

# **Epoka Unified System**

**Requirements Specification**

**Version 2.0**

**May 12, 2019**



**EPOKA  
UNIVERSITY**

# **EUS**

## **Epoka Unified System**

**Requirements Specification prepared by:**

**Megi HOXHA  
Ergi DERVISHAJ  
Krist KOKALI  
Paolo MIRAKA  
Gerard KRAJA  
Edlira PELI**

**Received by: Dr. Igli HAKRAMA**

# Table of Contents

<b>1.</b>	<b>EXECUTIVE SUMMARY.....</b>	<b>3</b>
1.1.	PROJECT OVERVIEW .....	3
1.2.	PURPOSE AND SCOPE OF THIS SPECIFICATION .....	3
<b>2.</b>	<b>PRODUCT/SERVICE DESCRIPTION .....</b>	<b>3</b>
2.1.	PRODUCT CONTEXT .....	3
2.2.	USER CHARACTERISTICS .....	3
2.3.	ASSUMPTIONS .....	4
2.4.	CONSTRAINTS .....	4
2.5.	DEPENDENCIES.....	4
<b>3.</b>	<b>REQUIREMENTS.....</b>	<b>4</b>
3.1.	FUNCTIONAL REQUIREMENTS .....	5
3.2.	NON-FUNCTIONAL REQUIREMENTS.....	6
3.2.1.	<i>User Interface Requirements.....</i>	6
3.2.2.	<i>Usability .....</i>	6
3.2.3.	<i>Performance.....</i>	6
3.2.4.	<i>Manageability/Maintainability .....</i>	7
3.2.5.	<i>System Interface/Integration .....</i>	9
3.2.6.	<i>Security .....</i>	9
3.2.7.	<i>Data Management .....</i>	10
3.2.8.	<i>Standards Compliance .....</i>	7
3.2.9.	<i>Portability .....</i>	<i>Error! Bookmark not defined.</i>
3.2.10.	<i>Other Non-Functional Requirements.....</i>	<i>Error! Bookmark not defined.</i>
3.3.	DOMAIN REQUIREMENTS .....	10
<b>4.</b>	<b>USER SCENARIOS/USE CASES .....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>
<b>APPENDIX.....</b>		<b>14</b>
APPENDIX A.	DEFINITIONS, ACRONYMS, AND ABBREVIATIONS .....	14
APPENDIX B.	REFERENCES .....	14
APPENDIX C.	REQUIREMENTS TRACEABILITY MATRIX.....	14
APPENDIX D.	ORGANIZING THE REQUIREMENTS.....	16
APPENDIX E.	SKETCHES.....	16

# 1. Executive Summary

## 1.1 Project Overview

A lot of students struggle with deadlines. They have a hard time keeping up with everything going on around them. This is due to the large workload students have to deal with in a daily basis.

Epoka Unified System introduces a way for solving this problem by keeping track of every activity, event or deadline the students have. EUS does this by incorporating notifications as its primary way of communicating with the user. Through using this system, the student will have access on all of his data, which include, but are not limited to, attendance, grades, courses, timetables. Furthermore, the user will be able to interact with the professors through the use of notifications.

It is a web application intended to provide an easy-to-use, intuitive interface, which allows the users to access their university related data such as courses, attendance etc. This application also provides a channel of communication between the student and the professor.

EUS's main purpose is to provide an easy-to-use tool that students can use to be on top of their schedule and interact with the professors of the respective courses they have chosen. A lot of focus is given to individualism on EUS. Every student will have the ability to choose what notifications to see, which course hours can be seen at the timetable etc. On the other side EUS provides the professors with options that make it easy for them to specify which students will get their notifications, which makes the whole experience of EUS much more specialized.

The intended audience of EUS are:

- Students
- Professors

## 1.2 Purpose and Scope of this Specification

This document specifies the requirements of the project without any technical implementation, thus focusing solely on the description of the entire infrastructure of the program.

The software's purpose is to provide an easy-to-use tool that students can use to be on top of their schedule and interact with the professors of the respective courses they have chosen.

This application also provides a channel of communication between the student and the professor.

### In scope

Modification of the methods of collecting and storing information to meet the rules of GDPR set by the European Union.

Modification of Labor Relations Processing to meet the requirements of the Albanian legislation regarding the topic.

## Out of Scope

- Technical implementation of the system.
- Development obstacles and solutions.
- The way of obtaining and using the software.

## 2. Product/Service Description

The Epoka-Unified-System is meant to be used by students and professors which is the main idea behind the designation of the entire solution.

The whole student and professor experience in Epoka University is a continuous series of exams, project and assignment deadlines which have to be respected. At times it is pretty hard to remember every single task or exam that the student or professor has to participate in. This unanimously came to be the design philosophy behind every decision that the team is taking.

Practically the team is attempting to provide a simple and clean interface that displays efficiently and with no delay all the personal data of a student or professor.

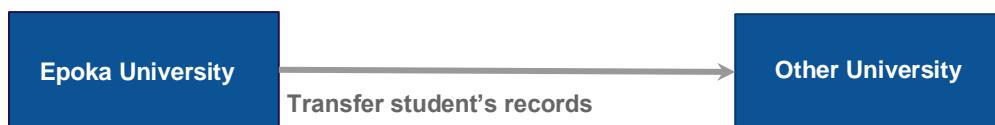
To further simplify things the addition of notifications and reminders might help increase the productivity and subsequently the performance of the users of the system.

### 2.1 *Product Context*

The software is supposed to be related directly to Epoka University managing staff.

It is an independent system whose intended audience are students and professors.

It does not interface with a variety of related systems, unless a student transfers its studies to another university. In this case the student's records are also transferred to the specified university.



### 2.2 *User Characteristics*

There are two user categories who will be using this product:

- Students
- Professors

**Students** are able of the following functionalities:

- Can access their account anytime.
- Are able to use the GUI to display the needed information.
- Change their passwords.
- Edit and Update their profile anytime.
- Tend to use the Electronic System at times where it is crucial to obtain the necessary information as fast as possible.
- Will rely on the displayed data to do many crucial university-related actions.
- Add customized events and deadlines.
- Set up reminders.
- Send request to specific professors to enroll to their course.
- Request major change.
- Log out anytime

**Professors** are able of the following functionalities:

- Can access their account anytime.
- Are able to use the GUI to display the needed information.
- Change their passwords.
- Edit and Update their profile anytime.
- Visit students' profile.
- Approve students' request to enroll to their course.
- Have average to expert level technical knowledge of a system of the sort.
- Repeatedly communicate with the system to provide the grades and assignments in a timely manner.
- Rely on the communication bridge (EIS system currently) to correctly and timely transmit grades and assignments to the students.
- Log out anytime.

### **2.3 Assumptions**

The EUS system is designed to provide cross-platform functionality because of its web-based structure. Users are expected to run the software on the well-known platforms Windows, Mac and mobile environments. Because of the complexity of the solution the device should have at least average computation power and a reliable internet connection.

The intended audience (students and professors) are expected to be at least semi proficient in the English language to understand the utilities provided. The interface is being developed to be simplified and the modules are designed to effectively group together functionalities to make the learning curve of the program as smooth as possible.

It is assumed that the professors and students are differentiated by their card issuance number and when they firstly sign up they're going to be provided with different operations based on their user category.

It is assumed that the personal information of the student and the professor is confidential and can only be viewed by them.

It is assumed that every professor has access to the list of the students that attend his course and if they lecture more than one course the lists of the students divided by the course they're enrolled into.

Only the managing staff of the university can verify the students when they sign up. They are the only ones that are responsible for deleting students' records when they are no part of the university anymore (ex. they have transferred their studies to another university, they have dropped their studies at this university etc.). They are also assumed to handle the changes of the students' information when they change major.

## 2.4 *Constraints*

- Users are expected to run the software on the well-known platforms Windows, Mac and mobile environments. Because of the complexity of the solution the device should have at least average computation power.
- The users should make sure to have reliable internet connection in order for the software to work.
- The intended audience (students and professors) are expected to be at least semi proficient in the English language to understand the utilities provided.
- The audience should know how to put to use the application.
- The back-end structure should be ready to respond to all requests at any time which might be highly concurrent peaking at University operating hours.
- The EUS is a very complex system which manages crucial operations for students and professors therefore the administrators should always be available to respond to complaints when certain scenarios fail to provide functionality or a better way is suggested.
- Professors' views and functionalities must function correctly first to provide the server information which will adequately be displayed to the students.

## 2.5 *Dependencies*

A part of the software that monitors the professors' operations is dependent on the part of the software that monitors the students' operations.

There are some dependencies between the two categories (students and professors):

- The students cannot enroll to a specific course if the corresponding professor does not accept their request.
- The students do not have access in viewing their grades if the professors do not post them on the application.
- The students do not have access in viewing their attendance if the professors do not post them on the application.
- The students do not have access in viewing their materials related to the specific course/s if the professors do not post them on the application.

# 3. Requirements

## 3.1 *Functional Requirements*

The requirement numbering has a scheme - BR## (BR for Business Requirement).

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_01	The system must be supported by a web application.	This is the main platform for using the software.	2		
BR_02	The system should, but not necessarily, provide the users with a mobile view platform.	This will allow the users to operate on the application by using their mobile phones.	3		
BR_03	The software should have different views for different level of users.	A view with different functionalities for the students and another view for with different functionalities for the professors.	2		
BR_04	All the accounts of the users should be secured by a password.	Only users know their password. Passwords are going to be hashed in the database.	1		

BR_05	Users can change their password.	They can change their passwords in case they forget them. A PIN will be sent to their email address. After entering it the users can change their forgotten password to a new one.	2		
BR_06	Users cannot edit their personal information except their passwords.	No user can change their personal information (username, name, surname, major, card number, card issuance date).	2		
BR_07	Users can change/modify the setting.	Professors and students can specify the operations that appear by default.	3		
BR_08	The professors should be able to view all their students.	(A) list/s of all the students that are enrolled to their course should be provided by the system to all of the professors.	2		
BR_09	The professors should approve(not) the students' request to enroll to their course.	After the request is approved by the specific professors the request is also sent to the supervisor who officially approves the request.	2		
BR_10	The professors create notifications about assignments and deadlines related to them.	Each time the professor enter an assignment he also creates a deadline related to the assignment and send the notification to the students.	2		
BR_11	The professors decide who receives the notifications.	Since a professor might have more than one course they lecture on, they can choose who receives a specific notification.	2		
BR_12	The professors can edit the notifications.	They can change the deadline of the assignment and also send a notification to the student to notify them for the changes made.	3		
BR_13	The professors create the courses.	Professors create their courses and add the students who want to enroll to their course.	2		

BR_14	The professors edit the courses' description.	Whenever something new is added to the curricula of the course the professors can change their courses' description.	3		
BR_15	The professors enter all the materials related to a specific course.	The professors can add materials related to the course (online books, PowerPoint presentations etc.)	3		
BR_16	The professors enter students' grades and they specify the type and the weight each grade is assigned to.	Professor enter the grades of each student and specify its type (midterm exam, final exam, quiz, laboratory assignment, homework) and the weight of the grade (the weight it has on the final grade).	2		
BR_17	The professors enter students' attendance.	After each lecture the professors add if students attended the course or not.	2		
BR_18	The students view the notifications, events and deadlines entered by the professors.	Each time the professors enter an assignment and a deadline related to it, the notification is sent to the students to view them.	3		
BR_19	The students can create customized events and deadlines.	Each student is able to create its own event or deadline so it can notify oneself.	3		
BR_20	The students select courses they want to enroll to.	In the course selection week a list of the courses available in his major is provided to the students and each one of them should and is able to select the courses they want to enroll to.	2		
BR_21	The students drop courses they do not want to be enrolled to anymore.	Students are able to drop courses they do not want to be enrolled to anymore and send this request to specific competences.	2		
BR_22	The students view grades, attendance, materials on each course.	They are able to view anything related to a specific course including attendance, grades and materials.	3		

BR_23	The students view all notifications, events and deadlines.	They are always notified for specific events and deadlines whenever professors enter them.	3		
BR_24	The students choose which notifications to see.	The students can always choose which notifications to see. They can also turn off notifications if they want to.	3		
BR_25	The students can search for a specific notification.	At any case a student misses a notification they can search for it.	3		
BR_26	The students view the bus timetable and the courses timetable.	The students can view the bus timetable (Epoka Campus-Durres, Durres-Epoka Campus, Tirane-Epoka Campus, Epoka Campus-Tirane). Students can view the courses timetable also (today's courses timetable or the upcoming days' courses timetable).	3		
BR_27	Students can request major change.	The major change is directed to the specific competences.			

### 3.2 Non-Functional Requirements

#### 3.2.1 User Interface Requirements

The application where the main focus will be put on is the web application. It should be compatible for all Chrome, Mozilla and Safari.

The sketches of the interfaces are going to be attended to the Appendix E.

- The main page of the application is just a login interface.
  - It will contain Epoka University's logo.

Below the user is asked to enter:

- Their E-mail
- Their password,
- Followed by a login button.

Two links follow the login button:

- The "Forgot your password?" link
- "Don't have an account?" link which direct the users to specific interfaces.

- The “Forgot your password?” link directs the users to another page where:
  - they are asked to enter their E-mail address where a code is going to be sent to reset the password
  - and a send button.
- The send button directs the users to another page where:
  - the users are asked to enter the code they received in their e-mail address
  - and a verify button.
- The verify button directs the users to another page where:
  - the users are asked to enter the new password twice
  - and a reset password button that directs the users to the login interface.
- The “Don’t have an account?” link directs the users to a page where they are required to enter some personal information including:
  - name
  - surname
  - gender
  - email
  - password
  - confirm password
  - recovery email
  - student ID No
  - card issuance date
  - and a signup button that directs the users to the login interface

### The Student Interface contains:

A side menu which shows all the available menus the user can access after logging in. They appear in this order:

- **Notifications:** The students see the deadlines which should be accomplished sooner first. Below the notifications related to specific courses are posted appearing by the ones posted lastly first. Students can also choose the course they want to get notifications for or search a particular one in the search bar.
- **Calendar:** The calendar of the real time month will be shown. The numbers (representing the days of the month) who have deadlines to meet or events to see are followed by a number representing the number of the events/deadlines related to that day. (For a clearer view, see Appendix E). If the students want to create a customized event/deadline they can do so by clicking in the day they want their deadline to appear and a box will be shown to be completed with the necessary information like: the course’s name, name of the event/deadline, a short description and the finish time.
- **Timetable:** At the top of the page the bus timetable will be shown of the real time date of the user. The students can choose the bus start place and also the arrival place. Below the bus

timetable, the courses timetable will be shown, firstly the todays course timetable and below the upcoming days courses timetable.

- **Courses:** During the course selection week the students can view all the available courses and select the ones they want to enroll to. These will appear in the selected courses table. Each student is allowed to select as much courses as to not surpass the max ECTS (thirty-five).
- **My Profile:** General information about each student will be shown including their credentials and the transcript of their all academic years.
- **Settings:** This menu is divided into three sections:
  - **General:** At the top left of the page the profile picture of the user will be shown. The student can change it according to their preferences. They can change their password and secondary email and also request major change.
  - **Transport preferences:** Students will be able to set up a notification x minutes before the bus leaves.
  - **Courses preferences:** Students will be able to choose their priority course, set up a reminder for a specific percentage of unattended hours, set up a reminder for a specific "max can get" grade, set up a reminder for a deadline and one when new materials are uploaded.

#### The Professor Interface contains:

A side menu which shows all the available menus the user can access after logging in. They appear in this order:

- **Notifications:** They create all the deadlines and send the notifications to the students. The notifications will contain a name, a description, the finish time and an upload button so the professors can upload the specific assignments. Professors can choose who can view the notification.
- **Courses:** The list of the students enrolled to their course will be appeared. The professors can upload each students' grades (should also specify the type and the weight of the grade), attendance (attended and unattended hours) and course materials.
- **My Profile:** General information about the user will be appeared, including a description of their academic profile. The professors can make necessary changes including a password change, description of their academic profile change.

### 3.2.2 Usability

#### Learnability:

- The application is easy to use hence no specific training will be needed for the users.
- The users will be automatically informed in case of any error by using a message digest which is known to be relatively free from collisions.
- The application will know the specific users that are allowed to use the application (by the username), so it will not allow random users to sign up and use the application.

### 3.2.3 Performance

- The software will be based on web and has to be run from a web server.
- The software shall support all the students and the professors who must have access in the system at any time.
- The application's time of execution will depend on the user's internet connection strength.
- The performance of the application will depend on the number of active user accessing the website.

#### 3.2.3.1 Capacity

- Every user will use the same database. If multiple requests are made to the server, the requests will form a query.
- The application will be stored in a web server.
- The database will not be very large and complex.

#### 3.2.3.2 Availability

- The application (web and mobile) will be available for usage 24 hours for each day of the week.
- The application will be available for all the users. Everything needed is a PC/mobile and Internet connection.
- The application will be accessed and in any geographical area.
- The application will be reliable.

#### 3.2.3.3 Latency

The latency of the software will depend on:

- The Internet connection strength.
- The size of the database since the number of the users will be big.
- Because of the complexity of the solution the device should have at least average computation power.

### 3.2.4 Manageability/Maintainability

#### 3.2.4.1 Monitoring

Application Performance Monitoring:

- The performances pulse of the application will be measured by writing reports. High quality reports give additional insight into performance trends and indicate directly to the performance of the application.
- An additional way to measure the application's performance will be by allowing the users to rate the application and write their suggestions on what should be improved.

Log Monitoring:

- Log files will be generated. Errors, problems, and more information will be constantly

logged and saved for analysis.

- Monitoring logs will help to identify security events that occurred or might occur.

### 3.2.4.2 Maintenance

- The existing software will be modified while preserving its integrity, to fulfill the objective of the software maintenance.
- To maintain the software, the collaborators will try to re-document their software systems from time to time to keep it updated.
- The users will be automatically informed in case of any error by using a message digest which is known to be relatively free from collisions.

### 3.2.4.3 Operations

The normal and special operations required by the user will include:

- The ability of logging in anytime and accessing their personal information.
- The users are divided into two categories (student and professor) and each one will be provided with different accessibilities.
- The personal information of the student is accessed only by them. It will include:
  - The courses they have selected to enroll to and materials regarding each course.
  - The attended/unattended hours in each one of the courses, together with the final percentage of the attendance.
  - The grades taken in each exam/quiz/homework/laboratory assignment and a prediction on the final grade of the course.
- The personal information of the professor is accessed only by them. It will include:
  - The list of the students enrolled to the course/s they lecture divided into different majors.
  - Their materials regarding the course/s.
- These accessibilities by signing in/up as a student will be:
  - **Notifications** – These will include events (ex. “The course registration week”) and deadlines (ex. “WEB Programming: Please submit the Laboratory Assignment 02 (01:45)”). The student will also be able to create a customized event/deadline by writing its name, description, also the time when it should be finished.
  - **Calendar** – It will work as an optimization of all events, deadlines and other national events (days off), all in one.

- **Timetable** – It will include the transport and the courses timetable.  
As for the courses timetable, the timetable of the current day will be displayed first, followed by the upcoming days of the week. On the other hand, the mobile view will be a little different since the display changes. The user will have to choose the day and then the specified timetable will be shown.
  - **Courses** – During the course registration week, the student will have to choose the courses by selecting them in a list where will be displayed all the courses of its major from the first to the third year and then a request for acceptance will be sent to the professor.  
My courses – This will include me main information the student will have, including grades, course materials and attendance.
  - **My Profile** – It will have the credentials of the students, the transcription of its grades, also the GPA of them.
- These accessibilities by signing in/up as a professor will be:
    - The acceptance of the students that want to enroll to their course/s.
    - They should update the attendance for each student.
    - Create deadlines for assignment submissions.
    - Add/Edit/Delete students' grades.
    - Add/Edit/Delete course materials.

### 3.2.5 System Interface/Integration

#### 3.2.5.1 Network and Hardware Interfaces

For the Epoka Unified System to run you will need a PC (regardless of its operating system, it can be Windows or Linux) or Mac, or on mobile (it can be Android or IOS).

Since it is not a resource hungry program, it will run on most systems without a problem. Lastly, a functional standard keyboard and mouse is required.

#### 3.2.5.2 Systems Interfaces

The program will be an integrated software.

There is no synchronization process since the solutions all share the same database. This feature is one of the biggest benefits of having an integrated software solution.

The data of the application is maintained in the database (MySQL). It cannot be edited by any user.

### 3.2.6 Security

#### 3.2.6.1 Protection

- The data of each user will be strictly protected.
- The personal information of the student will be protected and secured by the lecturer.
- The email and password of each user will be validated by using specific functions.
- Each lecturer will be provided with the information of the students who are enrolled to his/her course/s.
- Each student will be provided with the information related to him/her.

#### 3.2.6.2 Authorization and Authentication

- It will be a Single-Factor Authentication, so it will rely on the email and password of the user
- The user will be authenticated by using their email and password in order for them to log in the software.
- The credentials of the user will be checked by using a function for their validation to verify their identity.
- The two different categories of the users will only be authorized with their accessibilities.
- The information of each user will be private and will be accessed only by the specific actors.
- The standard PubCookie tool will be used.

### 3.2.7 Data Management

- The data that this software will have to deal with varies from personal information of the student, to specific and detailed records.
- This data will be accessed and maintained by certain rules. Depending in the user's level of accessibility (student and lecturer), the range of access will be different.
- The entities and their relationships will be defined in detailed schemas and diagrams.

### 3.2.8 Standards Compliance

Our application is a system developed to manage all academic activity of both students and professors. Sensitive information will be stored and as such it must be protected.

Given that there is existing regulation by the EU, called the General Data Protection Regulation (GDPR), we strive to comply with it in order to protect the privacy of the system users.

(For further information on GDPR rules and citizens' rights visit this [link](#).)

### 3.2.9 Portability

The system will be web-based; therefore, it will operate the same regardless of the operating system. The system will be programmed using technologies such as ReactJS, NodeJS, SQL, Express. The application can be accessed by using a computer or a mobile phone.

### 3.3 Domain Requirements

- Being able to access the list of faculties and list of students of each department.
- Implementing a repository for study material sharing and assignment submission.
- Being able to access the course and transportation timetables.
- Having access to the attendance records.

## 4. Software Design/Diagrams

### 4.1.1 User Scenarios

Number	User Story Name	Description
1	Successful Login	User logs in successfully by entering his email and password
2	Login failed	User fails to login by using his email and password
3	Successful Signup	User succeeds to sign up to the application by entering his credentials
4	Signup fails	User fails to sign up to the application by entering his credentials
5	Password forgotten	User forgets his password, changes it by using a code received to his email account.
6	Profile view and edit	Users can edit their profile in the My Profile menu.
7	User signs out	Users log out by clicking the log out button at the bottom left of the page
8	Student checks notifications	Student logs in and checks the notifications and deadlines of the upcoming assignments.

9	Student searches specific notifications	Students can also choose the course they want to get notifications for or search a particular one in the search bar.
10	Student checks calendar	Student opens the calendar to check if any upcoming event is coming soon.
11	Student updates calendar	Student updates calendar by adding customized events and deadlines.
12	Course selection	During the course selection day, students choose the courses they want to enroll to.
13	Course information	Students can view information about the course like attendance, grades and additional course materials.
14	Student checks bus timetable	Students can view the bus timetable anytime they want.
15	Student selects start/arrival place of the bus	The students can choose the bus start place and also the arrival place.
16	Student checks courses timetable	After selecting the courses students can check the courses timetable.
17	Student requests major change	Students can request major change to the corresponding competences
18	Student sets up reminders	Students can set up reminders about attendance, "max can get" grades, reminder before bus leaves and course materials uploading.
19	Professor creates deadlines	Professors can upload different assignments and allocate a deadline related to them.
20	Professor sends notifications	Professors can send notifications to students about the posted assignments and chooses who receives the notifications.
21	Professor enter students' list	After students have selected their courses and have enrolled to them professors add the students' names and divide them into lists.
22	Professor enters course information	Professors enter information about the course.

23	Professor enters students' grades	Each time a grade is assigned to the students it is uploaded in the application by professors for the students to view.
24	Professor enters students' attendance	After each lecture the professors upload the attended and unattended hours.

#### 4.1.2 User Scenarios Extended

##### 1. User Scenario 1 - Successful Login

- a. The user is asked to enter the username.
- b. The user is asked to enter the password.
- c. The user presses the “Login” button.
- d. If the credentials of the users match in the database, user is authorized to be redirected.
- e. The user logs in and is redirected to the main page of the application.

