LinkedHU_CENG
Software Design Description

1. Revision History

Version	*Date*	*Author*	*Change Description*
0.1	30.04.2022	Tuğçe Kızıltepe	Introduction and, Design Constraints and Decisions
0.2	30.04.2022	Mert Doğramacı	Class diagram added.
0.3	30.04.2022	Murat Çelik	Sequence Diagrams and State Diagrams added.
0.4	01.05.2022	Humeyra Uçar	Requirement traceability matrix added
0.5	01.05.2022	Mert Doğramacı Murat Çelik	User Interface Designs added.
0.6	01.05.2022	Humeyra Uçar	Explanations of User Interface Design added
0.7	01.05.2022	Sümeyye Meryem Taşyürek	E-R diagram is added.
1.0	01.05.2022	Tuğçe Kızıltepe Mert Doğramacı	Document completed with small appendices and reviewed.

2. INTRODUCTION

2.1 Purpose and Scope

Purpose of this document is to represent the project design as it complies with functional and non-functional requirements that are described in the SRS document. This document explains the LinkedHU_CENG project. It describes the project with necessary and extensive information and conveys this information to the design's stakeholders. It addresses design concerns. It includes architectural diagrams, illustrations of the design, and tools to represent the structure of the software. It contains references to comprehensive specification of smaller pieces of the software design.

2.2 Document Overview

This document consists of 6 sections. In order, as follows: Revision history, introduction, design constraints and decisions, design details, requirements traceability and annexes.

1. Revision History section is used to keep track of changes.
2. In the Introduction section, there are 5 subsections.
    a. Purpose and scope subsection describes the purpose and scope of the document.
    b. Sections of the document are summarized in the document overview subsection.
    c. System overview subsection gives a general description of the complete system using diagrams.
    d. In Definitions, Acronyms, and Abbreviations subsection, all non-standard terms, acronyms and abbreviations that are unique to this document should be included.

e. References include the references to other documents.

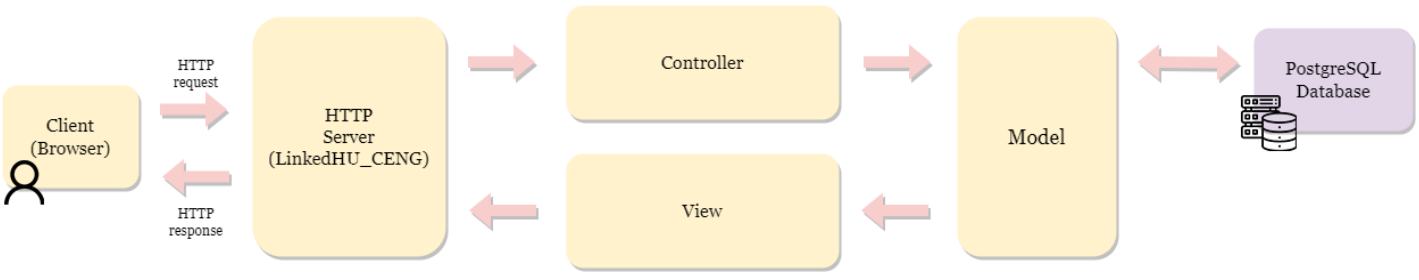
3. Design constraints and decisions, the general constraints imposed by the design process and their effects on the system architecture, as well as constraints imposed by the hardware and software environment and design decisions, are discussed in this section.
4. Design details, the design model that was defined during the architectural design phase is further developed. There are 4 subsections.
    a. Software Component, the class diagram is included.
    b. The Software Behavior section includes 10 sequence diagrams and 5 state diagrams for critical use-cases specified on SRS.
    c. In the Data Model (E-R Diagram) section, a diagram of the parts that make up the data model, as well as their relationships, is illustrated.
    d. The User Interface Design section shows interfaces. A more detailed version of the interfaces supplied in the SRS file has been updated.
5. In the Requirements Traceability section, the relationship between requirements and software design is shown, and the relationship between classes and requirements is represented by the traceability matrix.
6. In the Annexes section, parts of the document that need to be explained in more detail are included.

