

Software Design Description Specification

CENG 396

Software Engineering
Project

Project Group 1

Stage 3- Software Design Description
Specification

Names of members

Mert Alp Kuvandık 201911038

Emre Haser 201711407

Süleyman Serdar Erdemir 201811292

Volkan Mazlum 201811045

Table of Contents

List of Figures	3
1. Introduction	4
1.1. Purpose	4
1.2. Definition and Acronyms	4
1.3. Stakeholders and Their Concerns	4
2. References	5
3. System Overview	5
4. System Design	5
4.1. Architectural Design	5
4.2. Decomposition Description	7
4.3. System Modeling	9
4.4. User Interface Design	12
4.5. A brief description of each Team Member Contribution	14

List of Figures

Figure 1:	Class Diagram
Figure 2:	Layered Architecture Design for System
Figure 3:	High-Level Decomposition for Architecture Design
Figure 4:	Sequence Diagram of Manage Give Answers to Quiz/Test Use Case from Student
Figure 5:	Activity Diagram of Join Online Class Use Case from Student
Figure 6:	Sequence Diagram of Creating Course Use Case from Lecturer
Figure 7:	Activity Diagram of Managing a Course Use Case from Lecturer
Figure 8:	Sequence Diagram of Search User Use Case from Admin
Figure 9:	Activity Diagram of Search User Use Case from Admin
Figure 10:	User Interface Part-1 for Course Enrollment from the Use Case of Student
Figure 11:	User Interface Part-2 (When clicking button of Enroll) for Course Enrollment from the Use Case of Student
Figure 12:	User Interface Course Management (Add-Delete-Modify) from the Use Case of Lecturer
Figure 13:	User Interface Admin Page

1. Introduction

1.1. Purpose

Smart Edu Project is designed for the people who are want to improve themselves. This project that allows to improve the people whatever they want. They can study university lectures, high school courses, specific jobs, etc. to build up themselves for their life. They can internship our companies to learn their jobs and can do some careers also.

1.2. Definition and Acronyms

- **Auditory, Visual, Linguistic, and Logical:** These represent different types of tests. An effort is made to produce a test suitable for each student. That is, tests/quizzes suitable for different types of intelligence such as auditory, visual, linguistic, and logical will be produced by the lecturer. This is a new generation method.
- **Class:** Classes, on the other hand, are like short seminars on current topics that are not continuous like courses. Courses are divided on this subject. It may also contain materials such as courses.
- **Course:** Courses are courses where people can get information about the subject, they want through the materials uploaded by the lecturer.
- **Grade:** It represents the test/quiz score taken by the student according to the results he/she has uploaded.
- **Manage:** It is involved in most parts of the project. It means only one thing. Indicates that it hosts more than one job. For example, manage test/quiz means that you can both upload and delete a quiz on the system.
- **Podcast:** A podcast is a music-like document or audio recording that the student must upload in response to questions. It is a new generation method.
- **Result:** It represents the answers given to the questions in the tests. It does not mean the test result or answer. It represents the answer given by the student.

1.3. Stakeholders and Their Concerns

Stakeholders in this project can be categorized into 4 groups as Student, Lecturer, Company, and Admin.

Lecturer: These users are responsible for creating and modifying the resources that the system will make available to students. Developing course resources such as courses and classes enables the student to communicate with the system and causes them to benefit from this system. In addition, they must prepare tests and quizzes according to the specific exam types chosen by the user so that they can test themselves.

Student: These users are related to the courses and internships they will take from the system to improve themselves. Responsible for attending and completing these courses.

Company: These users are responsible for creating and modifying the resources that the system will make available to students. Developing course resources such as internships enables the student to communicate with the system and causes them to benefit from this system. Company users can add duties to these internships to see if the student will benefit the company later.

Admin: These people are concerned with the technical issues of the system. Their main responsibility is to provide maintenance through handling possible conflicts that arises while system is operating. They will make sure that system is working well in general with controlling system servers, databases, and other system users. Besides they will keep the system up to date with making necessary modifications related with bugs or improvements of the system whenever system needs so.

2. References

IEEE Computer Society. (2009). *IEEE Standard for Information Technology—Systems Design— Software Design Descriptions*. IEEE. New York: IEEE. IEEE Std 1016

Other sources:

Sommerville, I. (2016). *Software engineering*. Boston: Pearson Education Limited.

3. System Overview

Smart Edu Project is online education and internship website that students can take lessons and use these lessons as a tool to find internship in companies working with Smart Edu.

Design of website will be four parts.

- First parts for students. Students can choose and enroll courses. Also, students can apply internship via their certificates.
- Second part is lecturers. Lecturers can open courses, see the student that enroll those courses. See the company information.
- Third part is companies. Companies can see the applications. Also writes their requirements in their pages.
- Fourth part is admin page. Admin can approve or disapprove users. Admin can create, modify, or delete user. Also, can make announcements for all or specific user.

