



Bilkent University

Department of Computer Engineering

CS 319 - Object-Oriented Software Engineering

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Section 1

Term Project

BilConnect

Final Report

Team 3

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1. Introduction

The final form of the BilConnect software offers different screens and functionalities for social club coordinators, users, and administrators. All of the key features and ideas were implemented in the app to ensure the customers' expectations were satisfied. It is ensured that for a social club coordinator or a user to enter the system, the email address verification step is included. This way, the medium of exchange of second-hand sales, borrowing, traveling, donation, event tickets, pet adoption, lost item and found item post types, and social club events of the BilConnect is secured since email verification ensures that the email is a Bilkent email.

After the authentication step, the user is redirected to the feed, where they can see the post types, search through them, or filter them out according to their needs. The primary method of interaction in posts is through chat. Users can choose to go to their own self-posts, their reports, or their profile page. They can leave the Bilconnect using log out. Club event coordinators can choose to create an event, edit it, or delete it; they can also file a report for posts and events. Moreover, they can see their own club events and their reports. They can leave the Bilconnect using log out. These reports will be evaluated by corresponding administrative staff, and their statutes can also be tracked through the user or social club coordinator. Administrative staff can also suspend a user or social club coordinator for inappropriate content.

1.1. State Of The System

- React components of the front end were very hard to implement into the current project. Hence, the front-end team redirected its work to the cshtml files for the view components, cleared the bugs and solved inconsistencies throughout the project. Although the front end is working in terms of the actual display of components and features, a solution using dummy variables to the react components can be found in the web app folder in GitHub. Server deployment can be found using this link:
<https://webapi20231217144311.azurewebsites.net/>

2. User Manual

2.1. Admin

Admin is the predetermined user, meaning it does not have a verification step and is hard coded into the database. Admins can resolve the reports by deleting the post or making it remain as is; they have access to events and posts, and they can also suspend a user or a social club coordinator and not allow their email to be registered again to safely secure the BilConnect. Admins can leave the page using log out.

2.2. Social Club

The social club can register themselves using the authentication step. Club event coordinators can choose to create an event, edit it, or delete it; they can also file a report for posts and events. A club event consists of place, description, start time, end time, GE250-251 eligibility, name, quota, and its respective photo. Moreover, they can see their own club events and their reports. The social club coordinator can leave the Bilconnect using log out.

2.3. User

The user can register themselves using the authentication step. After the authentication step, the user is redirected to the feed, where the user can see the post types, search through them, or filter them out according to the post types. The primary method of interaction in posts is through chat. Chat is a synchronous feature that enables two users to interact at the same time, allowing interaction between the post author and the post owner, who can edit, mark the post as inactive, which makes the specific post invisible to the other users, or delete it. When the user interacts with other users' posts, they are redirected to the inbox page where they can chat with the users. Users can choose to go to their own self-posts, their reports, or their profile page. The user can leave Bilconnect by logging out.

3. Build and Execution Instructions

In order to ease the deployment process, Bilconnect uses Visual Studio, which is a powerful developer tool that you can use to complete the entire development cycle in one place. It is a comprehensive, integrated development environment (IDE) that you can use to write, edit, debug, and build code and then deploy your app. For MacOS, LocalDB is not supported, meaning the configuration needs to be done using a docker container. Build and execution instructions of the project for Windows are shown.

For building and executing Bilconnect:

1. You need to install Visual Studio if you do not have it installed on your system. For that, official documentation [here](#) can be useful.
2. Similarly, you need to clone the project's repository from GitHub to your system using "git clone".
3. After cloning, enter the folder named BilConnect. Then, open "BilConnect.sln" with Visual Studio.
4. Install following packages through Tools > Nuget Package Manager > Manage Nuget Packages for Solution
 - Microsoft.AspNetCore.Identity.EntityFrameworkCore v7.0.14

- Microsoft.AspNetCore.Mvc.Razor.RuntimeCompilation v7.0.0
- Microsoft.EntityFrameworkCore.SqlServer v7.0.14
- Microsoft.EntityFrameworkCore.Tools v7.0.14
- Microsoft.VisualStudio.Web.CodeGeneration.Design v7.0.11

For sending verification and forgot password emails SendGrid should be used:

For avoiding this you can use following users:

Admin Name = bilconnect-admin Password = Ataturk1881@

User Mail1 = user1@ug.bilkent.edu.tr Password = TaylorSwift13?

User Mail2 = user2@ug.bilkent.edu.tr Password = TaylorSwift13?

