CS 319 TERM PROJECT

Section 3
Group 3B
UNICLAPP

Analysis Report

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1. Introduction

We have decided to implement a student club manager for CS319 - Object-Oriented Software Engineering course's term project. This student club manager project is a website where students can follow the club activities they want. The project aims to provide students and student clubs of Bilkent University with an interactive environment.

The project enables students to follow the clubs that interest them, participate in the activities of the clubs they follow, and rate the activities they attend. Gathering students and student clubs on a single platform makes it easier for students to be informed about club activities and for student clubs to facilitate the processes of promoting student clubs' activities. Moreover, all these features contribute to the socialization of students.

All the user types and the features that will be found in the project are explained in detail in the Overview section to make the outline of the project more comprehensible. Section 2.2 describes what kind of actions actors can do and lists them. Section 2.3 describes some constraints affecting the system's and the user's behavior. Pseudo requirements are discussed in Section 2.4. Section 2.5 lists the use case diagram, class diagram, state transition diagrams, activity diagrams, and sequence diagrams. Finally, the context-specific terms used through the analysis report and references are provided in Section 3.

2. Proposed System

2.1 Overview

2.1.1 User Types

The system has four kinds of users:

- Student
- Club Coordinator
- Club Supervisor
- Admin

Student can follow student clubs, view upcoming events, attend club activities, track events that students will attend, and view campus map to easily find out the location of the event.
Club Coordinator can organize events, post the event announcement, and view the campus map.
Club Supervisor has different rights than Student and Club Coordinator. A Club Supervisor can edit events belonging to the club that he/she supervises. Moreover, A Club Supervisor can promote Student to Club Coordinator and demote Club Coordinator to Student for the club that he/she supervises.
Admin has the prerogative to access and edit all objects in the software as well as all rights of other types of users. Moreover, only the admin can create a Club Supervisor.

2.1.2 Sign Up & Sign In

The project will have a sign up and a sign in functionality. Thanks to these features of the application, each user will have a special account. The sign up and sign in page will welcome the club members who are responsible for the clubs' account and the students when entering the web application. On this page, there will be an e-mail and a password section that asks users to type this information to enter the application. Also, there will be a sign up option button for users to enter the application for the first time. To prevent a student from opening more than one account, students will only be able to register with Bilkent email or with their email registered in the Bilkent system. Once registered, all users except for club supervisors will be ready to log into their own accounts and have a great experience. Since club supervisors will be given accounts by the admin, they don’t need to register.

2.1.3 Organizing Club Events

This functionality is for the club coordinators to organize events. Thanks to this feature of the application, club coordinators will be able to easily create their activities. Each one will create an event by specifying the event information. Students will be able to easily see this event and indicate whether they will participate or not. In this way, students will not miss the events of the clubs they are interested in. In addition, each participating student will be able to rate that event at the end of the event. The overall score of the club will be determined by taking the average of these scores. By this way, the students can see the rate and have an idea about how effectively the examined club does their activities. Also, the club members can see the rate and have an idea about the impressions of the students. The clubs can evaluate their rates and work on how to improve their rates.

2.1.4 Event Tracker & Sync Event Calendar

This feature of the application is to help students not to miss an event they desire to go to. On the event tracker page, students will be able to see the club events they marked as "Attending" on a calendar. Thus, they will be able to follow the events they will attend in an orderly manner. In addition to this feature, the calendar on the site will be synchronized one-way with the Google Calendar application, which is used by almost everyone, to make it easier for students to follow the club events they have marked as "Attending".

2.1.5 Upcoming Events

This feature is for giving information about upcoming events. Thanks to the upcoming events page, students will be able to see the events added to the system by the student clubs that students follow. When they click on any upcoming event that appears on this page, they will be able to read detailed information about the event specified by the student club organizing the event. They will select the events they want to attend, from the events that they received detailed information about, and press the "Attending" button. Thus, the system will automatically add this event to the event tracker and trigger synchronization with Google Calendar. The upcoming events page works with the event tracker feature to help students easily learn information about the event they want to go to.

2.1.6 Profile Page

This is the page where students can view personal information. This personal information includes a profile picture, full name, e-mail address, student ID, and department, respectively. Students can also edit their personal information on this page. In addition, each student has a PSI score that is calculated by a specific algorithm based on their activities on the events organized by student clubs. PSI is a personal social activity indicator. It is based on the frequency of attending student club events, the role of the student in the club, etc. Students will experience a very valuable social activity experience thanks to PSI. For instance, the student who has a greater PSI score has more say in the decisions taken jointly by the student clubs.