2.3 System Overview

LinkedHU_CENG is a web based online networking platform for students, graduates and academicians at Hacettepe University who want to connect with each other. It provides an easy-to-use interface. 6 key functionalities of the system are provided in a diagram.

The system is built on MVC pattern. The system is structured into three logical components that interact with each other. Model component manages data and associated operations on that data. View component defines and manages how data is presented to the user. Controller component manages user interaction (e.g., key presses, mouse clicks, etc.) and passes these interactions to View and Model.

There are four actors: administrator, academicians, students, and graduates. Administrator manages the system and users. Academicians can add resources and other users can have access to these resources.



PostgreSQL is selected as the database of the project. When a client makes a request to the system, response is returned using MVC architecture.

2.4 Definitions, Acronyms, and Abbreviations

Term/Acronym	*Definition*
MVC	Model-View-Controller
GUI	Graphical User Interface
SRS	Software Requirements Specification

2.5 References

There is no reference.

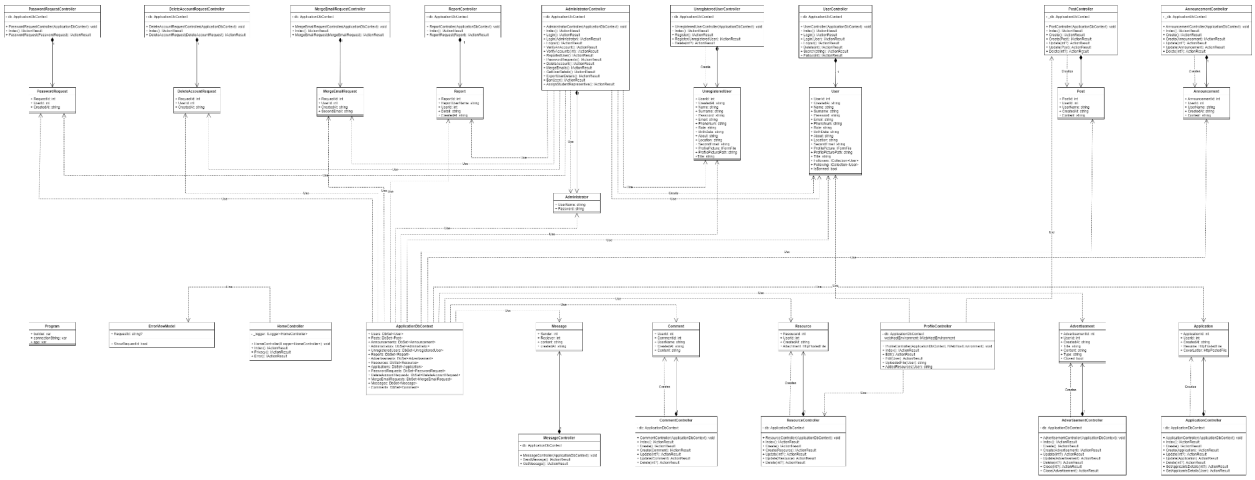
3. Design Constraints and Decisions

- The project is built on MVC architectural patterns There are 3 components: mode, view, controller.
- Any user who is not registered and not logged in, does not have access to the system. In this case, the user can only see the homepage for not logged in users.
- Registration of users is completed by approval of the administrators.
- This project is a web application. It should be flexible under the constraints of the universal web applications.
- The system should be unaffected by the operating system and browser.
- The back-end of our system is handled by ASP.NET Core 6 using C# programming language. MVC architecture is provided by ASP.NET
- In the frontend, Javascript, CSS, HTML are used.
- PostgreSQL is selected as the database of the project.
- Github is used for software development and version control. Issues and bugs are tracked from the Projects section of the demo-final repository. Codes present in the Github repository.
- Administrators manage accounts. They can ban users, assign student representatives etc.
- Any user can create advertisements.
- The system should be reachable at least 99% of the 24 hours a day and 7 days a week.
- The private messages that are sent between users shall be stored in encrypted form.
- Error handling is done and error messages are shown to the user.
- The GUI should be easy-to-use and simple.