Club Mail = bilkentacm@ug.bilkent.edu.tr Password = Taytay*13

5. Run the project using the IIS Express option on Visual Studio.

With this, the project using localhost will work. Server deployment of the project is found here: <https://webapi20231112110715.azurewebsites.net>

In case of a database error, if the following first four instructions are done, follow these steps:

1. In the SQL Server Object Explorer, using (localdb)\MSSQLLocalDB > Databases > bilconnect-app-db, delete bilconnect-app-db.
2. Write Package Manager Console Update-Database

4. Work Allocations

Murat Çağrı Kara - 22102505

Analysis Report:

- Contributed to the choosing of tech stack and helped write the content inside.
- Modified the second iteration of the use case diagram with Samed and used the professional convention of editing, creating, and deleting features in the whole diagram.
- Explained all of the flow of events for the subsystem second-hand sale for the second iteration.
- Drew and explained all of the activity diagrams.
- Modified the activity diagrams for the second iteration according to the feedback received.
- Helped Samed in producing state diagrams on the first iteration.

Design Report:

- Changed the entity structure for the Design Report for the given instructions.
- Drew the screen layers, such as buttons, built-in functions, etc., which connect to the project.

Implementation:

- Worked on the front end of the project.
- Created the complete version of the login page and its logic configuration using React.
- Designed the initial design of the feed page, consisting of the actions menu, event image, search attribute(as well as the logic configuration) and posts of the React framework. Combined navigation of the pages in React. These functionalities work in the front-end part.
- Designed the user profile page and post details page in the React component.
- Added the redistribution of the authorization cookie for accessibility to the pages.
- Made bug fixes for the front end in cshtml format and testing of the components in the back end.

Final Report:

- Wrote the introduction part and the current status of the system
- Wrote the User Manual
- Wrote the Build and Execution Instructions
- Wrote the work allocation for himself

Abdullah Samed Uslu - 22003598

Analysis Report:

- Participated in the writing of the ReadMe file.
- Participated in the design of the use case diagram.
- Refactored the class diagram.
- Updated the non-functional requirements.
- Designed the state diagrams.

Design Report:

- Updated the design goals and design trade-offs according to feedback.
- Participated in the design of the class diagram.
- Designed the subsystem decomposition.
- Wrote the explanation of subsystems.

Implementation:

- Developed an independent sample MVC ASP.NET project to use as a sample.
- Implemented all models, controllers, services and views related to club events.
- Arranged the authorisation of the club accounts.
- Arranged validations and data transfer in the create and edit forms.
- Wrote classes for validation.
- Fixed all bugs related to services, controllers, models and views, especially those related to posts.
- Made additions to other files and helped others develop some parts.

Final Report:

- Wrote own work allocation.

Celal Salih Türkmen - 22102498

Analysis Report:

- Participated in the overall idea of the project.
- Participated in the writing of the ReadMe file.
- Participated in the design of the use case diagram.
- Played a role in drawing the requirement-level class diagram.
- Formatted and proofread the reports.
- Formatted the Visual Paradigm files.

Design Report:

- Participated in the drawing of the subsystem decomposition diagram.
- Participated in the drawing of the solution-level class diagram.
- Wrote the design pattern descriptions. Particularly implemented the Facade design pattern.
- Formatted and proofread the reports.
- Formatted the Visual Paradigm files.

Implementation:

- Implemented the entire chat and message back-end. Added SignalR framework to achieve a real-time experience between the users.
- Implemented database relationships for Chat and Message classes.
- Designed and implemented the general front-end of the website. Specifically, login and register screens, feed screen, chat and message screens, self-posts screen, etc.
- Made minor back-end fixes, such as sorting posts in order and fixing redirecting errors, database errors, etc.
- Made minor front-end fixes, such as fixing layout errors, changing bad design, etc.
- Helped other developers when they needed help with the configurations of the VS project or database errors.

Final Report:

- Designed, edited, and uploaded the trailer video of BilConnect.
- Wrote his own work allocation.

Emre Akgül - 22102310

Analysis Report:

- Participated in the writing of the ReadMe file.
- Participated in the design of the use case diagram.
- Played a role in drawing the requirement level class diagram.
- Drew the 4 sequence diagrams for different cases and wrote their explanations. Modified the diagrams in the second iteration.
- Modified one-state diagram according to feedback.

Design Report:

- For the design level class diagram, I designed the Post, Report and User related classes tentatively. These classes include models, view models, services, and controllers.
- The Repository design pattern I used was used as the design pattern.

Implementation:

- Set up the project architecture with an MVC .NET backend and HTML-CSS-JS frontend, and pinpointed the essential external packages needed for the development process.
- Crafted an ApplicationUser class tailored for User and Admin roles, utilizing the Identity framework for role-based access control.
- Implemented report system and admin view.
- Implemented a database layer in the program using the Entity Framework (EF), and developed 'Post' and Post subclass models adhering to the repository design pattern.
- Implemented email system for verification.
- Implemented authentication for the website.

Final Report:

- Setup the system to cloud database for easier running of the program.
- Wrote the work allocation for himself.

Umut Bora Çakmak - 22101806

Analysis Report:

- Participated in writing the README file.
- Refactored the initial use case diagram and wrote the flow of events for most of the use cases.
- Expanded the final use case diagram and wrote some of the flow of events.
- Made the design of the app in Figma and made changes as I conversed with my group.

