

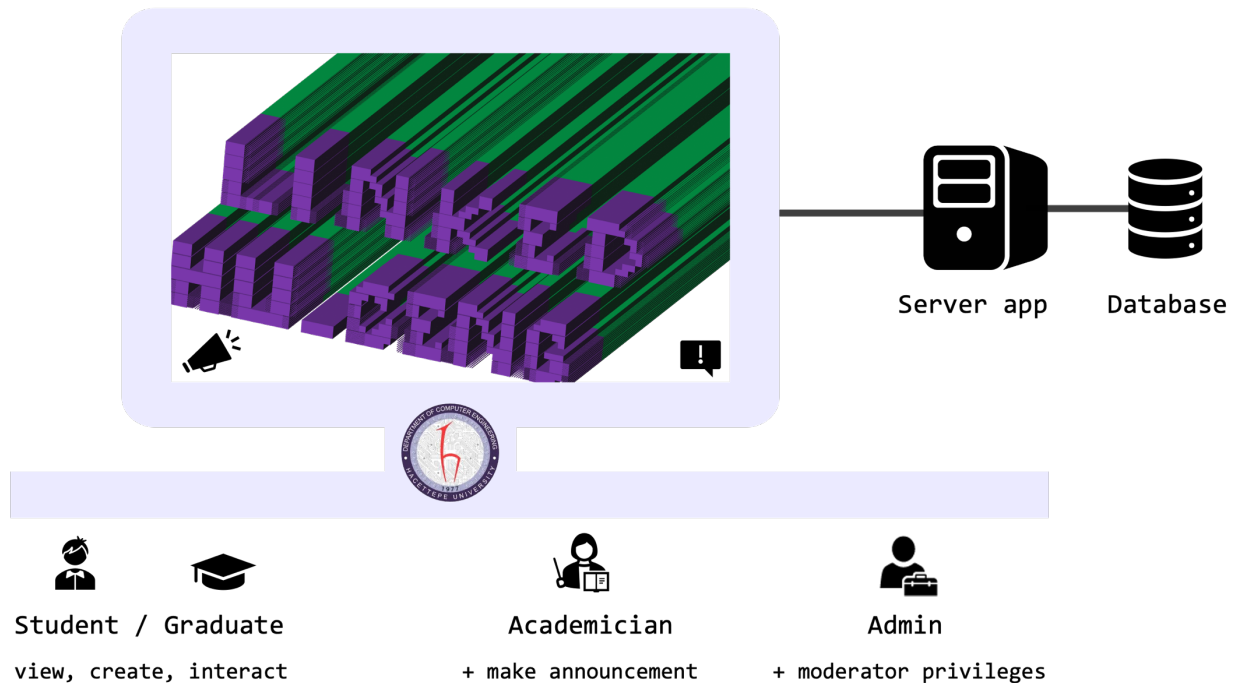
LinkedHU_CENG

Software Design Description

1. System Overview

LinkedHU_CENG is a web-based communication application for students, graduates, and academicians of Hacettepe University Computer Engineering Department, where they can exchange news, announcements, offers in an academic context. Desirably, the content shared on the platform is related to academy and people. LinkedHU_CENG is designed exclusively for people of HU_CENG, since it is born from a need.

A user can view their profile, announcement pages, and main page; scroll through these pages as long as they wish. Users can mostly complete tasks such as posting announcements and changing their personal information by themselves; yet they require admin approval for functionalities such as enrolling as an academician, or requesting other users' data. Users have different set of privileges according to their account types (based on their role in HU_CENG department).



LinkedHU_CENG is accessed as a Dynamic Website that can run on popular desktop browsers. In background, it is a SpringBoot application built using three-tier MVC architecture.

