University of Maryland, College Park

ENPM 613: Software Design and Implementation
Fall 2024
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OlympiLearn

Team SONIC

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1. Project Description

The OlympiLearn system by Team SONIC is a learning management system for Olympic sports. The web application provides a platform for users to sign up as a professor or student. This allows users to share their knowledge of a certain olympic sport through OlympiLearn elements such as assignments, modules, and course descriptions. Alternatively, if a user wants to take on more of a learning role they could sign up with a student account and add courses of their liking that are taught by other users. The student would have access to class materials as well as their grade information.

2. User Requirements

2.1. Use Cases

Use Case UC001 Login User
Actors: Student/Instructor/Admin
Pre-Conditions: User has created an account in the system.
Triggering Event: A user wants to access their account information.
Steps:

1. The user navigates to the website URL.
2. The user selects the login option on the home page.
3. The system presents the prompt to enter the email address and password associated with the account.
4. The user selects the login button.

Post-Conditions: The user is directed to the home page based on their account type (student, professor or admin)

Use Case UC002 Create Account
Actors: Admin/Student/Professor
Pre-Conditions: User has an email address that can be used to sign up.
Triggering Event: User wants to create an account in the SONIC (OlympiLearn) system.
Steps:

1. The user navigates to the website URL.
2. The user selects the login option on the home page.
3. The system presents the prompt to enter the email address and password associated with the account or provides an option to create an account.
4. The user selects the create account option.
5. The system presents the prompt to enter an email address, password and account type.
6. The user selects “create account”.

Post-Conditions: The user account is created and logged in. The user can not add a class to teach or take depending on the account type chosen.

Use Case UC003 Professor Add Class
Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in.
Triggering Event: Professor has a new course they want to teach through the OlympiLearn Platform.
Steps:

1. The user navigates to their homepage dashboard.
2. The professor will select the option to add a course.
3. The system will prompt the professor to specify the name of the course, provide a class description, and add a syllabus.
4. The professor will enter the relevant information and will select the “Create Class” option.

Post-Conditions: The system will display a message that the class will be created through an admin. Once the admin approves the course the professor will have access to manage the course.

Use Case UC004 Edit Class Description
Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in. Professor must have a course associated with their account.
Triggering Event: The professor would like to update the contents of the course.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.
3. The system will present the class home page.
4. The professor will choose the edit class option.
5. The system will present the professor with the following options to edit: grades, class description, syllabus, assignments, and student roster.
6. The professor will choose the “class description” option.
7. The system will display an editable version of the current class description.
8. The professor will make the desired edits.
9. The professor will select “Save Changes”.

Post-Conditions: The course description will be updated. This will be displayed on the course home page.

Use Case UC005 Edit Class Syllabus
Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in. Professor must have a course associated with their account.
Triggering Event: The professor would like to update the contents of the course syllabus.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.
3. The system will present the class home page.
4. The professor will choose the edit class option.
5. The system will present the professor with the following options to edit: grades, class description, syllabus, assignments, and student roster.
6. The professor will choose the “course syllabus” option.
7. The system will present an option to upload a syllabus file.
8. The professor will upload the new/updated syllabus.
9. The professor will select “Save Changes”.

Post-Conditions: The course syllabus will be updated.

Use Case UC006 Create Assignment
Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in.

Triggering Event: The professor has taught new content to the class and would like to create an assignment for the students.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.
3. The system will present the class home page.
4. The professor will choose the edit class option.
5. The system will present the professor with the following options to edit: grades, class description, syllabus, assignments, and student roster.
6. The professor will choose the "assignments" option.
7. The system will display all existing assignments plus the option to add a new assignment.
8. The professor will select "Add New Assignment".
9. The system will present an option to upload the assignment file.
10. The professor will upload the assignment and select the assignment due date.
11. The professor will select the "Publish Assignment" option.

Post-Conditions: The new assignment will be published to the course for all students to access.

Use Case UC007 Edit Assignment
Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in. Professor must have an assignment published.
Triggering Event: The professor has published an assignment but changed the contents and details of the assignment.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.
3. The system will present the class home page.
4. The professor will choose the edit class option.
5. The system will present the professor with the following options to edit: grades, class description, syllabus, assignments, and student roster.
6. The professor will choose the "assignments" option.
7. The system will display all existing assignments plus the option to add a new assignment.
8. The professor will select "Edit Assignment".
9. The system will present an option to upload a new assignment file, edit the assignment due date, edit the description, or delete the assignment.
10. The professor will upload the new assignment file, update the assignment due date and/or update the description.
11. The professor will select the "Save changes" option.

Post-Conditions: The new assignment will be published to the course for all students to access.

Use Case UC008 Enter Grade
Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in. Professor must have an assignment published and students registered in the course.
Triggering Event: The professor has graded a student's assignment and wants to enter the grade for the student to view.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.

3. The system will present the class home page.
4. The professor will choose the edit class option.
5. The system will present the professor with the following options to edit: grades, class description, syllabus, assignments, and student roster.
6. The professor will choose the “grades” option.
7. The system will display all existing assignments plus the option to add a new assignment.
8. The professor will select the assignment that they would like to grade.
9. The system will present all the students in the class with a prompt to enter their grade for that assignment.
10. The professor will enter student grades as desired.
11. The professor will select the “save assignment grades” option.