4. Design Details

4.1 Software Components

- Class Diagram



To see it clearly, click here.

4.2 Software Behavior

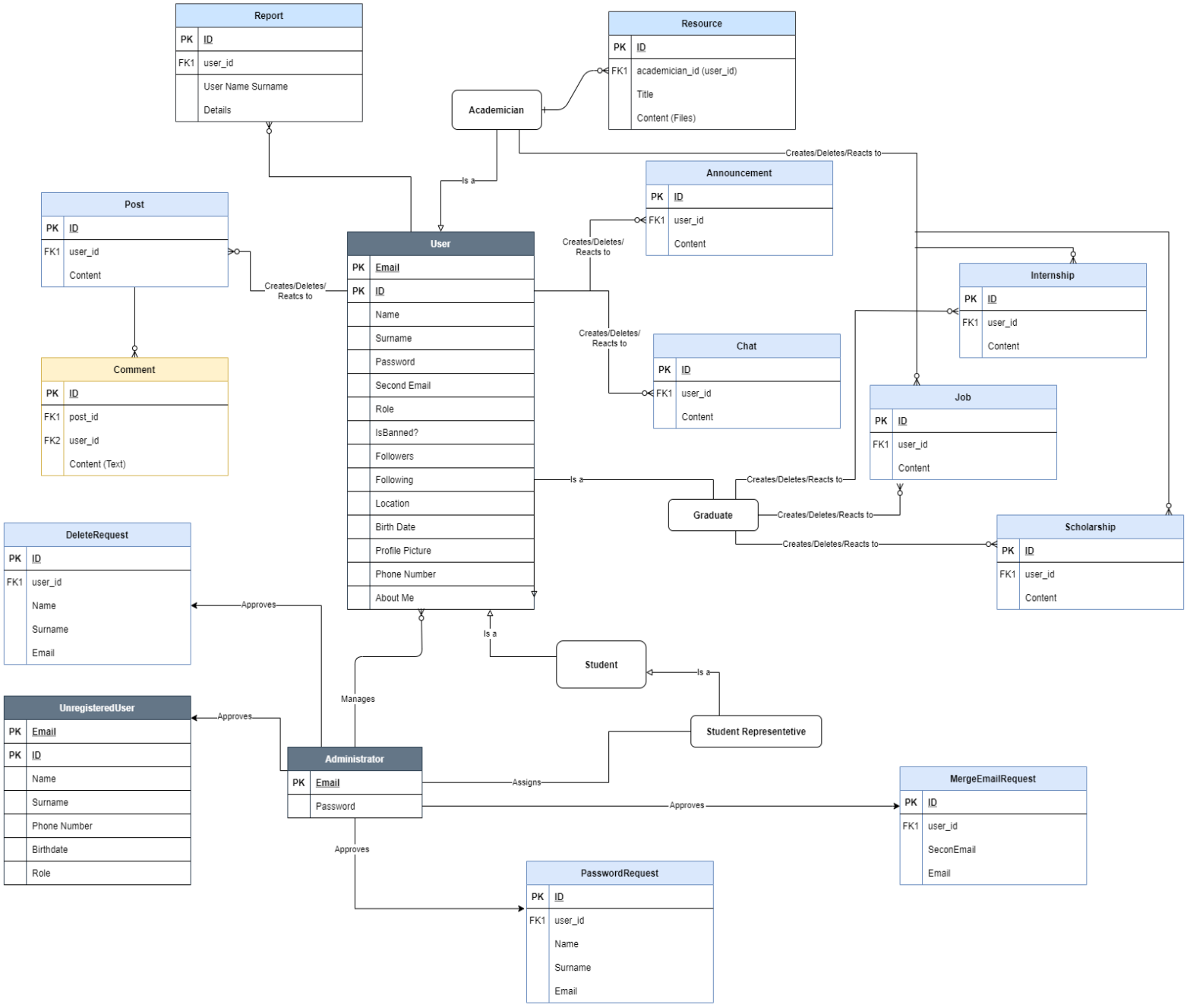
1. Sequence Diagrams

   Sequence diagrams are shown in Annex A document.

