Software Requirements Specification

for

Training Master System

Group Number 4 - Dancing Monkey

Casey Teh Qi Shi	**1171103211**
Koh Shi Jing	**1171103504**
Wong Man Yi	**1171103378**

Date: 9th August 2020

Contents

1 Project Introduction

1.1 Team Members

Name	Functionality
Casey Teh Qi Shi	User Account Management
Koh Shi Jing	Feedback and Interaction Management Course Management
Wong Man Yi	Training Material Management

1.2 Problem Statement

Training Management System (TMS) has been widely used by many companies nowadays in order to improve the employees' skill set as well keep them up to date. However, many TMS in the market today neglected the interactivity features between users such as giving and receiving feedback related to the courses. This is crucial for the trainers or the administrator to improve their course. Interactivity features such as discussion boards are also necessary in each course for the users to discuss the problems they faced during the course as well as the answer for their problems. On top of that, some TMS nowadays do not provide a clear report in a timely manner which is important especially for the administrators to oversee the progress of the trainees and also the trainers.

1.3 Objective

In the process on developing this TMS, our team's objective for this system is to:

1) Provide a system where it enhances interaction between users
   As explained in the problem statement, interactions between users are essential factors to help users to know how to improve courses. Moreover, interactivity features can help with enhancing the quality of training.
2) Make users to improve their training progress with tracked records.
   With tracked records, users could have a clearer view of their training progress as well their performance in each course every month. The report acts as a motivation and a proof of their hard work. In this case, users that did not have satisfying performance would try to find their weakness from the report and improve accordingly.

2 System Overview

2.1 Description

The "Training Master System" will develop a Training Management System that helps companies to manage their resources and training events and will seek to develop trainees' skills in collaborative works while advancing their technical knowledge. The system firstly focuses on the interactivity between users and followed by a tracking system to keep track of the trainees' progress. In this system, the administrator will control the flow of the company in the software by assigning the trainer to the respective course, overviewing reports of trainees and trainers, as well as viewing feedback from other users. As a trainer, he/she will handle the course(s) that has been assigned by the administrator by going through the training process, providing course materials and rating trainees' performance. Meanwhile, trainees will take the training and upskilling to adapt new knowledge.

2.2 Actors

This TMS is intended to be made as a third-party system for companies which requires their employees to undergo training for a better insight of the internal operations of the company. In our system, the users can be mainly divided into 3 types, which are:

Actor	Use Cases
Administrator	User Account Management
	Feedback and Interaction Management
	Training Material Management
Trainer	User Account Management
	Feedback and Interaction Management
	Training Material Management
Trainee	User Account Management
	Feedback and Interaction Management
	Course Management

2.3 Assumptions and Dependencies

1. The users should have an active internet connection or have access to one to view the webpages.
2. The training heavily deals with the video and voice for training process, so the users should be able to initiate a video conference.
3. Since the application is a web based application there is a need for the internet browser, the users are assumed under the condition of supporting web browsing.
4. The search mechanism should be simple and responsive.
5. The user interface should be easy to use without any ambiguous functionality.
6. It is assumed that the user is familiar with an internet browser and also familiar with handling the keyboard and mouse.

2.4 Elicitation Techniques

2.4.1 Literature review

2.4.1.1 Overview of existing Training Management System

Going through the famous and suggested Training Management Systems(TMS) exists in the online market currently, eTraining is no longer a privilege among large companies and even small company are willing to invest in this kind of software that helps in scheduling, tracking and assessing training efforts to oversee employee training progress and certifications. In this section, we have reviewed three popular systems for online corporate training, which are Cognician, Trainual and GoToTraining. While paying attention to their features description in the next section, we will first briefly overview each of the systems.

First and foremost, Cognician is a self-paced training software that helps its users to develop a reflective mindset which builds employees' capability from the mental side. Cognician focus the training in three ways, including efficiency, performance, and culture. It has supported various kinds of platforms and allowed training in person, online, webinars and adopted documentation. The main selling points contain the breakdown of complex client-side IP into discrete chunks for better performance, implement concepts into memorable and actionable frameworks, create questions for better understanding and turn concepts into action, as well as build personal experience around their context.

Besides, Trainual is a software that mainly supports small businesses with 1 to 100 people for their training manuals, playbooks, standard operating procedures, handbooks, how-to's, or whatever else you want to call the magic and operational know-how that is—how you do what you do. Trainual promotes itself as an easy to use software with necessary tools equipped without neglecting the fun throughout the training process. Just like all other training systems will do, Trainual has included a user-friendly interface to create new trainings, assigns to people and also some quizzes to test the trainees' understanding of the course.

Finally, GoToTraining provides the service in both virtual and hybrid training ways that create engaging and effective training sessions. Trainees' knowledge measurement are allowed before and after course whereas engagement is encouraged such as polls, collaboratives, and breaking sessions etc. Unlike Trainual, GoToTraining supports tens of millions of daily users, over a billion customer interactions and twenty billion voice minutes per year. It is mainly concentrated on its flexibility, dispersing, mobilily, efficiency and productivity towards building a platform for small to medium business all around the world.

2.4.1.2 Features Review of Existing Training Management System

Cognician

Tracking features

1. The trainee may set their goal and track their progress to achieve their goals.
2. The trainee is able to track their progress and understanding by the scoring system, skill testing or individualized assessments.

Interaction features

1. The user is able to interact with each other through collaboration of assessment assigned by the trainer inside each course.
2. The user can interact with their mentor or coach that has been assigned by the system.

Management and Monitoring features

1. The course update is managed inside a portal which gives instruction and information for the trainee to follow up every important message from the trainer.
2. The life or business coaching is available for trainees.

Trainual

Training & eLearning

1. Trainual contains a built in Learning Management System which provides the functions of content creation, content delivery and tracking as well as content storage and management.
2. Similar to Cognician, Trainual has the Manager and Learner Portals for an easier management of information transmission and material management.
3. The trainees' understanding of the course can be checked and viewed via assessments and practice throughout the course.
4. Besides, gamification is added to encourage the involvement of the trainees instead of just providing the theoretical knowledge but implementing the theory inside the game.

Recruiting and Onboarding

1. A special point in the Trainual system is that it has included the onboarding feature which helps the process of integrating new employees with a company and its culture.
2. The business rule can be added and managed by the administrator.

Task Tracking

1. The trainer and trainee will receive activity feed to get the newest information and announcement of the company.

2. The users will be informed of the process change if there is any.

GoToTraining

Training & eLearning

1. GoToTraining has its focus on the content delivery and tracking towards the trainees.
2. Meanwhile, the system also helps external users(customers) to understand the use of the product.
3. Just like Cognician and Trainual, GoToTraining has its course related update through Manager Portals.
4. The trainer can manage the content storage for better resource management.

2.4.1.3 Improvement of existing system

To further improve the existing training management system, we have put our attention to the administrator's control of the system which gets little focus from the systems we have reviewed. Taking the example of Cognician that has mainly prioritized personal learning and development experience, we have taken the administrators' duty into our concern.

First of all, the feature that should be added to the system is the report generation of the trainees and trainers for administrators to determine and observe their performance going through the training so that he/she could have understood the effectiveness of the training process and analyse the resource allocation. Besides, a report is important to help in promotions of the employee by tracking their performance through a clear stated report and assisting those with poor performance.

A system will not stay forever, it needs improvement and development. In order to improve and make things work better way round, a feedback system to the administrator should be provided. The feedback stands a very dominant role in future development of the system and training itself so understanding the needs and suggestions from the users will be a good way of improving the process. From the feedback system, the administrator may understand how well a trainer works by the trainees' experience and response which cannot be analysed from a report. This is a good way to understand the trainer assigned is suitable for his/her position or course from the trainees' reaction and feedback sent.

Lastly, we can observe that most of the training management systems provide a portal to announce the updates of a course and the materials needed. However, it is possible that the trainees will need help undergoing the training that may need discussion. A discussion board feature should have been added that allowed trainers, trainees and administrators to interact with each other to solve problems and misunderstandings of the course. From the discussions, the administrator may notice the mastery of the trainees in certain courses, that is, if most of the trainees meet the same problem, that could be a high chance of the trainer's side issue which should have been taken into concern.

2.4.1.4 Reference Links

Cognician: https://www.cognician.com/
Trainual: http://trainual.com/
GoToTraing: https://www.gotomeeting.com/training

2.4.2 User Story

- As a manager of a training company, I want to be able to create, edit, and track details of my training course, so that I can effectively obtain the outcome and progress to know what I should do/alter for my next course for a better result.

- As an employee, I want a discussion board feature, so that I can get to know what problems or issues others faced at each stage and how they overcome it.

- As an employee, I want to keep track of my performance or progress so that I can improve myself and have a clear mind on what I have done.

- As a HR specialist, I want to view all current and past trainees' feedback, so that I can see recurring problems that may be fixed.

- As a training manager, I want to generate an overview of trainees, So that I can monitor their process quickly.

- As a trainer, I want to have a system that can track the progress of the trainees so that I can make sure the trainees have read all the training course materials and done the work provided in a given time period.

- As an admin, I want to have the ability to manage trainees and their materials and manage trainers, so that I can handle any issue that occurs.

- As a trainee, I want to have an user-friendly interface that is responsive in both computer and mobile phone, so that I can access the Training Management System anywhere.