4. System Design

4.1. Architectural Design

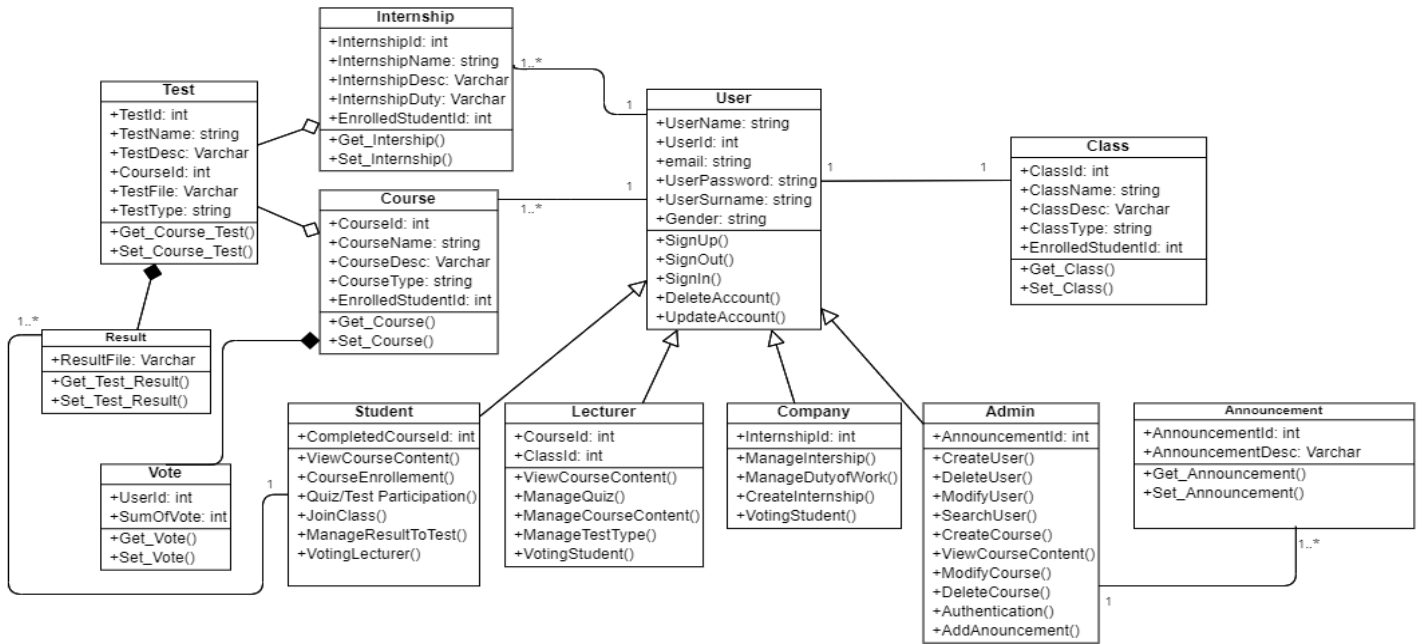
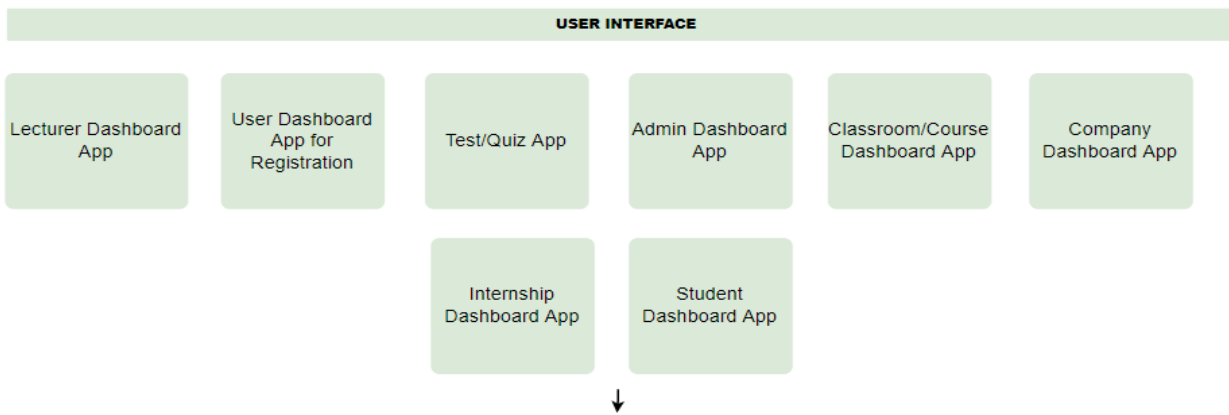
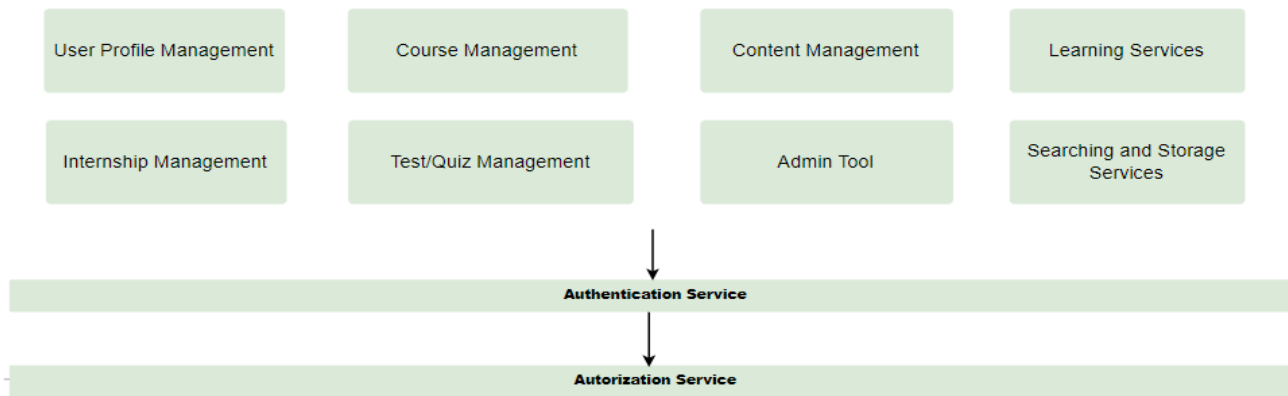


Figure 1: Class Diagram

Application Layer



Service Layer



Data Repository



Figure 2: Layered Architecture Design for System

Our system consists of layered architecture. The layered architecture enables the incremental development of systems. While a layer is being developed, some of the other services provided by that layer may be offered to users. It consists of 3 layers. In the application layer, the user encounters the main interface. Afterward, these interfaces can be diversified according to their wishes. The service layer provides the functions of the interfaces that reach this layer in the application layer, that is, brought with the web browser. According to the operation that users want to do (test participation in students, user management in admin, etc.), they can use the operations allowed by their roles. In the last layer, the changed data is updated in the database by working according to the needs of the system. In addition, in this last layer, a good database management is used, and movement management and permanent data storage capability is brought into the system.