Post-Conditions: The student grades will be updated and reflected in the students accounts.

Use Case UC009 View Grades
Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in. Professor must have an assignment published and students registered in the course.
Triggering Event: The professor has graded several students assignments and wants to view the grades.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.
3. The system will present the class home page.
4. The professor will choose the “Class Roster” option.
5. The system will present the professor with a list of all students enrolled in the course.
6. The professor will select the option to display student grades.
7. The system will display the assignment grades of each student.

Post-Conditions: The professor knows the progress of each student and can determine which students are excelling and which need help.

Use Case UC010 Add Module
Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in. Professor must have a course associated with their account.
Triggering Event: The professor has course materials that the students will use to learn.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.
3. The system will present the class home page.
4. The professor will choose the “Configure Modules” option.
5. The system will present the professor with all of the current modules plus an option to add, edit, or delete a module.
6. The professor will select the option to add a module.
7. The system will display a template for module description and module files.
8. The professor will populate the module description and upload relevant files.
9. The professor will select “Publish Module”.

Post-Conditions: The module will be accessible to students in the course.

Use Case UC011 Edit Module

Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in. Professor must have a course associated with their account.
Triggering Event: The professor has course materials that the students will use to learn.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.
3. The system will present the class home page.
4. The professor will choose the "Configure Modules" option.
5. The system will present the professor with all of the current modules plus an option to add, edit, or delete a module.
6. The professor will select the option to edit a module.
7. The system will display a template that has the current module description and module files.
8. The professor will change the module description or file uploads.
9. The professor will select "Publish Module".

Post-Conditions: The updated module will be accessible to students in the course.

Use Case UC012 Join Class
Actors: Student
Pre-Conditions: Student must have an account in the system and be logged in.
Triggering Event: The student wants to learn about an olympic sport.
Steps:

1. The student will navigate to their account dashboard.
2. The student will select the "Add Course" option.
3. The system will display a prompt to search the name of the professor or class that they would like to take.
4. The student will enter the course they would like to take.
5. The system will present the student with all of the courses that match their search.
6. The student will select "Add Course" for the class they want to take.

Post-Conditions: The new course and materials will be added to the students dashboard.

Use Case UC013 Check Student Grades
Actors: Student
Pre-Conditions: The student must have an account in the system and be logged in. The student must be signed up for at least one course.
Triggering Event: The student has submitted an assignment and wants to see how well they did.
Steps:

1. The student will navigate to their account dashboard.
2. The student will select the course that they would like to view their grades in.
3. The system will display the homepage of the course.
4. The student will select the option to view grades.
5. The system will present the student with all of the assignments and their corresponding grades.

Post-Conditions: The student will gain an understanding of how well they are doing in the class and will be able to adjust their studying to obtain their ideal grade.

Use Case UC014 View Assignment
Actors: Student
Pre-Conditions: The student must have an account in the system and be logged in. The student must be signed up for at least one course.
Triggering Event: The student has submitted an assignment and wants to see how well they did.

Steps:

1. The student will navigate to their account dashboard.
2. The student will select the course associated with the assignment of interest.
3. The system will display the homepage of the course.
4. The student will select the option to view assignments.
5. The system will present the student with all of the assignments and their corresponding grades.
6. The student will select the assignment of interest.
7. The system will display the assignment description, provide the assignments files, and provide an option to upload submission files.
8. The student will download the assignment file.

Post-Conditions: The student will view the assignment file and understand the scope of the assignment so that they can successfully complete the associated tasks.

Use Case UC015 Submit Assignment
Actors: Student
Pre-Conditions: The student must have an account in the system and be logged in. The student must be signed up for at least one course.
Triggering Event: The student has an open assignment they wish to complete
Steps:

1. The student will navigate to their account dashboard.
2. The student will select the course associated with the assignment of interest.
3. The system will display the homepage of the course.
4. The student will select the option to view assignments.
5. The system will present the student with all of the assignments and their corresponding grades.
6. The student will select the assignment of interest.
7. The system will display the assignment description, provide the assignments files, and provide an option to upload submission files.
8. The student will upload their submission file.
9. The student will select the “Submit” option.

Post-Conditions: The student submission file will be provided to the instructor for grading.

Use Case UC016 View Course Modules
Actors: Student
Pre-Conditions: The student must have an account in the system and be logged in. The student must be signed up for at least one course.
Triggering Event: The student wants to learn the contents of the course.
Steps:

1. The student will navigate to their account dashboard.
2. The student will select the course that they are interested in learning.
3. The system will display the homepage of the course.
4. The student will select the option to view modules.
5. The system will present the student with all of the modules.
6. The student will select the module they would like to learn.
7. The system will display the module description and associated files.
8. The student will download the desired files to learn the module contents.

Post-Conditions: The student will gain an understanding of that topic in the course.