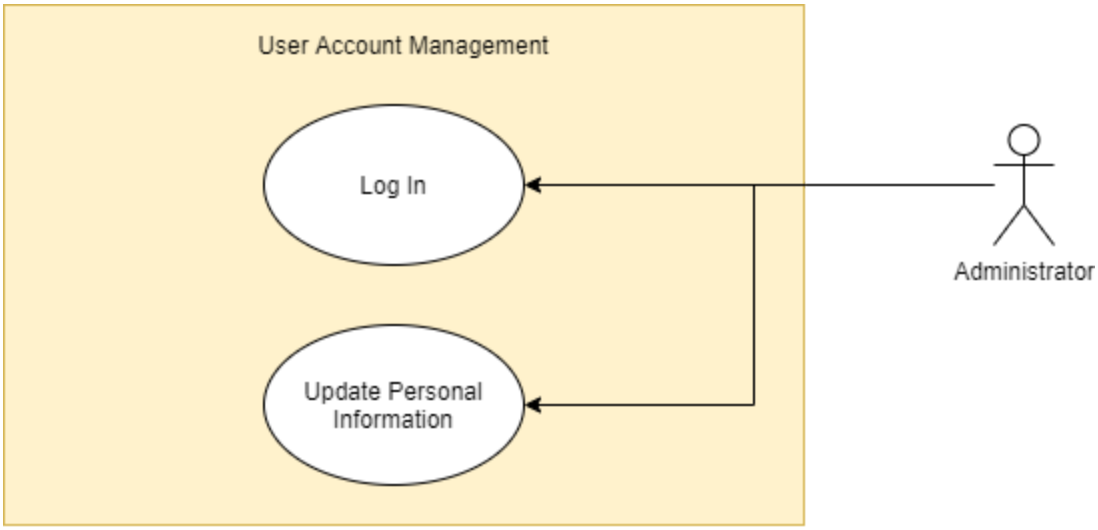
3 Basic Requirements

3.1 Actors

3.1.1 Administrator

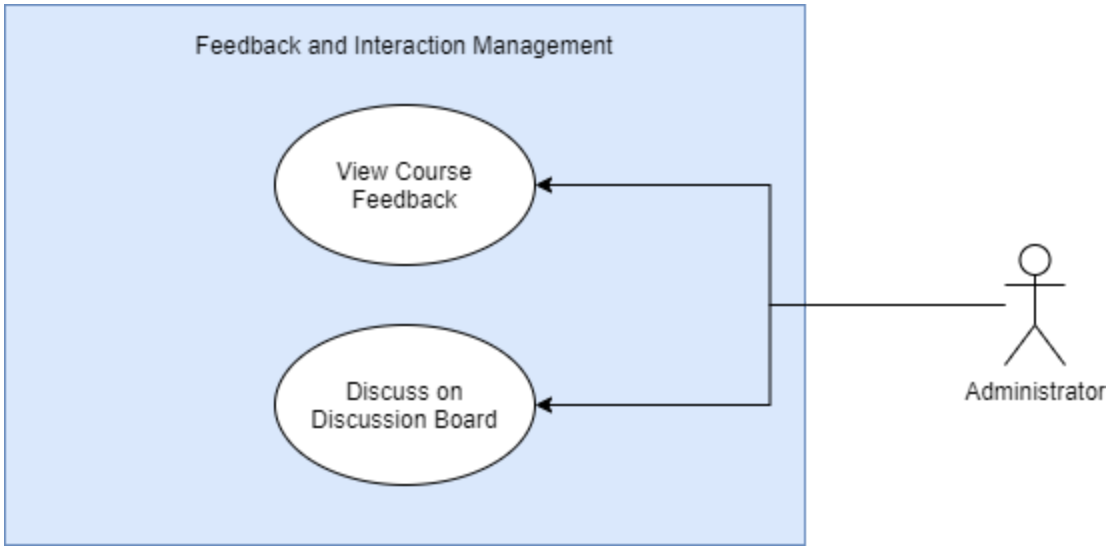
Administrator is the person who has the privileges to control the flow of the company operations. In the system, the administrator will be the HR manager, CEO, or any other similar position leader that will handle the internal operations of the company. The admin has the abilities to create, edit and delete courses for training that helps to organize the training courses centrally. The main duties of the admin include courses creation and edition. A centralized course management system is under the control of the administrator to make sure things go smoothly and flawless. Meanwhile, the administrator will assign the trainer depending on the course. One trainer may be teaching more than one training course. Also, The administrator can edit the users and trainees under one course if there is a need to do so. Feedback from the courses will be sent to the admin for a better handling decision. A report will be generated for trainees' and trainers' performance upon the request from the admin.

3.1.1.1 User Account Management



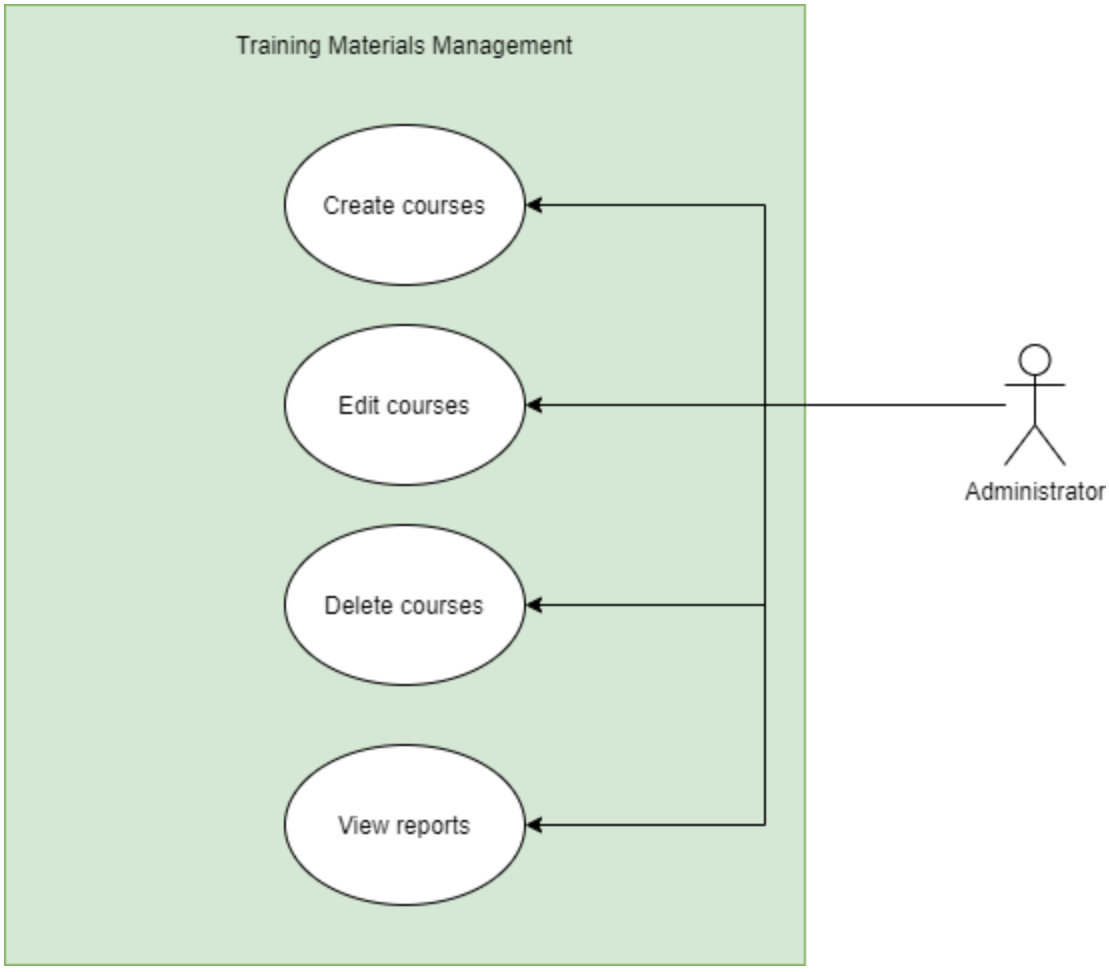
In our system, the administrator's account will be provided once the company signs up to use our service. The administrator can log on with a pre-set account and change their password and setting after this. Like all other users will do, the administrator will be able to update their personal information after log in.

3.1.1.2 Feedback and Interaction Management



In the feedback and Interaction section, administrators may view the feedback sent from the trainees regarding each course. They are also free to join the discussion board equipped under each course to help any trainees while interacting with them.

3.1.1.3 Training Material Management

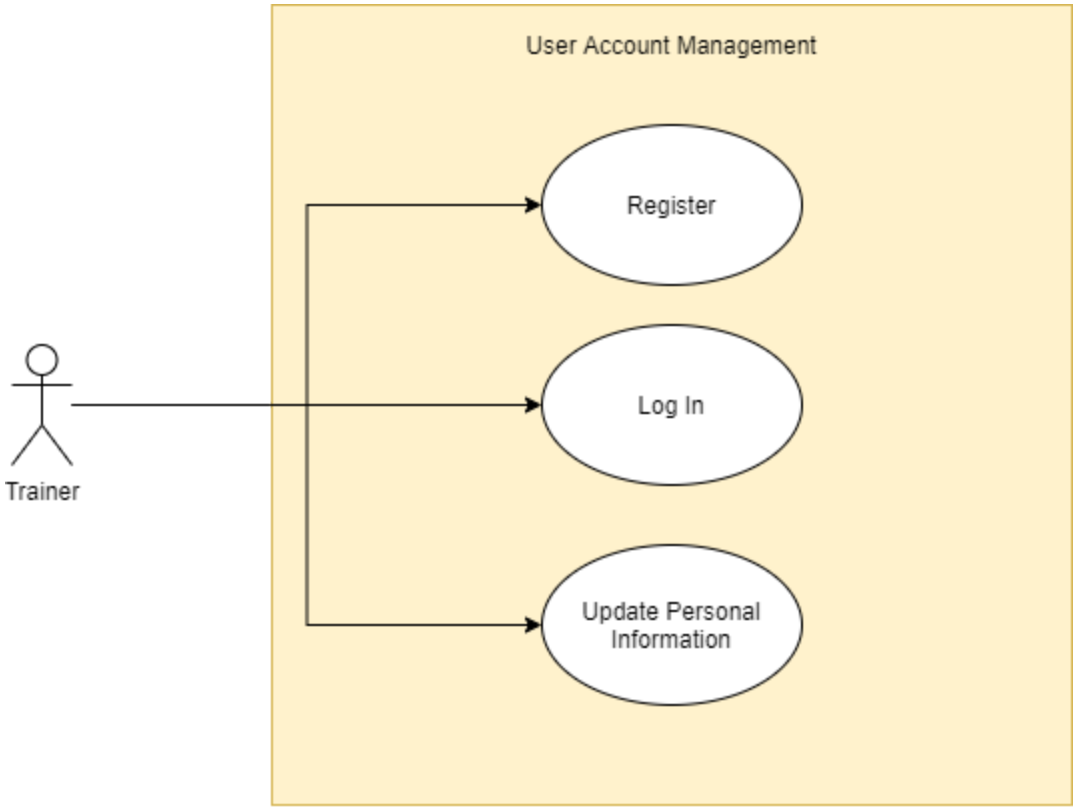


As stated previously, administrators are on charge to create, edit, and delete courses for any training arrangement. Meanwhile, reports can be generated upon request to view the overall performance of trainees and trainers.

3.1.2 Trainer

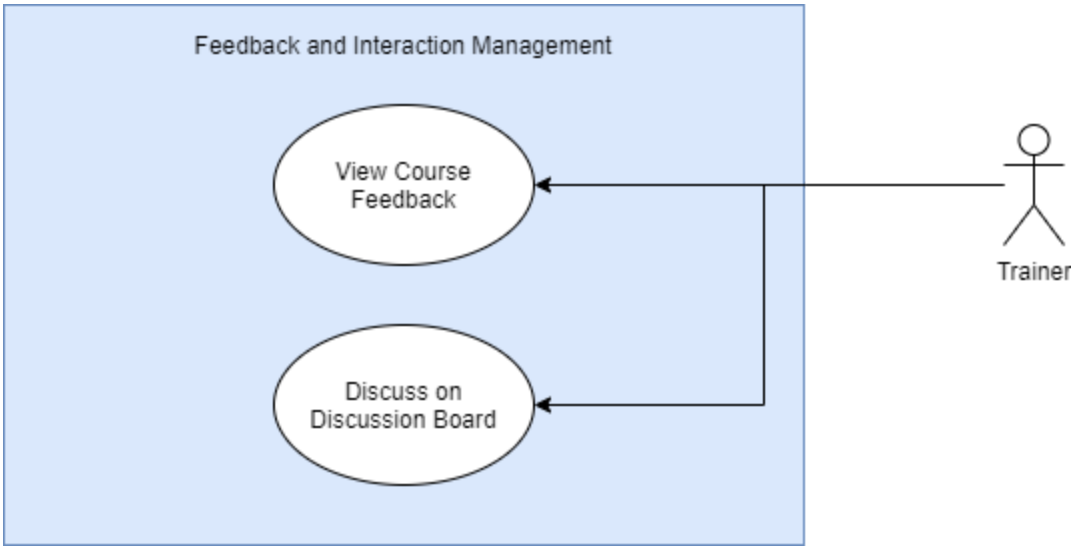
A trainer is the person who provides the training process to a group of trainees enrolled under his/her course. Trainer will be responsible for the course resources and training procedure by uploading the materials for training and extra documents such as videos, images, text files, and slides etc. Besides, the trainer can view the performance of the trainees by request for a report from the system. The trainer can make quizzes to determine the trainees' understanding and provide feedback towards the trainees.