4.2. Decomposition Description

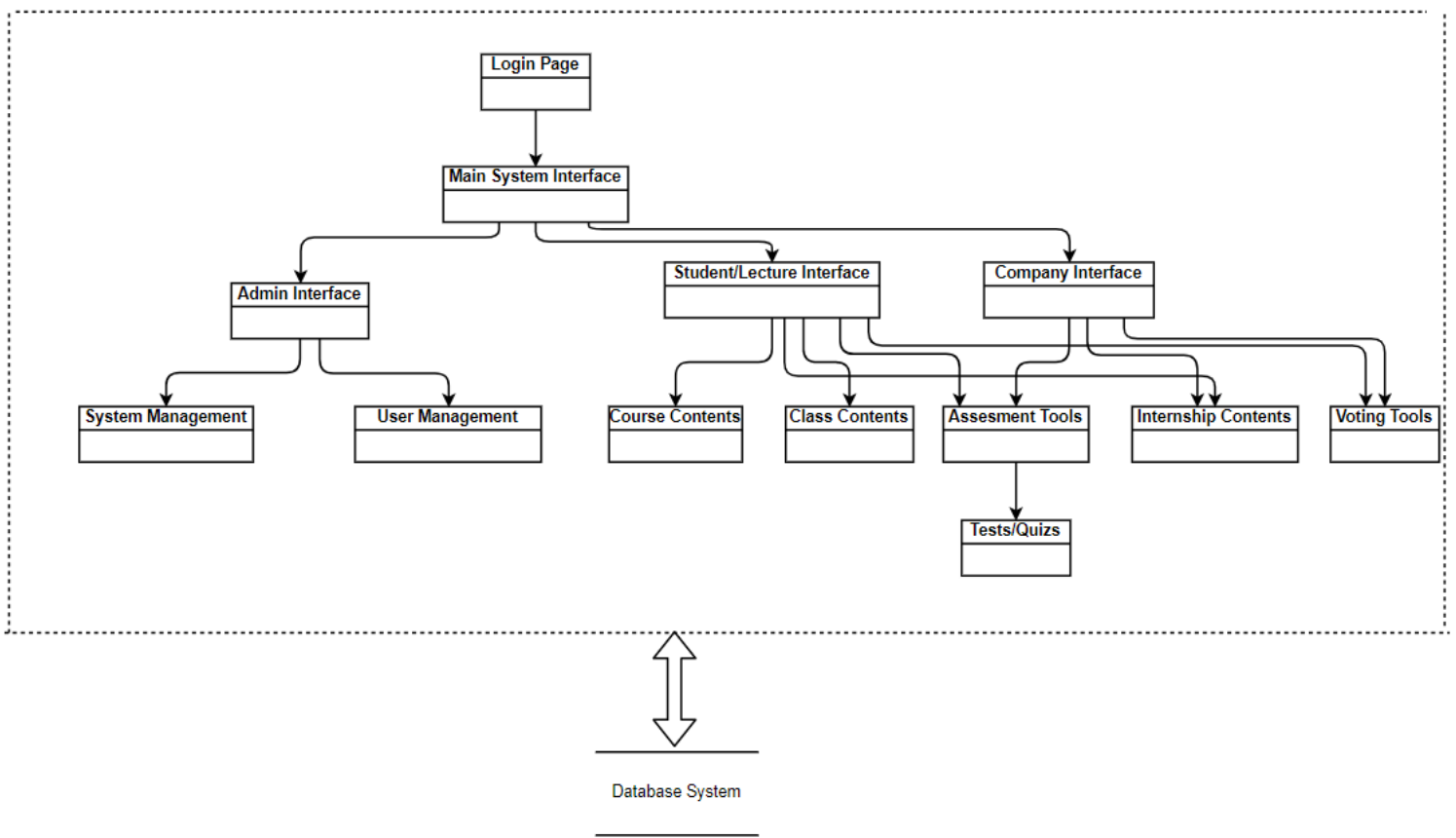


Figure 3: High-Level Decomposition for Architecture Design

Every package in our first layer comes out of the user interface package. First, the user must come to the user interface package and orient himself to other subsystems with directions according to the desired operation or the role he has. As mentioned above, there are only interfaces in the application layer. According to the choices made in this section, the user will be directed to the subsystems in the service layer and will perform the desired operation here. The changed data according to the changes made will be processed in the data repository layer and the necessary places will be updated. To give a brief example of subsystems. Internship management offers different operations according to the user type. If the person is a company, they can add an internship and delete an existing internship. If the user is a student, he/she can register for the internship available in the system. In the learning services subsystem, it is responsible for bringing the resources such as video and pdf that are uploaded to the system, which will form the infrastructure of the training received, such as Course/Class. User management is responsible for fetching and updating, deleting, or modifying the data in the user's profile. The data access subsystem, on the other hand, needs to replace the changed data in the database and update them with the new data.