Use Case UC017 Delete Account

Actors: Admin
Pre-Conditions: The admin must have an account in the system and be logged in. The user to be deleted must have an account.
Triggering Event: A user reaches out to an admin expressing that they forgot their password and want to delete their account.
Steps:

1. The admin will navigate to their account dashboard.
2. The admin will select “Change” for the “Users” option.
3. The system will display all the registered users in the website.
4. The admin will select the account of the user that they would like to delete, select the action “Delete Selected Members”, and select “Go”.
5. The system will display a page with the message “Are you sure” and “Yes, I’m Sure” or “No, Take Me Back”.
6. The admin will select “Yes, I’m Sure”.

Post-Conditions: The user account will be removed from the system.

Use Case UC018 Add Account
Actors: Admin
Pre-Conditions: The admin must have an account in the system and be logged in.
Triggering Event: A user reaches out to an admin expressing that they want to create an account and they are not tech savvy. They ask the admin to create an account for them.
Steps:

1. The admin will navigate to their account dashboard.
2. The admin will select the “Members” option.
3. The system will display all the registered users in the website and an option to add a member.
4. The admin will select the “Add Member” option.
5. The system will display a template to enter the user information.
6. The admin will enter the user's information and select “SAVE”.

Post-Conditions: The user account will be added to the system.

Use Case UC019 Remove student from class
Feature: Account
Actors: Admin
Pre-Conditions: The admin must have an account in the system and be logged in.
Triggering Event: A student has broken the rules or exhibited harmful behavior and needs to be removed from the class.
Steps:

1. The admin will navigate to their account dashboard.
2. The admin will select the course in which the student is enrolled .
3. The system will display the homepage of the course.
4. The admin will choose the “Class Roster” option.
5. The system will present the admin with a list of all students enrolled in the course.
6. The admin will select the “Edit Roster” option.
7. The system will give the option to remove students from the course.
8. The admin will select the student to be removed.
9. The admin will select “Save”.

Post-Conditions: The student account will be removed from the class.

Use Case UC020 Delete Assignment
Feature: Assignment

Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in. Professor must have an assignment published.
Triggering Event: The professor has published an assignment but wishes to delete it.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.
3. The system will present the class home page.
4. The professor will choose the edit class option.
5. The system will present the professor with the following options to edit: grades, class description, syllabus, assignments, and student roster.
6. The professor will choose the “assignments” option.
7. The system will display all existing assignments plus the option to add a new assignment.
8. The professor will select “Edit Assignment”.
9. The system will present an option to upload a new assignment file, edit the assignment due date, edit the description, or delete the assignment.
10. The professor will select the option to delete the assignment.

Post-Conditions: The assignment will no longer be accessible to the class.

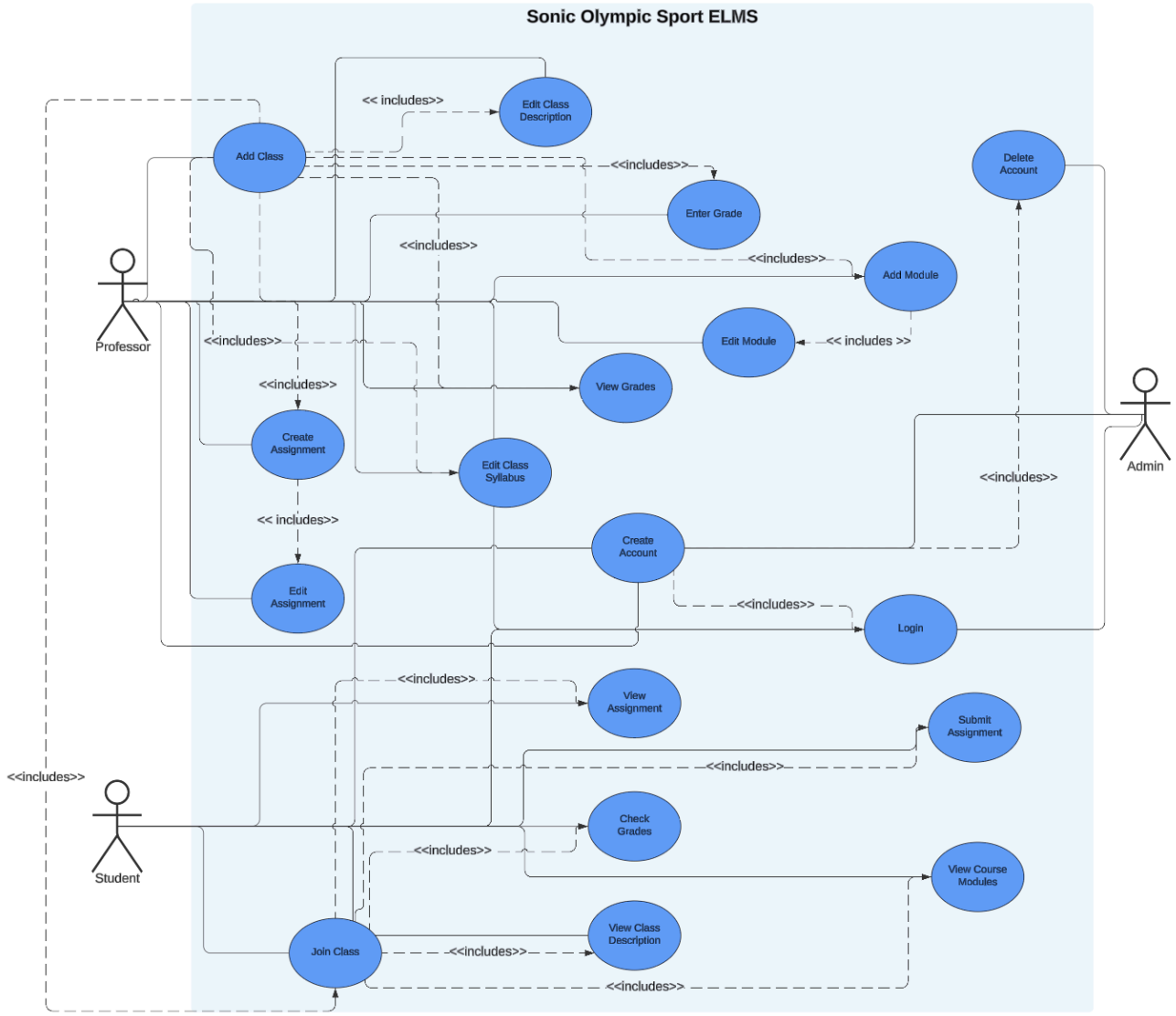
Use Case UC021 Delete Module
Feature: Module
Actors: Professor
Pre-Conditions: Professor must have an account in the system and be logged in. Professor must have a course associated with their account, and an existing module in the course.
Triggering Event: The professor has published a module but wishes to delete it.
Steps:

1. The professor will navigate to their account dashboard.
2. The professor will select the class that they would like to edit.
3. The system will present the class home page.
4. The professor will choose the “Configure Modules” option.
5. The system will present the professor with all of the current modules plus an option to add, edit, or delete a module.
6. The professor will select the option to delete a module.
7. The professor will select the module to delete, and confirm the change.

Post-Conditions: The updated module will no longer be accessible to the class.

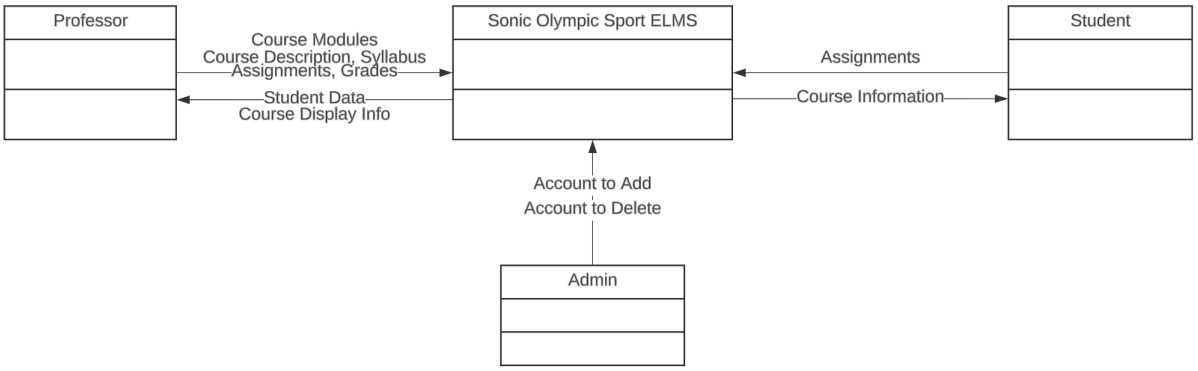
2.2. Use Case Model

OlympiLearn (SONIC) LMS Use Case Diagram:



2.3. Context Model

OlympiLearn (SONIC) LMS Context Diagram



2.4. Functional Features

User role/perspective	Feature Name	Feature brief description	Feature utility (importance) to the users (Low = 1, Medium = 2, High = 3)	Estimated Feature development difficulty or risk (Dificult or high risk = 1, Medium difficulty or risk = 2, Rather easy and low risk = 3)	Feature priority score (utility * difficulty)
Student/Admin/Instructor	Feature 1	The system must allow users to create an account with an email and password	3	2	6
Student/Admin/Instructor	Feature 2	The system must allow users to log into their account by entering their email and password	3	2	6
Student/Admin/Instructor	Feature 3	The system must allow users to reset their password by clicking "I forgot my password" and receive a link to reset their password to	3	1	3

		their entered and associated email			
Student/Admin/Instructor	Feature 4	The system must redirect the user to their home page after successfully logging into their account	1	3	3
Student/Admin/Instructor	Feature 5	The system must inform the user if they were unsuccessful logging into their account with the entered email and password combination	2	3	6
Student/Admin/Instructor	Feature 6	The system must log in the user and redirect them to the home page after account creation	2	3	6
Admin/Instructor	Feature 7	The system must allow the user to create a course	3	1	3
Admin/Instructor	Feature 8	The system must prompt the user to enter name of the course, description and add a syllabus when prompted with the ability to create a course	2	2	4
Instructor	Feature 9	The system must display a message to the user stating the request to add a course has been sent to an admin for approval	2	3	6
Admin	Feature 10	The system must display a message to the user stating the course has been successfully created	2	3	6
Admin	Feature 11	The system must send a notification to the user to approve a request for the addition of a course	2	1	2
Admin	Feature 12	The system must allow the user to accept or deny the request for the addition of a course	3	1	3
Instructor	Feature 13	The system must notify the user with a message stating if their request to add a course has been approved or denied	1	2	2

