

Object Oriented Software Engineering

SE-202a



**Delhi Technological University
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Course Registration Website (Interactive)

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PROBLEM STATEMENT

An online course website is an interactive platform that allows users to access educational content and complete coursework remotely. The website includes a variety of resources such as videos, readings, quizzes, and assignments that too are an organised structure. Users can progress through the course at their own pace(a golden opportunity for slow bloomers), and may also have the ability to communicate with instructors and other students through live chats and dedicated doubt sessions. Websites offer features such as progress tracking, certification, etc. Some also include quizzes and tests that provide immediate feedback on a student's understanding of the material. There are several limitations in the current scenario:

- Offline teaching typically requires students to be present in a physical location, which can limit the number of students.
- Offline teaching typically follows a predefined schedule and has fixed time slots.
- Offline teaching can be difficult to scale up, as it requires additional resources such as classrooms, instructors, and equipment.
- Without technology, it can be harder for offline teachers to adapt the curriculum or teaching methods to different student needs or learning styles.
- Offline teaching may have limited options for assessment as it is harder for teachers to evaluate student progress and provide effective feedback.
- The idea behind interactive courses is that learners learn best when they're required to participate in the process actively, rather than simply reading a text or watching a video such as on a non-interactive online website.

So, to overcome the above said limitations we are proposing a website that has the following features:

- Our websites will have facilities such as forums, live chats, and dedicated doubt classrooms that allow students to communicate with instructors and other students.
- This feature allows students to test their understanding of the topic and receive immediate feedback on their performance.
- Our websites will offer certification upon completion of a course, which can be useful for professionals looking to advance their careers, or for students seeking to demonstrate their knowledge and skills.
- Our website will be responsive and can be accessed from any source such as smartphones, tablets, and laptops.

Initial Requirements Document

Title Of Project	Online Course Interactive
Stakeholders Involved in Capturing Requirement	Teachers, Students, Admin, Tech Support
Techniques used for Requirement Elicitation	Interviewing and Brainstorming
Name of the person along with their designations	Abhishek Goyal: Software Developer Aman Gupta: Software Developer
Date	2 February 2023
Version	1.0

Consolidated list of Initial Requirement:-

1. The software should be compatible with multiple devices and browsers.
2. A secure system for users to **create their accounts and log in** to access the website's features and content.
3. Live video streaming and live chat, including features for screen sharing, video access, mic access, jam board, and class recording
4. Allows users to **manage their personal information and preferences**, including their profile picture, name, and contact information.
5. **Keeps track of each user's progress** through the courses they are enrolled in, including the completion of assignments and exams.
6. The software should allow educators to **block a student** creating nuisance in the classroom or chat section.
7. The software should enable students to access and complete online courses, including viewing course content, taking quizzes, and submitting assessments.
8. The software should be scalable to accommodate a large number of users and courses.
9. Automates the grading process for quizzes and exams and provides immediate feedback to students.
10. Allows students and instructors to communicate directly, including the ability to send and receive messages and attachments.
11. Build and manage a database for storing user data as well as content data
12. The software should integrate with third-party tools for practical learning, like codeSandbox and graph plotters.
13. The software should support multiple languages for international access and engagement.
14. The software should facilitate the automation of attendance taking for teachers.
15. All users will be given Random UserID to identify them
16. Admin:-
 - i. Managing Student & Teacher
 - ii. Creating New Course
17. Teacher:-
 - i. Uploading Course
 - ii. Taking Live Classes
 - iii. Creating Quiz and doubt Forms
 - iv. One-to-one interaction with premium enrollers
18. Student:-
 - i. Accessing Course content
 - ii. Giving online tests

Software Requirements Specifications

Version 1.0

January 23rd,2023

Course Registration Website (Interactive)

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B.Tech. Software Engineering

4th Semester

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Software Requirement Specification Document

1. Introduction

1.1 Purpose

The purpose of an online course that is interactive is to provide learners with an engaging and dynamic learning experience that allows them to actively participate in the learning process. Interactivity in an online course involves the use of multimedia elements such as videos, graphics, and audio to enhance the learning experience. It also involves the use of interactive tools such as quizzes, discussion boards, and online simulations to encourage learner engagement and collaboration.

1.2 Scope

DOs:-

- Use multimedia elements: Incorporate a variety of multimedia elements such as videos, images, and audio to enhance the learning experience.
- Provide interactive tools: Use interactive tools such as quizzes, discussion forums, and simulations to encourage learner engagement and participation.
- Encourage collaboration: Foster a collaborative learning environment by providing opportunities for learners to connect with each other and share ideas.
- Offer feedback and support: Provide learners with feedback and support throughout the course to help them stay motivated and on track.
- Make it mobile-friendly: Ensure the course is mobile-friendly so that learners can access it from anywhere, anytime.

DONTs:-

- Overload with content: Avoid overloading the course with too much content as this can overwhelm learners and hinder their learning experience.
- Neglect accessibility: Ensure the course is accessible to learners with different needs, such as those with visual or hearing impairments.
- Ignore feedback: Take into account learner feedback and make necessary changes to the course to improve the learning experience.
- Use outdated technology: Use up-to-date technology to ensure that the course runs smoothly and is accessible to all learners.
- Disregard time management: Provide learners with a realistic timeline for completing the course and avoid overwhelming them with too much work.

Benefits:-

- Increased engagement: Interactive elements in the course make it more engaging for learners, keeping them motivated and interested in the content.
- Enhanced learning outcomes: Interactive tools can help learners retain information better, leading to improved learning outcomes.
- Greater flexibility: Online courses offer greater flexibility in terms of when and where learners can access the content, making it easier for them to fit learning into their busy schedules.

- Collaborative learning: Interactive tools such as discussion forums and group projects facilitate collaborative learning, which can lead to a richer learning experience.
- Personalised learning: Interactive tools can be used to offer personalised learning experiences tailored to the needs and preferences of individual learners.

1.3 Definitions, Acronyms, and Abbreviations

Definition

- **Online Course Website:** A website that provides access to online courses for students to learn at their own pace and convenience.
- **Course Catalogue:** A comprehensive list of all available courses offered on the website.
- **Course Materials:** Any digital content provided to students to help them learn, including videos, presentations, ebooks, quizzes, and assignments.
- **Enrollment:** The process by which students sign up and pay for a course.
- **User Profile:** A personal account on the website where a user can manage their personal information and view their course progress.
- **Course Progress:** The tracking of a user's progress through a course, including completed assignments and quizzes.
- **Customer Support:** The assistance provided to users with any technical or customer service issues they may encounter on the website.

Acronyms

- SRS: Software Requirements Specification
- UI: User Interface
- UX: User Experience
- CMS: Content Management System
- API: Application Programming Interface

Abbreviations

- FAQ: Frequently Asked Questions
- SSL: Secure Sockets Layer
- HTTP: Hypertext Transfer Protocol
- HTML: Hypertext Markup Language
- CSS: Cascading Style Sheets
- JS: JavaScript
- SQL: Structured Query Language

1.4 References

- Software Engineering by K.K. Aggarwal & Yogesh Singh, New Age Publishing House, 3rd Edition, 2008.
- IEEE Recommended Practice for Software Requirements Specifications IEEE Std 830-1998.
- IEEE Standard for Software Test Documentation—IEEE Std. 829-1998

1.5 Overview

An Online Course Website is a website that offers online courses that can be accessed by students at their own pace and convenience. The website provides a course catalogue, enrollment, course materials, user profiles, course progress tracking, ratings, reviews, and course recommendations. The website should be user-friendly, responsive, secure, and provide excellent customer support. The benefits include increased accessibility, flexibility, affordability, and convenience for both students and instructors.

2. Overall description

This section provides an overview of the online course website, including its product perspective, functions, user characteristics, constraints, and dependencies.

2.1 Product perspective

This section describes how the online course website fits into the larger system or environment in which it operates.

2.1.1 System interfaces

The online course website should have a smooth integration with popular Learning Management Systems (LMS) such as Blackboard, Canvas, Moodle, and other similar systems. Additionally, the system should integrate with payment gateways such as Stripe, PayPal, and other similar payment processing platforms.

2.1.2 User interfaces

The user interface should be easy to use, interactive, and aesthetically pleasing. The website should be responsive and provide a seamless experience across all devices and screen sizes. The user interface should include features such as search, filtering, sorting, and pagination for ease of use.

2.1.3 Hardware interfaces

The online course website should be accessible from any device with internet connectivity, including desktops, laptops, tablets, and smartphones. The website should be optimized for performance and load quickly on all devices.

2.1.4 Software interfaces

The website should be developed using a reliable programming language and framework, such as PHP, Python, or Ruby on Rails. The website should integrate with popular web technologies such as HTML5, CSS3, and JavaScript.

2.1.5 Communications interfaces

The website should be able to communicate with external systems and services, such as email services, payment gateways, and social media platforms.

2.1.6 Memory constraints

The online course website should be designed to handle a large number of users simultaneously. The website should be optimized for speed and should not have any memory constraints that would limit its performance.

2.1.7 Operations

The website should be easy to maintain, with regular updates and patches to fix any security vulnerabilities or bugs. The website should also be scalable, allowing for the addition of new features and functionality as the website grows.

2.1.8 Site adaptation requirements

The online course website should be adaptable to different languages and cultures to make it accessible to a broader audience. The website should also be accessible to users with disabilities, complying with international web accessibility standards.

2.2 Product functions

This section of the SRS outlines the core functions and features that the online course website will provide to its users. These may include functions such as course enrollment, content delivery, communication tools, assessment and evaluation tools, and administrative functions. By defining the product functions clearly, the SRS ensures that all stakeholders have a shared understanding of what the system is supposed to do.

2.3 User characteristics

This section of the SRS describes the intended users of the online course website, including their demographics, educational background, technical skills, and other relevant characteristics. Understanding the characteristics of the users is important for designing a system that meets their needs and is accessible to them. This section also helps stakeholders to identify potential issues or challenges that users may face in using the system.

2.4 Constraints

This section of the SRS identifies any constraints or limitations that may affect the design and development of the online course website. Constraints may include factors such as budget, time, technical resources, regulatory requirements, and user privacy concerns. By identifying these constraints upfront, stakeholders can better plan and allocate resources to ensure that the system is developed within the defined constraints.