##### 2. User Scenario 2 - Login failed

- a. The user is asked to enter the username.
- b. The user is asked to enter the password.
- c. The user presses the “Login” button.
- d. The user’s credentials do not match with any in the database.
- e. An error message is displayed to the user.
- f. The user tries to enter his credentials again.

##### 3. User Scenario 3 - Successful Sign up

- a. The user clicks on the link “Don’t have an account?”.
- b. The user is redirected to another page where he has to fill a form.
- c. The user is asked to enter his credentials (name, surname, gender, email, password, confirm password, recovery email, student ID number, card issuance date)
- d. The user presses the “Sign Up” button.
- e. The user logs in and is redirected to the main page of the application.

##### 4. User Scenario 4 - Signup fails

- a. The user clicks on the link “Don’t have an account?”.
- b. The user is redirected to another page where he has to fill a form.
- c. The user is asked to enter his credentials (name, surname, gender, email, password, confirm password, recovery email, student ID number, card issuance date) .
- d. The user presses the “Sign Up” button.
- e. The credentials entered are not validated.
- f. An error message is displayed to the user.
- g. The user tries to enter his credentials again.

**5. User Scenario 5 - Password forgotten**

- a. The user forgets the password and clicks on the link “Forgot Password?”.
- b. The user is redirected to another page where he is asked to enter an email address so a code to reset the password is going to be sent.
- c. The user presses the “Send” button.
- d. The user is redirected to another page where he is asked to enter the code that was received in his email address.
- e. The user presses the “Verify” button.
- f. The user is redirected to another page where he is asked to enter the new password twice.
- g. The user presses the “Reset Password” button.
- h. The user is redirected to the login page.
- i. The user enters his email address and the new password.
- j. The user presses the “Login” button.
- k. The user is redirected to the main page of the application.

**6. User Scenario 6 - Profile view and edit**

- a. The user is logged in the system.
- b. The user is directed to the main page of the application.
- c. The user clicks on the “My Profile” menu.
- d. The user views his profile.
- e. The user edits his profile credentials.

**7. User Scenario 7 - User signs out**

- a. The user is logged in the system.
- b. The system user presses the “Log out” button.
- c. The system user is signed out securely.
- d. The system user is redirected to the login page
- e. The system user cannot go back to the page by using back button, only by re-entering the credentials.

**8. User Scenario 8 - Student checks notifications**

- a. The student is logged in the system.
- b. The student’s main page will be the notification page.
- c. The student views the deadlines that are about to end soon first.
- d. The student views all the other notifications that appear in chronological order.

**9. User Scenario 9 - Student searches specific notifications**

- a. The student is logged in the system.
- b. The student’s main page will be the notification page.
- c. The student searches a specific notification in the navigation bar.
- d. Notifications related to the keyword entered by the student appear.
- e. The student finds the desired notification.

**10. User Scenario 10 - Student checks calendar**

- a. The student is logged in the system.
- b. The student's main page will be the notification page.
- c. The student clicks on the Calendar menu.
- d. The student views the events and deadlines in the calendar.

**11. User Scenario 11 - Student updates calendar**

- a. The student is logged in the system.
- b. The student's main page will be the notification page.
- c. The student clicks on the Calendar menu.
- d. The student clicks on the day they want to add a deadline/event to.
- e. The student fills the information required (name of event/deadline, course's name, description, and finish time).

**12. User Scenario 12 - Course selection**

- a. The student is logged in the system.
- b. The student clicks on the Courses menu.
- c. The student views all the available courses.
- d. They select the courses they want to enroll to.
- e. The courses are added to the "selected courses" table fulfilling the condition that the maximum ECTS of the courses selected is 35.
- f. The student presses the "Confirm" button.

**13. User Scenario 13 - Course information**

- a. The student is logged in the system.
- b. The student clicks on the Courses menu.
- c. The student views the courses they are enrolled to in the "Select a course" table.
- d. The student selects the course they want to get information about.
- e. The student views the grades taken on that course.
- f. The student views the attendance of that particular course.
- g. The student views the course materials uploaded by the professor.

**14. User Scenario 14 - Student checks bus timetable**

- a. The student is logged in the system.
- b. The student clicks on the Timetable menu.
- c. The student checks the bus menu of that day.

**15. User Scenario 15 - Student selects start/arrival place of the bus**

- a. The student is logged in the system.
- b. The student clicks on the Timetable menu.
- c. The student selects the start place of the bus.
- d. The student selects the arrival place of the bus.

**16. User Scenario 16 - Student checks courses' timetable**

- a. The student is logged in the system.
- b. The student clicks on the Timetable menu.
- c. The student views the courses' timetable of the day they're in.
- d. The student views the upcoming days courses' timetable.

**17. User Scenario 17 - Student requests major change**

- a. The student is logged in the system.
- b. The student clicks on the "My Profile" menu.
- c. The student clicks on the "Send major change request" link.

**18. User Scenario 18 - Student sets up reminders**

- a. The student is logged in the system.
- b. The student clicks on the "My Profile" menu.
- c. The student sets up reminder x minutes before the bus leaves.
- d. The student selects priority course.
- e. They set up reminder for a "max can get" grade of that course.
- f. They set up a reminder for a specific percentage of unattended hours of that course.

**19. User Scenario 19 - Professor creates deadlines**

- a. The professor is logged in the system.
- b. The professor clicks on the Notification menu.
- c. The professor creates a deadline.
- d. They upload assignments.
- e. They enter the description needed about the assignment.

**20. User Scenario 20 - Professor sends notifications**

- a. The professor is logged in the system.
- b. The professor clicks on the Notification menu.
- c. The professor creates a deadline.
- d. They upload assignments.
- e. They enter the description needed about the assignment.
- f. They choose who receives the notification about the uploaded assignment.
- g. They send the notification to the selected students.

**21. User Scenario 21 - Professor enter students' list**

- a. The professor is logged in the system.
- b. The professor clicks on the Courses menu.
- c. They enter the names of the students who have enrolled to his course.
- d. If the professor is responsible of more than one course they divide the students according to the course they belong to.

**22. User Scenario 22 - Professor enters course information**

- a. The professor is logged in the system.
- b. The professor clicks on the Courses menu.
- c. The professor adds a course.
- d. They enter a description about the course.
- e. They enter all the necessary materials related to that course.

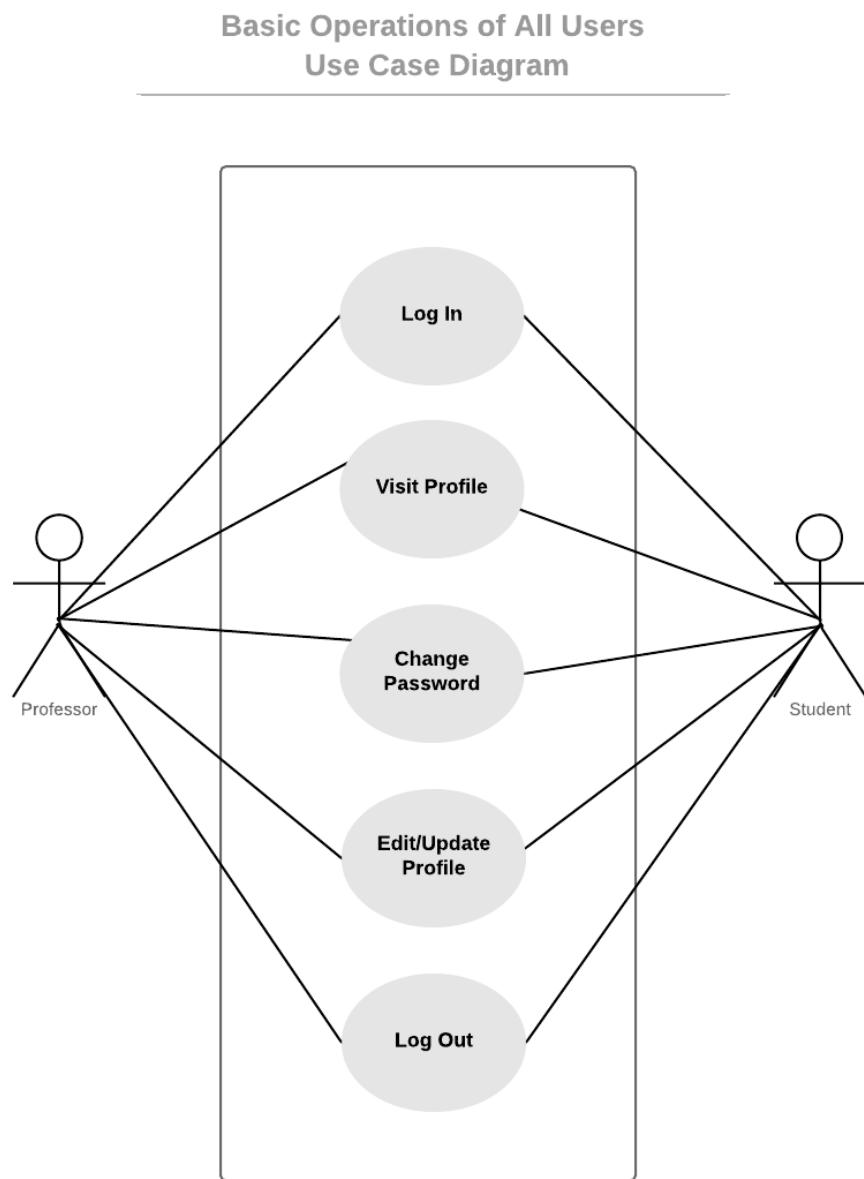
**23. User Scenario 23 - Professor enters students' grades**

- a. The professor is logged in the system.
- b. The professor clicks on the Courses menu.
- c. The professor views the list of the students enrolled to his course.
- d. They enter the grades of each student.
- e. They specify the type the grade is assigned with (midterm exam, quiz, assignment etc.)
- f. They specify the weight the grade holds to the final grade of the student.
- g. They upload the grades in the system for the students to view.

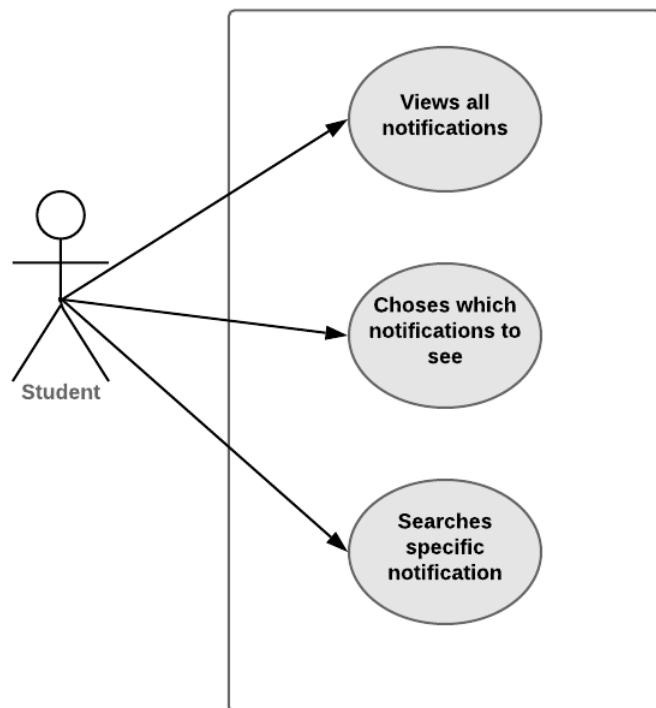
**24. User Scenario 24 - Professor enters students' attendance**

- a. The professor is logged in the system.
- b. The professor clicks on the Courses menu.
- c. The professor views the list of the students enrolled to his course.
- d. They enter the attendance of each student and upload it for the students to view.

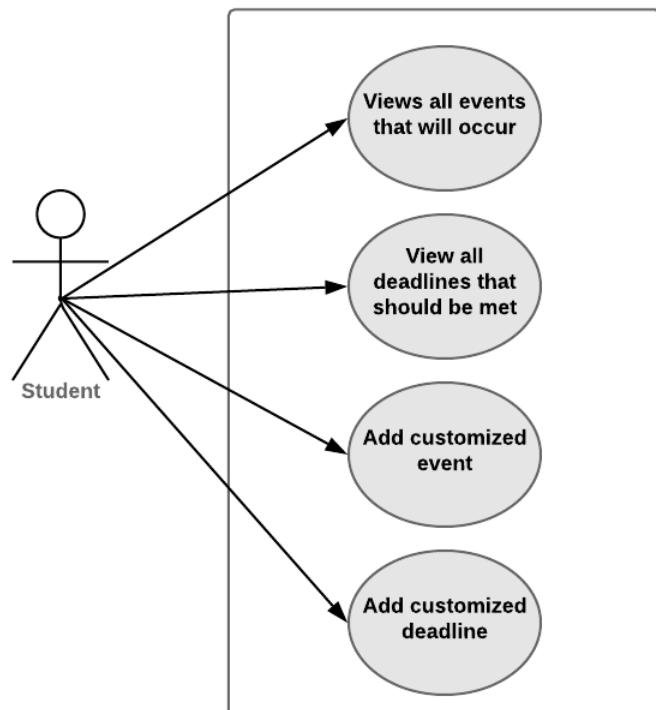
## 4.2 Use Case Diagrams



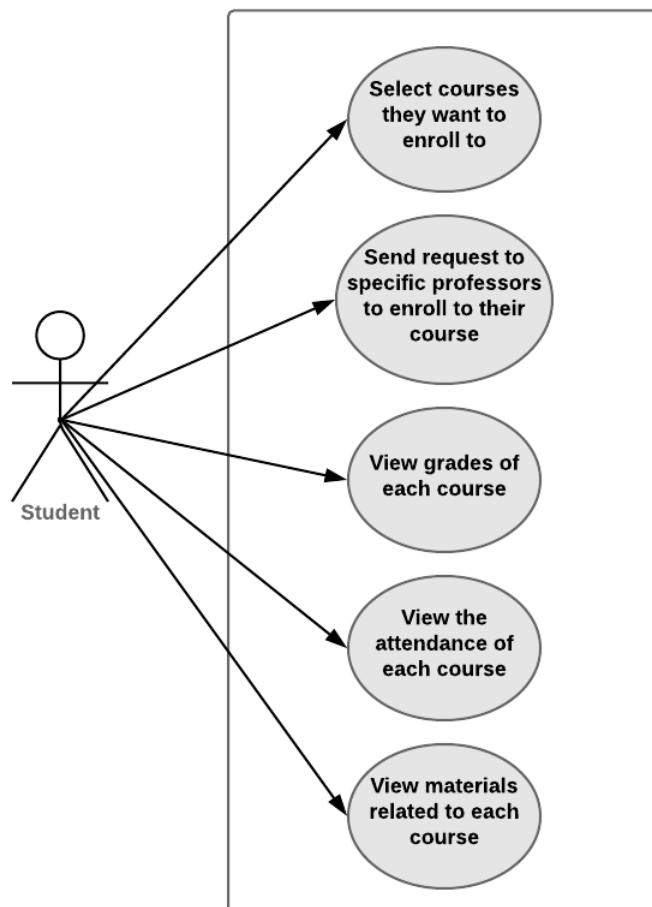
### Student - Notifications Use Case Diagram



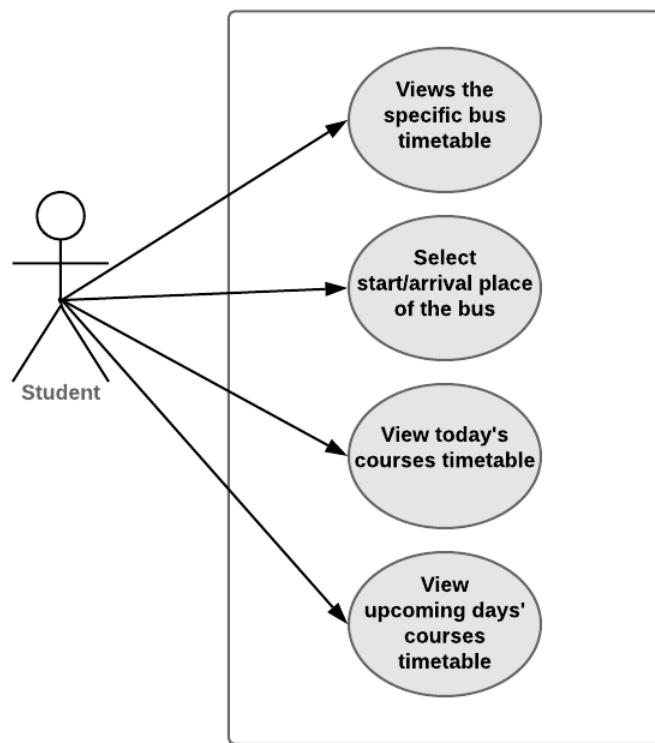
### Student - Calendar Use Case Diagram



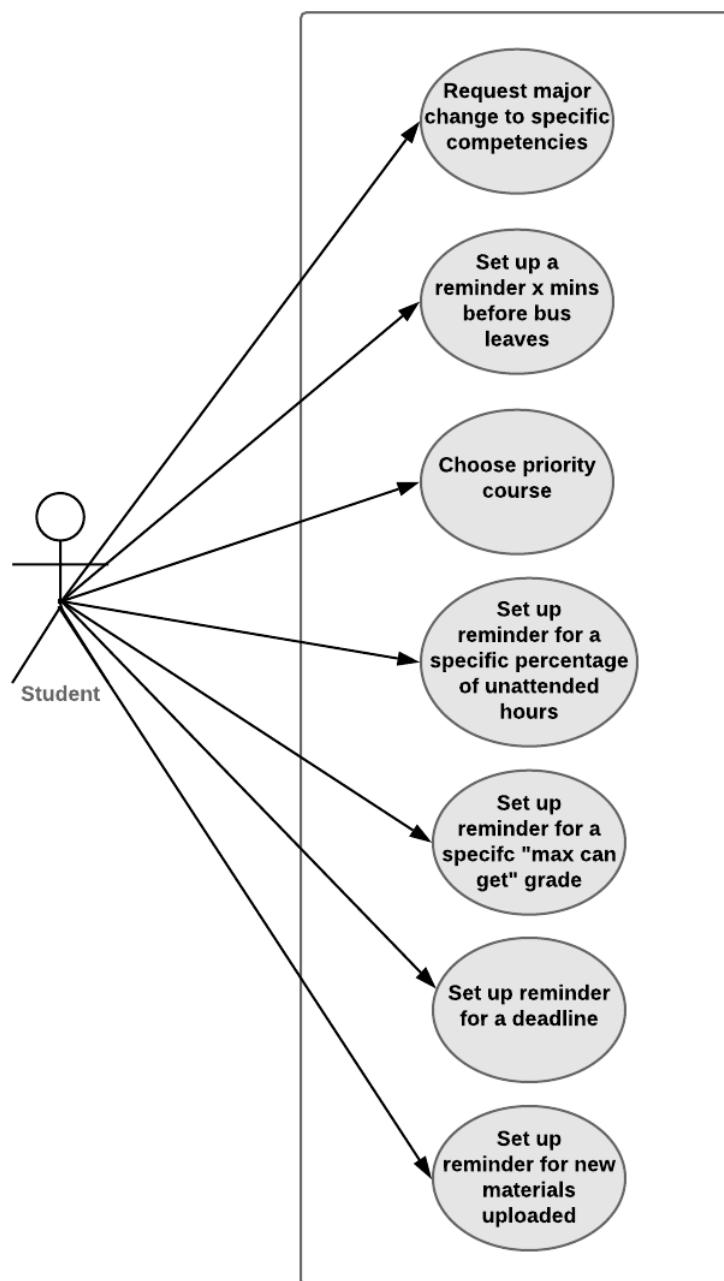
### Student - Courses Use Case Diagram



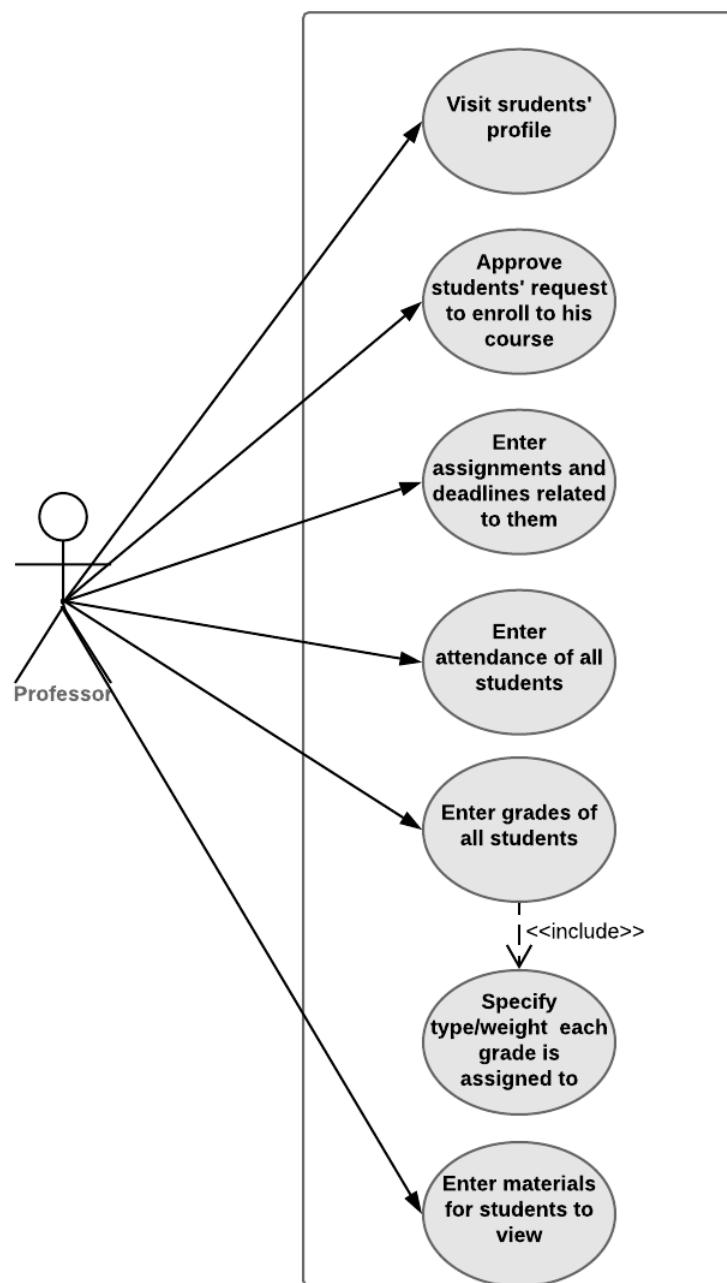
### Student - Timetable Use Case Diagram



### Student - Settings Use Case Diagram



### Professor - Main Operations Use Case Diagram



## APPENDIX

### Appendix A. Definitions, Acronyms, and Abbreviations

#### Abbreviations:

SQL – Standard Query Language  
XML – Extensible Markup Language  
GDPR – General Data Protection Regulation

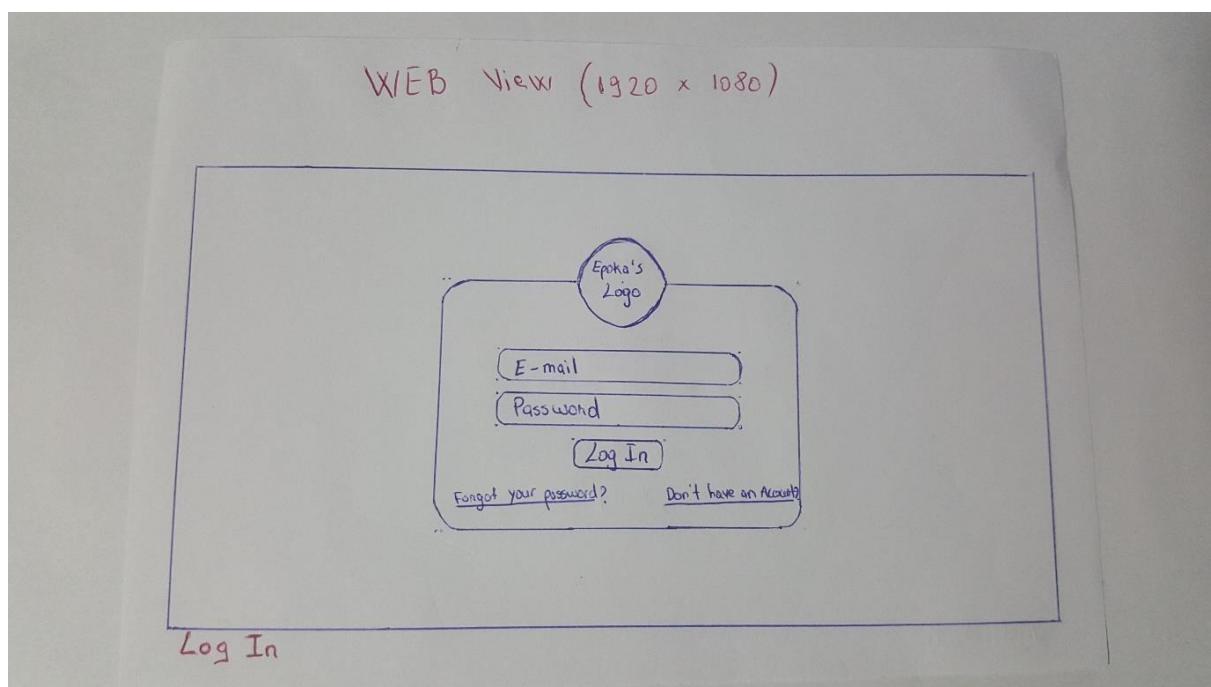
### Appendix B. References

- [1] [https://ec.europa.eu/commission/priorities/justice-and-fundamental-rights/data-protection/2018-reform-eu-data-protection-rules\\_en](https://ec.europa.eu/commission/priorities/justice-and-fundamental-rights/data-protection/2018-reform-eu-data-protection-rules_en)