2.1.7 Following

Students will be able to examine all the student clubs that are members of the application. The students can follow the student clubs that they want to be a part of and participate in their activities and events. Once a student club is followed, the students can see the upcoming events of the followed club. In this way, students can easily manage their calendars and participate in the activity to be carried out by the student club followed.

2.1.8 Campus Map

On this page, there is a bird's eye view of the campus plan of Bilkent University. One of the biggest problems experienced by many students, especially newcomers, finding the building and classroom where student club activities will be held. This page aims to be a solution to this problem experienced by many students. Students will be able to choose the building and class number they want to go to from the list. Then, the selected location will be marked on the map. All these operations can also be done automatically by clicking on the location information on the page with Upcoming Events.

2.1.9 Explore

On this page, students can explore all student clubs. They can view the filtering results by filtering as categories. They can also search student clubs by their name. Moreover, by clicking on the student clubs on this screen, they can view the student clubs' profiles. Finally, they can unfollow the club they follow from this screen and they can follow new clubs.

2.1.10 Leaderboard

On this screen, the competitions between the student clubs will be displayed. Clubs can be sorted with regards to their total number of followers, their average rate, the total number of events, and the total number of participants in their events.

2.1.11 Event History

This screen displays past events. The system automatically switches the event from the upcoming event state to the past event state. Past events seen on this screen can be rated. Moreover, events on this screen can be filtered by event categories. Finally, students can choose either past events of all clubs or past events of the following clubs.

2.2 Functional requirements

2.2.1 Sign Up

- Students and club coordinators sign up for the application with their Bilkent e-mail and students should set a password to his/her account.

2.2.2 Sign In

- To sign in to the application with a student and a club coordinator account, students and club coordinators should correctly enter their Bilkent e-mail and the password they created.
- To sign in to the application with a club supervisor account, club supervisors should correctly enter their account information provided by the admin.

2.2.3 View Profile

- Students, club coordinators, and club supervisors can view their profiles by clicking the Profile button.
- Student and club coordinator profiles contain their full name, ID, profile picture, department, email address, and PSI score, respectively.
- Club supervisor profile contains club supervisors' full name, e-mail address, profile picture, respectively.

2.2.4 Edit Profile

- Students, club coordinators, and club supervisors can edit their profile information.
- Students, club coordinators, and club supervisors can update or delete their profile pictures.
- Students, club coordinators, and club supervisors can change their accounts' passwords.
- Students, club coordinators, and club supervisors can submit their HES codes.

2.2.5 Follow Student Club

- Students and club coordinators can explore the clubs by filtering with respect to the categories of the clubs.
- Students and club coordinators can follow a club that they want to join or they desire to have some information about their events.
- If Students and club coordinators want, they can unfollow any club that they follow.

2.2.6 Create Club Event

- Club coordinators can create their club's events.
- In this functionality, club coordinators can explain where and when their events will occur.
- Club coordinators can determine how many people can sign up for that event.
- Club coordinators can specify the GE status and the F2F status of their events.

2.2.7 View Upcoming Events

- Students and club coordinators can see the upcoming events of a club they want by entering the page of that club.
- Students and club coordinators can filter the upcoming events with regard to their categories.

2.2.8 Enroll In an Event

- Students and club coordinators can register for events created by a club coordinator.
- Students and club coordinators can collect PSI points by enrolling and joining an event.

2.2.9 Cancel the Enrollment

- If students and club coordinators give up to attend the event they are registered for, they can cancel that event registration.
- If students and club coordinators cancel their registration, they cannot collect PSI points.

2.2.10 Track the Events

- Students and club coordinators can follow the activities they participate in the event tracker.
- Students and club coordinators can sync their Google Calendar with the event tracker.
- Students and club coordinators can label events as 1 to 5 based on their priority.

2.2.11 Rate the Events

- Students and club coordinators can rate the events they have participated in.
- Students and club coordinators can write a comment while rating the event.

2.2.12 View the Events' Rates

- Students and club coordinators can view the events rates they have participated in.
- Club coordinators can view the evaluation of the event organized by their club.
- Club supervisors can view the event evaluation of the club supervised by them.

2.2.13 View the Campus Map

- Students and club coordinators can view the Campus Map by clicking the Campus Map button.
- Students and club coordinators can also access this page from the event information.
- Students and club coordinators can select the building and classroom where they want to go.
- Students and club coordinators can transfer the coordinates of the location to another application such as Google Maps by clicking the Open With button.

2.2.14 View the PSI Score

- Students and club coordinators can view their PSI in the area just below their profile pictures and Profile page.

2.2.15 View the Event History

- Students and club coordinators can view the past events that they attended.
- Students and club coordinators can filter the past events with regards to their categories when viewing them.