1.1 Definitions, Acronyms, and Abbreviations

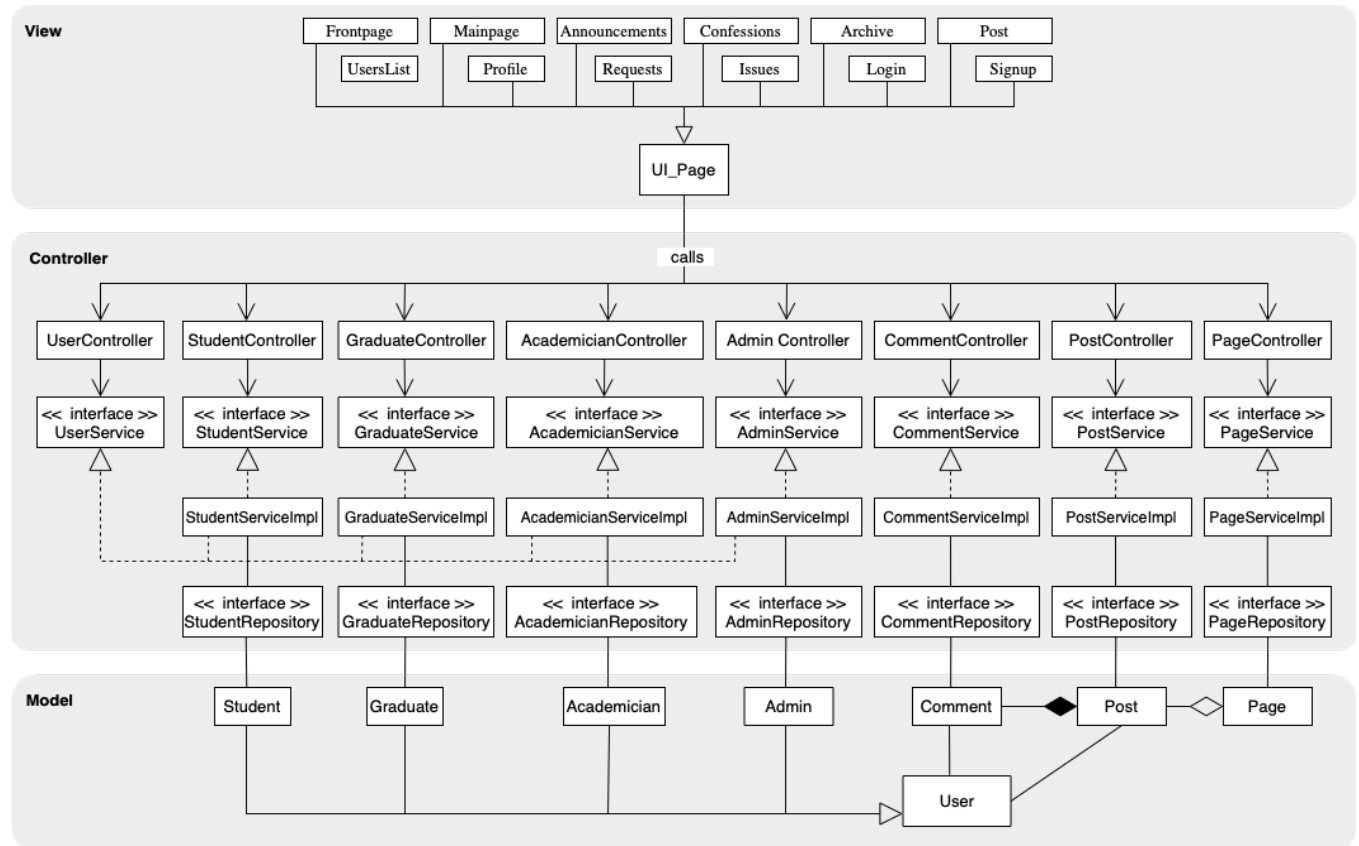
Term/Acronym	Definition
HU_CENG	Hacettepe University Computer Engineering Department
GUI	Graphical User Interface
MVC	Model View Controller Architectural Pattern
SRS	Software Requirements Specifications Document