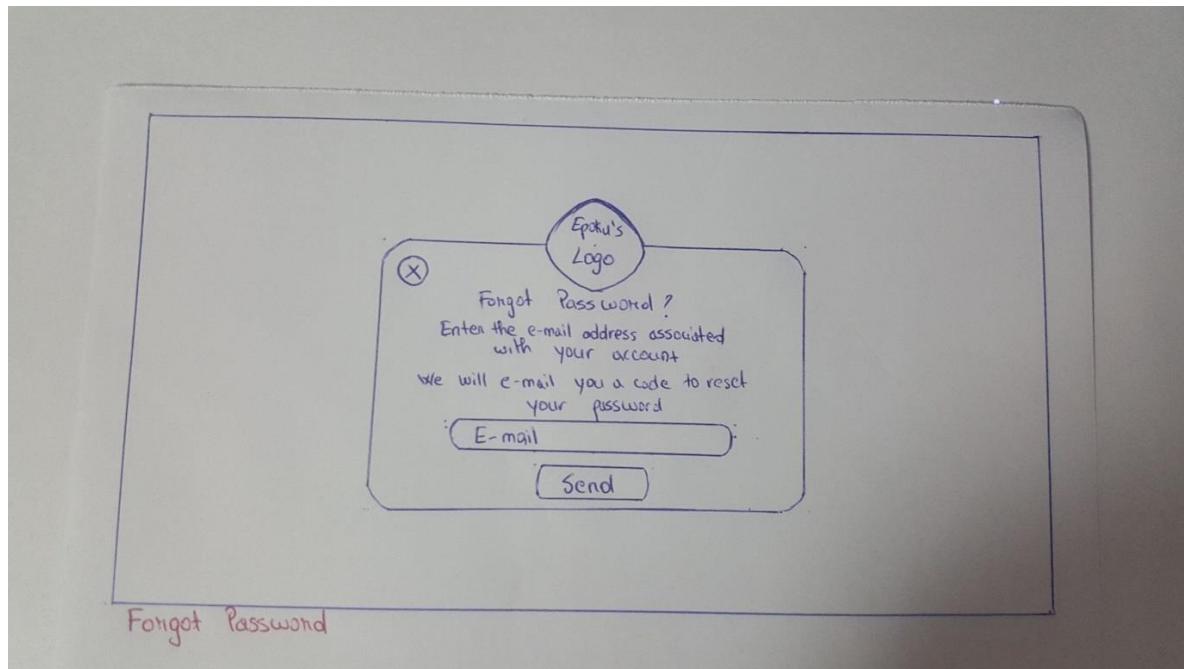
### Appendix C. Sketches

#### Part A – WEB View

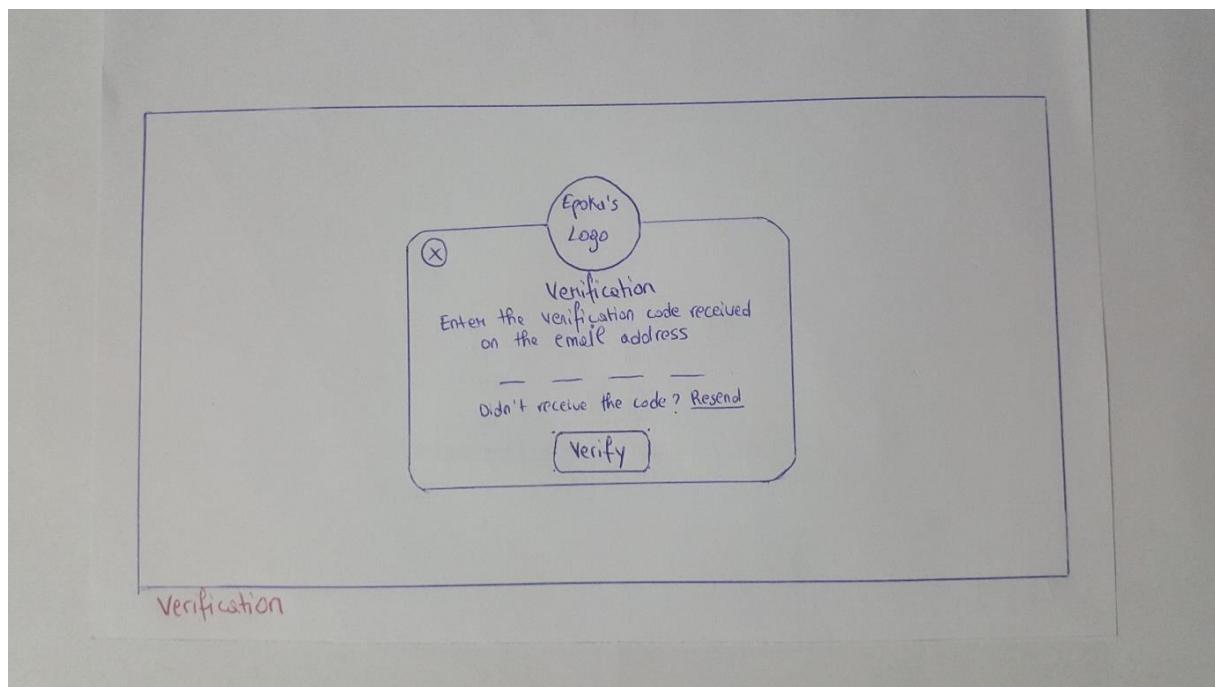
##### 1. LOG IN



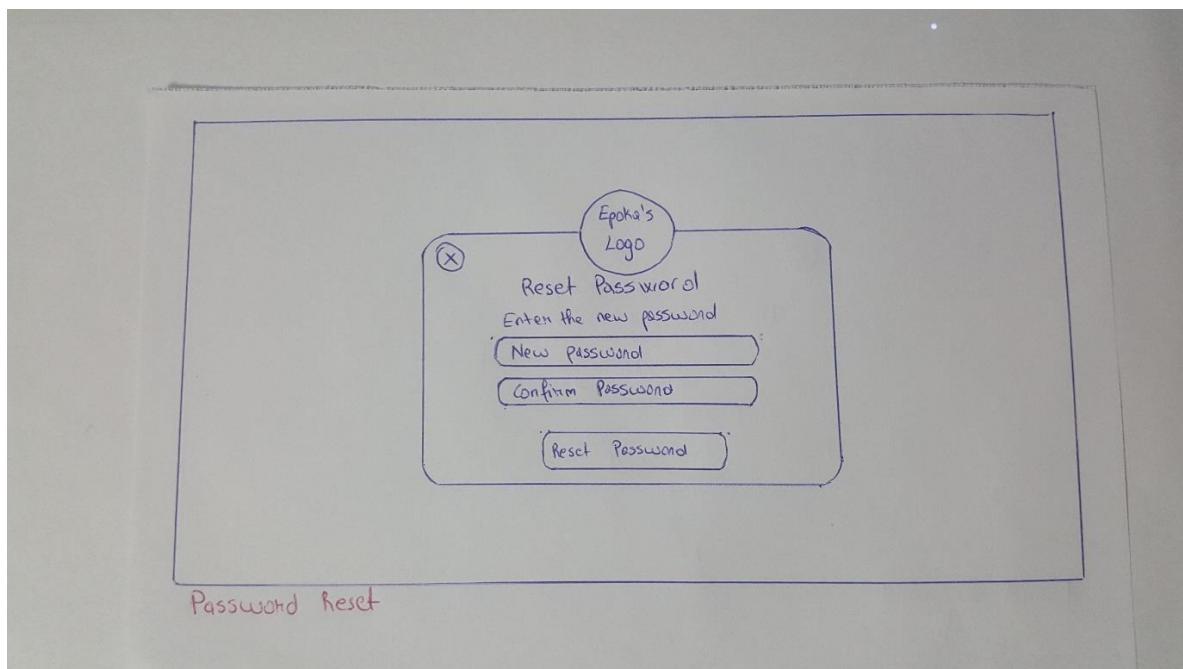
## 2. FORGOT PASSWORD



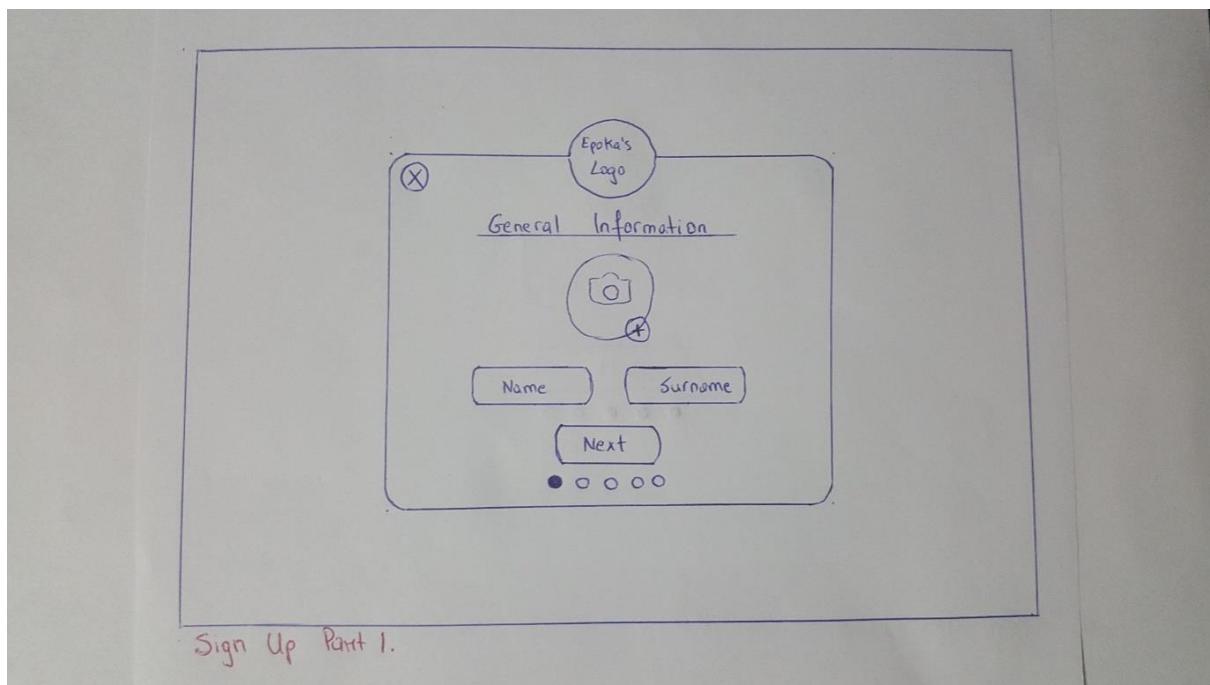
## 3. VERIFICATION



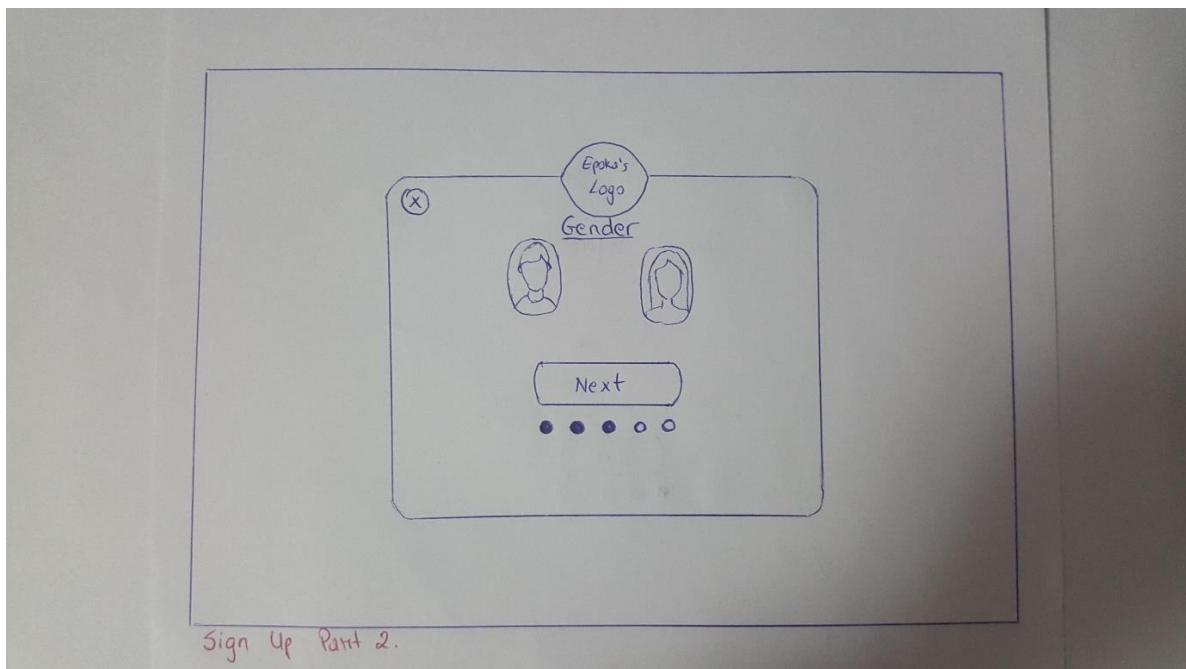
## 4. PASSWORD RESET



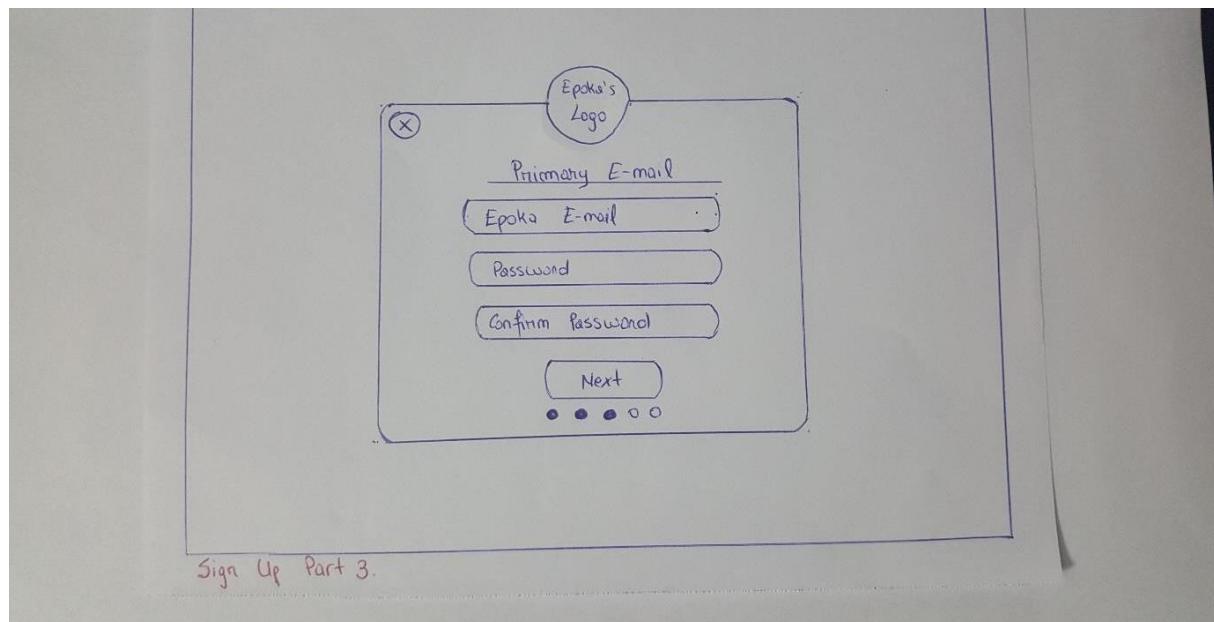
## 5. SIGN UP PART 1

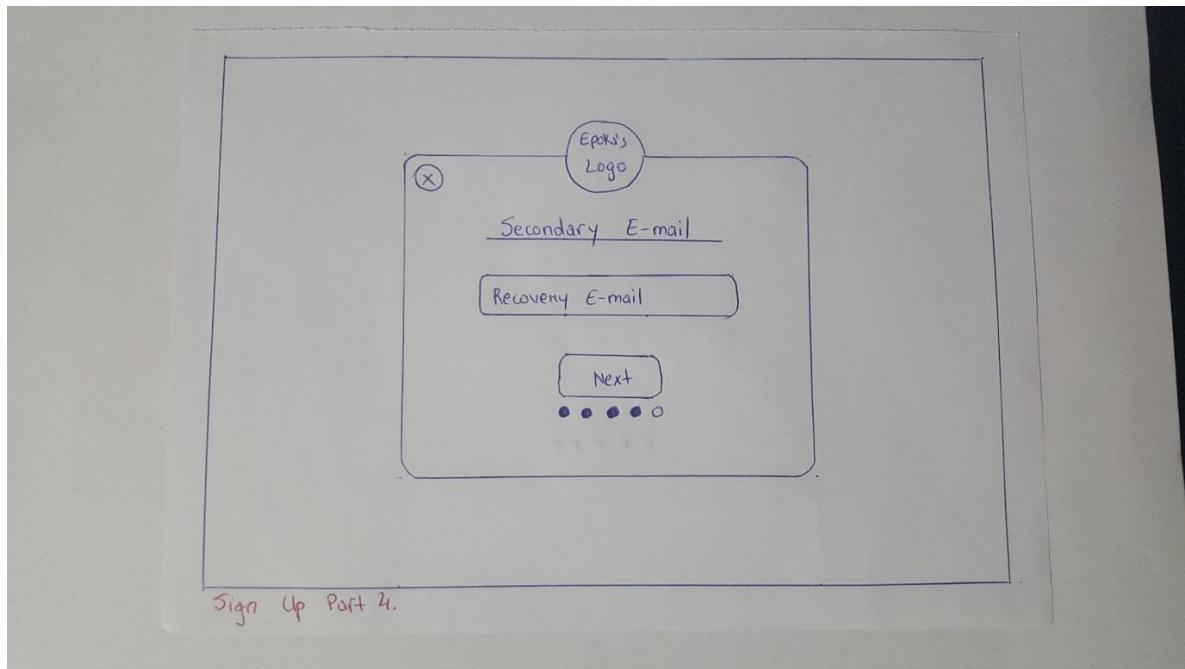
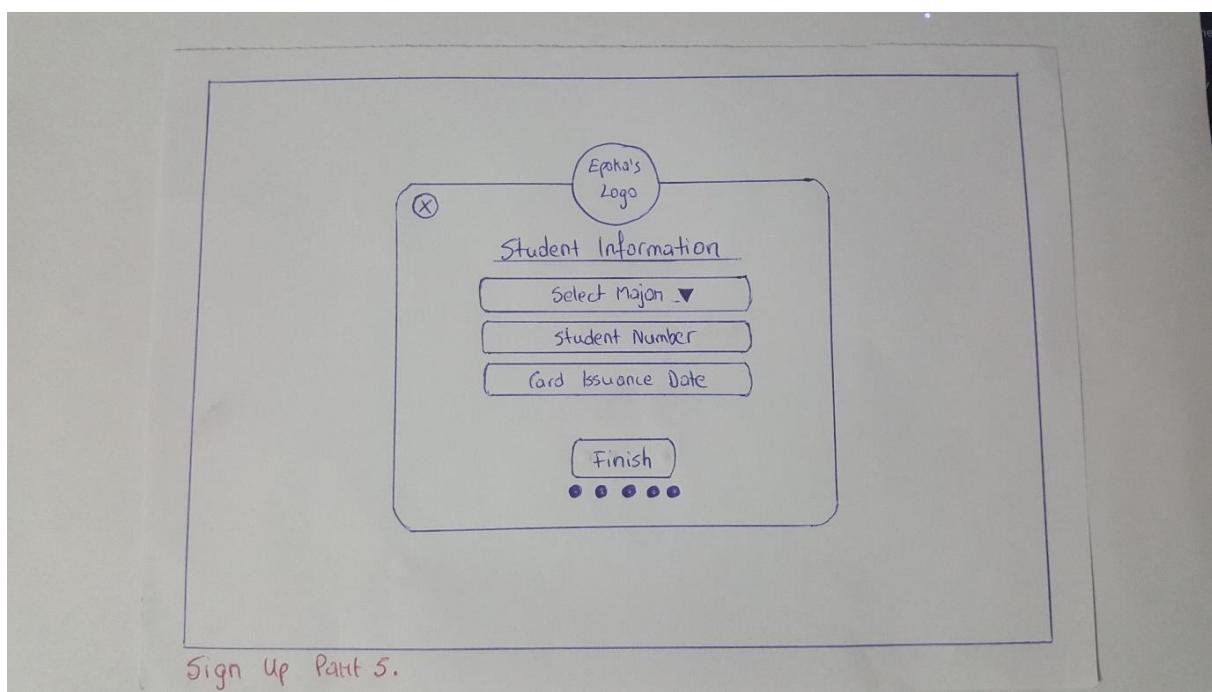