Design Report:

- Helped assess the design goals and design trade-offs and wrote the parts for them in the first iteration.
- Helped decide on design patterns for the project.

Implementation:

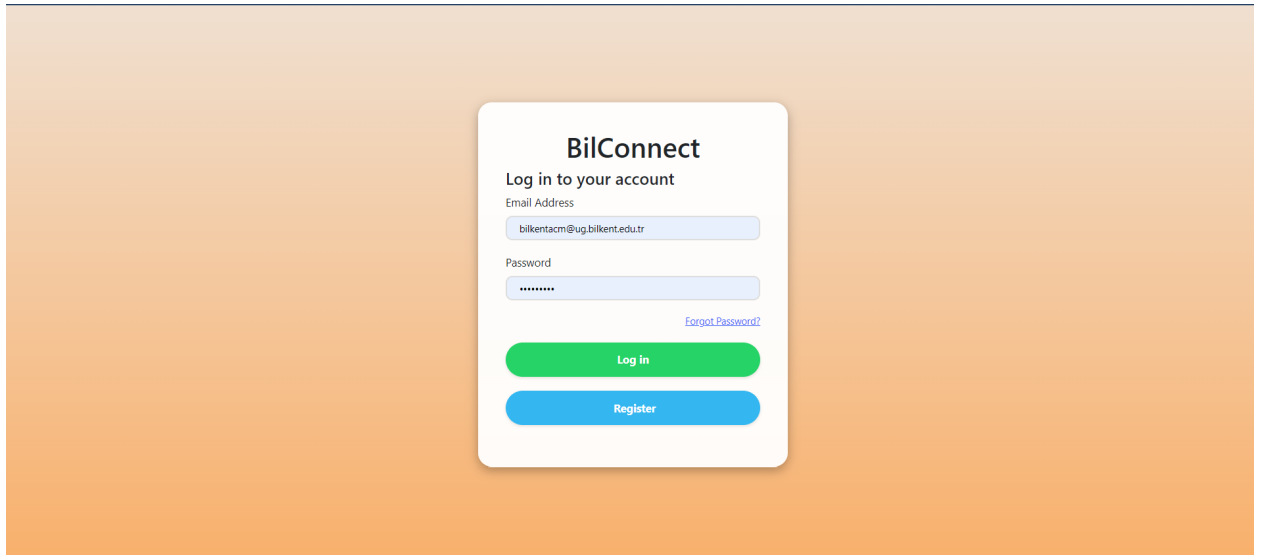
- Worked on the front end of the project.
- Contributed to the initial front-end plan which was a React project.
- Worked on the front-end of the project using .cshtml.
- Made required changes in the View layer of the project (in C#) that had effects on the front-end.
- Helped manually test the code and tried seeing if the program works on other environments.

Final Report:

- Wrote my own work allocation.

5. Appendix

A. Login Page



The login page features a white card centered on an orange gradient background. The card has the title 'BilConnect' and the subtitle 'Log in to your account'. It contains two input fields: 'Email Address' with the value 'bilkentacm@ug.bilkent.edu.tr' and 'Password' with masked characters. A blue link 'Forgot Password?' is positioned below the password field. At the bottom of the card are two buttons: a green 'Log in' button and a blue 'Register' button.