2.5 Assumptions and dependencies

This section of the SRS identifies any assumptions or dependencies that may impact the development or operation of the online course website. Assumptions are factors that are believed to be true but have not been validated, while dependencies are factors that are outside the control of the development team but are necessary for the system to work. By identifying these factors upfront, stakeholders can better plan for potential risks or issues that may arise during development and operation of the system.

2.6 Apportioning of requirements

This section of the SRS outlines how the product requirements will be prioritized and implemented over time. This may include identifying requirements that are critical for the initial release of the system, as well as requirements that can be deferred to later releases. By apportioning requirements in this way, stakeholders can better plan and allocate resources to ensure that the system is developed and released in a way that meets the needs of its users and stakeholders.

3. Specific requirements

This section of the SRS outlines the detailed requirements that the online course website must meet to satisfy the needs of its stakeholders. The specific requirements are typically broken down into various sub-sections, as outlined below.

3.1 External Interfaces

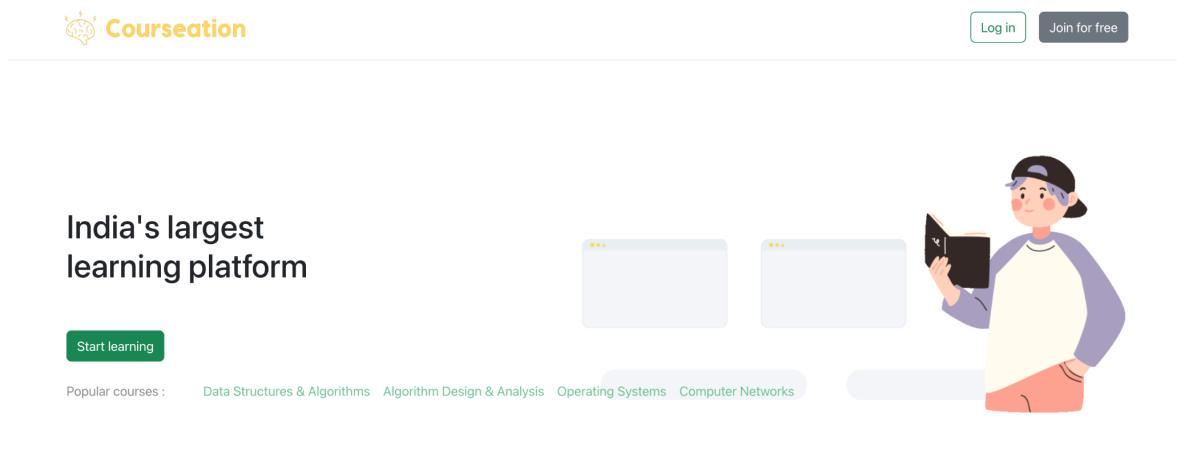
This section of the SRS describes the interfaces between the online course website and other external systems or services. These interfaces may include hardware or software systems, such as payment gateways, messaging services, or learning management systems.

3.1.1 User Interfaces

The following user interfaces shall be provided by the system.

a. Landing Page-

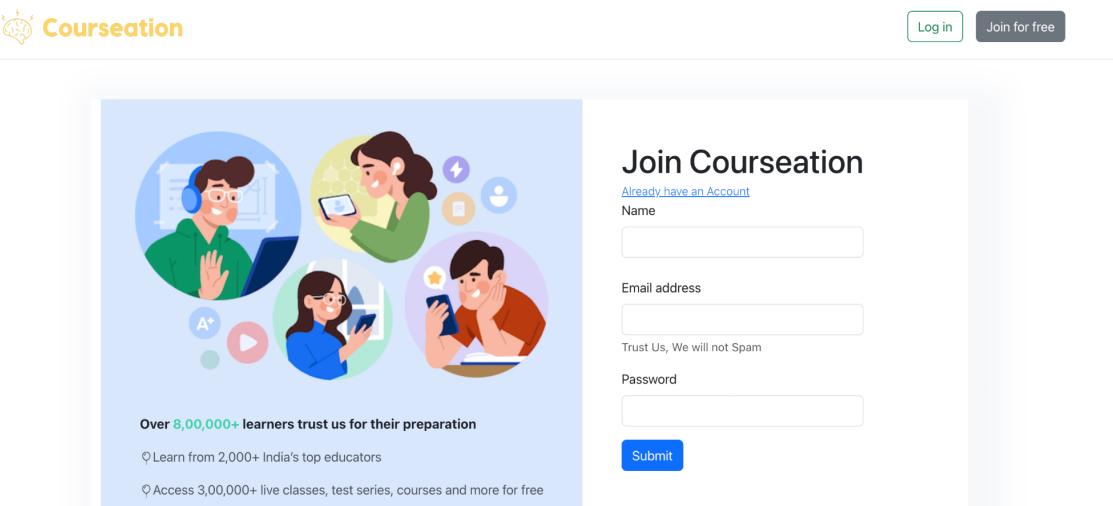
This is the first page that a user encounters on arriving at the website. It provides the option for a user to register (which means creating a fresh account for a new user) and the option of login in for already registered users. It contains the basic information about the website and the FAQs and Admin Contact, which are accessible on this page itself.



b. Register-

This page is meant for creating a new account and contains a form that gives the option to register as a recruiter or as a job seeker. The user selects the option and is asked for credentials. For Recruiter the fields to be filled are-

- Email address – alphanumeric with an @ sign compulsory as a means of validation
- Name - Name of candidate.
- Password- alphanumeric of minimum 6 characters. Special characters are allowed.

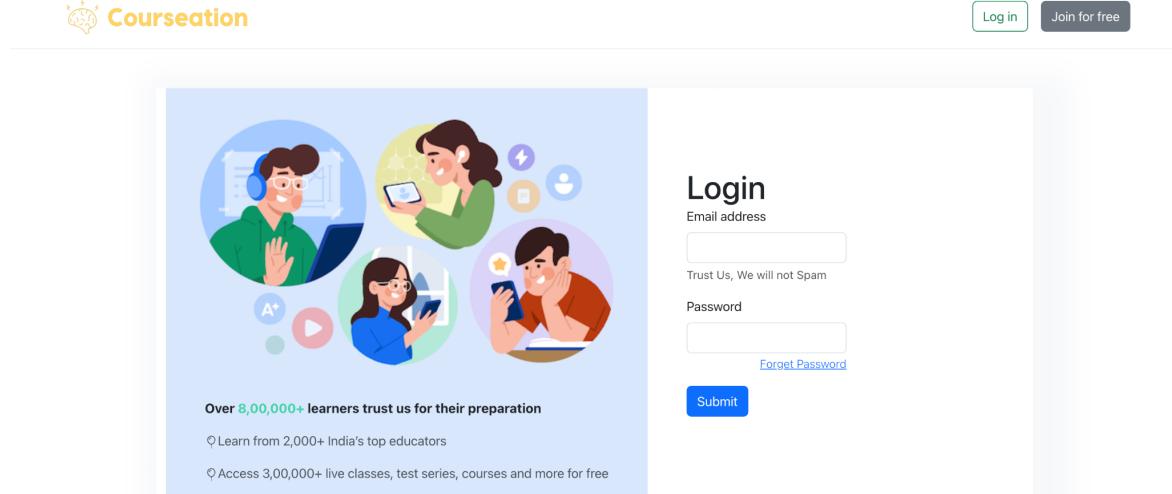


c. Login –

This page is meant for users' login to the system via authentication. Existing users shall select the option to log in as a teacher or as student depending on the type of account they have created and are asked for the email ID and password they have entered at the time of registration.

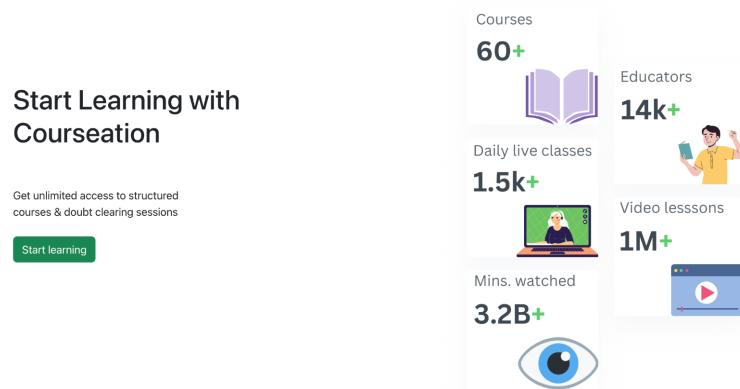
- Email ID – alphanumeric with an @ sign compulsory as a means of validation.
- Password- alphanumeric of minimum 6 characters. Special characters are allowed.

Then the user is provided the button to log in and enter the system.



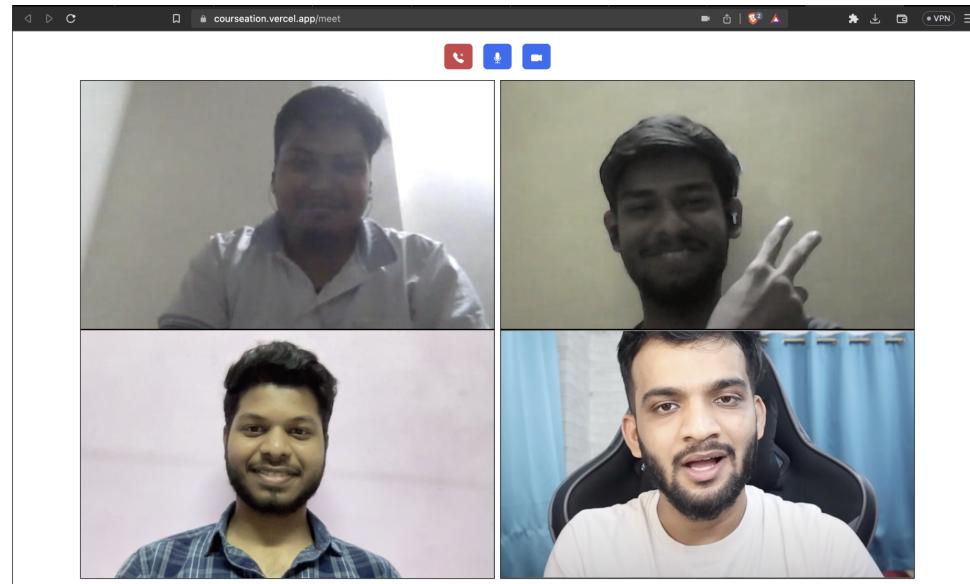
d. Home Page –

Once the user is successfully logged into the system the user is given an option according to the type of account.



e. Live Video Call Interaction -

Live video call interaction is a use case where two or more people connect in real-time through a video call platform to communicate and interact with each other. This technology allows individuals to communicate with others who are in different locations or unable to meet in person due to various reasons. In a live video call interaction, participants can see and hear each other in real-time, allowing for a more personalized and immersive experience. Features such as screen sharing, virtual backgrounds, and chat functionalities enhance the experience and make it more engaging.



f. Choose Goal -

To allow students to register for goal they wish to take following which a more detailed view of goal will be presented. Students will be able to see every goal provided and the courses present in them.

