

E-Classroom Requirements Specification

Final Version

June 18, 2021



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1. Executive Summary

1.1 Project Overview

In this project, we aim to construct and deploy a free web & mobile service for the students of Epoka University, regarding the “Mentorship Program” of the school.

The "Mentorship Program" is a great initiative, designed for students offering support and help to other students that want to discover their interests and become high performing individuals. However, the program has continuously encountered difficulties through the years for various issues coming from both parties. As a result, especially during the time of pandemic, students who have applied for study guidance are being left without a response or supervision, and the students who have applied for mentoring, have not been assigned any tasks or students.

We're offering a solution to this problem and a better approach for the coordination team, by building a software service where students are free to apply to available courses, or apply to become a mentor and open courses themselves, with some little guidance and supervision from the assigned coordinators of the service.

1.2 Purpose and Scope of this Specification

The purpose of the software is to provide a set of solutions to the students of Epoka University that wish to follow the “Mentorship Program”.

The purpose of this specification is to assess the state of our service, to define its requirements and functions in a high-level language and to document the entire process based on the software's design, implementation and deployment.

This document addresses requirements related, and in scope of:

- In depth documentation of the features of the software (from user side & admin side)
- Technical overview of the system processes
 - User, Functional, Non-Functional and Domain Requirements
 - Means of designing the software
 - Development & Testing
 - Deployment & Maintenance

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- Definition of users' means of using and accessing the service
 - User Scenarios/Use Cases
- Description of possible dependencies and constraints

Aspects out of the scope for this specification:

- Rules & Regulations of the university that address the criteria of the program since it may continuously be aspect of change.

2. Product/Service Description

2.1 Product Context

E-Classroom is an extremely helpful software which serves the purpose and mission of the “Mentorship Program”, in that it provides all necessary functionalities and benefits needed for the program to properly work. Given the difficulties encountered through the years, this online service fulfills the scope of requirements and also takes into consideration the rules and regulations, by providing the rightful privacy and security to all its users.

This service gives an easy, flexible and efficient solution to the mentor-students, who will be able to manage their own courses and classes, have a comfortable interaction with the participants and get their feedback. The course participants will have access to a huge number of documentations, helpful resources and instructions that will be provided by the mentors.

2.2 User Characteristics

If we divide the program in three major subsections, we are able to give a more detailed description of what the software provides for all parties.

Students:

1. See the available courses offered in their department & request to enrol in the ones they need help with
2. Follow the instructions of the mentor based on what they're assigned to study and complete
3. Elaborate on any questions or uncertainties to the private/group chat with the mentor
4. See the mentor's timetable for their free hours during the week
5. Request a one-to-one appointment, etc

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6. Rate the mentor at the end of the course & see the Honours Dashboard for best-performance students during the semester

Mentors:

1. Create courses based on the subjects they feel confident to teach
2. Accept enrolment invitations on their classes - either one student or a group of students, up to them to decide
3. Assign reading lists, watching lists, quizzes to the students
4. Create a chat to communicate
5. Weekly update their free hours on their timetable
6. Keep a private to-do list on what things have been achieved until now, what tasks are being done and what are the future goals for the course
7. Retrieve the Certificate of Completion based on the ratings of the students & the course given

Academic Advisors:

1. Make decisions on the mentor requests, based on criteria like GPA, course performance, etc.
2. View mentor achievements throughout the year
3. Invite students to become mentors

2.3 Assumptions

It is assumed that only advisors have access to students' information regarding GPA and performance, in order to evaluate mentor requests & invitations.

It is assumed that the achievements of the mentors are confidential and only available to the advisor, unless wished differently from the mentor themselves.

It is assumed that the mentor understands the concept of privacy/confidentiality and does not share information regarding the course participants.

It is assumed that mentors will actively keep up with the work and interact with the course participants.

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It is assumed that the mentors will generally follow the same workflow when it comes to posting activities and resources weekly.

It is assumed that by the end of the course/semester, the participants will give a fair & unbiased feedback and rating on their mentor.

It is assumed that all students who wish to participate in the program have access to a digital device like PC, laptop and/or mobile.

It is assumed that all students have strong internet service at the time of usage.

2.4 Constraints

This system will be potentially constrained by:

1. The fact that there has to be a wide range of courses provided by mentors.
2. The fact that the number of regular users (students) will probably always outcome the number of available mentors.
3. The students are constrained to only use their Epoka mails to join the program.
4. Potential constraint in the software performance since it depends on the usage traffic.
5. The need of a fast internet connection and strong mobile data signals.
6. Having all the students, but especially mentors, understand the way the service works and how to use it best.

2.5 Dependencies

Dependencies that affect the requirements:

- This service is dependent on a successful communication between the mentors and the students.
- This service is dependent on a strong capability from mentors to manage their own classes and optimize studying.
- Students can only follow courses depending on what the mentors have created, regardless of what subject they need most help with.
- Students can join the course depending on whether the mentor will accept them or not.

3. Requirements

Priority Definitions

The following definitions are intended as a guideline to prioritize requirements.

- Priority 1 – The requirement is a “must have” as outlined by policy/law
- Priority 2 – The requirement is needed for improved processing, and the fulfillment of the requirement will create immediate benefits
- Priority 3 – The requirement is a “nice to have” which may include new functionality

3.1 Functional Requirements

	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_01	The system should provide a web application which will be used by all types of users	This will be their main platform of operation	2		
BR_02	The system should provide the users with a cross-platform mobile application.	This will give them an alternative way of accessing the services provided by the system	2		
BR_03	The system should handle multiple account types	Based on the status of the user, (student, mentor, advisor), each will have their own view of the system	2		
BR_04	The system should handle unregistered users	Students that have not registered in the Mentorship program will only be able to see the Register option and not have access to any published course	2		
BR_05	The system should restrict account registration	Students and mentors should only be able to register with their Epoka mails	2		

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	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_06	The system should require the department & role information when registering	Users should be required to specify the department they belong to and the type of service they're applying for (student or mentor)	2		
BR_07	The system should not give access to the users applying as mentors, until advisor approval	All users that wish to become mentors have to be evaluated by their respective advisor, based on mentor criteria	2		
BR_08	The system should not give access to students that have requested to enroll in a course, until mentor approval	Students that wish to participate in a course will be able to do so only if the mentor agrees and accepts their request	2		
BR_09	The system should make available to the students to explore courses within their own department	Students can enroll only in courses that are published within the current semester by mentors in their department	2		
BR_10	Students should be able to access all courses they've enrolled in	This includes the courses that are currently being taught and the courses that have been completed	2		
BR_11	Within a course, students should be able to have access to all tasks and resources uploaded by the mentor	Tasks and resources including reading lists, links to tutorials, uploaded videos, compressed files, etc.	2		
BR_12	Within a course, students should have options available as to locally download the resources or access them on the browser	Since the resources may be compressed files or book attachments, the students should be able to use them properly	3		

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	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_13	Within a course, students should view the uploaded tasks and resources structured in academic weeks	Specifically, each academic semester lasts approx. 16 weeks, so the files that the mentor assigns should correspond to the academic week they were uploaded (+ specific date and time)	3		
BR_14	Students should be able to access basic information about the mentor of a course they're enrolled in	Basic information includes: their full name, a preferred picture and bio, all courses the mentor is teaching for the current semester, the mentor's timetable for the current week	3		
BR_15	Mentor's and student's personal information is only shared with their consent.	The only public information for the mentors will be the current courses that they're teaching, and that is public only within the users of the system, not the entire school.	2		
BR_16	Students following the same course will have available only personal details that the mentor has chosen to share in their profile.	If the mentor does not wish to make public their years of study, the students will have no way of retrieving that information from within our system.	2		
BR_17	Students following the same course will have no information about other students on the course.	They can only directly communicate with the mentor. If the mentor wishes to teach in group meetings, they'll have to take the approval of every participant.	2		
BR_18	Students should be able to see the week's agenda within a course they're enrolled in	The agenda will include already appointed meetings, in the calendar, & free consultation hours that the mentor has entered	2		

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	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_19	Students should be provided with an option to request an appointment with the mentor, within a course they're enrolled in	They have to specify the preferable date and time for the appointment, the type (one-to-one or online), and briefly describe the topics they wish to discuss	2		
BR_20	When a course is marked as finished, the students will have no more access to the mentor's profile and personal information.	The only resources that will remain will be the course's materials shared by the mentor, and that is if they choose not to delete the course.	3		
BR_21	The system should provide the mentors the option to create a course based on their specifications	The specifications include the type of the course, code and name, department, etc.	2		
BR_22	The system should make available to the mentor all the courses they have created	All courses include the courses they're currently teaching and the courses they have finished	2		
BR_23	Mentors should have access to all students that are following their classes	This information should include all students, specifying the course code they're part of	2		
BR_24	The system should provide to the mentor the option of sending an email to students enrolled in their classes	This option should be provided in the same list where mentors can access all students	3		
BR_25	The system should provide to the mentor the option of removing a particular student from the course they're enrolled in	This option should be provided in the same list where mentors can access all students	3		
BR_26	The system should provide to the mentor the week's activity on all courses	Week's activity includes all posts and resources shared with the classes	3		

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	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_27	The mentor should be able to decide what personal information they're comfortable sharing with the enrolled students	This means they can edit their profile anytime they want, they choose whether they want a profile picture or not & they choose what their bio says	2		
BR_28	The system should make available to the mentor to update their timetable at anytime	The general timetable keeps information about meetings of all the courses that the mentor is currently teaching	2		
BR_29	The system should provide to the mentor the option of accepting/declining all student requests for enrollment	The mentor decides which of these students and how many of them can follow the course that they're offering	2		
BR_30	The system should provide to the mentor an honor certificate upon course completion	The certificate will include the course, semester & student rating. The mentor should be able to download it anytime	2		
BR_31	The system should provide to the advisor the option of accepting/declining mentor requests	The advisor should evaluate the ability of a student to teach a course, based on criteria such as GPA and performance, and give them access to create courses	2		
BR_32	The system should provide to the advisor the option of inviting students to join the program as mentors	The students should receive an automated email from the advisor, inviting them to become mentors	3		
BR_33	Advisors do not have access to the details of the courses being taught, nor the students following these courses.	They can only see the mentor's and general information about each of their courses, as well as the achievements at the end of the semester.	2		

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	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_34	When a course is marked as finished, advisors will no longer have access to the mentor's list for the courses of the semester.	They can only approve new ones and check currently opened courses.	2		

3.2 Non-Functional Requirements

3.2.1 Product Requirements

3.2.1.1 User Interface Requirements

The main application shall be a web application, which can be seen with any type of web browser and the other alternative shall be the mobile application providing similar services.

The main page of the web application, shall be a simple login interface, where it will ask the user for their Epoka mail and password. Based on the given credentials, the necessary system constraints will apply. The user will gain access to the system, in case of proven authenticity, otherwise an error message of invalid credentials will be displayed.

If the user is not registered, they will only have access to the general information about the Mentorship Program and will be prompted to join it.

As part of the system structure different system modules are included, depending on the type of user they were registered as. Such modules are dashboard module, courses module, student's module, mentor module, timetable module, etc.

Once the user is logged in the web application, they shall have access to specific modules of the system. The system will redirect the regular user (students) to the courses module. This module will provide information to the user such as the courses they're currently enrolled in, the courses they've completed and the option to explore new courses. The system will redirect the admin (mentor) to the dashboard module, with course information, week's activity, to-do list and other actions.

Another module provided by the system is the timetable module. This module is a calendar of the week's agenda, including meetings and consultations. The students shall be able to view the timetable for each course they're currently enrolled in, the mentor shall be able to edit their own agenda that shall be shown in their profile and the timetable for every course they're teaching.

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The most important module shall be the course module, where students will have access to assignments, tasks, reading lists, tutorials and other resources provided by the mentor of the course, structured in academic weeks.

By the end of the course, the mentor shall be awarded with a certificate of completion, auto-generated based on the students' evaluation of the mentor. The mentor shall be able to access and download their achievements at any time.

3.2.1.2 Usability

- **Accessibility & Learnability**

The software shall be easy to access remotely and at all times, since both students and mentors will be able use the application from any of their devices.

Specific error messages will be displayed, by also identifying the specific action, that caused the error. The application is specified for certain users, thus the system will know, when a certain action is not allowed.

- **Flexibility**

The software shall be easy to update in order to accommodate new requirements

The software shall be designed in such a way that the isolation and management of errors is possible

- **Effectiveness**

The software shall provide the mentors with practical tools of managing their data and with a convenient way of communicating with their class participants.

3.2.1.3 Performance

The main application, being a WebApp, will be stored in a web server. The application's time of execution will depend on:

1. The algorithm's efficiency for fetching data from the database.
2. The users Internet connection strength.
3. The server's hardware capabilities
4. The operating system installed on a server.
5. Third party library dependencies that need to be installed.

6. The number of active users accessing the website.

3.2.1.3.1 Capacity

1. The application needs to be stored in a web server.
2. The application will be restricted to a maximum size of 100 MB.
3. The database itself will not be very large and complex. This means that the database will not occupy too much space as compared to the application.
4. The application is expected to work properly, for every active user. None the less, for sake of performance and efficiency, the applications usage will be restricted, to the number of users registered on the systems database.
5. The application should load perfectly, even on a slow Internet connection speed.
6. The mobile application will be deployed in the Google Play Store & App Store.
7. The mobile application will connect to the central database and again, will have a size of no more than 100MB.

3.2.1.3.2 Availability

1. The web application will be available for use 24/7.
2. The mobile application will be available for use 24/7.
3. The mobile/web application will work in an optimal manner during the working hours of the day.
4. The application can be accessed and used in any geographical area, as long as the user has an active Internet connection.
5. By creating separate user sessions, their overall work efficiency and productivity will not decrease by much, while using the application.
6. Specific error messages will be provided, in case an action would cause systems fatal error.

3.2.1.3.3 Latency

The latency of the application will mainly depend on:

- The Internet connection strength.
- The efficiency of the algorithm for fetching the data from the database.
- The size of the database.

Different services of the application may show different performance, in order to provide fast, accurate, reliable and productive functions, however the load time should not exceed 100ms for any of them.

3.2.1.4 Manageability/Maintainability

3.2.1.4.1 Monitoring

- The system will be evaluated on a regular basis.
- This assessment will be carried out by looking at the data integrity and keeping track of the error logs that are created automatically in case of abnormal activities.
- In order to suppress non-substantial errors and identify and deal with substantial errors appropriately, a few cases must be expected and dealt within the design.
- The users of the system must be able to follow clear protocols, according to their type, with several prompts and validations whenever errors occur.

3.2.1.4.2 Maintenance

In the event that the system fails or crashes, the program will restart. The user will be redirected to the page where the crash occurred during this phase. In the event that the application does not restart correctly, the following two scenarios should be considered:

1. The web application's storing server is already down, and a restart is needed.
2. Contact the institution/ICTCO, who are already familiar with the application's layout and algorithm, to correct and make the application available.

3.2.1.5 System Interface/Integration

The database management system is the application's most vulnerable component.

Only the ICTCO will have access to it and will be responsible for its implementation.

The user is not permitted to alter the database in any way. This task will be completed by the application for the user.

3.2.1.5.1 Network and Hardware Interfaces

The web application needs to be stored in a web server, so that the browser user agent is be able to create a TCP connection with server.

The Doctrine ORM, which deals with databases needs to get installed for proper functionality (not by end users, but by the ICTC department).

3.2.1.6 Security

3.2.1.6.1 Protection

The web application will be developed using the Symfony PHP framework. Symfony by default already protects against common authentication and session management attacks.

Furthermore, the Security component of Symfony will be properly installed and maintained to:

- provide all the common security features, from authentication to authorization and from encoding passwords to loading users
- integrate the core sub-component with the HTTP protocol to handle HTTP requests and responses
- provide protection against CSRF attacks.

3.2.1.6.2 Authorization and Authentication

When a request points to a secured area (user tries to access a page or service), and one of the listeners from the firewall map is able to extract the user's credentials from the current Request object, it should create a token, containing these credentials.

The next thing the listener should do is ask the authentication manager to validate the given token, and return an authenticated token if the supplied credentials were found to be valid. The listener should then store the authenticated token using the token storage.

Since deciding whether or not a user is authorized to perform a certain action can be a complicated process (e.g., when a user is both a student and a mentor), the standard AccessDecisionManager itself depends on multiple voters, and makes a final verdict based on

all the votes (either positive, negative or neutral) it has received, by recognizing several strategies.

All these components are handled by Symfony if the right installation and usage is done.

3.2.1.7 Data Management

We define the following data management measures that are to be followed by the university and all types of users of the system:

1. Mentor's and student's personal information is only shared with their consent. The only public information for the mentors will be the current courses that they're teaching, and that is public only within the users of the system, not the entire school.
2. Students following the same course will have available only personal details that the mentor has chosen to share in their profile. If the mentor does not wish to make public their years of study, the students will have no way of retrieving that information from within our system.
3. Students following the same course will have no information about other students on the course. They can only directly communicate with the mentor. If the mentor wishes to teach in group meetings, they'll have to take the approval of every participant.
4. When a course is marked as finished, the students will have no more access to the mentor's profile and personal information. The only resources that will remain will be the course's materials shared by the mentor, and that is if they choose not to delete the course.
5. Advisors do not have access to the details of the courses being taught, nor the students following these courses. They can only see the mentor's and general information about each of their courses, as well as the achievements at the end of the semester.
6. When a course is marked as finished, advisors will no longer have access to the mentor's list for the courses of the semester. They can only approve new ones and check currently opened courses.

3.2.1.8 Standards Compliance

The system will be developed in such way that will respect the Rules and Regulations determined by Epoka University and it will adapt to meet the required criteria of the Mentorship Program, in order to provide higher proficiency and productivity for both students and mentors.

3.2.1.9 Portability

The application will be easy to access as long as you have an internet connection.

The web application can be accessed by using either a computer or mobile phone and it doesn't depend on the device's operating system.

The mobile application is cross-platform and can be installed either Google Play Store, App Store or any other digital distribution platform.

3.2.2 Organizational Requirements

3.2.2.1 Environmental Requirements

Our software will be efficient and effective on its use, helping both students and mentors on saving the time it usually takes to manage the participants' meetings, the time it takes to share all materials, discuss problems and choose appointments.

Floor Space: It won't require any additional equipment to maintain the system other than what the ICTCO already has.

Power Supply: The power is provided from the infrastructure of the school and it only needs access to a school computer for maintenance, a PC or mobile phone otherwise (for regular usage).

Internet Connection: Epoka's internet connection, home internet connection, either Wi-Fi or Ethernet, and/or mobile data will be sufficient for accessing the application.

3.2.2.2 Operational Requirements

E-Classroom is an application that will provide better communication and easier task management between the students and the mentors. Furthermore, since the operations will be easily accessible to both parties, and advisors will have the option to invite mentors directly

through the system, it will boost and increase the active students that wish to become mentors and it will provide a variety of different courses offered, making the students have the opportunity to choose with who and what that want to study.

The ICTCO members will be the only one to have access to the system's implementation and their job is to maintain it.

Mentors will be the only users to access CRUD operations within a course. Regular students will only be able to view the posted materials.

Advisors will only be able to accept and invite mentors. They won't have detailed information about the courses' activities, nor their students.

3.2.2.3 Development Requirements

a. Client-Side Programming (Front-end)

- *Technologies to be used in the client-side web development:*

Bootstrap (CSS framework)

Javascript (for some faster page interaction actions)

Yaml (for configuration files and data storage)

- *Technologies to be used in the client-side mobile development:*

Bootstrap (CSS framework)

Angular (TypeScript-based framework)

b. Server-Side Programming (Back-end)

- *Technologies to be used in the server-side web development:*

Symfony framework (PHP framework)

- *Technologies to be used in the server-side mobile development:*

PHP

MySQL database.

3.2.3 External Requirements

3.2.3.1 Regulatory Requirements

Our software will operate under the Rules & Regulations of Epoka University, acknowledging that only the advisor can have direct access to mentors' academic achievements (as in GPA), therefore making them the only valid faculty member capable of accepting and choosing mentors of the program.

The software will also act in accordance with the provisions of the law no. 9887 "On the protection of personal data" and the related sub-legal acts, in case of any sensitive information shared and/or stored by the mentor (like an identification number to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity), though that is unlikely to happen.

3.2.3.2 Ethical Requirements

Mentors must agree to share their personal information within the system and it will only be used for educational purposes. The information they will share is their full names, their Epoka email addresses, their study program and their free agenda (as they wish). No other individual outside of the system, not even non-registered Epoka students or non-enrolled students will have the right to ask for this information or access it in any way by themselves.

Students must agree to respect the mentor's rights and wishes to keep this information confidential and share only with the mentor's permission. If by any chance, the mentor's privacy feels violated, he/she has the full right to remove from the class any student that threatens it, with no need of explanation.

On the other hand, the mentor must agree to act professionally and not share any student information without permission.

3.2.3.3 Legislative Requirements

Based on law No. 10221, “On protection from discrimination”, the elimination of all privileges and of unfair discrimination is guaranteed for everyone, on the basis of the personal, economic, social and cultural rights assured by the Constitution of the Republic of Albania and international acts ratified by the Republic of Albania as well as by the laws in force. It is the responsibility of the mentor to treat, teach and act equally professional to all its students. The student has the right to report any behavior that seems to favor discrimination acts. The proper actions and consequences will be taken by the administration and the mentor's right to practice teaching will be immediately revoked.

Workplace health and safety (WH&S) legislation requires workplaces (the university) to be, as far as is reasonably practicable, physically and mentally safe and healthy for all employees and students.

This legislation acknowledges that employees & students have a responsibility for their own health and safety as well, however the meeting placement, though it is recommended to be within the university premises, it is up to the mentor and the participants.

Under the “On protection of personal data” and similar legislation assured by the Constitution of the Republic of Albania, all mentors, students and advisors must observe confidentiality and respect the privacy of each individual.

3.3 Domain Requirements

The system manages everything related to the proper operation of the Mentorship program.

The system is specific and only serves to Epoka University, therefore all above-mentioned requirements include domain requirements as well.

The only requirement that cannot be fully accomplished by the system itself, is the criteria for choosing the mentors. That is aspect to Rules & Regulations up to the university and the corresponding advisors.

4. Software Design

4.1 User Cases & Scenarios

4.1.1 User Scenarios

Notice: We are using the abbreviations U – referring to students (users), A – referring to mentors (admins).

We refer to User if it's not specified whether they're a student or a mentor, otherwise we specify the user type.

Scenario U1: User is not logged in

1. User is presented with a Login/Signup option.
2. User is presented with detailed info about the program.

Scenario U2: User is registering for the first time

1. User is asked to enter their active Epoka mail
2. User is asked to enter and confirm a valid password
3. User is asked to specify the department they're in
4. User is asked to choose the type of account they want to create (student or mentor)
5. User account is pended until the respective advisor approves if the type of account is "mentor"
6. User is redirected to explore courses if the type of account is "student"
7. Sign out button is added to the dashboard

Scenario U3: User fails to register

1. User is prompted the specific error that is occurring (wrong email, not Epoka mail, invalid password, etc.)
2. User retries to enter the right credentials

Scenario U4: User is successfully logged in

1. User is asked to enter their Epoka mail
2. User is asked to enter their password

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3. If their credentials are matched in the database, they are authorized to be redirected
4. User gets redirected to the dashboard of the website

Scenario U5: User failed to login

1. User is asked to enter their Epoka mail
2. User is asked to enter their password
3. The credentials that were entered are not found in the database
4. User is displayed an error message “Your credentials were not correct, please try again”
5. User tries to enter the credentials again

Scenario U6: Student requests to enroll in a course

1. Student is able to see all courses published for the current semester by mentors in their department
2. Student wants to participate in a specific course
3. Student requests to enroll in the course
4. Student waits for the mentor’s confirmation

Scenario U7: Student is accepted to attend a course

1. Student has gained access to the course by the mentor
2. Student can now see the dashboard of the course, containing assignments and resources posted by the mentor in academic weeks
3. Student has access to all services within the course provided for students

Scenario U8: Student wants to read the assignments of a course

1. Student can see the assignments structured in academic weeks
2. Student is only able to view, open and download the resources
3. Student will have two options in the corner of each assignment: open in new tab or download locally
4. Student chooses to open the files in the web browser and the files will be shown in a new tab if the browser supports the file type
5. Student chooses to download the files in their local device and they’ll be able to access the files where they store it

Scenario U9: Student wants to see the mentor's profile

1. For each course enrolled in, student will be able to view basic information for the mentor of the course
2. Student can see a profile picture, followed by a brief bio description
3. Student can see all the courses the mentor is teaching in the current semester, followed by a link to the course and an option to request enrollment in other courses
4. Student can see the mentor's timetable for the current week, with the agenda for all their courses together

Scenario U10: Student sees the timetable within a course they're enrolled in

1. For each course enrolled in, student will be able to view the week's agenda provided by the mentor for that specific course
2. The timetable will include the meeting that have already been decided
3. The timetable will include free consultation hours provided by the mentor if the student wishes to request an appointment

Scenario U11: Student requests an appointment with the mentor

1. Student is prompted to check the course's timetable before setting a preferable date and time for the appointment
2. Student is asked to enter the date and time for the appointment
3. Student is asked to specify the type of appointment (one-to-one or online meeting)
4. Student is asked to briefly describe the topics they wish to discuss in the meeting
5. Student waits for mentor confirmation

Scenario A1: Mentor creates a new course

1. Mentor is asked to specify the course code and course name
2. Mentor is asked to specify the department the course belongs to (for documentation purpose only)
3. Mentor is only able to teach courses within their department
4. Mentor publishes the course and waits for student requests

Scenario A2: Mentor views all courses they've taught

1. Mentor will be able to access all courses at any time
2. Mentor will access the courses in two different sections: the courses they're currently teaching and the courses they've completed
3. Mentor will be able to edit and post only on the ongoing courses
4. Mentor will be able to open access any specific course by being redirected to a new tab

Scenario A3: Mentor sees all the students that are following their courses

1. Mentor will have access to a table containing the names of all students that are currently enrolled in the courses and the respective course code
2. Mentor has an option to email to each student, in their Epoka mails
3. Mentor has an option to remove any student

Scenario A4: Mentor chooses to send email to a student

1. Mentor presses the “mail” option in the All-Students table
2. Mentor is redirected to their Epoka compose mail option in Gmail account, with the student’s mail as recipient
3. Mentor is able to compose and send the desired email from there

Scenario A5: Mentor chooses to remove a student from a specific course

1. Mentor presses the “remove” option next to student name in the All-Students table
2. Mentor is prompted to reconfirm the removal of the student
3. Once the mentor chooses “Remove”, the student is deleted from the student list and will no longer have access to course materials

Scenario A6: Mentor sees all students that have requested to enroll

1. Mentor will have access to a table containing all student requests for the courses of the current semester
2. Mentor will see the student’s full name, Epoka mail, and the course code they’ve requested to enter

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3. Mentor will have an option to accept/decline the student
4. Once the mentor accepts a request, they're giving the student access to course materials and the student will show on the list

Scenario A7: Mentor opens and edits “My Profile”

1. Mentor will have access to their profile and choose what will be visible to the students
2. Mentor will be able to update their profile picture at any time
3. Mentor will be able to edit their bio
4. Mentor will be able to add or delete course links

Scenario A8: Mentor edits “My Timetable”

1. Mentor will have access to their personal agenda for the current week
2. Mentor will have all the courses they're currently teaching listed in a table
3. Mentor will be able to drag and drop the courses in the timetable in the preferred time of the day
4. Once the mentor chooses “Update timetable”, the timetable will be automatically updated and shown in their profile, when accessed by students.

Scenario A9: Mentor sees the current week's activity in dashboard

1. Mentor will access the week's activity in their dashboard
2. The activities include course materials poster, meetings held, and other resources
3. The activities will be listed by date, starting from the most recent post

Scenario A10: Mentor posts materials in a course

1. Mentor will access the homepage of each course they're teaching for the semester
2. Mentor will access the recourses and activities structured in academic weeks
3. Mentor will have options to add, edit, open, copy, delete or change settings of the entire academic week
4. Mentor has the same options for each individual material within the academic week
5. After they post the new materials that they wish to share with the class, they choose “Make visible” option
6. The new materials are made public to the course participants

Scenario A11: Mentor sees all the students following a specific course

1. Mentor will have access to a table containing the names of all students that are currently enrolled in the specific course they're accessing
2. Mentor has an option to email to each student, in their Epoka mails
3. Mentor has an option to remove any student

Scenario A12: Mentor edits “Course Timetable”

1. Mentor will have access to the timetable for the specific course
2. Mentor will have to specify already arranged meetings and free hour consultations
3. Mentor will be able to drag and drop the meeting or the consultation in the timetable in the preferred time of the day
4. Once the mentor chooses “Update timetable”, the timetable will be automatically updated and shown in “View Timetable” module of the students.

Scenario A13: Mentor receives appointment request

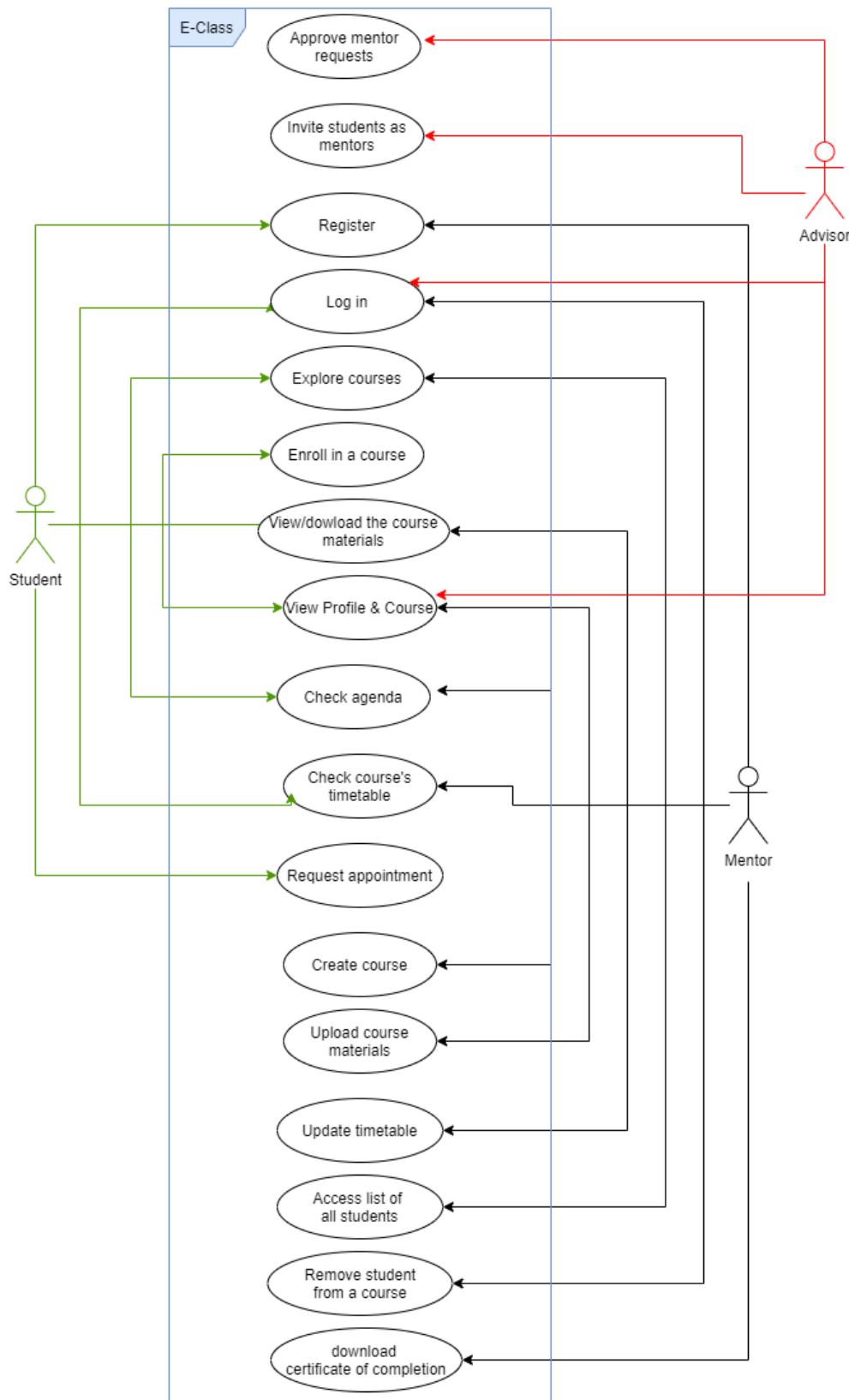
1. Mentor gets a notification for a requested appointment by a student
2. Mentor sees the student that made the request, the time of appointment, the type and a brief topic description
3. Mentor is prompted to choose whether to accept or decline the appointment
4. If mentor accepts, the appointment is added to the “Course Timetable” agenda

Scenario A14: Mentor receives certificate upon course completion

1. Mentor has access to their achievements
2. Upon course completion and student ratings, the “My achievement” module is automatically updated
3. The module shows the course name, semester taught and overall student rating
4. Mentor has the option to download the certificate
5. The certificate will be in the pdf format, containing mentor, course and rating information
6. The certificate will be issued by the CPAO of Epoka University and will be valid for life.