BilConnect

Log in to your account

Email Address

bilkentacm@ug.bilkent.edu.tr

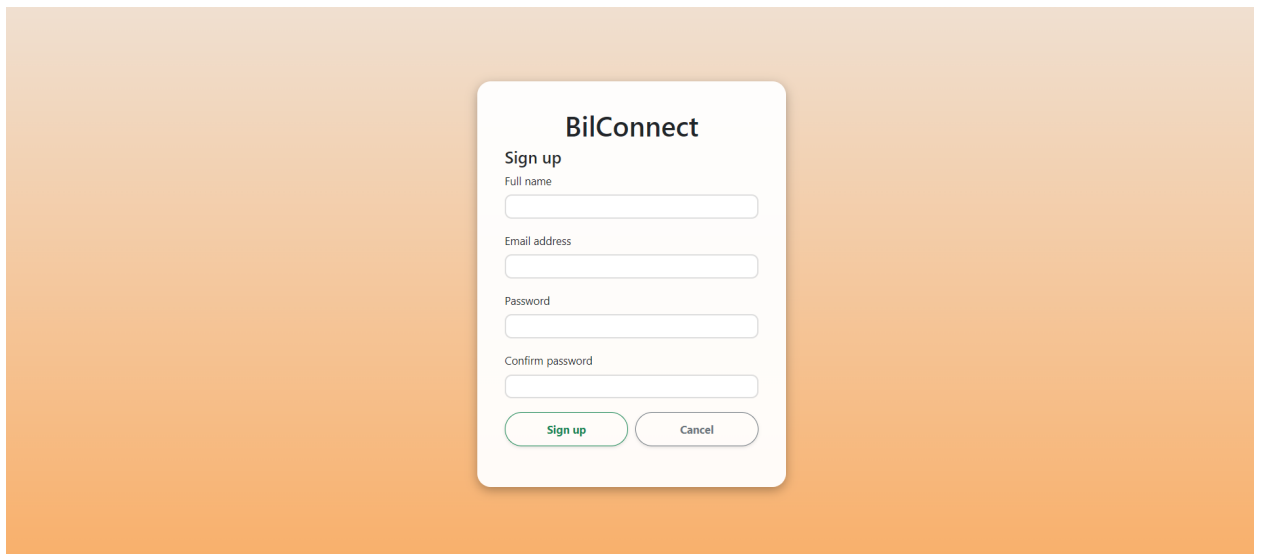
Password

[Forgot Password?](#)

Log in

Register

B. Register Page



The register page features a white card centered on an orange gradient background. The card has the title 'BilConnect' and the subtitle 'Sign up'. It contains four input fields: 'Full name', 'Email address', 'Password', and 'Confirm password'. At the bottom of the card are two buttons: a green 'Sign up' button and a grey 'Cancel' button.