2.2.16 View the Leaderboard

- Students and club coordinators can view the leaderboard of all clubs in the application.
- Student and club coordinators can sort the clubs by the number of followers, the average rate, the number of events, or the number of total participants.

2.2.17 View Club Profile

- Club coordinators and club supervisors can view the club profile containing club profile picture, club name, the number of followers, the average rate, club description, club category, and board member information.

2.2.18 Edit Club Profile

- Club coordinators can edit the club profile by changing the club profile picture, club description, club category, and board member information.

2.2.19 Rank Coordinators

- Club supervisors can promote students as club coordinators and demote club coordinators as students.

2.3 Nonfunctional requirements

2.3.1 Usability

- All pages should be displayed in the sidebar so that users can easily access them.
- The titles on the navigation bar, the titles on each page, and the labels on all buttons should be meaningful and self-explanatory so that users who do not read the user manual are able to understand how the website is used from the titles on the navigation bar, the titles on the screen and the labels on the buttons.
- All screens including pop-ups should be reached by being clicked at most 2.
- In order to be a user-friendly website, it is imperative to be consistent in the website layout and design by following a design pattern in which all screens accessed from the sidebar use the same main template.
- Except for the pop-ups, none of the screens on the website must be connected to each other, so users don’t have to go backward on the website.

- Web Content Accessibility Guidelines [1] must be followed, which makes content in the website more accessible to users with disabilities.

2.3.2 Reliability

- Users must access their upcoming and past events information %99 of the time without failure.
- Users who close the browser without properly logging out of their account will be automatically logged out.

2.3.3 Performance

- The load time of each page must be less than 1 second.
- The average response time of each button must be about 0.1 seconds.
- The website must keep the above-mentioned times the same, up to 15000 simultaneous users.

2.3.4 Supportability

- User feedback will be evaluated continuously and if there is any bug reported by users, it will be assigned to a developer within 24 hours.

2.3.5 Scalability

- When the daily traffic of this website, which has 50000 visitors per day, exceeds this number, the bandwidth limit should not be exceeded.

2.4 Pseudo Requirements

2.4.1 Implementation

- Django [2] must be used at the back-end side.
- Vue.js [3] must be used at the front-end side.
- The web app must be used with any type of browser on a computer, i.e., the web app should not be used with a mobile device to get a neat layout.
- PostgreSQL [4] must be used for the database.