2. State Diagrams

   State diagrams are shown in Annex A document. In state diagrams, you can see the states and changes of classes.

4.3 Data Model (E-R Diagram)



4.4 User Interface Design

When the guest enters the website, the main screen greets him, and he can access the relevant form pages by using one of the sign-up and login buttons. Then, the necessary information is filled in these form pages and the system is logged in.

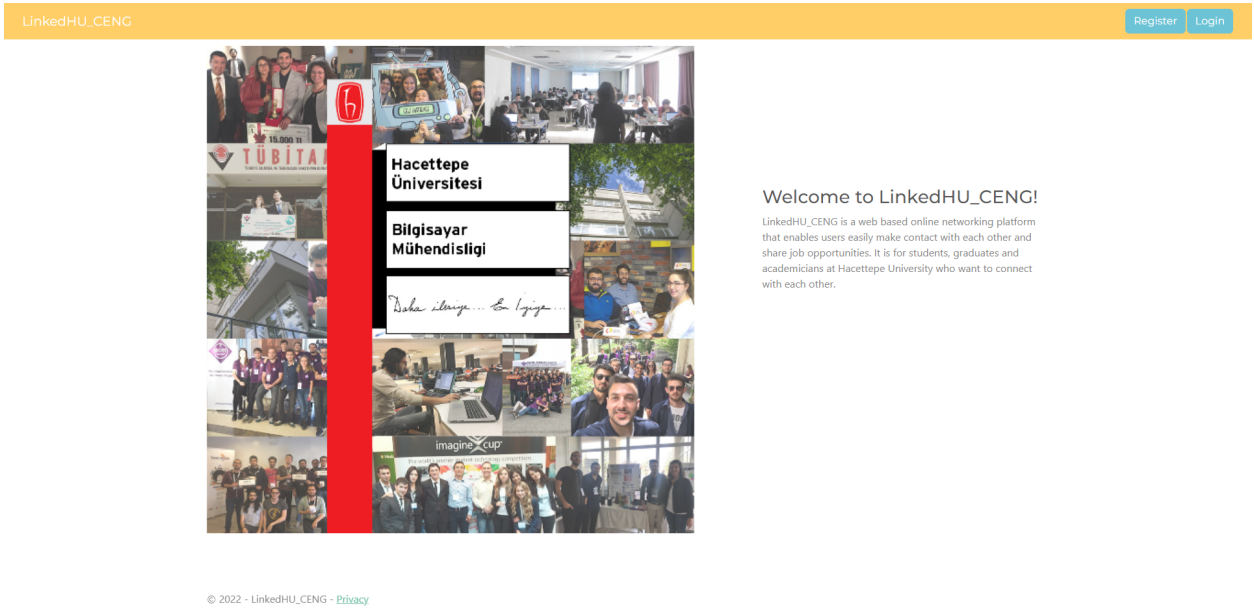
After logging in, the posts and announcements shared by the users followed on the homepage stream are displayed. Posts and announcements can be shared on this page. The desired page can be accessed by choosing from the top menu (homepage, messages, profile, etc.).

When the user clicks on their profile or someone else's profile, they can view their name, surname, title, profile picture, personal information, about me, and the posts they share.