2. Design Constraints and Decisions

- LinkedHU_CENG is a Web application that can run on popular desktop browsers such as Chrome, Firefox, Safari. Therefore, hardware independent.
- LinkedHU_CENG is a Dynamic Website. Upon a user request (HTTP, or HTTPS for more security), contents of a page are rendered into HTML files at the server-side, by Thymeleaf template engine. This design decision has been taken based on limited resources and limited expertise of the team; as well as the requirements of our system, and efficiency. For more details, please refer to *Architecture Notebook by Average Java Enjoyers (07.04.2022)*.
- On Backend, LinkedHU_CENG is a SpringBoot application, written in Java. System is designed and built on Model-View-Controller architectural pattern. Having multiple layers provide abstraction of layers from each other and low coupling; therefore, brings flexibility, maintainability, data security, and better extendibility. For advantages, implementation details, and our reason to use MVC pattern, please refer to *Architecture Notebook by Average Java Enjoyers (07.04.2022)*.
- Finished system will be deployed and running on Heroku server as a public website. PostgreSQL Database will also reside in this server.
- **Security.** System does not let a non-logged-in user view or change any data on the system.
- **Privacy.** Other than “View Users” use-case, which is only available for some privileged users, there is no way to access any other user’s profile or private information.
- **Exclusivity.** Initially, LinkedHU_CENG is exclusive for people who are related to Hacettepe CS and AI departments. Therefore, all registration requests first have to be approved by an Admin. The network requires Admin members to protect the system and society, from unintended or malicious uses.

3. Design Details

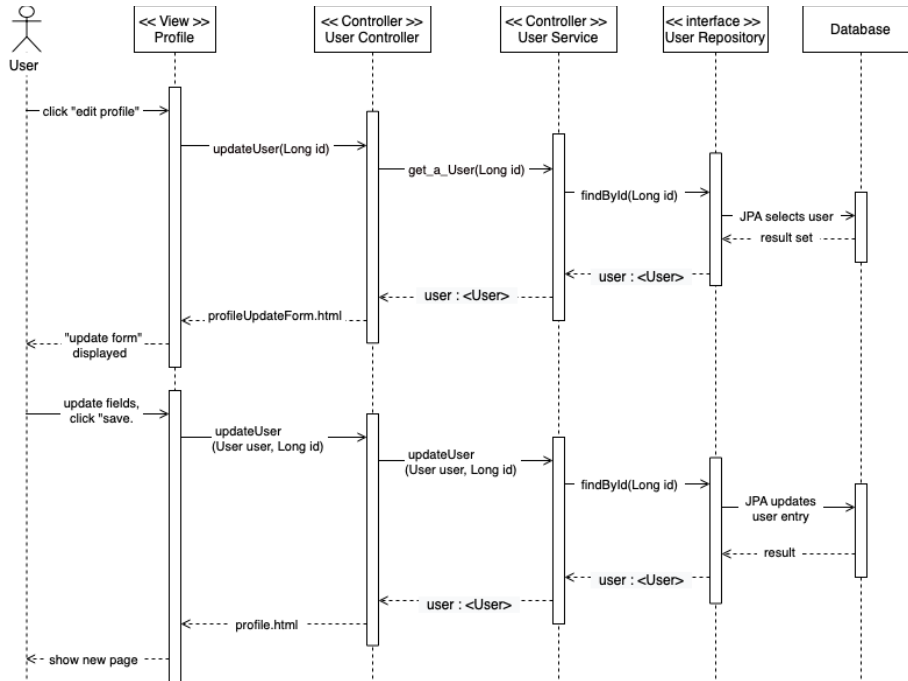
3.1 Software Components: Class Diagram for LinkedHU_CENG