2.5. System models

2.5.1. Use case model

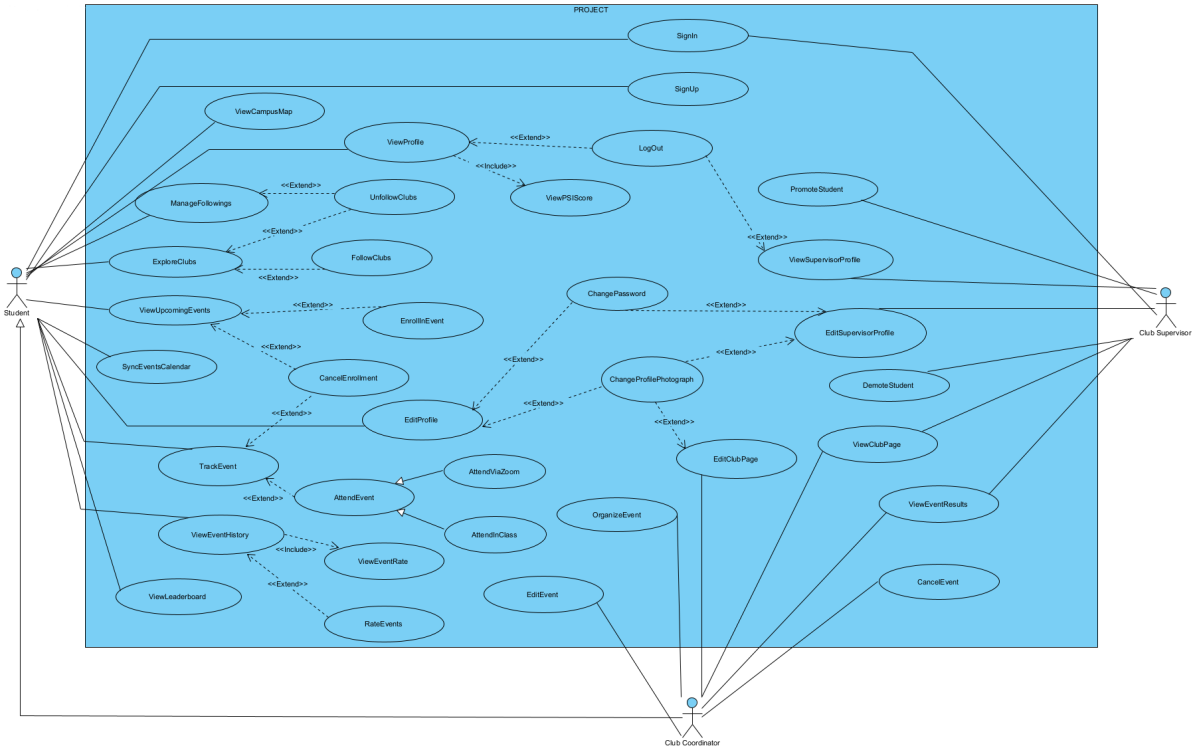

Fig. 1: *Use Case Diagram of Project*

Use Case Name: Sign In
Participating Actors: Initiated by Students
Initiated by Club Supervisor
Flow of Events:

1. User enters a valid email registered in the system.
2. User enters a valid password registered in the system.
3. User clicks the login button.
4. System checks whether this information is registered in the database.

Entry Conditions: User enters the web page.
Exit Conditions: User clicks the login button.
Quality Requirements: Email and password field cannot be empty.

Use Case Name: Sign Up
Participating Actors: Initiated by Students
Flow of Events:

1. Student enters a valid name.
2. Student enters an email registered in the Bilkent system.
3. Student enters a valid identification number.
4. Student enters a password.
5. Student clicks the sign up button.
6. System checks whether information entered is valid and if they are valid, it registers the Student to the system. If not, an error message appears.

Entry Conditions: Student enters a sign up page.
Exit Conditions: Student clicks the sign up button.
Quality Requirements: Students should enter an email registered in the Bilkent system and enter a valid identification number.

Use Case Name: Log Out
Participating Actors: Communicates with View Profile and View Supervisor Profile.
Flow of Events:

1. User opens the Profile page.
2. User clicks the logout button.
3. System logs out the user.

Entry Conditions: User opens Profile page.
Exit Conditions: System logs out the user.
Quality Requirements: There must be internet connection.

Use Case Name: View Campus Map
Participating Actors: Initiated by Students
Flow of Events:

1. Student clicks the Campus Map section.
2. System brings Campus Map page.
3. Student selects the place s/he wants to learn its location.
4. System retrieves data from Google Maps and displays the location of that place on the screen.

Entry Conditions: Student enters Campus Map section.
Exit Conditions: Student opens another page.
Quality Requirements: Students must select the place on the Bilkent Campus.

Use Case Name: View Profile
Participating Actors: Initiated by Students
Flow of Events:

1. Student clicks the Profile section.
2. System opens the Profile page and displays student's personal information such as name, id, profile picture, HES code.

Entry Conditions: Student enters Profile section.
Exit Conditions: Student opens another page.
Quality Requirements:

Use Case Name: View PSI Score
Participating Actors: Communicates with View Profile.
Flow of Events:

1. Student opens the Profile page.
2. System retrieves data of PSI for that student and displays it on the screen

Entry Conditions: Student opens Profile Page.
Exit Conditions: The system displays the data on the screen.
Quality Requirements:

Use Case Name: Manage Followings
Participating Actors: Initiated by Students
Flow of Events:

1. Student clicks the Followings section.
2. System opens the Followings page and displays a text area for this student to search a club, categories selection, and table of followings of this student.
3. The system retrieves the data of followings of this student and displays them in that table.

Entry Conditions: Student enters the Followings section.
Exit Conditions: Student opens another page.
Quality Requirements:

Use Case Name: Follow Clubs
Participating Actors: Communicates with Explore Clubs.
Flow of Events:

1. Student clicks the Follow button.
2. System changes the status of this club to the following for this student and writes this data to the database.

Entry Conditions: Student clicks the Follow button.
Exit Conditions: The system writes the data to the database.
Quality Requirements:

Use Case Name: Unfollow Clubs
Participating Actors: Communicates with Manage Followings and Explore Clubs.
Flow of Events:

1. Student clicks the Unfollow button.
2. System changes the status of this club to the unfollowing for this student and writes this data to the database.

Entry Conditions: Student clicks the Unfollow button.
Exit Conditions: The system writes the data to the database.
Quality Requirements:

Use Case Name: Enroll In Event
Participating Actors: Communicates with View Upcoming Events.
Flow of Events:

1. Student clicks the Enroll button.
2. System enrolls this student to that event and updates the participants of that event.
3. The system updates the database.

Entry Conditions: Student clicks the Enroll button.
Exit Conditions: The system writes the data to the database.
Quality Requirements: It is not possible to register for events on the same date.