4.3. System Modeling

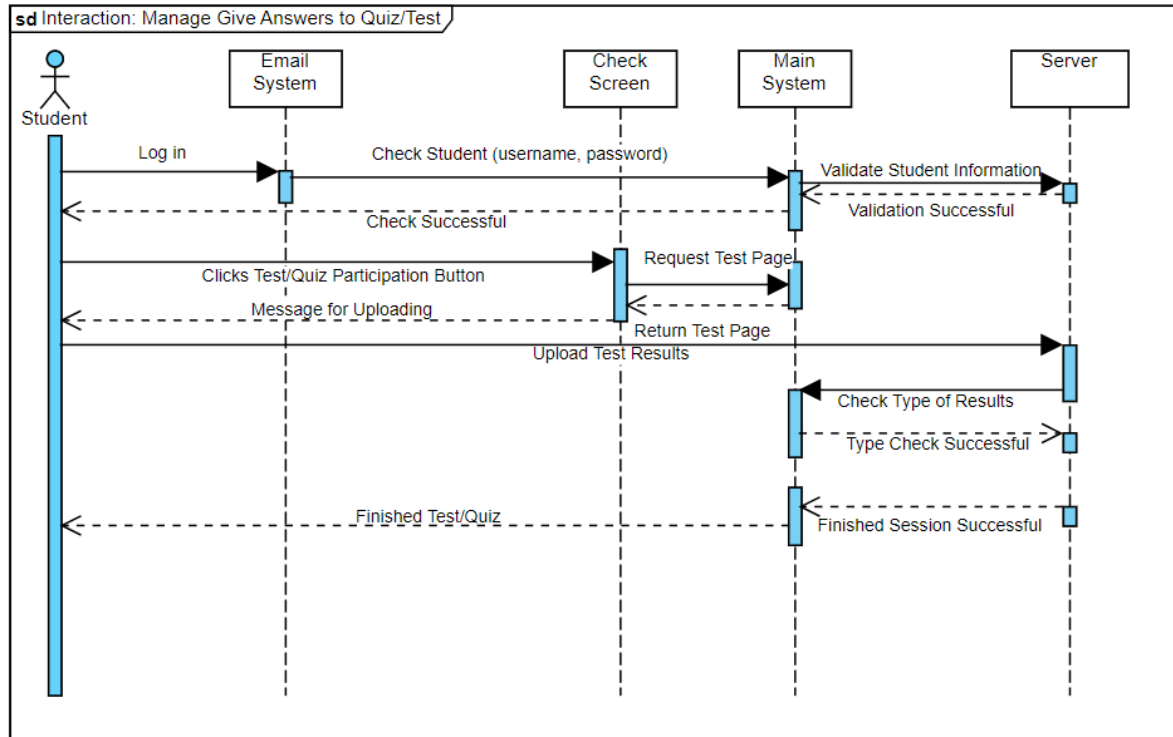


Figure 4: Sequence Diagram of Manage Give Answers to Quiz/Test Use Case from Student