3.1.2.1 User Account Management



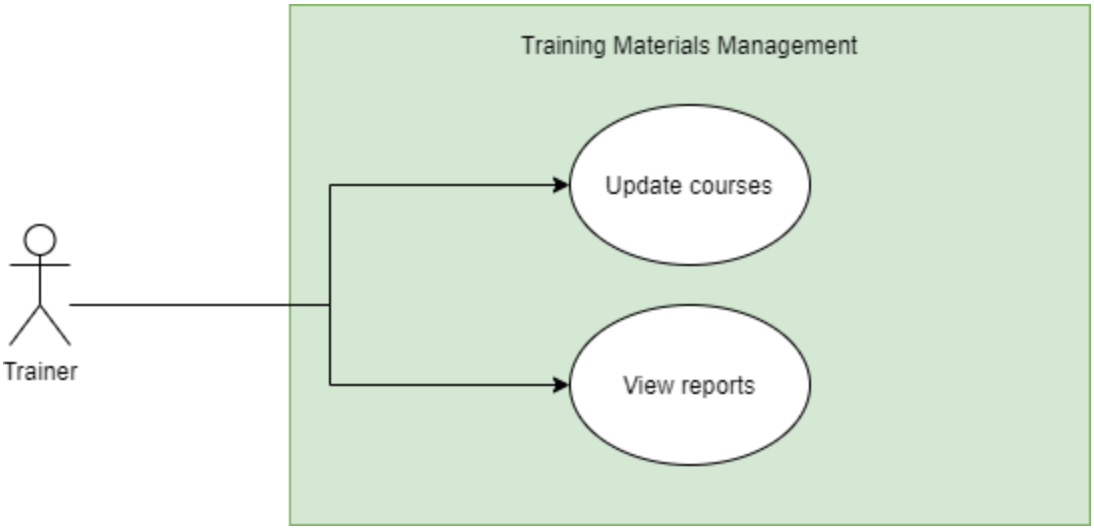
A trainer will create their own accounts and have the ability to update their personal details.

3.1.2.2 Feedback and Interaction Management



A trainer is managed to view the course feedback under his/her own course for a better improvement. Also, they are provided the chance to interact and help the trainees through discussion boards.

3.1.2.3 Training Material Management

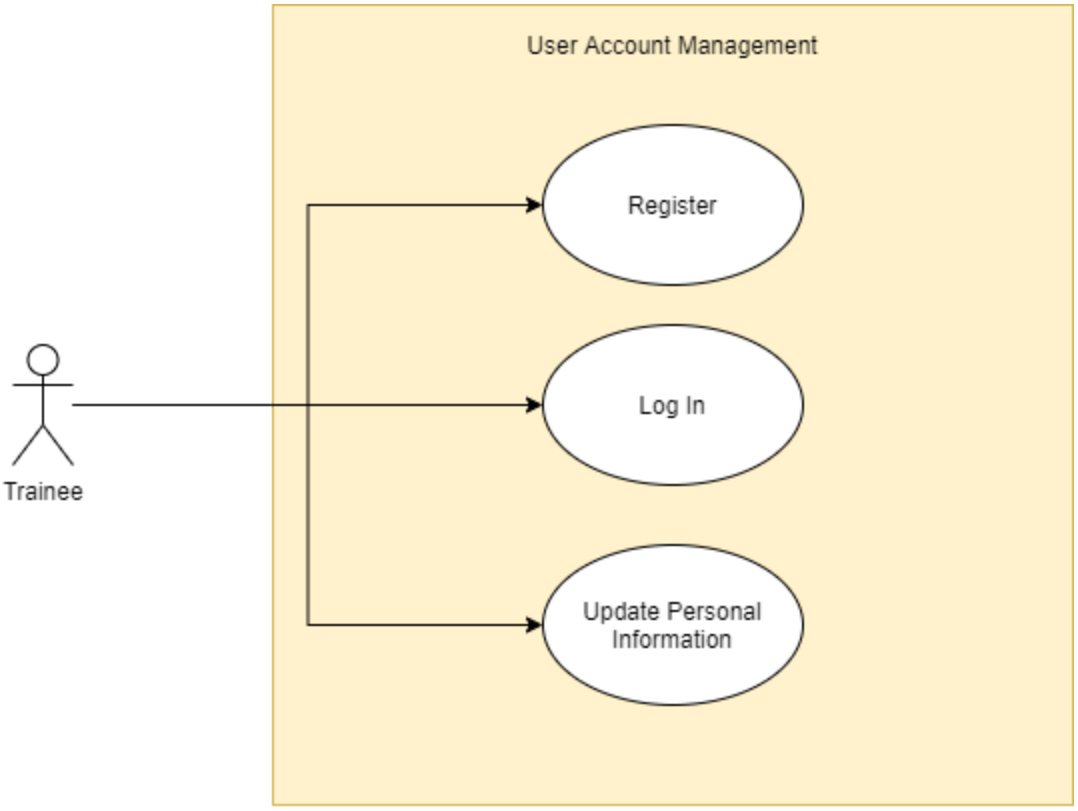


Under material management, the trainer is allowed to update courses by uploading materials for the course he/she will handle. Throughout the course, the reports will be created for understanding how well the trainees do.

3.1.3 Trainee

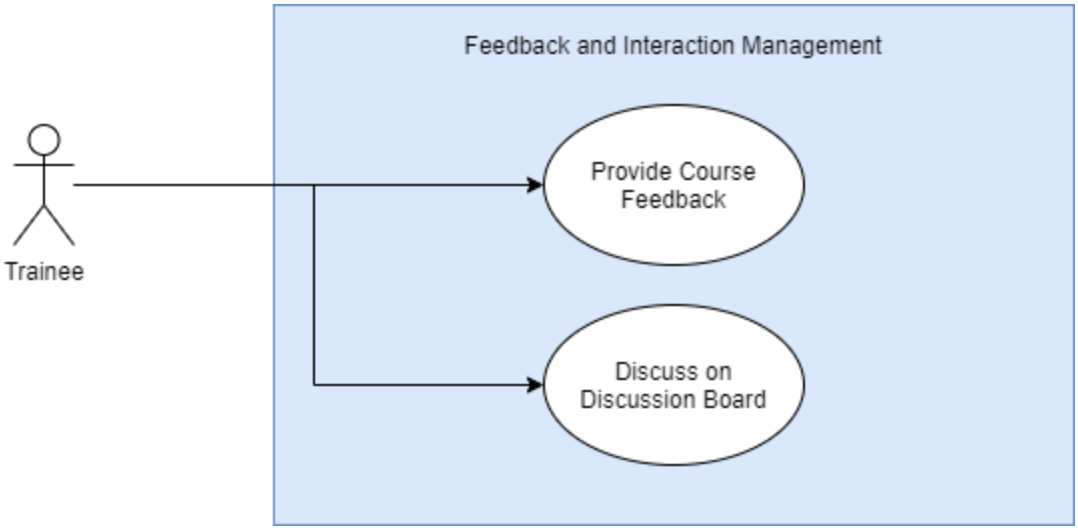
Trainee is the third type user in our system who will be training. A trainee can register and log into the system and perform various tasks such as editing the personal information, enrolling or dropping the course and discussing the problems faced in the discussion board provided. If there is any issue occurring during the training, or while using the software, he/she can send feedback to the trainer or administrator.

3.1.3.1 User Account Management



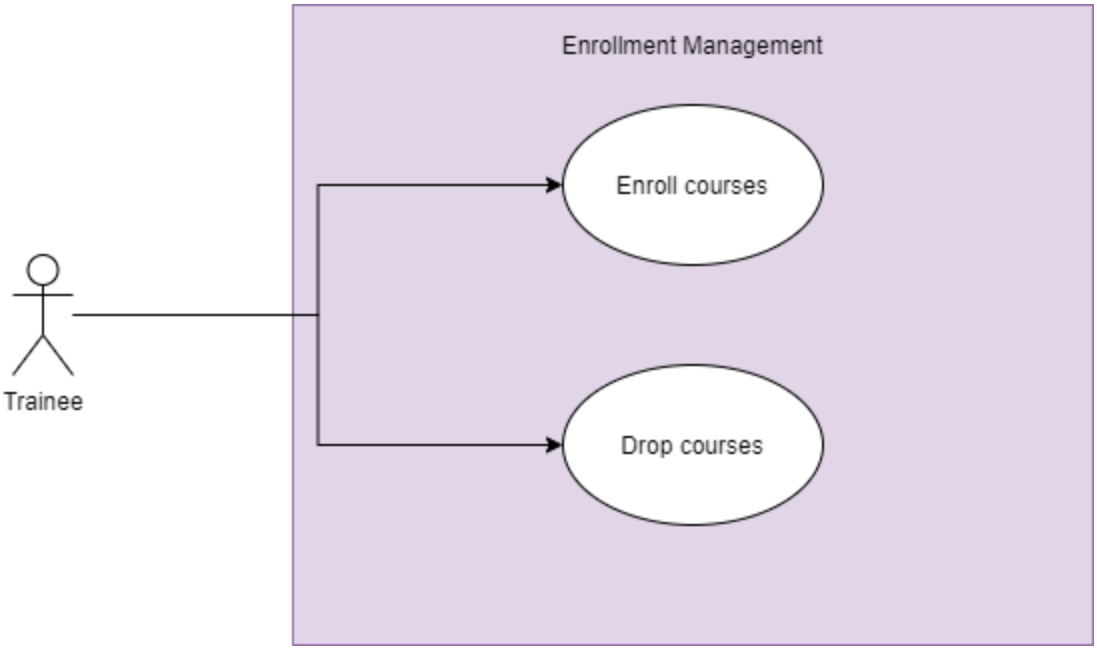
The trainees are creating and using their own account, just like a trainer, that may update their personal information.

3.1.3.2 Feedback and Interaction Management



As a trainee, he/she may provide any feedback regarding the course, or trainer, that will help to improve the resources assigned. If the trainers meet any question or problem where they need help from others,they may utilize the discussion forum tools.

3.1.3.3 Enrollment Management



A trainee may enroll and drop courses depending on their needs.

3.2 Functional Requirements

3.2.1 User Account Management

Requirement 1: The system should prevent user duplication by checking the user's email.

Requirement 2: The system should provide users with the ability to alter their personal information on their user profile.

Requirement 3: The system may provide users with the ability to change the visibility of their personal information.

3.2.2 Feedback and Interaction Management

Requirement 4: The system should be able to get feedback from the trainees to the trainers and from the users to the administrators.

Requirement 5: The system should provide a discussion board for users to interact and discuss about the course.

3.2.3 Course Management

Requirement 6: The system shall provide trainees with the ability to enroll and drop courses.

3.2.4 Training Materials Management

Requirement 7: The system shall allow trainers to create, update and delete courses and the course details.

Requirement 8: The system should generate an overview report of the trainees and trainer's progress of the course.