Courseation

Log Out

Choose your goal

Software Engineering

ADA	OOSE	SE	OS
CSA	DBMS	TOC	ML
DSA			

Mathematics & Computer Science

Probability	Real Analysis	Complex Analysis	ADA
CN	Matrix Computation	Financial Engineering	

g. Course Details -

Students will be able to see details about different topics provided in the course and the teachers teaching that particular topics. Following that a live video meet link will be provided whenever the teacher will take the class. The students then can join that meet and ask further

questions.

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3.2 Functions

This section of the SRS details the specific functions and features that the online course website must provide to its users. This may include functions such as course registration, content delivery, discussion forums, and assessment tools.

1. Registration

A. Use Case Description

Registration
Introduction: This use case covers the process for students and teachers to register on online course website.
Actors: Student, Teacher
Preconditions: None
Postconditions: The user has a registered account on the online course site.
Flow of Events: Basic Flow: <ul style="list-style-type: none">• The user clicks the "Register" button on the website.• The user selects whether they are registering as a student or a teacher.• The user fills out a form with their personal information, such as name, email address, and password.• The user submits the form.• The website verifies the information and creates an account for the user.• The website sends a confirmation email to the user's email address.• The user clicks the confirmation link in the email to activate their account. Alternative Flow: Alternative Flow 1: Incorrect Information If the user provides incorrect information in the registration form, they receive an error message and are unable to complete the registration process. Alternative Flow 2: Duplicate account: If the user tries to create an account with an email address that has already been entered, the website displays an error message and does not allow the user to create a duplicate account. Alternative Flow 3: Incorrect email format: If the user enters an email address in the incorrect format, the website displays an error message and does not allow the user to complete the registration process until they enter a valid email address. Alternative Flow 4: Internet Connectivity: Shutdown, Disturbance in Internet Connectivity and exit Website
Special Requirements: None
Associated Use case: None

B. Validity Checks-

- The email and username entered must be unique
- No field should be left blank
- Email entered must be valid
- Password must be at least 5 characters long

C. Sequencing information

NONE

D. Error Handling/Response to Abnormal Situations

If any of the validation flows does not hold true, appropriate error messages will be prompted to the user for doing the needful.

2. Login

A. Use Case Description

Login
Introduction: To allow a registered user to access their account on the online course website.
Actors: Student, Teacher, Admin
Preconditions: Users must have an account on the online course website.
Postconditions: Users get logged in to their account and then can access the courses and other information related to their account.
Flow of Events: Basic Flow: <ul style="list-style-type: none">User enters their email address and password.The website checks the entered credentials against the registered user accounts.If the entered credentials are correct, the website grants the user access to their account.The website displays the user's dashboard, which shows the courses they are enrolled in, the progress of each course, and other account information. Alternative Flow: Alternative Flow 1: Incorrect credentials: If the entered credentials are incorrect, the website displays an error message and does not grant the user access to their account. Alternative Flow 2 : Forgotten password: If the user forgets their password, they can click on the "Forgot password" link, which initiates the password reset flow.
Special Requirements: Login Credentials
Associated Use case: None

B. Validity Checks-

- The email and username entered must be unique
- No field should be left blank
- Email entered must be valid
- Password must be at least 5 characters long

C. Sequencing information

NONE

D. Error Handling/Response to Abnormal Situations

If any of the validation flows does not hold true, appropriate error messages will be prompted to the user for doing the needful.

3. Doubt and Live Session

A. Use Case Description

Doubt and Live Session
Introduction: This use case covers the process for a student to ask a doubt or a live session on the online course website.
Actors: Student, Teacher
Preconditions: The student is logged in to the website. The student is enrolled in a course that offers live sessions or doubt resolution sessions.
Postconditions: The teacher or tech support team is aware of the student's doubt or live session request and can take appropriate action.
Flow of Events: Basic Flow: <ul style="list-style-type: none">● The student accesses the course page on the website.● The student clicks on a "Doubt" or "Live Session" button on the course page.● The student is taken to a form where they can enter the following information:<ul style="list-style-type: none">○ Description of the doubt or topic for the live session○ Contact information (e.g. email address, phone number)● The student clicks on a "Submit" button to send the doubt or request for a live session.● If the doubt or live session request was submitted successfully, a confirmation message is displayed to the student.● If the doubt or live session request was unsuccessful, an error message is displayed to the student with instructions on how to resolve the issue. Alternative Flow: Alternative Flow 1: Invalid Authentication: If the student is not logged in, they are prompted to log in before submitting the doubt or live session request. Alternative Flow 2: Incomplete Information: If the student does not provide the required information, they are prompted to complete the form before proceeding.
Special Requirements: Login Credentials
Associated Use case: Login

B. Validity Checks-

- User authentication: Users must be authenticated and logged in to access the live doubt session feature.
- Unique session IDs: Each live doubt session must have a unique session ID to avoid conflicts or overlap with other sessions.
- Session duration: The live doubt session must have a minimum and maximum duration to ensure that it is effective and efficient.

- User limit: The number of users allowed to join a live doubt session should be limited to ensure that the session remains manageable and effective.

C. Sequencing information

NONE

D. Error Handling/Response to Abnormal Situations

If any of the validation flows does not hold true, appropriate error messages will be prompted to the user for doing the needful

4. Logout

A. Use Case Description

Logout
<p>Introduction: This use case covers the process for a student to end their current session and secure their personal information</p>
<p>Actors: Student, Teacher, Admin</p>
<p>Preconditions: The student must have a valid account and be logged into the course website.</p>
<p>Postconditions: The student's session is terminated, and their personal information, such as their progress in the course, is secured from unauthorized access.</p>
<p>Flow of Events:</p> <p>Basic Flow:</p> <ul style="list-style-type: none"> ● The student logs into the online course website and starts working on a lesson. ● The student decides to log out and clicks on the "Logout" button located in the right-hand corner of the screen. ● The website displays a confirmation prompt, asking the student if they are sure want to log out. ● The student confirms the logout request by clicking "Yes" or "Logout". ● The student's session is ended, and they are redirected to the login page. <p>Alternative Flow:</p> <p>Alternative Flow 1: Session continues:</p> <p>If the student does not confirm the logout request, their session remains active, and can continue working on the lesson.</p> <p>Alternative Flow 2: Automatic session end:</p> <p>If the student closes the browser window or navigates away from the website without clicking the "Logout" button, their session will end automatically, but their personal information will not be secured. In this case, the student will need to log in again to continue work on the course.</p>
<p>Special Requirements:</p> <p>Login Credentials</p>
<p>Associated Use case:</p> <p>Login</p>

B. Validity Checks-

- User authentication: Users must be authenticated and logged in to access the logout feature.
- Confirmation: Users should be prompted to confirm that they want to log out to avoid accidental logouts.
- Session termination: The logout feature should ensure that the user's session is terminated properly and all user data and information are cleared.
- Redirect: After logging out, users should be redirected to the appropriate page or homepage to avoid confusion and improve the user experience.

C. Sequencing information

NONE

D. Error Handling/Response to Abnormal Situations

If any of the validation flows does not hold true, appropriate error messages will be prompted to the user for doing the needful.

6. Maintain Course Details

A. Use Case Description

Maintain Course Details
Introduction: This use case covers the process for a teacher or admin to manage the details of a course offered on the online course website.
Actors: Teacher, Admin
Preconditions: The teacher or admin is logged in to the website. The course has already been created on the website.
Postconditions: The course information on the online course website is up-to-date.
Flow of Events: Basic Flow: <ul style="list-style-type: none">● The teacher or admin accesses the course management page of the website.● The teacher or admin selects the course they want to manage.● The teacher or admin is taken to the course details page where they can view and update the following information:<ul style="list-style-type: none">○ Course title○ Course description○ Course content (e.g. lectures, assignments, exams)○ Course schedule (e.g. start and end dates)○ Enrollment information (e.g. number of students enrolled)● The teacher or admin makes the desired updates to the course information.● The teacher or admin clicks on a "Save" button to save the updates.

- If the updates were successful, a confirmation message is displayed to the teacher or admin.
- If the updates were unsuccessful, an error message is displayed to the teacher or admin with instructions on how to resolve the issue.

Alternative Flow:

Alternative Flow 1: Invalid Access:

If the teacher does not have permission to access the course management page, they are redirected to their dashboard with an error message.

Alternative Flow 2 : Update Conflict:

If the teacher or admin tries to make an update that conflicts with another course, they are prompted to resolve the conflict before proceeding.

Special Requirements:

Login Credentials

Associated Use case:

Login

B. Validity Checks-

- Course ID uniqueness: Each course must have a unique ID to avoid conflicts or overlap with other courses.
- Course details completeness: All required course details must be entered, such as course name, description, duration, instructor, and prerequisites.
- Valid input: The course details entered by the user must be valid and meet the required format or criteria.
- Field length: Fields must have a minimum and maximum length, such as the course name field having a maximum of 50 characters

C. Sequencing information

NONE

D. Error Handling/Response to Abnormal Situations

If any of the validation flows does not hold true, appropriate error messages will be prompted to the user for doing the needful.