## 6. SIGN UP PART 2

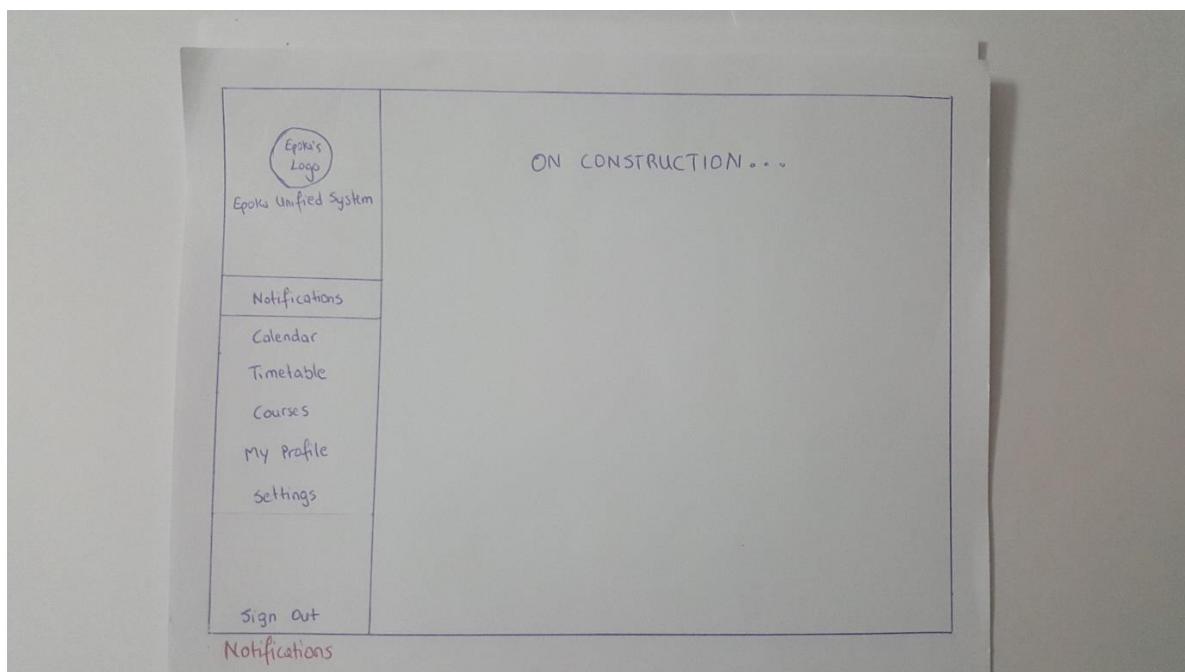


## 7. SIGN UP PART 3

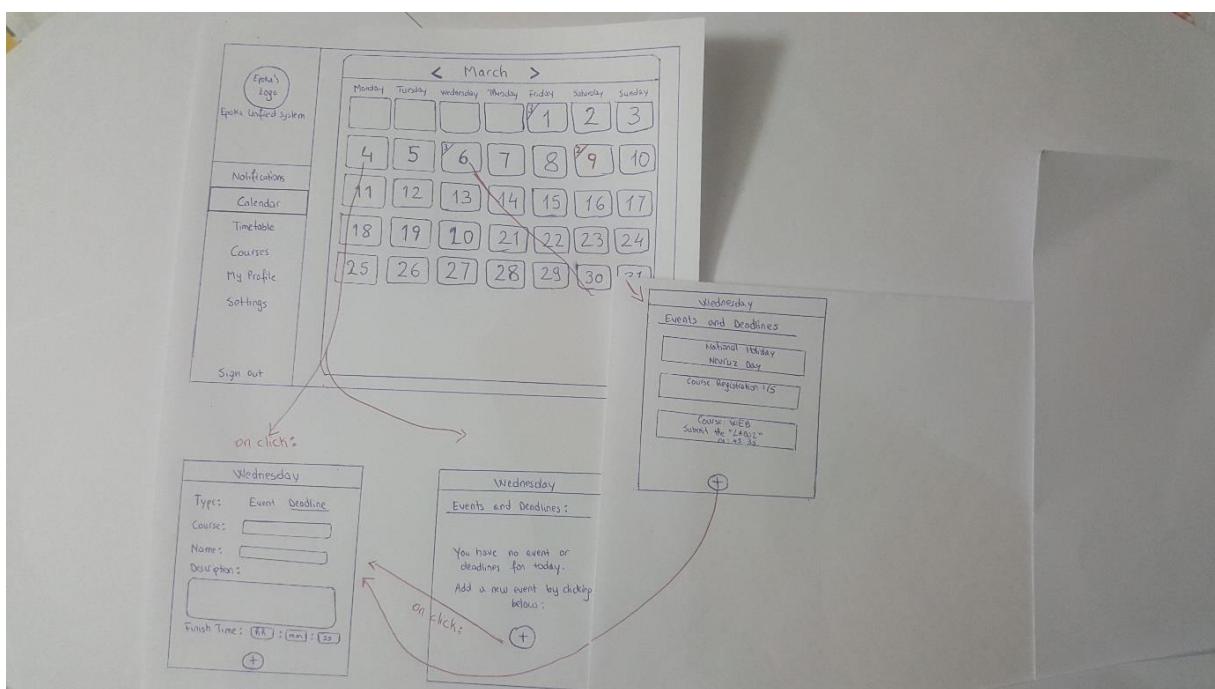


**8. SIGN UP PART 4****9. SIGN UP PART 5**

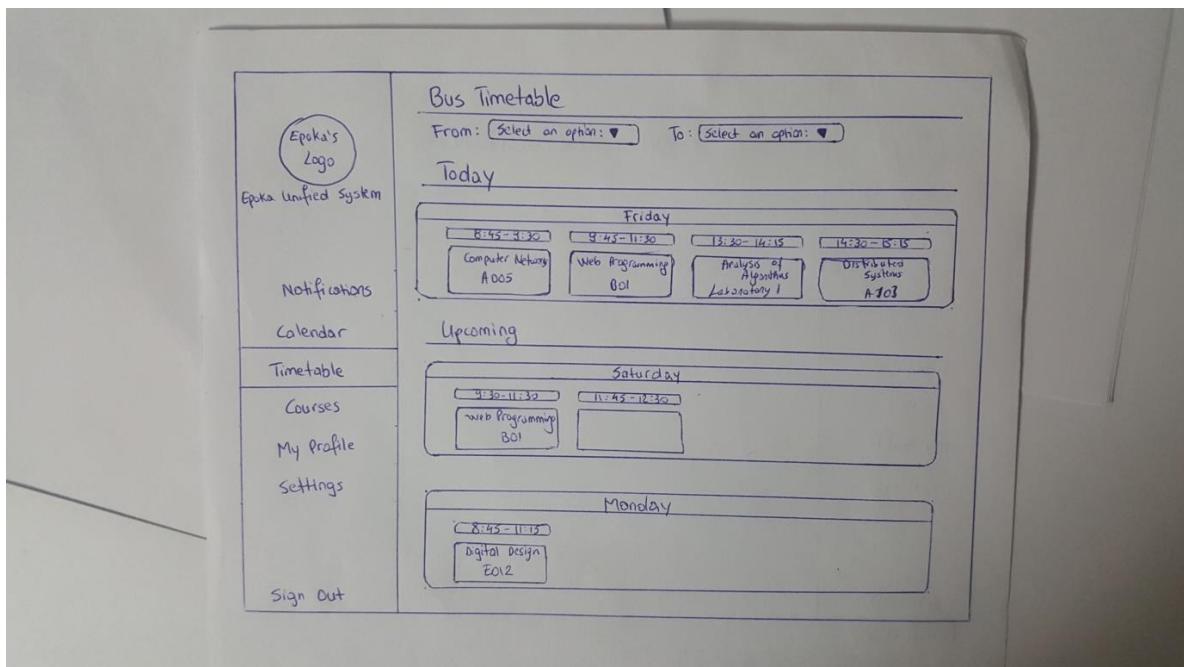
## 10. NOTIFICATIONS



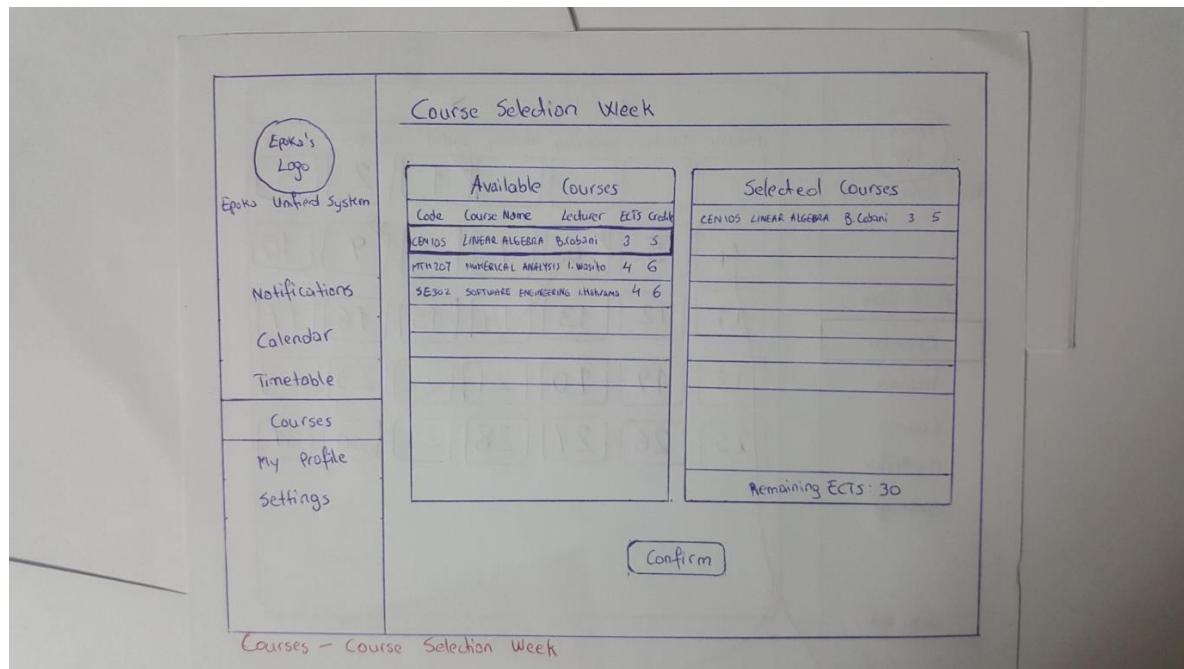
## 11. CALENDAR



## 12. TIMETABLE

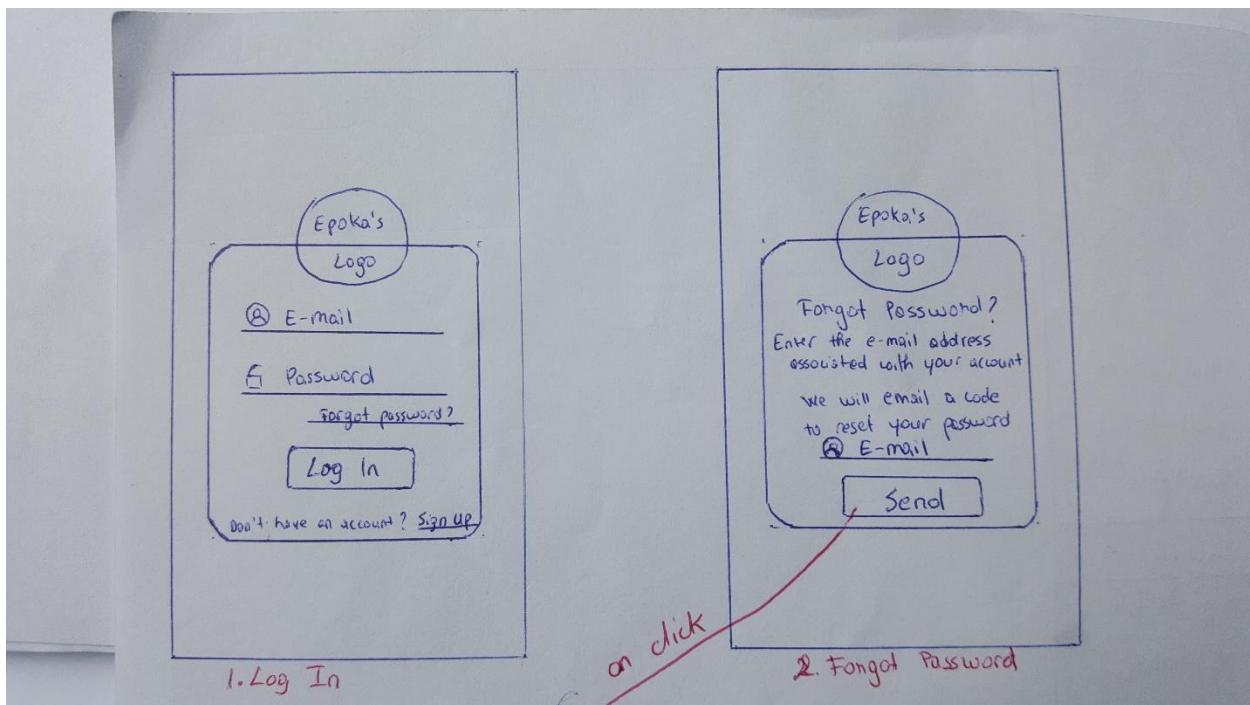


## 13. COURSE SELECTION WEEK

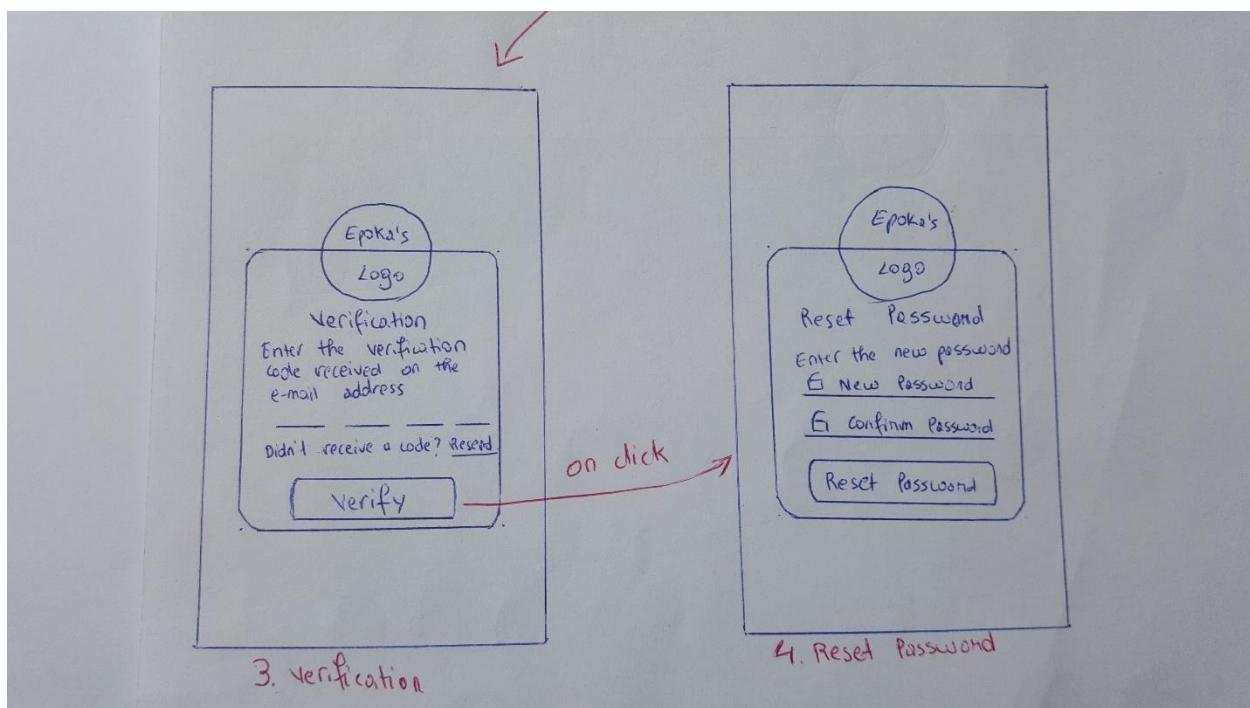


## Part B – Mobile View

### Login / Forgot Password



### Verification/Reset Password

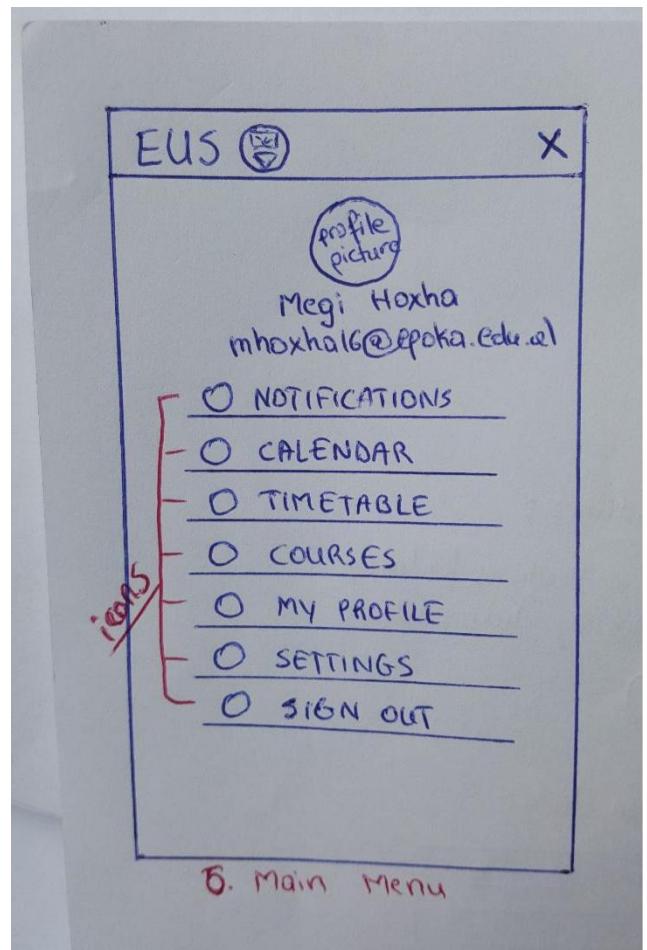


## Sign Up

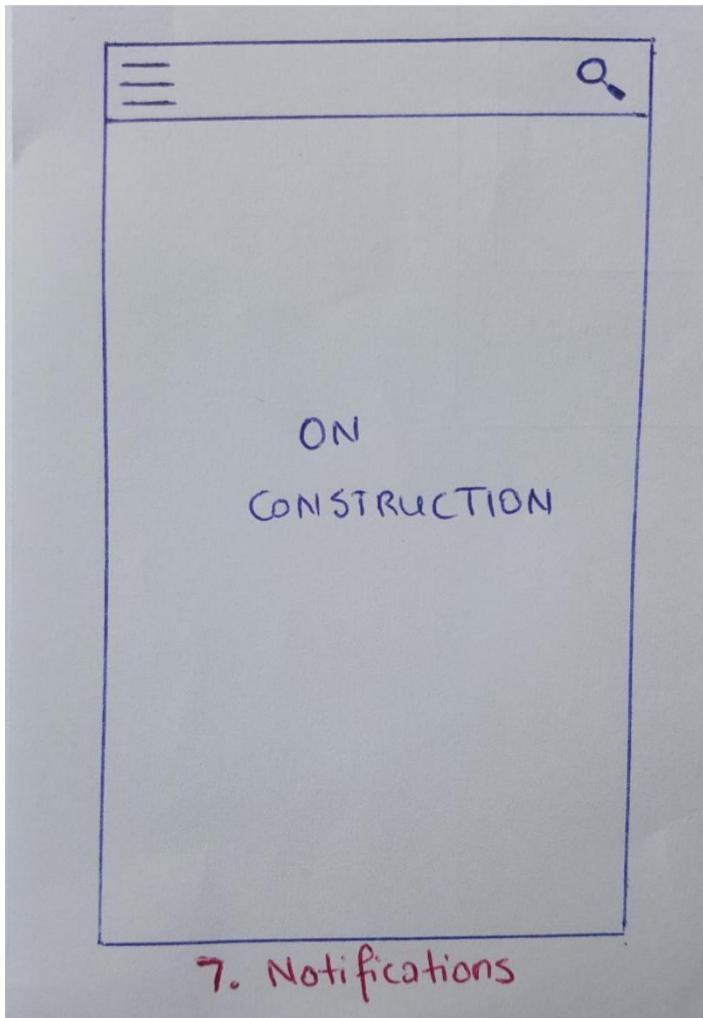
A hand-drawn wireframe of a sign-up form. At the top is a logo placeholder labeled "Epoka's Logo". Below it is a camera icon with a plus sign, indicating where a profile picture can be uploaded. The form includes fields for "Name" and "Surname". There are gender selection buttons for "Female" and "Male". A list of required fields follows: "E-mail", "Password", "Confirm Password", "Recovery E-mail", "Major", "Student ID NO.", and "Card Issuance Date". A "Sign Up" button is at the bottom.

5. Sign Up

## Main Menu



## Notifications



**Calendar + Events/Deadlines**

EUS 🇮🇷							X
< March >							
Mon	Tue	Wed	Thu	Fri	Sat	Sun	
4	5	6	7	8	9	10	(1)
11	12	13	14	15	16	17	
18	19	20	21	22	23	24	
25	26	27	28	29	30	31	
...	...	...	...	...	...	...	

Events:

- National Holiday
- Nevruz Day
- Course Registration
- Please complete course registration

Submit "Web" 00:02  
0:45:33

on click this appears here:

Events and Deadlines:

You have no events or deadlines for today. Add a new event by clicking below:

(+) on click:

Type: Event Deadline

Course:

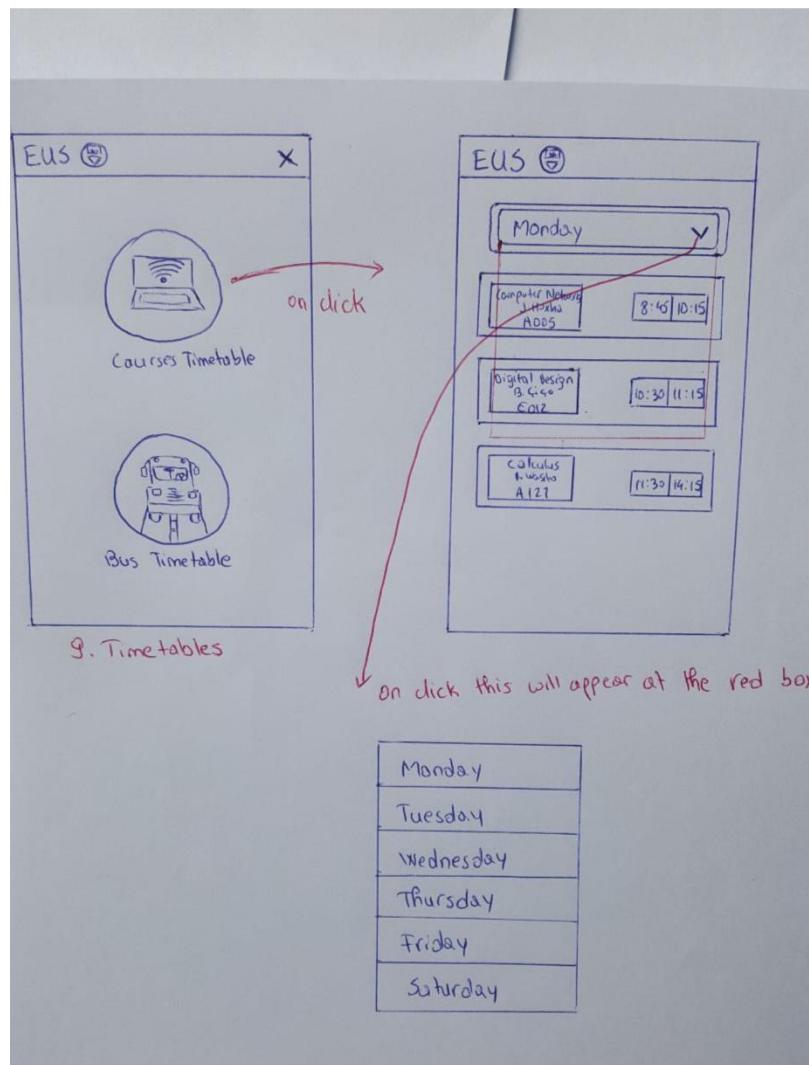
Name:

Description:

Finish Time:  :  :