BilConnect

Sign up

Full name

Email address

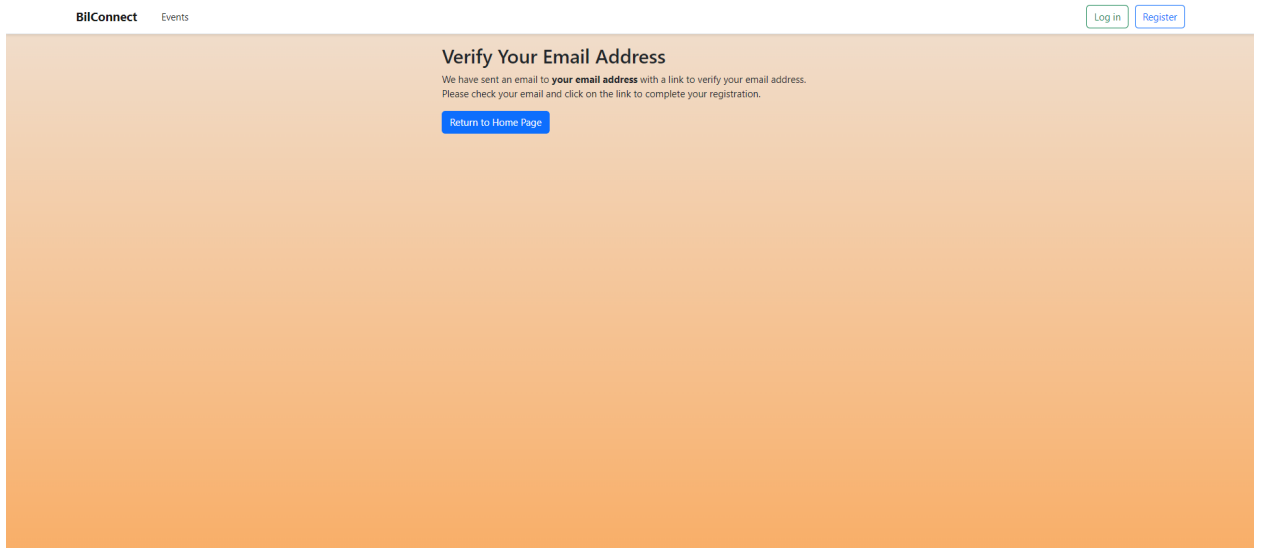
Password

Confirm password

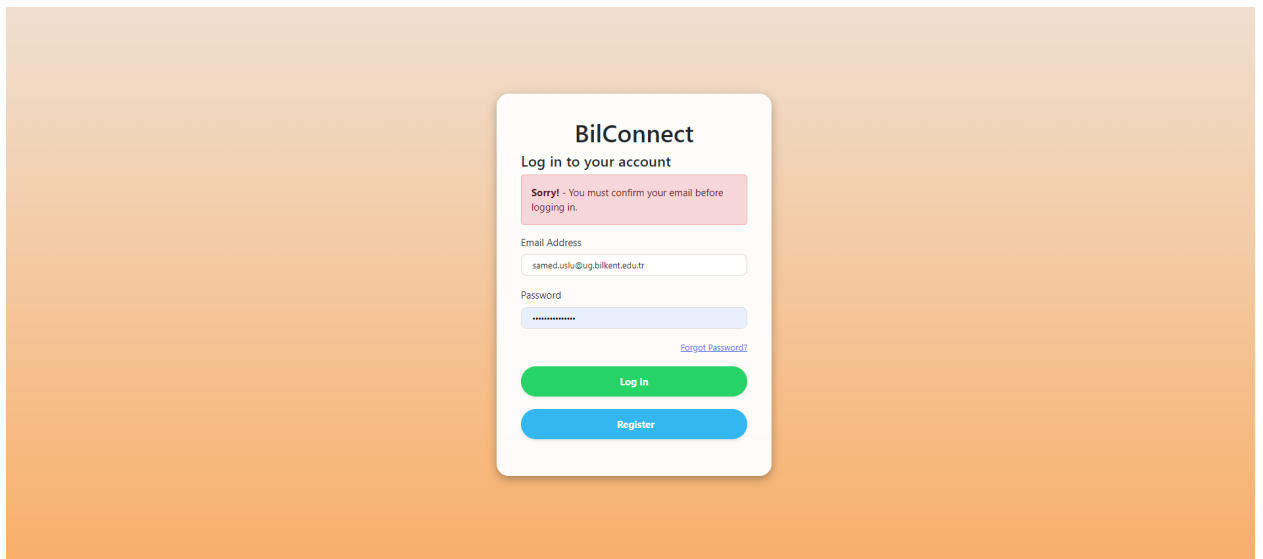
Sign up

Cancel

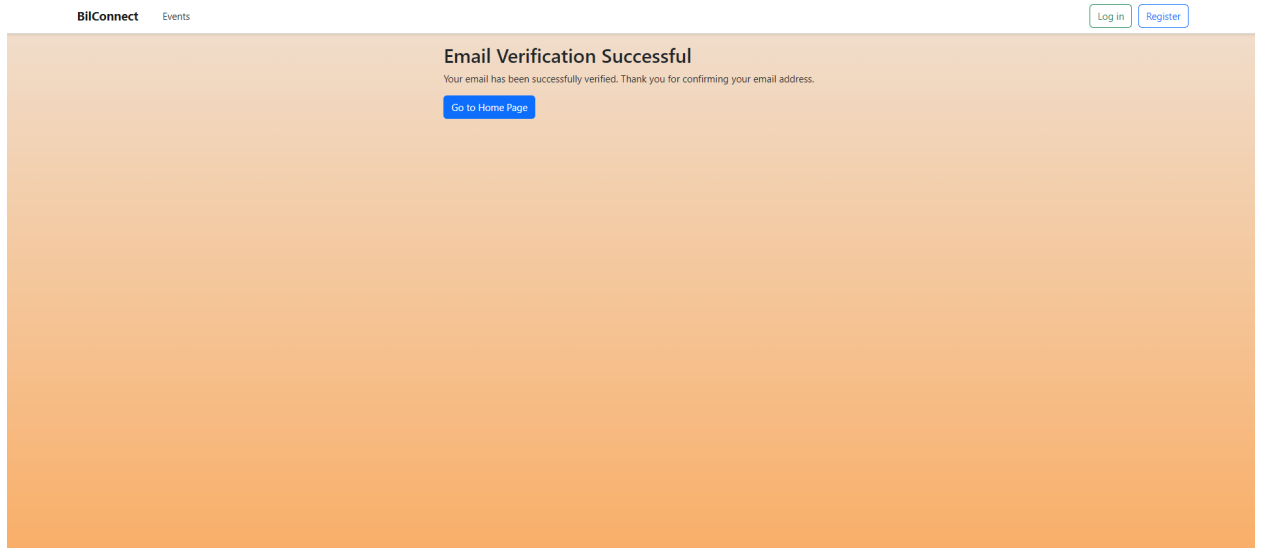
C. Email Verification Pending Screen