4.1.2 Use Cases

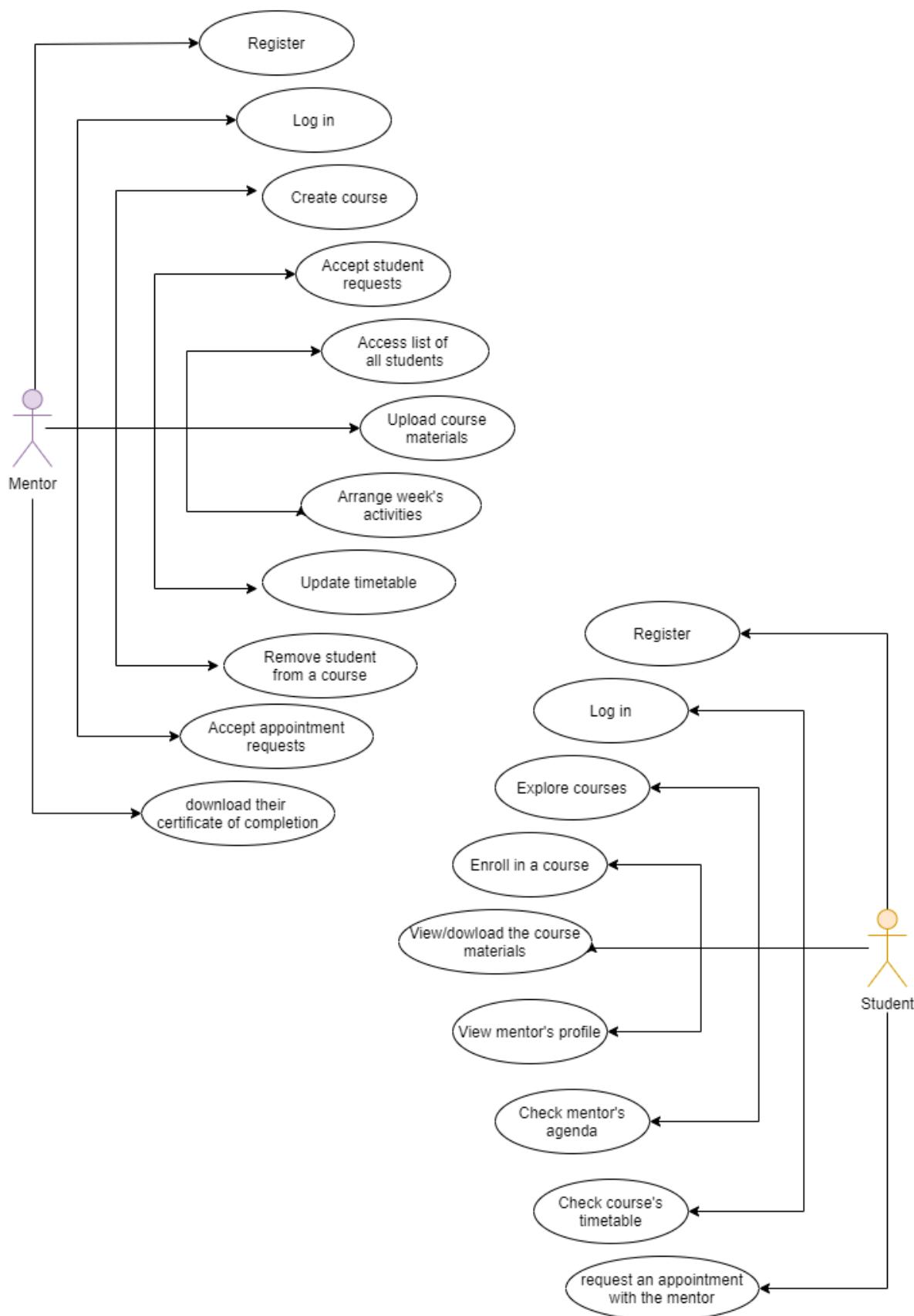
UC – General



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UC – Mentor

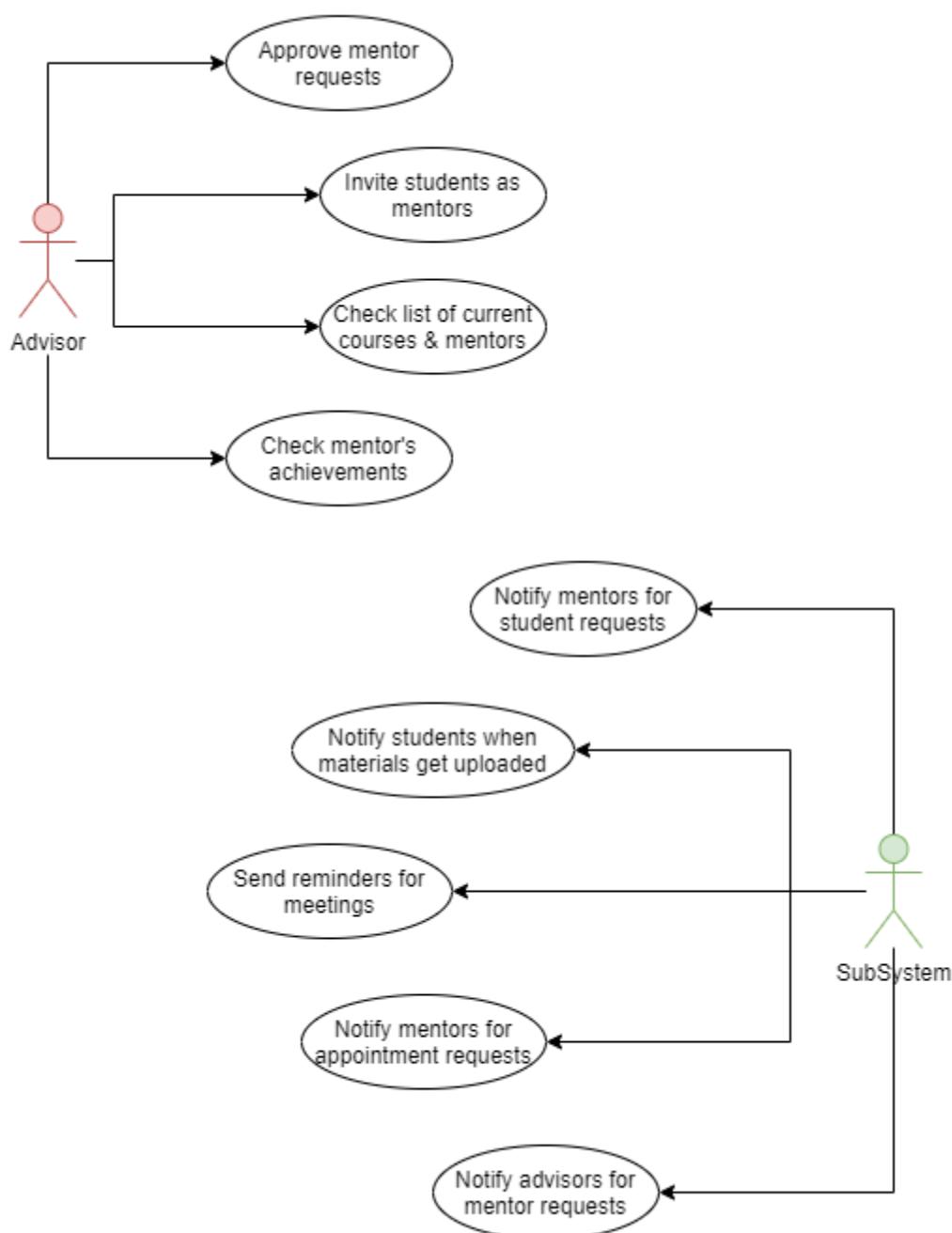
UC – Student



E-Classroom Requirements Specification

UC-Advisor

UC-Subsystem



4.1.3 Use Cases Extended

UC_U2 User registers for the first time	
Summary	Each user can create a student or mentor account.
Actors	Student, Mentor, Advisor
Description	User should enter their email, password and department they have. If they choose to have a student account, they will be redirected to explore courses. If they register as mentor their account will be pended until the respective advisor approves it.
Pre-Condition	Only users with an active Epoka account should be able to register.
Post-Condition	User will be directed to the respective dashboard.

UC_U4 User logs in to their existing account	
Summary	Users can log in by entering their email and password.
Actors	Student, Mentor
Description	Users enter their email and password. If it matches, they get redirected to their dashboard. If it fails to log in, an error message is displayed to retry their credentials.
Pre-Condition	User should already have registered to the program.
Post-Condition	User gets directed to the respective dashboard of the website.

UC_U6_U7 Student attends a course	
Summary	Students can enroll and attend any course that is being taught by mentors of the same department
Actors	Student, Mentor
Description	If a student requests to enroll in a specific course, they should wait for the mentor of that course to accept it. When the student enters into the course has access to all services like assignments, resources, materials, meetings etc.
Pre-Condition	Student should request to be enrolled in the course.
Post-Condition	Student has access to all services of the course.

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UC_U8 Student accesses course materials	
Summary	Student can see the assignments structured in academic weeks within a course
Actors	Student
Description	Student is only able to view, open and download the resources They have two options in the corner of each assignment: open in new tab or download locally
Pre-Condition	Student should be enrolled in the course
Post-Condition	Access and manage course materials

UC_U9 Student accesses mentor's profile	
Summary	For each course enrolled in, student will be able to view basic information for the mentor of the course
Actors	Student
Description	Student can see a profile picture, followed by a brief bio description, see all the courses the mentor is teaching in the current semester, followed by a link to the course and an option to request enrollment in other courses. And they can see the mentor's timetable for the current week, with the agenda for all their courses together
Pre-Condition	Student should be enrolled in the course
Post-Condition	Access personal shared information by the mentor

UC_U11 Student requests appointment	
Summary	The students are allowed to request an appointment with the mentor of the course they're attending
Actors	Student
Description	The student has the right to check the timetable of the course and request an appointment in the free consultation hours. Then wait for the approval of the mentor.
Pre-Condition	Student should apply for appointment only in the free consultation hours.
Post-Condition	Appointment is added to the timetable and student can attend it.

UC_A1 Mentor creates a new course	
Summary	Mentor has the right to create a new course.
Actors	Mentor
Description	Mentor should enter the name, code of the new course and the department where it belongs.
Pre-Condition	The course should be part of the department that mentor is teaching.
Post-Condition	The course is added to Explore page and students can enroll in it.

UC_A3_A4_A5 Mentor manages student list	
Summary	Mentor can see and manage all students following their current courses
Actors	Mentor, Student
Description	The mentor has accepted the student to be part of the course but whenever he wants to email, remove or manage a student he can access this info in the Students dashboard
Pre-Condition	Student must be part of at least one of the current courses.
Post-Condition	The student gets an email, or is removed from the course and has no access to the course, depending on the mentor's choice.

UC_A6 Mentor manages student requests	
Summary	Mentor can see and manage all students requests to the courses they're currently teaching
Actors	Mentor, Student
Description	Mentor will see the student's full name, Epoka mail, and the course code they've requested to enter. They will have an option to accept/decline the student.
Pre-Condition	Student must have sent an enrollment request
Post-Condition	Once the mentor accepts a request, they're giving the student access to course materials and the student will show on the list

UC_A7 Mentor edits profile	
Summary	Mentor can edit their profile info shared to the students.
Actors	Mentor
Description	They can make changes to their bio, their course links of their profile picture.
Pre-Condition	Mentor needs to be logged in and access the profile page
Post-Condition	The profile gets updated and it is visible to the students.

UC_A8 Mentor edits Full Timetable	
Summary	Mentor can edit their personal agenda for the current week
Actors	Mentor
Description	Mentor will have access to their personal agenda for the current week in the form of the calendar. They can add a new meeting, consultation or general event. They can update or delete a current one.
Pre-Condition	Mentor needs to be logged in and access the timetable
Post-Condition	The timetable gets updated and students get a notification

UC_A10 Mentor edits course materials	
Summary	Homepage of each course is editable only by the mentor who teaches it and they can edit shared materials.
Actors	Mentor
Description	Mentor can make changes in the main page of each course, where he can add, delete, edit materials and decide when he wants to make it public for the students to see it.
Pre-Condition	Mentor should be logged in and access the preferred course stream.
Post-Condition	Material changes are now visible by the students, who get a notification that the stream was updated.

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UC_A8	Mentor edits Course Timetable
Summary	Mentor can edit a specific course's agenda
Actors	Mentor
Description	Mentor will have access to their course agenda for the current week in the form of the calendar. They can add a new meeting, consultation or general event. They can update or delete a current one.
Pre-Condition	Mentor needs to be logged in the specific course and access the timetable
Post-Condition	The timetable gets updated and only the students of the course get a notification

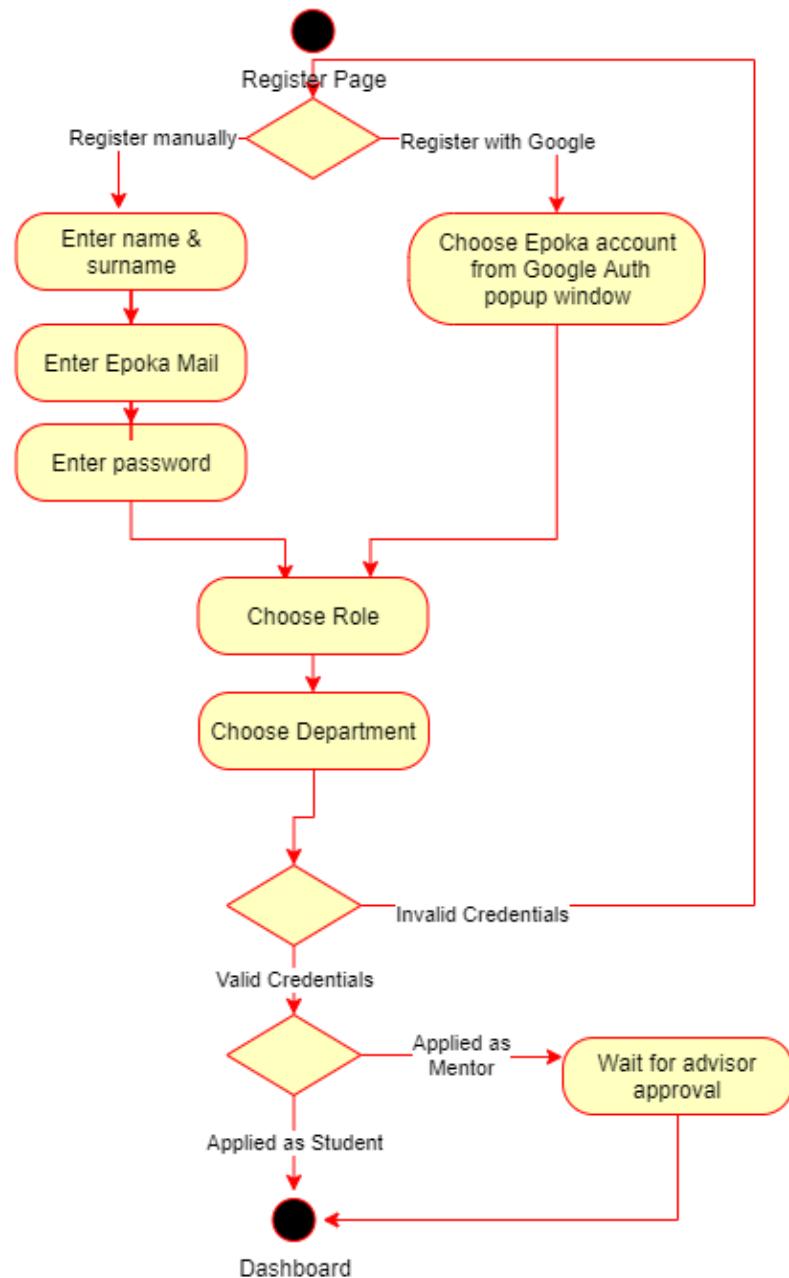
UC_A13	Mentor receive appointment request
Summary	Mentor can receive appointment requests from the students they're teaching to.
Actors	Mentor, Student
Description	Mentor receives appointment requests and can decide whether to accept, update the details or decline the request.
Pre-Condition	The mentor should be logged in the course and the student must send an appointment request.
Post-Condition	Appointment status notification and meeting added to timetable

UC_A14	Mentor receives Certificate
Summary	Mentor receives certificate upon completion of each course.
Actors	Mentor
Description	In the end of each course the system gets updated and the mentor automatically receives his certificate, where he has the option to download it.
Pre-Condition	The course should be completed.
Post-Condition	The mentor accesses and download the certificate issued by Epoka University.