Use Case Name: Cancel Enrollment
Participating Actors: Communicates with View Upcoming Events and Track Events.
Flow of Events:

1. Student clicks the Cancel button.
2. System cancels the enrollment of this student for that event and updates the participants of that event.
3. The system updates the database.

Entry Conditions: Student clicks the Cancel button.
Exit Conditions: The system writes the data to the database.
Quality Requirements:

Use Case Name: Explore Clubs
Participating Actors: Initiated by Students
Flow of Events:

1. Student clicks the Explore section.
2. System opens the Explore page and displays a text field, category selection section on the screen.
3. System retrieves data of the clubs registered at Bilkent University from the database and displays them in a table.
4. If a student selects a category, the system displays clubs related to that category, if not, all clubs are displayed.
5. If a student enters a club name in the text field, the system displays that club.

Entry Conditions: Student enters Explore page.
Exit Conditions: Student opens another page.
Quality Requirements: Only clubs registered to the Bilkent system can be displayed.

Use Case Name: View Upcoming Events
Participating Actors: Initiated by Students
Flow of Events:

1. Student clicks the Upcoming Events section.
2. System opens the Upcoming Events page and displays a text field, category selection section on the screen.
3. System retrieves data of the events that will take place at Bilkent University from the database and displays them in a table.
4. If a student selects a category, the system displays events related to that category, if not, all events are displayed.
5. If a student enters a club name in the text field, the system displays events that will be taken place by that club.
6. If a student selects the following part, the system only displays events that will take place by the clubs that the student follows.

Entry Conditions: Student enters Upcoming Events page.
Exit Conditions: Student opens another page.
Quality Requirements: Only clubs registered in Bilkent should be entered in the search section.

Use Case Name: Sync Event Calendar
Participating Actors: Initiated by Students
Flow of Events:

1. A Student enters email and password.
2. This student clicks the update account button.
3. System checks the information entered and if it is valid it synchronizes with google calendar.
4. If the information is not valid the system shows an error message.

Entry Conditions: Student enters email and password.
Exit Conditions: The system synchronizes or shows an error message.
Quality Requirements: Email and password entered must be valid.

Use Case Name: View Event History
Participating Actors: Initiated by Students
Flow of Events:

1. Student clicks the Event History section.
2. System opens the Event History page and displays a text field, category selection section on the screen.
3. System retrieves data of the events that this student has attended from the database and displays them in a table.
4. If a student selects a category, the system displays events related to that category, if not, all events are displayed.
5. If a student enters a club name in the text field, the system displays the events that this student has attended and organized by this club.

Entry Conditions: Student enters Event History page.
Exit Conditions: Student opens another page.
Quality Requirements: Only clubs registered in Bilkent should be entered in the search section.

Use Case Name: Rate Events
Participating Actors: Communicates with View Event History
Flow of Events:

1. Student opens Event History page.
2. The system displays events this student has attended.
3. This student clicks the event he or she wants to vote for.
4. This student votes for that event.
5. The system updates the event rate accordingly and writes this data to the database.

Entry Conditions: Student clicks the event.
Exit Conditions: The system updates the database..
Quality Requirements: Students must vote for an event with a score between 0 and 5.

Use Case Name: View Event Rate
Participating Actors: Communicates with View Event History
Flow of Events:

1. Student opens Event History page.
2. The system displays events this student has attended.
3. The system shows the event rate for each event on the screen.

Entry Conditions: Student opens Event History page.
Exit Conditions: The system shows necessary information.
Quality Requirements: In order to display event rate, that event must be rated.

Use Case Name: Edit Profile
Participating Actors: Initiated by Students
Flow of Events:

1. Student opens Profile page.
2. This student changes the name, id, email, department, HES code, or password.
3. This student clicks the update profile button.
4. System checks this information and if it is valid it changes them and updates the database.

Entry Conditions: Student opens Profile page.
Exit Conditions: The system updates the database.
Quality Requirements: Changed information must be valid.

Use Case Name: Change Password
Participating Actors: Communicates with Edit Profile.
Flow of Events:

1. Student enters a new password.
2. This student confirms this change.
3. System checks this information and if it is valid it changes it and updates the database.

Entry Conditions: Student enters a new password.
Exit Conditions: The system updates the database.
Quality Requirements: Changed information must be valid.

Use Case Name: Change Profile Photograph
Participating Actors: Communicates with Edit Profile, Edit Supervisor Profile, and Edit Club Page.
Flow of Events:

1. Student changes the profile photograph.
2. This student confirms this change.
3. System checks this change and if it is valid it changes it and updates the database.

Entry Conditions: Student changes the profile photograph.
Exit Conditions: The system updates the database.
Quality Requirements: Changed information must be valid.