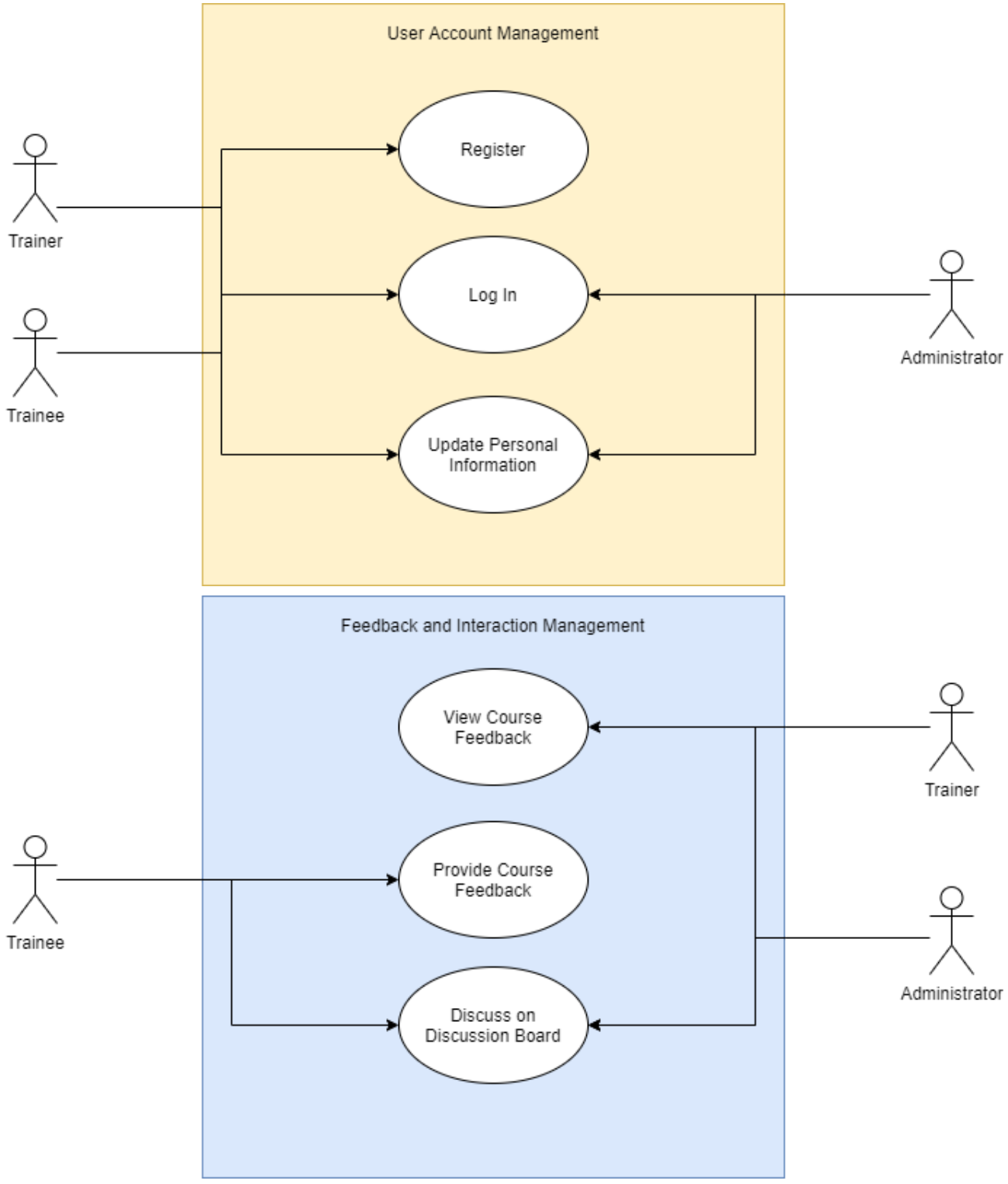
3.3 Non-Functional Requirements

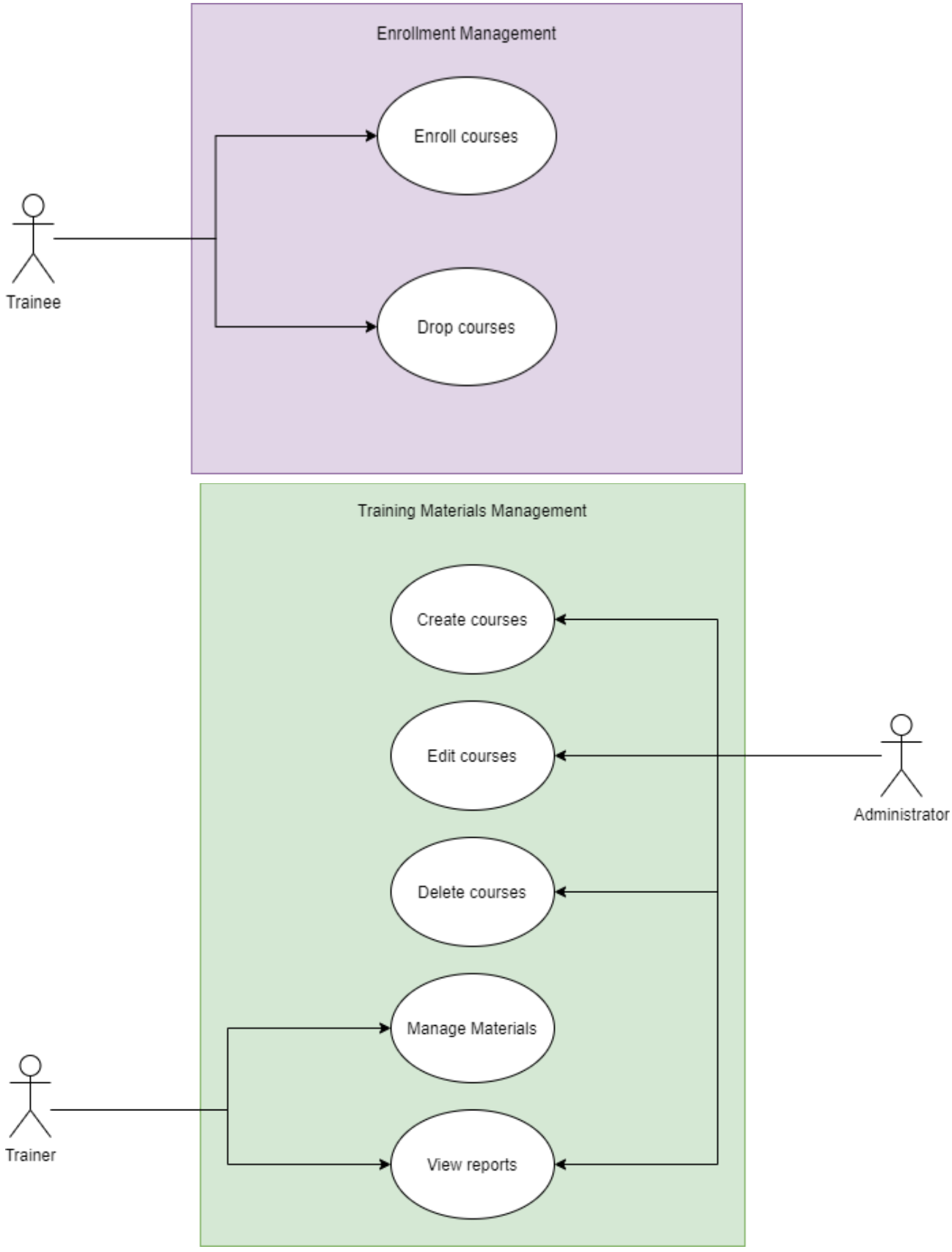
Requirement 1: The system should use a short and efficient response time of the system while getting required data from the database to respond to user requests.

Requirement 2: The interface of the system should be responsive across all types of platforms and devices

4 Behavioural Requirements

4.1 Use Case Diagram




Enrollment Management
Enroll courses
Drop courses
Trainee
Training Materials Management
Create courses
Edit courses
Delete courses
Manage Materials
View reports
Administrator
Trainer

4.2 Use Case Description Table

Use Case ID/Name	**UC1/ Register**
Description	Trainers/Trainees are able to register in to TMS
Precondition	User does not exist in database
Post Condition	User is registered in the TMS
Main Flow	1. User enters needed information 2. System checks input type 3. User submits 4. System checks if user already exists 5. User is registered
Alternate Flow	2a. User's input type is not valid 4a. User account exists in database
Exception Flow	Display error message

Use Case ID/Name	**UC2/ Log In**
Description	Users are able to log in to TMS
Precondition	User must exist in the database
Post Condition	User is logged in
Main Flow	1. User enters credentials 2. System verifies credentials 3. User is logged in
Alternate Flow	2a. User enters incorrect credentials
Exception Flow	Display error message

Use Case ID/Name	**UC3/Update Personal Information**
Description	Admins/Trainers/Trainees are able to update personal details on profile page
Precondition	Changes on personal information must exist
Post Condition	Personal information is updated
Main Flow	1. User changes details 2. System check input type 3. User confirms changes 3. System updates information
Alternate Flow	2a. User enters invalid input type
Exception Flow	Display error message

Use Case ID/Name	**UC4/View Course Feedback**
Description	Admins/Trainers are able to view feedback on course
Precondition	
Post Condition	User views course feedbacks
Main Flow	1. User request to view course feedback 2. System shows all course feedback 3. User views course feedback
Alternate Flow	
Exception Flow	

Use Case ID/Name	**UC5/Provide Course Feedback**
Description	Trainers are able to provide feedback on enrolled course
Precondition	User must be enrolled to the course
Post Condition	User submits course feedback
Main Flow	1. User types in required details 2. System checks input type 3. User submits feedback
Alternate Flow	1a. User does not enter any details 2a. User enters invalid type
Exception Flow	Display error message

Use Case ID/Name	**UC6/Discuss on Discussion Board**
Description	Users are able to discuss on the discussion board section
Precondition	
Post Condition	User submits discussion
Main Flow	1. User submits discussion 2. System stores the submission details and displays it on the board
Alternate Flow	
Exception Flow	

Use Case ID/Name	**UC7/Enroll Courses**
Description	Trainees are able to enroll into courses
Precondition	User is not already enrolled in the course
Post Condition	User is enrolled into the course
Main Flow	1. User searches the course name 2. System display related course 3. User selects course 4. System display course details 5. User enrolls the course 6. System confirms the enrollment and enrolls the user into database
Alternate Flow	
Exception Flow	

Use Case ID/Name	**UC8/Drop Courses**
Description	Trainees are able to drop courses
Precondition	User is enrolled in the course they want to drop
Post Condition	User is dropped out of the course
Main Flow	1. User selects the course to view details 2. System displays course details 3. User drops course 4. System pops up a confirmation message. 5. User confirms drop action. 6. System deletes the user details from the enrolled list.
Alternate Flow	
Exception Flow	

Use Case ID/Name	**UC9/Create Courses**
Description	Admins are able to create courses
Precondition	Course does not exist
Post Condition	User creates a course
Main Flow	1. User enters course details 2. System verify input type 3. User submits course details 4. System creates a course
Alternate Flow	2a. Invalid input type
Exception Flow	Display error message

Use Case ID/Name	**UC10/Edit Courses**
Description	Admins are able to edit courses
Precondition	Course exists.
Post Condition	Course update saved
Main Flow	1. User selects the course to be edited. 2. System displays the course information. 3. User enters new information for updating and submitting. 4. System stores new updates.
Alternate Flow	
Exception Flow	

Use Case ID/Name	**UC11/Delete Courses**
Description	Admins are able to delete courses
Precondition	Course exists
Post Condition	Course is deleted
Main Flow	1. User selects the course to delete 2. System displays course details 3. User deletes course 4. System pops up a confirmation message. 5. User confirms deletion. 6. System deletes course
Alternate Flow	
Exception Flow	

Use Case ID/Name	**UC12/Manage Materials**
Description	Trainers are able to manage courses' materials
Precondition	Course exists
Post Condition	New materials uploaded
Main Flow	1. User selects the course 2. System displays the details of the course. 3. User enters upload materials mode. 4. System provides feature for uploading 5. User uploads the materials. 6. System saves the materials.
Alternate Flow	3a. User enters edit materials mode. 3b. User enters delete materials mode. 4a. System receives edition. 4b. System delete materials
Exception Flow	

Use Case ID/Name	**UC13/View Reports**
Description	Trainers and admins are able to view generated reports
Precondition	
Post Condition	
Main Flow	1. User selects to view reports. 2. System generates the reports for viewing
Alternate Flow	
Exception Flow	

5 Specific Requirements

5.1 Process Model

The process model used for this TMS will be Evolutionary Prototyping. This process model will include the process of communicating among developers, planning the software, modeling and designing, prototyping, deployment and getting feedback. This cycle of process will be repeating, with functionalities and improvements along the way until the final product is developed. There will be four iterations developing this TMS.