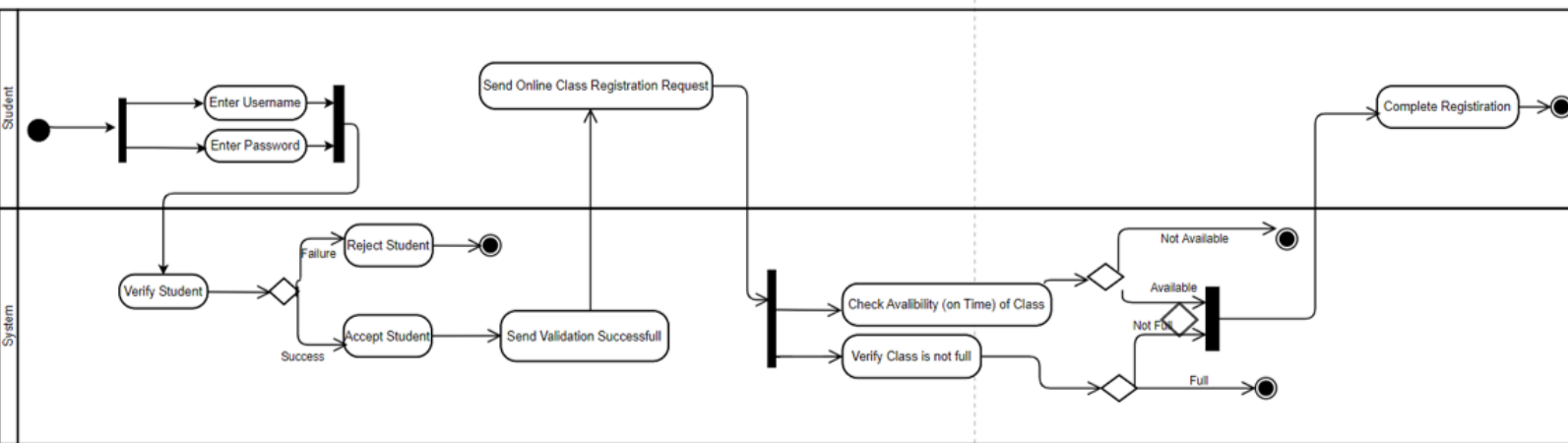


Figure 5: Activity Diagram of Join Online Class Use Case from Student

Creating a course

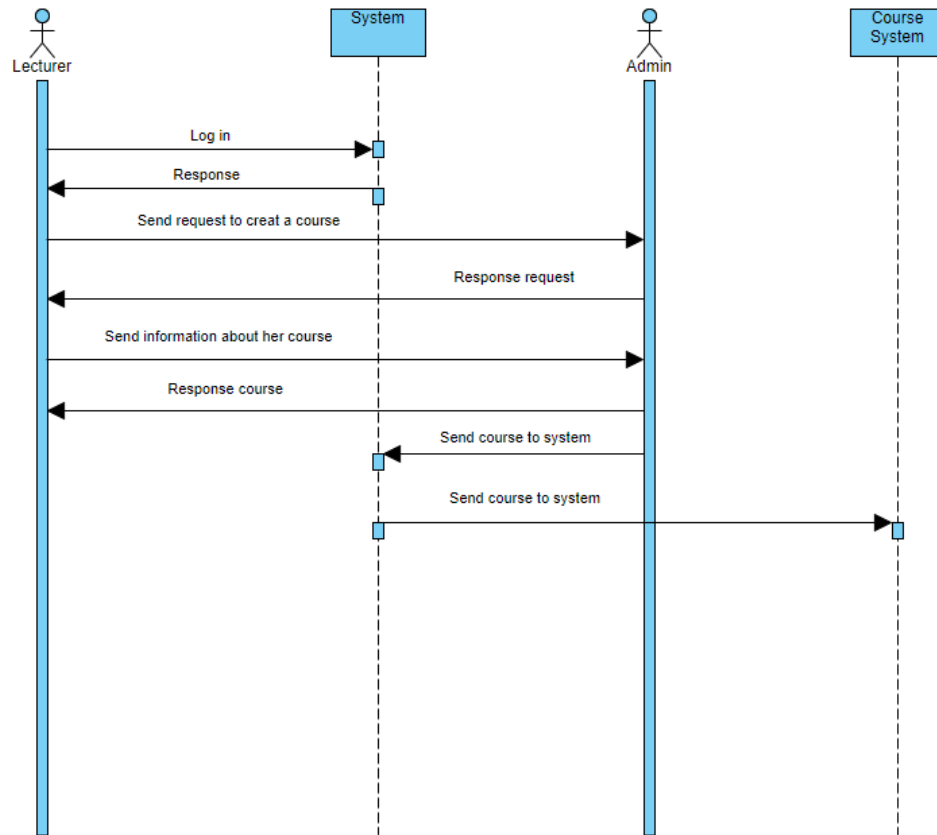


Figure 6: Sequence Diagram of Creating Course Use Case from Lecturer

Managing a course

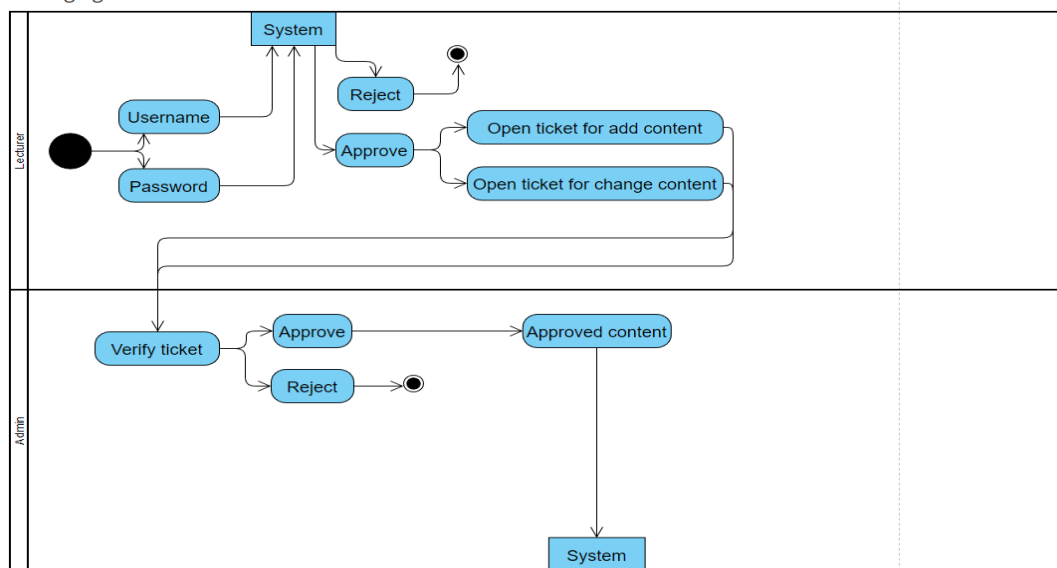


Figure 7: Activity Diagram of Managing a Course Use Case from Lecturer