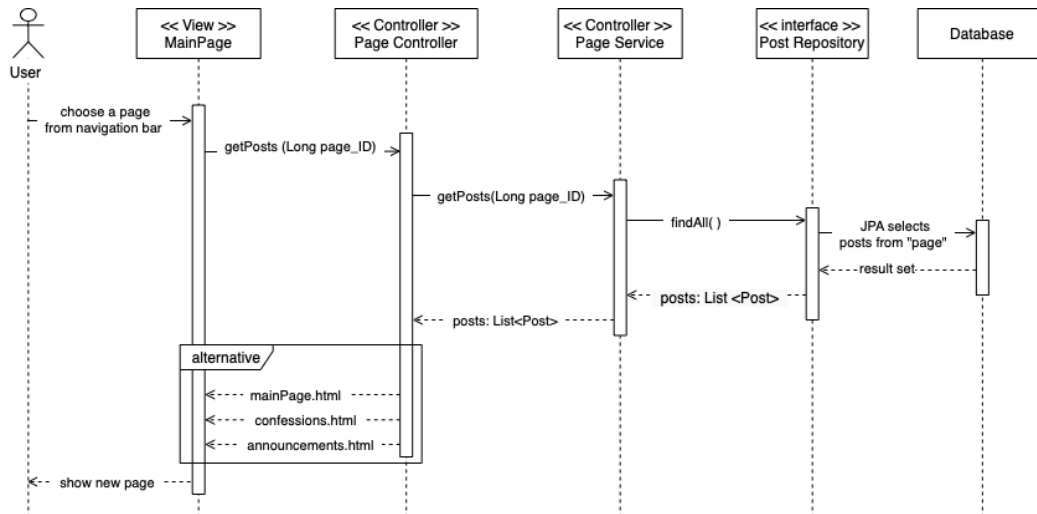
3.2 Software Behavior

A. Sequence Diagrams

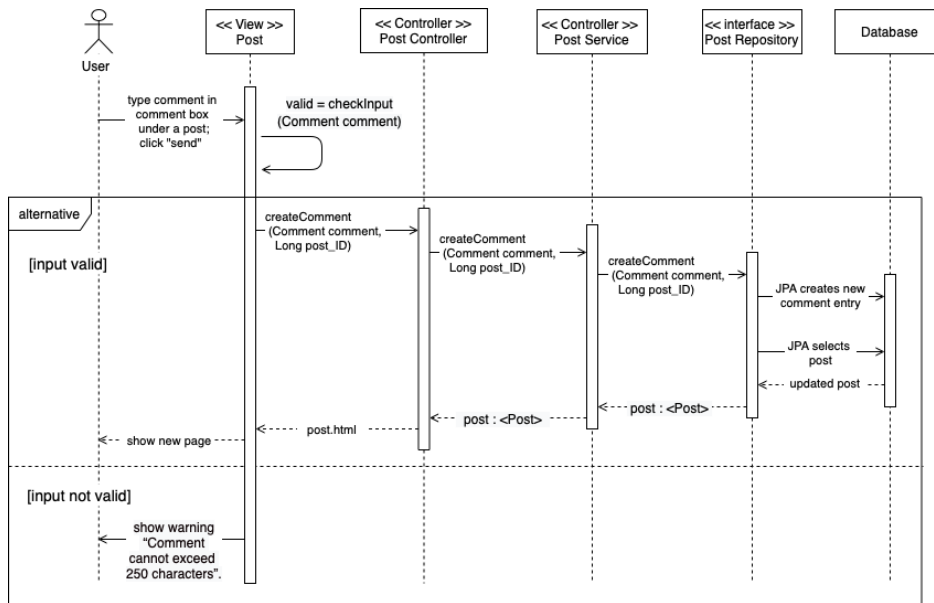
Sequence diagram for Manage Account (u-04) Use-case