For the first iteration, we will develop the authentication and user account functionalities as the start of the development where trainers and trainees will be able to register and all users will be able to log in to the system.

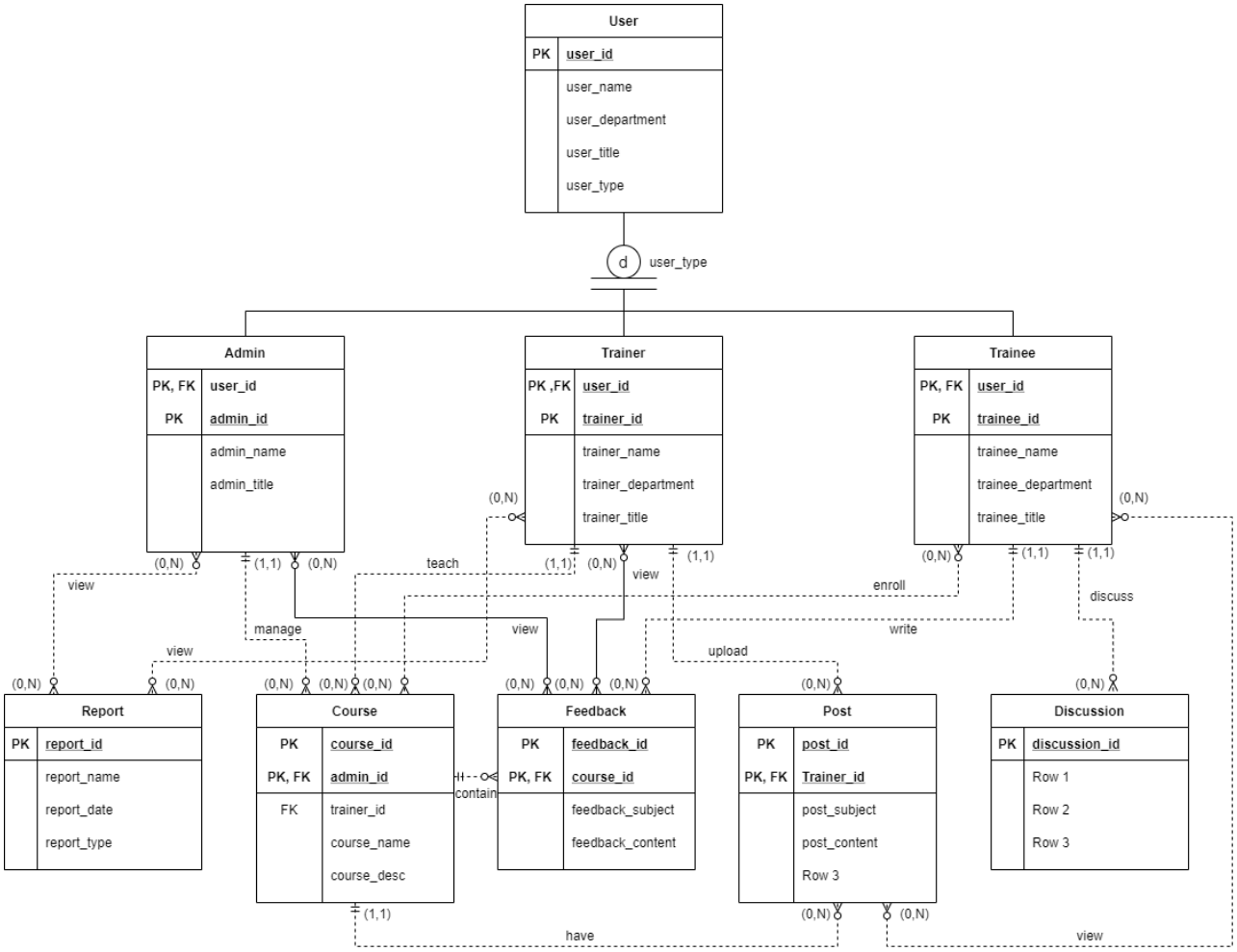
As for the second iteration, we will improve the system to allow administrators to manage courses which includes, creating, editing and deleting courses. We will also include the functionality to let administrators to assign a trainer to each course.

After the second iteration, there will be courses which are created where in the third iteration, we will implement functionalities of course enrollments for trainees to enroll into or drop out of.

Lastly, we will implement feedback and interaction management between the end users of the system.

Using the Evolutionary Prototyping process model will allow us to develop the software in an organized manner where each module will be added one by one in each iteration.

5.2 Conceptual ERDiagrams

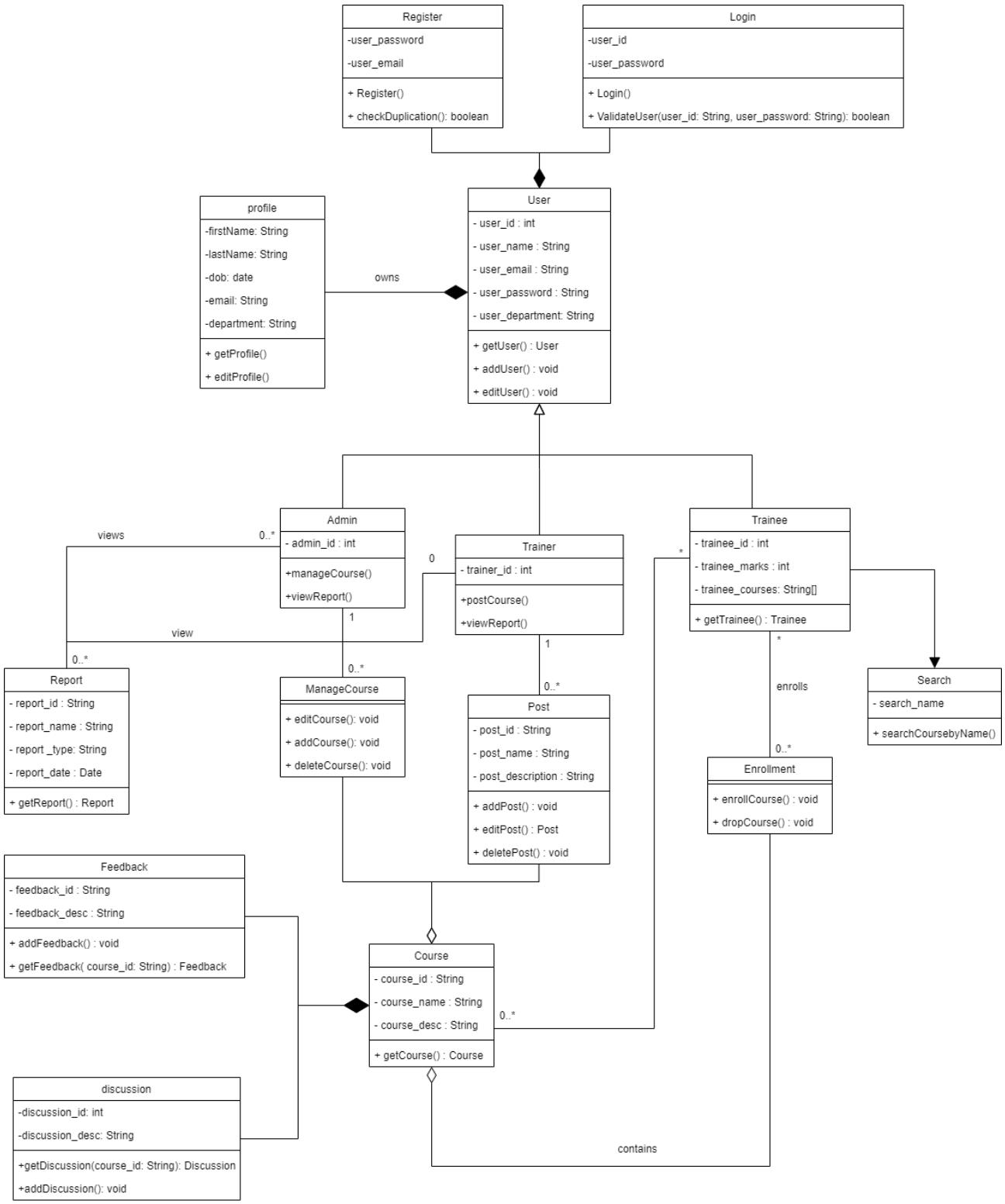


5.3 Business Rules

- An administrator can create many courses. A course can only be created by one administrator.
- An administrator can manage many courses. A course can only be managed by one administrator.
- An administrator can view many reports. A report can be viewed by many administrators.
- An administrator can view many course feedbacks. A course feedback can be viewed by many administrators.
- A trainer can teach many courses. A course can only be taught by a trainer.
- A trainer can manage many course posts. A course post can only be managed by the course trainer.
- A trainer can view many course feedbacks. A course feedback can be viewed by the course trainer.

- A trainer can view many reports. A report can be viewed by the course trainer.
- A trainee can enroll in many courses. A course can be enrolled by many trainees.
- A trainee can give many course feedbacks. A course feedback can only be given by a trainee.
- A trainee can view many course posts. A course post can be viewed by many trainees.
- A user can post many discussions. A discussion can only be posted by a user.