Use Case Name: View Event Tracker
Participating Actors: Initiated by Students
Flow of Events:

1. Student clicks the Event Tracker section.
2. System opens the Event Tracker page and displays a calendar and synchronize section on the screen.
3. System retrieves data of the events that this student has enrolled from the database and displays them in this calendar.
4. If the student enters the necessary information and clicks the update button, the events of this student are synchronized with the google calendar linked to the e-mail address s/he entered.

Entry Conditions: Student enters Event Tracker page.
Exit Conditions: Student opens another page.
Quality Requirements: Students should enter valid email and password to synchronize the account.

Use Case Name: Attend Event
Participating Actors: Communicates with View Event Tracker.
Flow of Events:

1. Student selects the date.
2. The system displays the events that this student has registered for the selected day.
3. If an event is performed online, this student clicks the attend button and zoom or other tools are opened.

Entry Conditions: Student clicks the attend button.
Exit Conditions: The system opens a necessary tool.
Quality Requirements: In order to open a tool, events must be performed online.

Use Case Name: Attend Via Zoom
Participating Actors: Communicates with Attend Event.
Flow of Events:

1. If the event is online, the student clicks the attend button.
2. The system opens the zoom tool and directs the student to the event room.

Entry Conditions: Student clicks the attend button.
Exit Conditions: The system opens a necessary tool.
Quality Requirements: The event must be online.

Use Case Name: Attend in Class
Participating Actors: Communicates with Attend Event.
Flow of Events:

1. If the event is face to face, the student goes to the class which the event performs.
2. After this student attends the event, the system changes that student's event status to attended.

Entry Conditions: Student goes to the class.
Exit Conditions: The system changes the status.
Quality Requirements: The event must be face to face.

Use Case Name: View Leaderboard
Participating Actors: Initiated by Students
Flow of Events:

1. Student clicks the Leaderboard section.
2. System opens the Leaderboard page and displays a text field, type of sort selection section on the screen.
3. The system receives the data of the clubs registered in the Bilkent System and sorts them according to the number of followers by default in a table.
4. The system shows the name, category, number of followers, total rates, total events and total participants of the clubs.
5. If the student chooses a different sorting type such as total rate, total events or total participants, the system sorts the clubs accordingly.

Entry Conditions: Student enters Leaderboard page.
Exit Conditions: Student opens another page.
Quality Requirements: Only clubs registered in Bilkent should be entered in the search section.

Use Case Name: Organize Event
Participating Actors: Initiated by Club Coordinator
Flow of Events:

1. Club coordinator clicks the Organize Event section.
2. The system opens the Organize Event page and displays a section for event information such as event name, location, date and a table for upcoming events of the club.
3. The club coordinator enters the name, description, location, and date of the event and clicks the create event button.
4. The system writes this data to the database and creates a new event in the database.
5. The system updates the upcoming events of that club on the screen.

Entry Conditions: Club coordinator enters the Organize Event page.
Exit Conditions: Club coordinator opens another page.
Quality Requirements: There must be no other events on the date chosen by the club coordinator.

Use Case Name: Cancel Event
Participating Actors: Initiated by Club Coordinator
Flow of Events:

1. Club coordinator opens the Upcoming Events section.
2. Club coordinator selects the event and cancels it.
3. The system detects this change and updates the database.

Entry Conditions: Club coordinator clicks cancel button.
Exit Conditions: The system updates the database.
Quality Requirements:

Use Case Name: Edit Event
Participating Actors: Initiated by Club Coordinator
Flow of Events:

1. Club coordinator opens the Upcoming Events section.
2. Club coordinator selects the event and clicks the edit button.
3. This coordinator makes some adjustments.
4. The system detects this change and updates the database.

Entry Conditions: Club coordinator clicks edit button.
Exit Conditions: The system updates the database.
Quality Requirements: There must be no other events on the new date.

Use Case Name: View Event Results
Participating Actors: Initiated by Club Coordinator
Flow of Events:

1. Club coordinator clicks the Event Results section.
2. The system opens the Event Results page and displays the name, description, location, date, and result field for the event.
3. The system retrieves this data from the database and shows it in that table.

Entry Conditions: Club Coordinator enters the Event Results page.
Exit Conditions: Club Coordinator opens another page.
Quality Requirements:

Use Case Name: View Club Page
Participating Actors: Initiated by Club Coordinator and Club Supervisor
Flow of Events:

1. Club Coordinator clicks the Club Profile section.
2. System opens the Club Profile page and displays club's information such as name, followers, rate, profile photograph, description, category, and board members.