4.2 Diagrams

4.2.1 Activity & Swimlane Diagrams

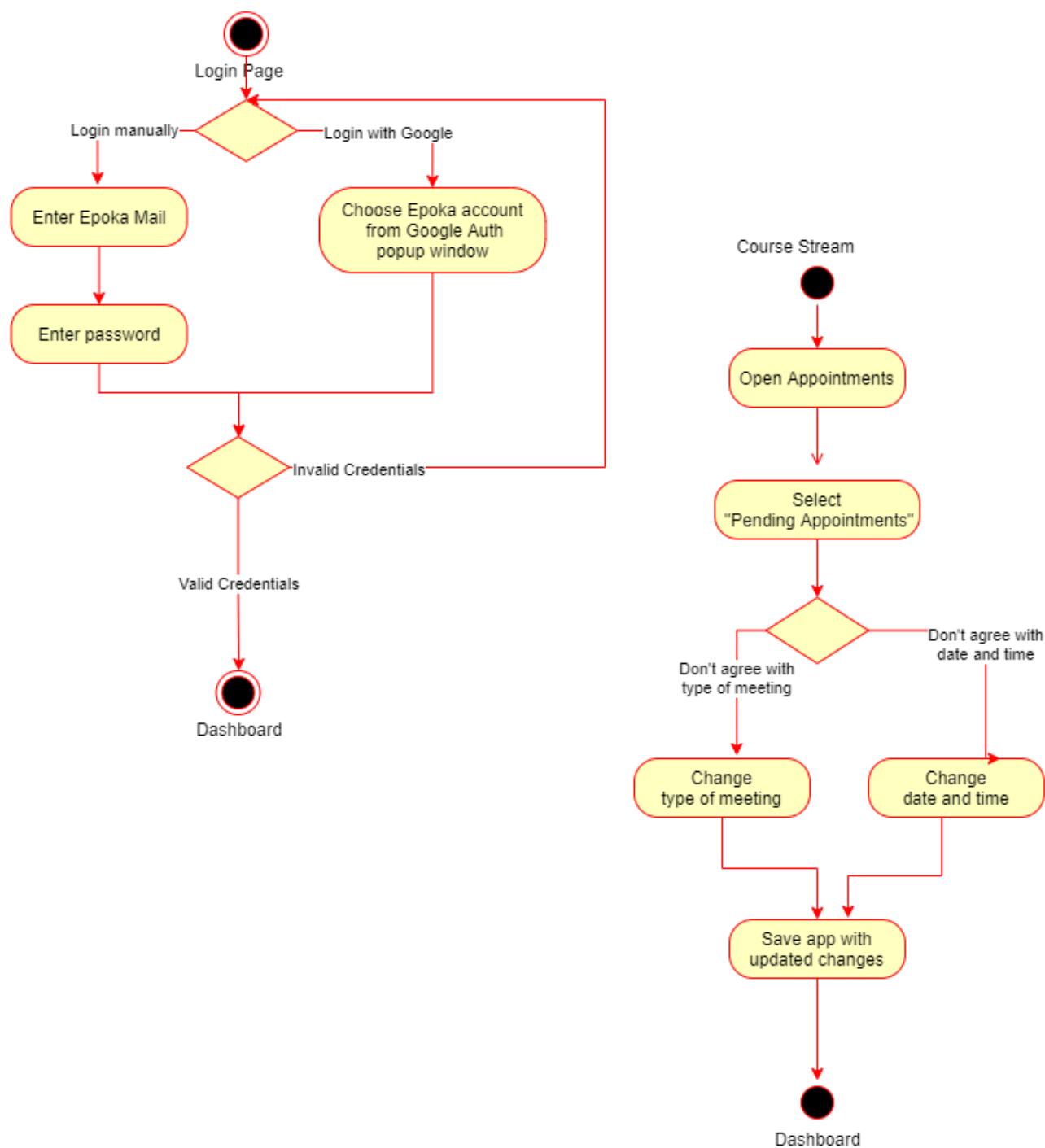
AD_U2_U3_Register



E-Classroom Requirements Specification

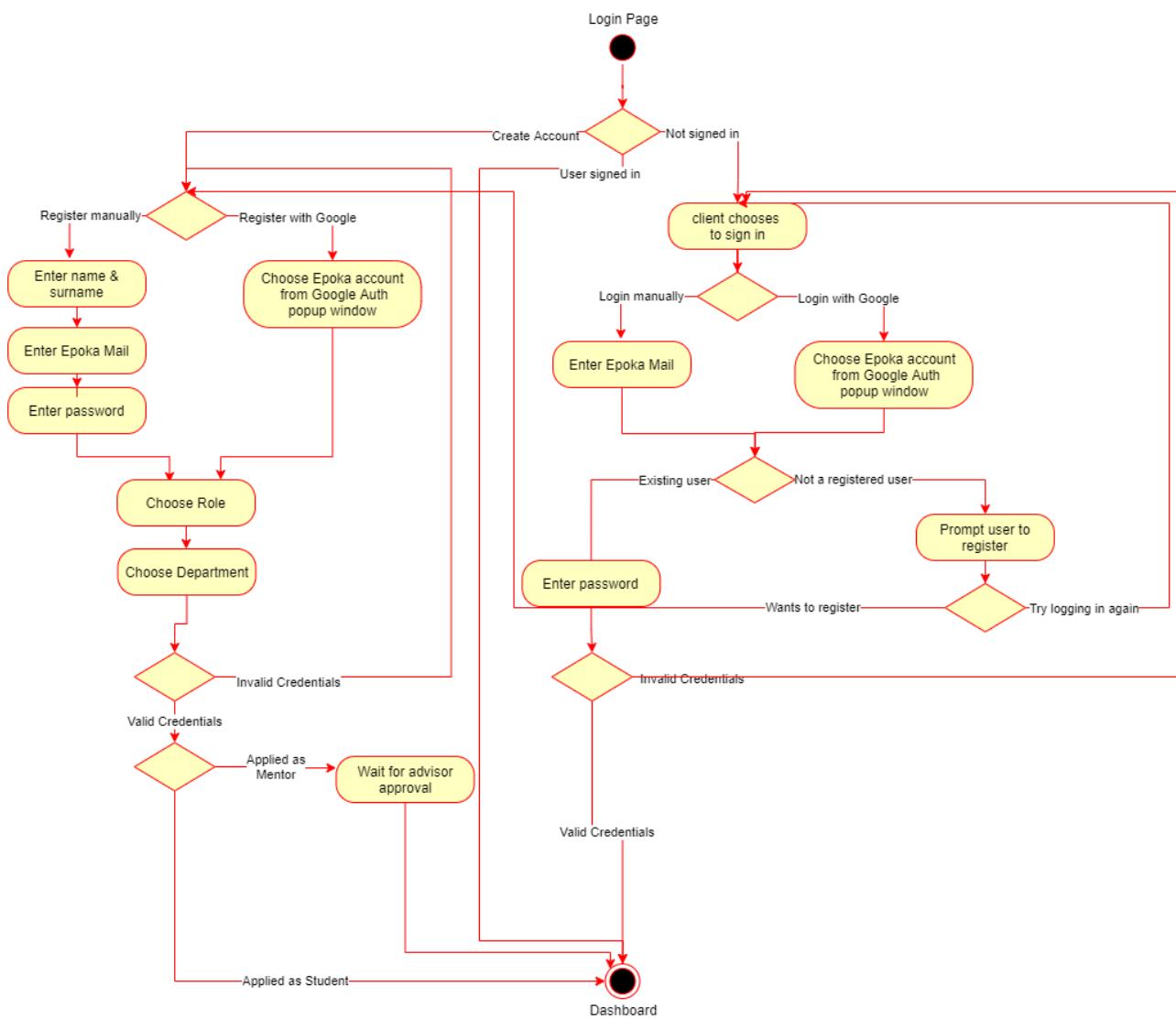
AD_U4_U5_Login

AD_A13_Update_Appointment

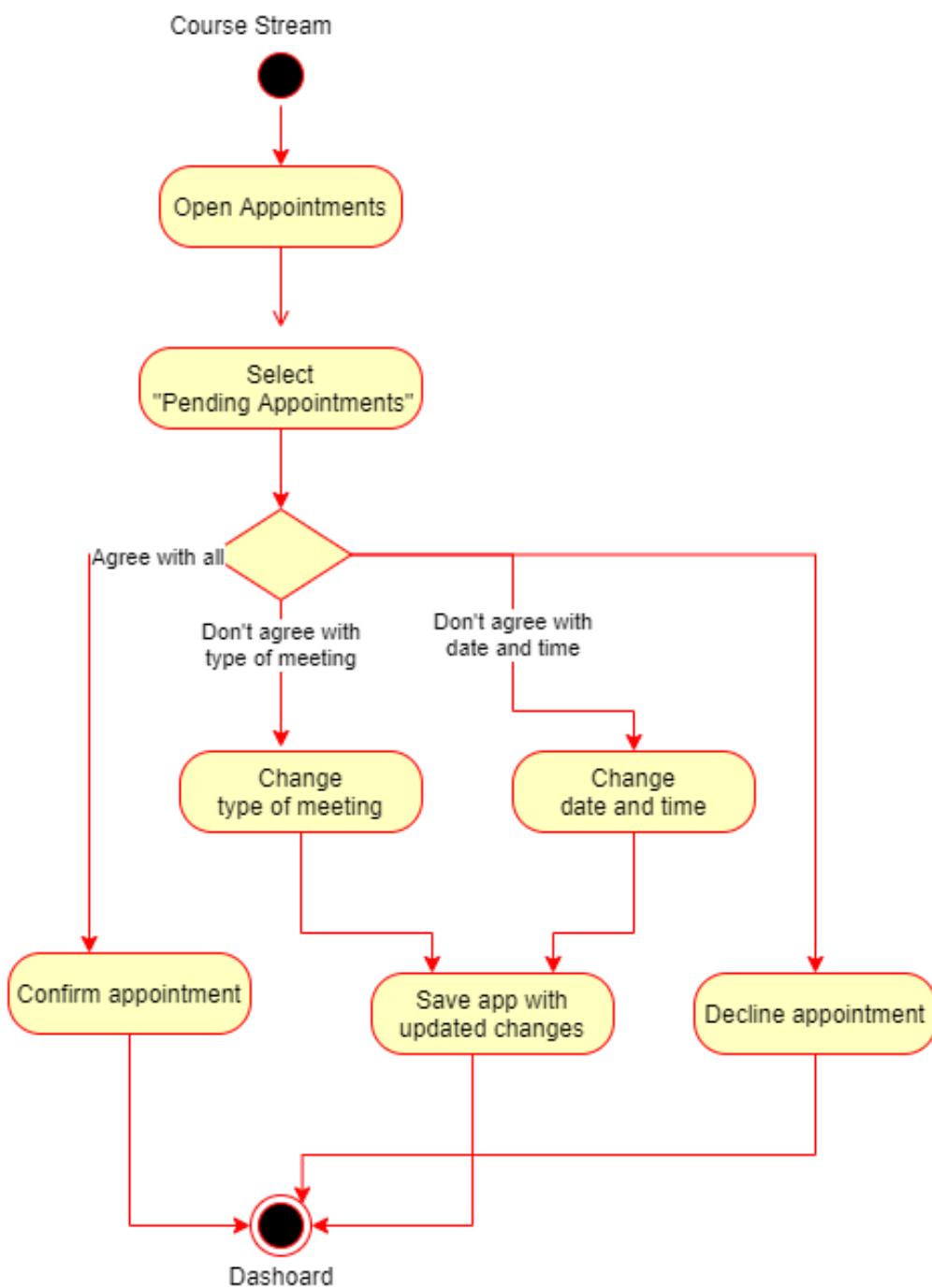


E-Classroom Requirements Specification

AD_U2_U3_U4_U5_Authentication



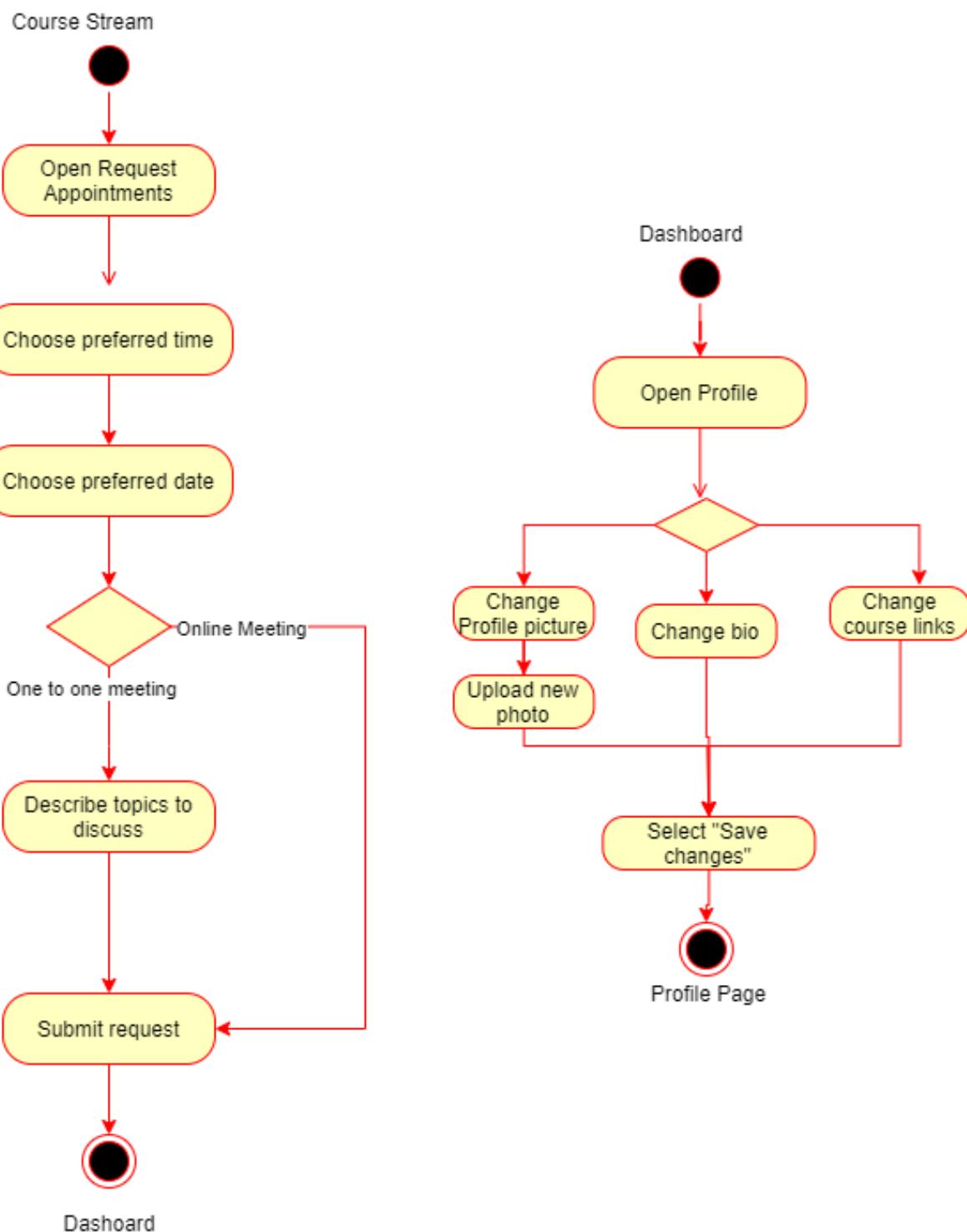
AD_A13_Manage_Appointment



E-Classroom Requirements Specification

AD_U11_Request_Appointment

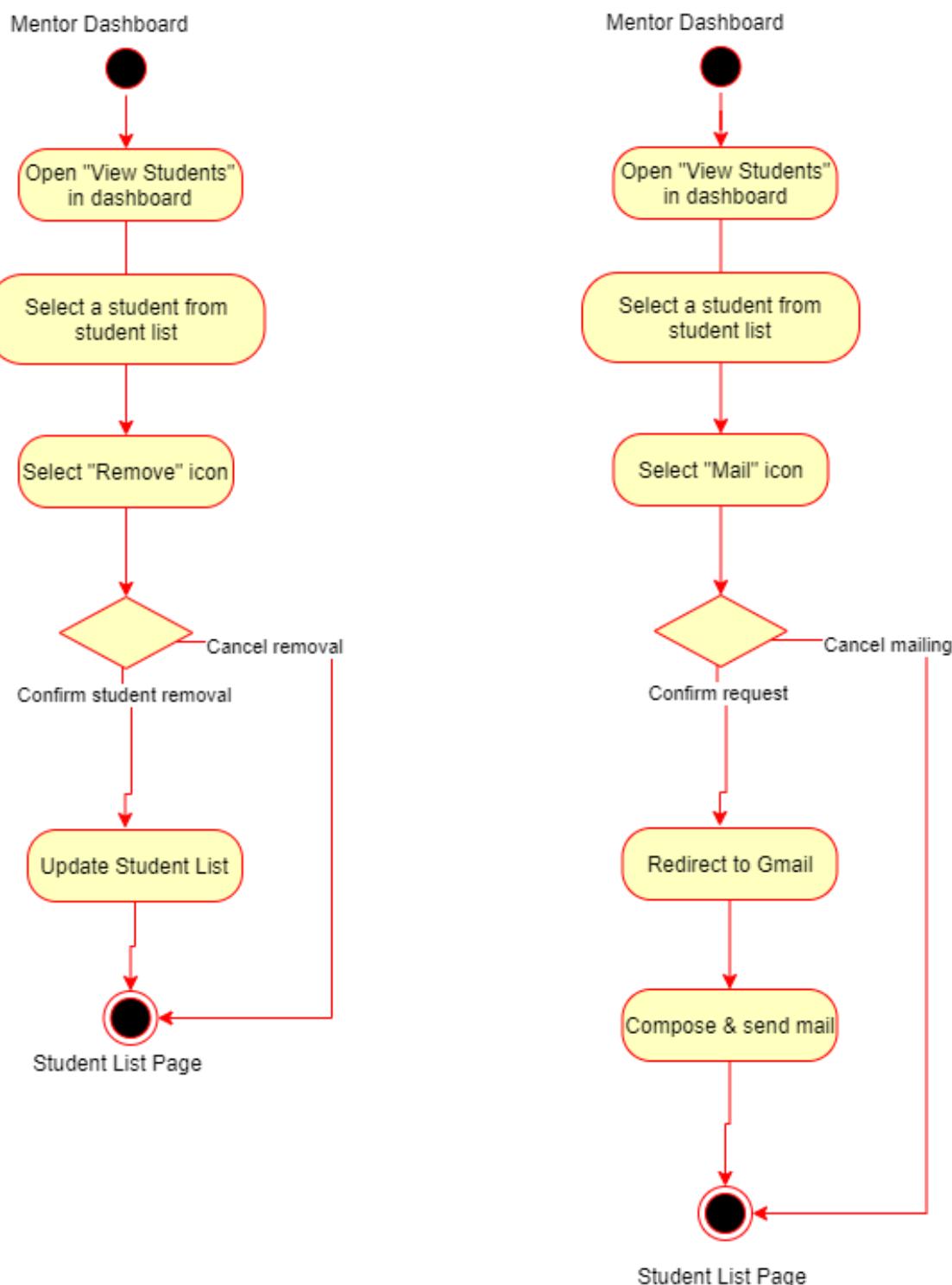
AD_A7_Edit_Profile



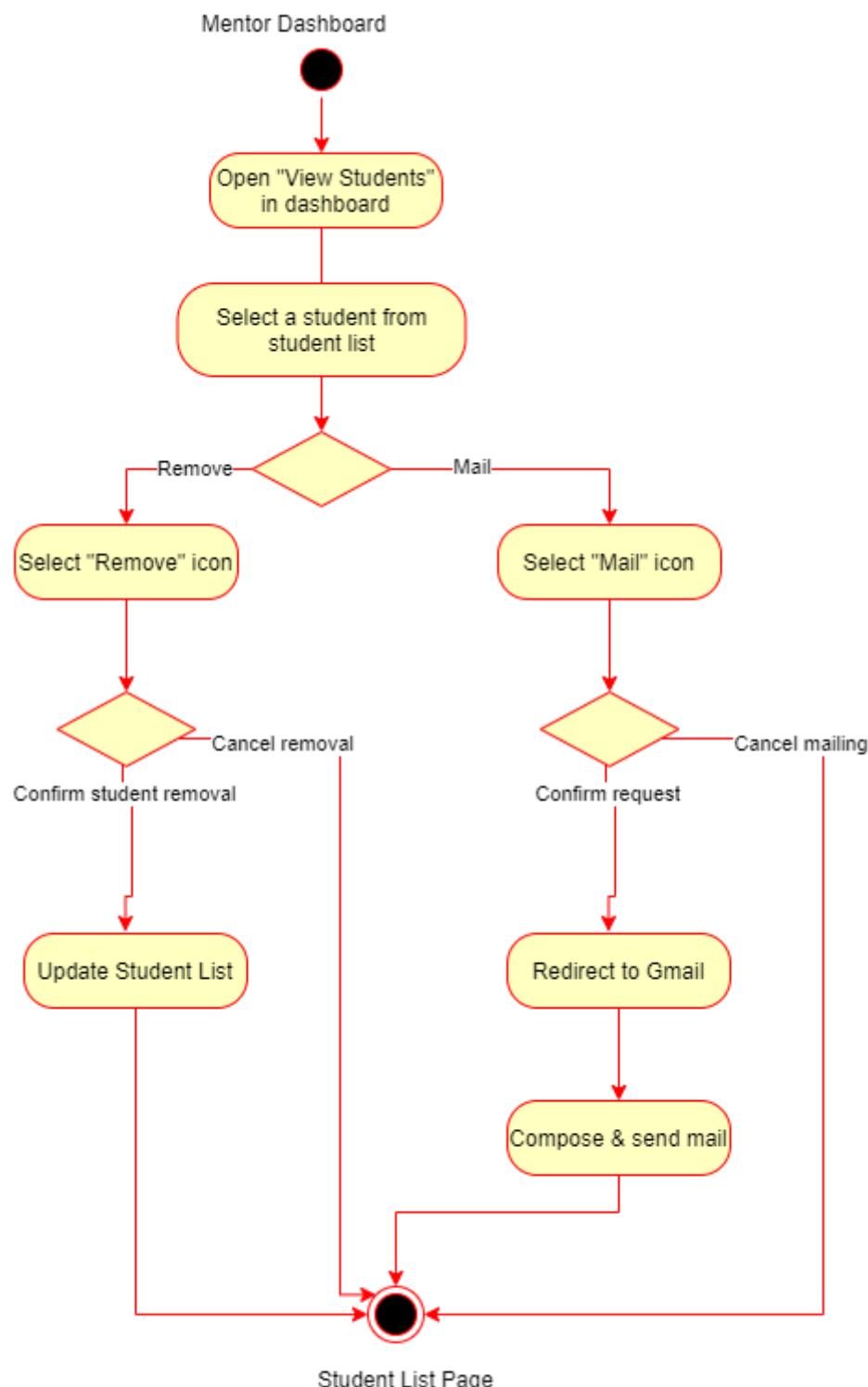
E-Classroom Requirements Specification

AD_A3_A5_Remove_Student

AD_A3_A4_Email_Student



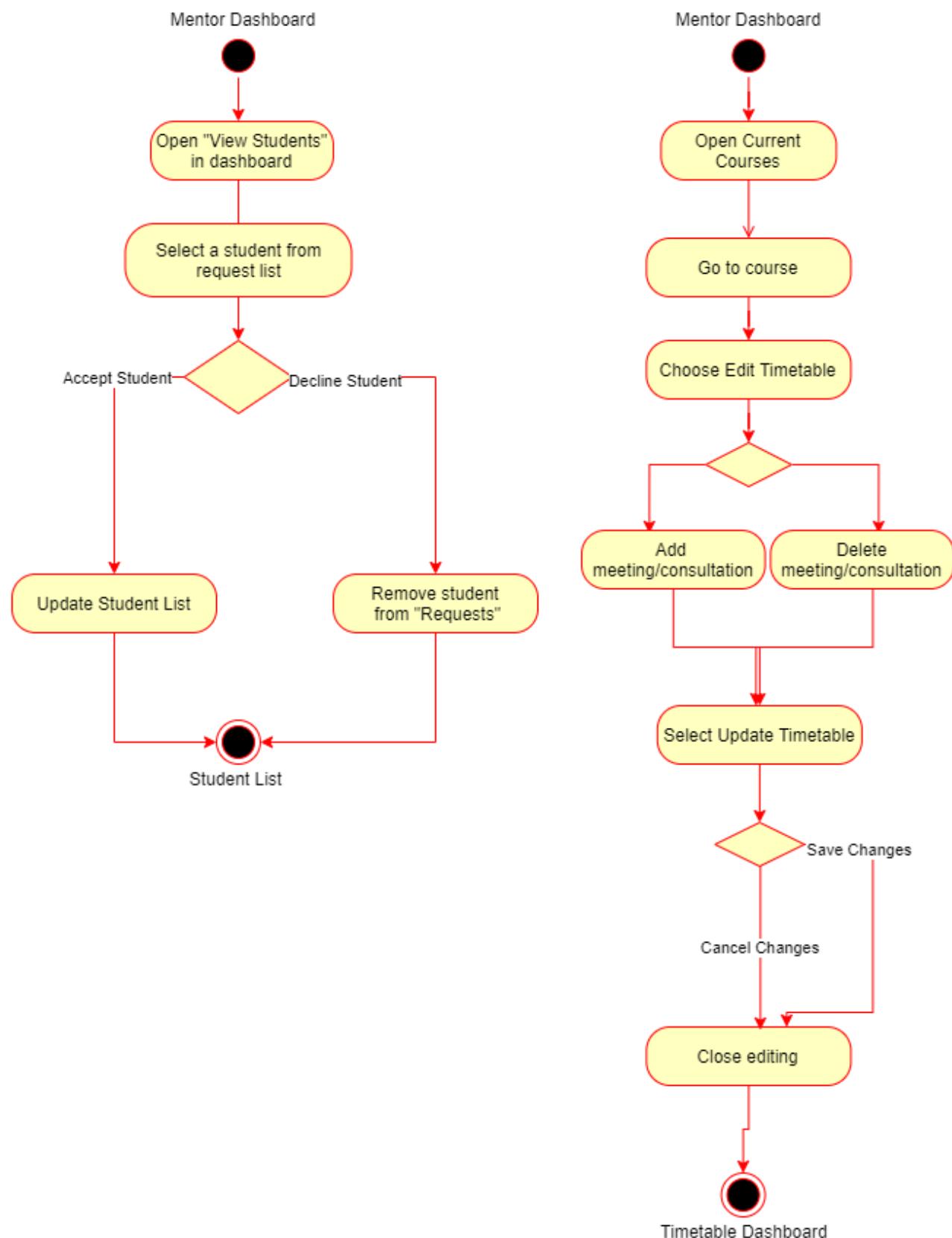
AD_A3_A4_A5_Manage_Student_List



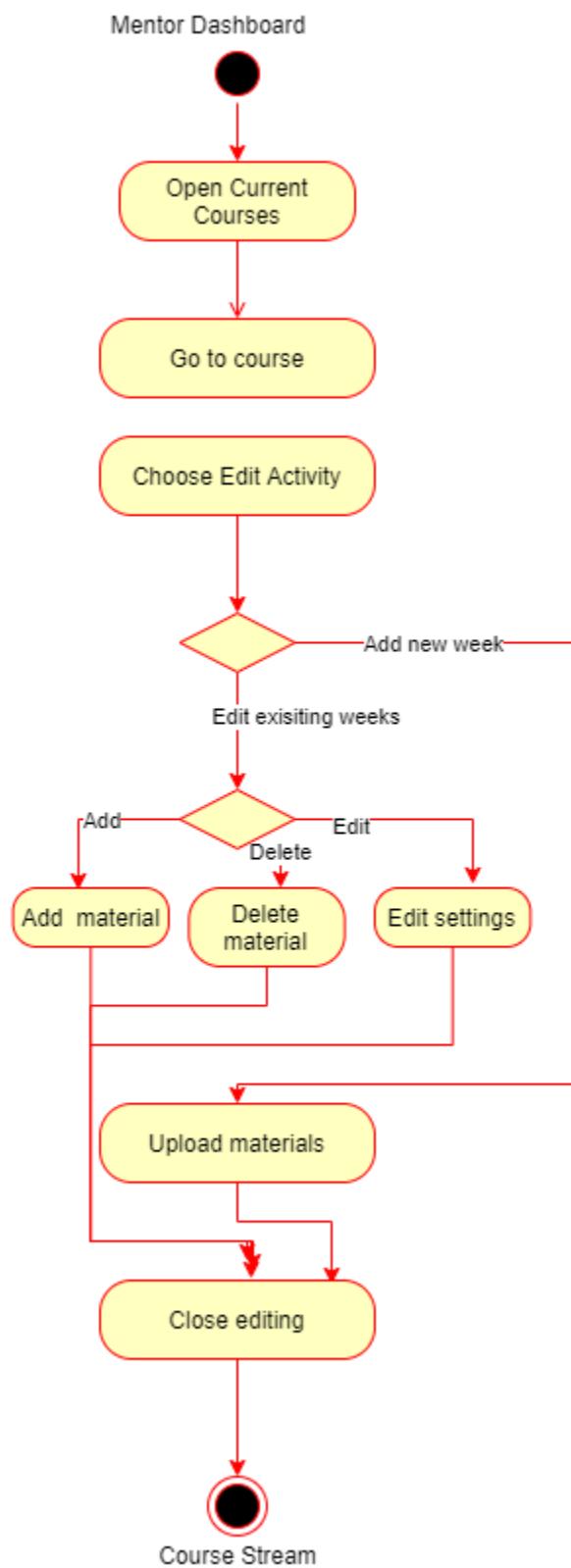
E-Classroom Requirements Specification

AD_A6_Manage_Student_Request

AD_A8_Update_Timetable

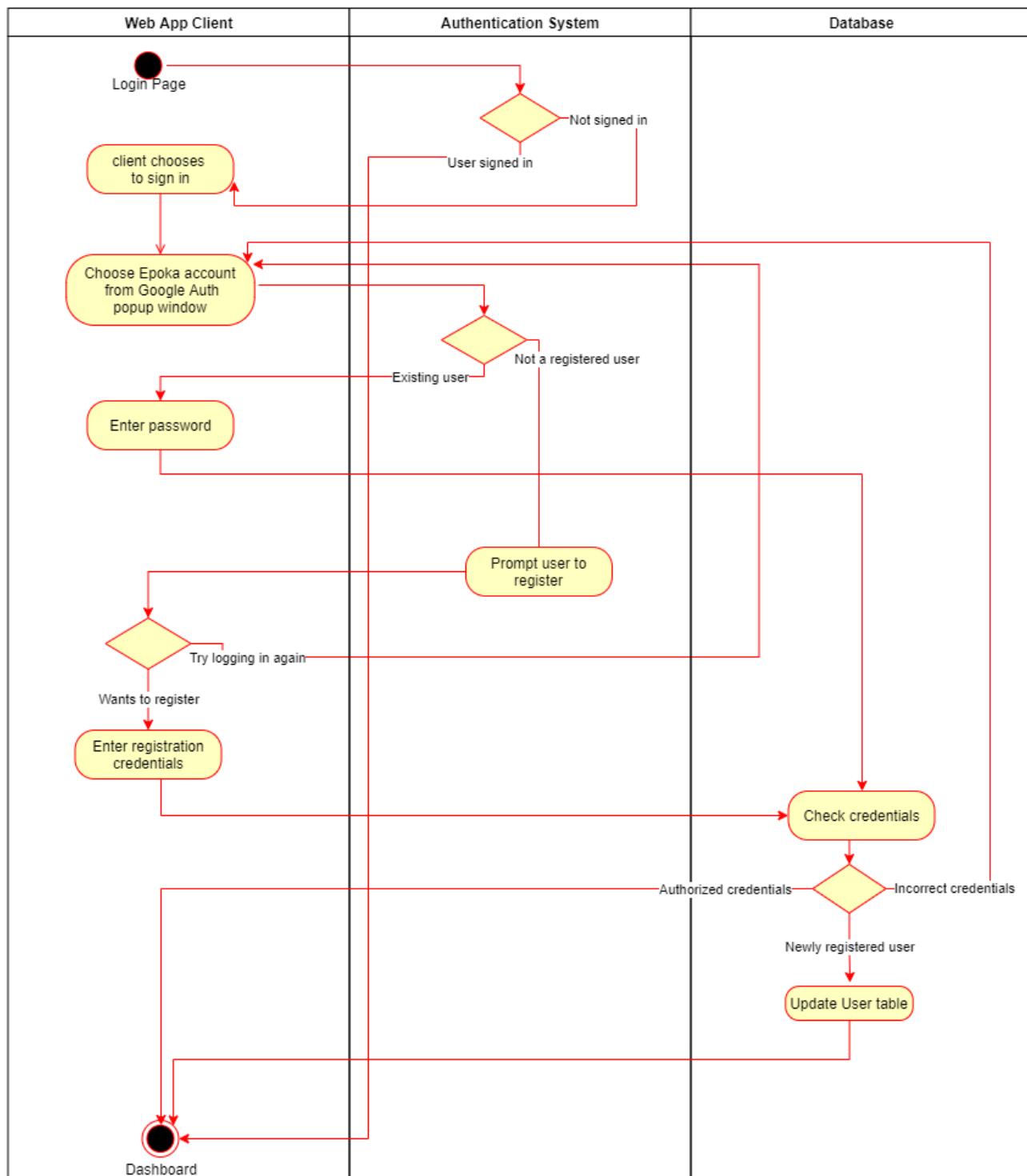


AD_A10 _Manage_CourseMaterials

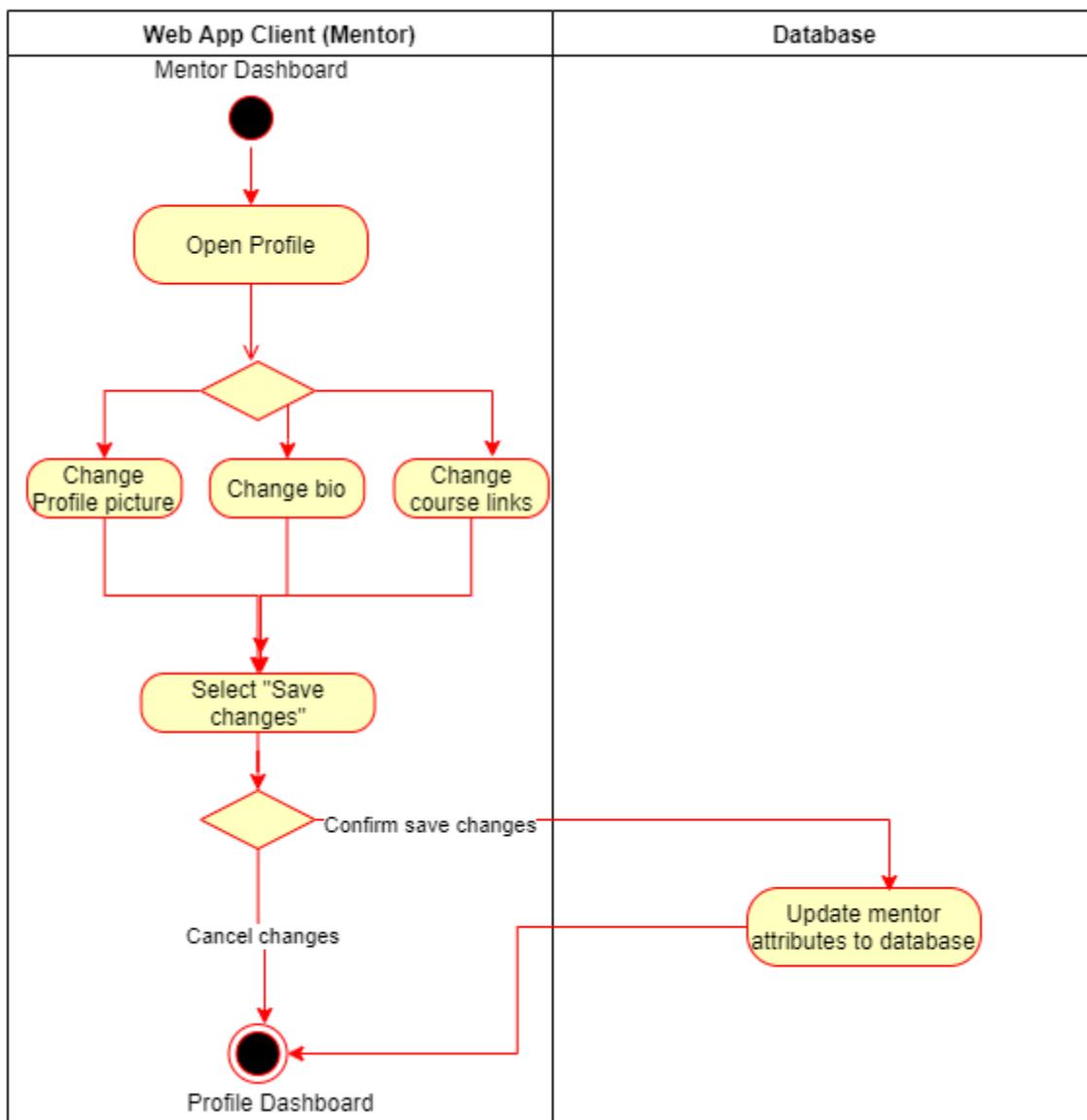


E-Classroom Requirements Specification