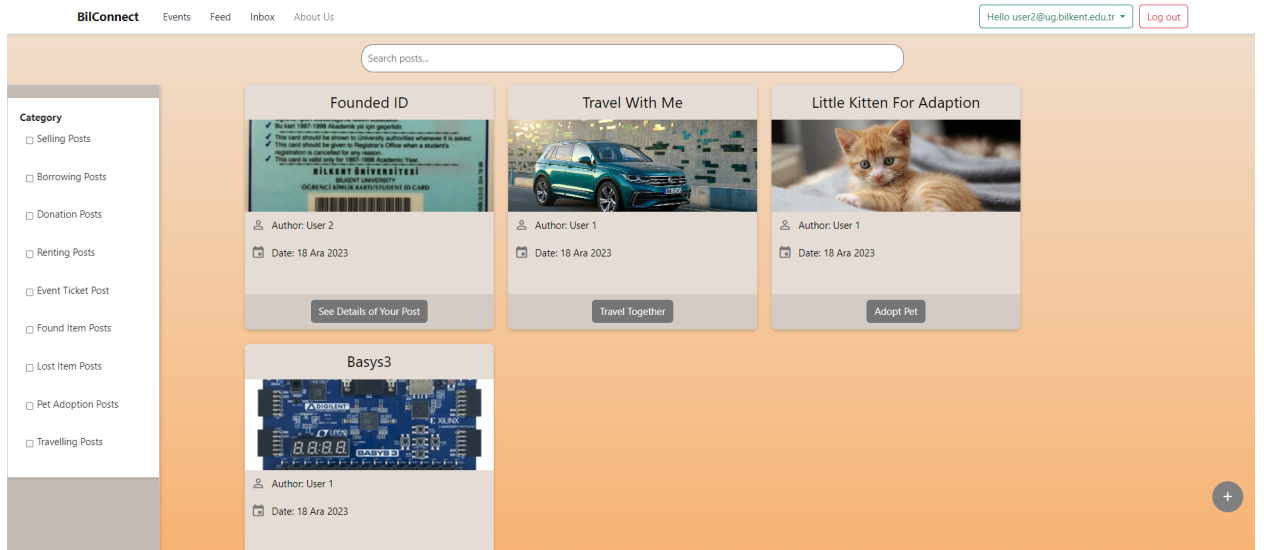
D. Email Verification Needed



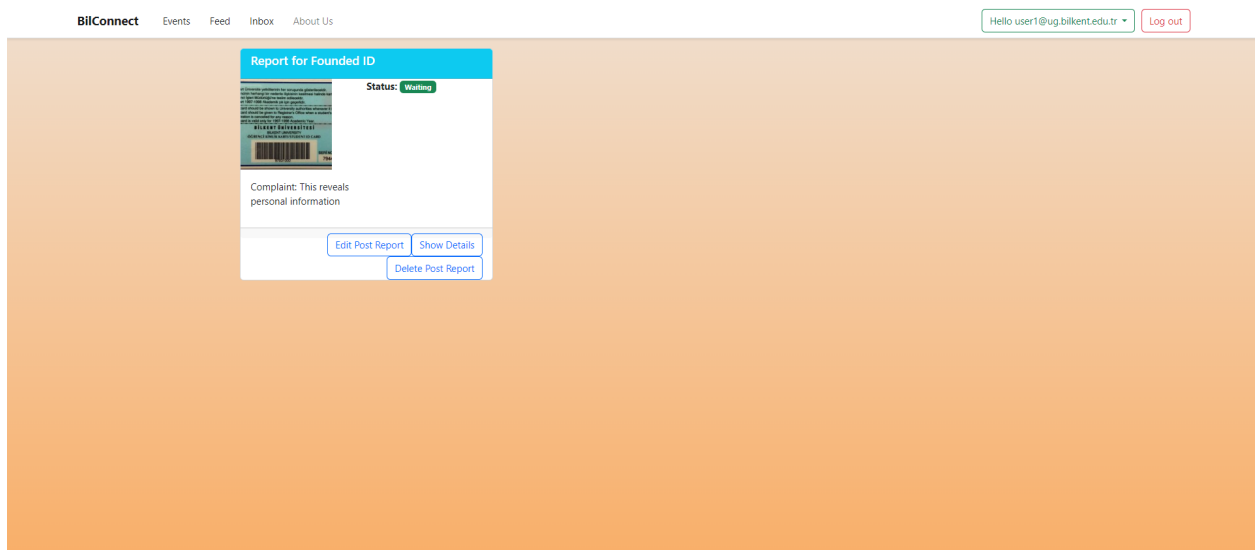
E. Email Verified Confirmed Screen



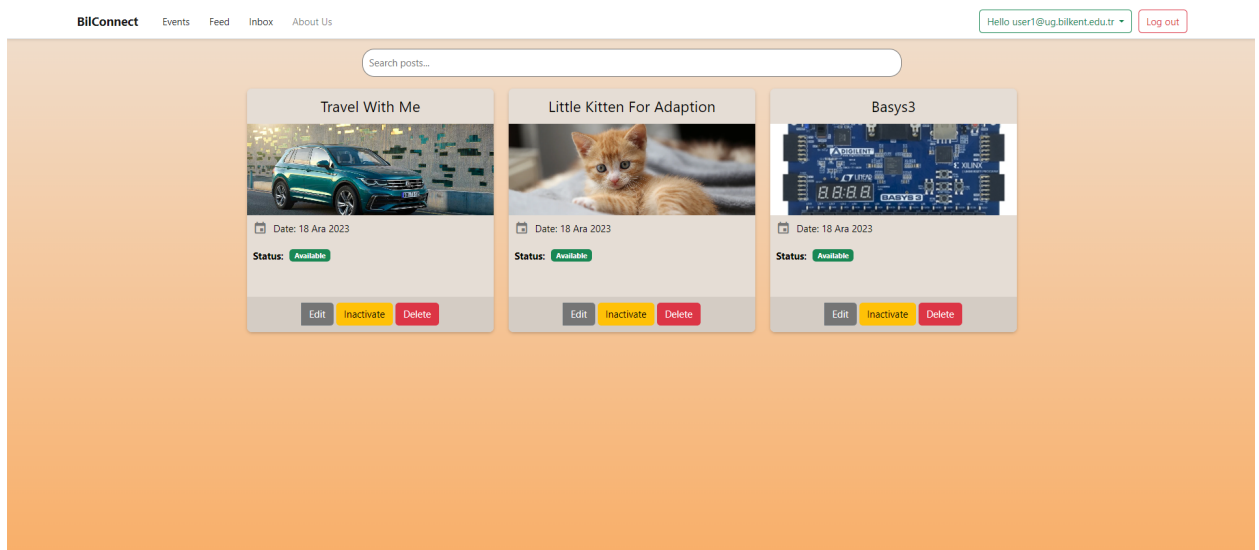
F. Feed Page



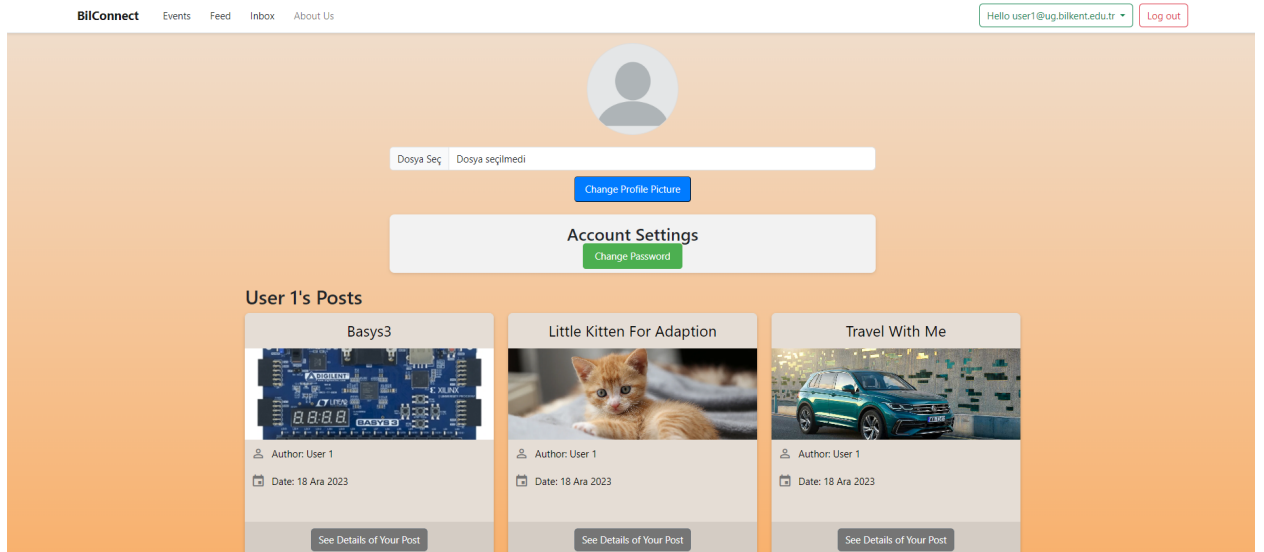