Admin/Instructor	Feature 14	The system must allow the user to manage and edit course information	2	1	2
Admin/Instructor	Feature 15	The system must associate the user with the courses they created	3	3	9
Instructor/Student	Feature 16	The system must display the list of courses associated with the user's account	3	3	9
Admin	Feature 17	The system must display all existing courses	3	3	9
Admin	Feature 18	The system must allow the user to delete a course from the list of available courses	2	2	4
Admin	Feature 19	The system must allow the user to assign an Instructor to a course	2	2	4
Admin	Feature 20	The system must allow the user to assign a Student to a course	2	2	4
Admin	Feature 21	The system must allow the user to delete a Student from a course	2	2	4
Instructor	Feature 22	The system must allow the user to view all Students enrolled in a course they instruct	3	3	9
Instructor	Feature 23	The system must allow the user to create a syllabus	2	2	4
Instructor	Feature 24	The system must allow the user to edit a syllabus	1	2	2
Instructor	Feature 25	The system must allow the user to post a syllabus	2	2	4
Instructor	Feature 26	The system must allow the user to create a course description	2	2	4
Instructor	Feature 27	The system must allow the user to edit a course description	1	2	2
Instructor	Feature	The system must allow the user to post a course	2	2	4

	28	description			
Instructor	Feature 29	The system must allow the user to delete module files	1	2	2
Instructor	Feature 30	The system must allow the user to edit module files	1	2	2
Instructor	Feature 31	The system must allow the user to post module files	2	2	4
Instructor	Feature 32	The system must allow the user to upload module files	2	2	4
Instructor	Feature 33	The system must allow the user to set the module file has Unpublished or Published	2	2	4
Instructor	Feature 34	The system must allow the user to view Unpublished and Published module files	2	2	4
Student	Feature 35	The system must not allow the user to view Unpublished module files for courses they have signed up for	2	2	4
Student	Feature 36	The system must allow the user to view Published module files for courses they have signed up for	2	2	4
Instructor	Feature 37	The system must allow the user to create an assignment for a course they manage	2	2	4
Instructor	Feature 38	The system must allow the user to edit an assignment for a course they manage	1	2	2
Instructor	Feature 39	The system must allow the user to post an assignment for a course they manage	2	2	4
Student	Feature 40	The system must have a gradebook with entries for every course the user is signed up for	3	1	3
Student/ Instructor	Feature 41	The system must be able to store the maximum points for an assignment	3	2	6

Instructor	Feature 42	The system must allow the user to assign a grade to an assignment for a respective student	3	2	6
Instructor	Feature 43	The system must allow the user to edit a grade to an assignment for a respective student	1	2	2
Instructor	Feature 44	The system must allow the user to delete a grade to an assignment for a respective student	1	2	2
Instructor	Feature 45	The system must allow the user to view grades for all assignments for every student registered in the course	3	1	3
Student	Feature 46	The user must be able to view a grade received for an assignment	3	3	9
Student/Instructor	Feature 47	The system shall be able to store total points for all assignments per student	2	2	4
Student/Instructor	Feature 48	The system shall be able to store total percentage of points for all assignments per student	2	2	4
Student	Feature 49	The system shall allow the user to join a course with an "add course" ability	3	2	6
Student	Feature 50	The system shall present a prompt that allows the user to search courses by name or professor's name	1	1	1
Student	Feature 51	The system shall allow the user to submit relevant files for an assignment for a course they are enrolled in	3	2	6
Student	Feature 52	The system shall allow the user to view submissions for an assignment for a course they are enrolled in	2	2	4
Admin	Feature 53	The system shall allow the user to add a user account	3	3	9
Admin	Feat	The system shall allow the	3	3	9

	ure 54	user to delete a user account			
Admin	Feature 55	The system shall allow the user to view an account	3	3	9