7. Maintain User Details

A. Use Case Description

Maintain User Details

Introduction: This use case covers the process for an admin to manage the lists of students and teachers registered on the online course website.

Actors: Admin

Preconditions: The admin is logged in to the website. The students and teachers have already registered on the website.

Postconditions: The user information on the online course website is up-to-date.

Flow of Events:**Basic Flow:**

- The admin accesses the user management page of the website.
- The admin selects the student or teacher whose details they want to manage.
- The admin is taken to the user details page where they can view and update the following information:
 - User profile information (e.g. name, email address, phone number)
 - User role (student or teacher)
 - User enrollment information (e.g. courses enrolled in, waitlist status)
 - User progress information (e.g. grades, completion status)
- The admin makes the desired updates to the user information.
- The admin clicks on a "Save" button to save the updates.
- If the updates were successful, a confirmation message is displayed to the admin.
- If the updates were unsuccessful, an error message is displayed to the admin with instructions on how to resolve the issue.

Alternative Flow:**Alternative Flow 1: Invalid Access:**

If the admin does not have permission to access the user management page, they are redirected to their dashboard with an error message.

Alternative Flow 2 : Update Conflict:

If the admin tries to make an update that conflicts with another user, they are prompted to solve the conflict before proceeding.

Special Requirements:

Login Credentials

Associated Use case:

Login

B. Validity Checks-

- User authentication: Only authorized users should be allowed to access and modify user details.
- User ID uniqueness: Each user must have a unique ID to avoid conflicts or overlap with other users.
- Complete user details: All required user details must be entered, such as full name, email address, username, password, and contact information.
- Valid input: The user details entered by the user must be valid and meet the required format or criteria, such as a valid email address or a password with a minimum length of 8 characters.

C. Sequencing information

NONE

D. Error Handling/Response to Abnormal Situations

If any of the validation flows does not hold true, appropriate error messages will be prompted to the user for doing the needful.

8. Maintain Course Content

A. Use Case Description

Maintain Course Content
Introduction: This use case covers the process for a teacher to manage the content of a course offered on the online course website.
Actors: Teacher
Preconditions: The teacher is logged in to the website. The course has already been created on the website.
Postconditions: The course content on the online course website is up-to-date.
Flow of Events: Basic Flow: <ul style="list-style-type: none">● The teacher accesses the course management page of the website.● The teacher selects the course whose content they want to manage.● The teacher is taken to the course content page where they can view and update the following information:<ul style="list-style-type: none">○ Course lectures (e.g. video, audio, text)○ Course assignments (e.g. homework, quizzes, projects)● The teacher makes the desired updates to the course content.● The teacher clicks on a "Save" button to save the updates.● If the updates were successful, a confirmation message is displayed to the teacher.● If the updates were unsuccessful, an error message is displayed to the teacher with instructions on how to resolve the issue. Alternative Flow: Alternative Flow 1: Invalid Access: If the teacher does not have permission to access the course management page, they are redirected to their dashboard with an error message. Alternative Flow 2 : Update Conflict: If the teacher tries to make an update that conflicts with another course, they are prompted to resolve the conflict before proceeding.
Special Requirements: Login Credentials
Associated Use case: Login

B. Validity Checks-

- Field length: Fields must have a minimum and maximum length, such as the course content name field having a maximum of 50 characters.
- Access control: Access to maintain course content must be limited to authorized users to ensure data integrity and security.
- Version control: Course content changes should be tracked and versioned to ensure the availability of previous versions and revisions.
- Availability: Course content should be made available.

C. Sequencing information

NONE

D. Error Handling/Response to Abnormal Situations

If any of the validation flows does not hold true, appropriate error messages will be prompted to the user for doing the needful.

9. Manage Transactions

A. Use Case Description

Manage Transactions
<p>Introduction: This use case covers the process for an admin to manage the transactions made on the online course website.</p>
<p>Actors: Admin</p>
<p>Preconditions: The admin is logged in to the website. The students have made transactions (e.g. course enrollments, exam registrations) on the website.</p>
<p>Postconditions: The transaction information on the online course website is up-to-date.</p>
<p>Flow of Events:</p> <p>Basic Flow:</p> <ul style="list-style-type: none">● The admin accesses the transaction management page of the website.● The admin selects the transaction they want to manage.● The admin is taken to the transaction details page where they can view and update the following information:<ul style="list-style-type: none">○ Transaction information (e.g. date, amount, payment method)○ User information (e.g. name, email address, phone number)○ Course information (e.g. course name, instructor name)● The admin makes the desired updates to the transaction information.● The admin clicks on a "Save" button to save the updates.● If the updates were successful, a confirmation message is displayed to the admin.● If the updates were unsuccessful, an error message is displayed to the admin with instructions on how to resolve the issue. <p>Alternative Flow:</p> <p>Alternative Flow 1: Invalid Access: If the admin does not have permission to access the transaction management page, they are redirected to their dashboard with an error message.</p> <p>Alternative Flow 2: Update Conflict: If the admin tries to make an update that conflicts with another transaction, they are prompted to resolve the conflict before proceeding.</p>
<p>Special Requirements: Login Credentials</p>
<p>Associated Use case: None</p>

B. Validity Checks-

- User authentication: Only authorized users should be allowed to access and modify transactions.
- Transaction ID uniqueness: Each transaction must have a unique ID to avoid conflicts or overlap with other transactions.
- Transaction completeness: All required transaction details must be entered, such as transaction type, amount, date, and description.
- Valid input: The transaction details entered by the user must be valid and meet the required format or criteria, such as a valid date format or a valid amount format.

C. Sequencing information

NONE

D. Error Handling/Response to Abnormal Situations

If any of the validation flows does not hold true, appropriate error messages will be prompted to the user for doing the needful.

10. Request Tech Support

A. Use Case Description

Request Tech Support
Introduction: This use case covers the process for a user to request technical support on the online course website.
Actors: Student, Teacher, Admin
Preconditions: The user is logged in to the website.
Postconditions: The tech support team is aware of the user's issue and can take appropriate action.
Flow of Events: Basic Flow: <ul style="list-style-type: none">• The user encounters a technical issue while using the website.• The user clicks on a "Tech Support" button on the website.• The user is taken to a form where they can enter the following information:<ul style="list-style-type: none">o Description of the issueo Contact information (e.g. email address, phone number)• The user clicks on a "Submit" button to send the support request.• If the support request was submitted successfully, a confirmation message is displayed to the user.• If the support request was unsuccessful, an error message is displayed to the user with instructions on how to resolve the issue. Alternative Flow: Alternative Flow 1: Invalid Access: If the user is not logged in, they are prompted to log in before submitting the support request. Alternative Flow 2: Incomplete Information: If the user does not provide the required information, they are prompted to complete the form before proceeding.
Special Requirements:

Request Tech Support

Introduction: This use case covers the process for a user to request technical support on the online course website.

Actors: Student, Teacher, Admin

Preconditions: The user is logged in to the website.

Login Credentials

Associated Use case:

Login

B. Validity Checks-

- Request ID uniqueness: Each tech support request must have a unique ID to avoid conflicts or overlap with other requests.
- Request completeness: All required request details must be entered, such as the description of the issue, the affected system, and the user's contact information.
- Access control: Access to tech support requests must be limited to authorized users to ensure data integrity and security.

C. Sequencing information

NONE

D. Error Handling/Response to Abnormal Situations

If any of the validation flows does not hold true, appropriate error messages will be prompted to the user for doing the needful.

3.3 Performance requirements

This section of the SRS outlines the specific performance requirements that the online course website must meet. These requirements may include factors such as response times, user concurrency, and system availability.

3.4 Logical database requirements

This section of the SRS describes the requirements for the logical organization and management of data within the online course website's database. This may include requirements for data storage, retrieval, and security.

3.5 Design constraints

None

3.6 Software system attributes

This section of the SRS outlines the desired attributes or qualities of the online course website's software system. These attributes may include factors such as reliability, availability, security, maintainability, and portability.

3.6.1 Reliability

This sub-section of the SRS specifies the desired level of reliability for the online course website's software system. This may include requirements for system uptime, error handling, and fault tolerance.

3.6.2 Availability

This sub-section of the SRS describes the desired level of availability for the online course website's software system. This may include requirements for system uptime, system maintenance, and disaster recovery.

3.6.3 Security

This sub-section of the SRS outlines the desired security features and measures for the online course website's software system. This may include requirements for data encryption, access control, and user authentication.

3.6.4 Maintainability

This sub-section of the SRS specifies the desired level of maintainability for the online course website's software system. This may include requirements for code modularity, documentation, and testing.

3.6.5 Portability

This sub-section of the SRS outlines the desired level of portability for the online course website's software system. This may include requirements for cross-platform compatibility, scalability, and ease of deployment.

3.7 Organizing the specific requirements

This section of the SRS outlines the methodology for organizing the specific requirements according to various factors, such as system mode, user class, objects, features, stimulus, and response.

3.7.1 System mode

This sub-section of the SRS specifies the different system modes or states that the online course website may operate in, such as login mode, course mode, or administrative mode.

3.7.2 User class

This sub-section of the SRS describes the different classes or types of users who will interact with the online course website, such as students, instructors, or administrators.

3.7.3 Objects

This sub-section of the SRS outlines the specific objects or entities within the online course website's system, such as courses, assignments, users and discussions.

3.7.4 Feature

This sub-section of the SRS outlines the specific features or functions that the online course website must provide to its users, such as course registration, content delivery, assessment tools, and discussion forums.

3.7.5 Stimulus

This sub-section of the SRS specifies the various types of input or stimuli that the online course website's software system may receive, such as user requests, system alerts, or error messages.

3.7.6 Response

This sub-section of the SRS outlines the specific responses or outputs that the online course website's software system must provide in response to different types of stimuli, such as displaying course content, sending confirmation messages, or generating error reports.