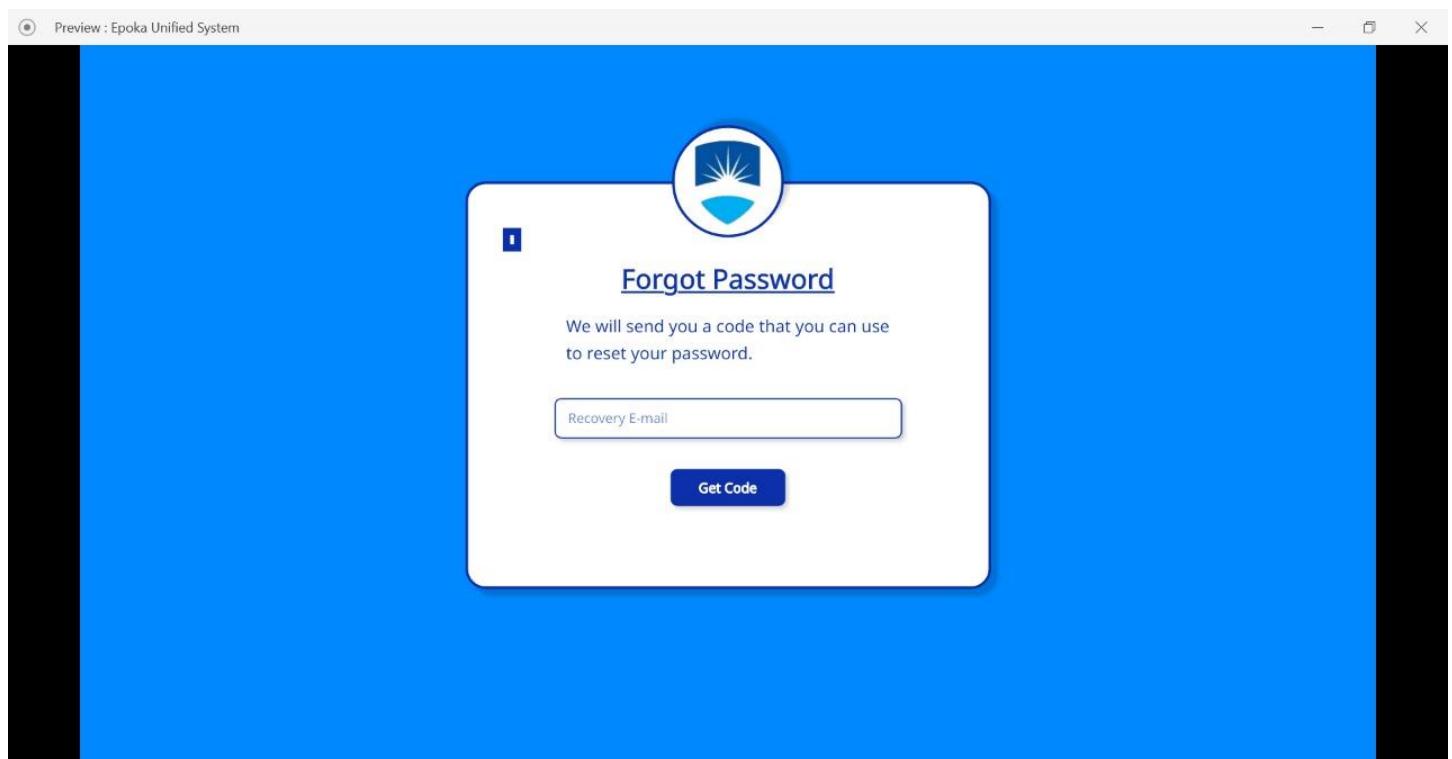
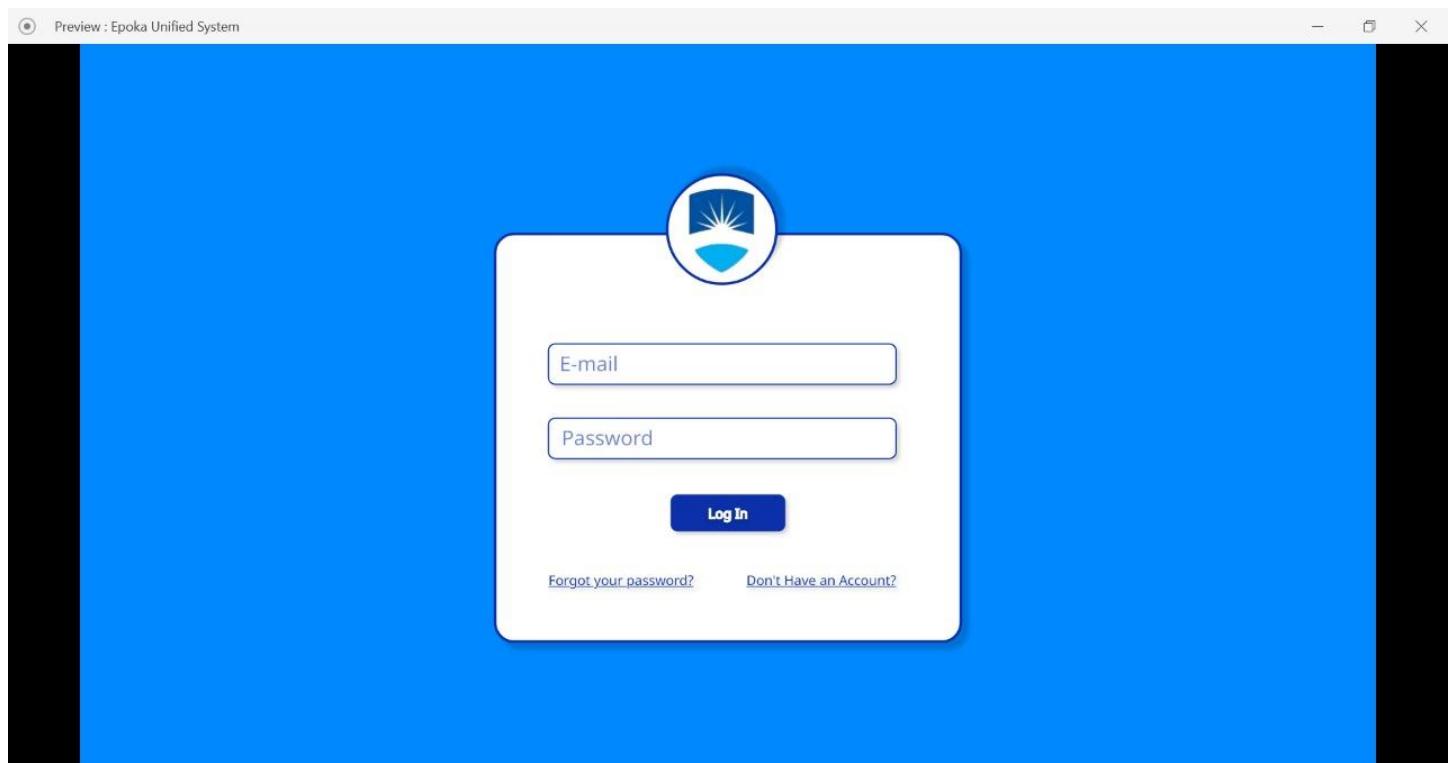
8. Calendar

## Timetables



## Appendix D. Detailed Design

The following designs were made using Adobe XD.



Preview : Epoka Unified System

The dashboard features a sidebar with a logo and links: Notifications, Calendar, Timetable, Courses, My Profile, and Settings. The main area displays three notifications for 'Computer Networks' with placeholder text about Lorem Ipsum. A 'Notifications' section below includes filters for Show (All), Course (All), and a search bar.

**Finishing Soon**

**Computer Networks**

There are many variations of passages of Lorem Ipsum available, but the majority have suffered alteration in some form, by injected humour, or randomised words which don't look even slightly believable.

2:20:19

**Computer Networks**

There are many variations of passages of Lorem Ipsum available, but the majority have suffered alteration in some form, by injected humour, or randomised words which don't look even slightly believable.

2:20:19

**Computer Networks**

There are many variations of passages of Lorem Ipsum available, but the majority have suffered alteration in some form, by injected humour, or randomised words which don't look even slightly believable.

2:20:19

**Notifications**

Show: All Course: All Search here ....

**Computer Networks**

**Short description goes here**

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

2:20:19

Preview : Epoka Unified System

The dashboard features a sidebar with a logo and links: Notifications, Calendar, Timetable, Courses, My Profile, and Settings. The main area displays three notifications for 'Computer Networks' with placeholder text about Lorem Ipsum.

**Computer Networks**

**Short description goes here**

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

2:20:19

**Computer Networks**

**Short description goes here**

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

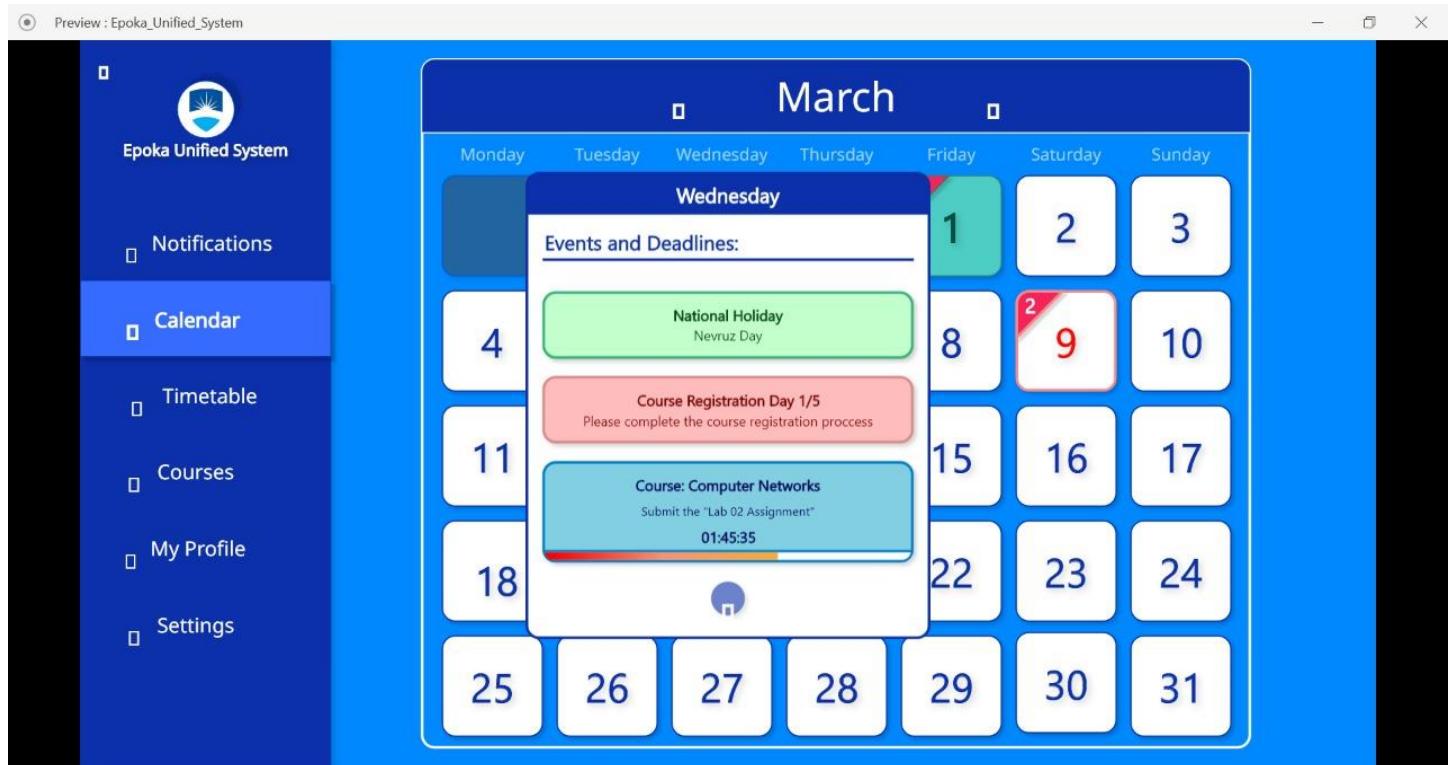
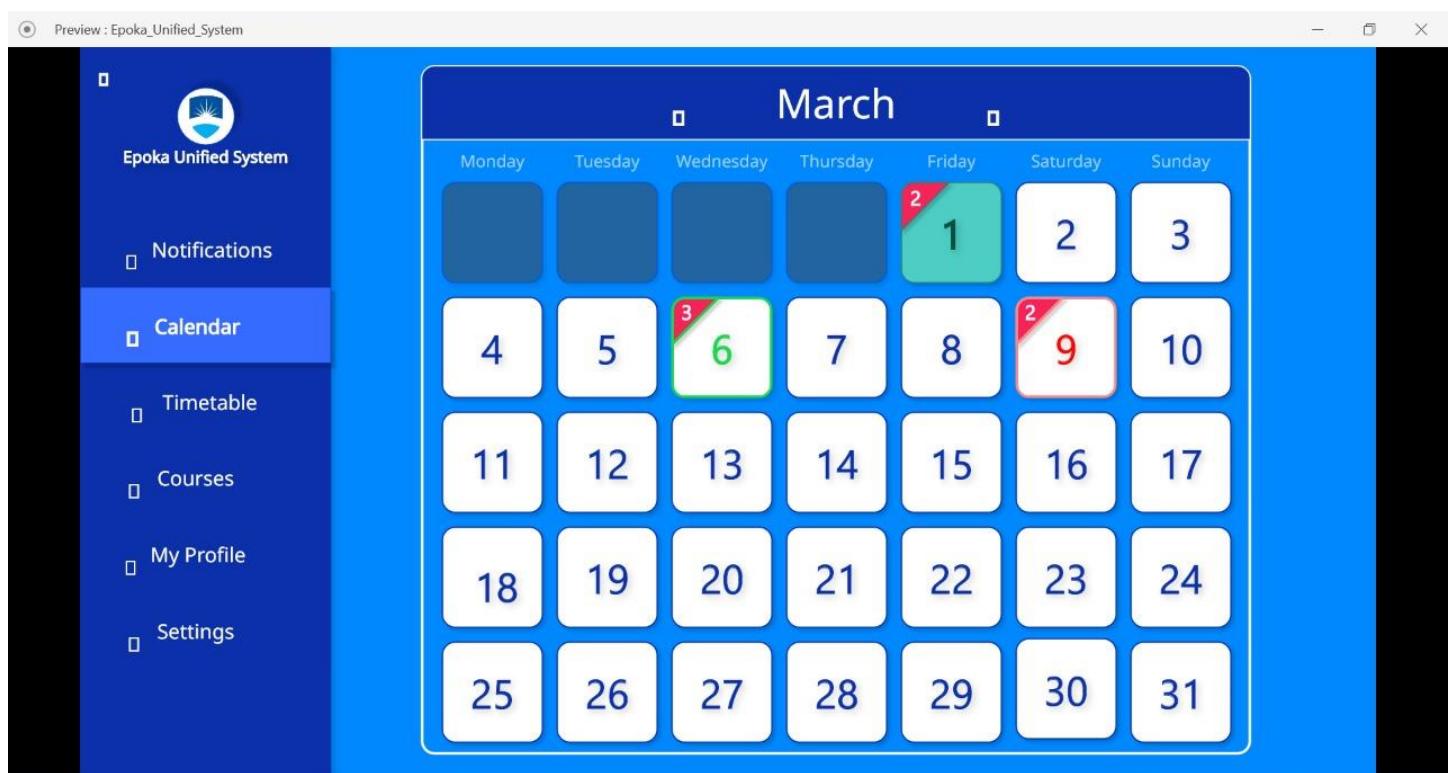
2:20:19

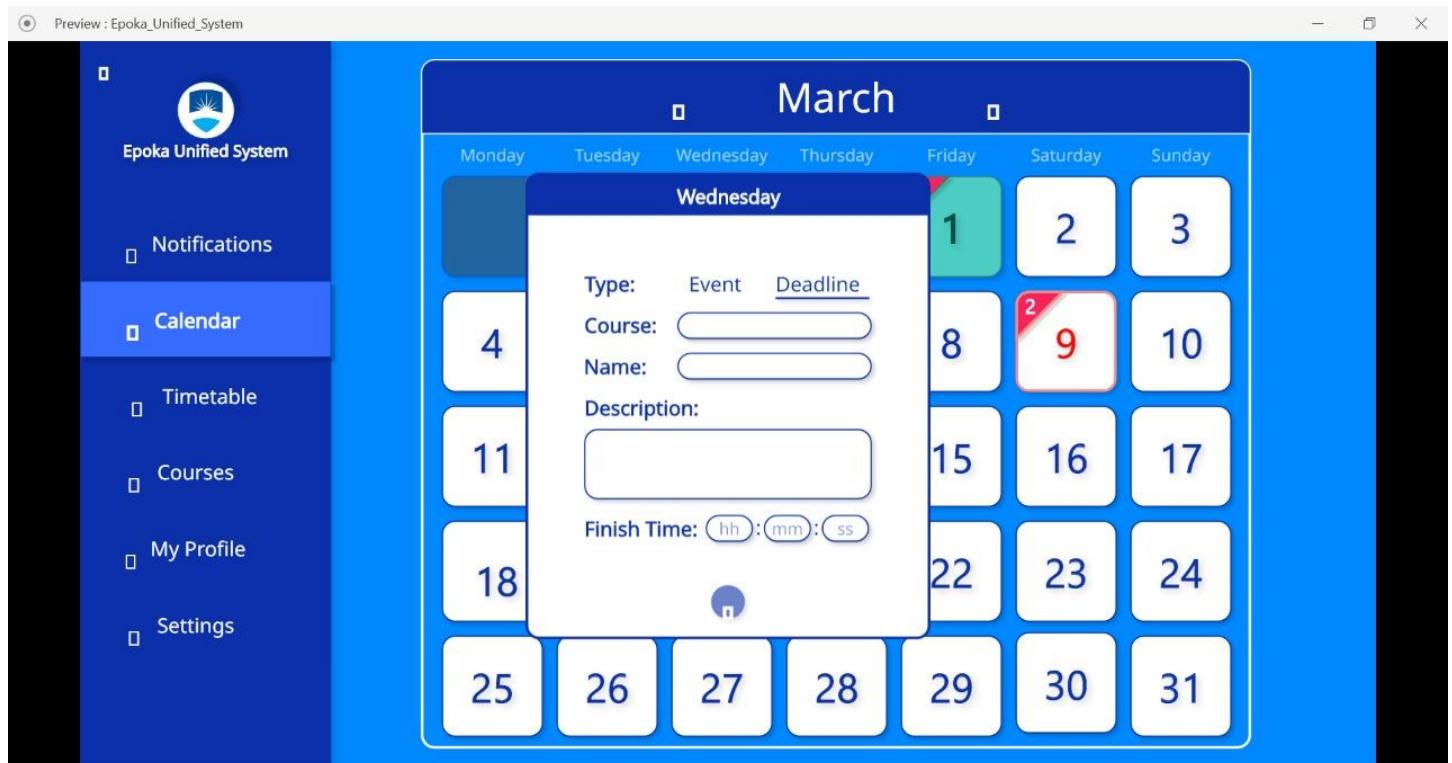
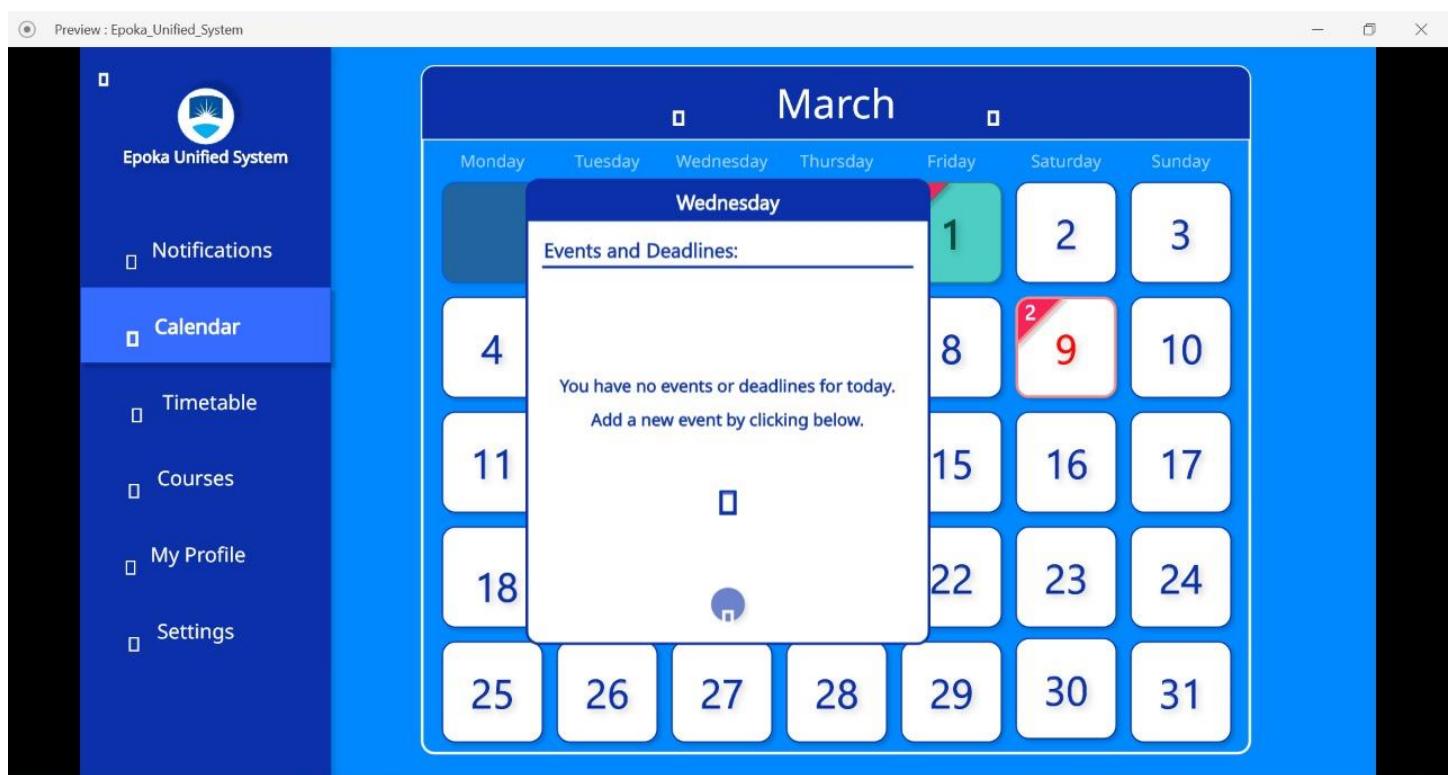
**Computer Networks**

**Short description goes here**

Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

2:20:19





Preview : Epoka\_Unified\_System

## Bus Timetable

From: Select an option To: Select an option

Friday

7:40 7:45 8:45 9:45 10:45 11:45 12:45 13:45 14:45 15:45 16:45 17:20

## Today

Friday

8:45 - 9:30	9:45 - 11:15	13:30 - 14:15	14:30 - 15:15
Computer Networks A 005	Web Programming B 01	Analysis of Algorithms Laboratory 1	Distributed Systems A 103

## Upcoming

Saturday

8:45 - 9:30	13:30 - 14:15	14:30 - 15:15
Computer Networks	Analysis of Algorithms	Distributed Systems

Preview : Epoka\_Unified\_System

## Upcoming

Saturday

8:45 - 9:30	13:30 - 14:15	14:30 - 15:15
Computer Networks A 005	Analysis of Algorithms Laboratory 1	Distributed Systems A 103

## Monday

8:45 - 11:30	14:30 - 15:15
Computer Networks A 005	Distributed Systems A 103

## Tuesday

8:45 - 9:30
Computer Networks A 005

Wednesday

Preview : Epoka\_Unified\_System

**Course Selection Week**

Available Courses				
Code	Course Name	Lecturer	ECTS	Credits
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5

Selected Courses					
CEN 105	LINEAR ALGEBRA	Besjana Cobani	3	5	
Remaining ECTS: 30					

**Confirm**

Preview : Epoka Unified System

**My Courses**

Select a Course			
Course Name	Attendance	Max. Grade	
LINEAR ALGEBRA	66%	70	CC
LINEAR ALGEBRA	66%	70	CC
LINEAR ALGEBRA	66%	70	CC
LINEAR ALGEBRA	66%	70	CC
LINEAR ALGEBRA	66%	70	CC

LINEAR ALGEBRA			
Grades			
Description	Percentage	Grade	Class Avg.
Midterm	20%	70 / 100	80 / 100
Quiz	10%	70 / 100	80 / 100
Final Exam	70%	70 / 100	80 / 100
Final Grade: CC			

Attendance			
Week 1	Monday	3/27/2019	0/3
Week 1	Monday	3/27/2019	0/3
Week 1	Monday	3/27/2019	0/3
Week 1	Monday	3/27/2019	0/3
Week 1	Monday	3/27/2019	0/3

**Materials**

No materials uploaded yet!

Preview : Epoka Unified System

The screenshot shows the Epoka Unified System interface. On the left is a vertical navigation bar with the following items:

- Epoka Unified System (with logo)
- Notifications
- Calendar
- Timetable
- Courses
- My Profile** (highlighted in blue)
- Settings

The main content area has a blue header "General". It features a circular profile picture of a woman with blonde hair. Below the picture, the user's details are listed:

Full Name:	Marilyn Default	Card Number:	xxx-xxx-xxx
Degree:	Computer Engineering	E-mail:	mDefault16@epoka.edu.al
Year:	Third	Recovery E-mail:	random@random.com

A section titled "Transcript" follows, containing two dropdown menus:

Choose Year:

Choose Semester:

Below these are two buttons for "First Year":

First Semester	Second Semester
----------------	-----------------

Preview : Epoka Unified System

The screenshot shows the Epoka Unified System interface, similar to the previous one but with a note about the transcript design.

The left navigation bar is identical to the first screenshot.