Entry Conditions: Club Coordinator enters the Club Profile page.
Exit Conditions: Club Coordinator opens another page.
Quality Requirements:

Use Case Name: Edit Club Page
Participating Actors: Initiated by Club Coordinator
Flow of Events:

1. Club Coordinator opens Club Profile page.
2. This coordinator changes the name, description, category, board member, or club profile photograph.
3. This coordinator clicks the update profile button.
4. System checks this information and if it is valid it changes them and updates the database.

Entry Conditions: Club Coordinator enters the Club Page.
Exit Conditions: The system updates database.
Quality Requirements: Changed information must be valid.

Use Case Name: View Supervisor Profile
Participating Actors: Initiated Club Supervisor
Flow of Events:

1. Club Supervisor clicks the Profile section.
2. System opens the Profile page and displays the name, email, and profile photograph of this supervisor.

Entry Conditions: Club Coordinator enters the Profile page.
Exit Conditions: The system displays all the information.
Quality Requirements:

Use Case Name: Edit Supervisor Profile
Participating Actors: Initiated by Club Supervisor
Flow of Events:

1. Club Supervisor opens Profile page.
2. This supervisor changes the name, email, password, or profile photograph.
3. This supervisor clicks the update profile button.
4. System checks this information and if it is valid it changes them and updates the database.

Entry Conditions: Club Supervisor enters the Profile Page.
Exit Conditions: The system updates database.
Quality Requirements: Changed information must be valid.

Use Case Name: Promote Student
Participating Actors: Initiated by Club Supervisor
Flow of Events:

1. Club supervisor fills in the name, identification number, and email section.
2. Club supervisor clicks the promote button.
3. The system checks whether name, identification, and email entered are valid or not. If valid, the student with this ID is changed to the club coordinator. If not, an error message is displayed.

Entry Conditions: Club Coordinator clicks the promote button.
Exit Conditions: The system changes the status of the student or displays an error message.
Quality Requirements:

Use Case Name: Demote Student
Participating Actors: Initiated by Club Supervisor
Flow of Events:

1. The system retrieves club coordinator data from the database and displays it on the screen.
2. Club supervisor clicks the demote button.
3. The system changes the club coordinator to the student.

Entry Conditions: Club Coordinator clicks the demote button.
Exit Conditions: The system changes the status of the club coordinator.
Quality Requirements:

2.5.2. Dynamic models

2.5.2.1 Sequence Diagrams

2.5.2.1.1 Follow Club Sequence Diagram

Scenario: Student clicks the Explore and sees the information of the student club from the list. The student follows the student club by clicking the Follow button. After the Student clicks the Follow button, the student is added to the followers list of the student club.