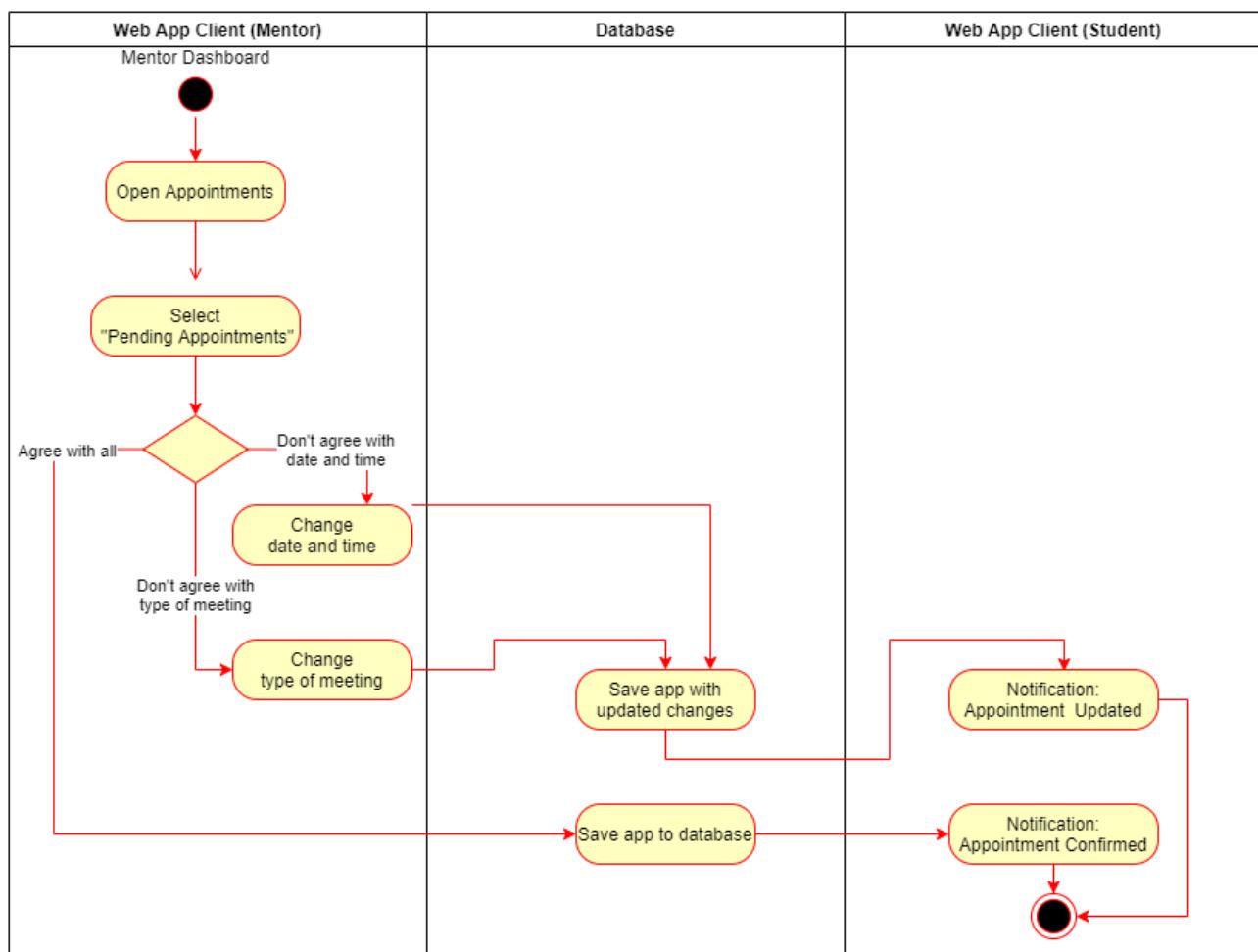
SL_U1_U2_U3_U4_U5_Authentication



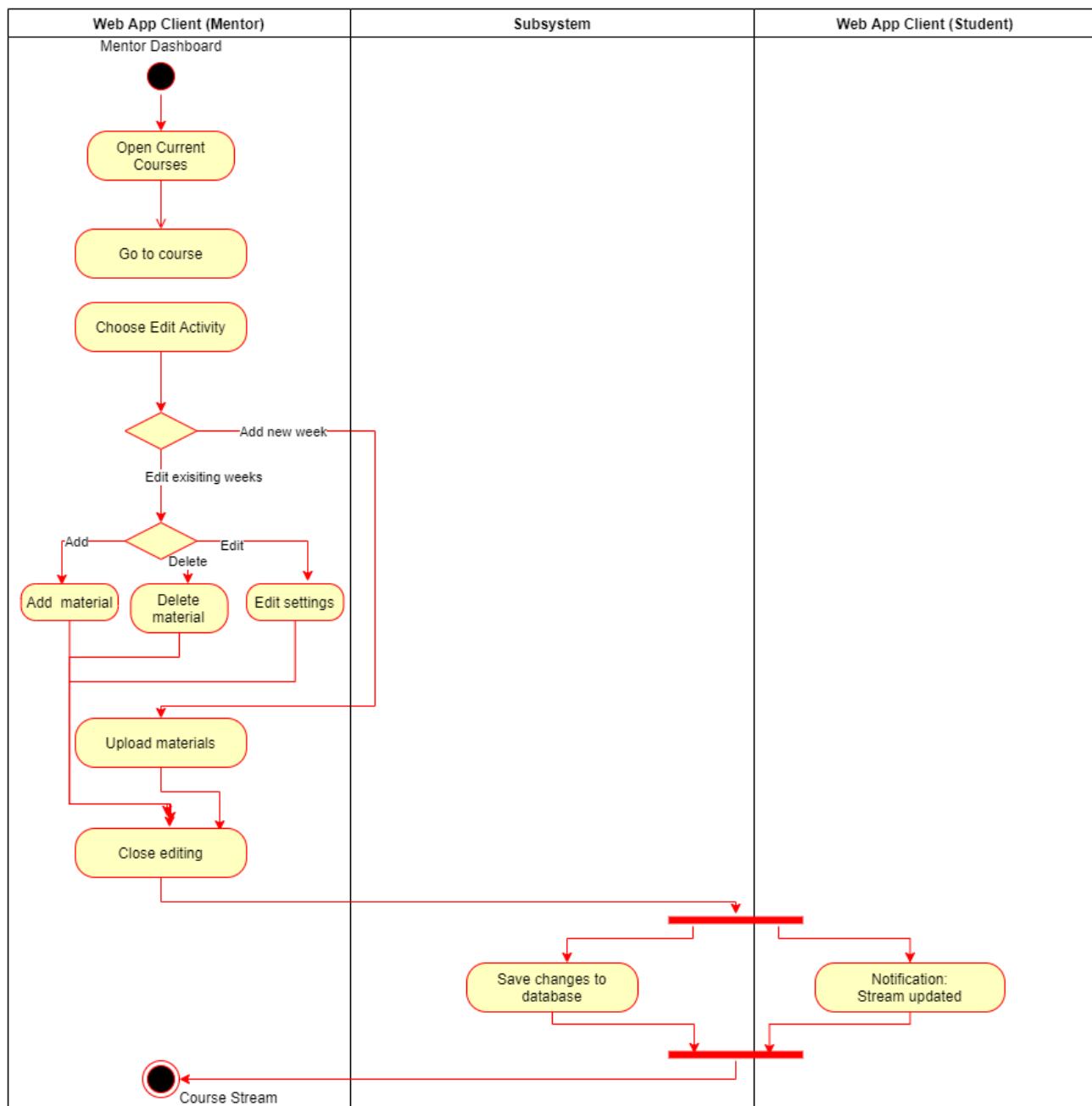
SL_A7_Edit_Profile



SL_A13_Manage_Appointment

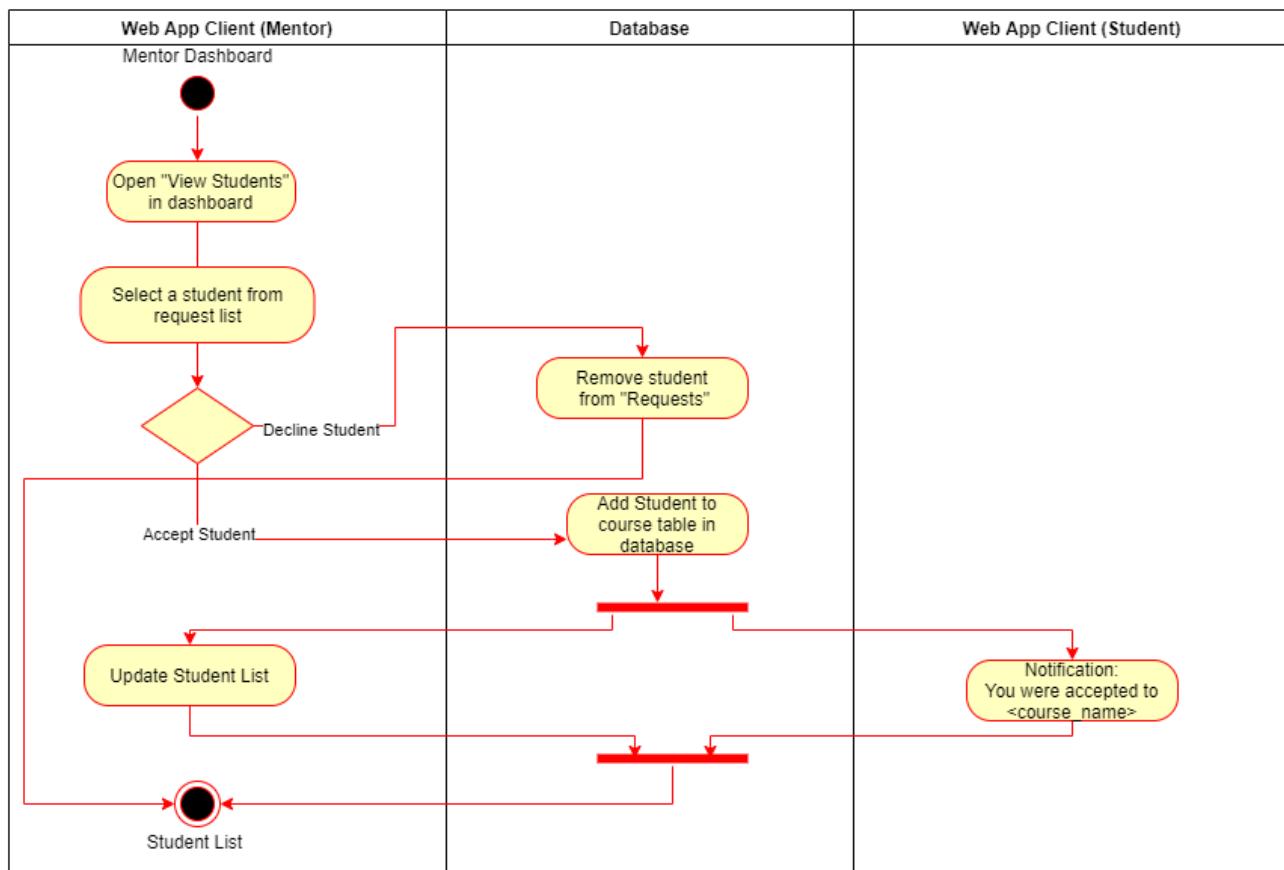


SL_A10_Manage_Course_Materials

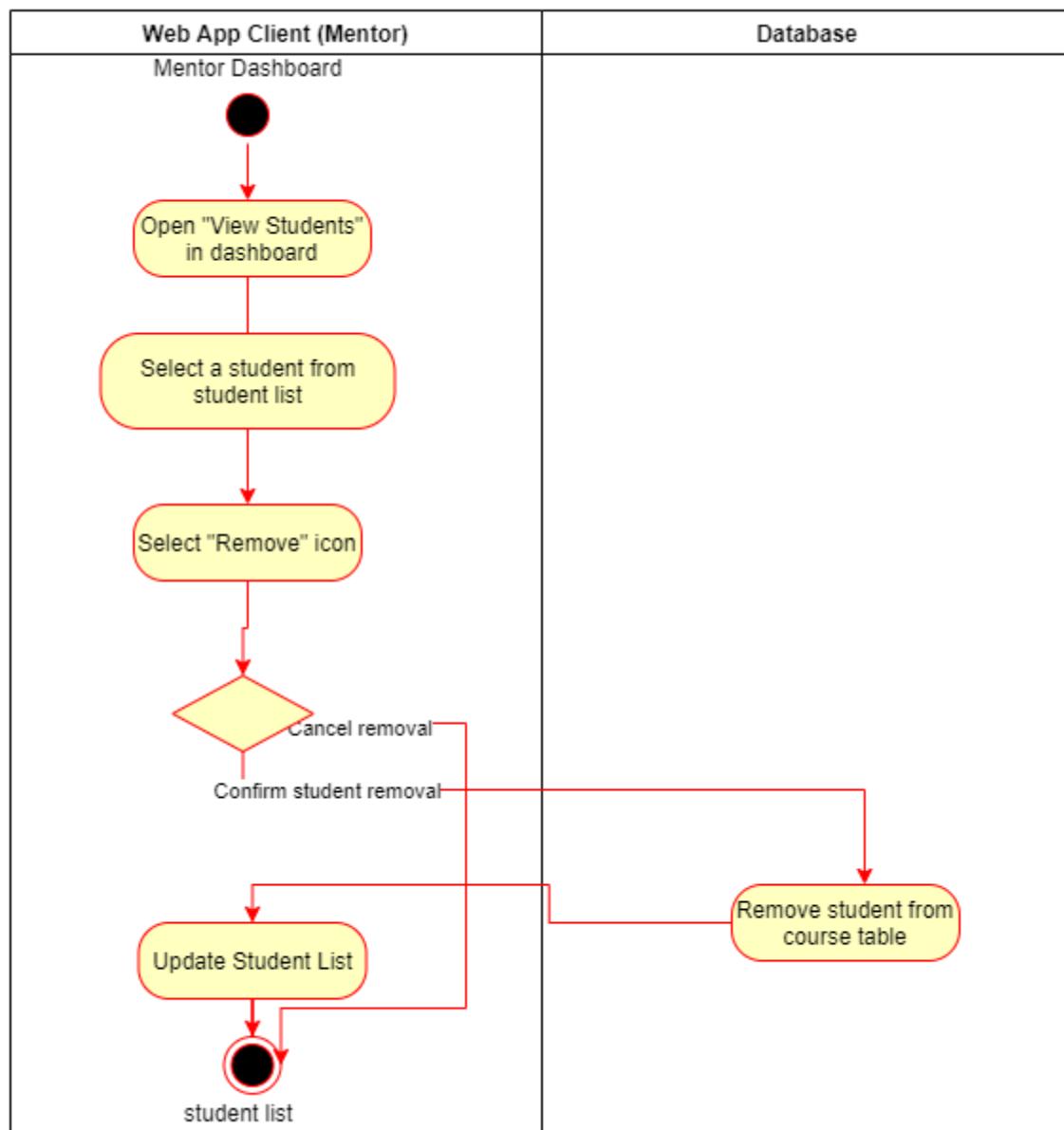


E-Classroom Requirements Specification

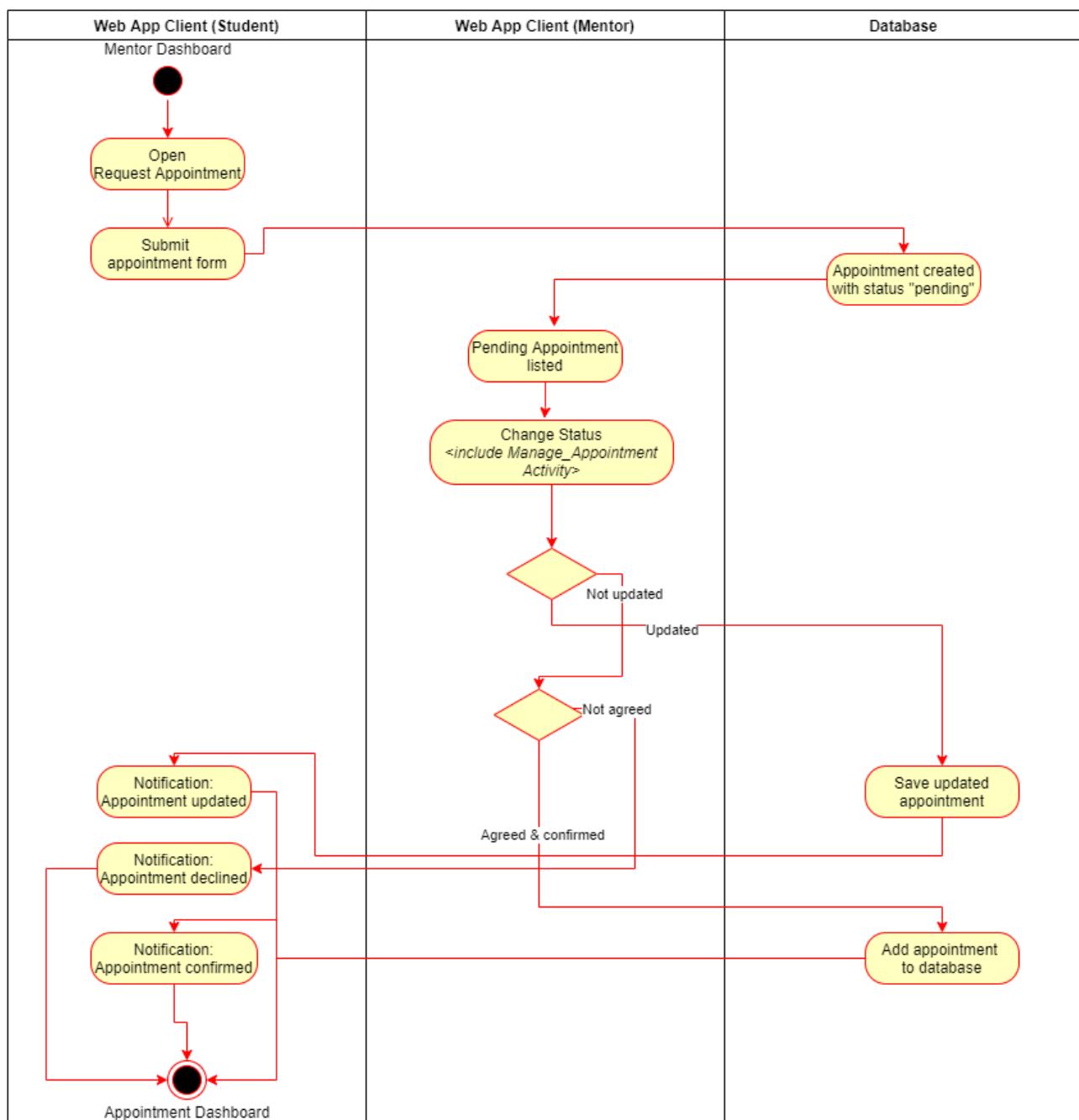
SL_A6_Manage_Student_Request



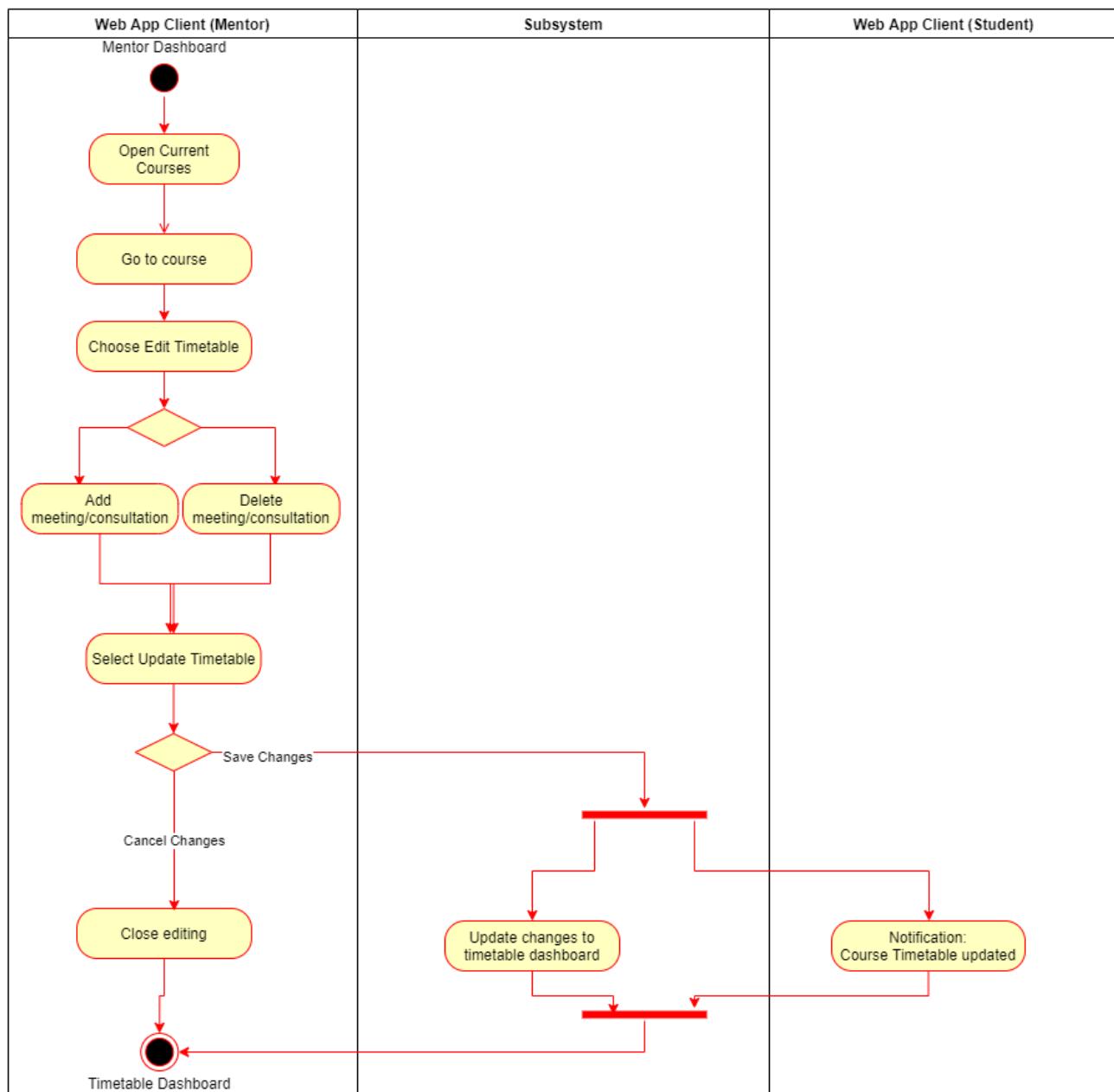
SL_A5_Remove_Student_From_List



SL_U11_Request_Appointment

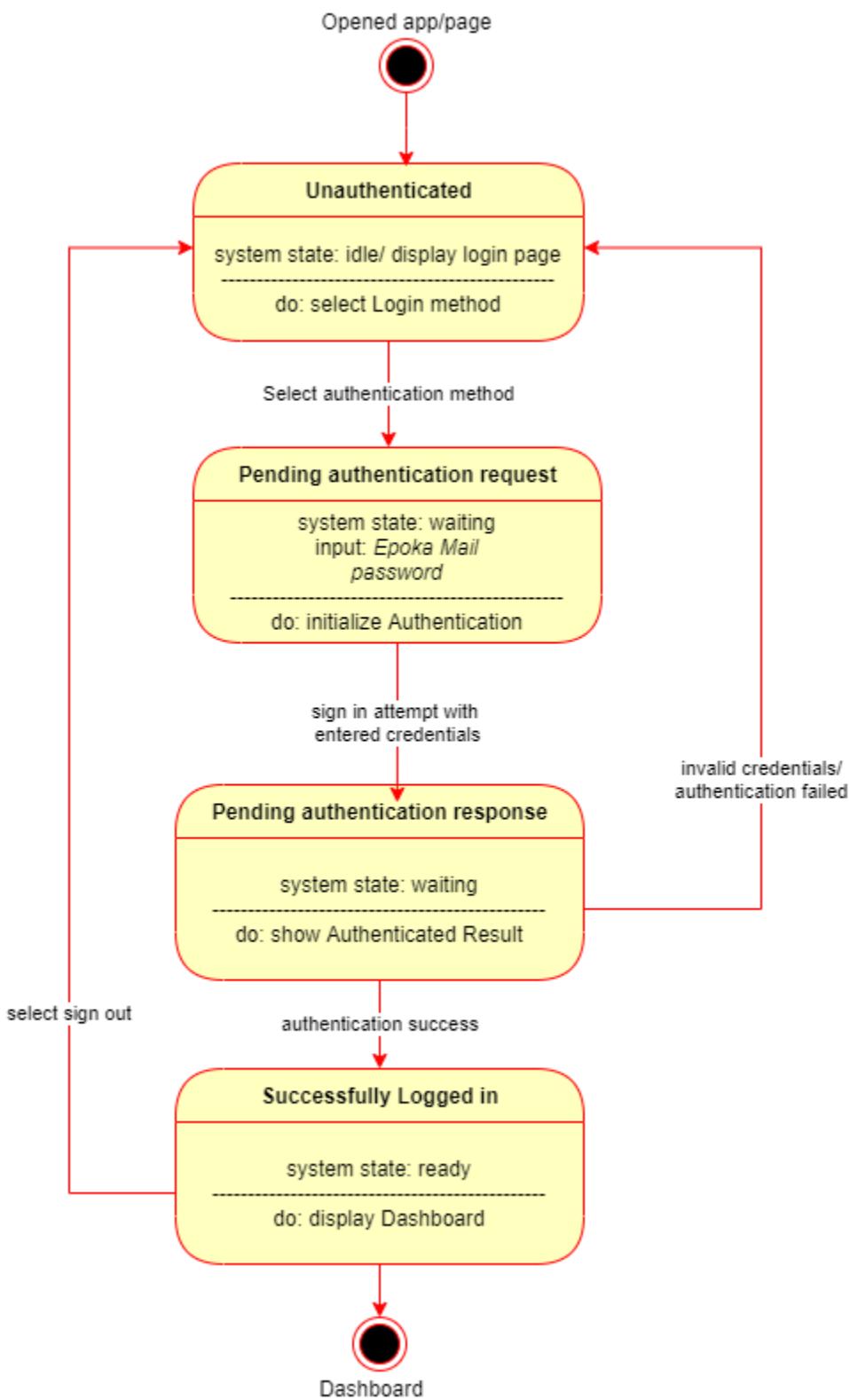


SL_A8_Update_Timetable

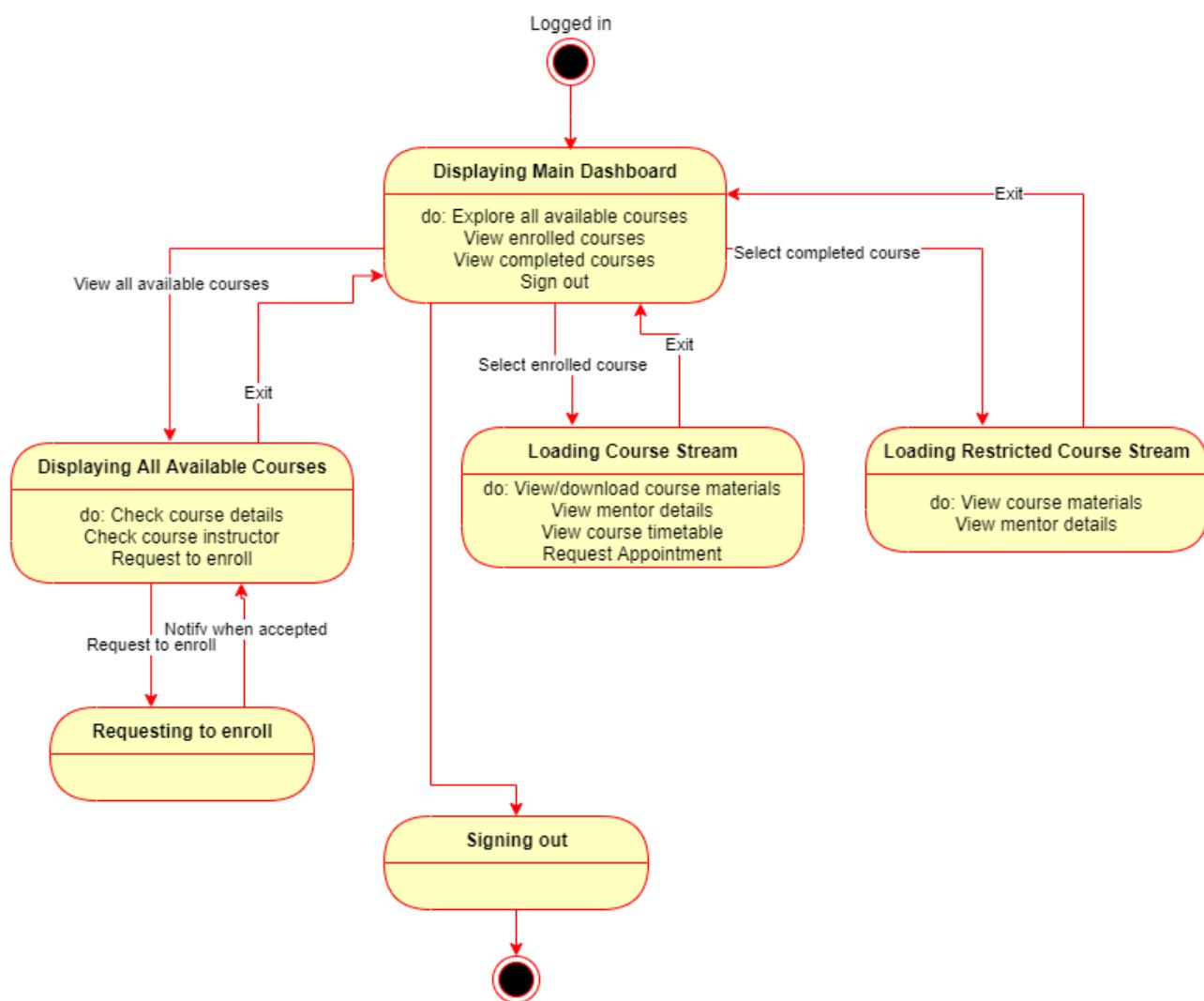


4.2.2 State Chart Diagrams

SC_U1_U2_U3_U4_U5_Authentication

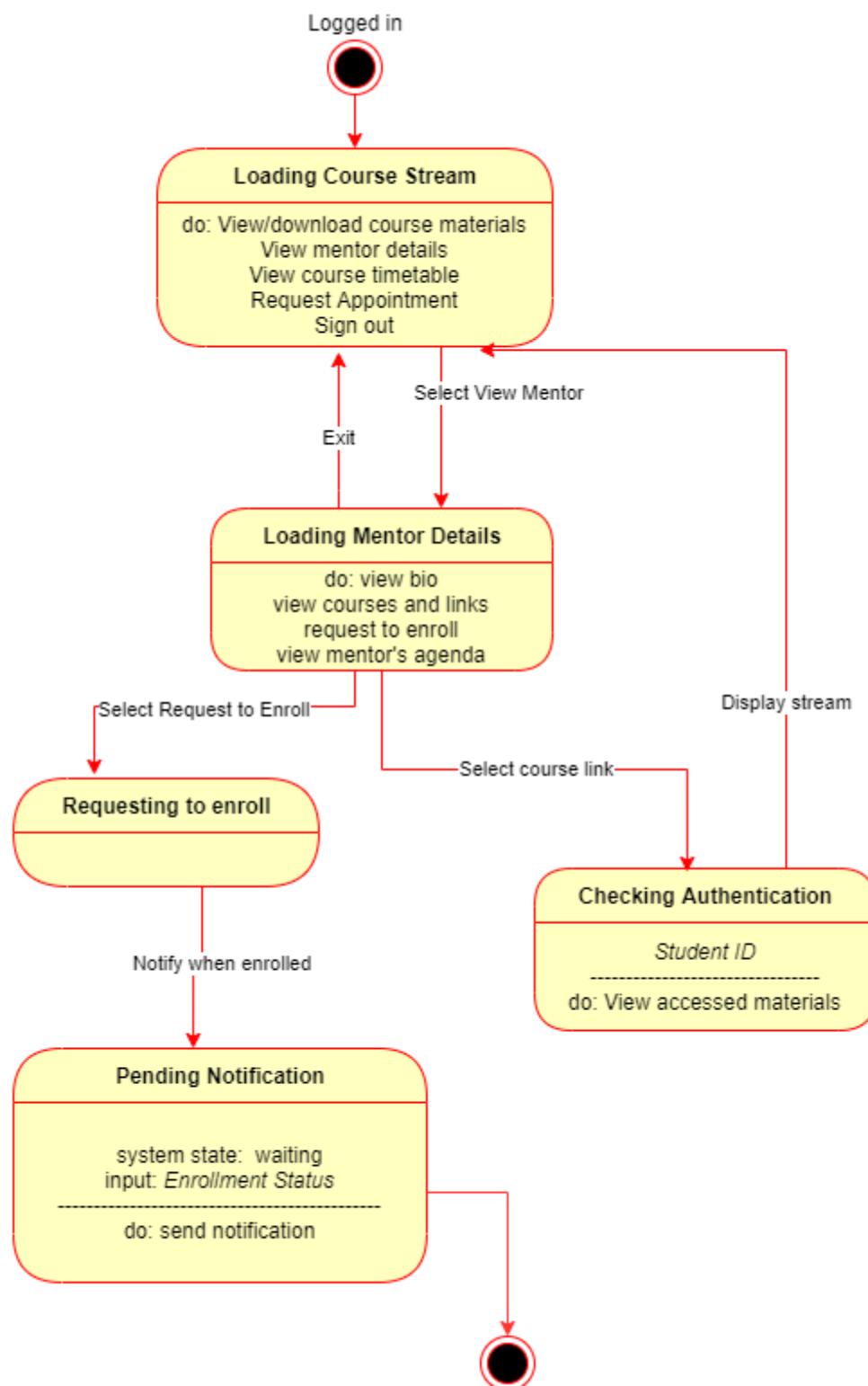


SC_U6_U8_Student_MainActivities



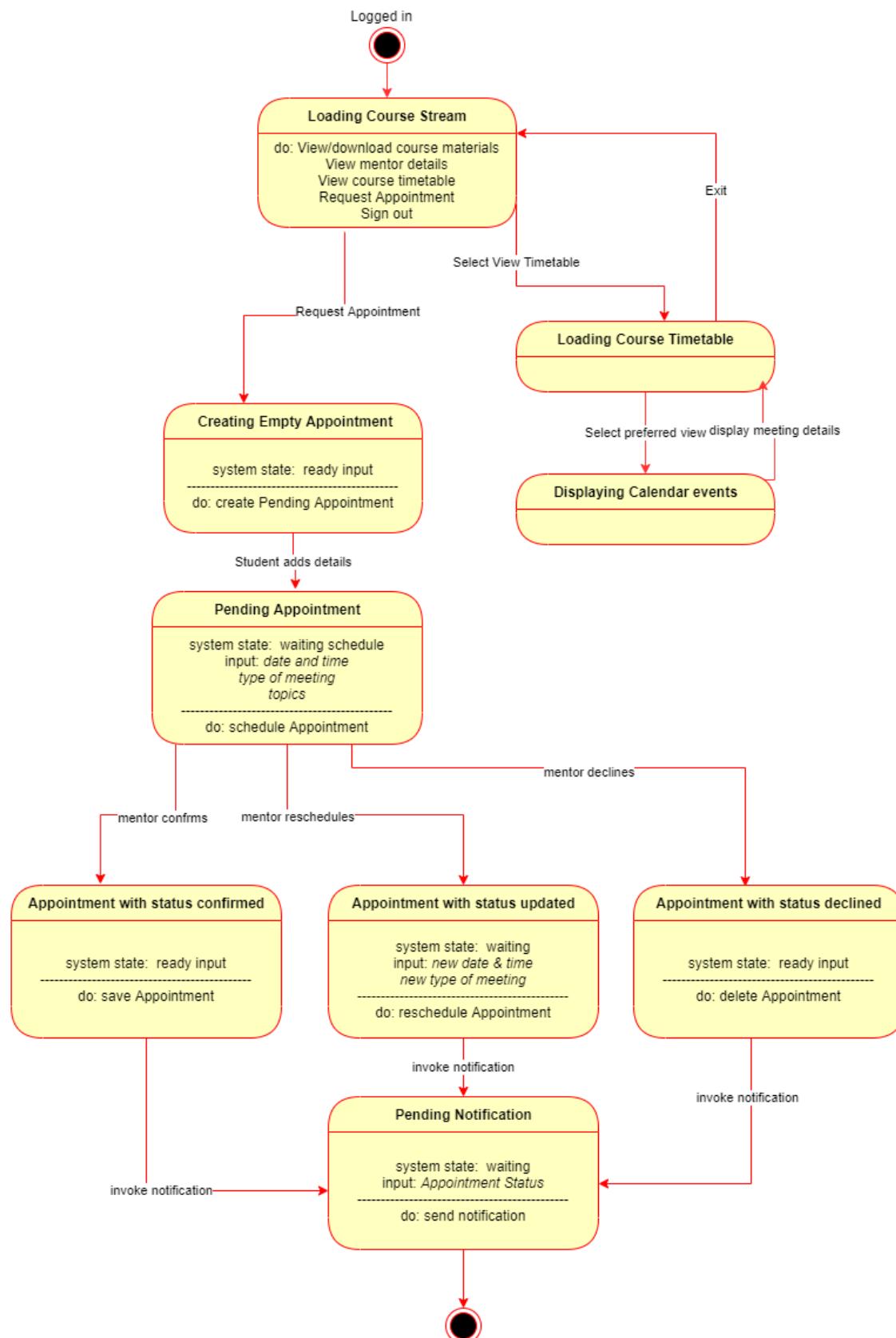
E-Classroom Requirements Specification

SC_U7_U9_Student_Specific_Course_Part1

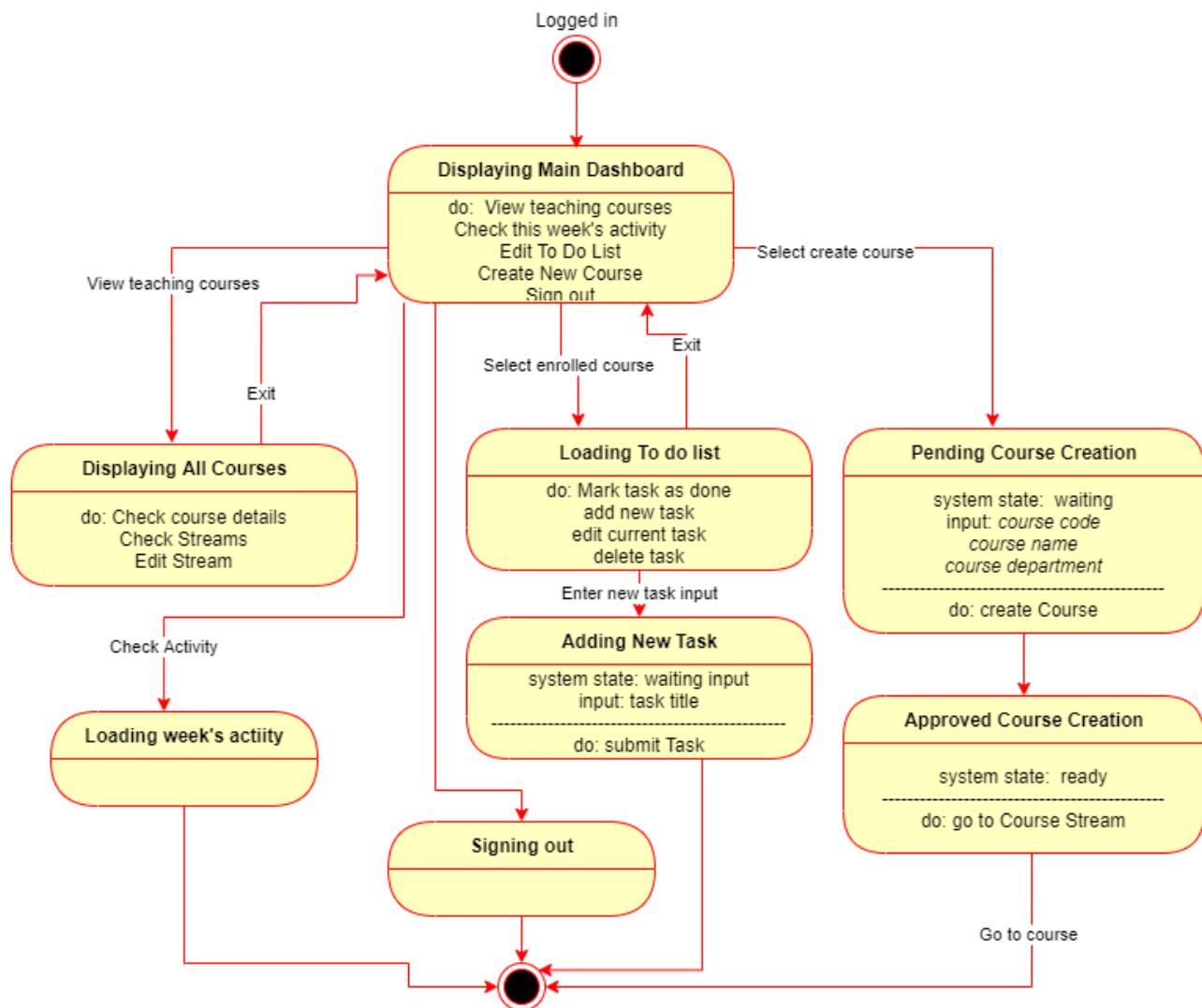


E-Classroom Requirements Specification

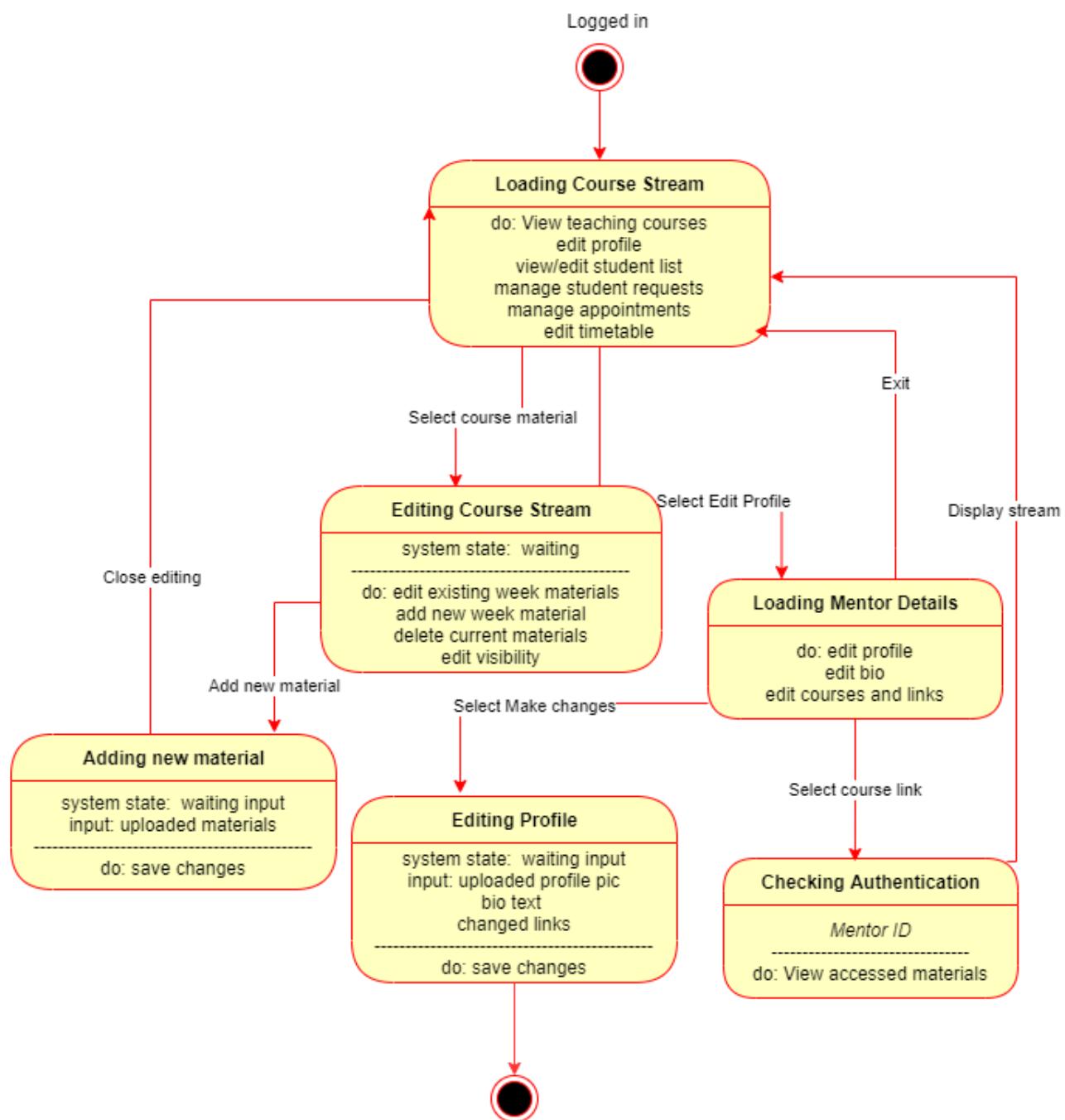
SC_U10_U11_Student_Specific_Course_Part2