The main content area has a blue header "General". It features two dropdown menus:

Choose Year:

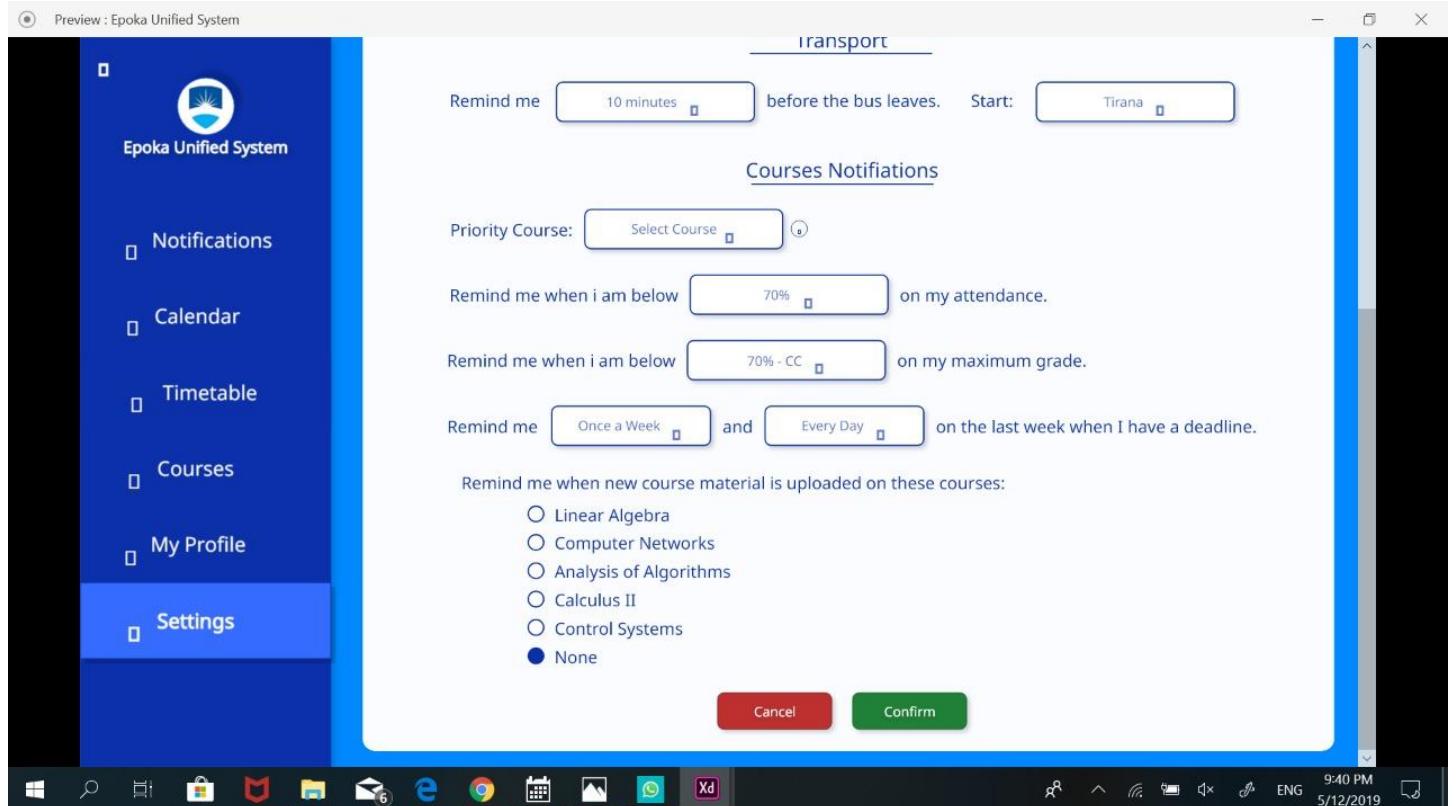
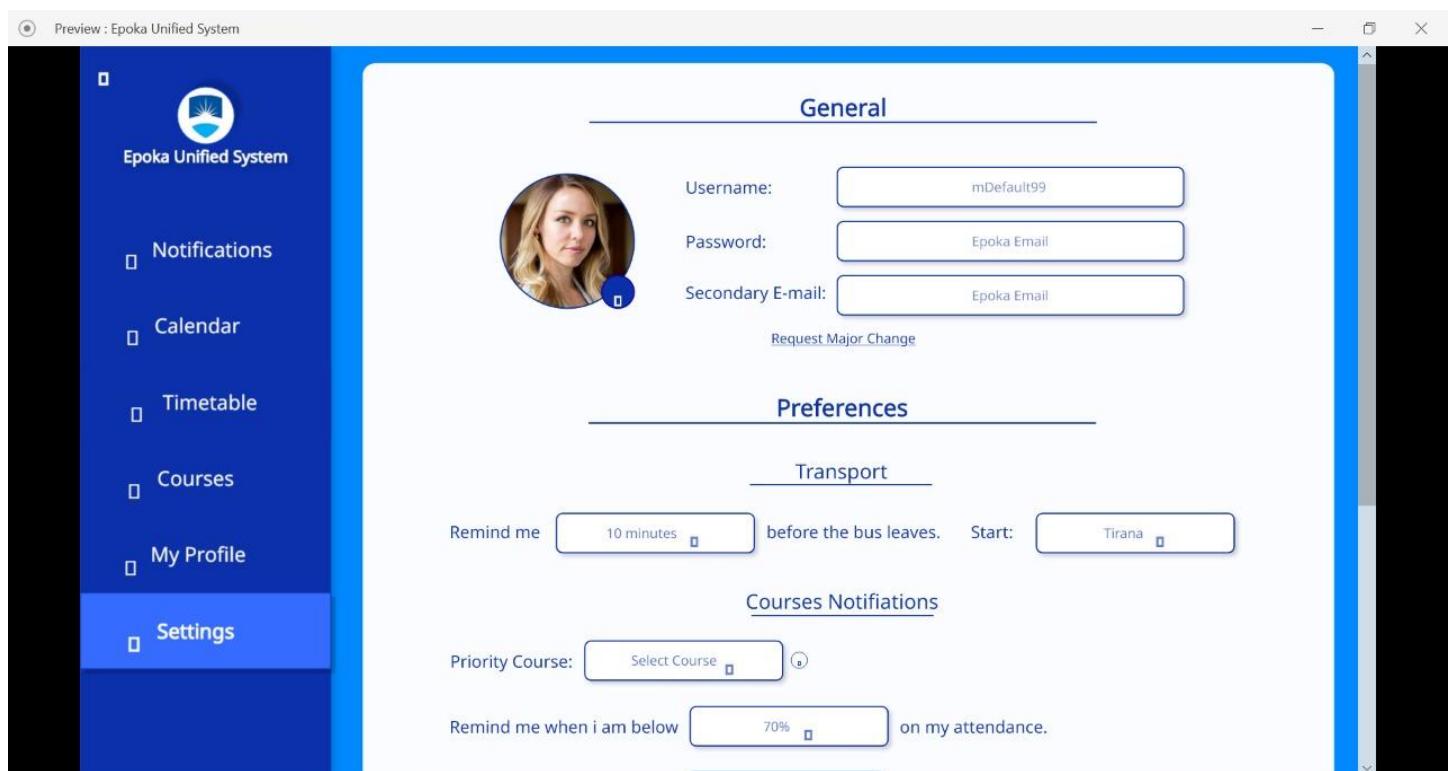
Choose Semester:

Below these are two buttons for "First Year":

First Semester	Second Semester
----------------	-----------------

A note in the center of the screen states:

The transcript design will be the same as the existing one in:  
[eis.epoka.edu.al/transcript](http://eis.epoka.edu.al/transcript)





E-mail \_\_\_\_\_

Password \_\_\_\_\_

[Forgot password?](#)

**Log In**

Don't have an account? [Sign up](#)



**Forgot Password?**

Enter the e-mail address associated with your account

We will email you a code to reset your password

E-mail \_\_\_\_\_

**Send**



**Verification**

Enter the verification code received on the email address

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
[Didn't receive a code? Resend](#)

**Verify**



**Reset password**

Enter the new password

New password \_\_\_\_\_

Confirm password \_\_\_\_\_

**Reset Password**



Name \_\_\_\_\_

Surname \_\_\_\_\_

**Female** **Male**

E-mail \_\_\_\_\_

Password \_\_\_\_\_

Surname \_\_\_\_\_

**Female** **Male**

E-mail \_\_\_\_\_

Password \_\_\_\_\_

Confirm Password \_\_\_\_\_

Recovery E-mail \_\_\_\_\_

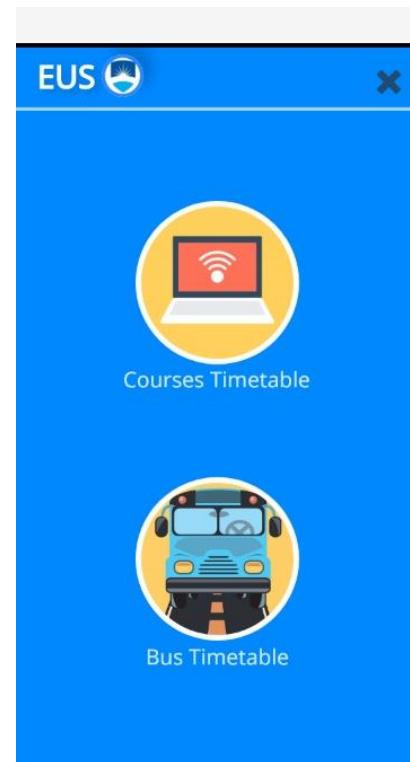
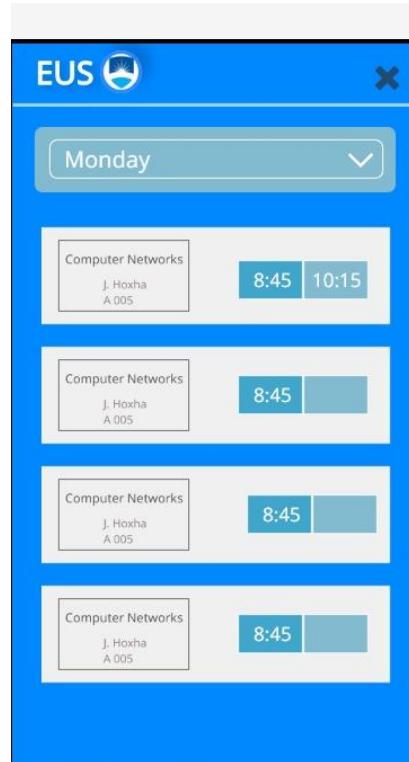
Student ID No. \_\_\_\_\_