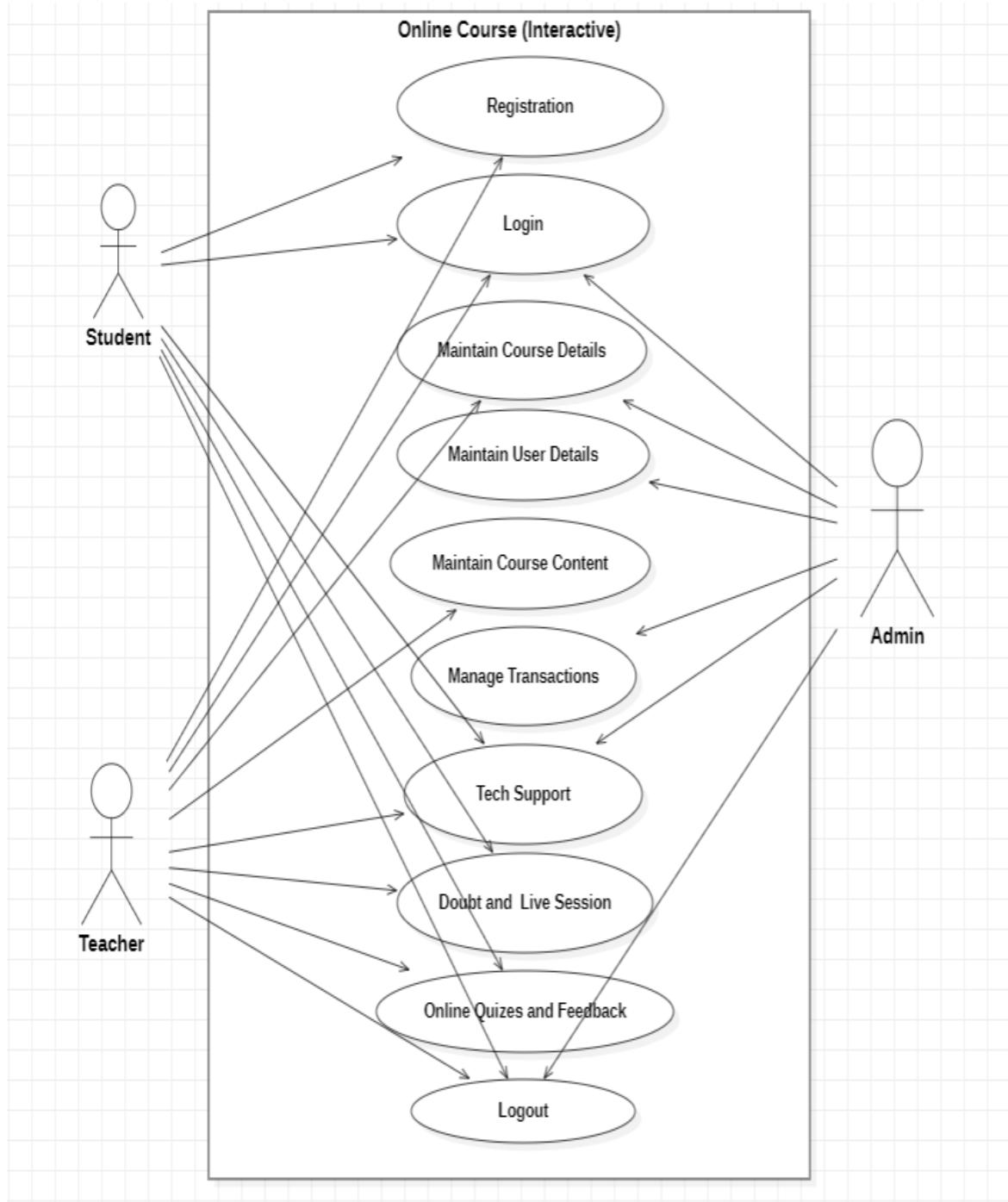
3.7.7 Functional hierarchy

This sub-section of the SRS outlines the functional hierarchy of the online course website's software system, such as the different layers of the software architecture or the sequence of operations required to complete specific functions.