SC_A1_A2_Mentor_MainActivites

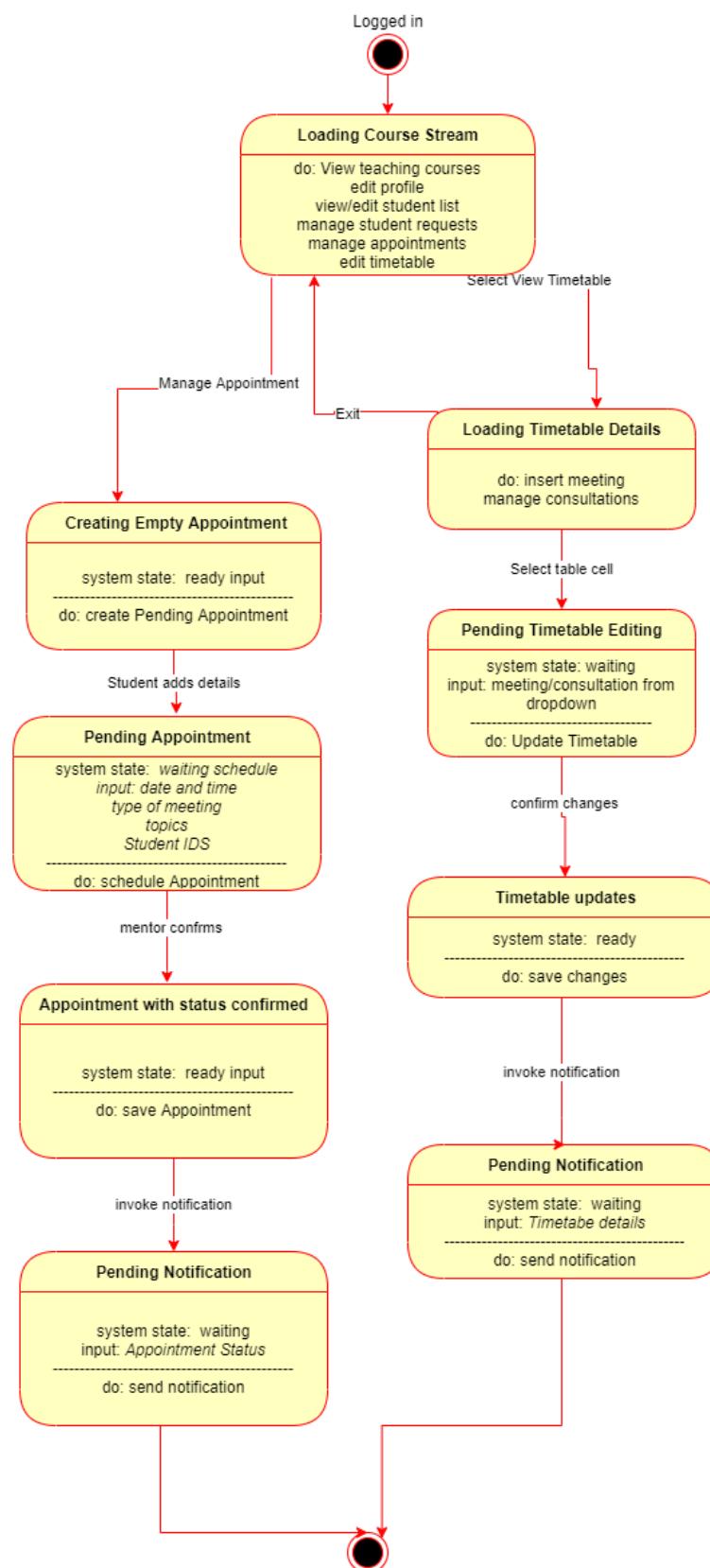


SC_A7_A10_Mentor_Specific_Course_Part1



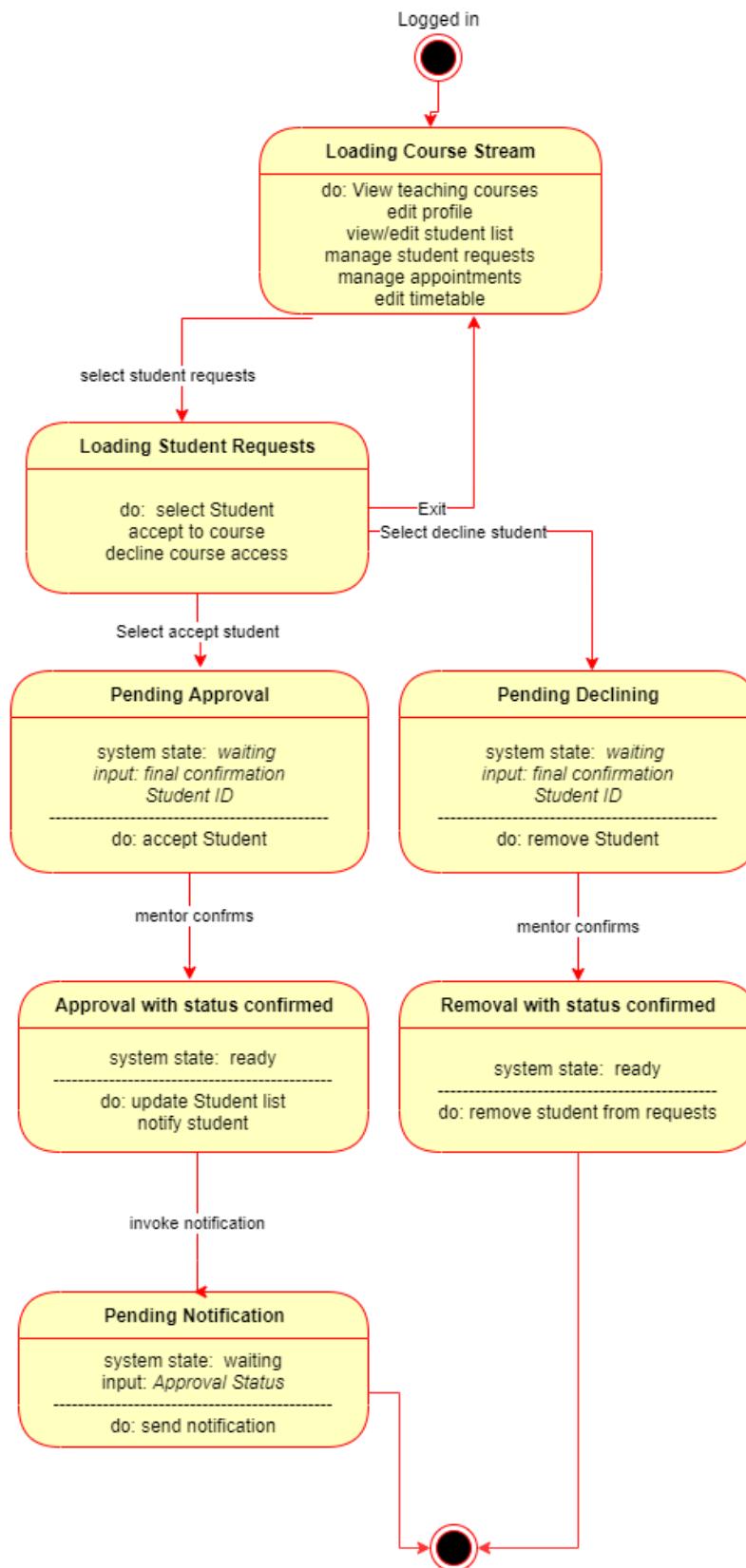
E-Classroom Requirements Specification

SC_A12_A13_Mentor_Specific_Course_Part2



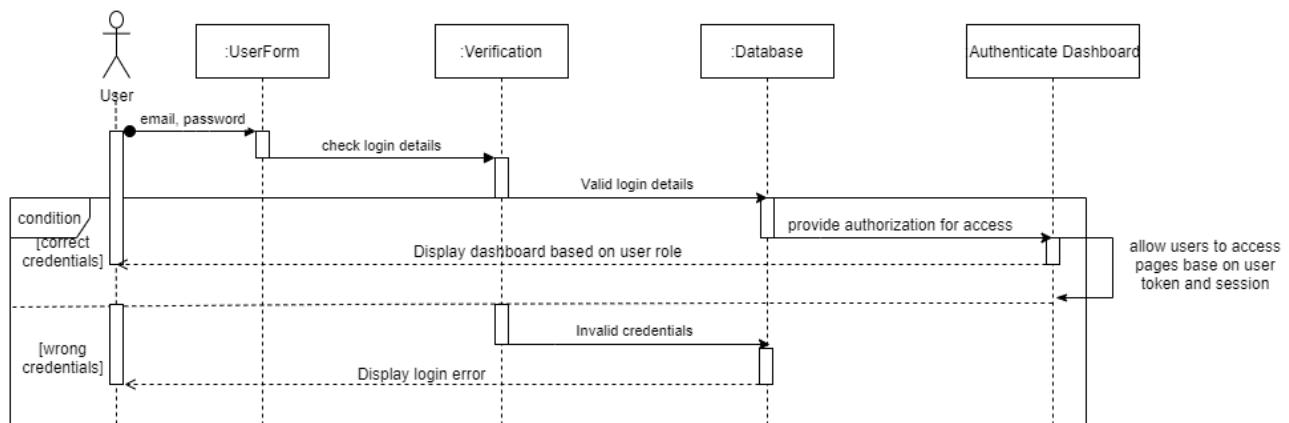
E-Classroom Requirements Specification

SC_A6_Mentor_Specific_Course_Part3

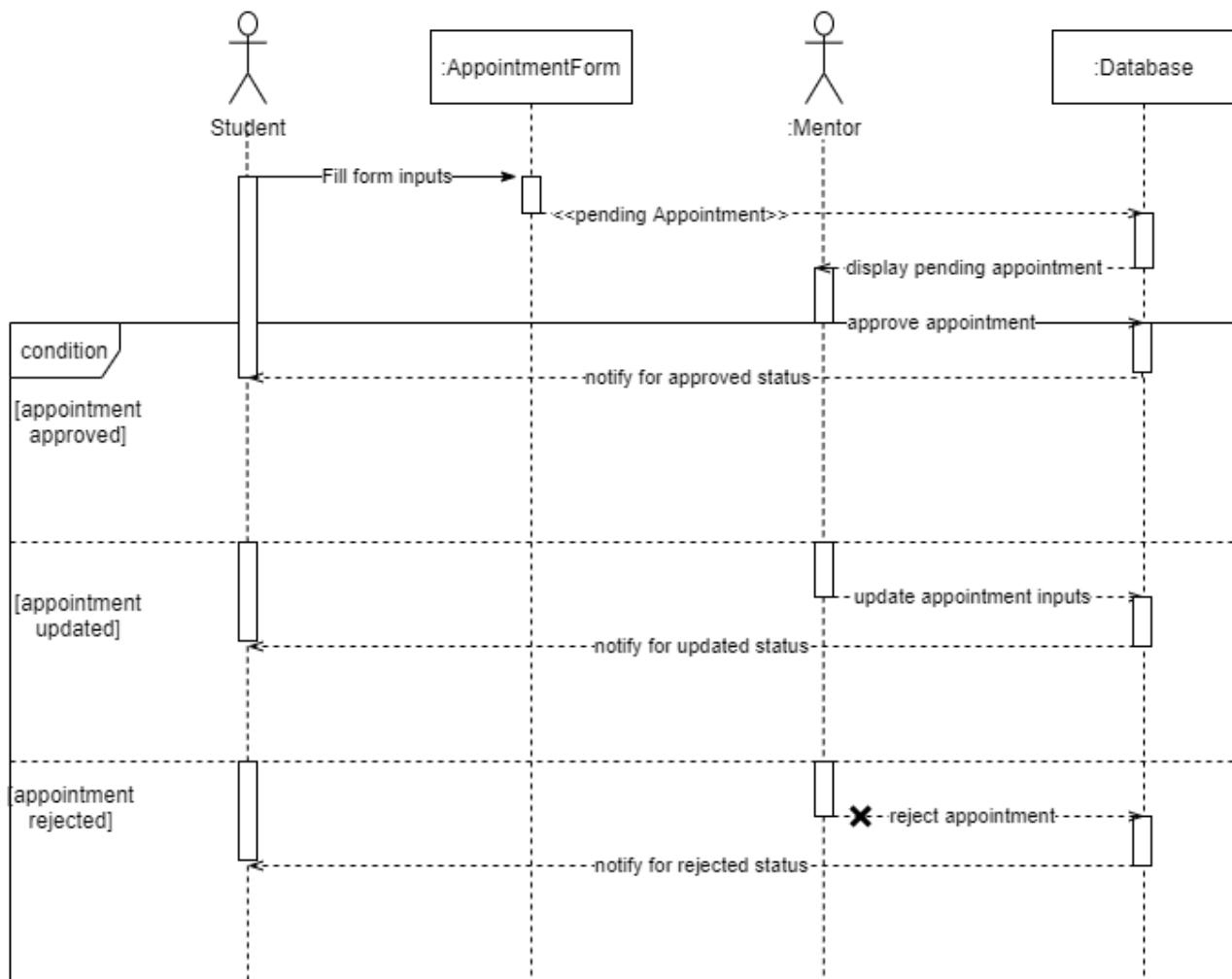


4.2.3 Sequence Diagrams

SD_U1_U4_U5_Authentication

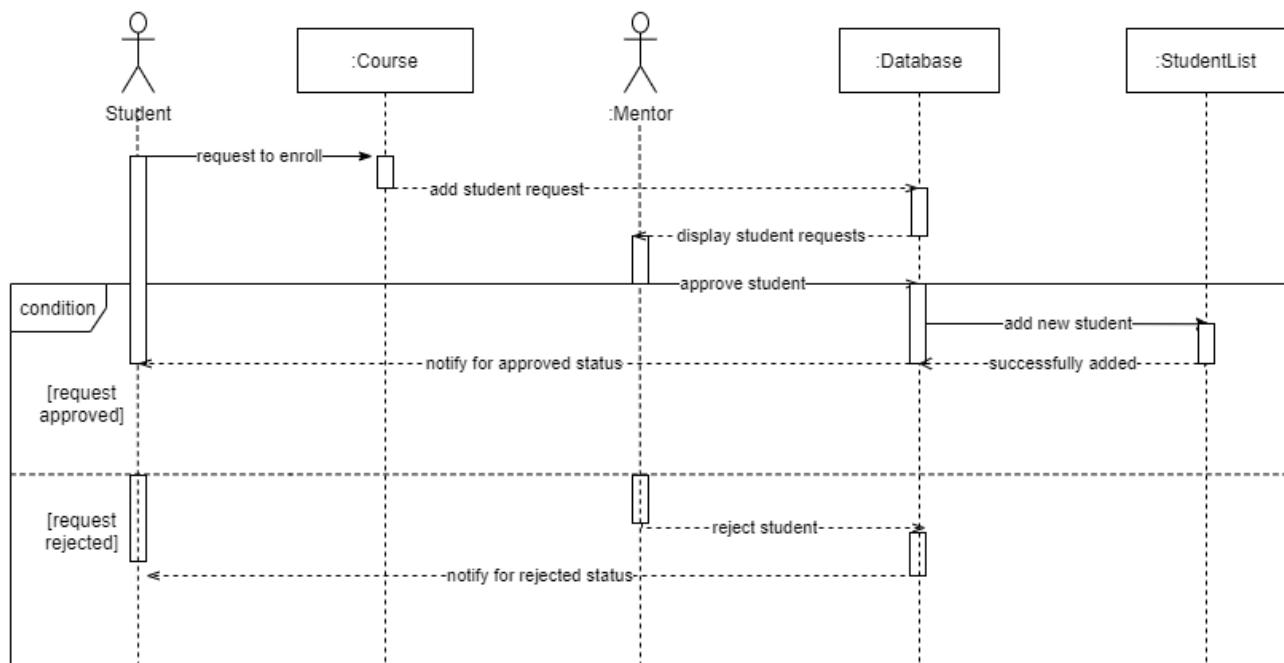


SD_U11_A13_Manage_Appointment

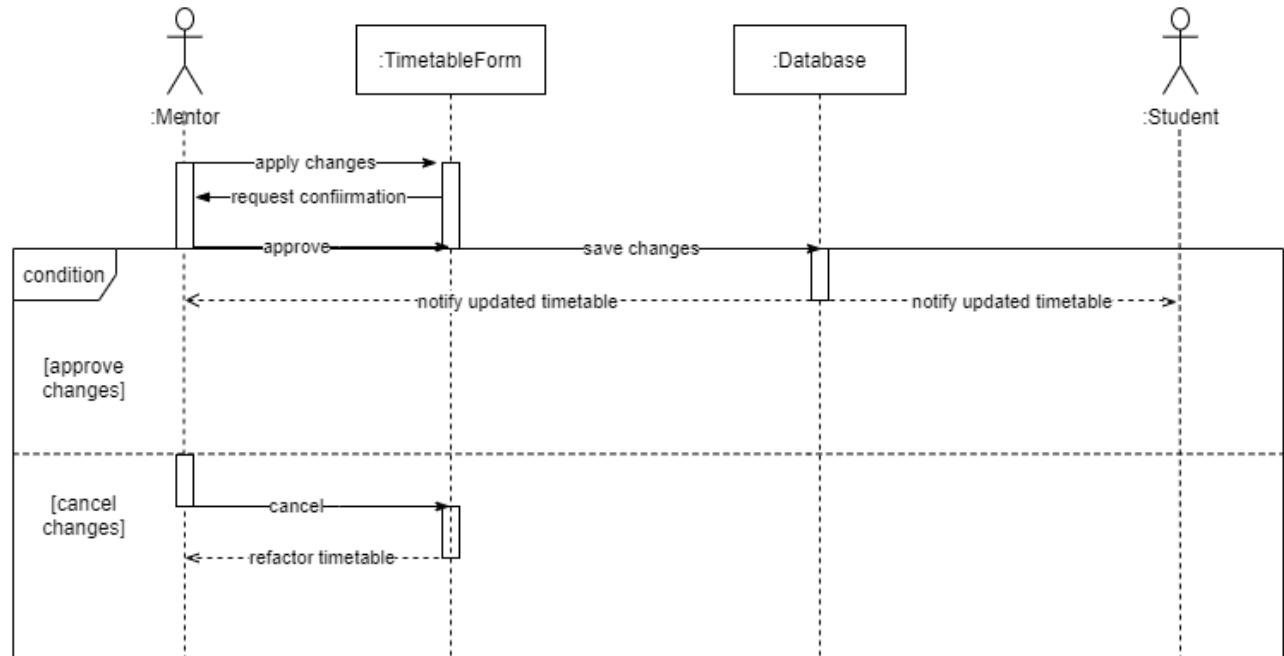


E-Classroom Requirements Specification

SD_U6_U7_A6_Manage_Student_Requests

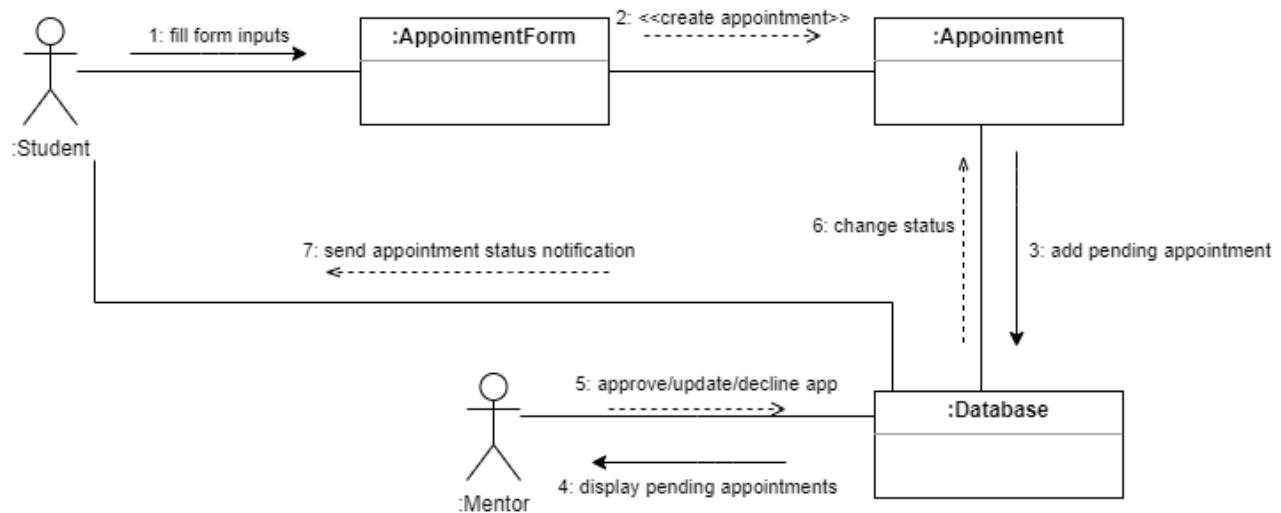


SD_A8_Edit_Timetable

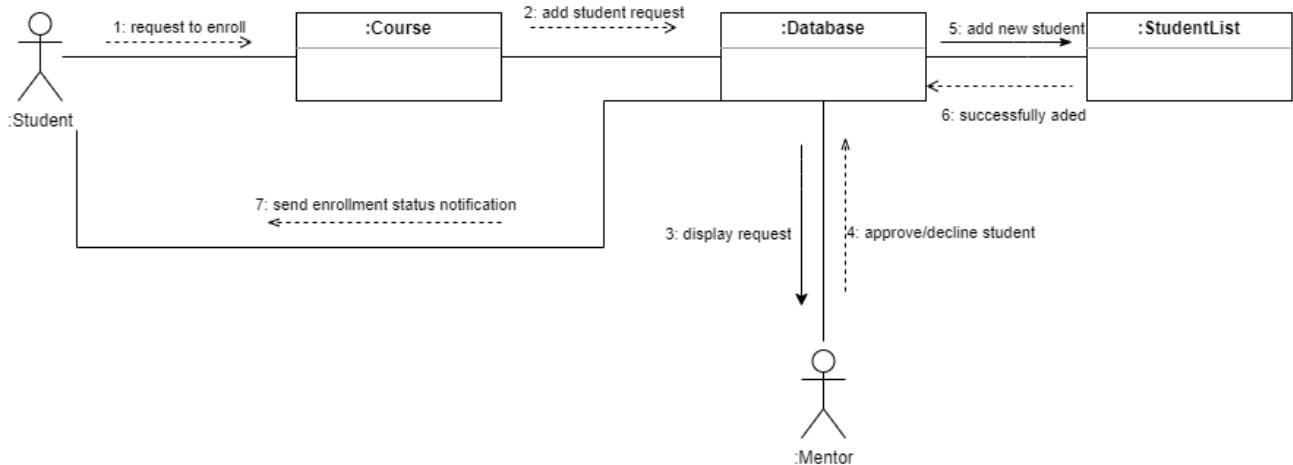


4.2.4 Collaboration Diagrams

C_U11_A13_Manage_Appointment

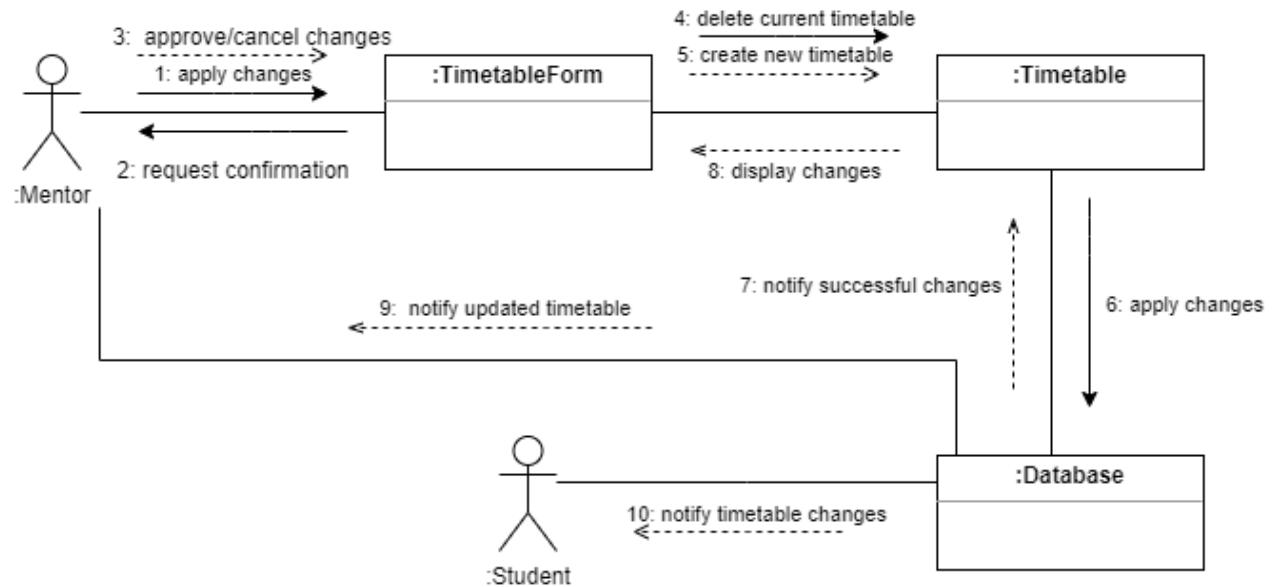


C_U6_U7_A6_Manage_Student_Requests

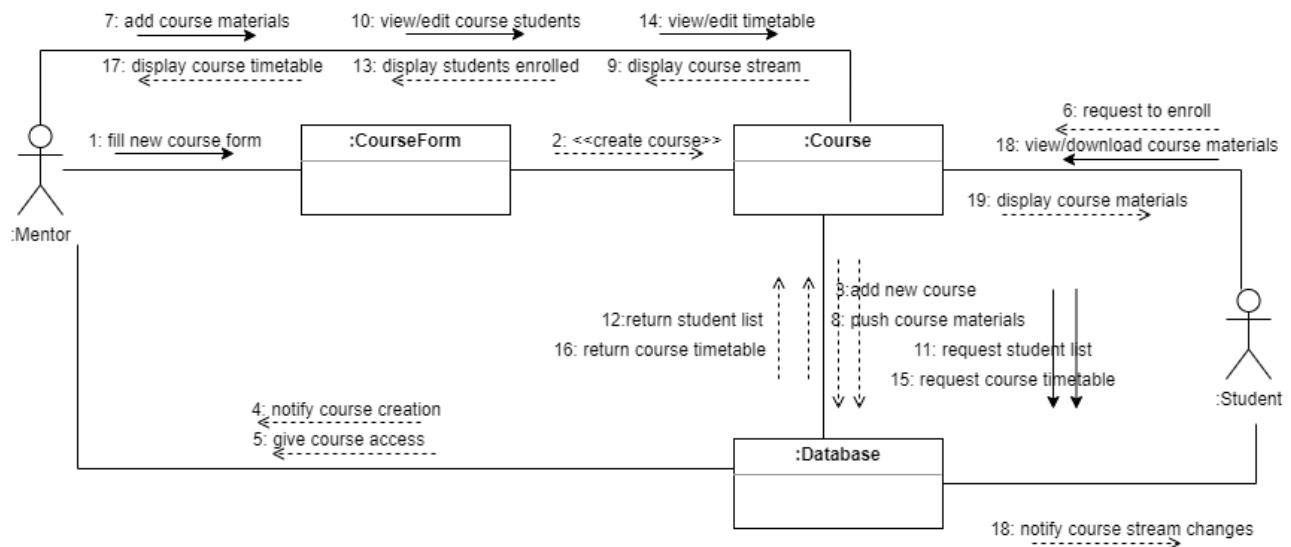


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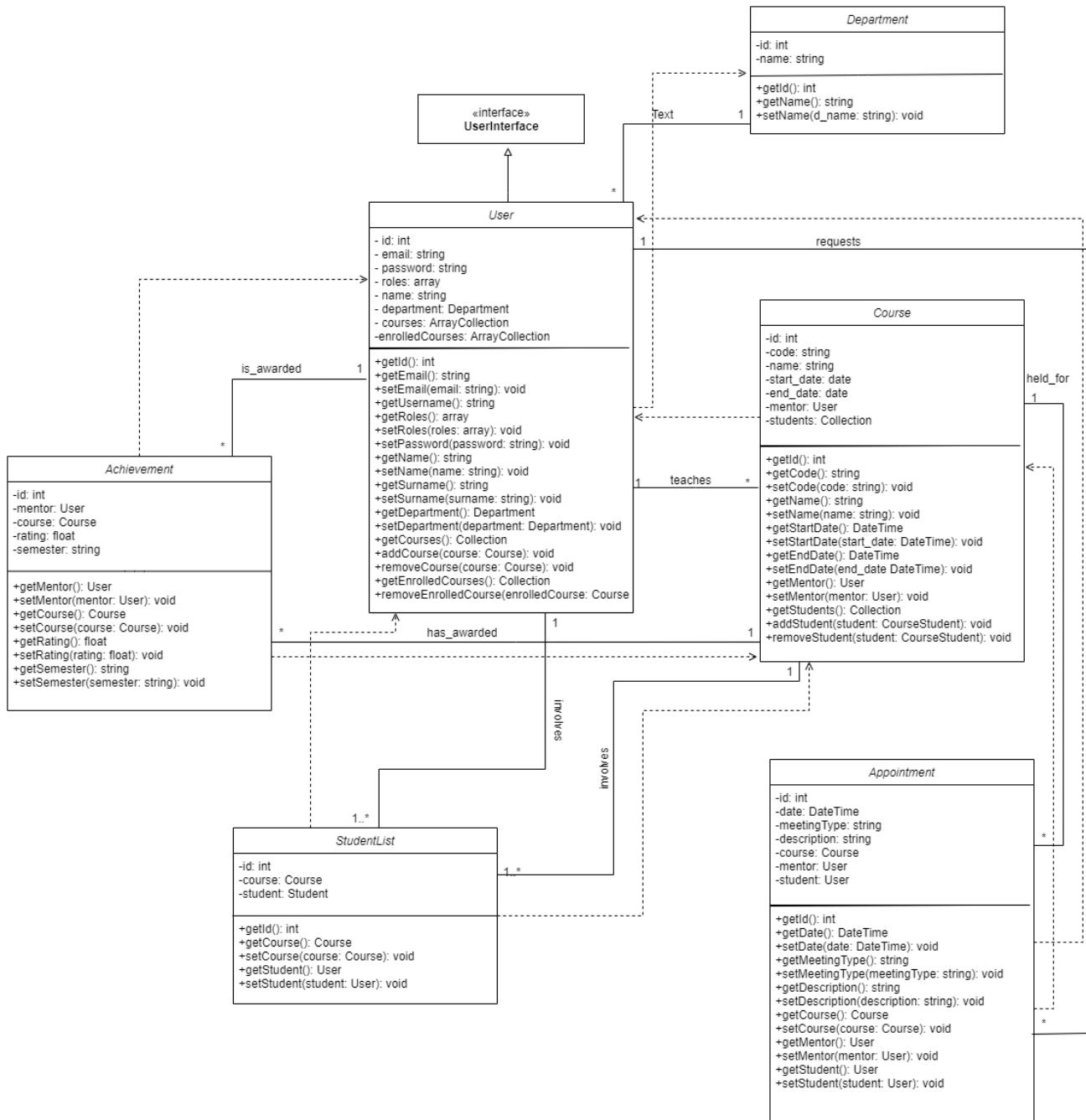
C_A8_Edit_Timetable