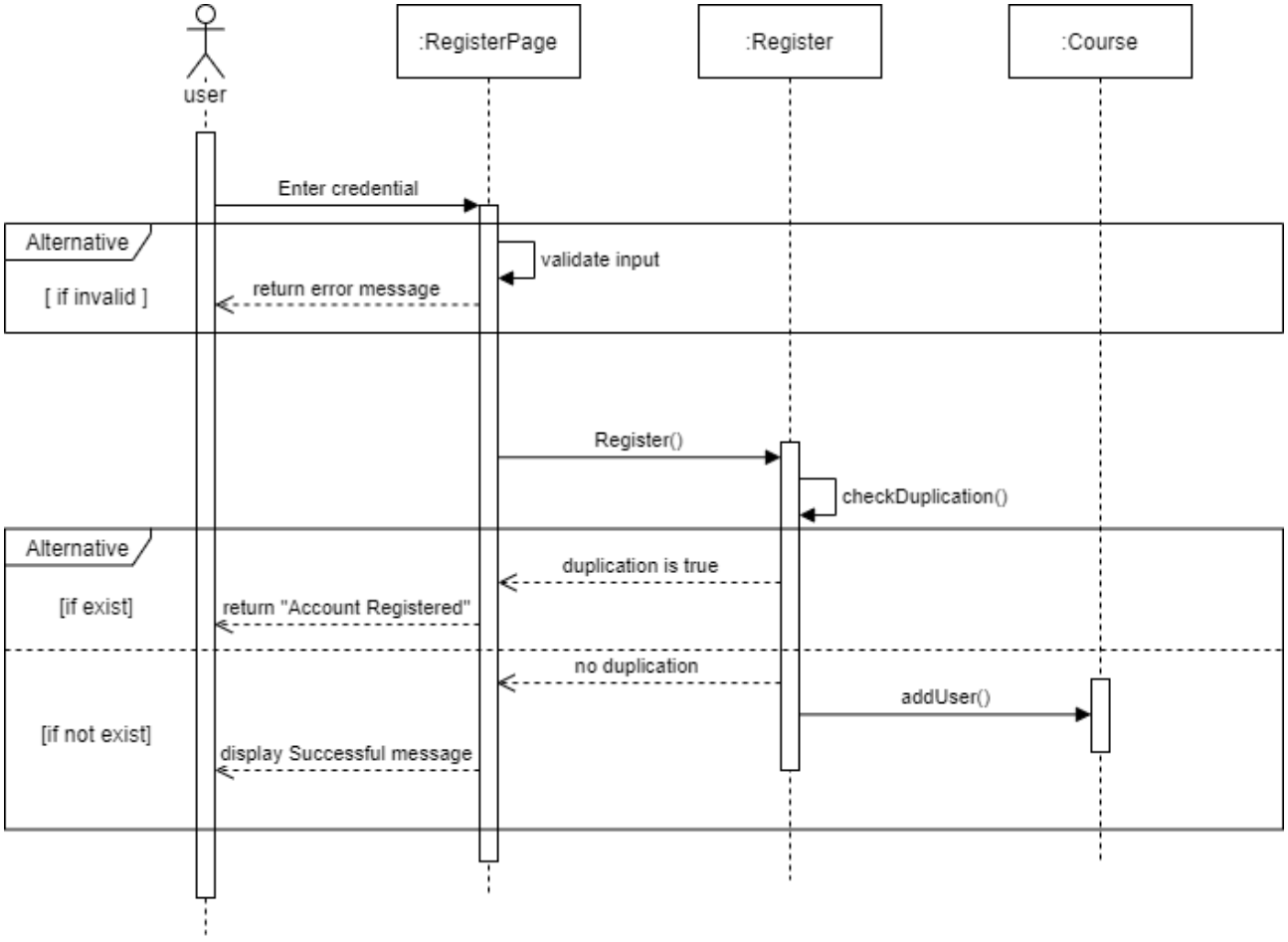
5.4 Class Diagrams



5.5 Sequence Diagrams

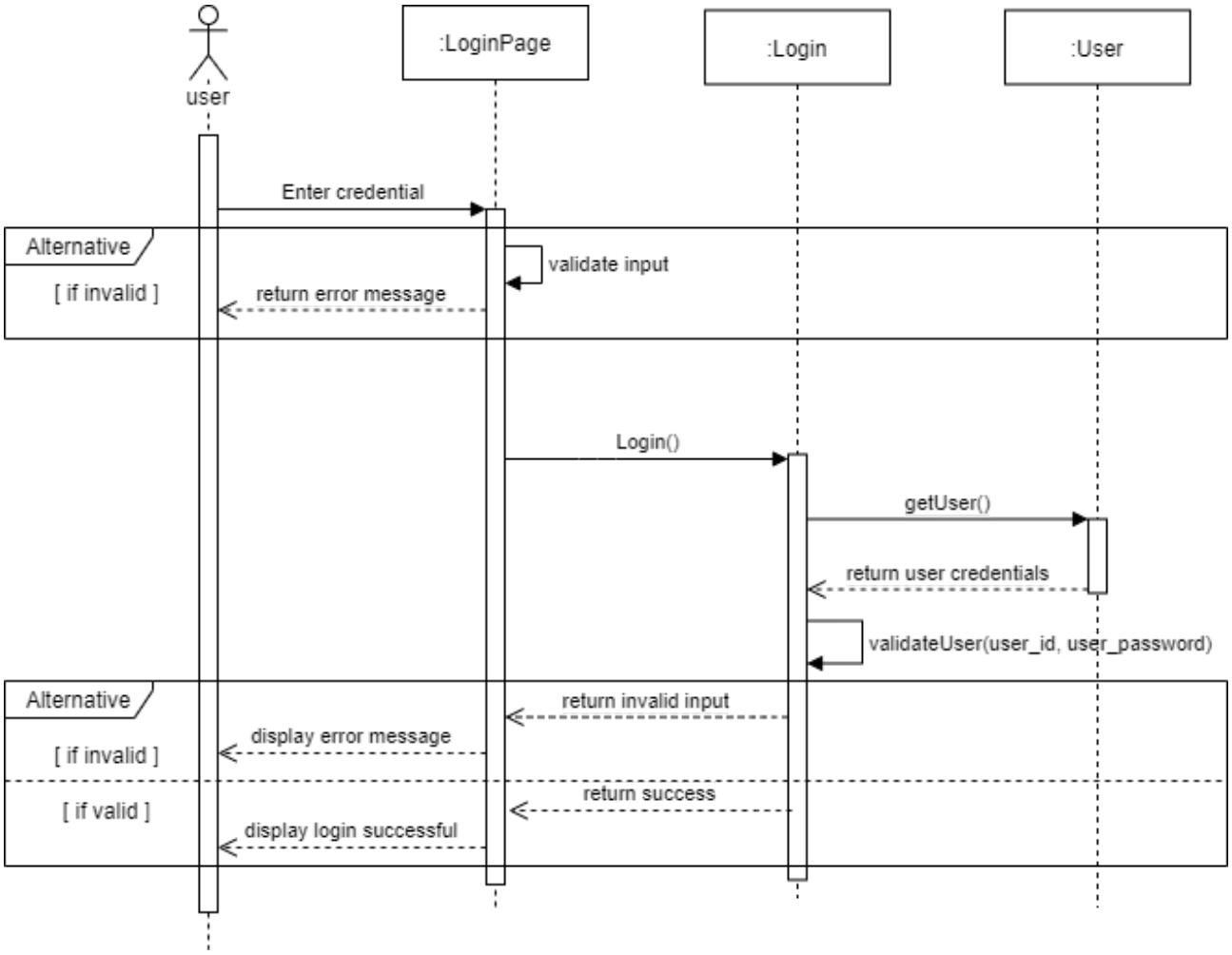
5.5.1 Use Case 1 - Register

1. User enters needed information
2. System checks input type
3. User submits
4. System checks if user already exists
5. User is registered



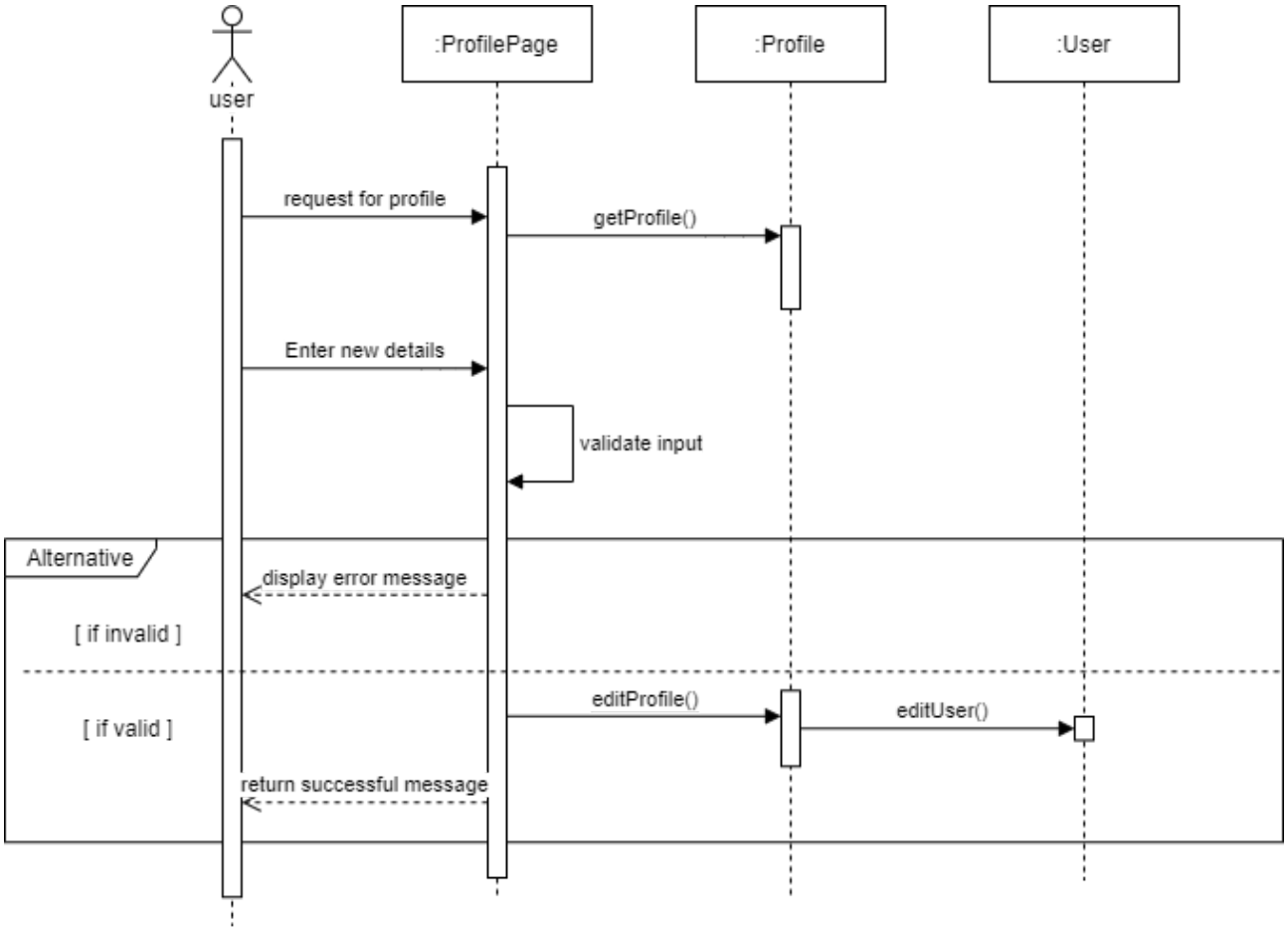
5.5.2 Use Case 2 - Login

1. User enters credentials
2. System verifies user account
3. User is logged in



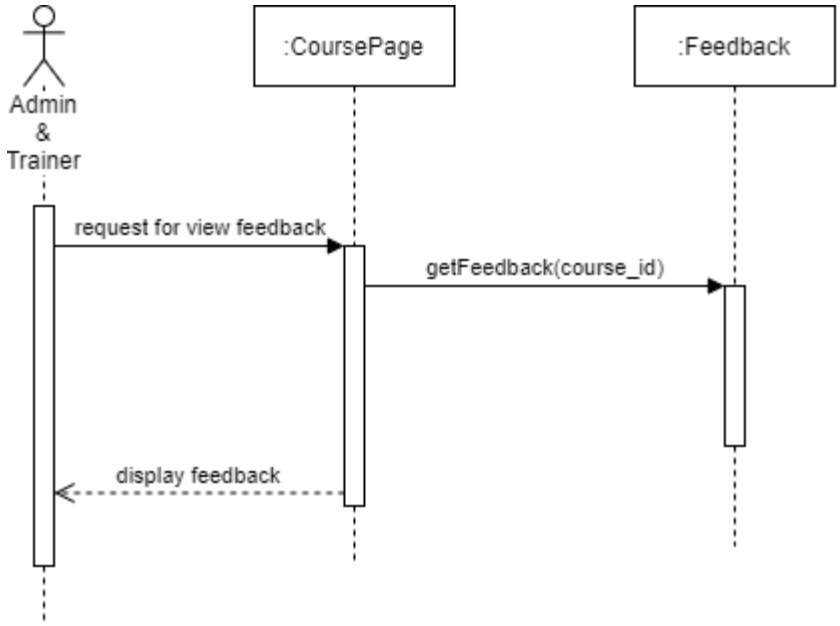
5.5.3 Use Case 3 - Update Personal Information