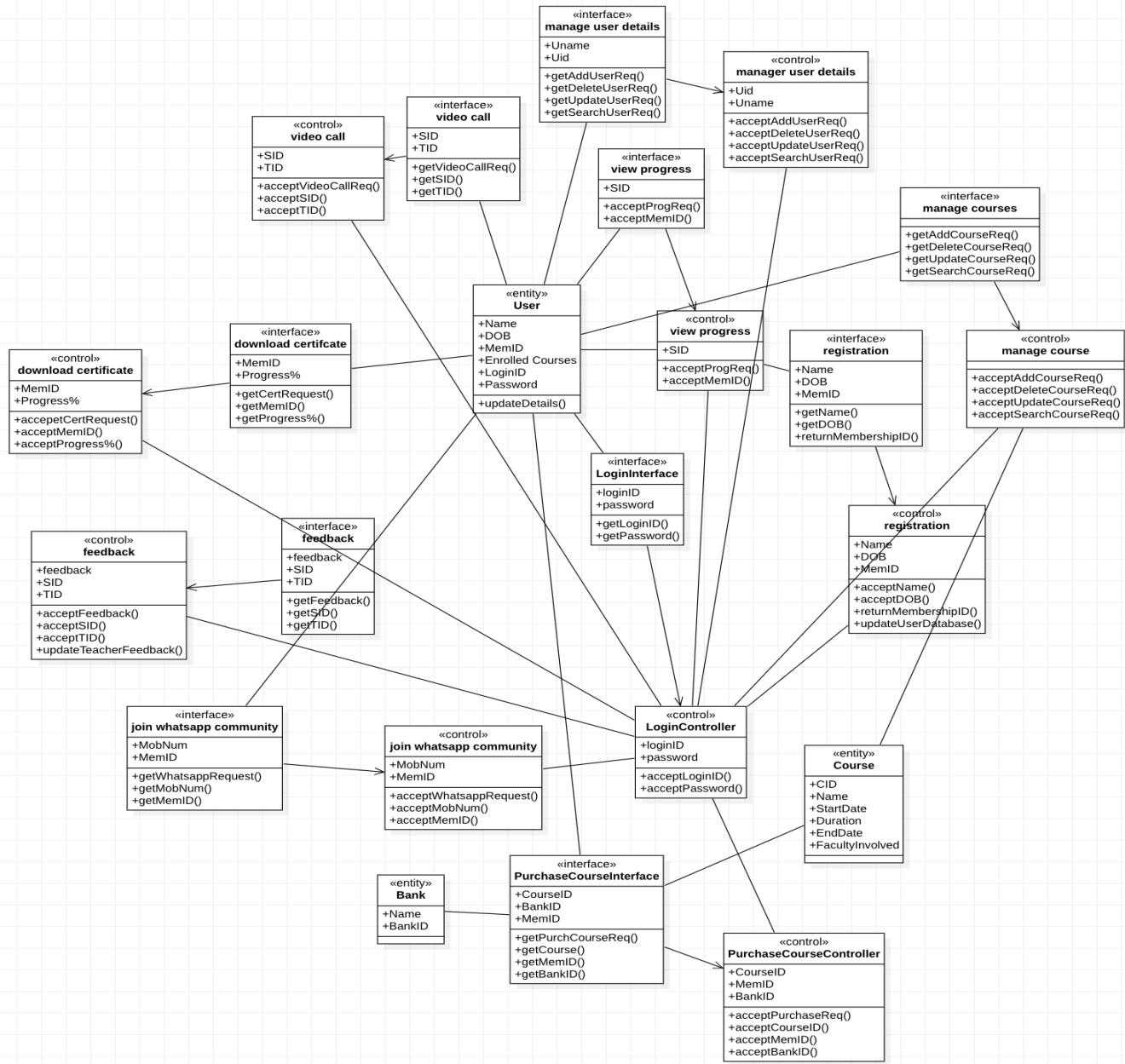
3.8 Other Requirement

None

Use Case Diagram

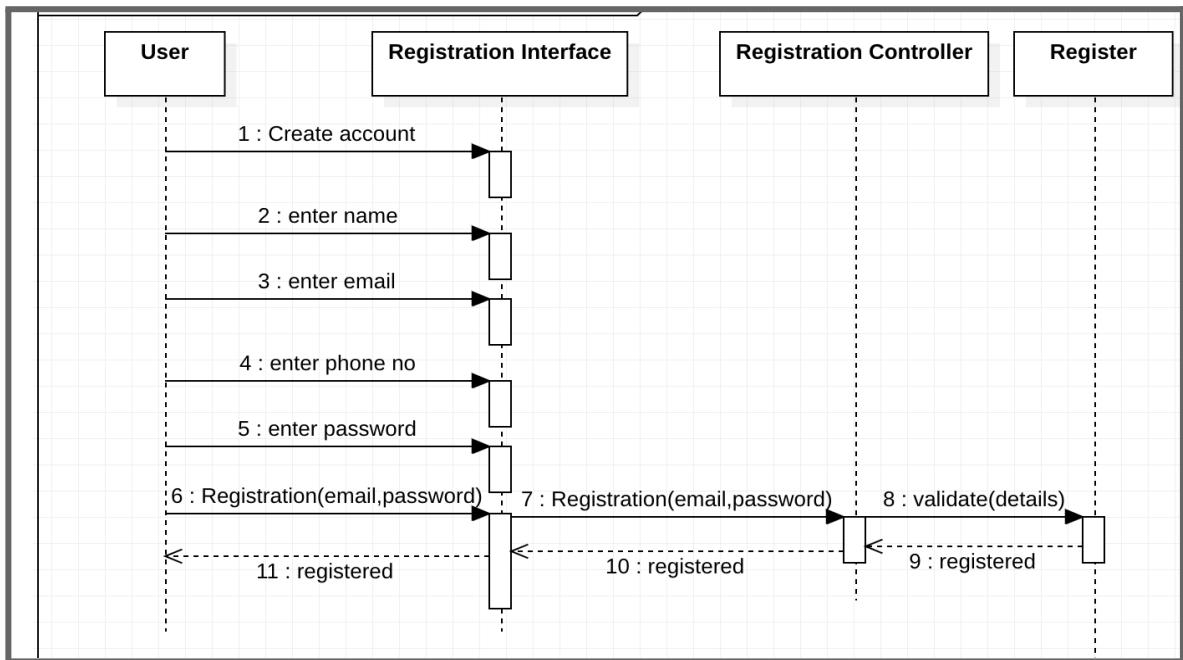


Class Diagram



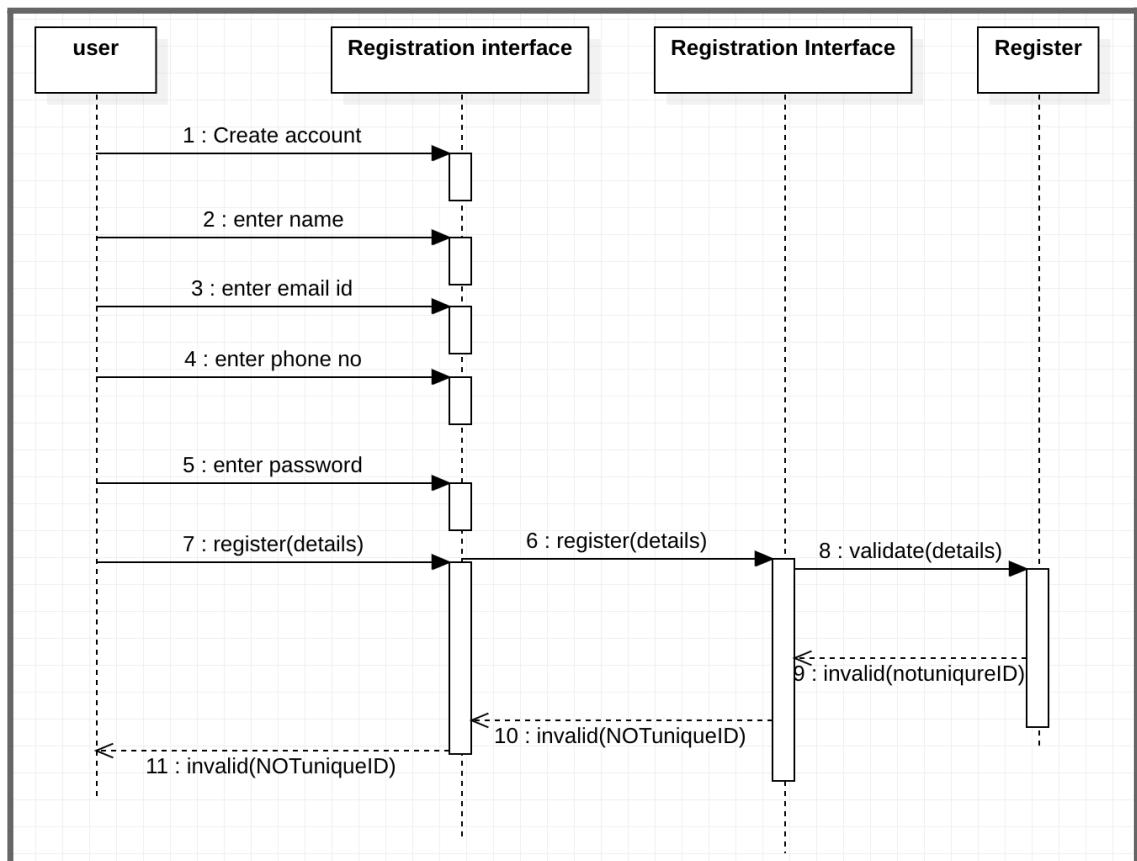
Sequence Diagram

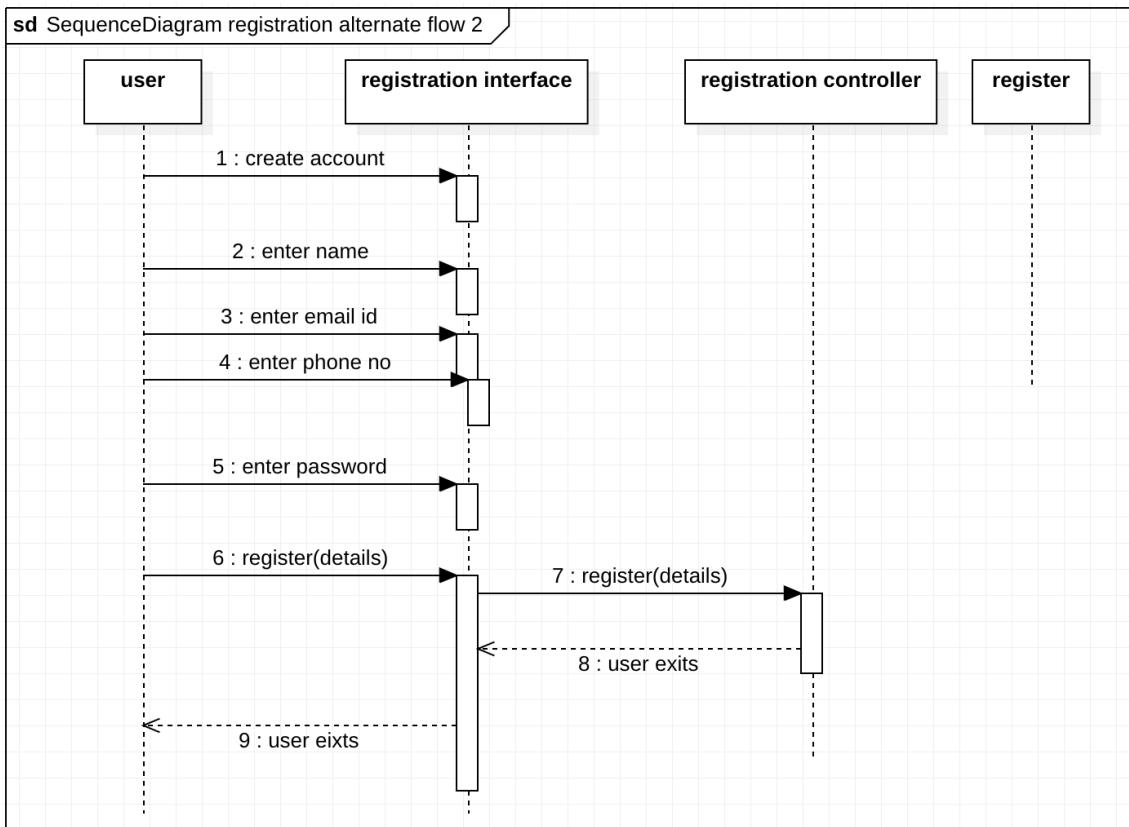
1. Sequence Diagram for basic flow of registration use case



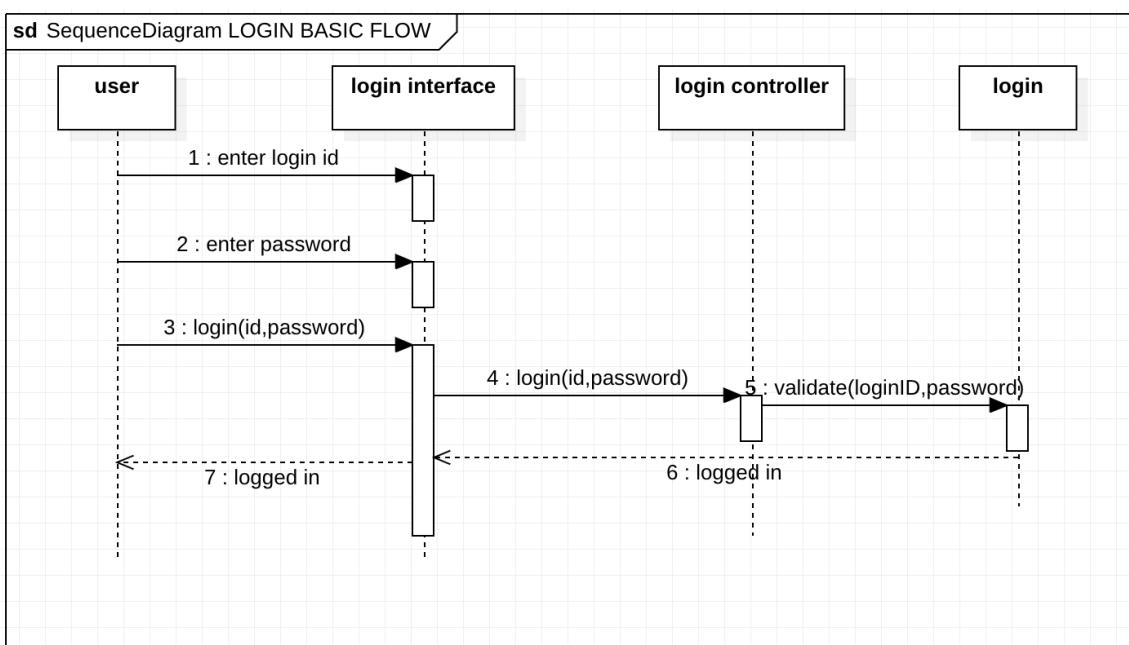
2. Sequence Diagram for Registration Alternate Flow 1