C_08_A10_Course_Management

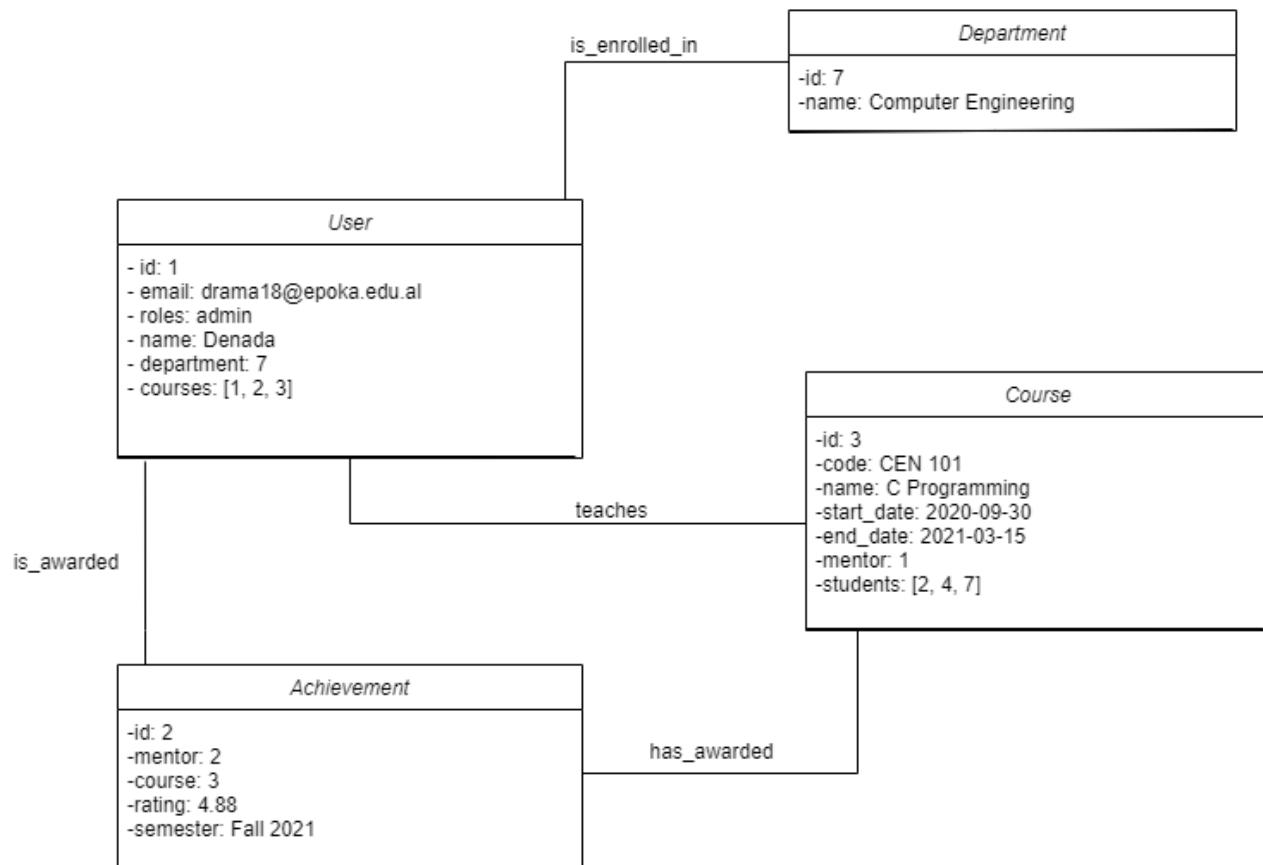


4.2.5 Class Diagram



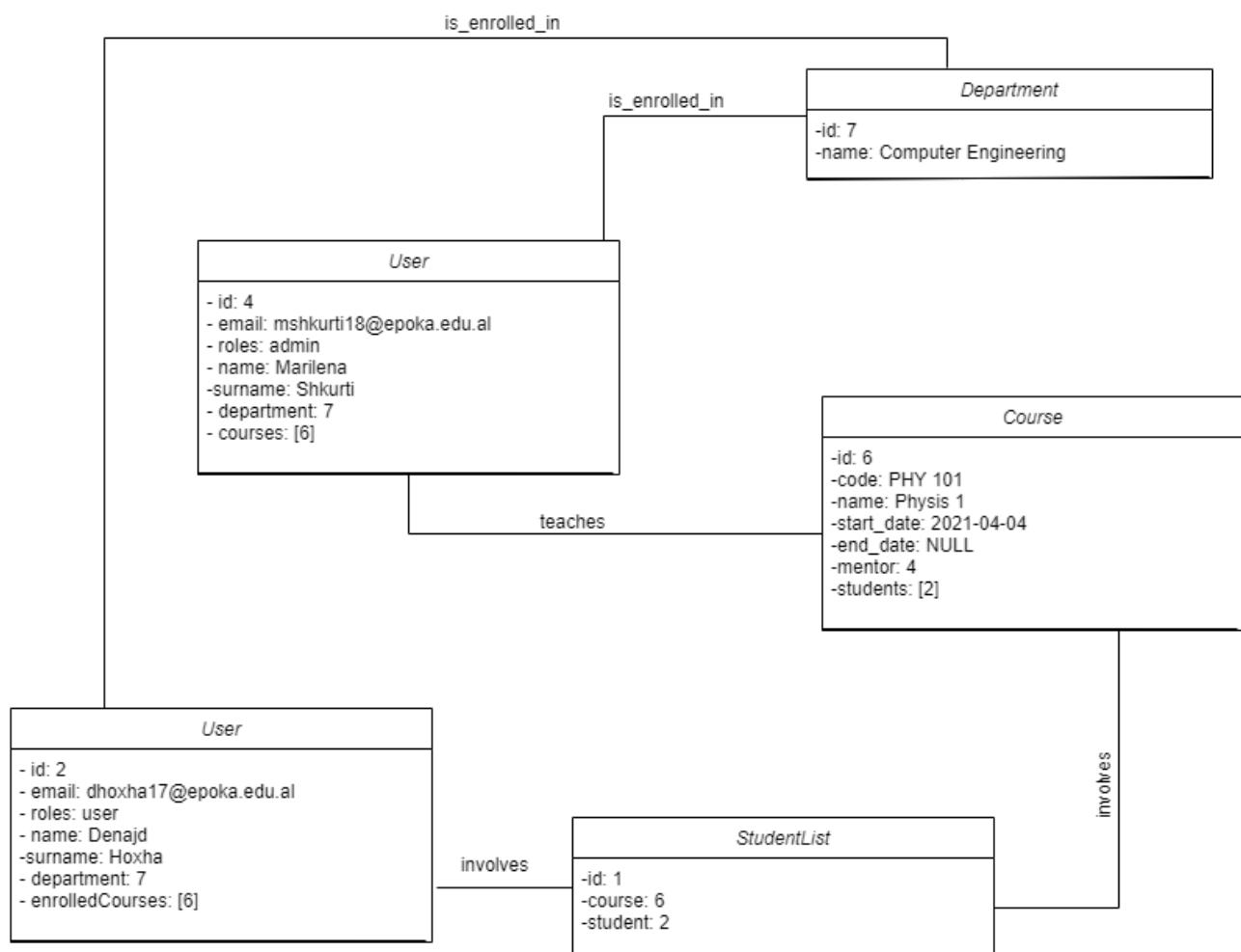
4.2.6 Object Diagrams

O_01_Mentor_Completed_Course



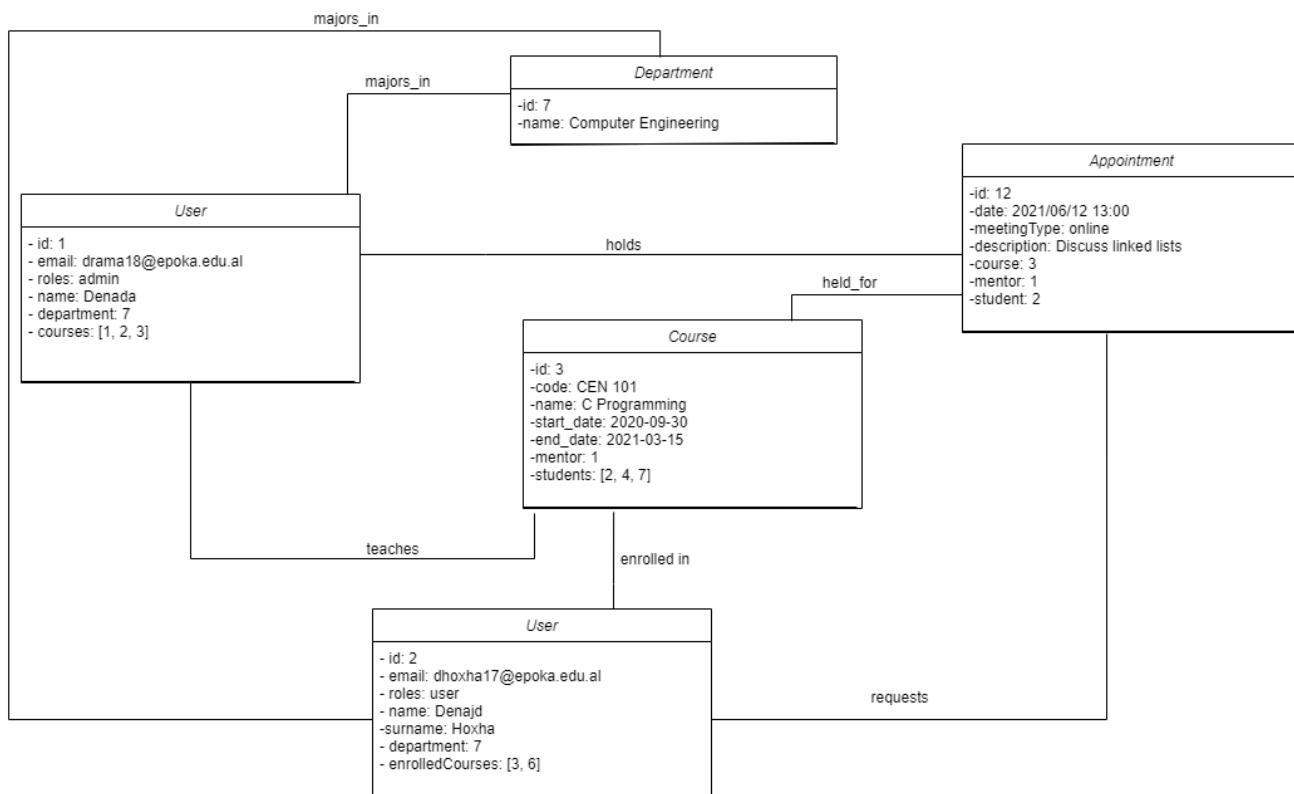
E-Classroom Requirements Specification

O_02_Mentor_Current_Course

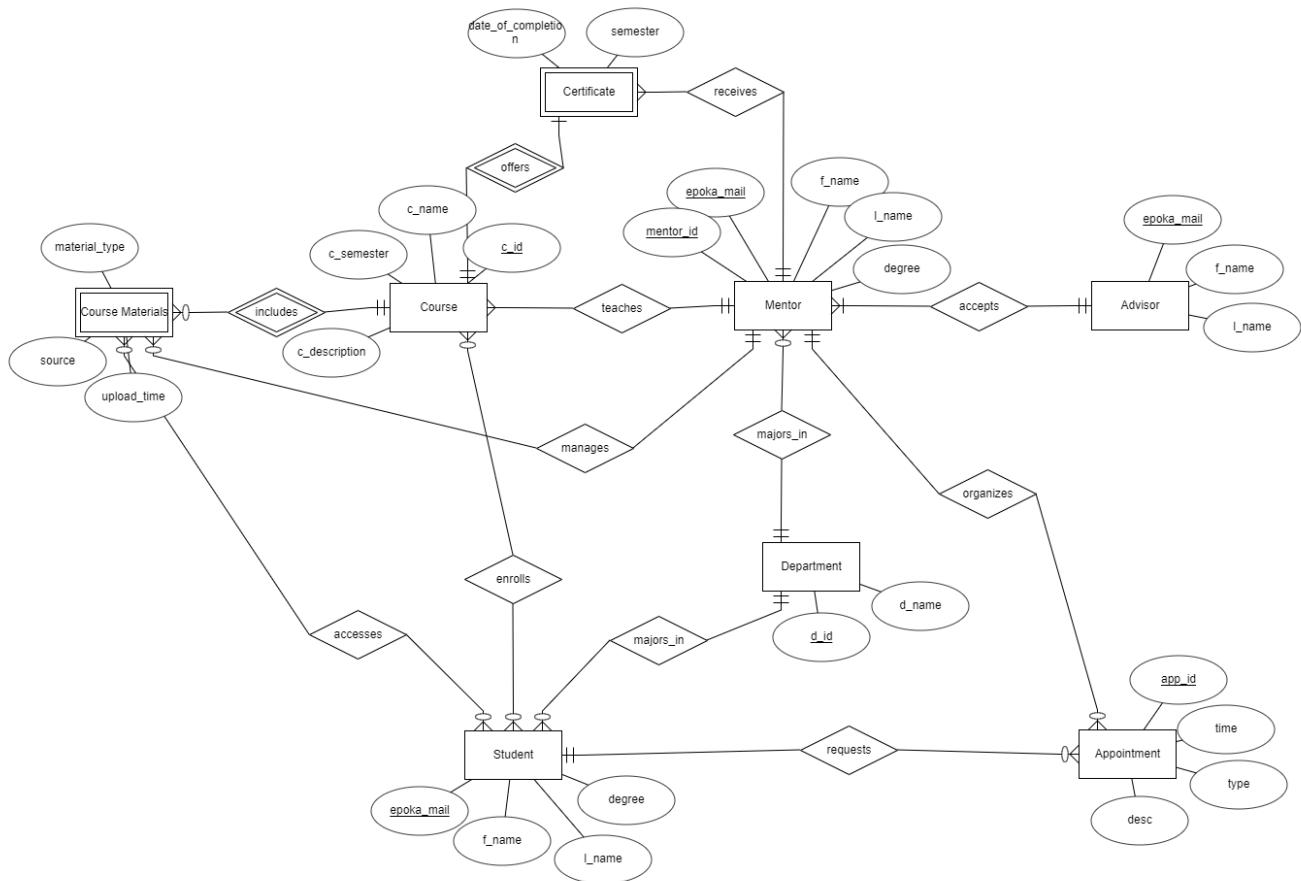


E-Classroom Requirements Specification

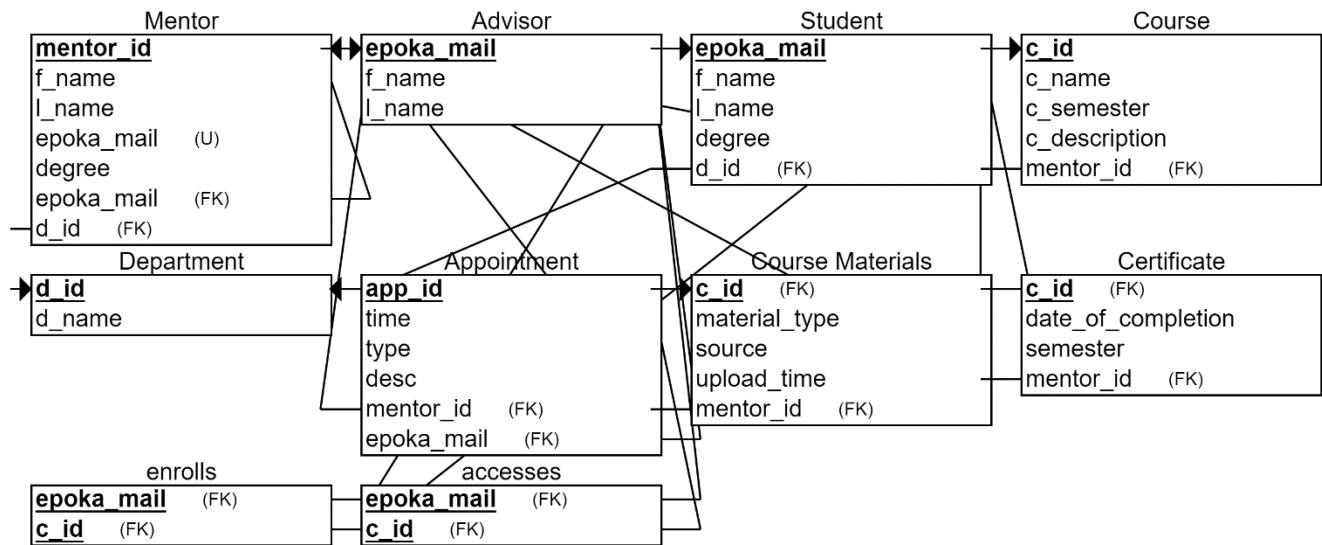
O_03_Appointment



4.2.7 Entity Relationship Diagram

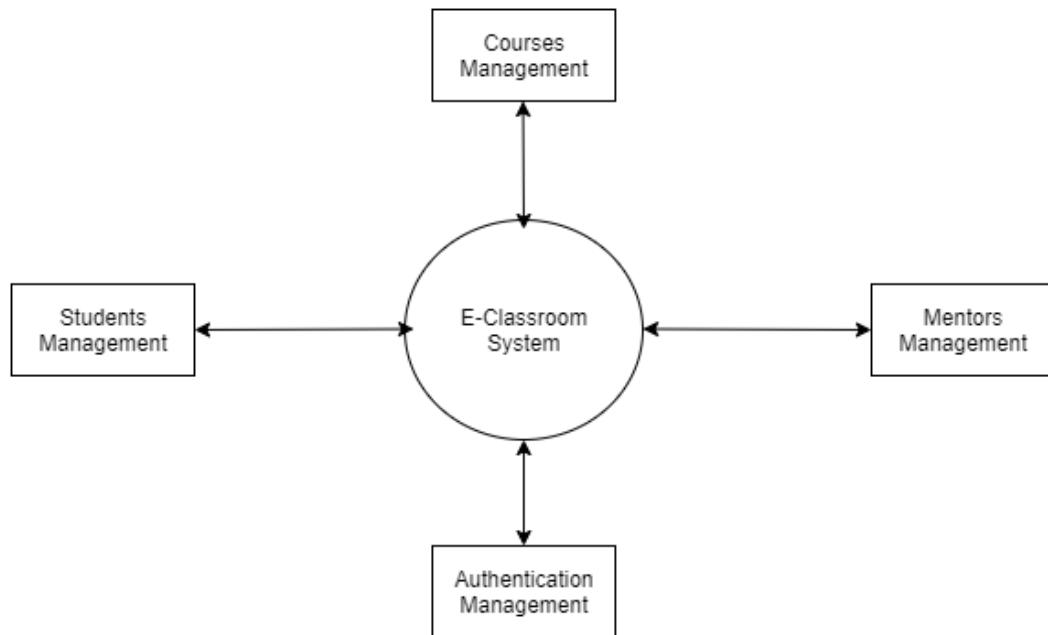


4.2.8 Relational Schema



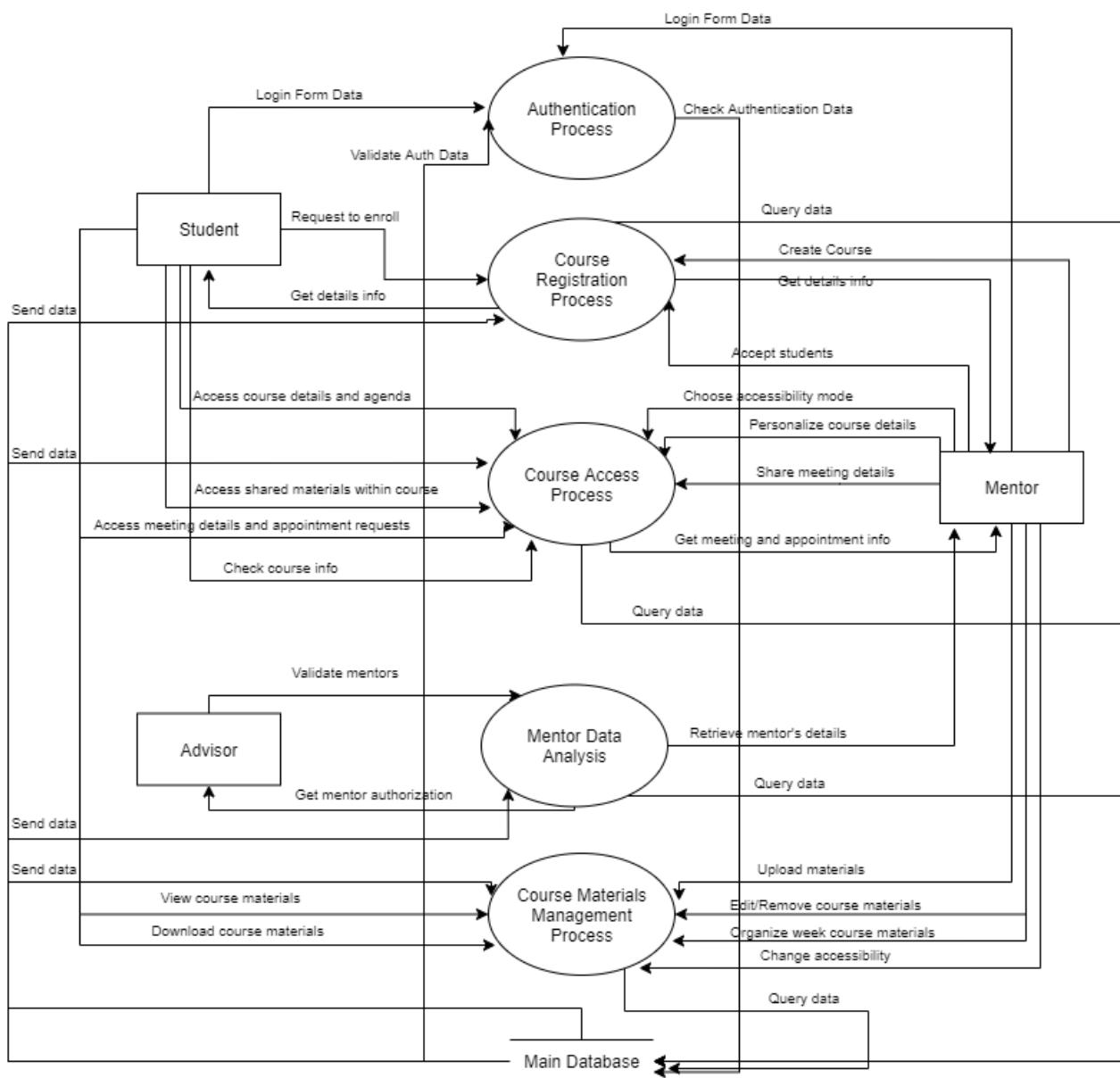
4.2.9 Data Flow Diagrams

DFD_Level_0



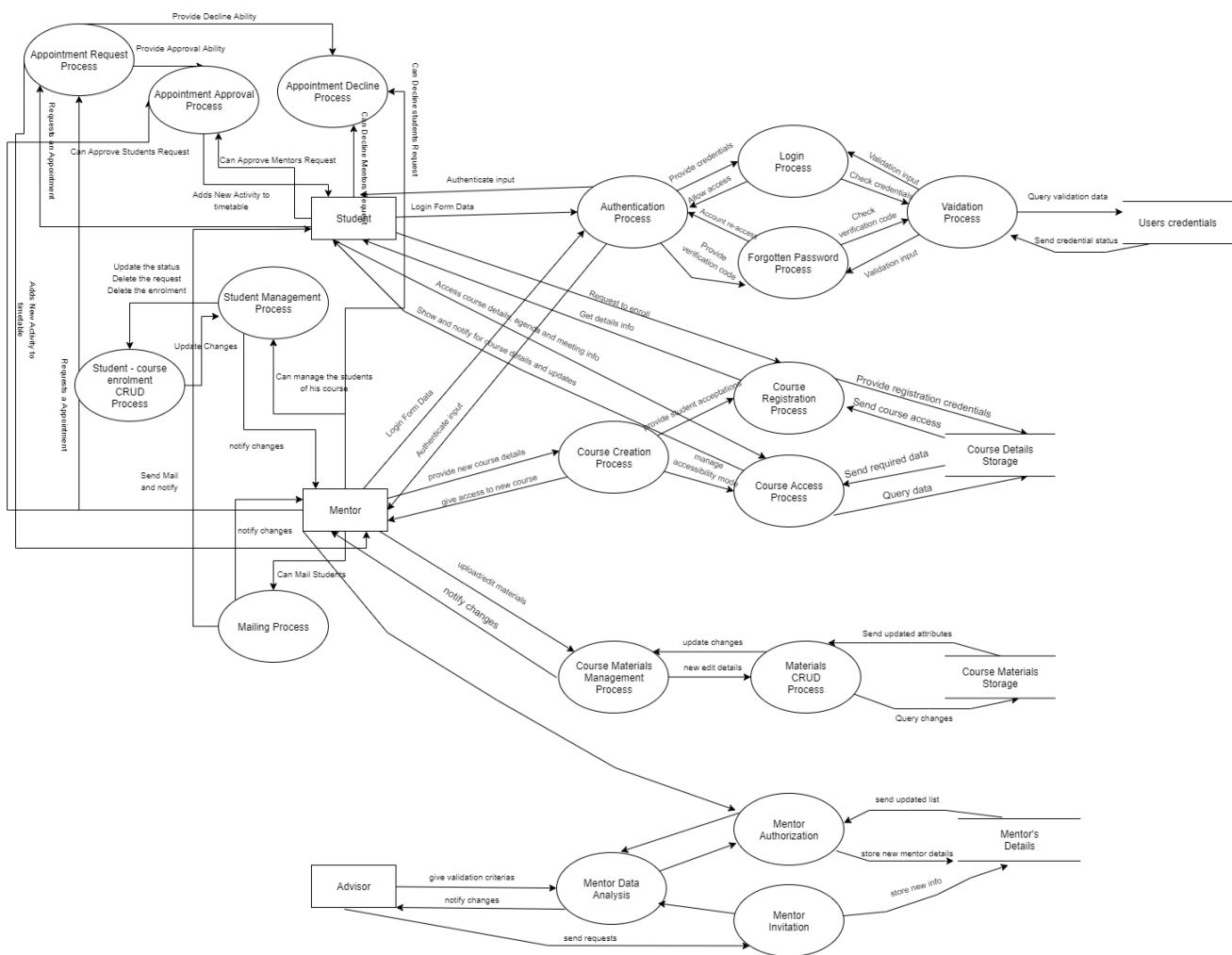
E-Classroom Requirements Specification

DFD_Level_1



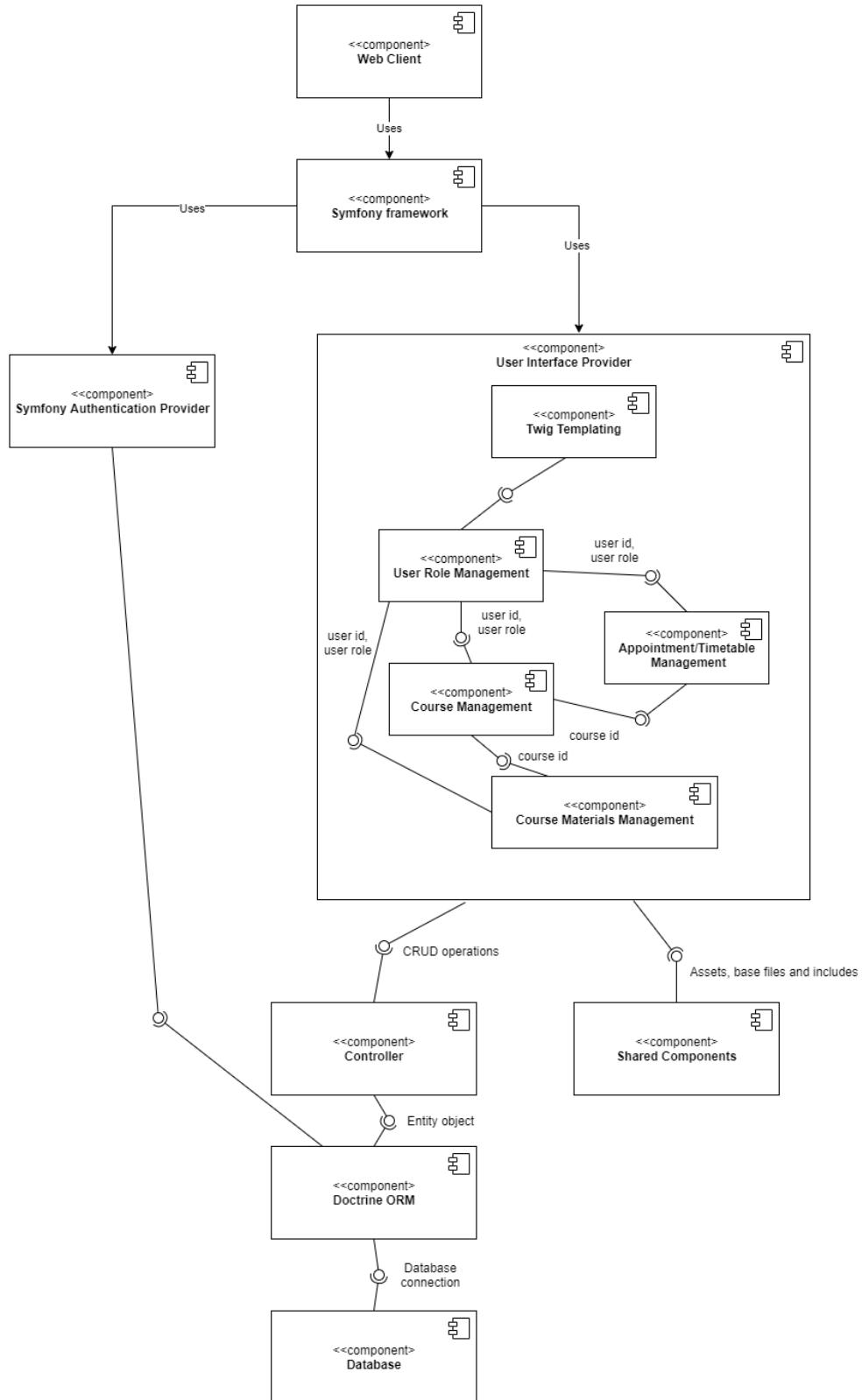
E-Classroom Requirements Specification

DFD_Level_2



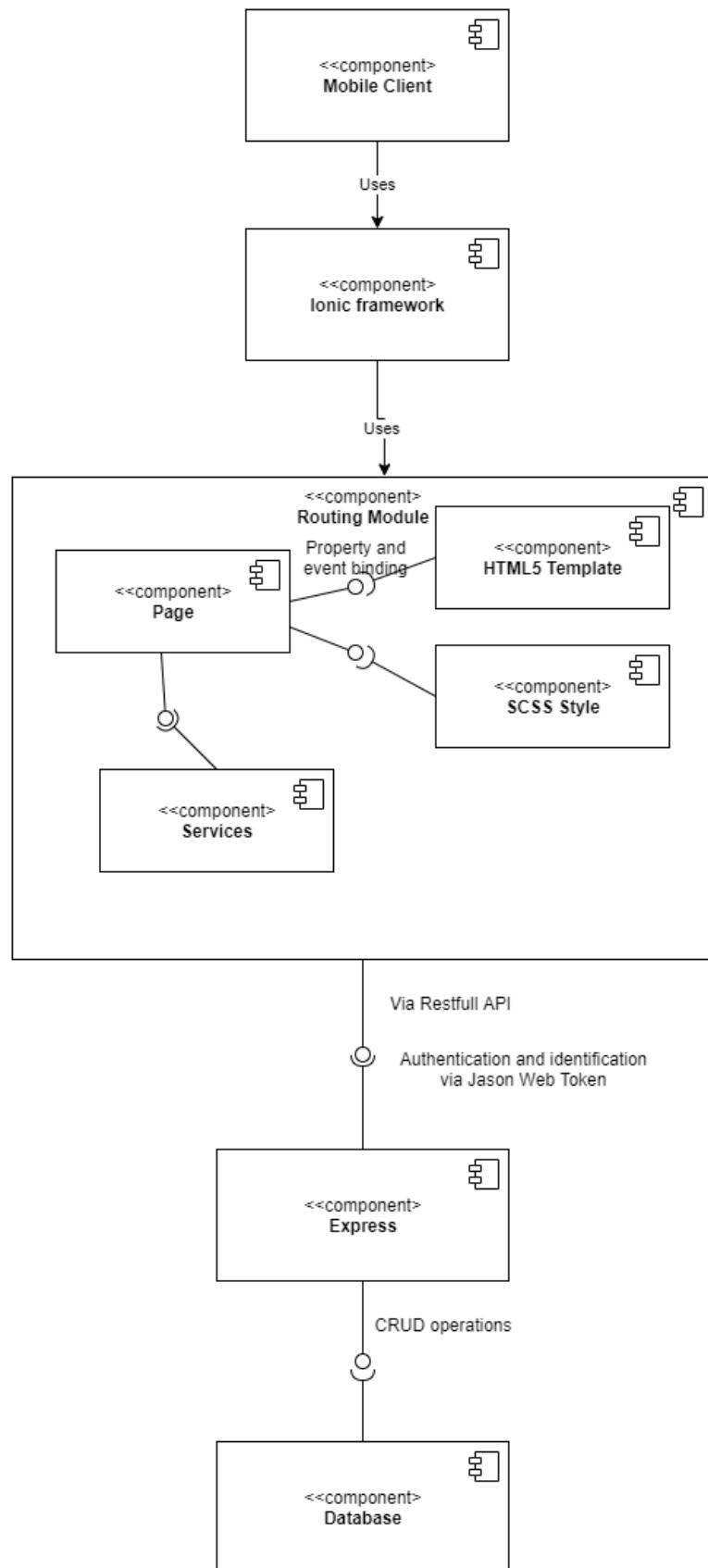
4.2.10 Component Diagrams

Web Client

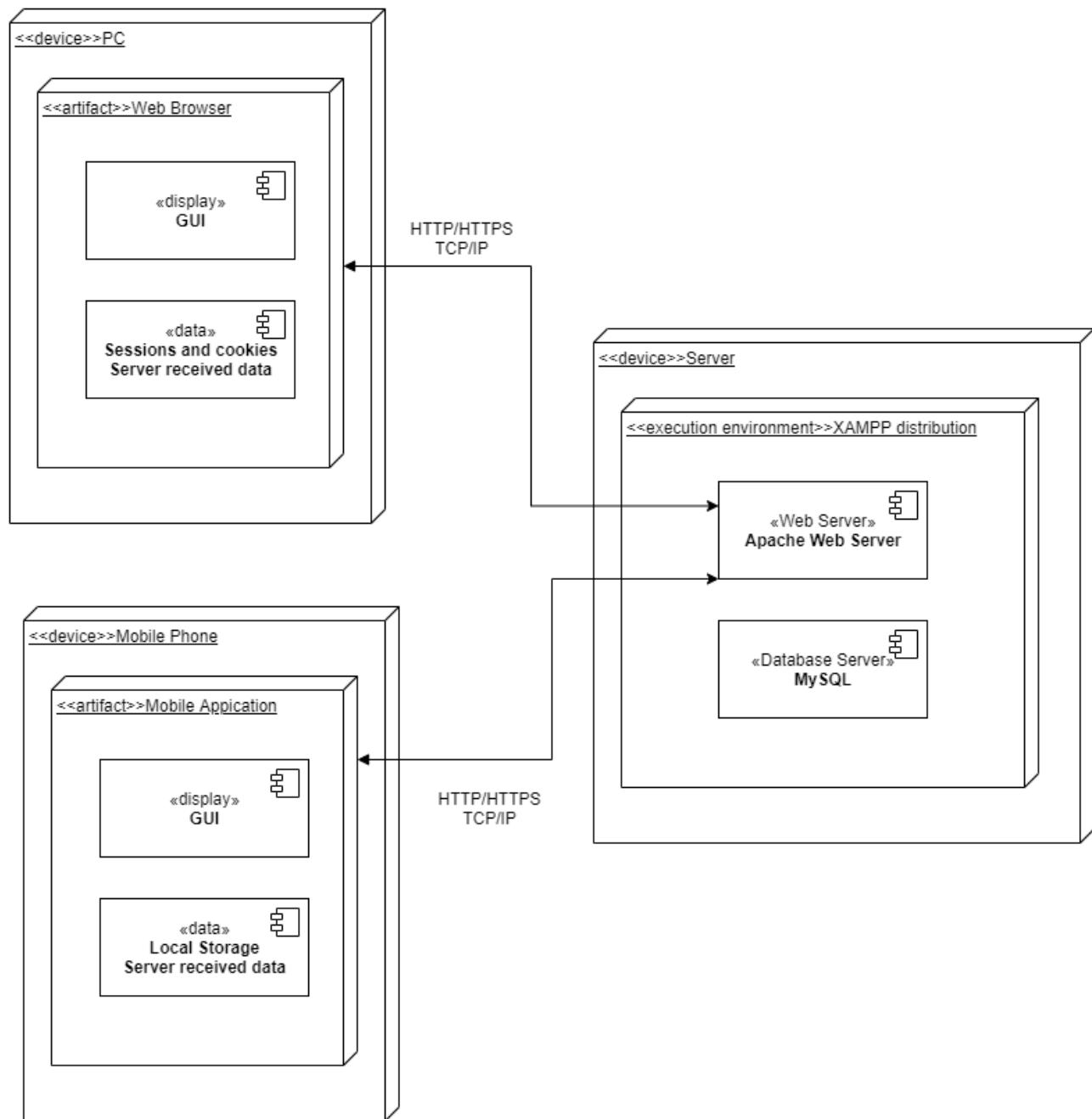


E-Classroom Requirements Specification

Mobile Client



4.2.11 Deployment Diagram



5. Implementation

To implement this project, we decided to use a combination of new and innovative technologies, while maintaining the standardized methods of Software Engineering. E-Classroom is a combination of models, involving a web application and a mobile application, where every part of the system serves for a specific purpose. To describe the technology used let's first explain the implementation of the Web Application and then we continue to the Mobile Application.