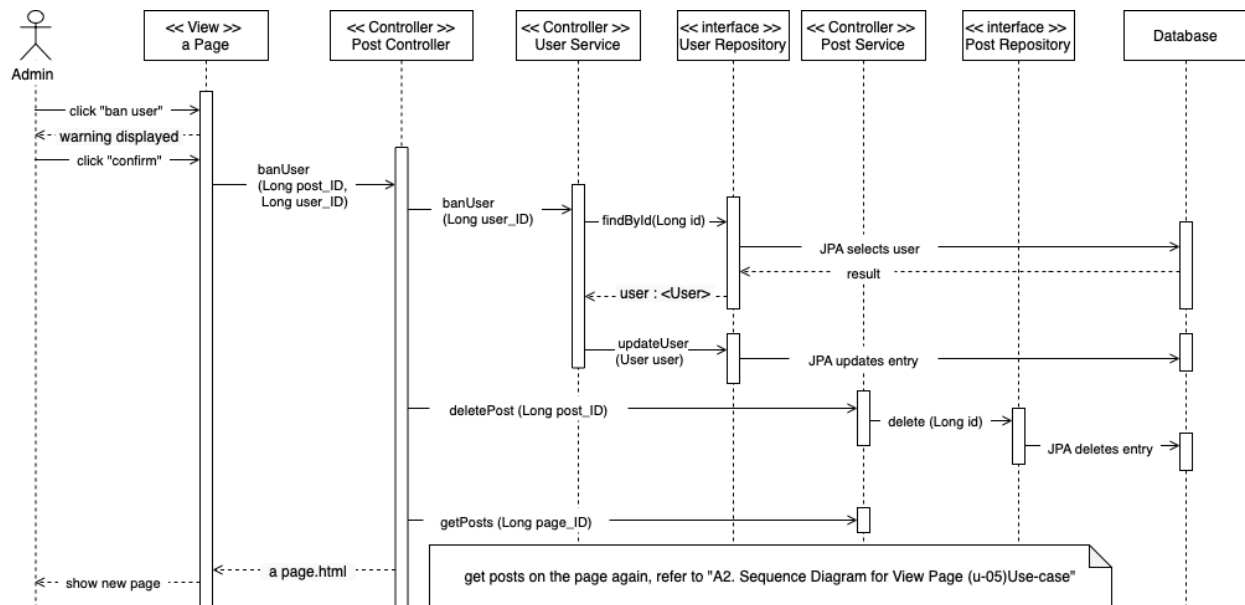
Sequence diagram for View Page (u-05) Use-case