Card Issuance Date \_\_\_\_\_

**Sign up**

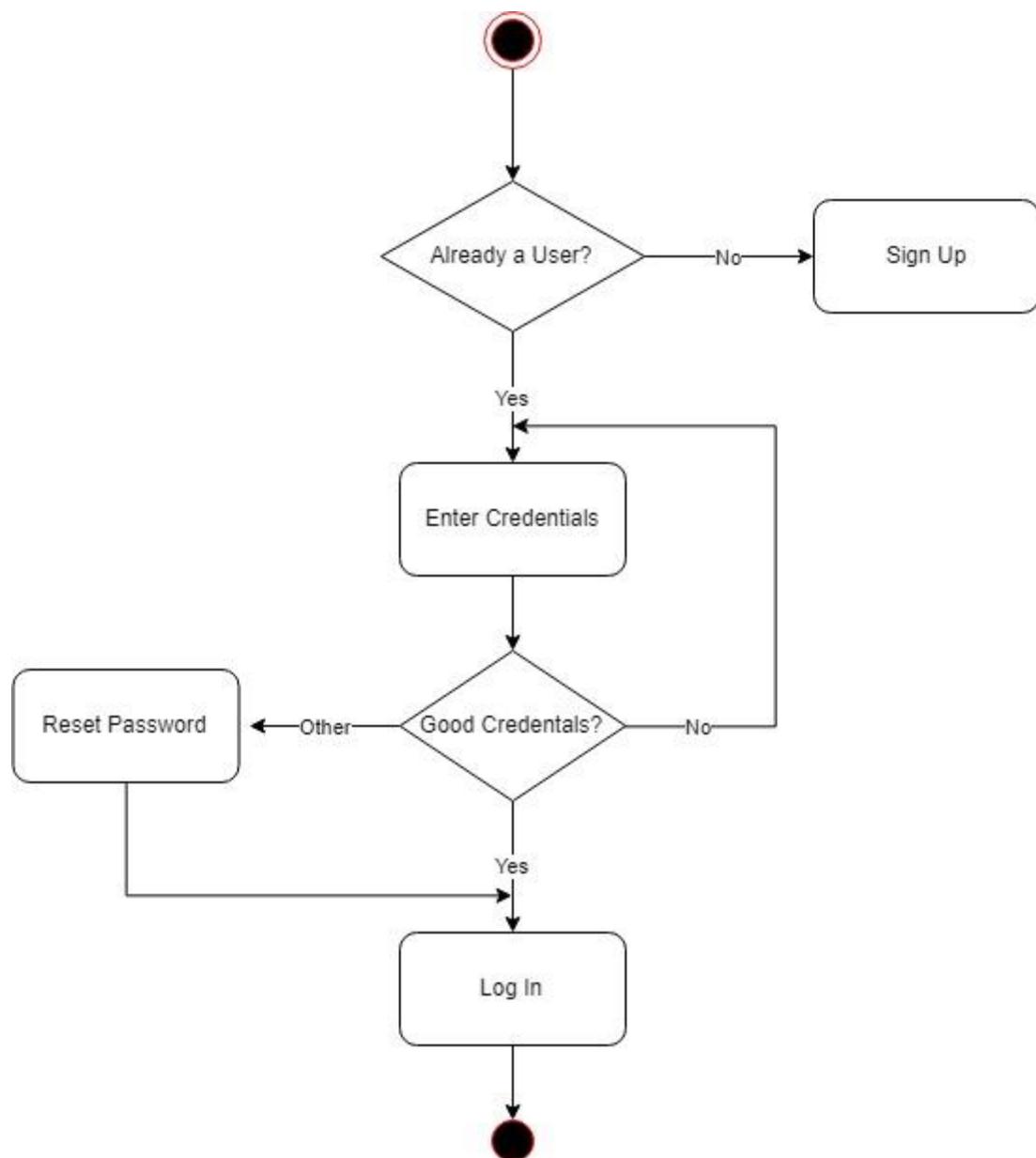
# EUS Requirements Specification

50

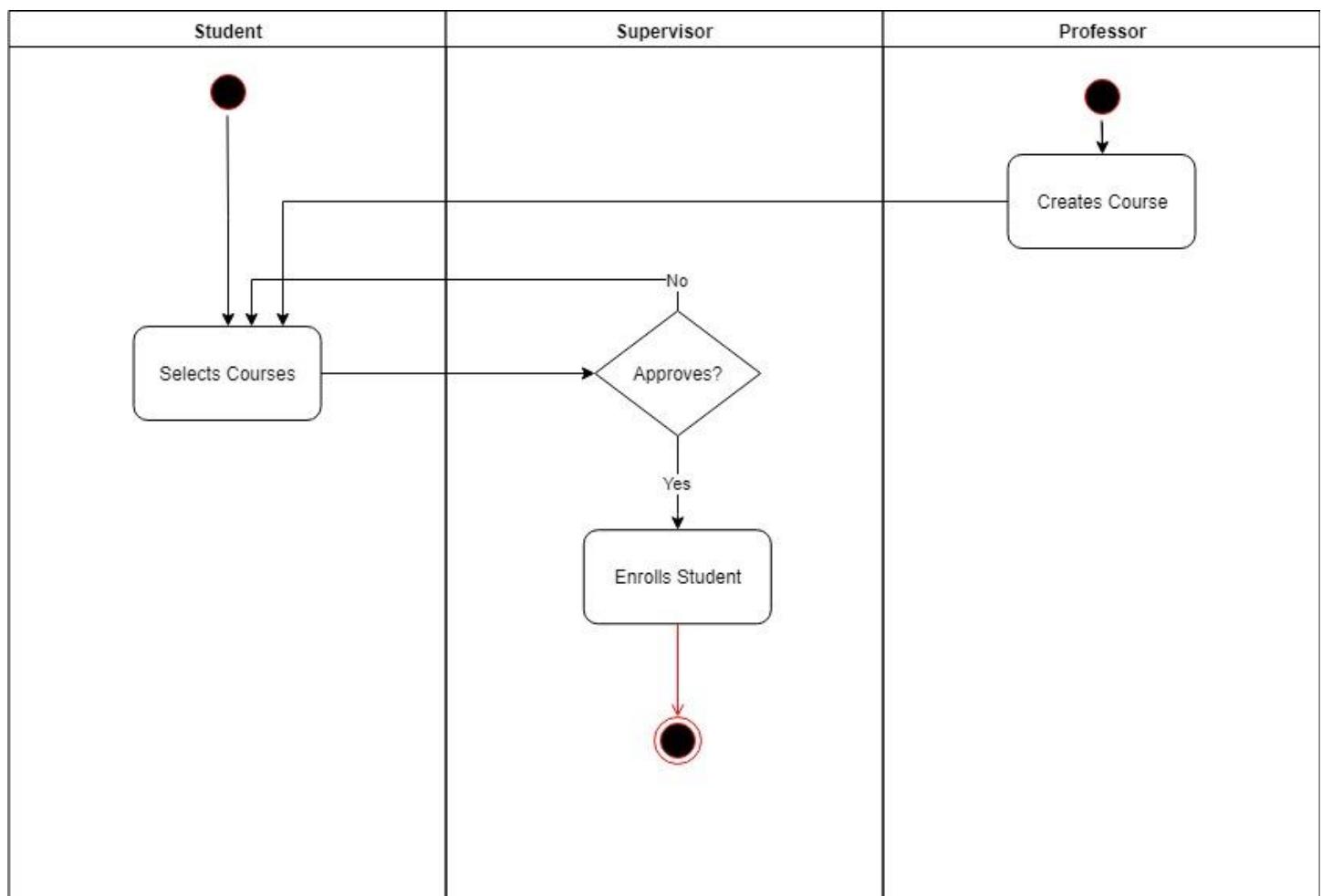


## Appendix E. Diagrams

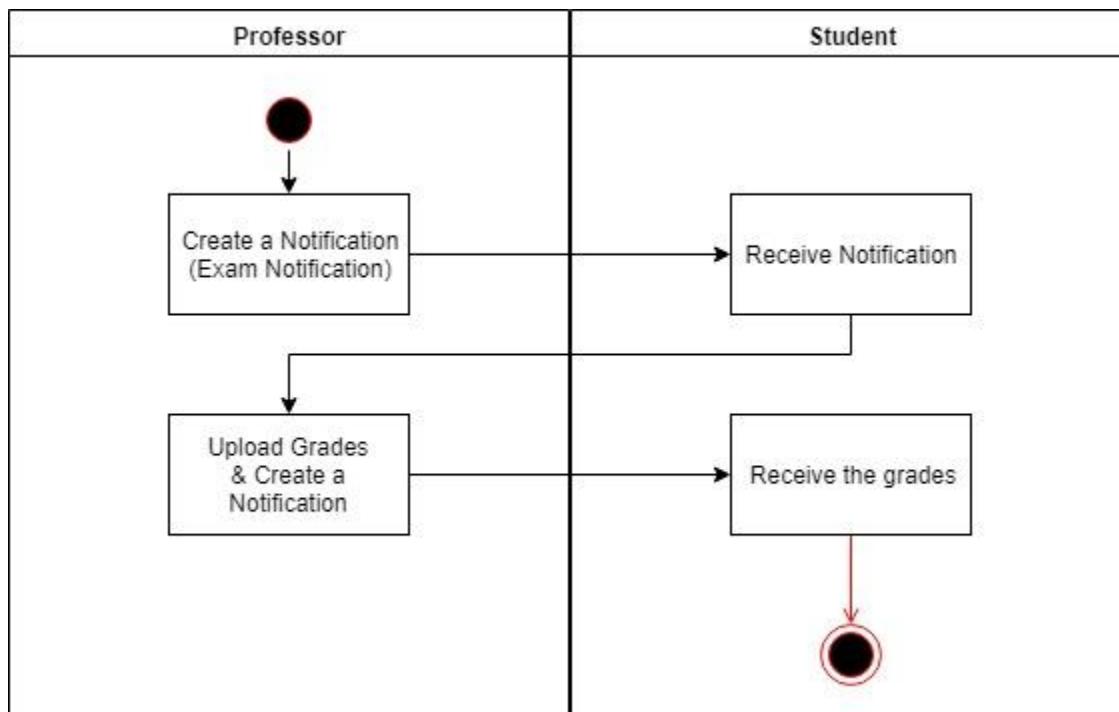
**Activity Diagram- Sign Up**



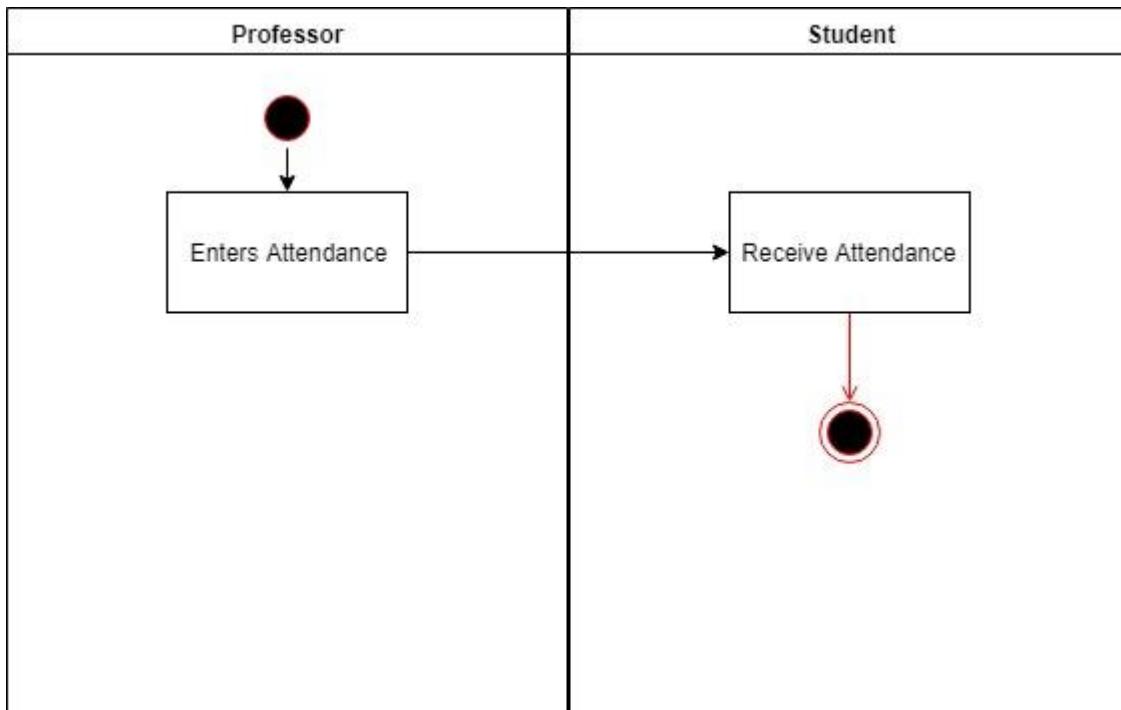
### Activity Diagram – Course Selection

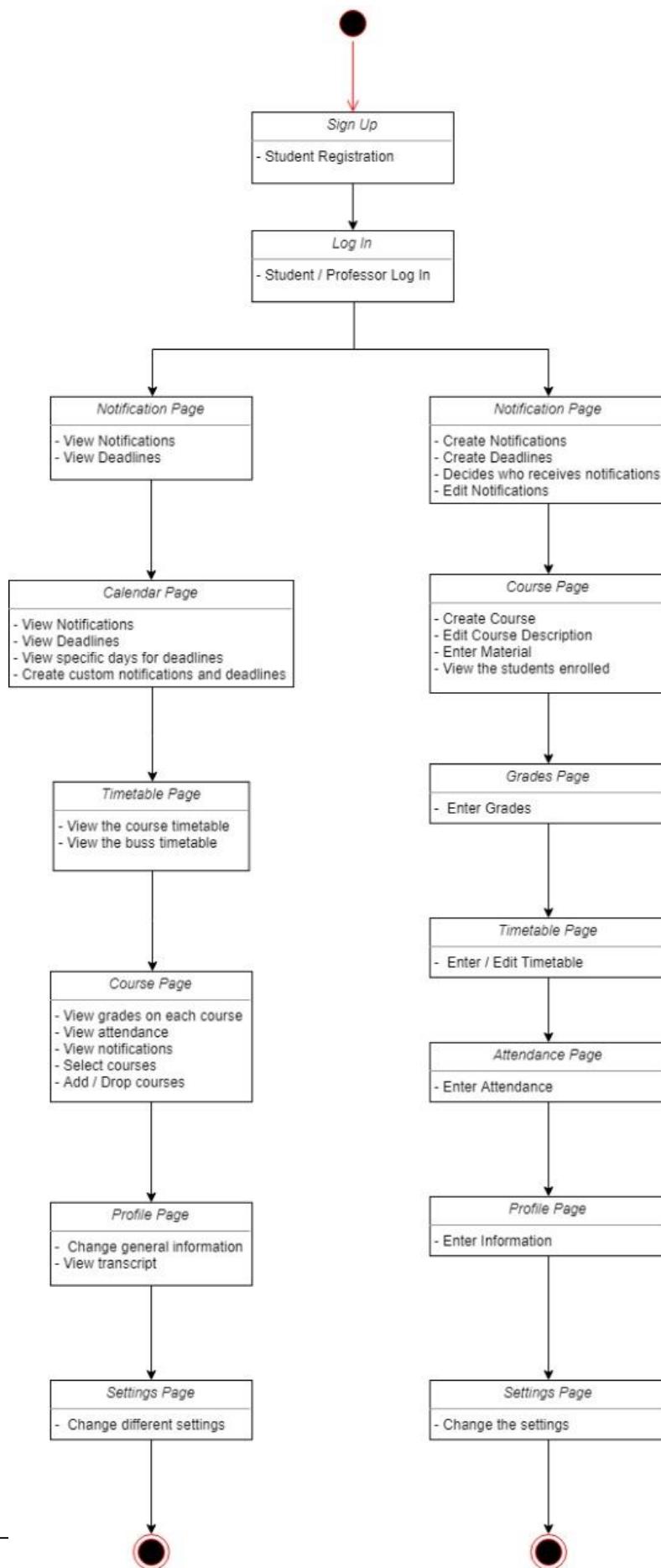


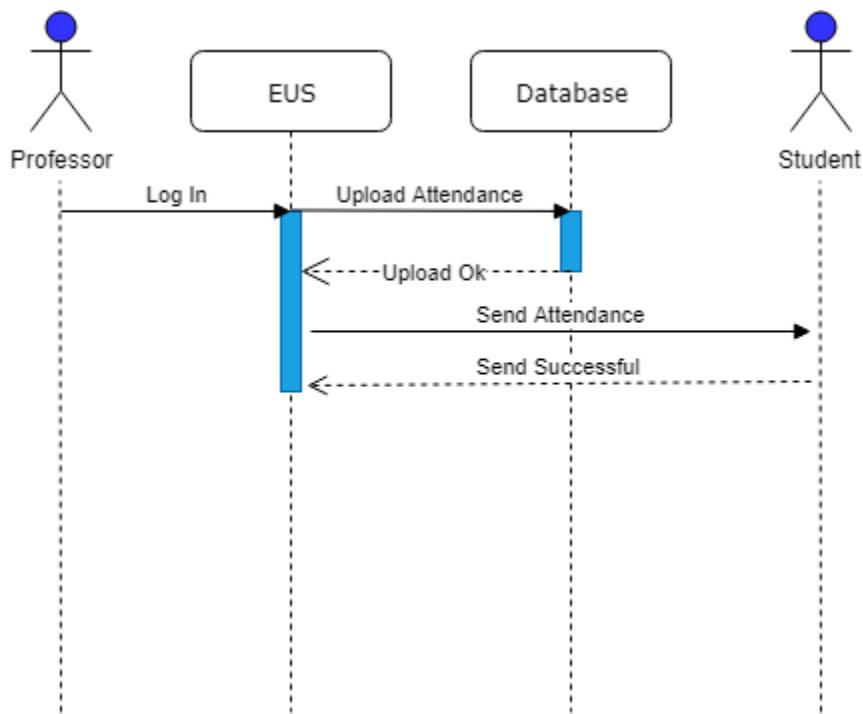
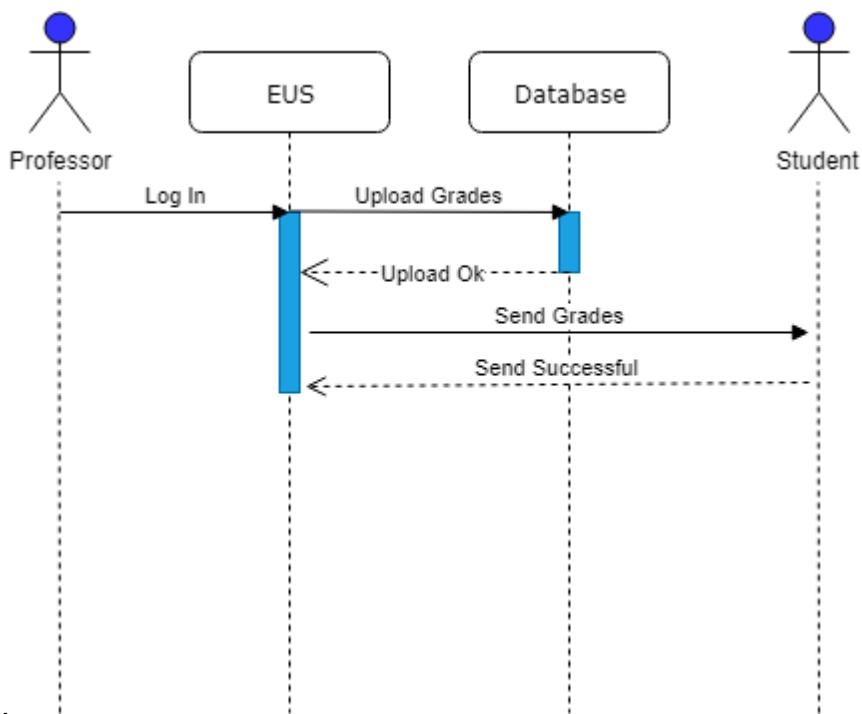
### Activity Diagram – Grade Upload