5.1 Technologies Used

5.1.1 Web App

E-Classroom Web App – The WebApp application is implemented in the Symfony framework for web development. The choice behind Symfony is mainly concentrated in the following points:

1. Permanence of the framework and its long-term support.
2. The framework promotes and enforces best practices, standardization and interoperability of applications.
3. The framework enforces a MVC model.
4. The framework makes testing and debugging very easy and comprehensive.
5. The framework supports very well mid to large scale web applications, which is the type of project that we aim to build.

In order to use this framework efficiently, we were required to use the following languages/markups:

Frontend Development: HTML/Twig Templating, CSS, Javascript

Backend Development: PHP

Configuration: YAML

Database: Doctrine ORM/ MySQL

5.1.2 Mobile App

E-Classroom Mobile App - The MobileApp application Front-End is implemented in Angular. Ionic uses Cordova to run on mobile devices. Cordova enables cross-platform programming using common web technologies such as HTML5, CSS3, and JavaScript rather than the native

development language of each mobile device. To access each device's sensors, data, and network status, applications run under wrappers tailored to each platform and rely on standards-compliant API bindings.

Frontend Development: HTML5, SCSS, Typescript, Angular Framework.

Backend Development: Express (NodeJS)

Configuration: YAML

Database: Doctrine ORM/ MySQL

5.1.3 Libraries

In order to make use of the technologies mentioned above we have also used the following programming paradigms:

Object Oriented Programming – For every type of user, course, appointment, material etc.. we were required to build Classes based on OOP rules.

Asynchronous Calls or AJAX – Each time we had to interact with the database without changing our web/mobile view, we used AJAX calls through JavaScript to our server.

Database Triggers – In order to trigger notifications on any new timetable event or student request, we will have to use database triggers in MySQL.

User Interface Details:

For the user interface design of the web application, we used Bootstrap classes with a number of self-created styles.

5.1.4 MVC Architecture

Model: the entity classes communicate directly with the database. Inside each entity, the respective functions that prepare the query statements and call repository functions are constructed. These functions return the results of database operations to the controllers.

View: The views form the front-end of our application. These are twig templating files with UI components, that incorporate JavaScript actions as well. In the view, different UI components fire actions for the controllers to handle.

Controller: The controller acts as an interface between the Model and View Component to process all the incoming requests, manipulate data by using the Model and render the output into the views.

5.2 Installation Manual

5.2.1 Web App

There are several steps that need to be followed in order to install E-Classroom software and make use of it.

Firstly, you need to make sure that you have XAMPP installed in your computer. Secondly, download or clone the **Source-Code Web** folder, which you can find under this link:

<https://github.com/drama18/SE-2021>.

Continue by opening XAMPP and starting MySQL and Apache.

Under XAMMP folder, manage to find the htdocs folder, and insert the E-Classroom downloaded folder inside the htdocs folder.

In order to use the database of the system, you need to firstly create a database called eclassroom in localhost/phpmyamdin, and then import the SQL script eclassroom.sql, which can be found inside the code directory.

In the terminal of your IDE, run [`php -S 127.0.0.1:8000`](http://127.0.0.1:8000) (or any other port)

You can open the software using this link: <http://localhost:8000> (or your chosen port).

5.2.2 Mobile App

While the app can be uploaded to App Store and Play Store and easily install on every Android or iOS device, some steps need to be followed to deploy the back-end for the Mobile App.

After downloading the source code from github repository (<https://github.com/drama18/SE-2021>) NodeJS need to be installed (at the time this is written the link is: <https://nodejs.org/en/download/>).

After installing NodeJS, should be open the folder where the source code is via terminal or cmd.

Then run "npm init" then run the command "npm install express --save".

After installing NodeJS and Express run "npm install" to install all the dependencies for this program.

Then to run the program execute the command "node index.js".

5.3 User Manual

This software has 2 types users: Mentor and Student. Both of these users have its own view of the system. To check the system design and functionalities that the system provides for each user, you can use one of the following accounts.

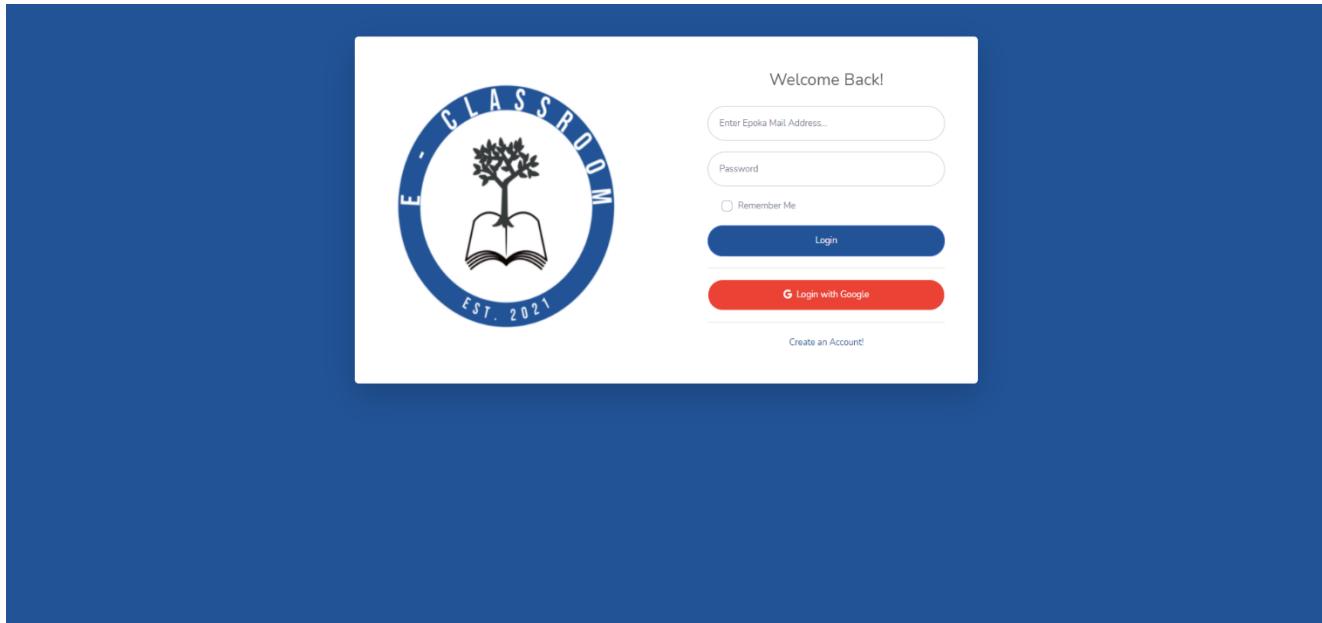
Use the following usernames and passwords to enter into the desired user's account.

- 1. Email:** drama18@epoka.edu.al, **Password:** epokauni ==> Admin view of the system.
- 2. Email:** mshkurti18@epoka.edu.al, **Password:** epokauni ==> Regular user view of the system.

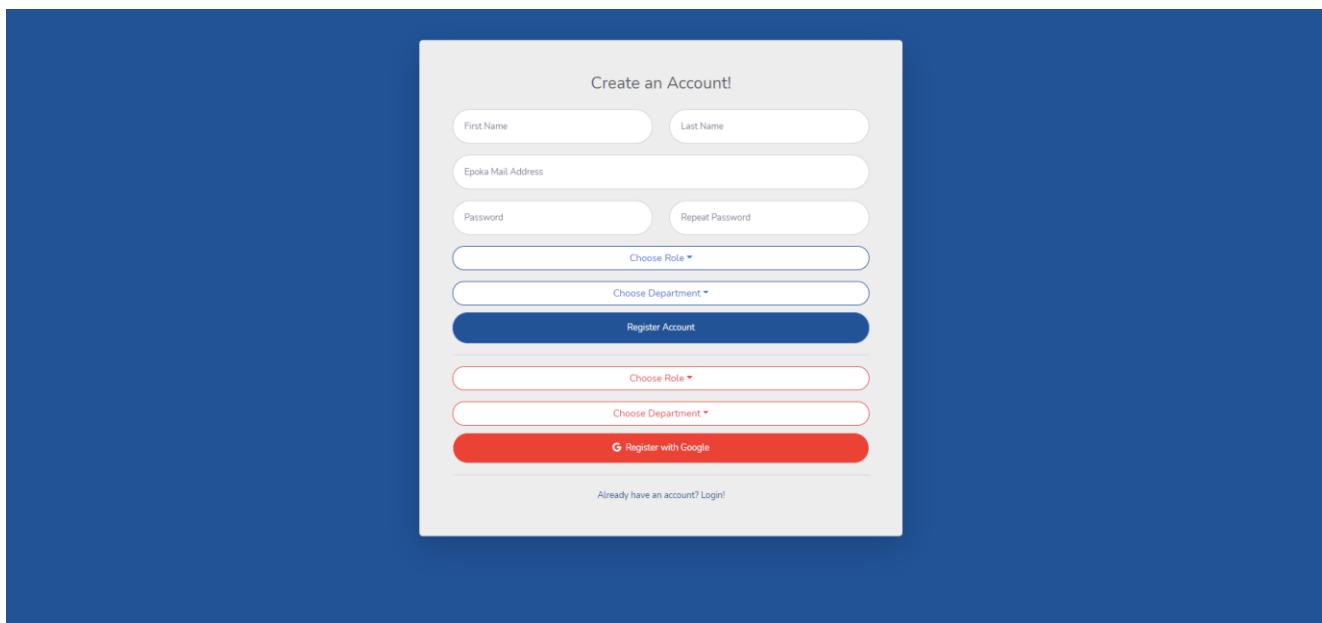
5.4 Software Screenshots

5.4.1 WebApp Screenshots

Login Page



Register Page



E-Classroom Requirements Specification

Mentor Home Dashboard

The screenshot shows the Mentor Home Dashboard. On the left is a sidebar with navigation links: Home, Profile, Courses, Students, Timetable, and Achievements. The main area has a header "Dashboard" and a top bar with a user profile for "Denada Rama" and a button "+ Create a New Course". Below the header are four cards: "STUDENTS NUMBER 2", "PENDING REQUESTS 18", "TO DO TASKS 2", and "THIS WEEK'S MEETINGS 5". Under "Current Courses" are two cards for "MTH 206 - Numerical Analysis" and "PHY 101 - Data Structures". A section "This Week's Activity" shows a calendar entry for "SUN 28 May CEN 110". To the right is a "Todo List" with items: "Lunch meeting 10:30 AM", "Lunch meeting 11:30 AM", and "Lunch meeting".

Mentor Profile

The screenshot shows the Mentor Profile page. The sidebar includes links for Home, Profile, Courses, Students, Timetable, and Achievements. The main area has a header "Profile" and a user profile for "Denada Rama". It features a placeholder photo with a "Change Photo" button. The profile section includes fields for First Name (Denada) and Last Name (Rama). There is a "Edit Biography" section with a large text input field. Below that is a "Course Links" section with four pairs of input fields for course names and links. At the bottom is a "Save Settings" button and a copyright notice: "Copyright © Epoka University 2021".

E-Classroom Requirements Specification

Mentor All Courses

The screenshot shows the 'Current Courses' section with two cards: 'MTH 206 - Numerical Analysis' and 'PHY 101 - Data Structures'. Both cards feature a cartoon illustration of a person sitting at a desk with a computer monitor displaying a document, surrounded by various educational icons like a pencil, a book, and a camera. The 'Completed Courses' section below shows two similar cards for 'CEN 110 - C Programming' and 'CEN 307 - Computer Networks'. A sidebar on the left lists navigation options: Home, Profile, Courses, Students, Timetable, and Achievements. A top right corner shows a user profile for 'Denada Rama'.

Mentor Student List

The screenshot shows the 'Students List' table with three rows of data. The columns are Name, Epoka Mail, Department, Course, Mail, and Remove. The data is as follows:

Name	Epoka Mail	Department	Course	Mail	Remove
Marilena Shkurti	mshkurti18@epoka.edu.al	Computer Engineering	Numerical Analysis		
Denajd Hoxha	dhoxha17@epoka.edu.al	Computer Engineering	Numerical Analysis		
Marilena Shkurti	mshkurti18@epoka.edu.al	Computer Engineering	Data Structures		

Below the table is a 'Student Requests' section with a table header and a message 'no records found'.

E-Classroom Requirements Specification

Mentor Timetable

The screenshot shows the E-Classroom Timetable interface. On the left, a sidebar menu includes Home, Profile, Courses, Students, Timetable (selected), and Achievements. The main area is titled "Timetable" and displays a table of events:

ID	Title	Start	End	Description	All_day	Actions
1	Appointment MTH 206	2021-06-17 10:00:00	2021-06-17 11:00:00	revision	No	Show / Edit
2	MTH 206 - Meeting	2021-06-18 14:00:00	2021-06-18 15:00:00	online	No	Show / Edit
3	Intro	2021-06-17 20:00:00	2021-06-17 20:11:00		No	Show / Edit
4	Appointment MTH 206	2021-06-19 10:00:00	2021-06-19 11:00:00	consultation	No	Show / Edit

A "Create New Event" button is located at the bottom right. Below the table is a weekly calendar for June 13 – 19, 2021, with time slots from 9am to 12pm. Events are color-coded: yellow for revision, green for online, blue for consultation, and red for meetings.

Mentor Calendar events

The screenshot shows the Mentor Calendar events interface. It features a weekly calendar for June 13 – 19, 2021, with time slots from 9am to 9pm. The calendar grid includes columns for Sun 6/13 through Sat 6/19 and rows for hours from 9am to 9pm. Events are color-coded:

- Yellow: Revision (e.g., 10:00 - 11:00 on Thu 6/17)
- Green: Online (e.g., 10:00 - 11:00 on Fri 6/18)
- Blue: Consultation (e.g., 2:00 - 3:00 on Fri 6/18)
- Red: Meeting (e.g., 8:00 - 9:11 on Thu 6/17)

The calendar also includes navigation buttons for "today", "month", "week", "day", and "list".

E-Classroom Requirements Specification

Mentor Calendar – Month view

[«](#) [»](#) [today](#)

June 2021

[month](#) [week](#) [day](#) [list](#)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
			● 10a Appointment MTH 206 ● 8p Intro	● 2p MTH 206 - Meeting		
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10

Mentor Calendar – List view

[«](#) [»](#) [today](#)

Jun 13 – 19, 2021

[month](#) [week](#) [day](#) [list](#)

Thursday		June 17, 2021
10:00am - 11:00am	● Appointment MTH 206	
8:00pm - 9:11pm	● Intro	
Friday		June 18, 2021
2:00pm - 3:00pm	● MTH 206 - Meeting	
Saturday		June 19, 2021
10:00am - 11:00am	● Appointment MTH 206	

E-Classroom Requirements Specification

Mentor Achievements

The screenshot shows the 'My Achievements' section of the E-Classroom interface. On the left is a dark blue sidebar with navigation links: Home, Profile, Courses, Students, Timetable, and Achievements (which is currently selected). The main area has a light gray header 'My Achievements'. Below it, there are two certificate cards for 'Denada Rama'. Each card displays the student's name, course details (CEN 110 - C Programming or CEN 307 - Computer Networks), and a date range (2020/09/02 - 2021/02/13 or 2020/09/02 - 2020/09/02). A 'Download Certificate' button with a download icon is at the bottom of each card. At the very bottom of the page, the text 'Copyright © Epoka University 2021' is visible.

Mentor create new course

The screenshot shows the 'Create New Course' form. It has a white background with a dark blue header bar. The title 'Create New Course' is centered at the top. Below it are two input fields: 'Course Code' and 'Course Name'. Each field has a placeholder text ('Ex: CEN 110' and 'Ex: C Programming' respectively) and a long, thin, rounded rectangular input box. At the bottom of the form is a large, dark blue rectangular 'Create' button.

E-Classroom Requirements Specification

Mentor – Course Stream

The screenshot shows the 'E-CLASSROOM' interface for the course 'MTH 206 - Numerical Analysis'. The left sidebar has links for Home, Students, and Appointments. The main area is titled 'Week 1' and contains three sections: 'Reading List For Arrays', 'Tutorials for C', and 'Project Samples', each with edit and delete icons.

Mentor – Course Students

The screenshot shows the 'E-CLASSROOM' interface for the course 'MTH 206 - Numerical Analysis'. The left sidebar has links for Home, Students, and Appointments. The main area is titled 'Students List' and displays two student entries: Marilena Shkurti and Denajd Hoxha, along with their emails and department information. Each student entry has 'Mail' and 'Remove' buttons.

E-Classroom Requirements Specification

Mentor – Course Appointments

The screenshot shows the 'Appointments History' section of the E-Classroom Mentor interface. The left sidebar has a dark blue background with icons for Home, Students, and Appointments. The main area title is 'MTH 206 - Numerical Analysis'. It displays two appointment entries:

ID	Start	End	Description	Status	Actions
1	2021-06-17 10:00:00	2021-06-17 11:00:00	revision	Approved	Approve / Show / Edit
2	2021-06-19 10:00:00	2021-06-19 11:00:00	consultation	Approved	Approve / Show / Edit

At the bottom right, there is a notification icon with 'No new notifications'.

Mentor – Student View – Explore courses

The screenshot shows the 'All Available Courses' section of the E-Classroom Mentor interface. The left sidebar has a dark blue background. The main area title is 'All Available Courses'. It lists three courses with small illustrations:

- MTH 206 - Numerical Analysis**
By You
- PHY 101 - Data Structures**
By You
- CEN 110 - C Programming**
By John Smith
[Request to Enroll](#)

At the bottom right, there is a notification icon with 'No new notifications'.

E-Classroom Requirements Specification

Mentor – add new calendar event

The screenshot shows a 'Create New Event' form. It includes fields for Title, Start date (dd/mm/yyyy), Start time (00:00), End date (dd/mm/yyyy), End time (00:00), Description, an 'All day' checkbox, and a 'Background color' selector. A 'Save' button and a 'Back To List' link are also present.

Create New Event

Title

Start
dd/mm/yyyy
00 00

End
dd/mm/yyyy
00 00

Description

All day

Background color

Save

[← Back To List](#)

Mentor – Course add material

The screenshot shows an 'Edit Course Material' form. It features a file upload field labeled 'Uploaded item' with a 'Choose File' button and a message indicating 'No file chosen'. A 'Save' button is located below the file field.

Edit Course Material

Uploaded item Choose File | No file chosen

Save

E-Classroom Requirements Specification

Student – Display all courses

The screenshot shows the E-Classroom student dashboard. On the left is a dark blue sidebar with the 'E - CLASSROOM' logo. The main content area has a light gray background. At the top, there's a header bar with a search icon, a video camera icon, and the name 'Marilena Shkurti'. Below the header, a button says 'Explore all courses'.

Currently Enrolled Courses

- MTH 206 - Numerical Analysis
By Denada Rama
- PHY 101 - Data Structures
By Denada Rama

Completed Courses

- CEN 110 - C Programming
By Denada Rama
- CEN 307 - Computer Networks
By Denada Rama

At the bottom right of the content area, there's a small footer note: 'Powered by Moodle. Last update: 2021'.

Student – Explore Courses

This screenshot shows the E-Classroom student dashboard with the same dark blue sidebar and header as the previous one. The main content area displays a grid of three course cards under the heading 'All Available Courses'.

- MTH 206 - Numerical Analysis
By Denada Rama
[Go to Course](#)
- PHY 101 - Data Structures
By Denada Rama
[Go to Course](#)
- CEN 110 - C Programming
By John Smith
[Request to Enroll](#)

At the bottom center of the content area, there's a copyright notice: 'Copyright © Epoka University 2021'.

E-Classroom Requirements Specification

Student – Course Stream

The screenshot shows the 'Week 1' section of the course stream. On the left sidebar, there are links for 'Home', 'View Mentor', 'View Timetable', and 'Request Appointment'. The main content area displays three items: 'Reading List For Arrays', 'Tutorials for C', and 'Project Samples', each with download icons.

Student – View Mentor's Profile

The screenshot shows Denada Rama's mentor profile for PHY 101. It includes a large placeholder for a profile picture, her name, degree, and a short bio. Below this is a section for 'Denada's Courses' showing she is already enrolled in MTH 206 and PHY 101. To the right is a 'Denada's Agenda' calendar for June 13–19, 2021, with specific appointments and meetings listed.

	Sun 6/13	Mon 6/14	Tue 6/15	Wed 6/16	Thu 6/17	Fri 6/18	Sat 6/19
all-day					10:00 - 11:00 Appointment MTH		
9am							
10am						10:00 - 11:00 Appointment MTH	
11am							
12pm							
1pm							
2pm						2:00 - 3:00 MTH 206 - Meeting	
3pm							
4pm							
5pm							
6pm							
7pm							

E-Classroom Requirements Specification

Student – View Course Timetable – Month View

The screenshot shows the E-Classroom interface for a student viewing their course timetable. The left sidebar has links for Home, View Mentor, View Timetable, and Request Appointment. The main area is titled "PHY 101 - Data Structures" and "Timetable". A navigation bar at the top right includes icons for Home, View Mentor, View Timetable, Request Appointment, and a user profile for Marlena Shikurti. Below the navigation is a "month" button. The main content is a calendar for June 2021. The days of the week are labeled Sun through Sat. Specific events are marked on the calendar:

- Wednesday, June 16: 10a Appointment MTH 206 (green dot)
- Wednesday, June 16: 2p MTH 206 - Meeting (blue dot)
- Wednesday, June 16: 8p Intro (blue dot)
- Saturday, June 19: 10a Appointment MTH 206 (green dot)

Student – View Course Timetable –List View

The screenshot shows the E-Classroom interface for a student viewing their course timetable in list view. The left sidebar has links for Home, View Mentor, View Timetable, and Request Appointment. The main area is titled "PHY 101 - Data Structures" and "Timetable". A navigation bar at the top right includes icons for Home, View Mentor, View Timetable, Request Appointment, and a user profile for Marlena Shikurti. Below the navigation is a "list" button. The main content displays a weekly list of events from June 13 to June 19, 2021:

Date	Event Details
Jun 17, 2021	Thursday 10:00am - 11:00am • Appointment MTH 206 8:00pm - 8:11pm • Intro
Jun 18, 2021	Friday 2:00pm - 3:00pm • MTH 206 - Meeting
Jun 19, 2021	Saturday 10:00am - 11:00am • Appointment MTH 206

E-Classroom Requirements Specification

Student – Request Course Appointment

The screenshot shows the E-Classroom application interface for a student. On the left, there is a sidebar with a blue background containing navigation links: Home, View Mentor, View Timetable, and Request Appointment. The main content area has a white background. At the top, it says "MTH 206 - Numerical Analysis". Below that is a "Request Appointment" form with fields for "Start" (date and time) and "End" (date and time), both using dropdown menus. There is also a "Description" text input field and a "Request Appointment" button. Below the form is a section titled "Appointments History" containing a table with one row of data. The table has columns: Id, Start, End, Description, and Status. The data row shows: Id 1, Start 2021-06-18 08:00:00, End 2021-06-18 09:00:00, Description (empty), and Status Pending. At the bottom right of the main content area is a small circular logo.

Id	Start	End	Description	Status
1	2021-06-18 08:00:00	2021-06-18 09:00:00		Pending

5.4.2 MobileApp Screenshots

Register Page

Create an Account!

First Name

Last Name

Email Address

Password

Repeat Password

Choose Role

Choose Department

Register Account

[Forgot Password?](#)
[Already have an account? Login!](#)

E-Classroom Requirements Specification

Login Page

Welcome!

Enter Email Address...

Password

Forgot Password?
Create an Account!

Login

E-Classroom Requirements Specification

Mentor – Home 1

The screenshot shows the Mentor - Home 1 dashboard. At the top right is a user profile icon. Below it, the word "Dashboard" is displayed, followed by a blue button labeled "+ Create a new course". The dashboard features four main sections: "STUDENTS NUMBER" (2), "PENDING REQUESTS" (1), "TO DO TASKS" (3), and "THIS WEEK TASKS" (2). Each section includes a small icon: a person for students, a person plus sign for pending requests, a checklist for to-do tasks, and a clipboard for weekly tasks. A "Current Courses" section is partially visible at the bottom.

E-Classroom Requirements Specification

Mentor – Student List



Students

Students List

Name	Department	Course	S M
 Marilena Shkurti	Computer Engineering	Numerical Analysis	
 Denajd Hoxha	Computer Engineering	Numerical Analysis	

Total of 2

Student Requests

Name	Department	Courses	A I
------	------------	---------	--------

E-Classroom Requirements Specification

Mentor – Student Request

The screenshot shows a user interface for managing student requests. At the top right is a circular profile picture of a person with short dark hair. To its left is a blue three-line menu icon. Below the header, there are two main sections: "Student Requests" and "Student Requests".

Student Requests:

Department	Courses	Send Mail	Remove Student
Computer Engineering	Numerical Analysis		
Computer Engineering	Numerical Analysis		

Total of 2

Student Requests:

Department	Courses	Accept	Decline
Computer Engineering	Computer Networks		

Total of 1

E-Classroom Requirements Specification

Mentor – All Courses



Courses

+ Add Course

Currently enrolled Courses



Numerical Analysis

MTH 206

Completed Courses

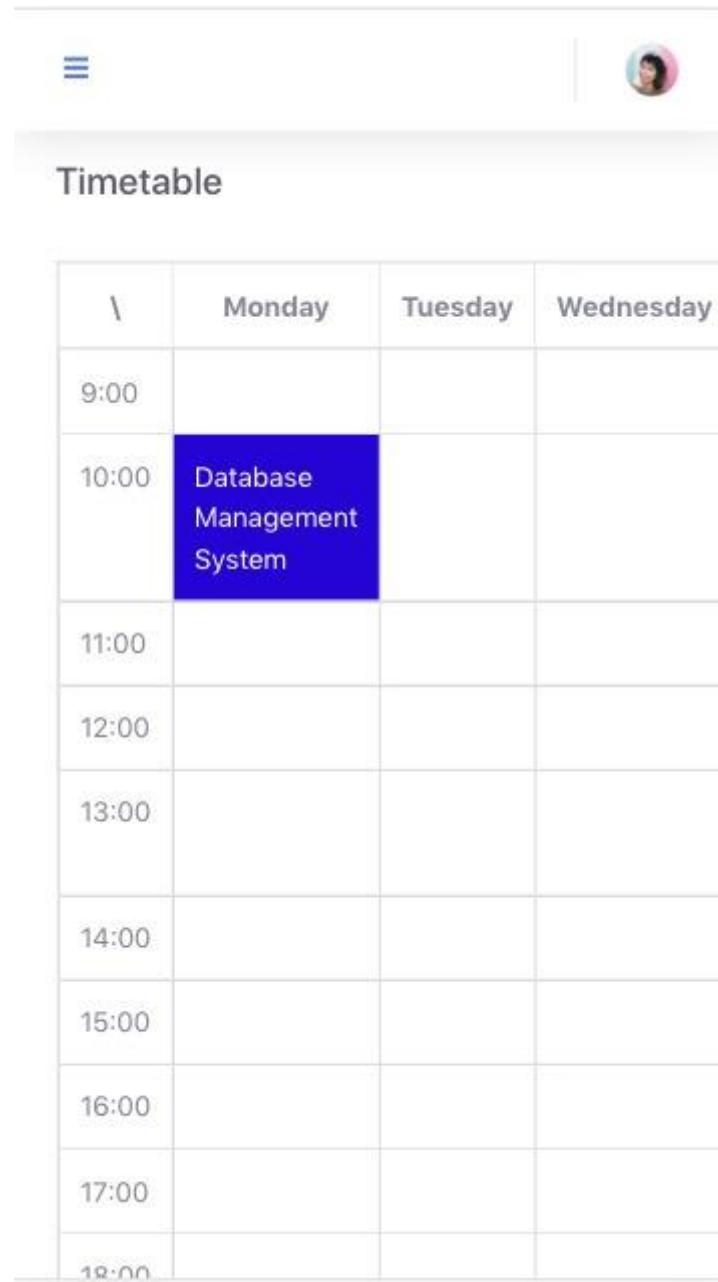


Mentor – Edit Profile

The screenshot shows a mobile-style application interface for editing a profile. At the top right is a circular placeholder for a user photo, showing a person's face. To its left is a three-line menu icon. Below the header is a section titled "Profile". In the center is a large, light-gray circular placeholder for a profile picture, containing a black silhouette of a person. Below this placeholder is a blue rectangular button labeled "Change Photo". Underneath the "Profile" section is another section titled "Change Biography". This section contains a heading "Biography" and a text input field with the placeholder text "This is a Biography Text!". At the bottom of this section is a blue rectangular button labeled "Save Changes".

E-Classroom Requirements Specification

Mentor – Timetable



\	Monday	Tuesday	Wednesday
9:00			
10:00	Database Management System		
11:00			
12:00			
13:00			
14:00			
15:00			
16:00			
17:00			
18:00			

E-Classroom Requirements Specification

Student – All Courses

The screenshot shows a user interface for managing courses. At the top, there's a header with three horizontal lines on the left and a circular profile picture on the right. Below the header, the word "Courses" is displayed in bold. A blue button labeled "Explore all courses" with a magnifying glass icon is visible. The main content area is divided into two sections: "Currently enrolled Courses" and "Completed Courses".

The "Currently enrolled Courses" section features a large, colorful illustration of a person sitting at a desk with a computer monitor, surrounded by various educational icons like a telescope, a pencil, and a book. Below the illustration, the course "Numerical Analysis" is listed with the code "MTH 206". To the right of the course name is a vertical ellipsis (...).

The "Completed Courses" section features a smaller illustration of a person sitting at a desk with a laptop, with books and a lamp nearby.

The entire interface has a clean, modern design with a light gray background and white cards for each course section.