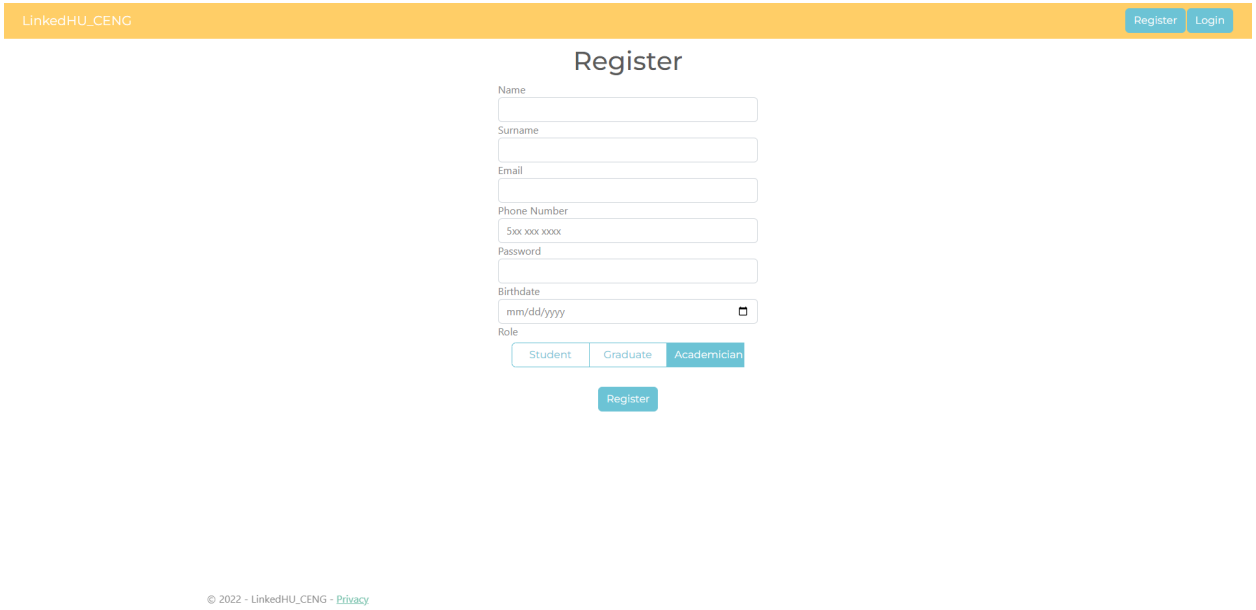
On the edit profile page, there are related form fields where the user can update their information such as name, surname, title, profile picture, personal information, about me.

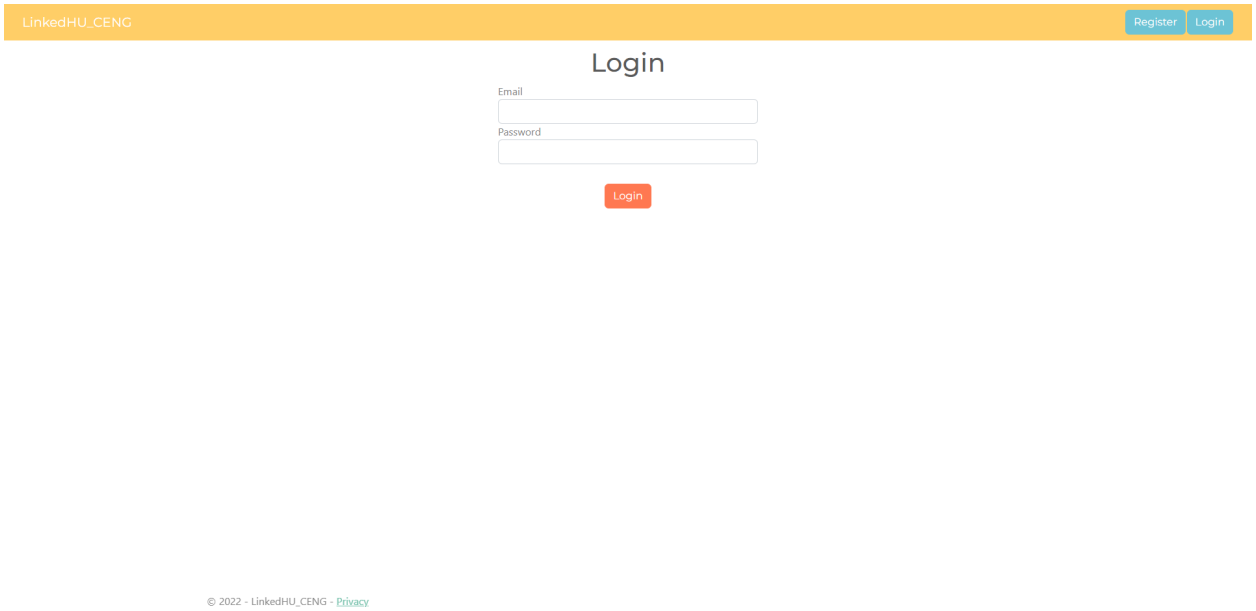
In our admin panel, which users of our application cannot access, there are system statistics and registered user list concerning the admin. It is aimed that the admin can quickly access the desired page from the menu on the left and quickly switch between pages.