2.5. Trace Features Use Cases

Use Case name --> Feature name | v	Use case 001	UC002	UC003	UC004	UC005	UC006	UC007	UC008	UC009	UC010	UC011	UC012	UC013	UC014	UC015	UC016	UC017	UC018
Feature 1		x																
Feature 2	x																	
Feature 3	x																	
Feature 4	x																	
Feature 5	x																	
Feature 6		x																
Feature 7			x															
Feature 8			x															
Feature 9			x															
Feature 10			x															
Feature 11			x															
Feature 12			x															
Feature 13			x															
Feature 14			x															
Feature 15			x															
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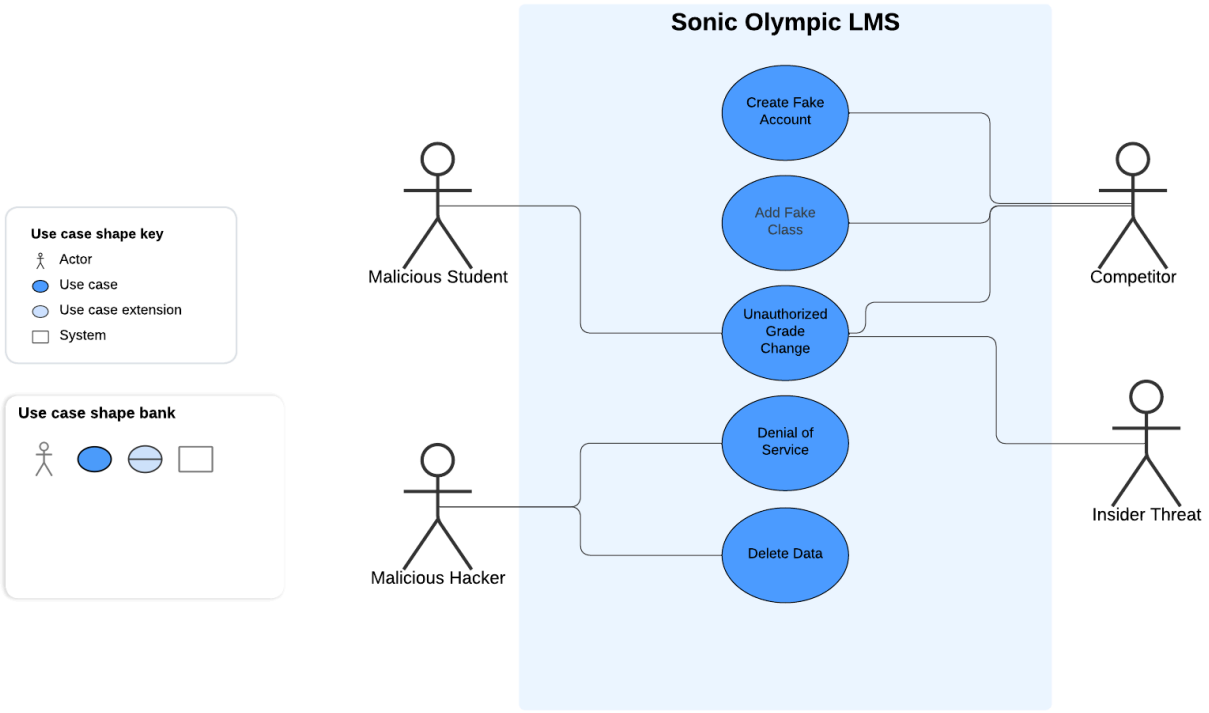
Feature 47													x				
Feature 48													x				
Feature 49												x					
Feature 50												x					
Feature 51															x		
Feature 52													x				
Feature 53																	x
Feature 54																x	
Feature 55																x	x

2.6. Abuse Cases

Five abuse cases have been identified:Create Fake Account, Add Fake Class, Unauthorized Grade Change, Denial of Service, and Delete Data.

Abuse Cases Overview



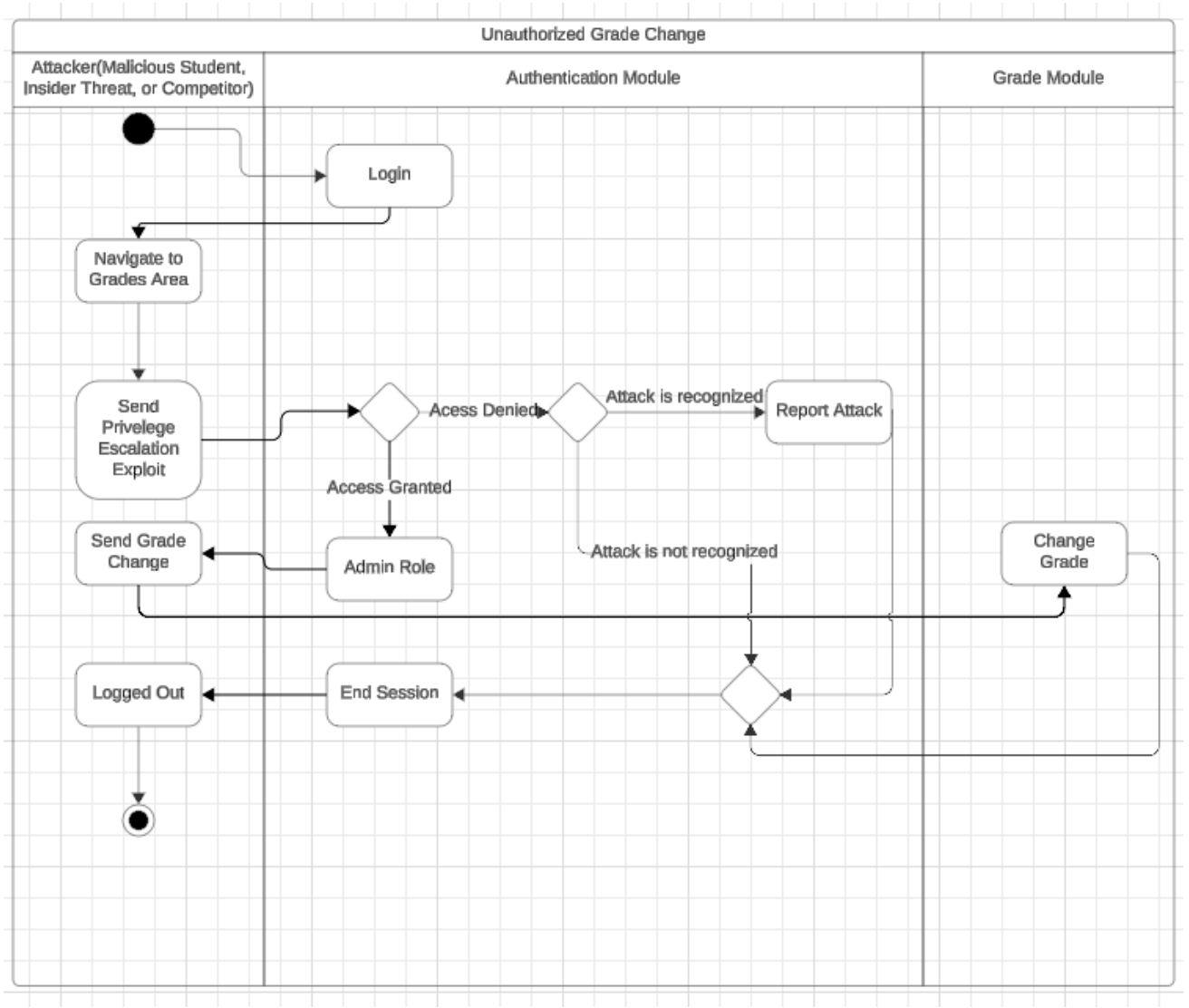
2.7. Security Scenarios and Security Scenario Abuse Case Traceability Matrix