Student – Request Appointment

The screenshot shows a user interface for requesting an appointment. At the top right is a user profile icon. Below the title 'Request Appointment' are fields for selecting a course (a dropdown menu), choosing a date and time (date and time pickers), and choosing the type of meeting (radio buttons for 'Online Meeting' and 'One-to-one meeting'). There is also a text area for describing the purpose of the meeting and a large blue 'Send Request' button at the bottom.

Request Appointment

Select a course

Select preferable time for appointment

dd/mm/yyyy

--:--

Choose type of meeting

Online Meeting

One-to-one meeting

Briefly describe what you'd like to discuss

Send Request

APPENDIX

Appendix A. Project Planning

Project Name: E-Classroom (Mentorship Program)

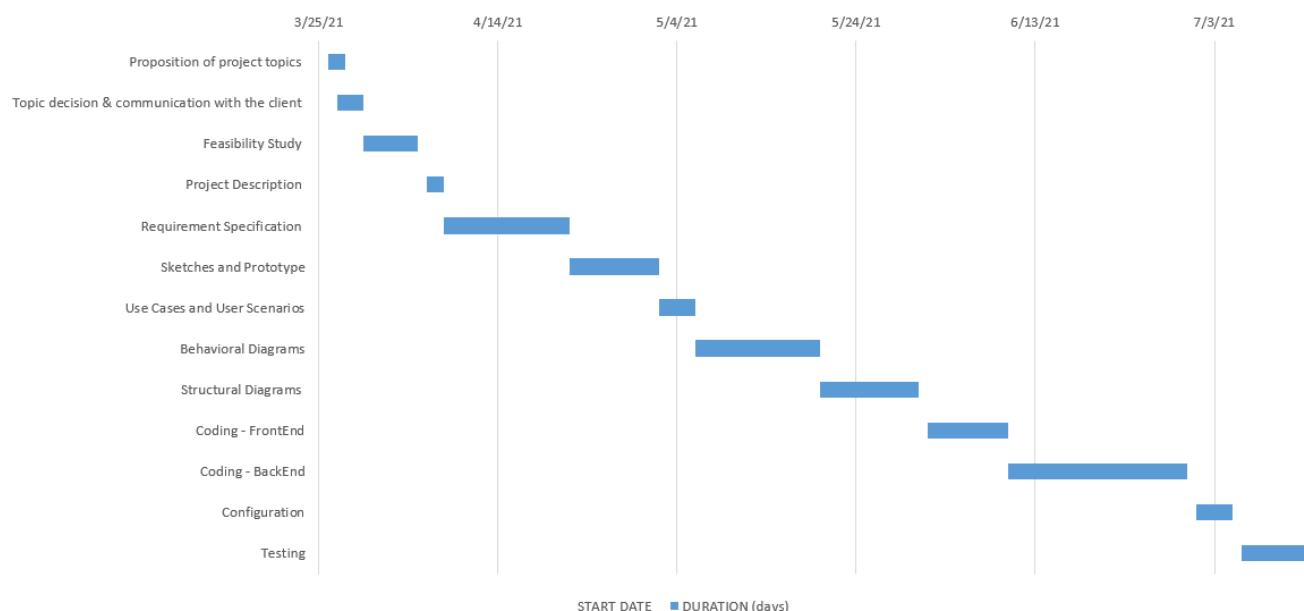
Start Date: March 26, 2021

End Date: July 15, 2021

Total Duration: 108 days

E-Classroom Project			DURATION (days)
START DATE	END DATE	Activity Name	
3/26/21	3/28/21	Proposition of project topics	2
3/27/21	3/30/21	Topic decision & communication with the client	3
3/30/21	4/6/21	Feasibility Study	6
4/6/21	4/8/21	Project Description	2
4/8/21	4/22/21	Requirement Specification	14
4/22/21	5/2/21	Sketches and Prototype	10
5/2/21	5/6/21	Use Cases and User Scenarios	4
5/6/21	5/20/21	Behavioral Diagrams	14
5/20/21	5/31/21	Structural Diagrams	11
6/1/21	6/10/21	Coding - FrontEnd	9
6/10/21	6/30/21	Coding - BackEnd	20
7/1/21	7/5/21	Configuration	4
7/6/21	7/15/21	Testing	9
			108

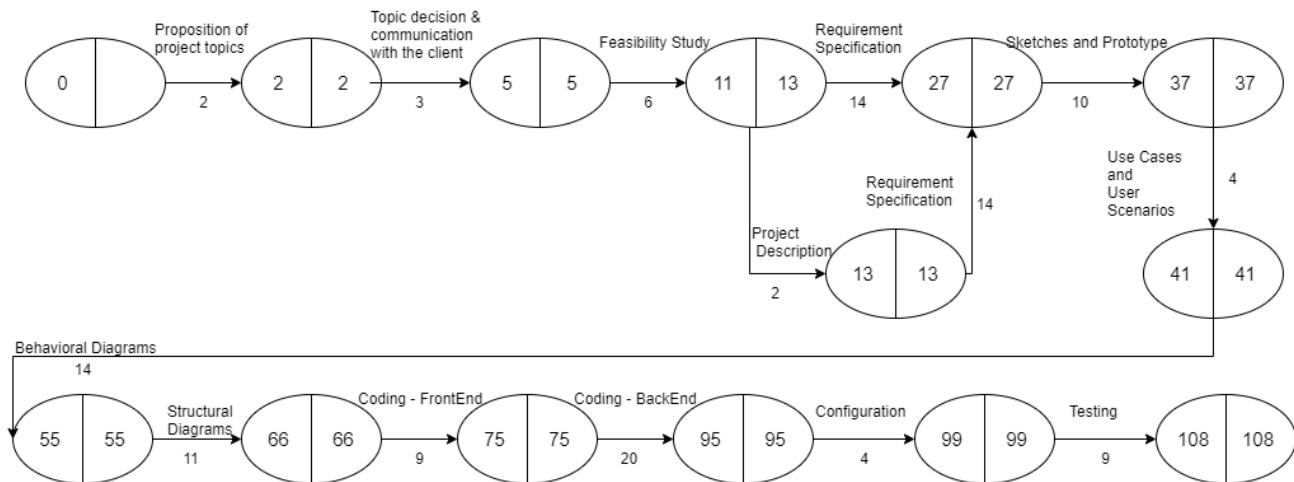
Gantt Chart



E-Classroom Requirements Specification

E-Classroom Project		DURATION (days)	Dependencies
	Activity Name		
1	Proposition of project topics	2	
2	Topic decision & communication with the client	3	1
3	Feasibility Study	6	2
4	Project Description	2	2
5	Requirement Specification	14	3,4
6	Sketches and Prototype	10	5
7	Use Cases and User Scenarios	4	6
8	Behavioral Diagrams	14	7
9	Structural Diagrams	11	8
10	Coding - FrontEnd	9	9
11	Coding - BackEnd	20	10
12	Configuration	4	11
13	Testing	9	12
		108	

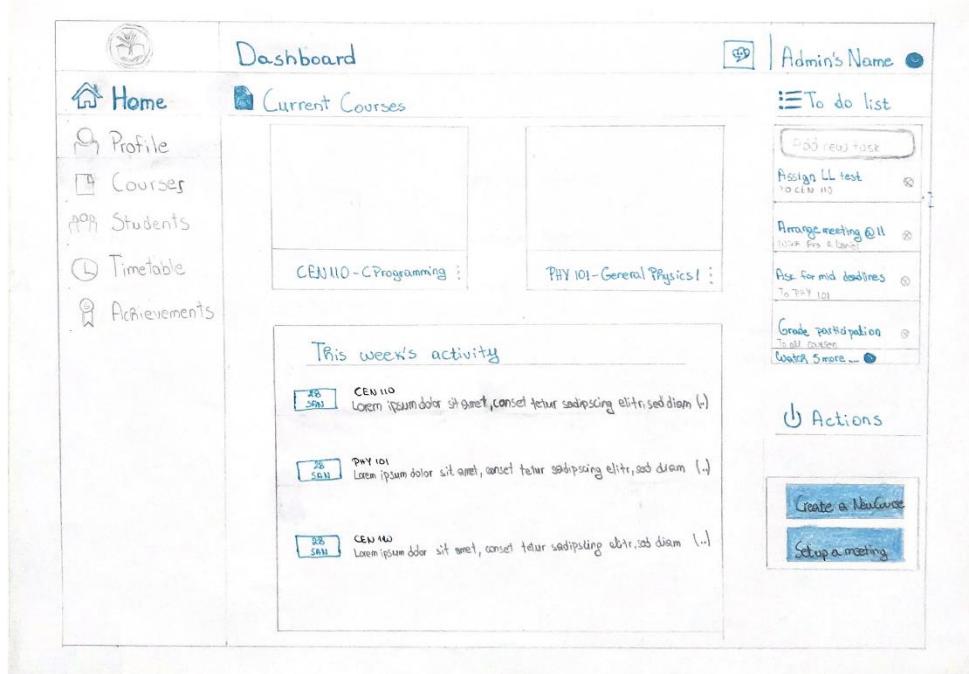
Network Analysis



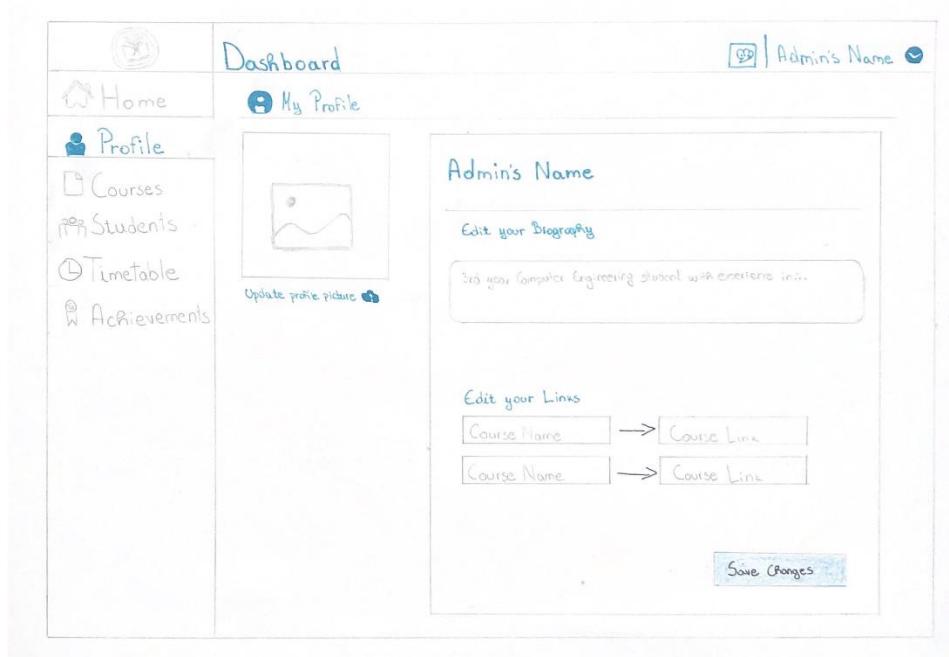
E-Classroom Requirements Specification

Appendix B. Sketches

Mentor - Home

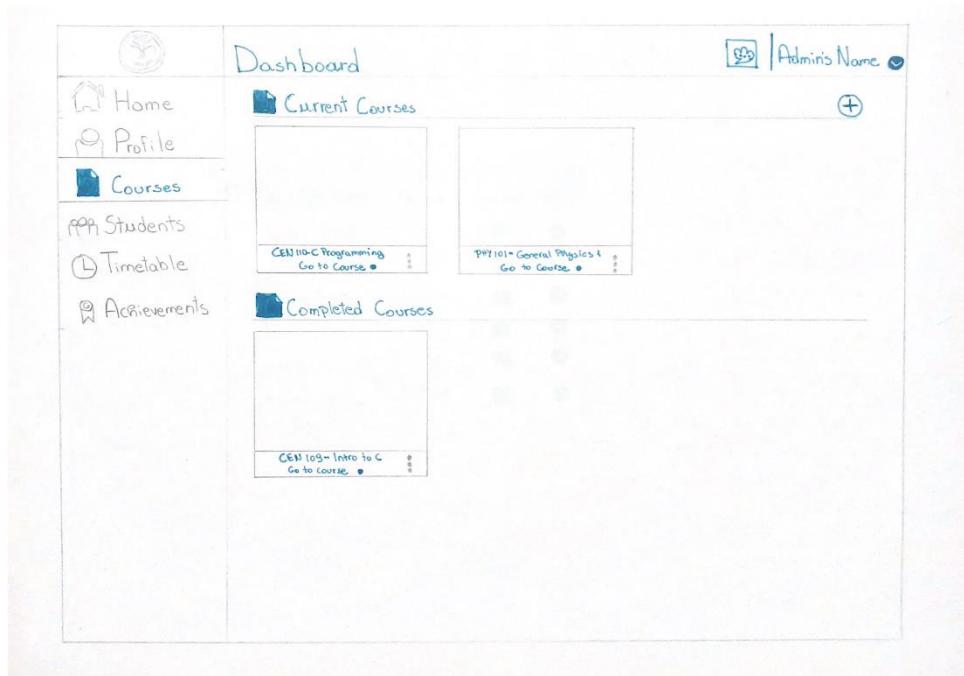


Mentor - Profile

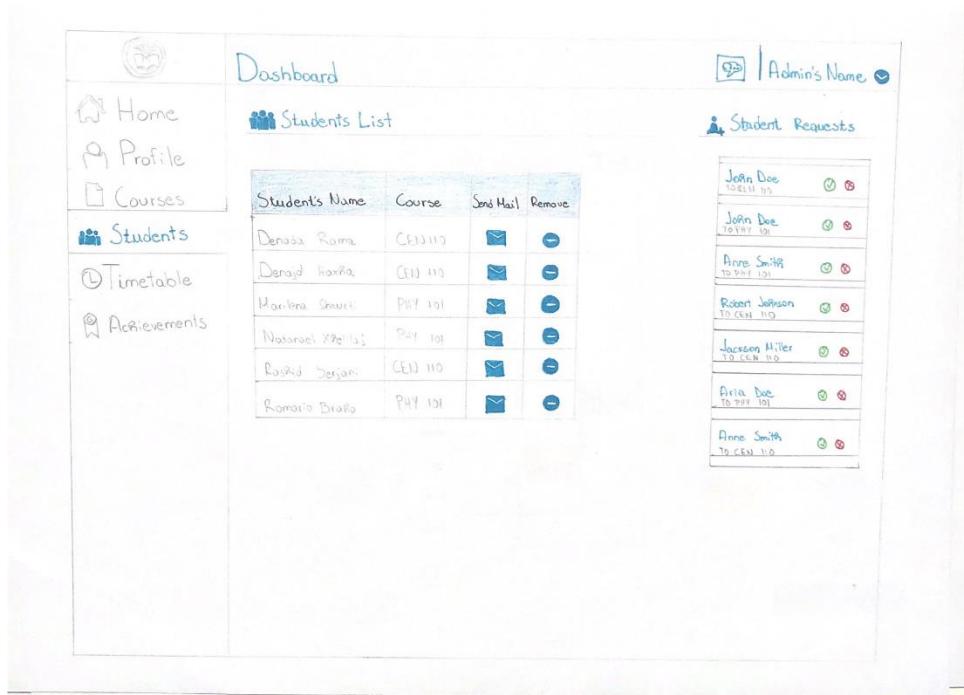


E-Classroom Requirements Specification

Mentor - Courses



Mentor - Students



E-Classroom Requirements Specification

Mentor - Timetable

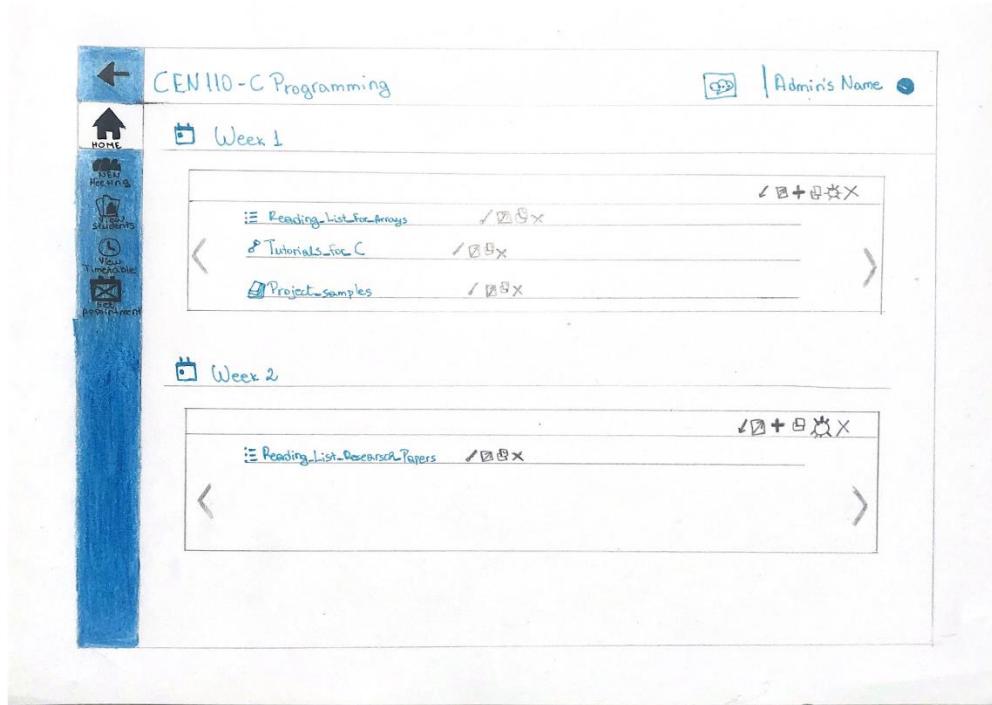
A hand-drawn sketch of a web-based application interface for a mentor's timetable. The left sidebar contains icons for Home, Profile, Courses, Students, Timetable, and Achievements. The main area is titled "Dashboard" and shows "This week's Agenda". Below it is a "TODAY'S DATE" section with a grid for the week from Monday to Sunday. The grid shows scheduled classes: CEN 110 at 15:00 on Friday, PHY 101 at 15:00 and 16:00 on Saturday, and CEN 110 at 17:00 and 18:00 on Sunday. A button at the bottom right says "Update Timetable".

Mentor - Achievements

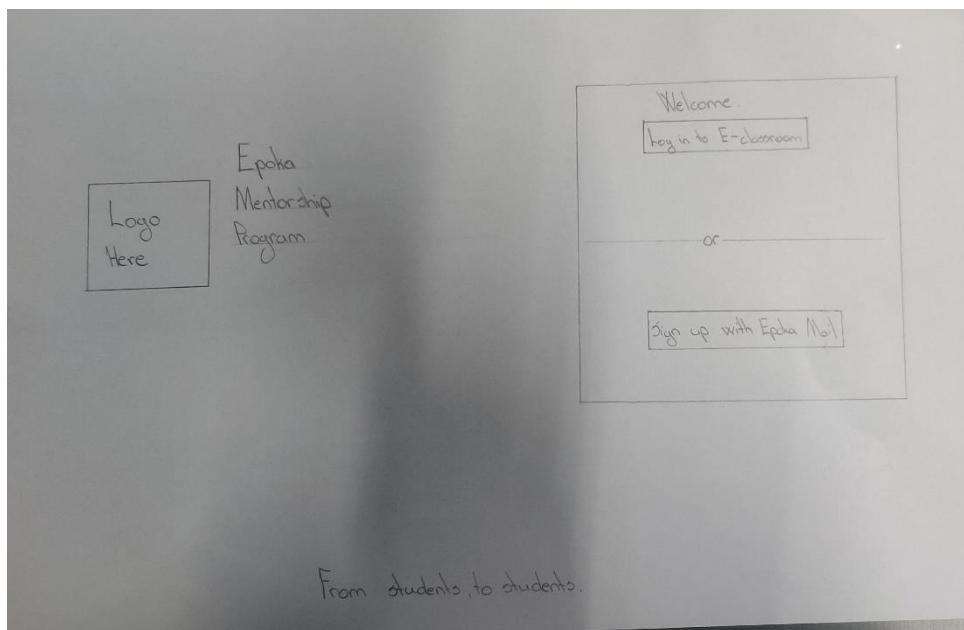
A hand-drawn sketch of a web-based application interface for achievements. The left sidebar contains icons for Home, Profile, Courses, Students, Timetable, and Achievements. The main area is titled "Dashboard" and shows "My Achievements". It displays a certificate thumbnail, the student's name, course details (CEN 109 - Intro to Algorithms & C Programming), the semester (Fall Semester 2021), and a rating (4.48/5.00). A button at the bottom says "Download Certificate".

E-Classroom Requirements Specification

Mentor – Course

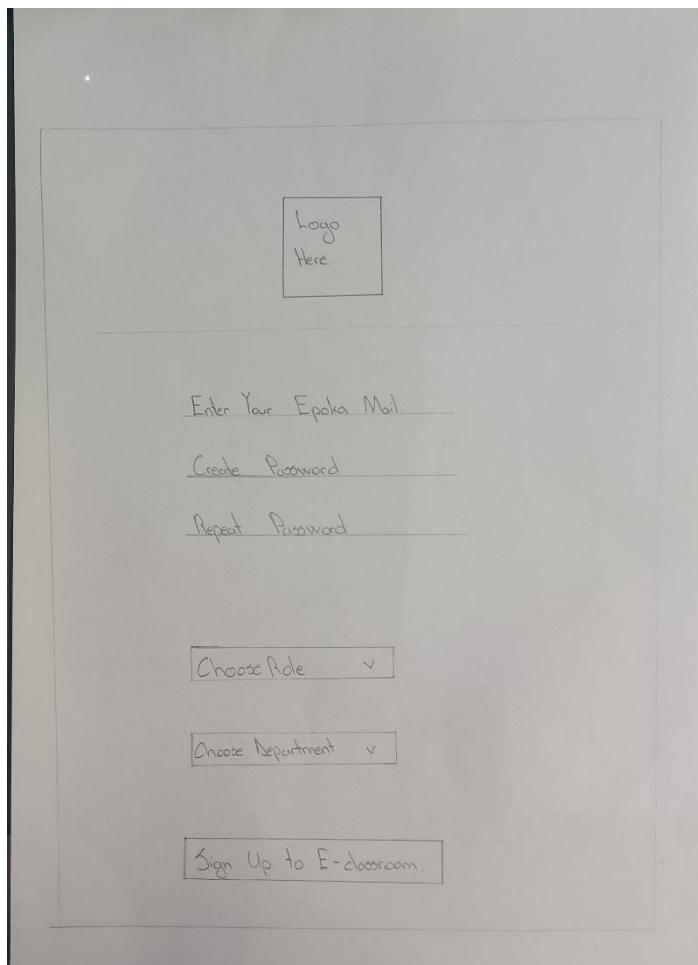


Log in

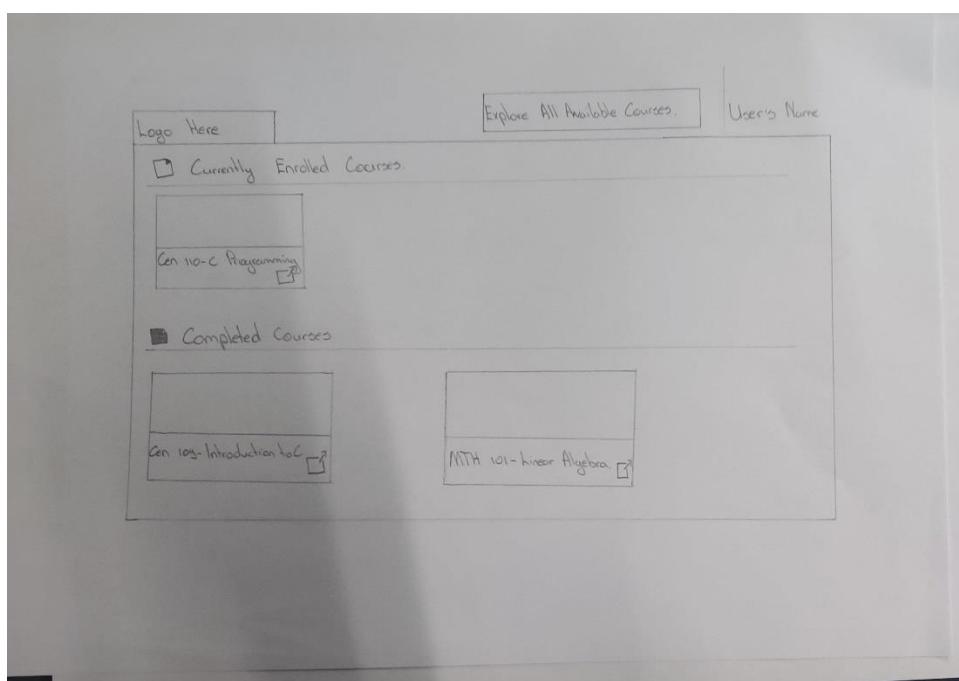


E-Classroom Requirements Specification

Sign Up



Student – All Courses



E-Classroom Requirements Specification

Student – Course Home

Cen 110-C Programming

Week 1.

Updated by John Mayer, 10/16/21

< >

Reading_1st_For_Arrays
Tutorials_for_C
Project_samples

Week 2.

< >

Reading_1st_Research_Papers

Student – View Mentor

Cen 110-C Programming. By John Mayer User's Name

John Mayer's Profile

John's Courses Fall Semester 2021

Cen 110-C Programming	→ https://...	<input checked="" type="radio"/> Already Enrolled
PHY 101 - General Physics	→ https://...	<input type="radio"/> Request to Enroll

John Mayer Computer Engineering-Years

An experienced software developer in ...

	MO	TU	WE	TH	FR	SA	SU
10:00							
11:00							
12:00							
13:00							
14:00							
15:00			PHY101				
16:00				PHY101			
17:00		CEN110					
18:00					CEN110		
19:00							

E-Classroom Requirements Specification

Student – View Timetable

Cen 110-C Programming By John Mayer | User's Name (S)

(S) This week's Agenda for CEN-110
TODAY'S DATE

IT Legend

- Reserved Meeting
- Free for Consultation

	MO	TU	WE	TH	FR	SA	SU
10:00							
11:00							
12:00							
13:00							
14:00							
15:00						Consultation	
16:00						Consultation	
17:00			Meeting			Meeting	
18:00							
19:00							

Student – Request – Appointment

CEN 110-C Programming By John Mayer | User's Name (S)

(X) Request Appointment with John.

Select preferable time for appointment.
14/04/2021

Choose type of meeting.

Online Meeting One-to-One Meeting

Briefly describe what you'd like to discuss.
L. linked lists...

Appendix C. Prototype

The screenshot shows the E-Classroom prototype dashboard. At the top right, there is a user profile icon labeled "Admin's Name". On the left, a sidebar menu includes "Home", "Profile", "Courses", "Students", "Timetable", and "Achievements". The main content area has three sections: "Current Courses" (listing "CEN 110 - C Programming" and "PHY 101 - General Physics 1"), "This week's activity" (listing activities for "CEN 110" and "PHY 101" on "28 JAN"), and a "To do list" (containing tasks like "Assign LL test", "Arrange meeting @11", "Ask for mid deadlines", "Grade participation", and "Watch 5 more...").

The screenshot shows the E-Classroom prototype profile page for "Admin's Name". The left sidebar is identical to the dashboard. The main content area features a "My Profile" section with a placeholder profile picture and a "Update profile picture" button. To the right, there is a "Admin's Name" section with fields for "Edit your Biography" (containing placeholder text "3rd year Computer Engineering student with experience in ...") and "Edit your Links" (containing two course name and link pairs). A "Save Changes" button is at the bottom right.

E-Classroom Requirements Specification

The screenshot shows the E-Classroom Dashboard. On the left sidebar, there are several navigation items: Home, Profile, Courses, Students, Timetable, and Achievements. The main content area is titled "Dashboard". It features two sections: "Current Courses" and "Completed Courses". In the "Current Courses" section, there are two cards: "CEN 110 - C Programming" and "PHY 101 - General Physics 1". Each card has a "Go to course" button. In the "Completed Courses" section, there is one card: "CEN 109 - Intro to C", also with a "Go to course" button.

The screenshot shows the E-Classroom Dashboard. The left sidebar includes: Home, Profile, Courses, Students, Timetable, and Achievements. The main content area is titled "Dashboard". It displays two sections: "Students List" and "Student Requests". The "Students List" section contains a table with columns for "Student's Name", "Course", "Send Mail", and "Remove". The table lists six students: Denada Rama (CEN 110), Denajd Hoxha (CEN 110), Marilena Shkurti (PHY 101), Natanael Xhelilaj (PHY 101), Rashid Serjani (CEN 110), and Romario Braho (PHY 101). The "Student Requests" section lists student names with checkboxes for "To CEN 110" and "To PHY 101". The requests are: John Doe (To CEN 110 checked, To PHY 101 unchecked), John Doe (To CEN 110 unchecked, To PHY 101 checked), Anne Smith (To CEN 110 checked, To PHY 101 unchecked), Robert Johnson (To CEN 110 checked, To PHY 101 unchecked), Jackson Miller (To CEN 110 checked, To PHY 101 unchecked), Aria Doe (To CEN 110 checked, To PHY 101 unchecked), and Anne Smith (To CEN 110 checked, To PHY 101 unchecked).

E-Classroom Requirements Specification



Dashboard

 Admin's Name 

-  Home
-  Profile
-  Courses
-  Students
-  Timetable
-  Achievements

This week's Agenda

TODAY'S DATE

My courses

	MO	TU	WE	TH	FR	SA	SU
10:00							
11:00							
12:00							
13:00							
14:00							
15:00			PHY 101				
16:00				PHY 101			
17:00	CEN 110						
18:00					CEN 110		
19:00							

Drag & Drop Courses

Update Timetable



Dashboard

 Admin's Name 

-  Home
-  Profile
-  Courses
-  Students
-  Timetable
-  Achievements

My Achievements



Admin's Name
CEN 109 - Intro to Algorithms & C Programming
Fall Semester 2021
Rating 4.48 / 5.00

Download Certificate 

E-Classroom Requirements Specification

[←](#) CEN 110 - C Programming [...](#) Admin's Name [▼](#)

[Home](#)

[New Meeting](#)

[View Students](#)

[View Timetable](#)

[Set Appointment](#)

[Week 1](#)

[Week 2](#)

[Reading List For Arrays](#)

[Tutorials for C](#)

[Project samples](#)

[Reading List Research Papers](#)

**Epoka
Mentorship
Program**

Our mission is to offer support and help to those who want to discover their interests, develop significant self-motivation and become high-performing individuals.

From students, for students

Welcome

[Login to E-Classroom](#)

If you have already joined our community, sign in with your credentials to use our services.

or

[Sign Up with Epoka Mail](#)

[Learn More \[▼\]\(#\)](#)

E-Classroom Requirements Specification



Enter Your Epoka Mail _____

Create Password _____

Repeat Password _____

Choose Role ▾

Choose Department ▾

Sign Up to E-Classroom



Explore All Available Courses

User's Name ▾

 Currently Enrolled Courses

CEN 110 - C Programming 
By John Mayer

 Completed Courses

CEN 109 - Introduction to C 
By John Mayer

MTH 101 - Linear Algebra 
By Anie Johnson

E-Classroom Requirements Specification

[←](#) **CEN 110 - C Programming** By John Mayer **User's Name** [▼](#)

[Home](#) [View Mentor](#) [View Timetable](#) [Request Appointment](#)

[Week 1](#)

Updated by John Mayer, 10/04/21

- [Reading_List_For_Arrays](#)
- [Tutorials_for_C](#)
- [Project_samples](#)

[Week 2](#)

Updated by John Mayer, 04/04/21

- [Reading_List_Research_Papers](#)

[←](#) **CEN 110 - C Programming** By John Mayer **User's Name** [▼](#)

[Home](#) [View Mentor](#) [View Timetable](#) [Request Appointment](#)

[John Mayer's Profile](#)

John's courses

Fall Semester 2021

CEN 110 - C Programming	→	https://...	 Already Enrolled
PHY 101 - General Physics	→	https://...	 Request to Enroll

John Mayer

Computer Engineering - Year 3

An experienced software developer in
....

JOHN'S AGENDA

	MO	TU	WE	TH	FR	SA	SU
10:00							
11:00							
12:00							
13:00							
14:00							
15:00			PHY 101				
16:00				PHY 101			
17:00	CEN 110						
18:00					CEN 110		
19:00							

April 19, 2021

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E-Classroom Requirements Specification

CEN 110 - C Programming By John Mayer User's Name

Home View Mentor View Timetable Request Appointment

This week's Agenda for CEN 110

TODAY'S DATE

TT Legend

Reserved Meeting	Free for consultation
------------------	-----------------------

Timetable Grid:

	MO	TU	WE	TH	FR	SA	SU
10:00							
11:00							
12:00							
13:00							
14:00							
15:00						Consultation	
16:00							Consultation
17:00		Meeting					
18:00				Meeting			
19:00							

CEN 110 - C Programming By John Mayer User's Name

Home View Mentor View Timetable Request Appointment

Request Appointment with John

Select preferable time for appointment
14/04/2021 16:00
(Please check timetable for available hours)

Choose type of meeting
 Online Meeting One-to-One Meeting

Briefly describe what you'd like to discuss
1. Linked Lists...

Send Request