Sequence diagram for Comment Under a Post (u-09) Use-case

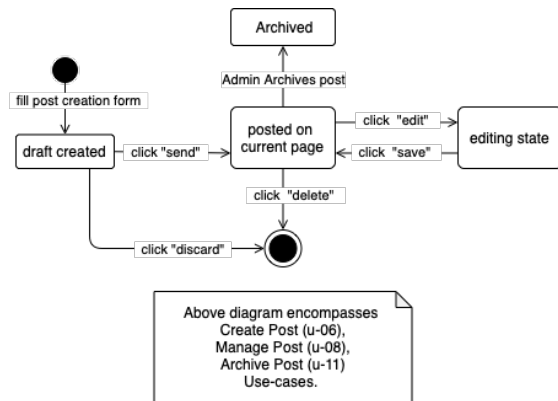


Sequence diagram for Ban User (u-12) Use-case

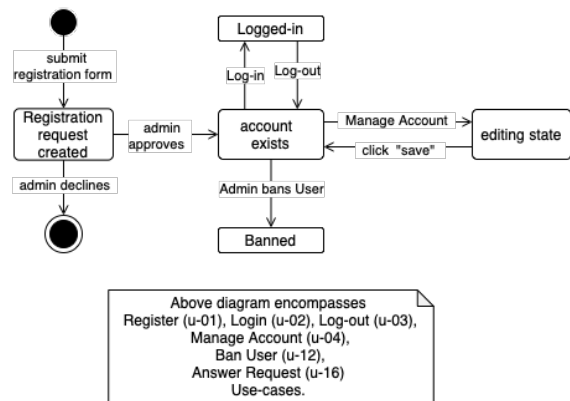


B. State-Chart Diagrams

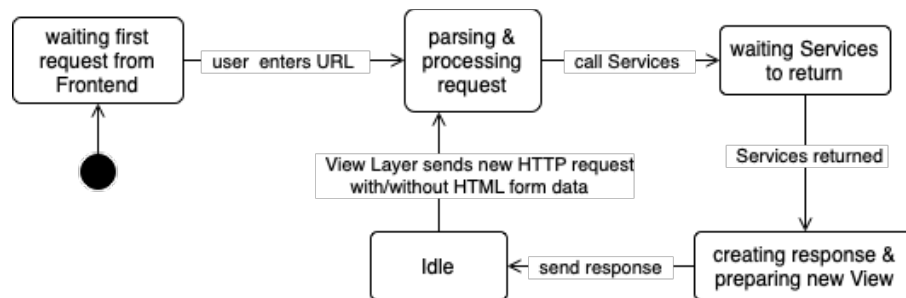
State-Chart Diagram for Post Object



State-Chart Diagram for User Account



State-Chart Diagram for Controller Layer



3.3 User Interface and User Experience Design

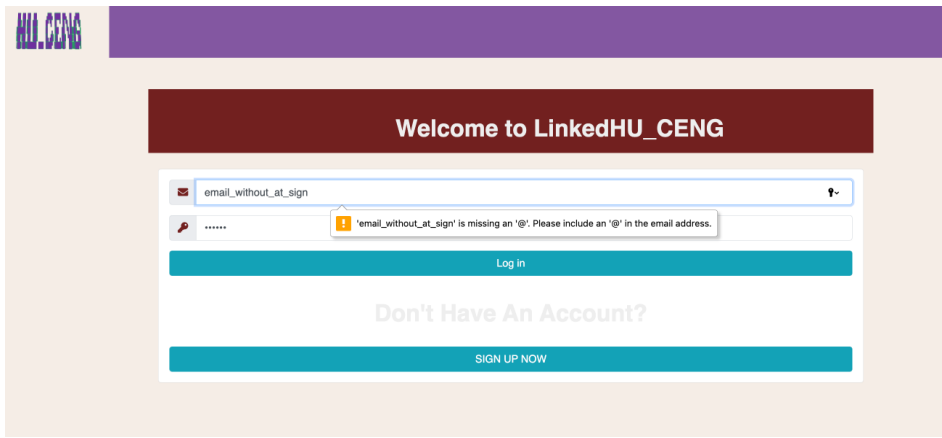
Colors

Interface of LinkedHU_CENG consists of soft/pastel colors, with a Lavender purple menu bar, as we feel these are the colors that define our department, while also not being tiring to the eye. The slight tan background is easier on eye than pure white.

Interactivity

User is satisfied to observe the result of their action right away. They are notified after their action regarding if it is accepted by the system; with a visible change, or a success/error message.