Legend
X = Basic flow
X = Alternate flow
X = Exception flow

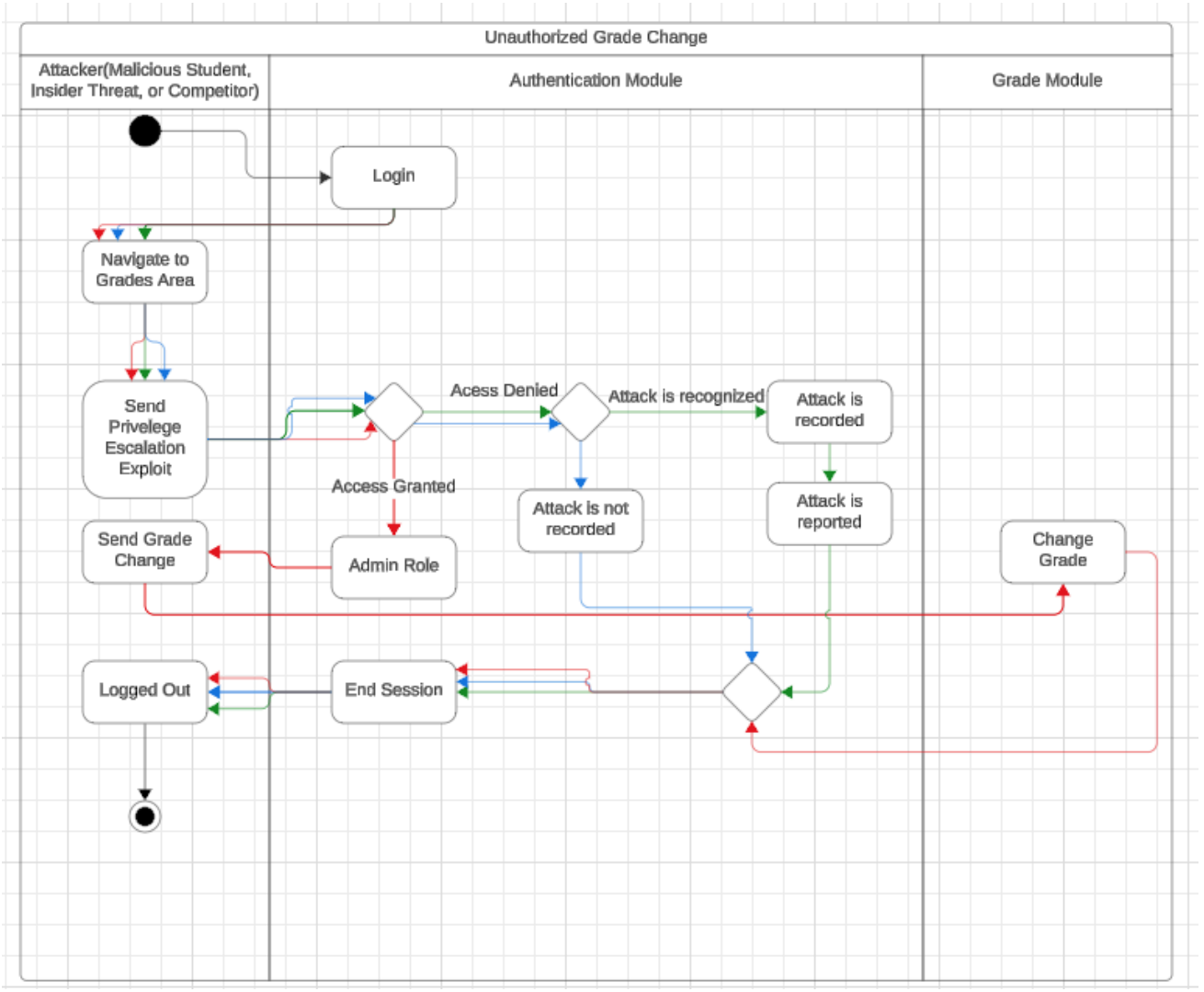
Abuse Case name --> Security scenario name | v	Create Fake Account	Add Fake Class	Unauthorized Grade Change	Denial of Service	Delete Data
System thwarts attack	X	X	X	X	X
System thwarts attack but does not record or report attack	X	X	X	X	X
Attacker adds illegitimate data to system	X	X			
Attacker changes data illegitimately to system			X		
Attacker removes data illegitimately from the system					X
Attacker denies service for other users on the system				X	

2.8. Critical Abuse Cases

Abuse Case UML Diagram: Unauthorized Grade Change



In this abuse case diagram, red arrows represent exception flow, blue for alternate flow and green arrows represent basic flow.