1. User changes details
2. System check input type
3. User confirms changes
3. System updates information



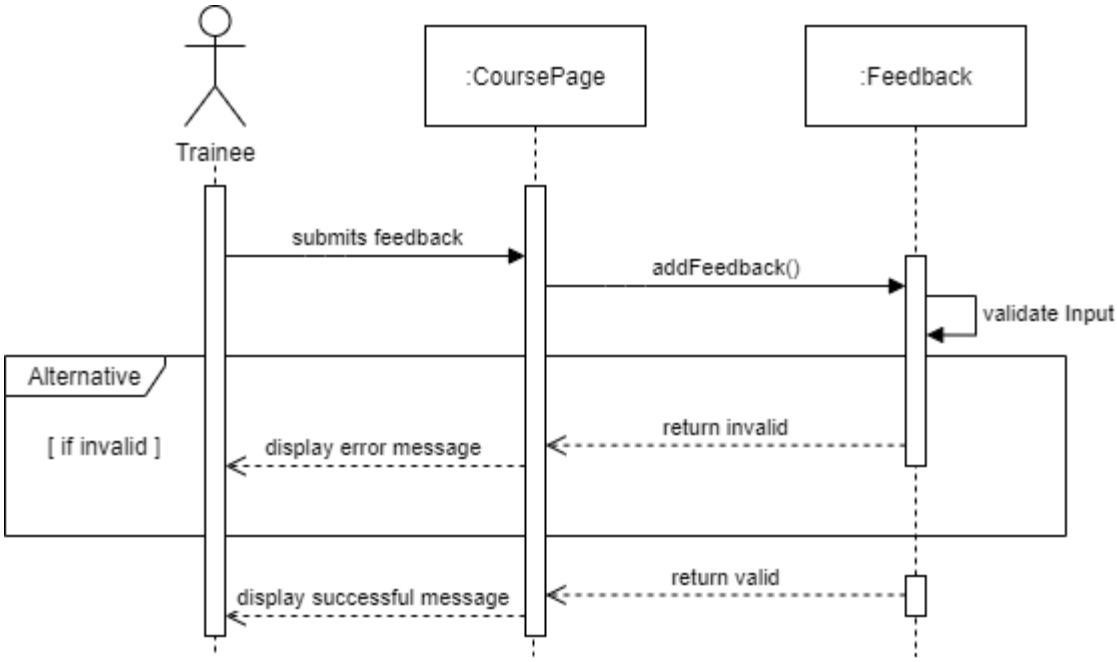
5.5.4 Use Case 4 - View Course Feedback

1. User request to view course feedback
2. System shows all course feedback
3. User views course feedback



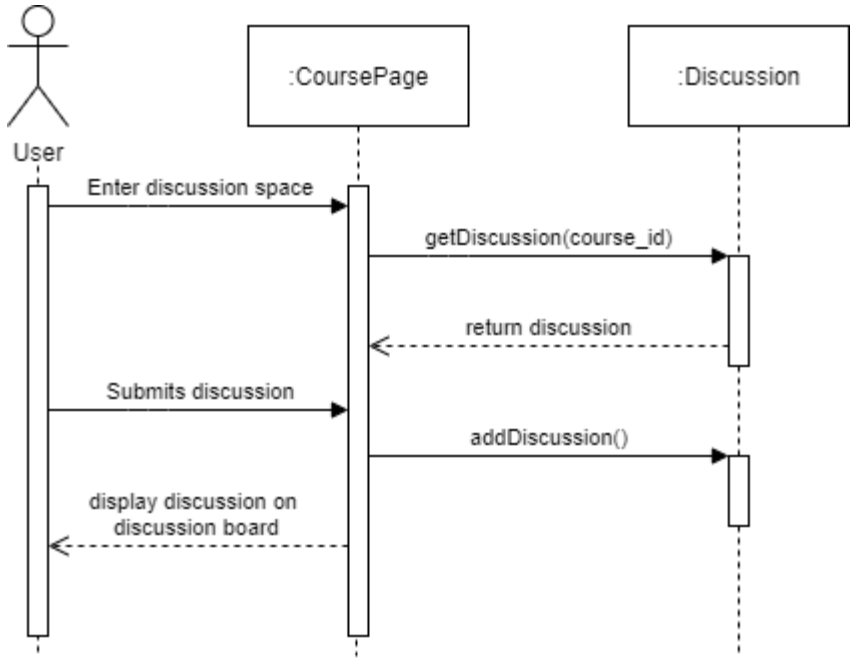
5.5.5 Use Case 5 - Provide Course Feedback

1. User types in required details
2. System checks input type
3. User submits feedback



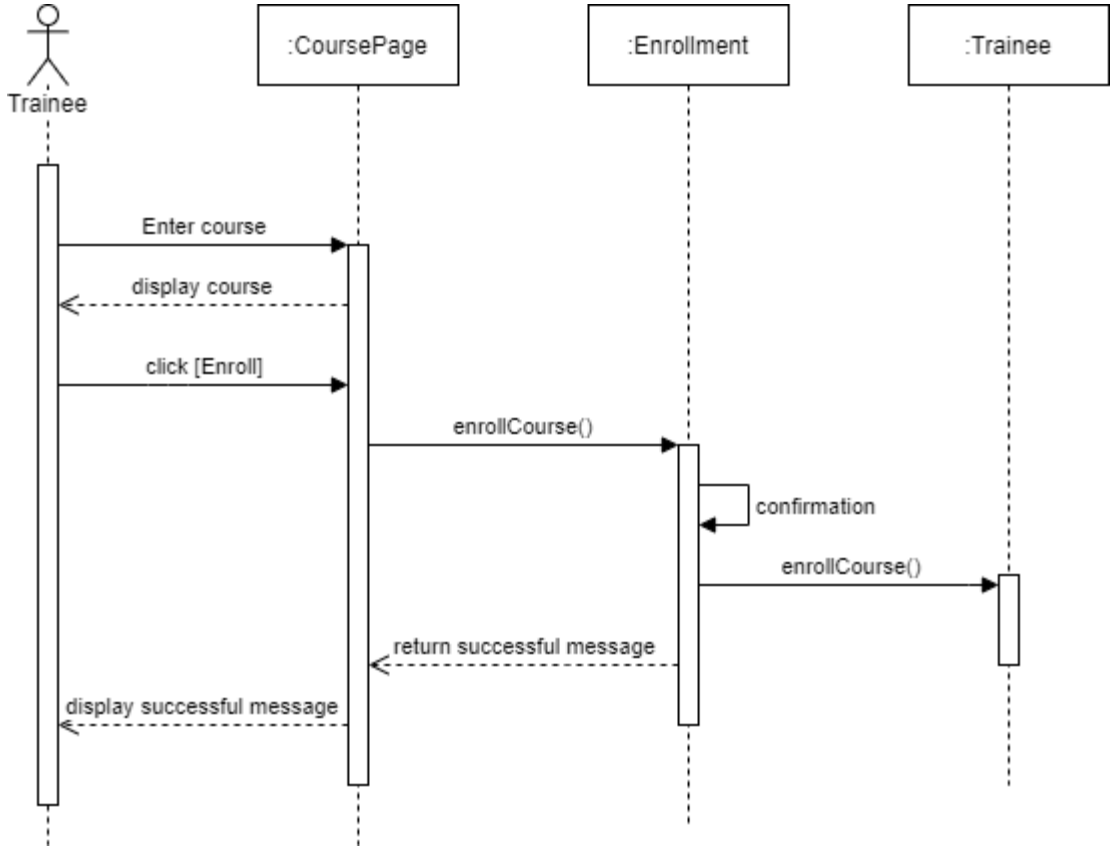
5.5.6 Use Case 6 - Discuss on Discussion Board

1. User submits discussion
2. System stores the submission details and displays it on the board



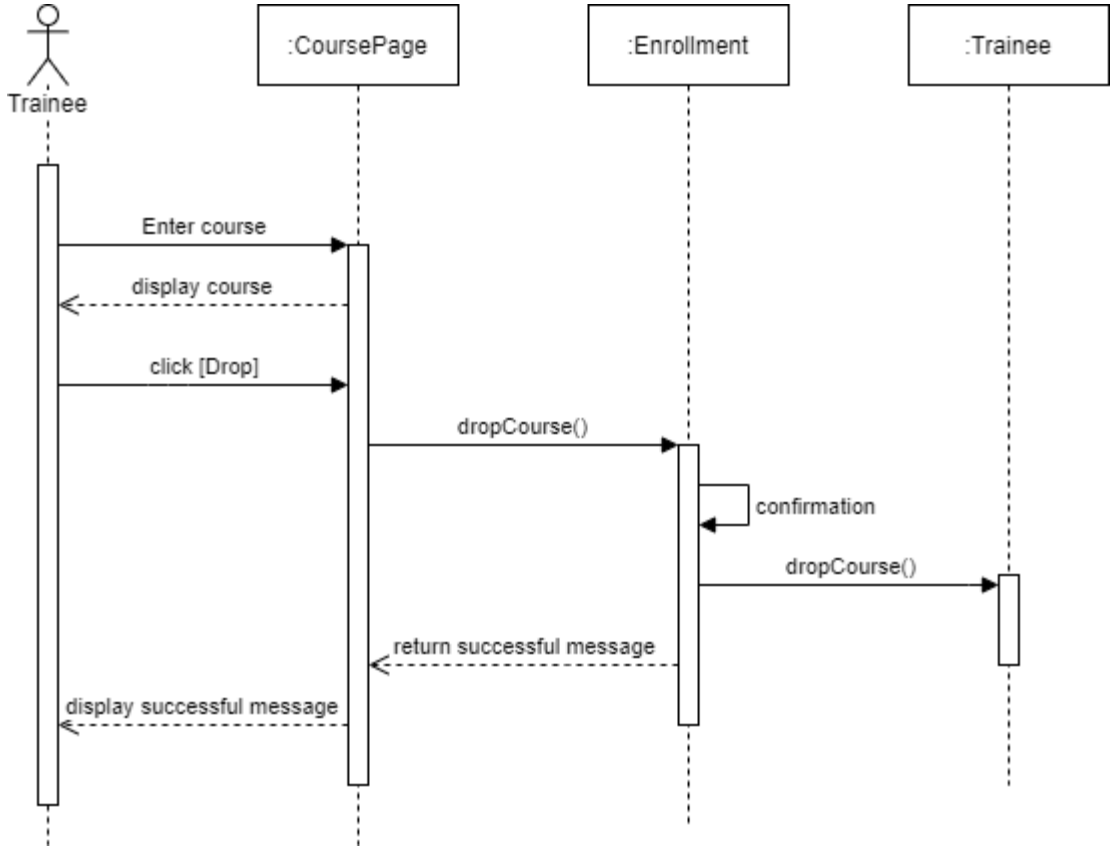
5.5.7 Use Case 7 - Enroll Course

1. User searches the course name
2. System display related course
3. User selects course
4. System display course details
5. User enrolls the course
6. System confirms the enrollment and enrolls the user into database