3. Sequence Diagram for Registration Alternate Flow 2

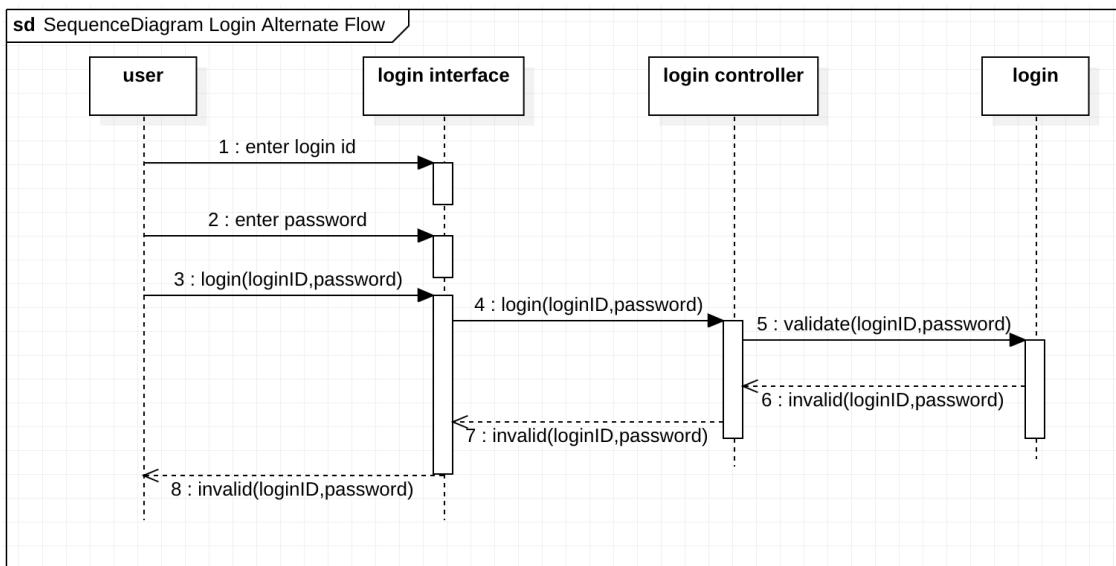




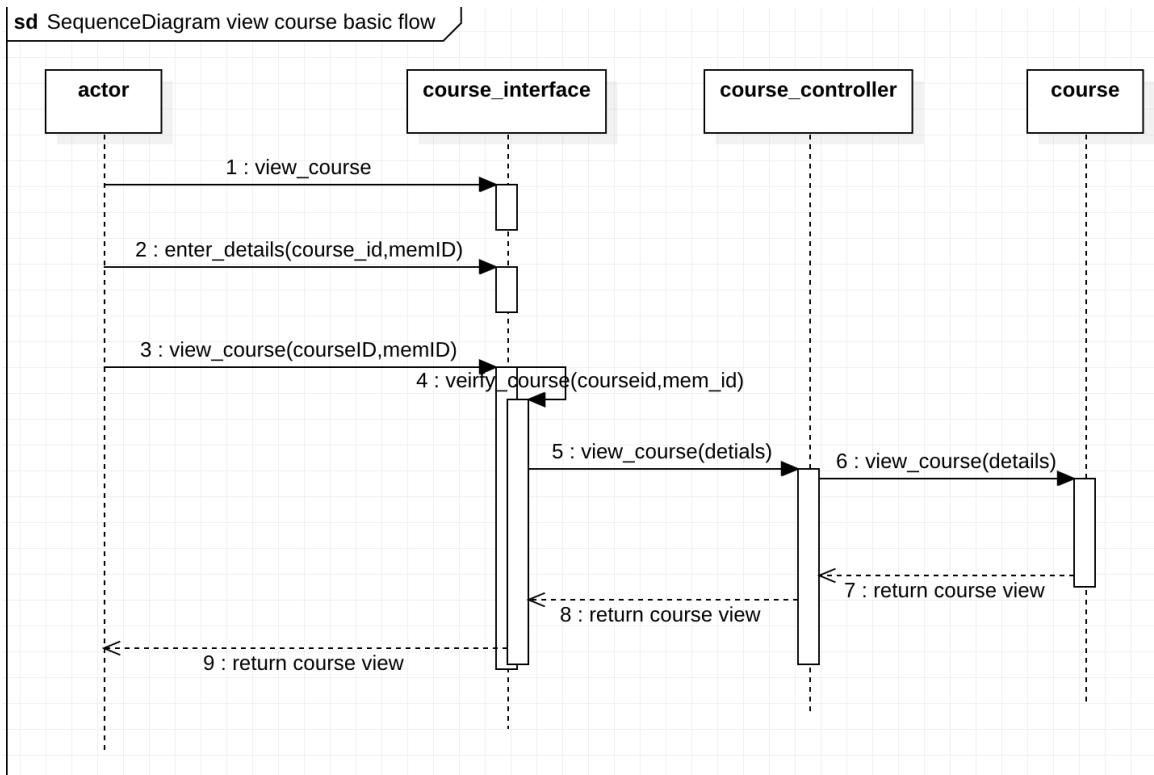
4. Sequence Diagram for Login Basic Flow



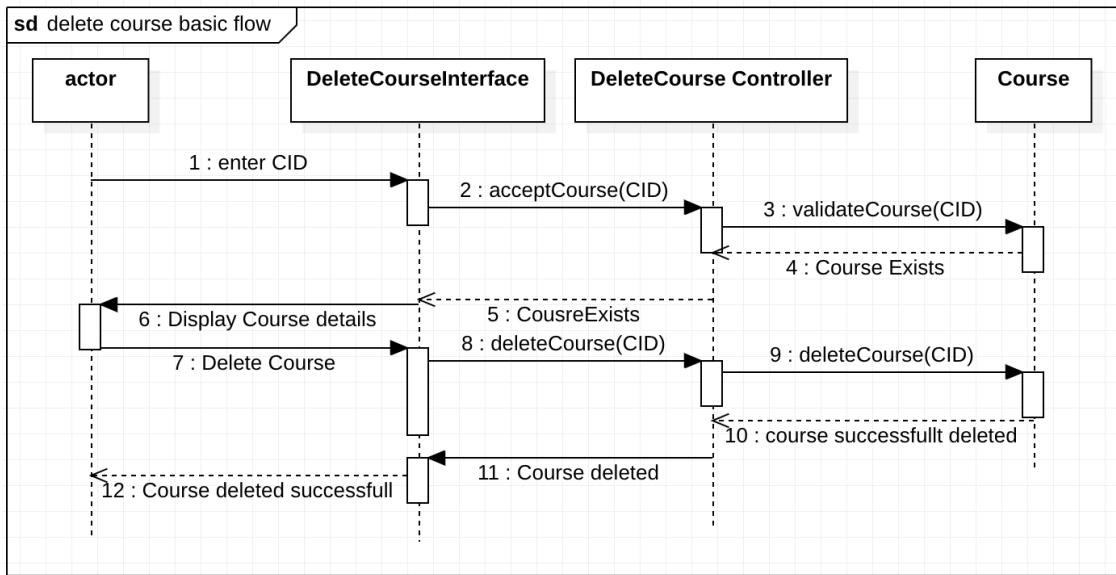
5. Sequence Diagram for Login Alternate Flow



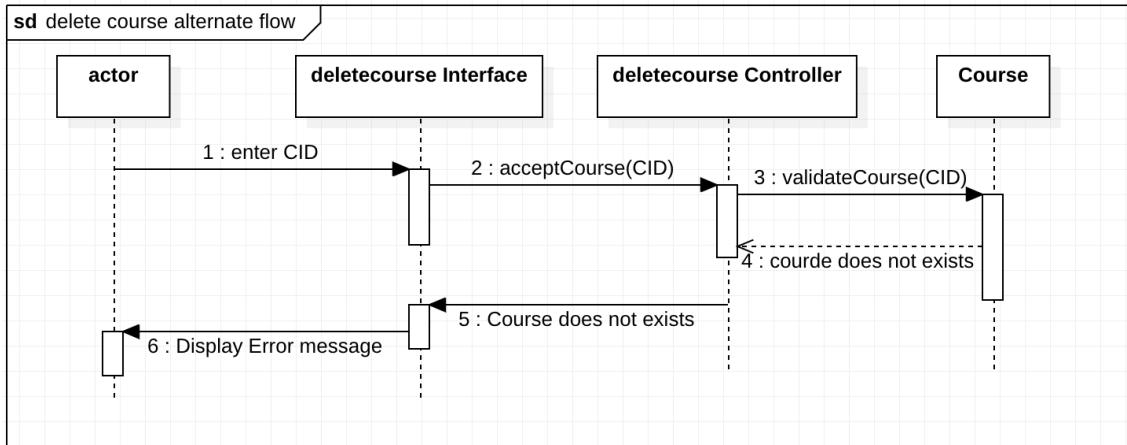
6. Sequence Diagram for View Course Basic Flow