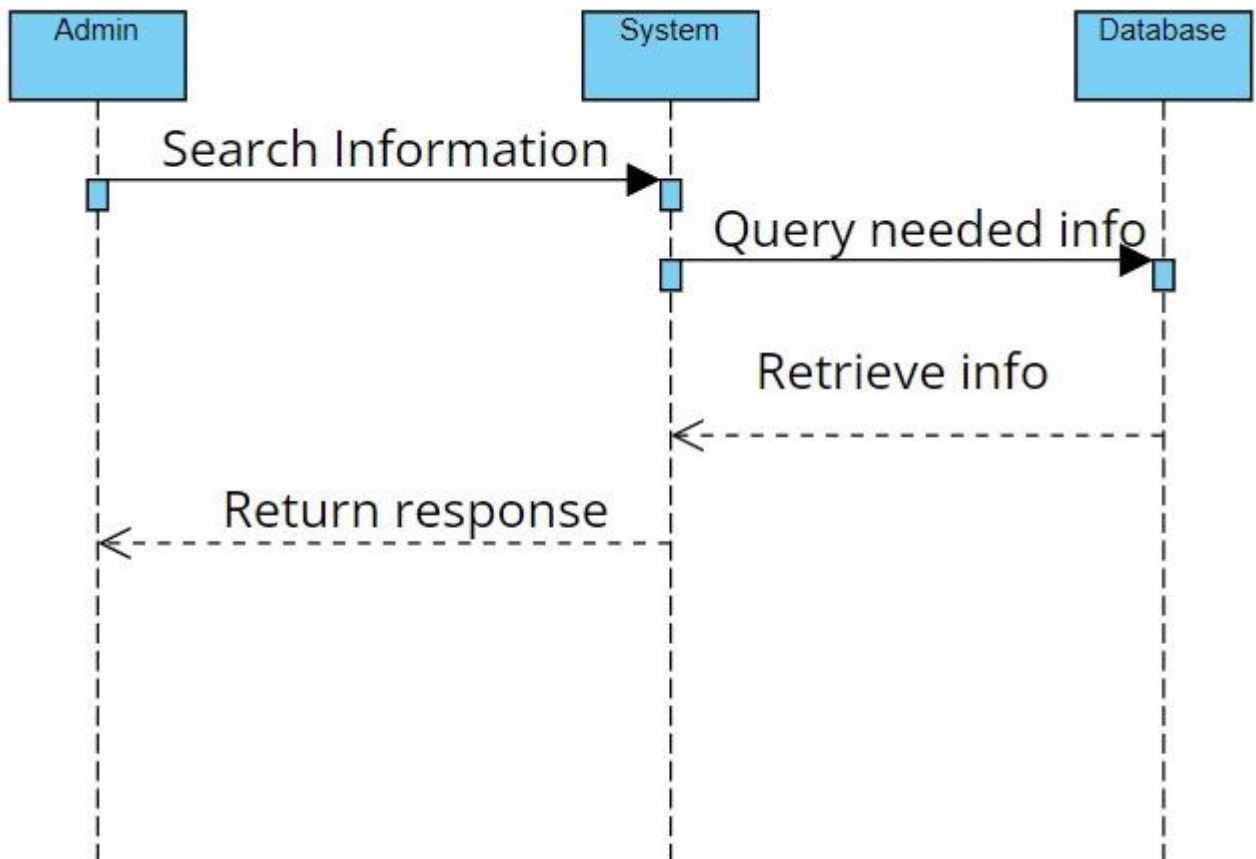


Figure 8: Sequence Diagram of Search User Use Case from Admin

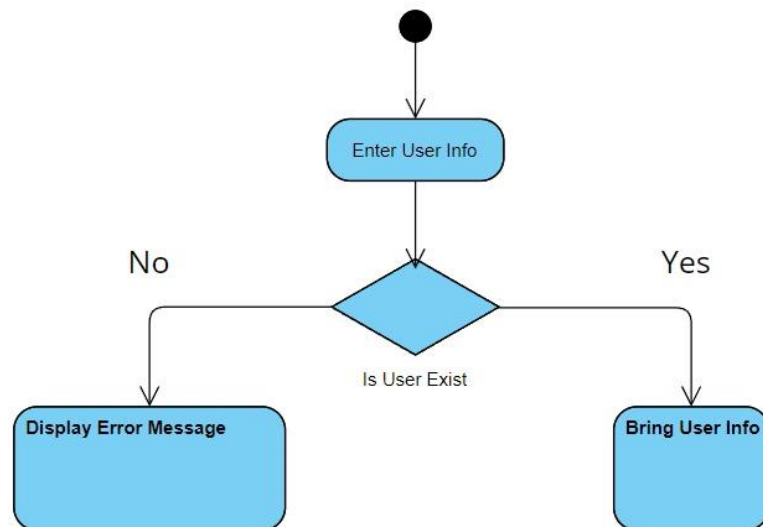


Figure 9: Activity Diagram of Search User Use Case from Admin

4.4. User Interface Design

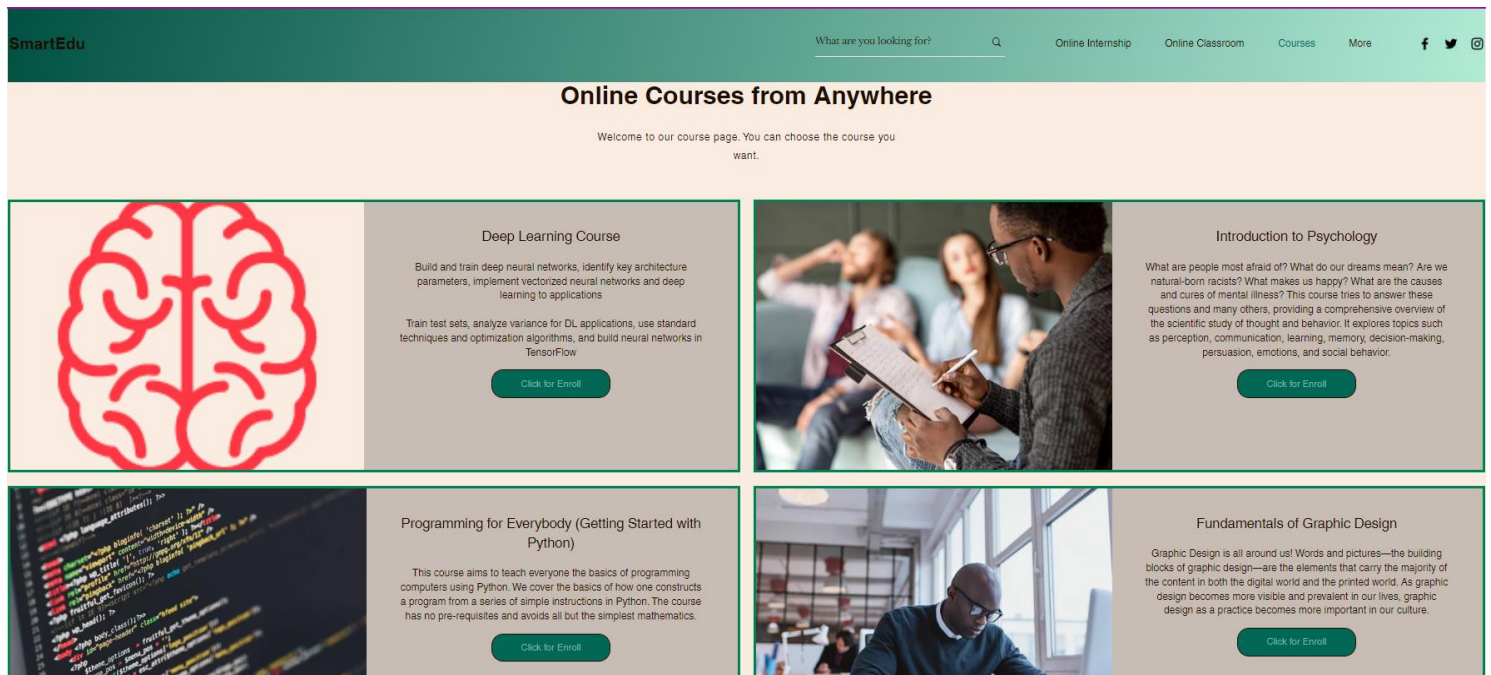


Figure 10: User Interface Part-1 for Course Enrollment from the Use Case of Student