Abuse case textual: Delete Data

Name: Delete Data
Actors: Malicious Hacker
Trigger: Attacker intends to upload an exploit and logs in to the system
Preconditions: Attacker is able to upload a exploit
Postconditions:

- Success postconditions: The attack fails and no data was deleted
- Failure postconditions: The attack fails and there is an amount of data that was deleted

Basic flow

1. Attacker logs in to system
2. Attacker enumerate system services
3. Attacker logs in to system
4. Attacker sends custom exploit
5. System thwarts exploit
6. System records attack
7. System reports Attack

8. System ends session
9. Attacker logs off

Exception flow

5a.System provides admin privileges to the attacker

5b. Attacker sends delete data request

5c. System deletes data

Alternative Flow

6a. System does not records attack

2.9. Quality Attributes

Quality attribute	Quality Scenario name	Quality Scenario brief description	Quality Scenario utility (importance) to the users (Low = 1, Medium = 2, High = 3)	Estimated Quality Scenario development difficulty or risk (Difficult or high risk = 1, Medium difficulty or risk = 2, Rather easy and low risk = 3)	Scenario priority score (utility * difficulty)
Usability	Users should be able to navigate the software intuitively without extensive training.	Users can find and access sports courses and assignments easily, allowing for seamless engagement.	3	2	6
Performance	The software should load pages and assignments quickly to enhance user experience.	Users expect minimal loading times when accessing different sections of the coursework.	2	2	4
Accessibility	The software must be usable by individuals with disabilities.	The platform should conform to accessibility standards to support users with different	2	2	4

		needs.			
Scalability	The software should handle an increasing number of users and courses without performance degradation.	As the user base grows, the system must efficiently support more simultaneous users and additional sports courses.	2	2	4
Engagement	The software should be fun to use and engage the user.	The platform should incorporate badges, points, and leaderboards to motivate users to participate actively in quizzes and assignments.	3	2	6
Content Accuracy	The software must provide accurate and up-to-date information on Olympic sports.	Information about rules, history, and facts should be current and verified by experts to maintain credibility.	2	3	6
User Support	The software should offer help and resources for users encountering difficulties.	A support section must provide FAQs, contact support, and tutorials for common issues.	2	3	6

2.10. SEI Analysis

Top Three Highest Priority Scenarios

1. **Engagement**
    - **Source of stimulus**: Users seeking interactive learning experiences.

- **Stimulus**: Users engage with quizzes and assignments that include gamification.
- **Environment**: Online learning platform for Olympic sports.
- **Artifact**: Quizzes and assignments.
- **Response**: Users complete assignments and quizzes, motivated to learn more.
- **Response measure**: Increased completion rates and user satisfaction scores.

2. **Usability**
   - **Source of stimulus**: Users with varying levels of tech-savviness.
   - **Stimulus**: Users attempting to navigate the software for the first time.
   - **Environment**: Web-based educational platform.
   - **Artifact**: Course navigation interface.
   - **Response**: Users successfully locate and access desired sports courses and content.
   - **Response measure**: Reduction in navigation-related support requests and positive user feedback.
3. **Content Accuracy**
   - **Source of stimulus**: Users seeking reliable information on Olympic sports.
   - **Stimulus**: Users looking for factual content to complete assignments or quizzes.
   - **Environment**: Online coursework interface.
   - **Artifact**: Course content database.
   - **Response**: Users confidently utilize the content for their educational needs.
   - **Response measure**: Decrease in reported inaccuracies and positive feedback on content reliability

Individual Student Contribution

Requirements analysis

Maggie Trimpin	Filled in & prioritized quality attributes and scenarios for the Quality attributes tree. Create a few use cases. Task 1.10, Task 1.11, Task 1.13
Joshua Gomes	Submitted assignment 2. Helped Chris with an abuse case model and thought of some security scenarios derived. Made an excel sheet to document the bi-directional traces. Tasks 1.6, 1.12, 1.7, 1.8, 1.9.
Christiana Pettit	Established organization of work for requirements analysis tasks, developed use cases, use case UML diagram, product description and context UML diagram. Task 1.1, 1.2, 1.3, 1.13
Chris Rivera	Created most of the abuse use cases and brainstormed security scenarios based on the abuse cases. developed diagrams for abuse use cases based on security scenarios. Tasks 1.6, 1.12, 1.7, 1.8, 1.9.
Adith Maheshwari	Created a list of functional features and made an excel sheet to document the bi-directional traces. Task 1.4, 1.5