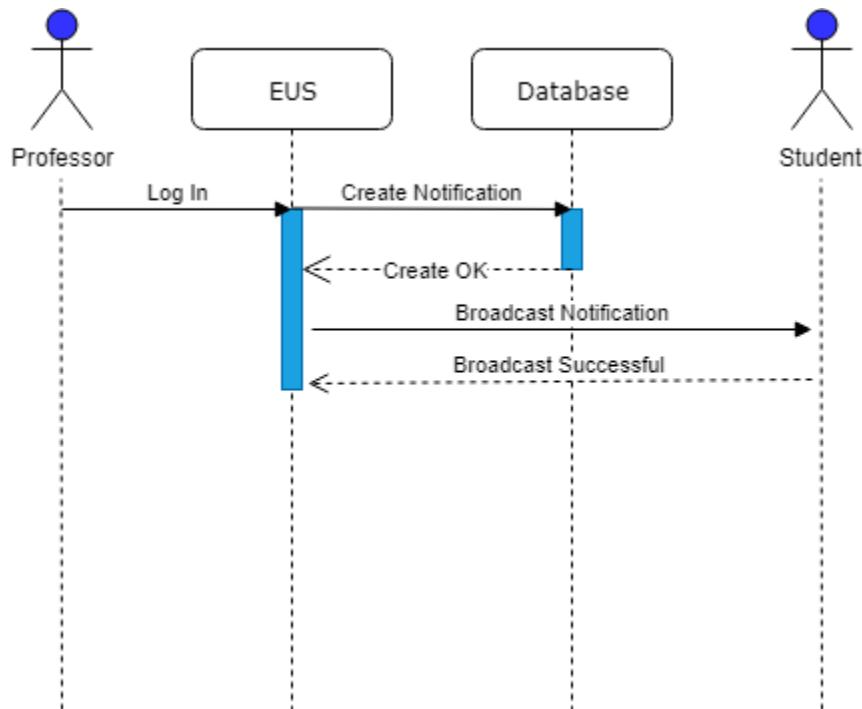
### Activity Diagram – Attendance



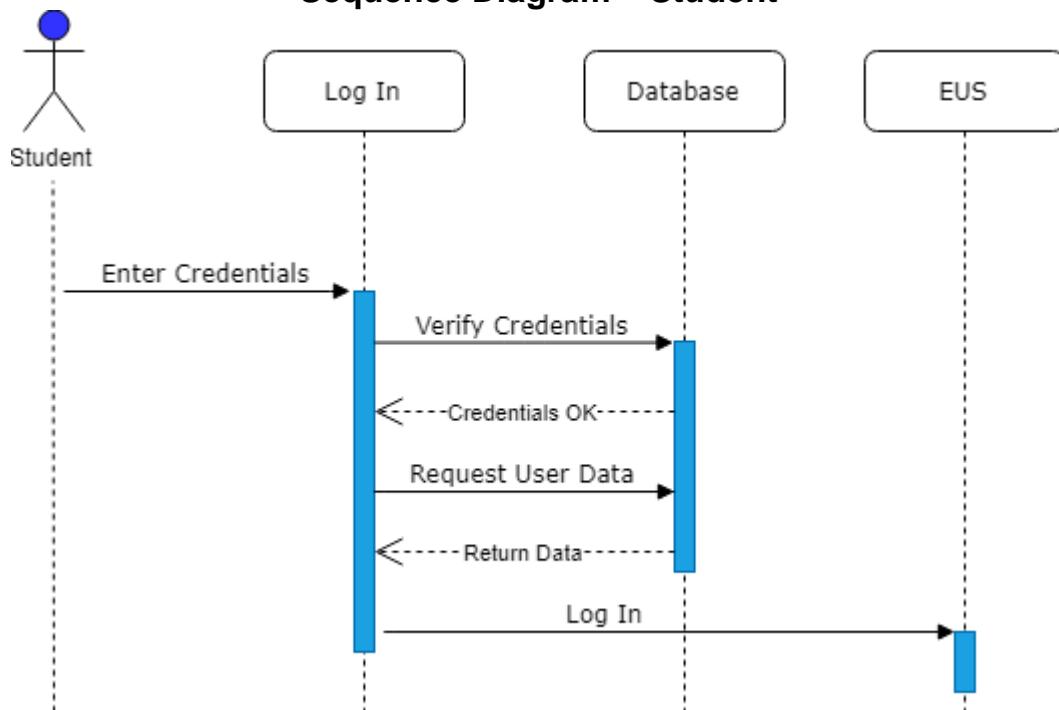


**Sequence Diagram – Attendance****Sequence Diagram – Grades**

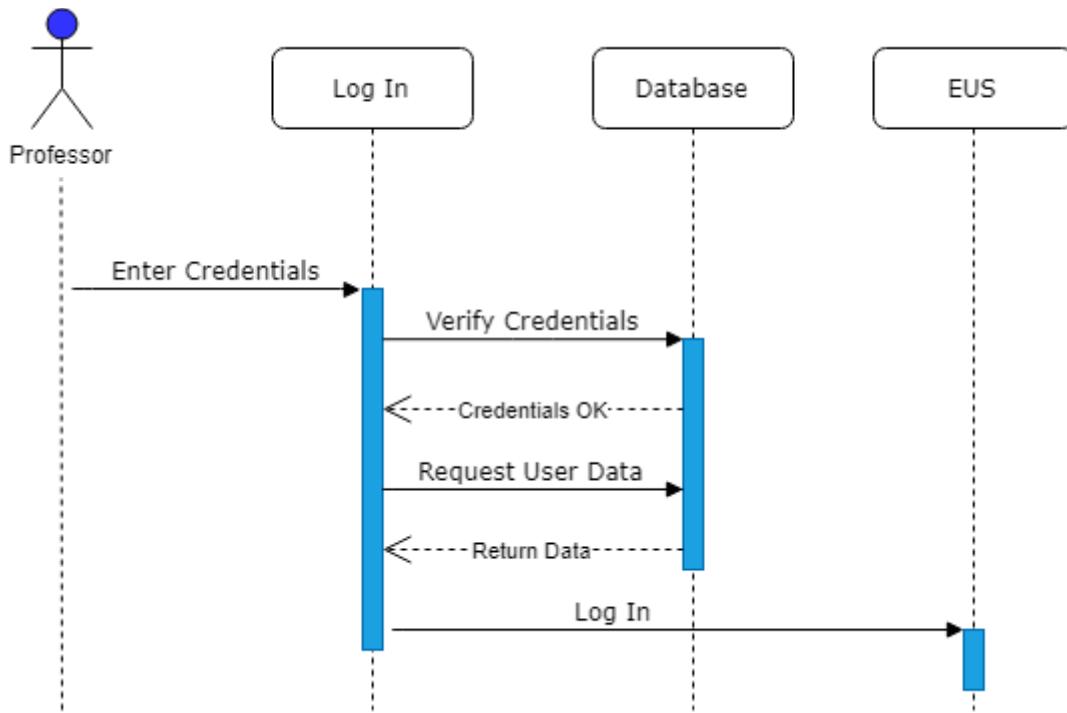
### Sequence Diagram – Notifications



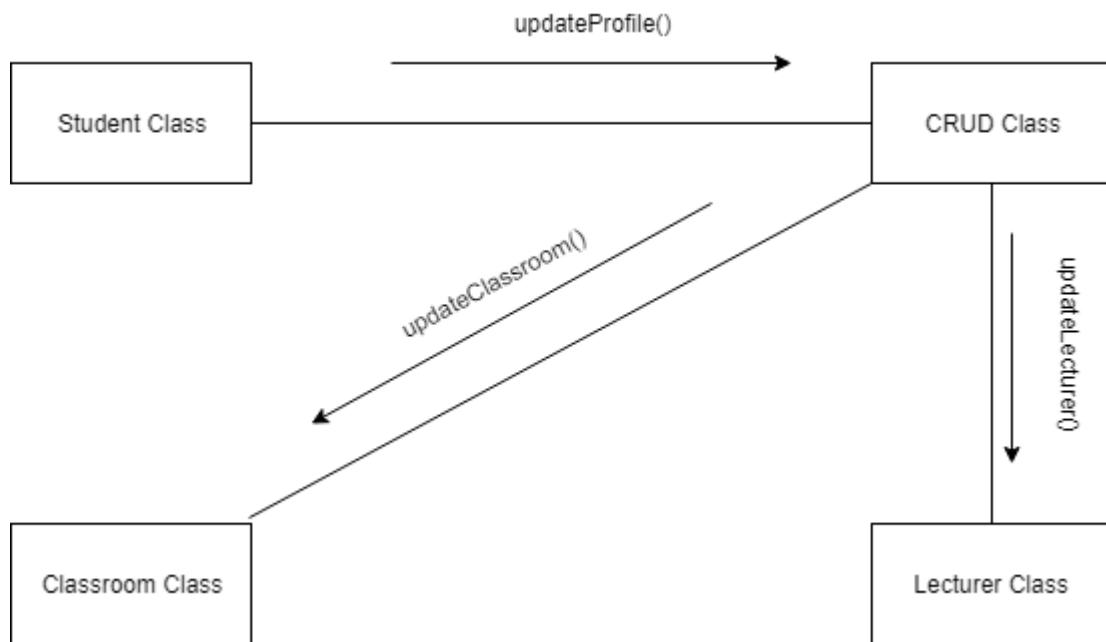
### Sequence Diagram – Student



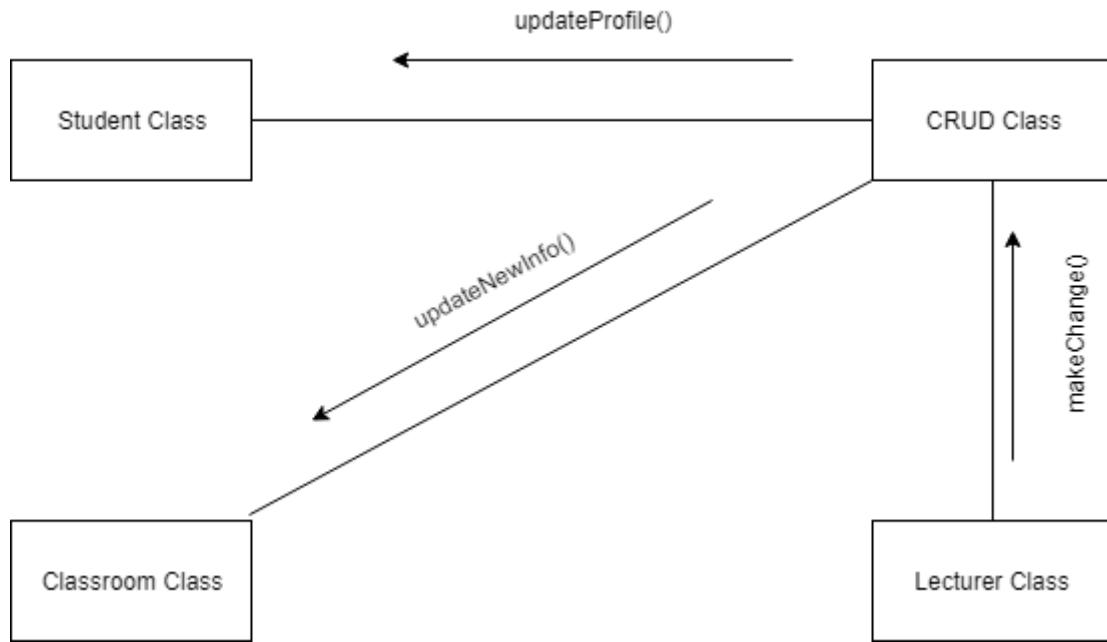
### Sequence Diagram – Professor



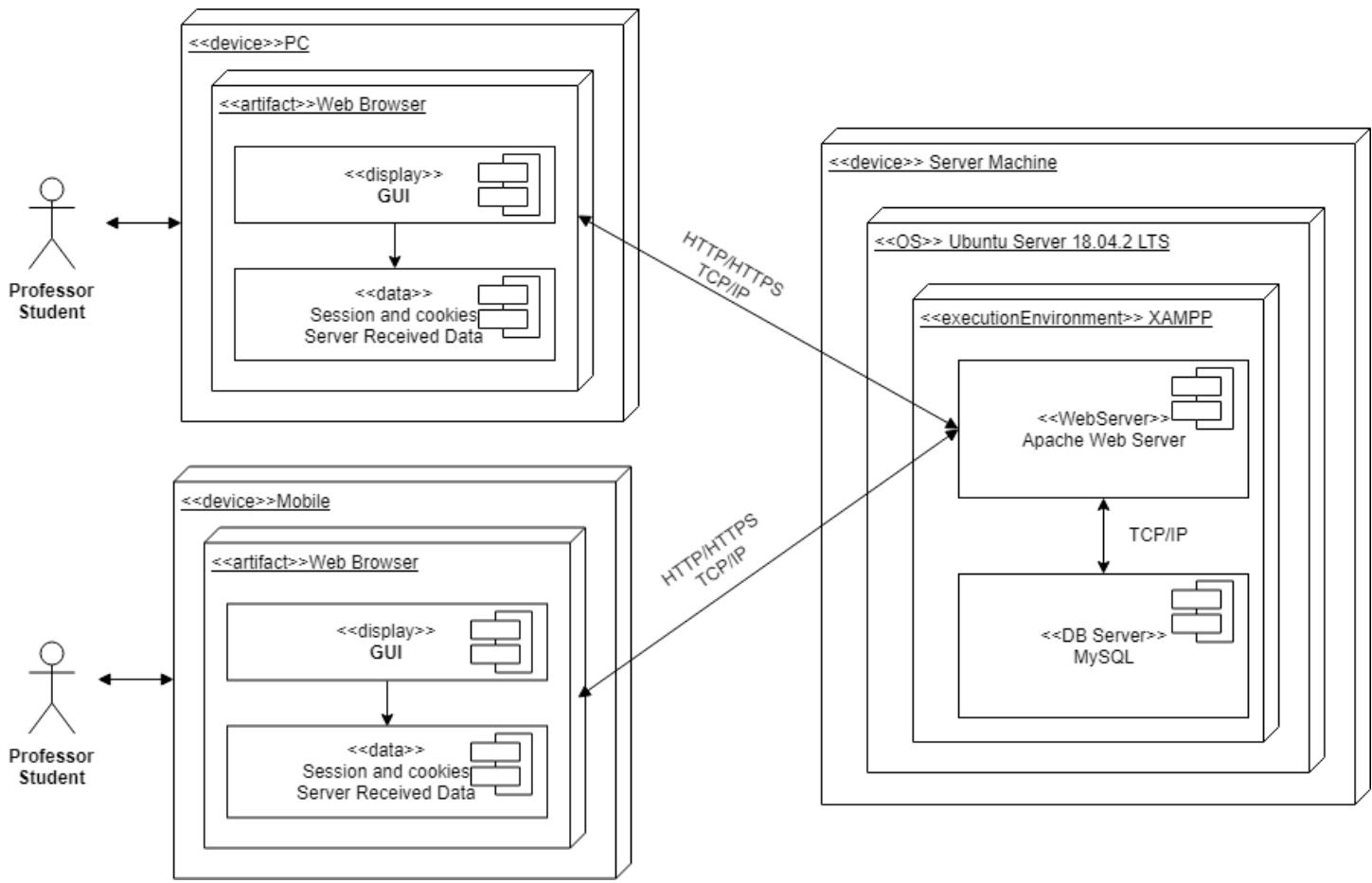
### Collaboration Diagram 1



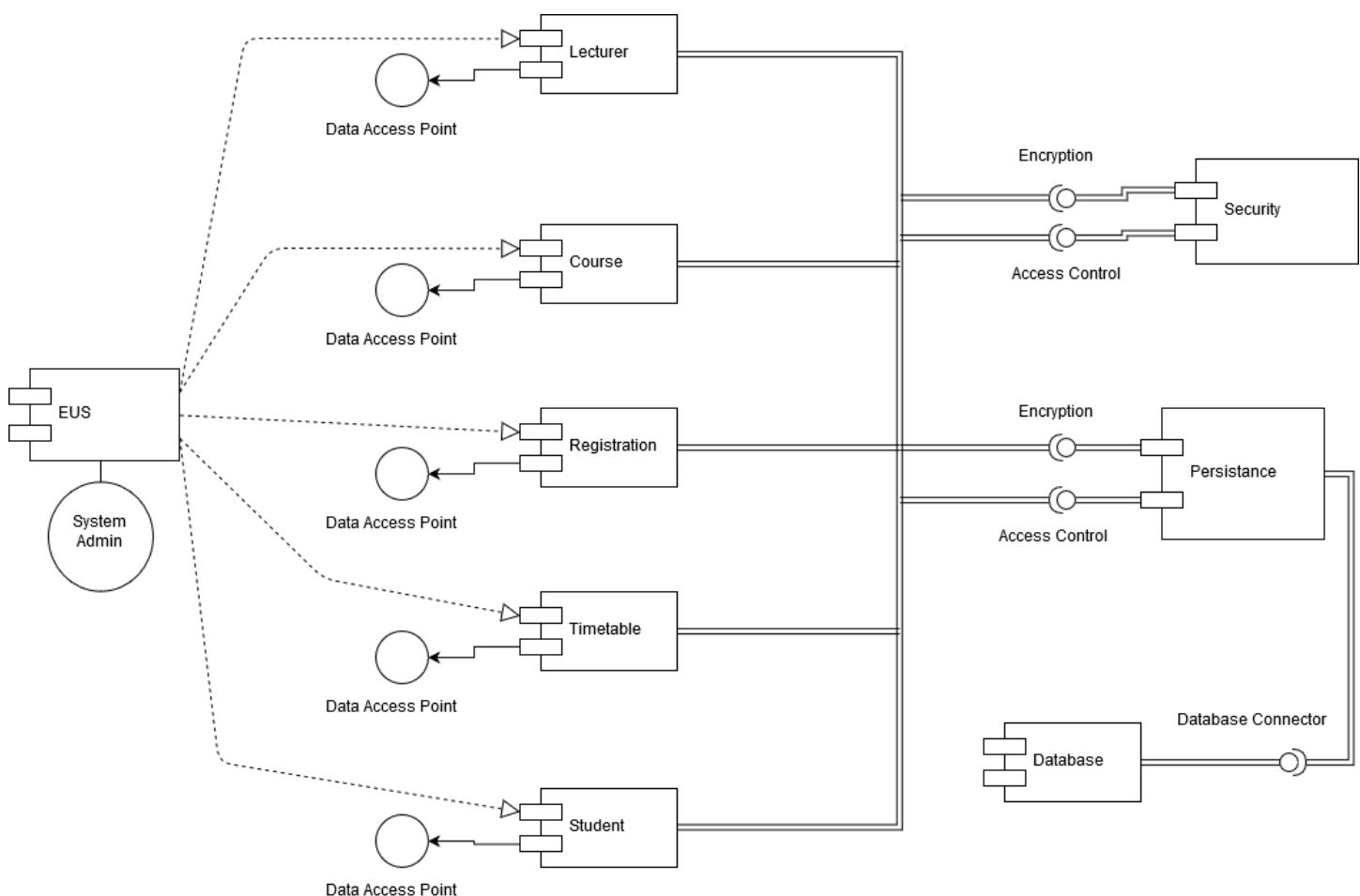
## Collaboration Diagram 2



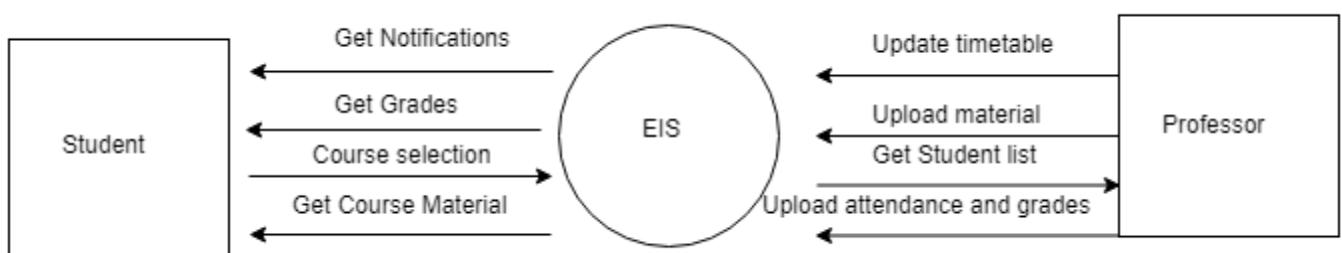
## Deployment Diagram



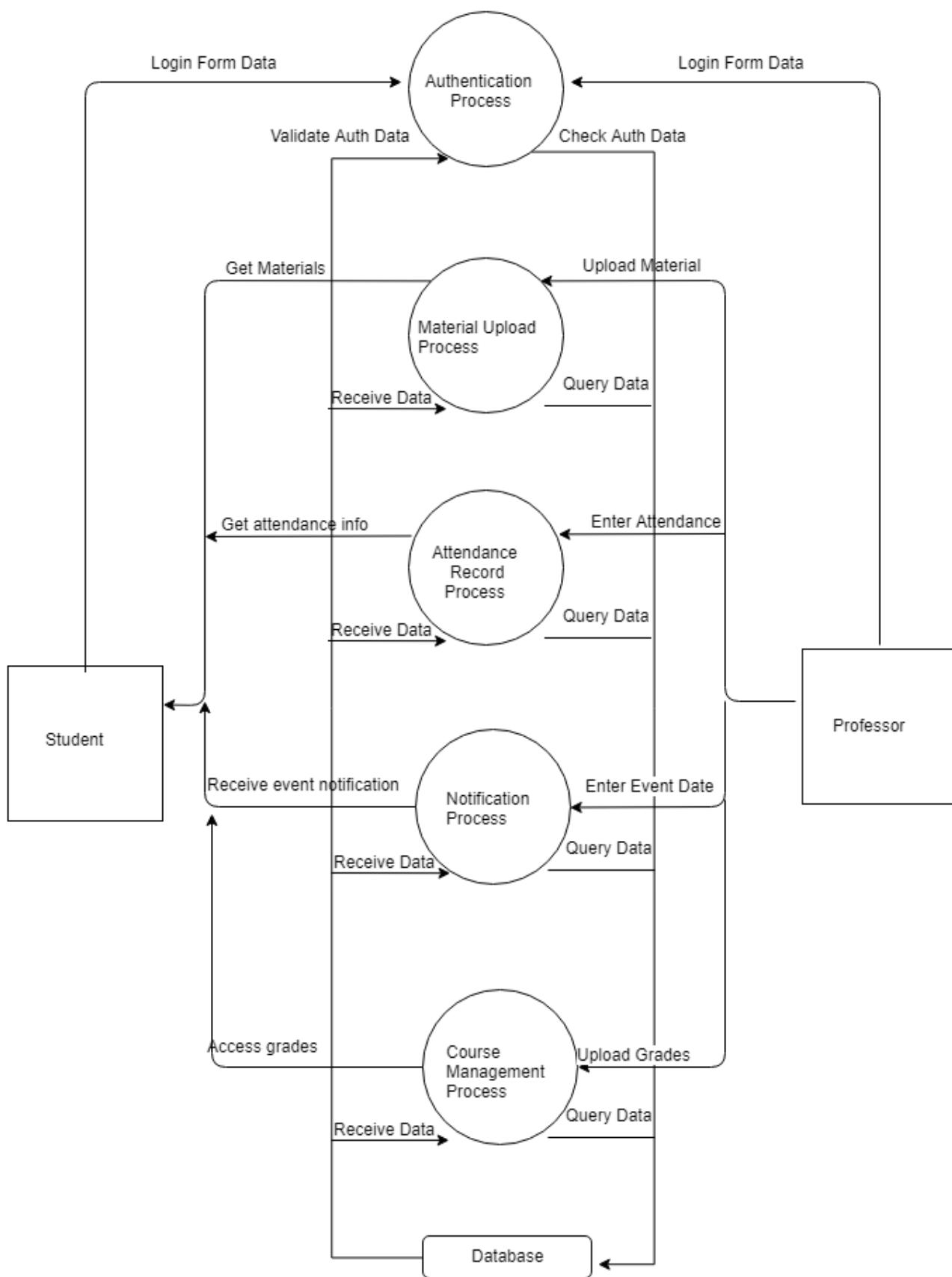
## Component Diagram

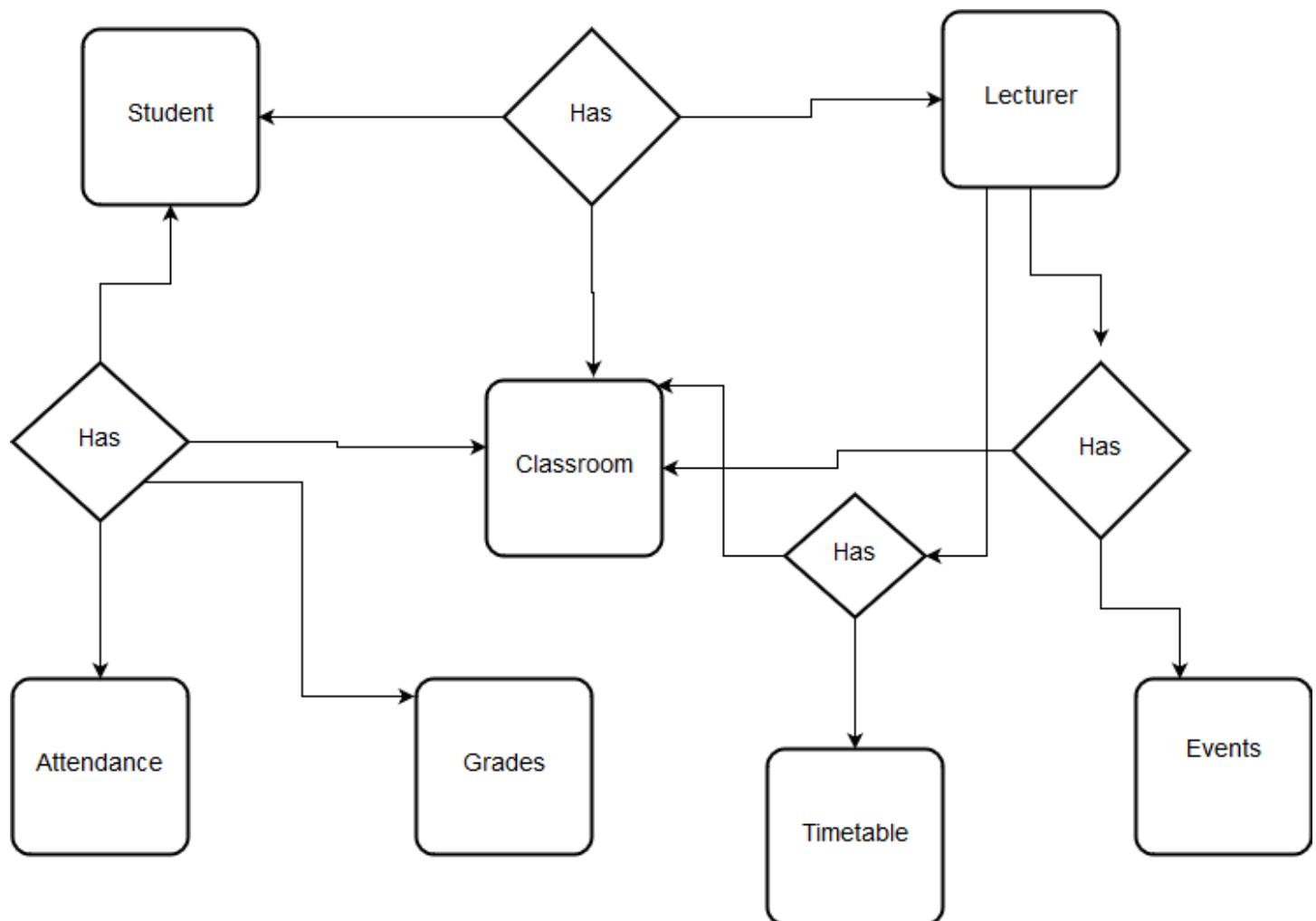


## Data Flow Diagram

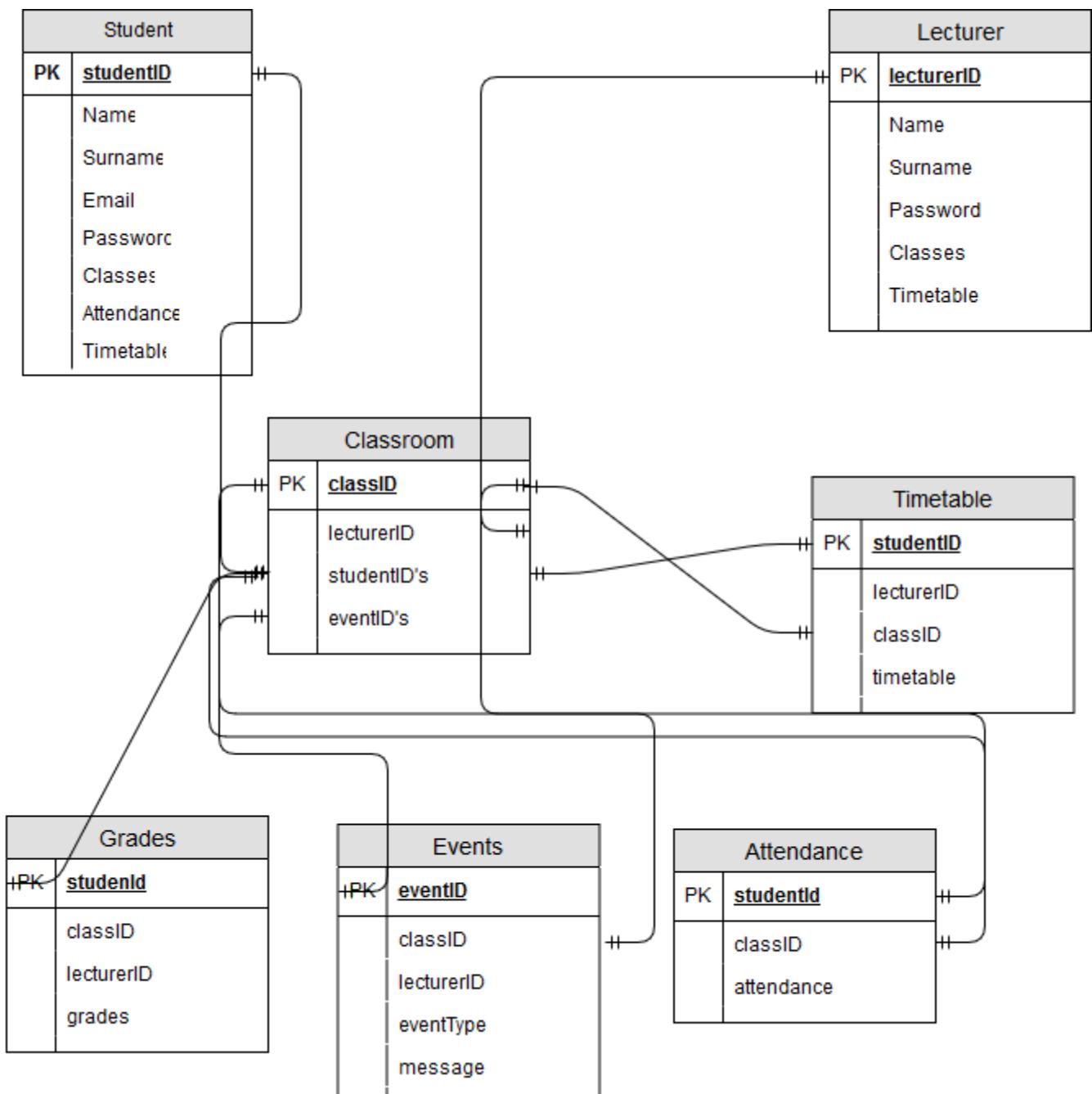


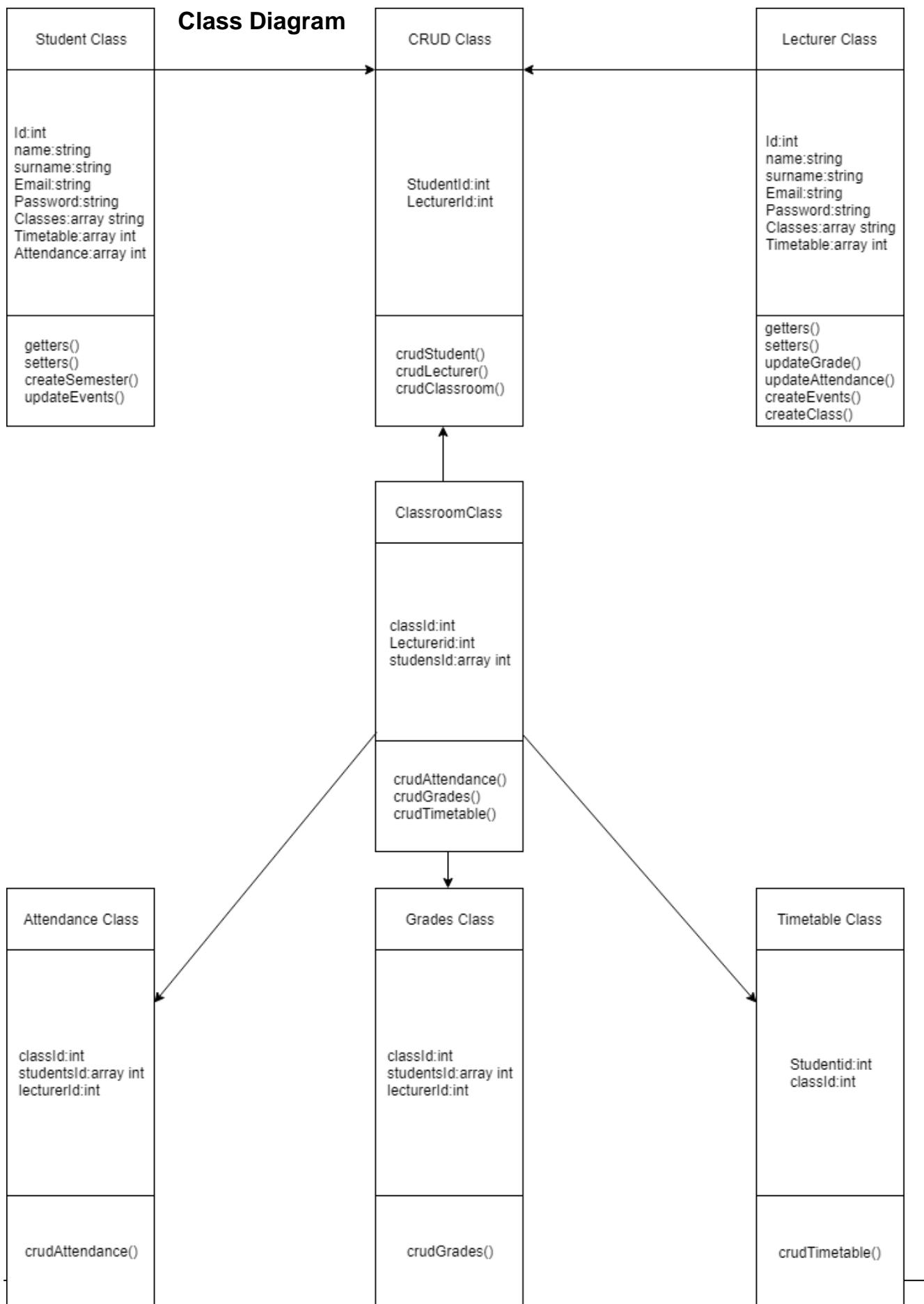
## Data Flow Diagram



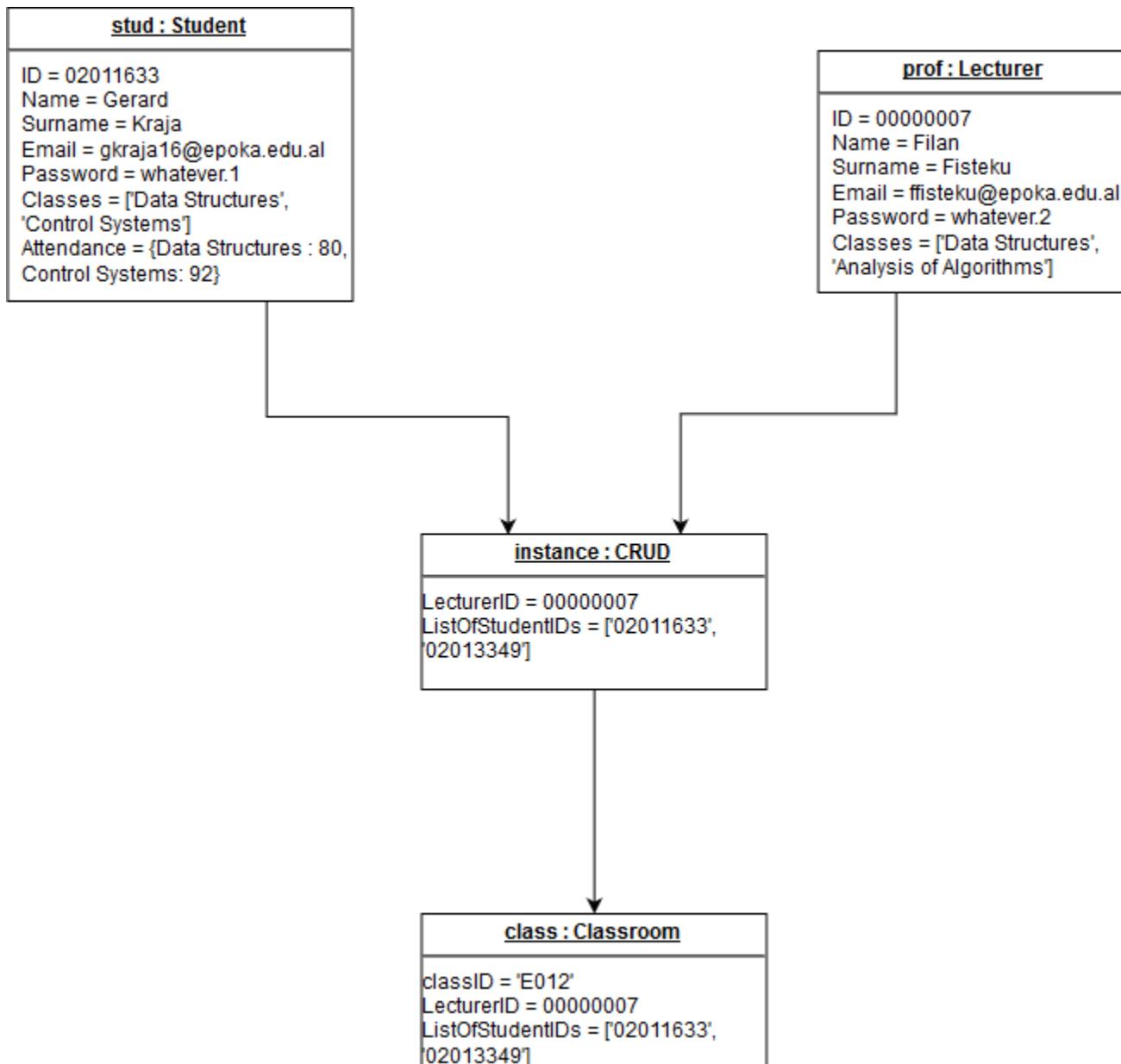
**ER Diagram**

## DB Schema

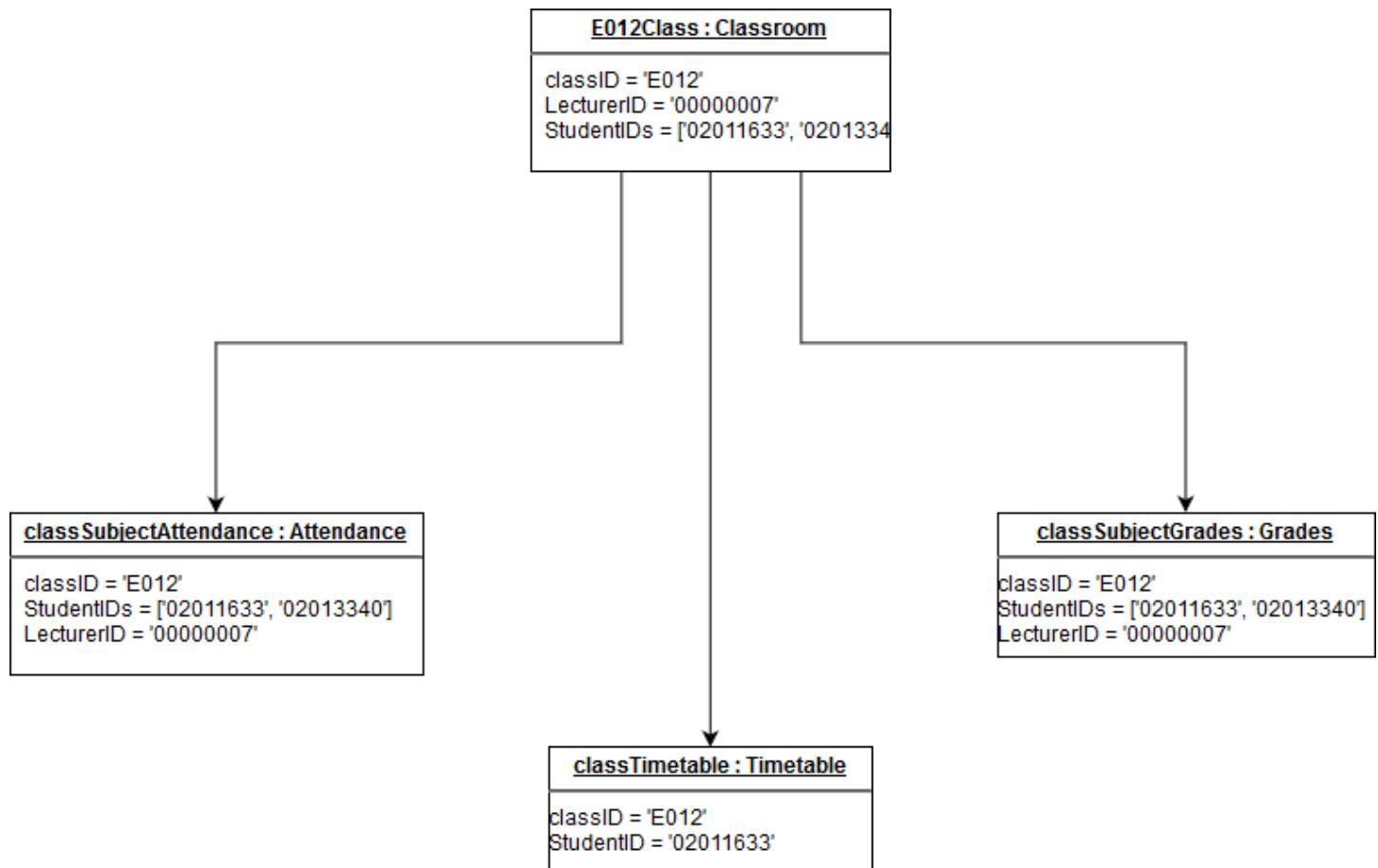




## Object Diagram 1



## Object Diagram 2



## **GROUP MEMBERS:**

Megi HOXHA ([mhoxha16@epoka.edu.al](mailto:mhoxha16@epoka.edu.al))

Ergi DERVISHAJ ([edervishaj16@epoka.edu.al](mailto:edervishaj16@epoka.edu.al))

Krist KOKALI ([kkokali16@epoka.edu.al](mailto:kkokali16@epoka.edu.al))

Paolo MIRAKA ([pmiraka16@epoka.edu.al](mailto:pmiraka16@epoka.edu.al))

Gerard KRAJA ([gkraja16@epoka.edu.al](mailto:gkraja16@epoka.edu.al))

Edlira PELI ([epeli16@epoka.edu.al](mailto:epeli16@epoka.edu.al))