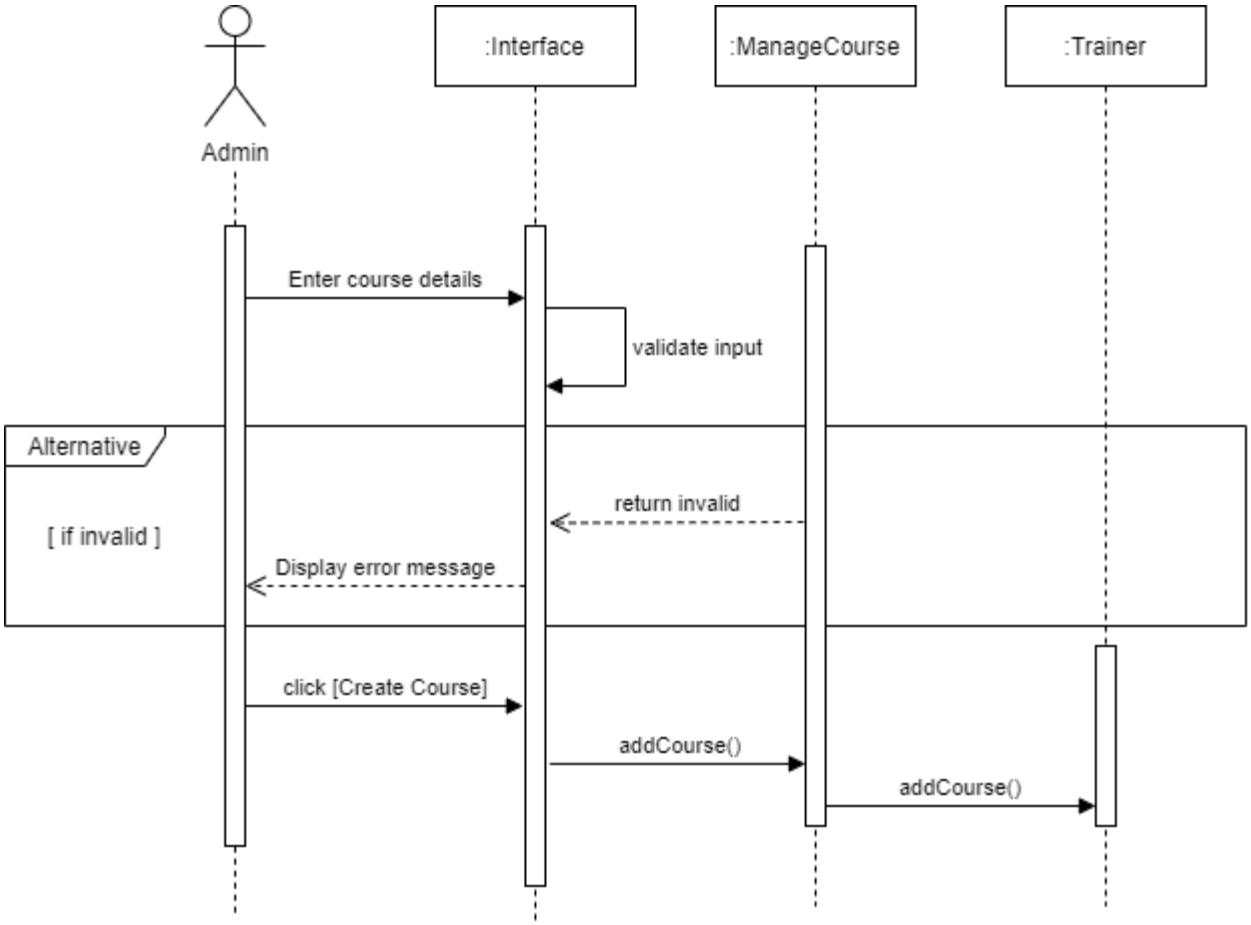
5.5.8 Use Case 8 - Drop Course

1. User selects the course to view details
2. System displays course details
3. User drops course
4. System pops up a confirmation message.
5. User confirms drop action.
6. System deletes the user details from the enrolled list.



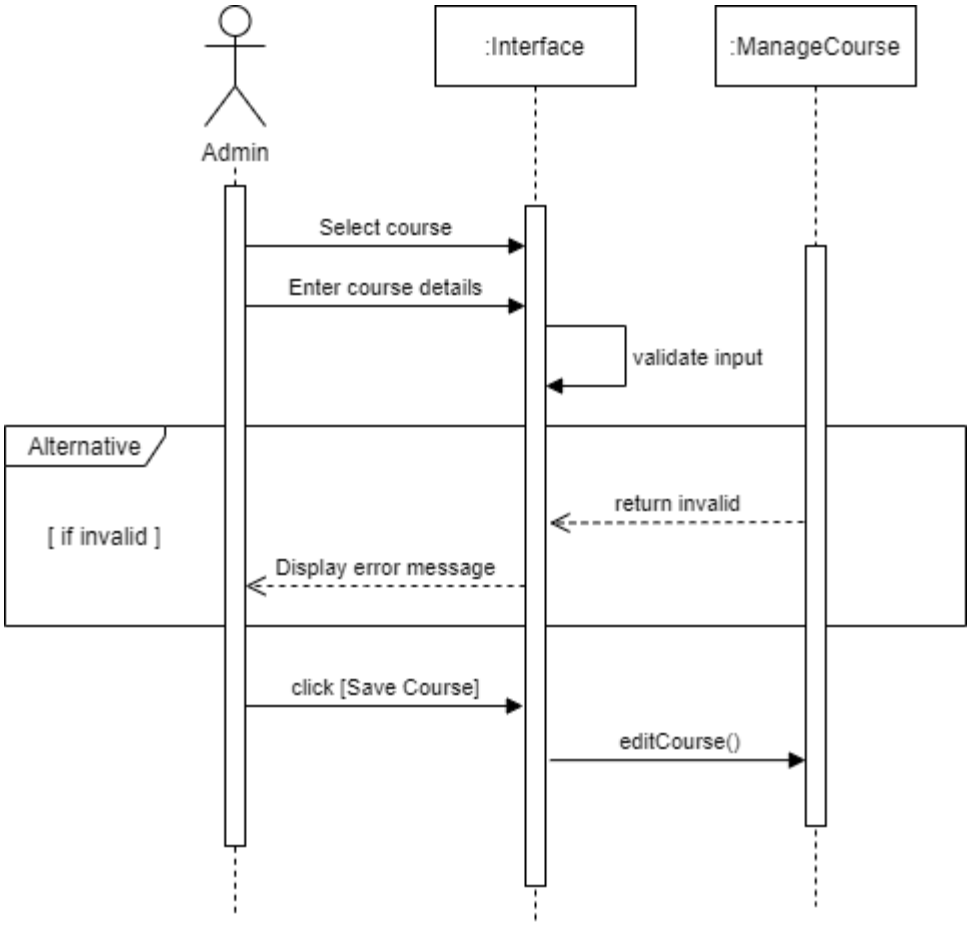
5.5.9 Use Case 9 - Create Course

1. User enters course details
2. System verify input type
3. User submit course details
4. System creates a course



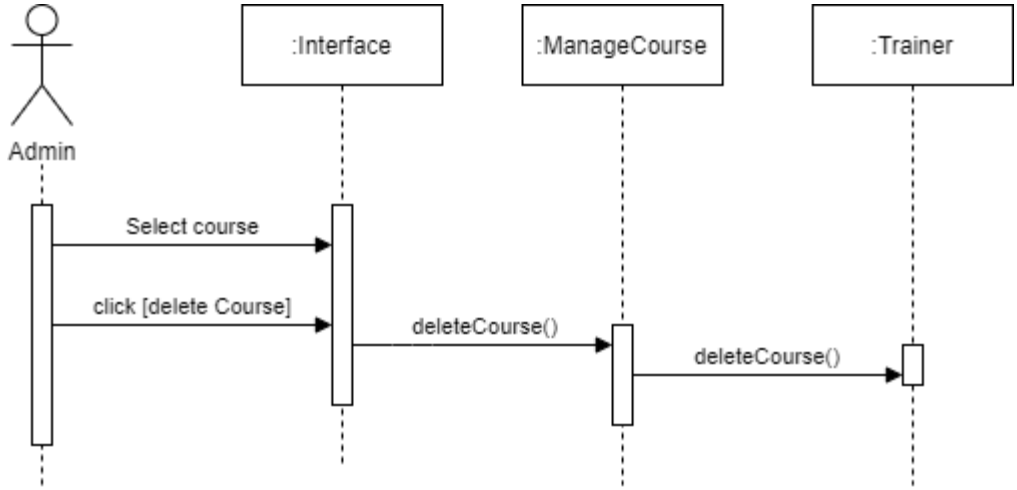
5.5.10 Use Case 10 - Edit Course

1. User selects the course to be edited.
2. System displays the course information.
3. User enters new information for updating and submitting.
4. System stores new updates.



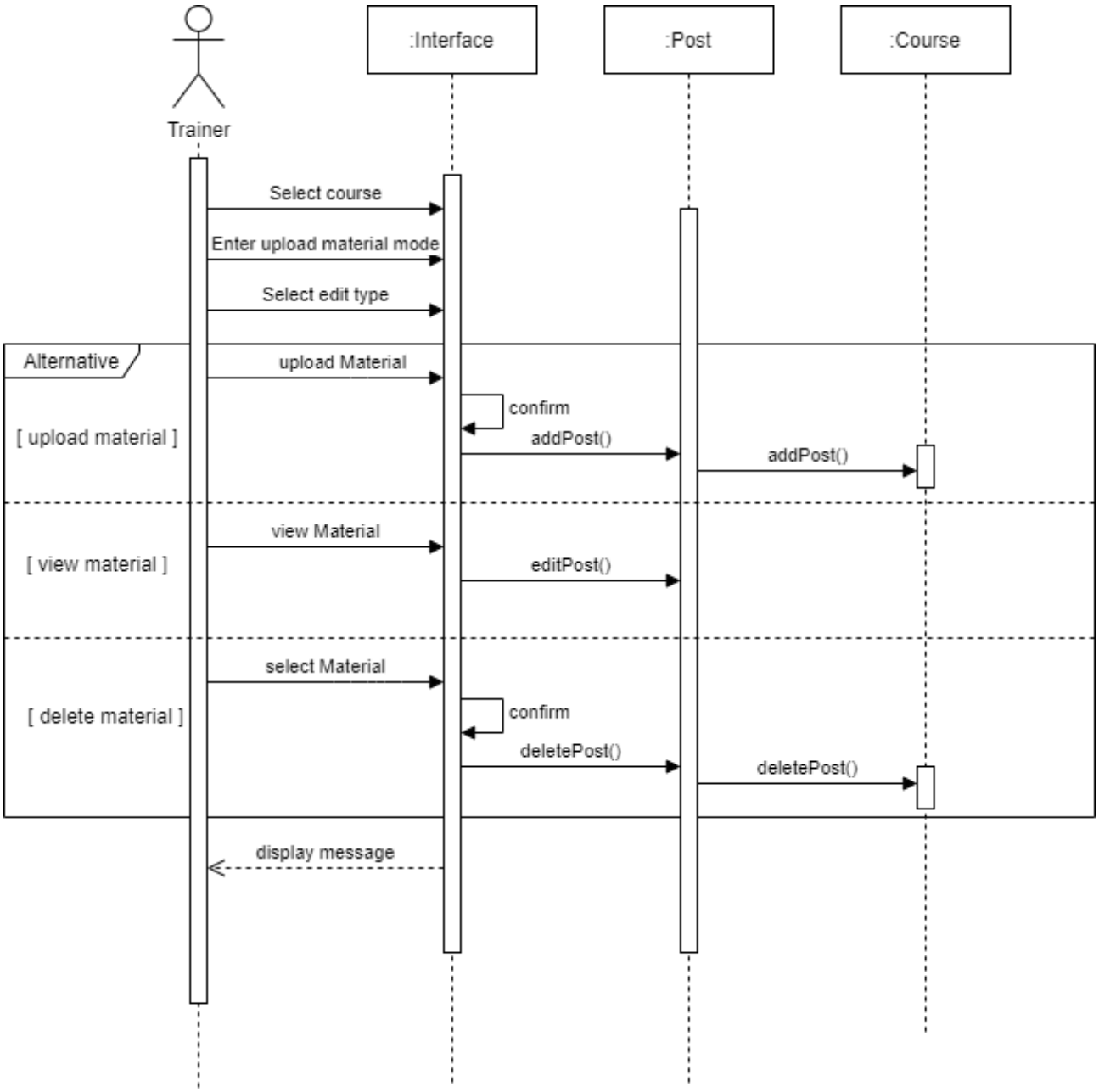
5.5.11 Use Case 11 - Delete Course

1. User selects the course to delete
2. System displays course details
3. User deletes the course.
4. System pops up a confirmation message.
5. User confirms deletion.
6. System deletes course



5.5.12 Use Case 12 - Manage Material

1. User selects the course
2. System enters the details of the course.
3. User enters upload materials mode.
4. System provides feature for uploading
5. User uploads the materials.
6. System saves the materials.



5.5.13 Use Case 13 - View Report

1. User selects to view reports.
2. System generates the reports for viewing