G. Self Reports



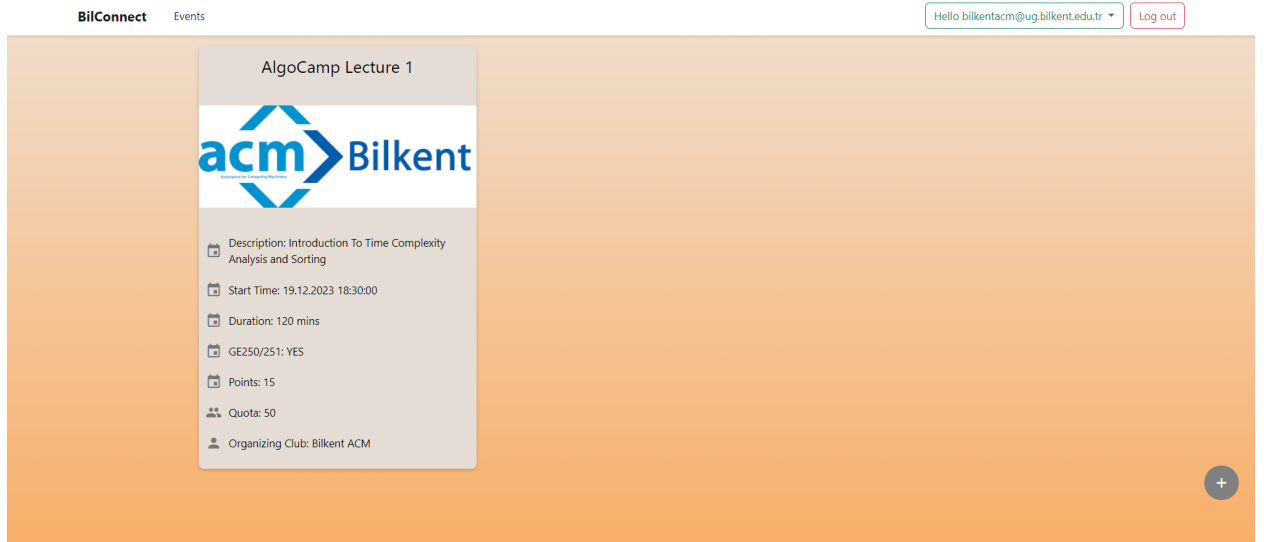
H. Self Posts



I. Your Profile



J. Club Event Page



K. Create Post Page

BilConnect [Events](#) [Feed](#) [Inbox](#) [About Us](#) Hello user1@ug.bilkent.edu.tr [Log out](#)