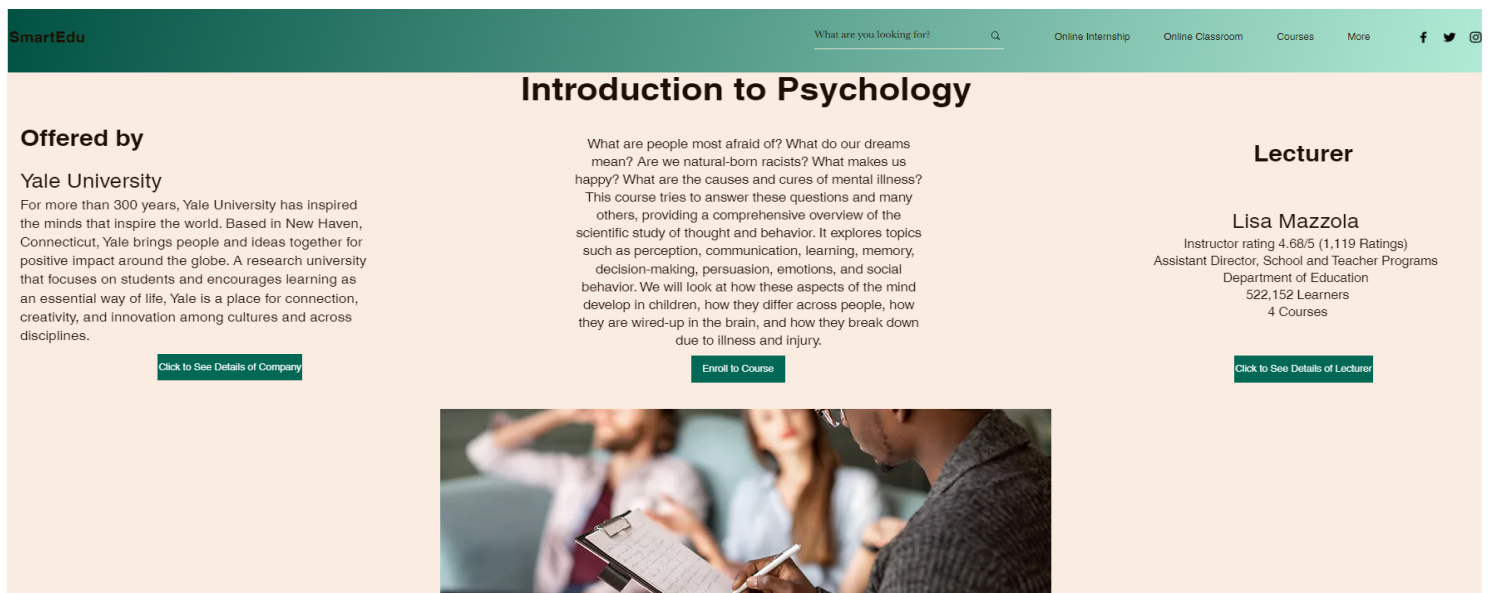


Figure 11: User Interface Part-2 (When clicking button of Enroll) for Course Enrollment from the Use Case of Student