4.4.1 Main Page

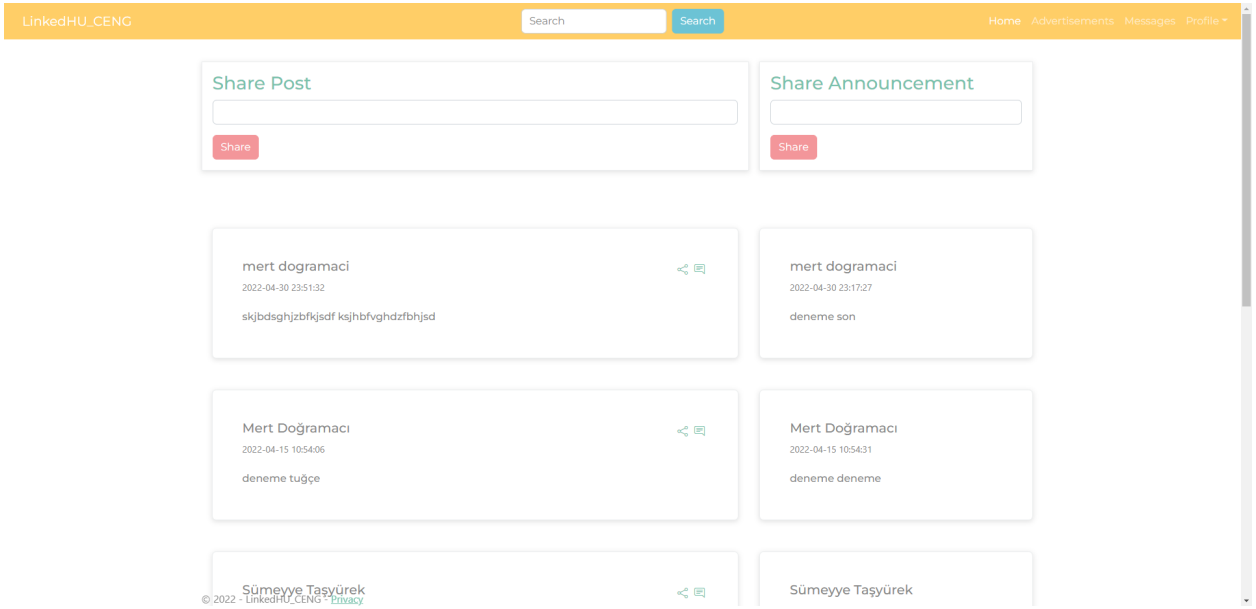


4.4.2 Register and Login

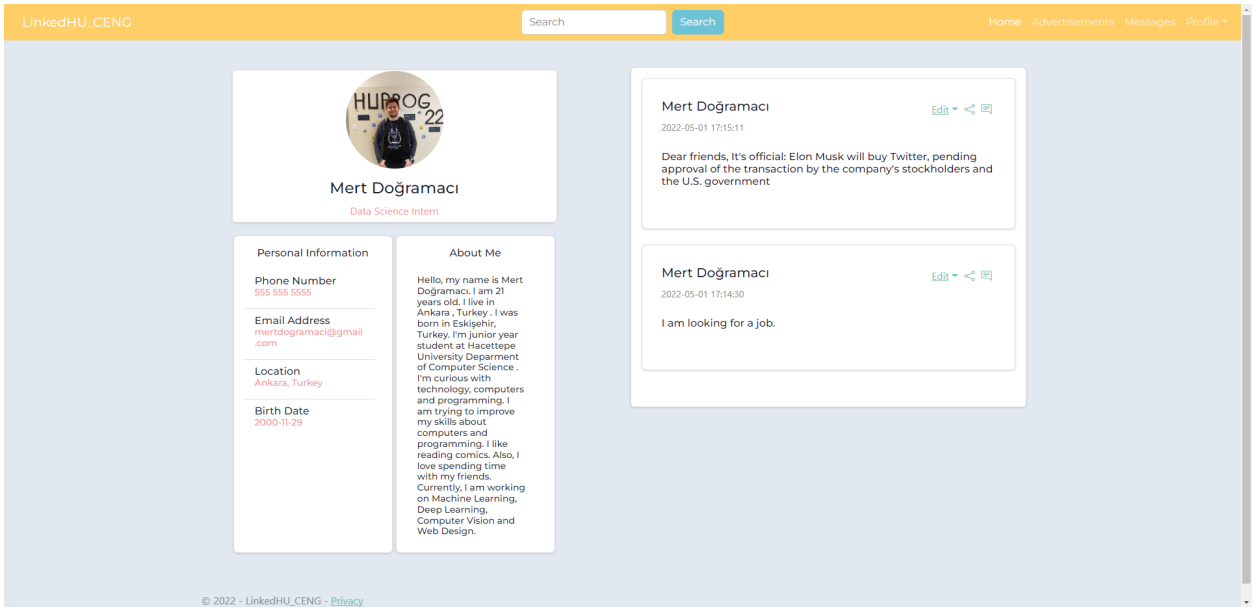




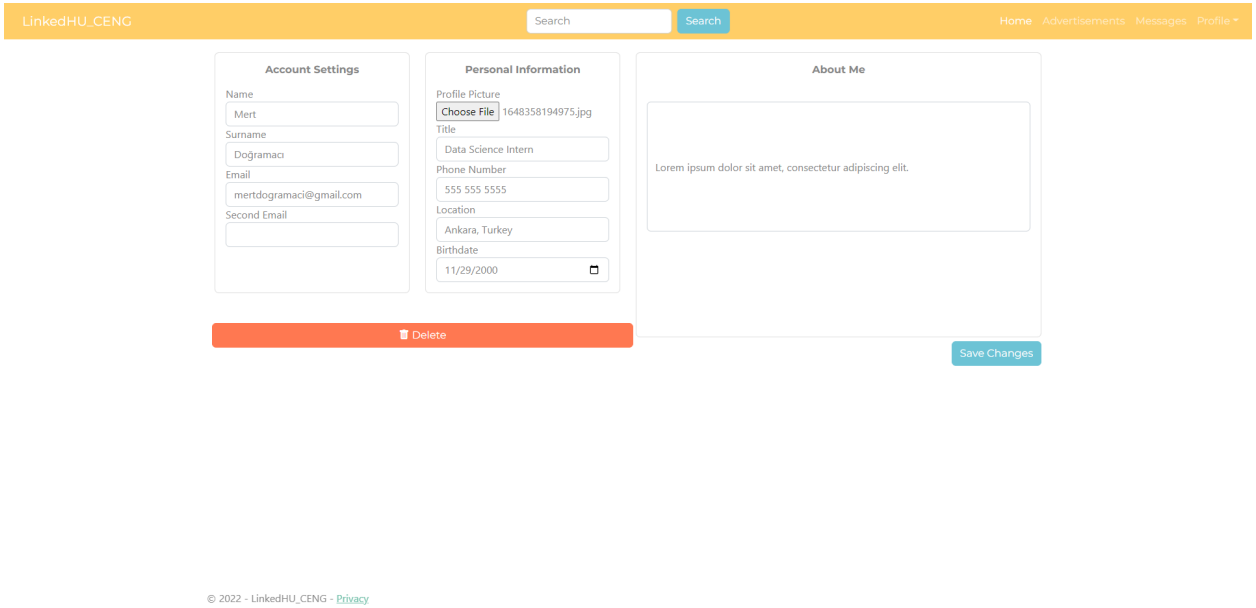
4.4.3 Home Page



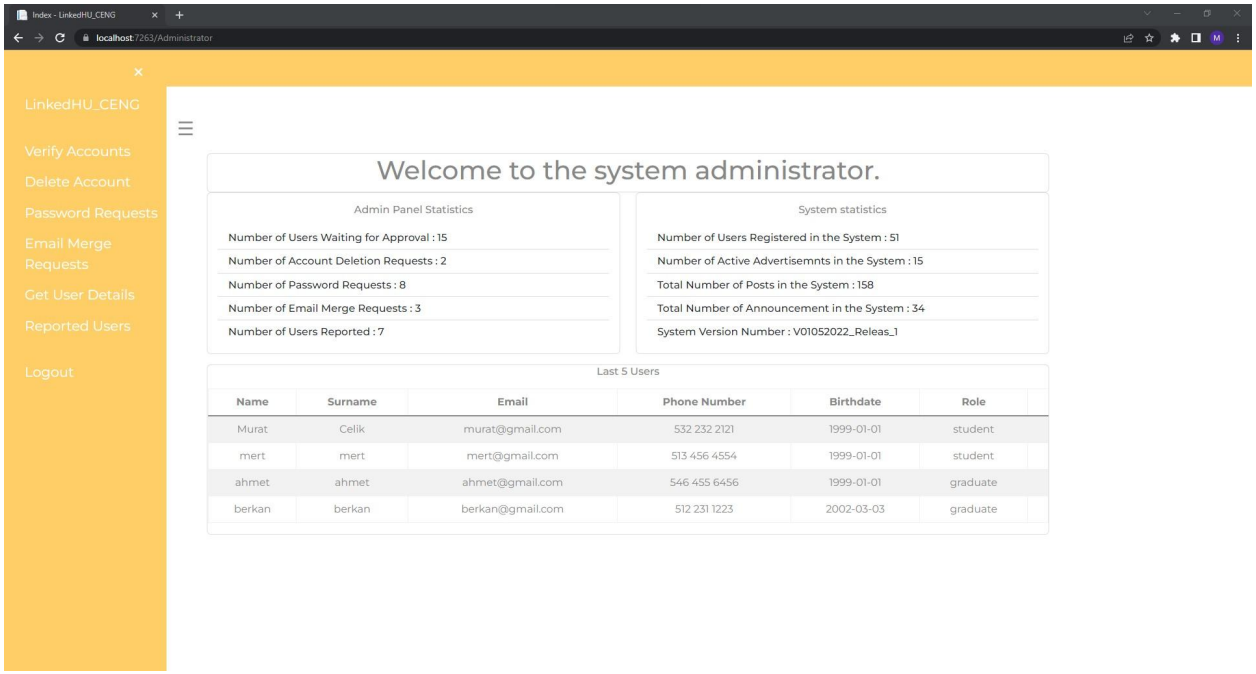
4.4.4 View Profile



4.4.5 Edit Profile



4.4.6 Admin Panel



5. Requirements Traceability

Classes/Use Cases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
PasswordRequest			X																																
PasswordRequestController			X																																
DeleteAccountRequest							X																												
DeleteAccountRequestController							X																												
MergeEmailRequest											X																								
MergeEmailRequestController											X																								
Report																																		X	
ReportController																																		X	
AdministratorController	X		X				X				X														X	X	X	X						X	
UnregisteredUser	X																																		
UnregisteredUserController	X																																		
User		X		X	X	X						X													X	X		X							X
UserController		X										X																							X
BannedUser																											X								
BannedUserController																											X								
Post													X	X	X									X											
PostController					X	X							X	X	X									X											
Announcement																X	X	X																	
AnnouncementController																X	X	X																	
ErrorViewModel	X																																		
HomeController	X																																		
ApplicationDbContext	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	
Message																													X	X	X				
MessageController																													X	X	X				
Comment																																X	X		
CommentController																																X	X		
Resource								X	X	X																									
ResourceController						X		X	X	X																									
ProfileController		X		X		X	X	X	X	X	X		X	X	X																				
Advertisement																			X	X	X														
AdvertisementController																			X	X	X														
Application																						X	X												
ApplicationController																						X	X												

6. Annexes

Annex A (Appendix_Sequence_Statechart_Diagrams.pdf)