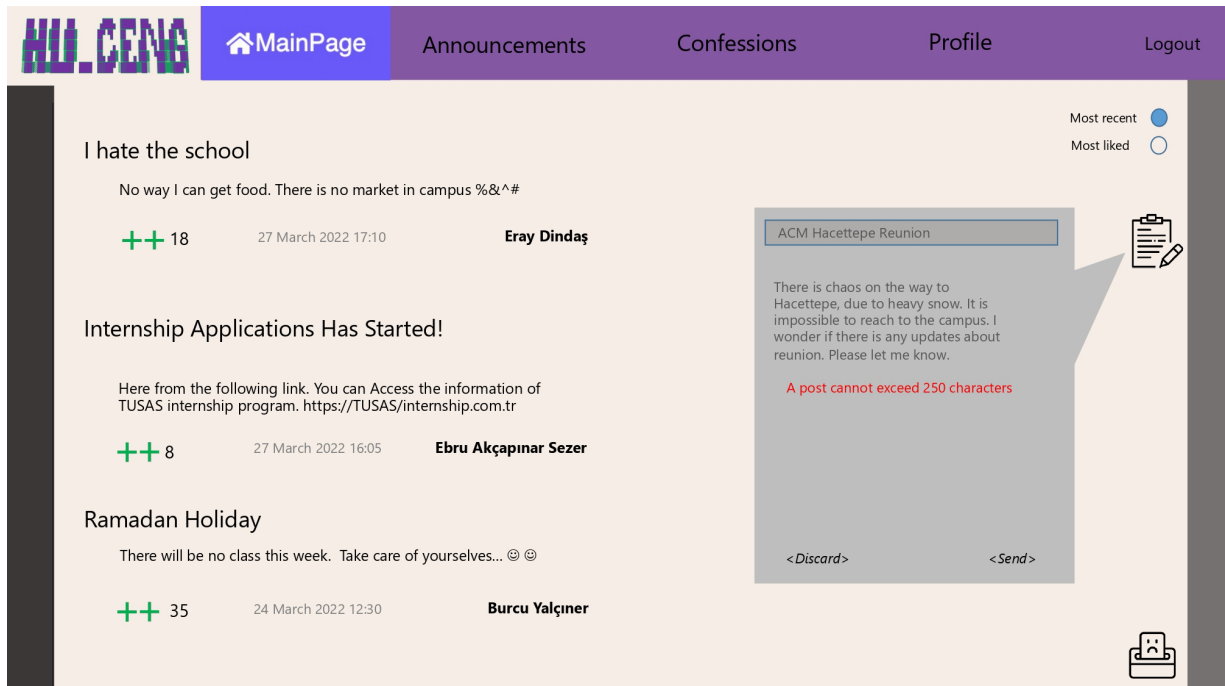
For example, login and register pages require email address to include “@” character, otherwise a warning is shown.



Main Pages

MainPage, Announcements, and Confessions are the main pages available for all users.

Since posts are aligned on a grid to the left-hand side of the window, the empty space on the right provides a room to breathe, also occasionally serves extra functionalities such as displaying the post creation box.



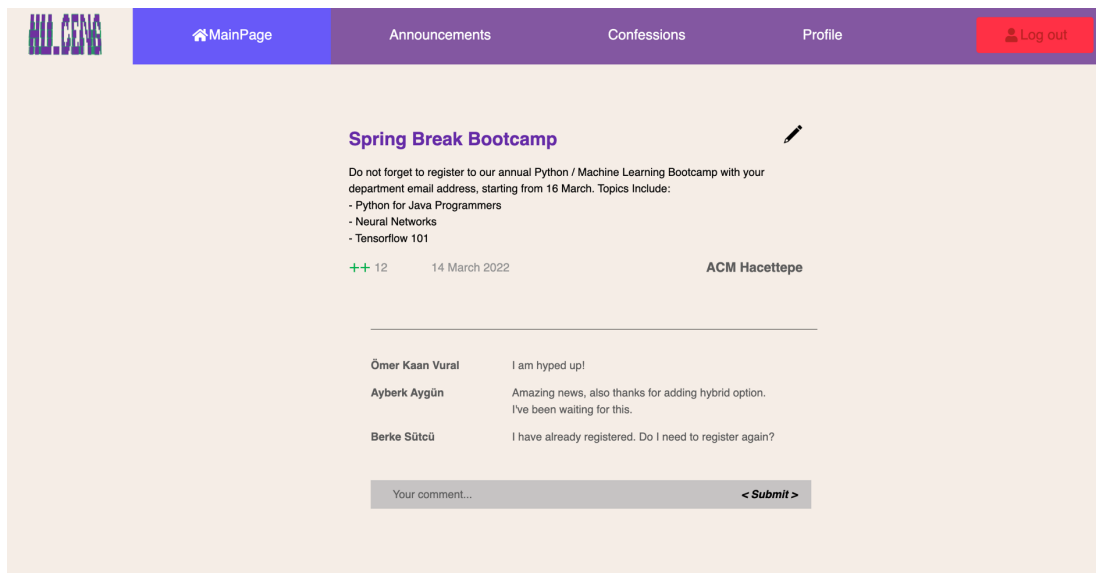
Minimalism

With the simple navigation bar and buttons, users can quickly navigate and perform functions with minimum effort. User experience is smooth and fluent. User is not bored or captivated by visuals, but focused on content.