Create Post

Post Type

Title

Description

Upload Photo

Upload Additional Images

Price
 TL

[Create](#)

L. Create a Club Event Page

BilConnect [Events](#) Hello bilkentacm@ug.bilkent.edu.tr [Log out](#)

Create Club Event

Place

Description

Starting Time

Duration In Minutes

GE250/251 Points
☐ Will GE250/251 Points Be Given

Activity Name

Quota

Upload Photo


[Create](#)

M. Self Club Events

BilConnect Events

Hello bilkentacm@ug.bilkent.edu.tr [Log out](#)

AlgoCamp Lecture 1



Description: Introduction To Time Complexity Analysis and Sorting

Start Time: 19.12.2023 18:30:00

Duration: 120 mins

GE250/251: YES

Points: 15

Quota: 50

Organizing Club: Bilkent ACM

[Edit](#) [Delete](#)

+

N. Users and Reports Page For Admin

BilConnect

Events

Feed

Inbox

About Us

Hello admin-user

Log out

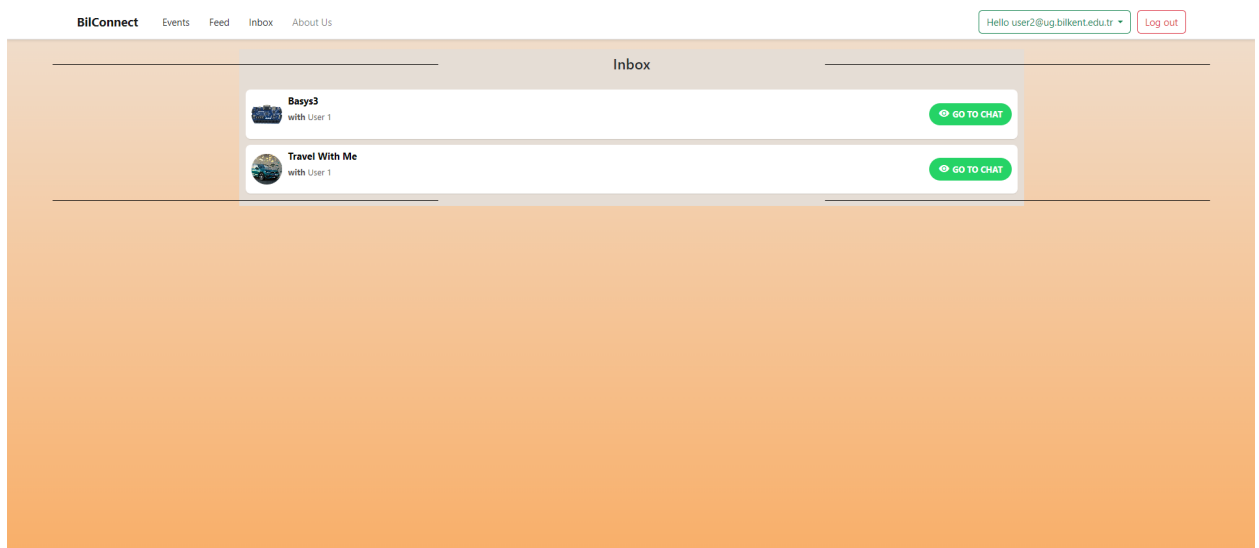
Admin Users			
Full Name	Username	Email	Action
Admin User	admin-user	admin@bilconnect.com	N/A

Club Account Users			
Full Name	Username	Email	Actions
Bilkent ACM	bilkentacm@ug.bilkent.edu.tr	bilkentacm@ug.bilkent.edu.tr	<button>Suspend</button>
Bilkent AI	bilkentai@ug.bilkent.edu.tr	bilkentai@ug.bilkent.edu.tr	<button>Suspend</button>

Regular Users			
Full Name	Username	Email	Actions
User 3	user3@ug.bilkent.edu.tr	user3@ug.bilkent.edu.tr	<button>Suspend</button>
User 2	user2@ug.bilkent.edu.tr	user2@ug.bilkent.edu.tr	<button>Suspend</button>
User 1	user1@ug.bilkent.edu.tr	user1@ug.bilkent.edu.tr	<button>Suspend</button>

[illegible]

O. Inbox Page



P. Chat Room Page