7. Sequence Diagram for Delete Course Basic Flow

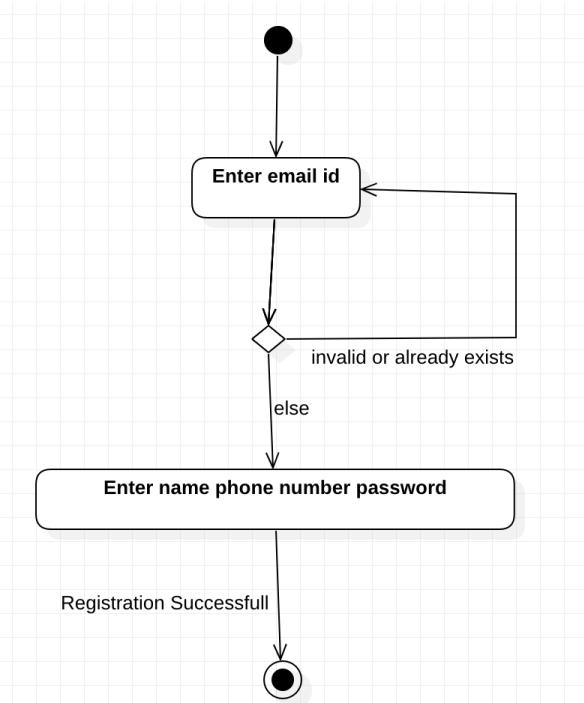


8. Sequence Diagram for Delete Course Alternate Flow

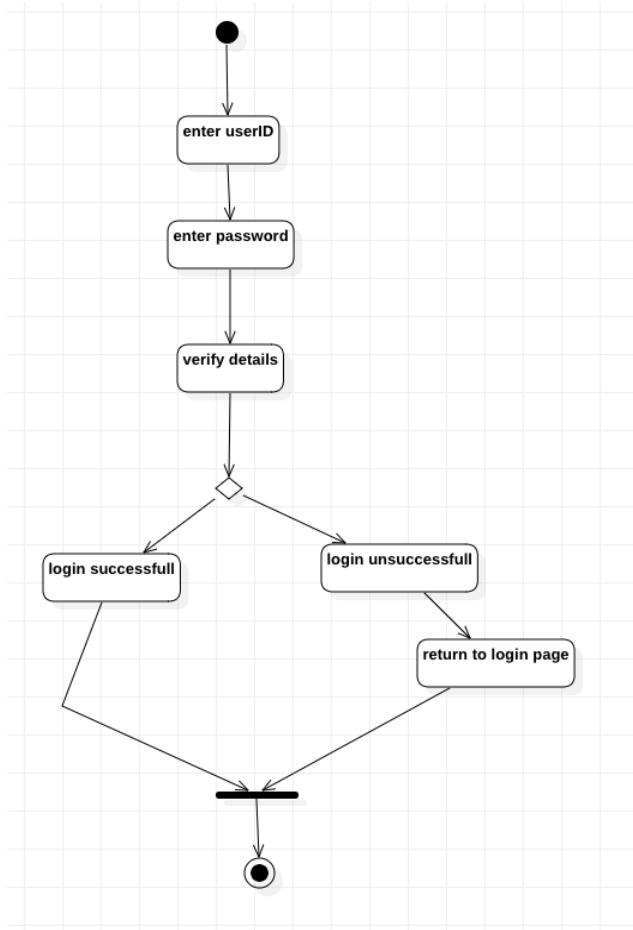


Activity Diagram

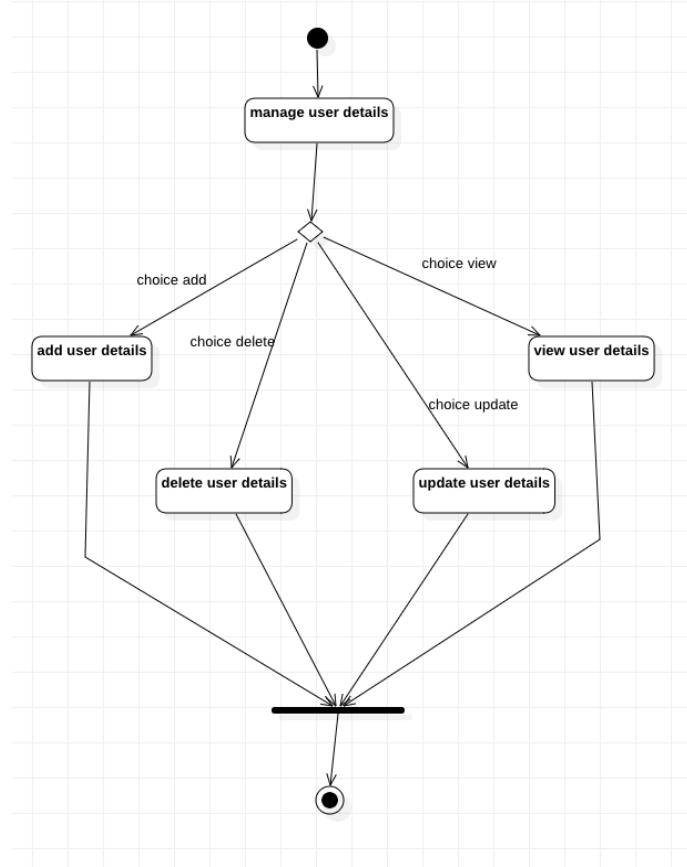
1. Registration Activity Diagram



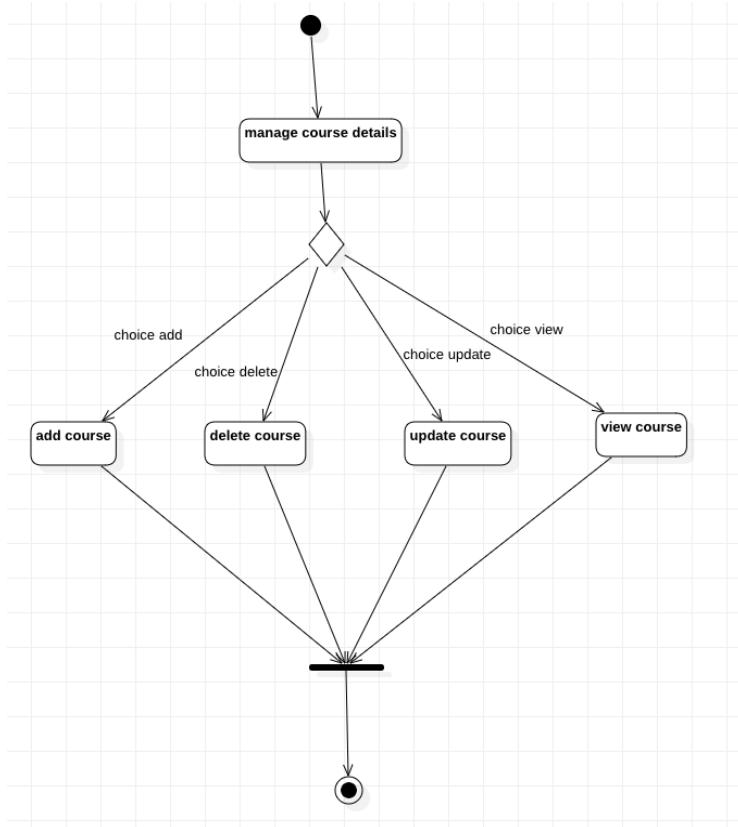
2. Login Activity Diagram



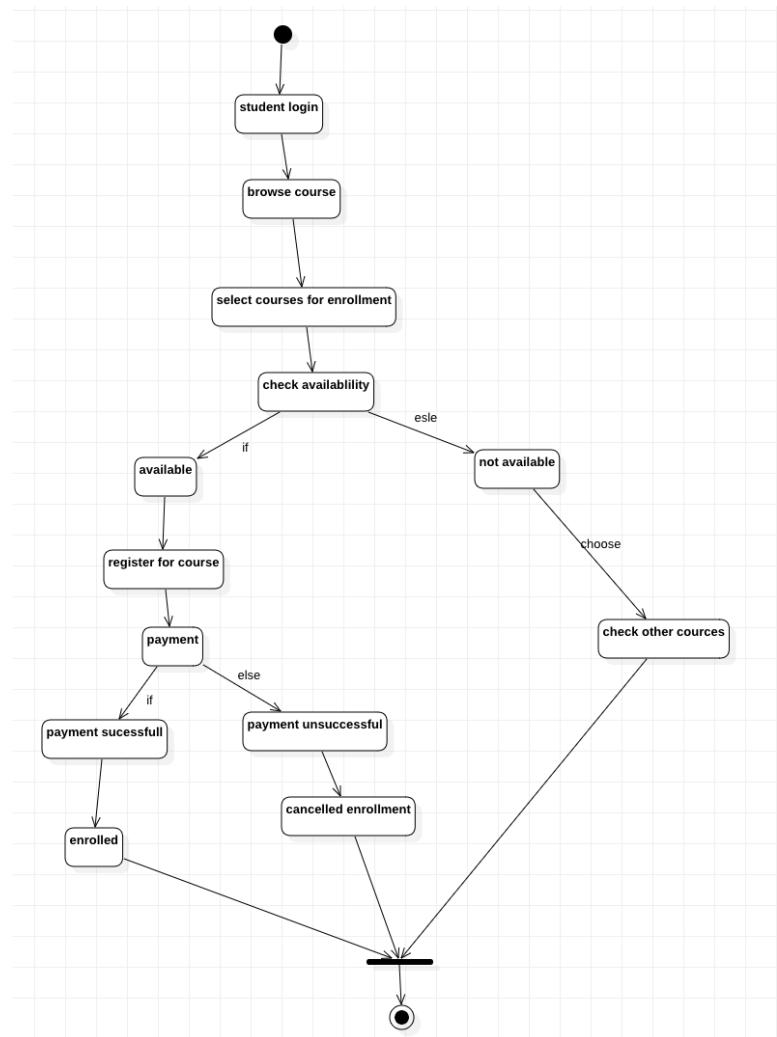
3. Maintain User Details Activity Diagram



4. Maintain Course Details Activity Diagram

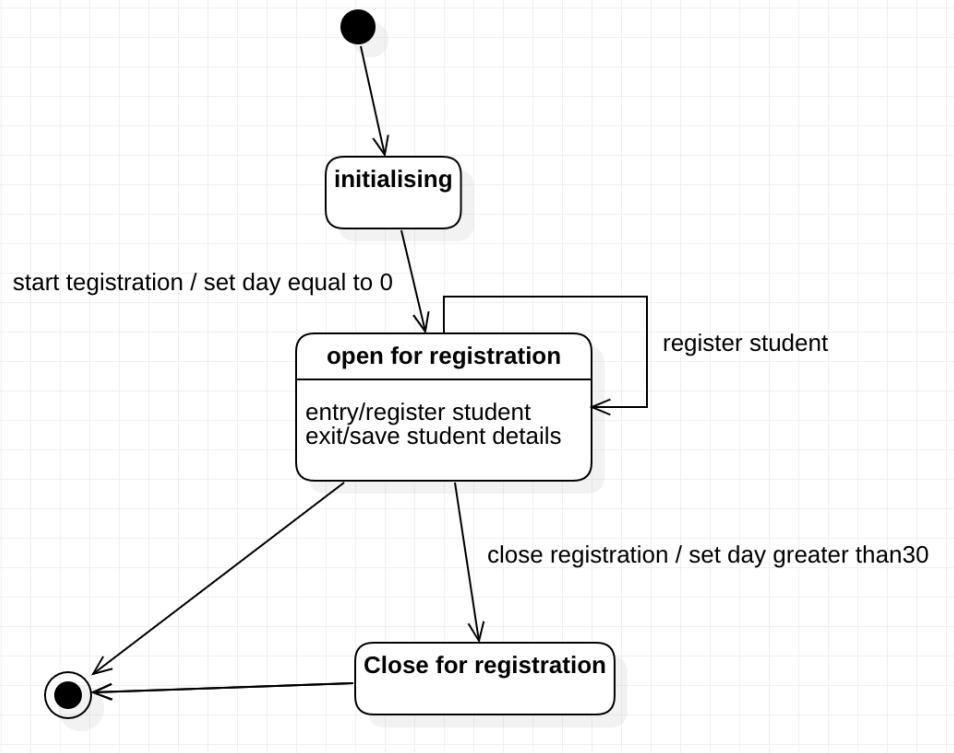


5. Enroll in Course Activity Diagram



State Chart Diagram

1. Registration State Chart Diagram



2. Login