Post Page

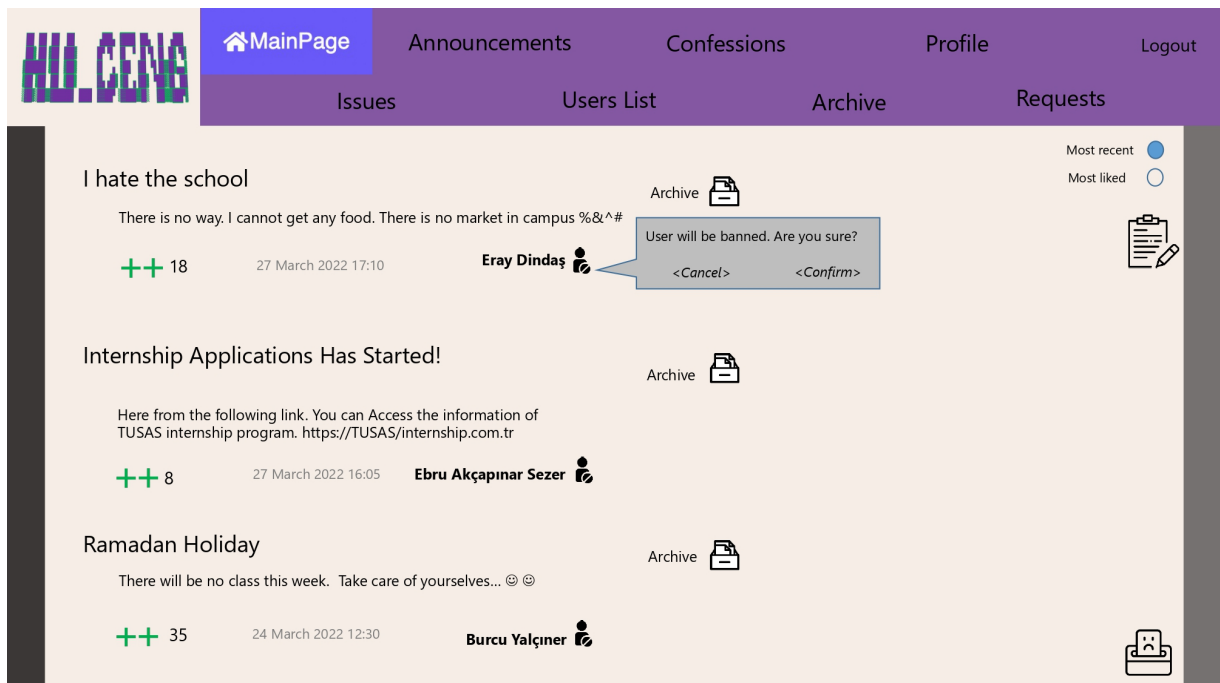
After clicking on a post's title, individual post opens on a new page; allowing interactions such as commenting. Box for a new comment is readily open and waiting for user's input.

Buttons are placed in similar positions as in similar systems, for best recognizability. "edit" on the top right, "like" at the below of the post.



Admin View

Admins have moderator privileges, thus they have many more functional buttons than other user types, such as “archive post” and “ban user”, delete or modify any post or comment; they also have access to extra pages such as Requests, Archive and Users List.



Error Prevention. To minimize accidental or unintended actions, before performing important actions, user is be warned, and needs to confirm the action. Such as an admin banning a user (as seen above).

Usability. With its minimal set of features and consistent UI, LinkedHU_CENG is easy to learn and adapt.

Performance. UI consists mostly of text, and colorful boxes, and some icons. No processor-intensive animations and such. Thus, performance of UI will only depend on the internet connection and Backend processing (which are also very light).