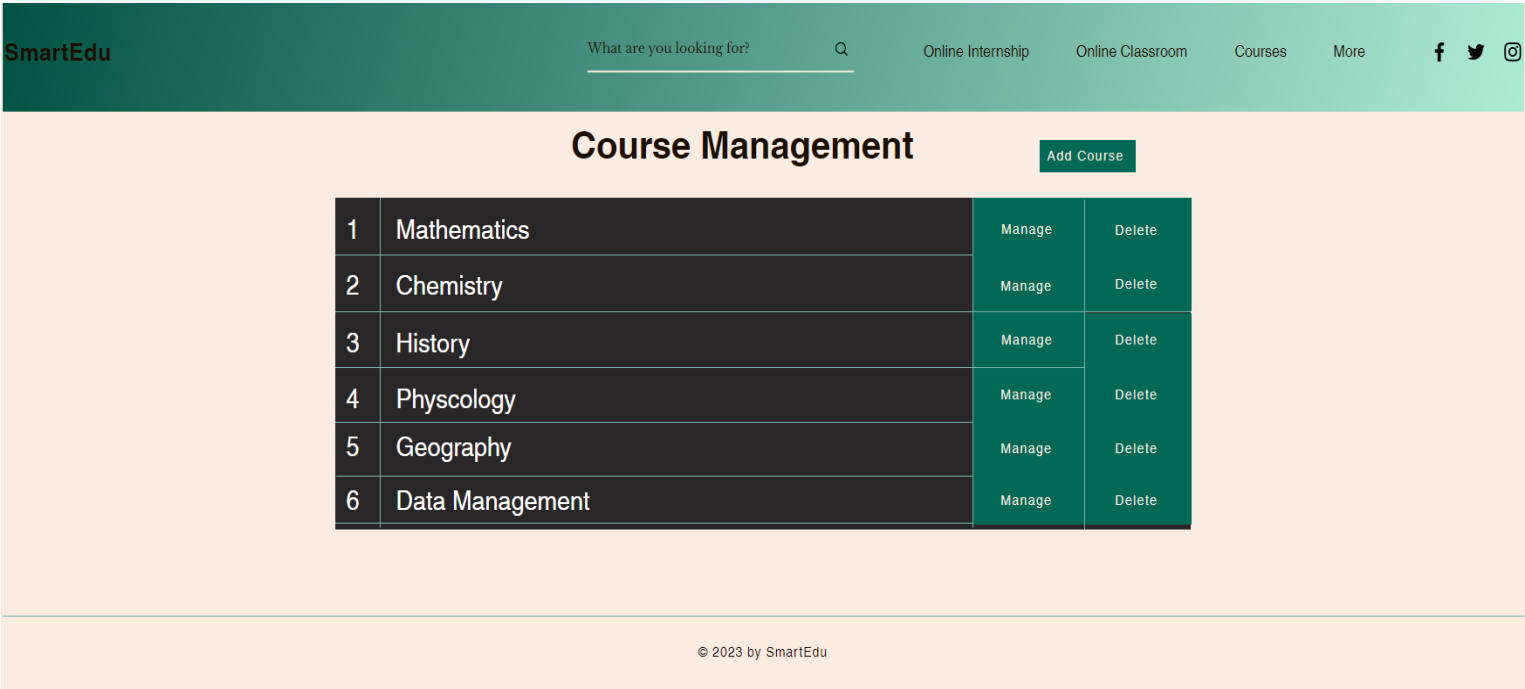


Figure 12: User Interface Course Management (Add-Delete-Modify) from the Use Case of Lecturer

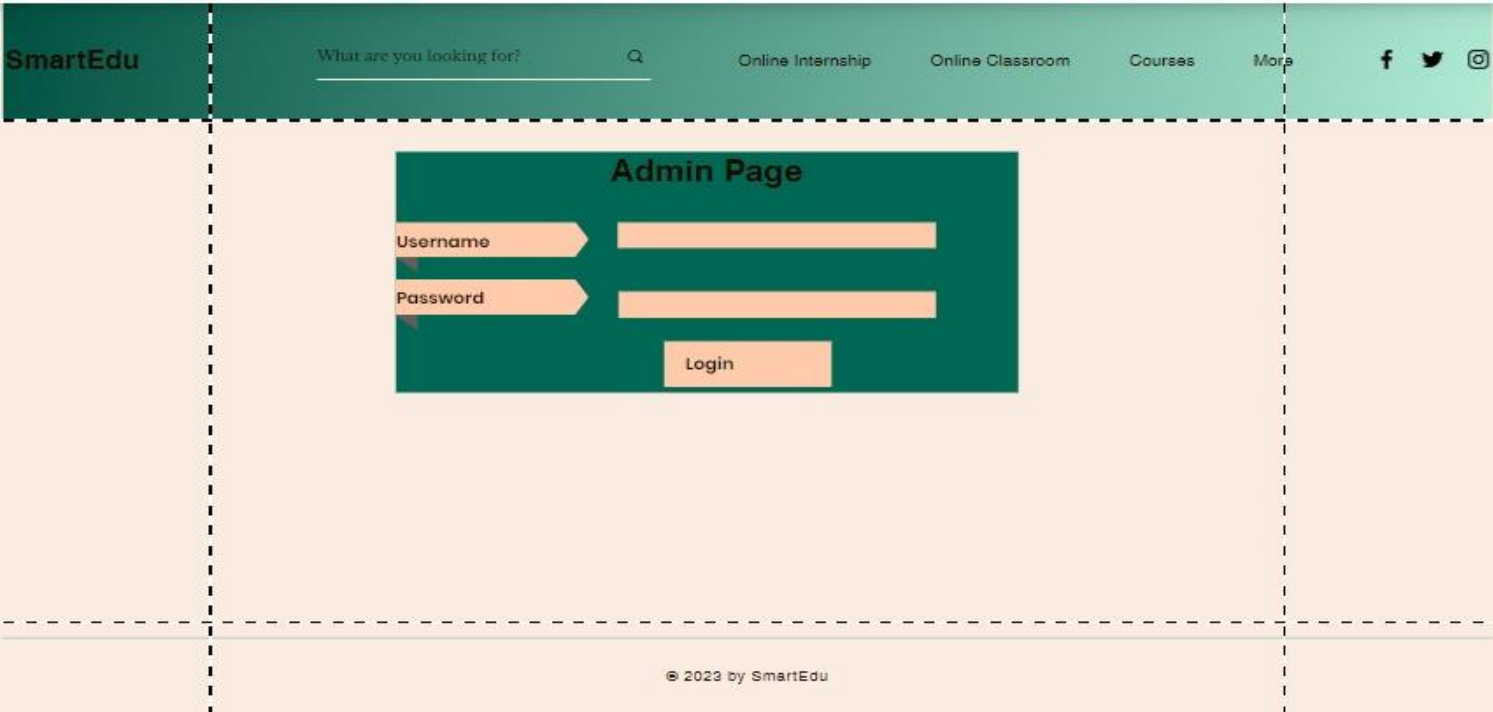


Figure 13: User Interface Admin Page

4.5. A brief description of each Team Member Contribution

Name:	Volkan Mazlum
<ul style="list-style-type: none">• Figure-1,2,3,4,5,10,11 are made by Volkan.• Part of Stakeholders and Their Concerns is made by Volkan.	

Name:	Süleyman Serdar Erdemir
-	

Name:	Mert Alp Kuvandık
<ul style="list-style-type: none">• Figure-8,9,13 are made by Mert.• Part of System Overview is made by Mert.	

Name:	Emre Haser
<ul style="list-style-type: none">• Figure-6,7,12 are made by Emre.• Part of Purpose is made by Emre.	

