlines in the calendar for course deadlines and group milestones through the calendar connection. Students and Faculty have the ability to set/give ot	Student, Teacher	Must have		Alex		
9.2		Automatic Reminders				Ujwala		
9.3		Calendar Integration				Feriel		
9.4		Event Modification and Cancellation				Amir		
10	Reporting and Analytics							
10.1		Report generation				William		
10.2		Analytics - provides powerful tools for analyzing data related to capstone projects, student performance, and program effectiveness.				Mouricia		
10.3		Performance metrics: Faculty can see the contributions of each member within the group to monitor group cohesion and assess performance of the students within the group. Administrators can track the use of different feat	Teacher, Administrator	Should have		Alex		

Figure 3: Use Case List

11 References:

https://www.wrike.com/blog/what-is-a-use-case/
https://www.techtarget.com/searchsoftwarequality/definition/use-case

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