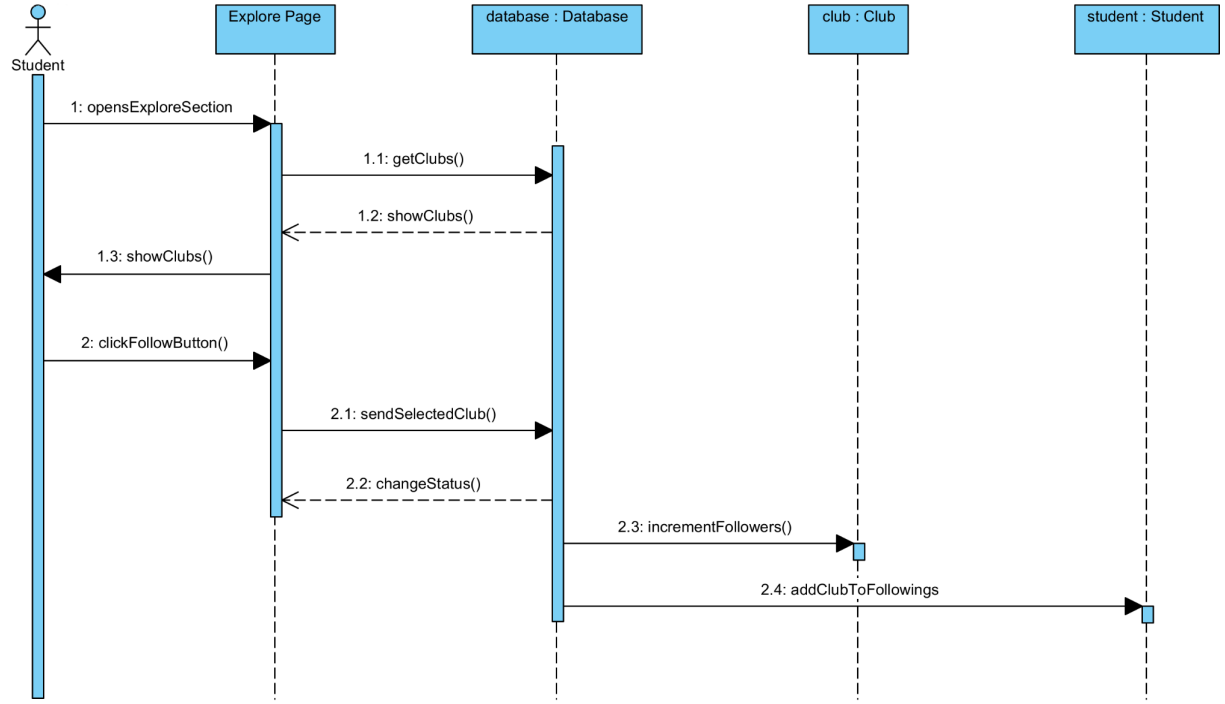

Fig. 2: *Sequence diagram showing the sequence of events when a student follows a student club.*

2.5.2.1.2 Organize Event Sequence Diagram

Scenario: Club Coordinator creates a club event by filling in the necessary information such as name, place, date. The club Coordinator determines if the status of a club event is online or face to face. If a club event is online, the Club Coordinator adds the Zoom link of the event. If a club event is not online, the Club Coordinator chooses the place where the event will take place. Then the system checks the availability of date and place determined by the Club Coordinator.

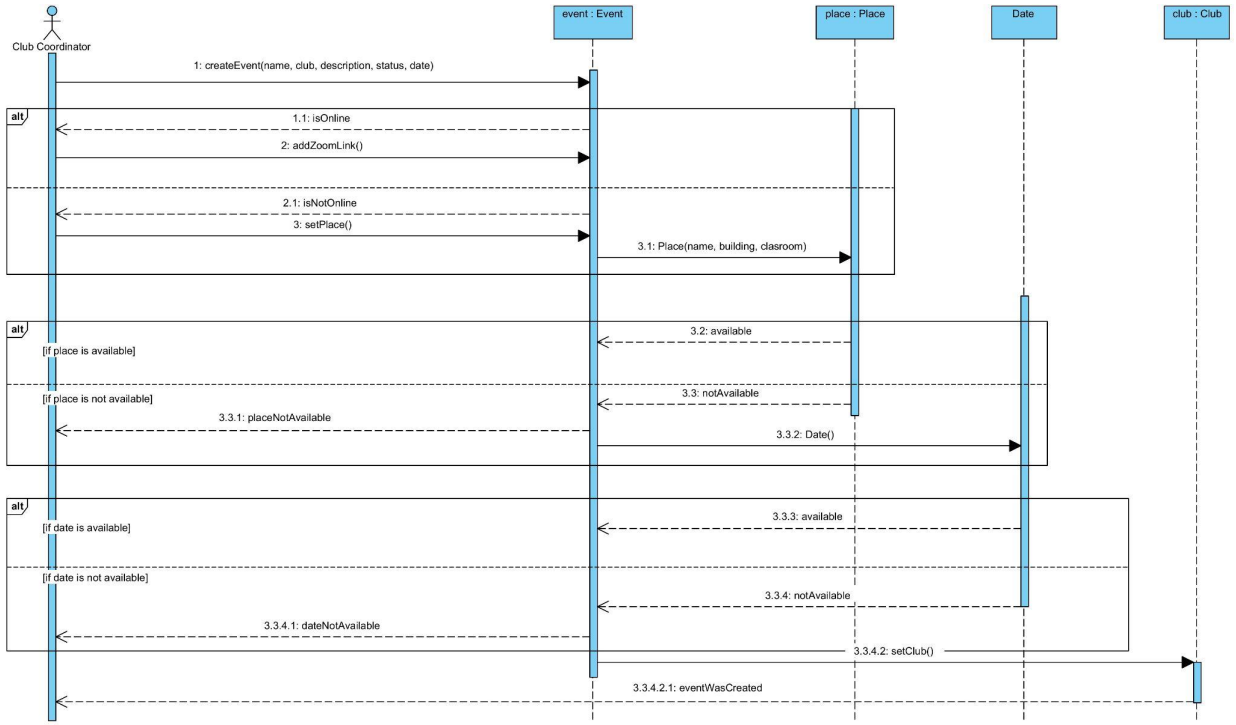

Fig. 3: *Sequence diagram showing the sequence of events when a club coordinator creates a new student club's event.*

2.5.2.1.3 Sign In Sequence Diagram

Scenario: The student and Club Supervisor enter their Bilkent email address and passwords and click the Sıgn In button. System checks the accuracy of the given information by searching in the database. If the given information matches the user in the database, the Main Page will display. If the given information does not match any account in the database, a warning message will display.

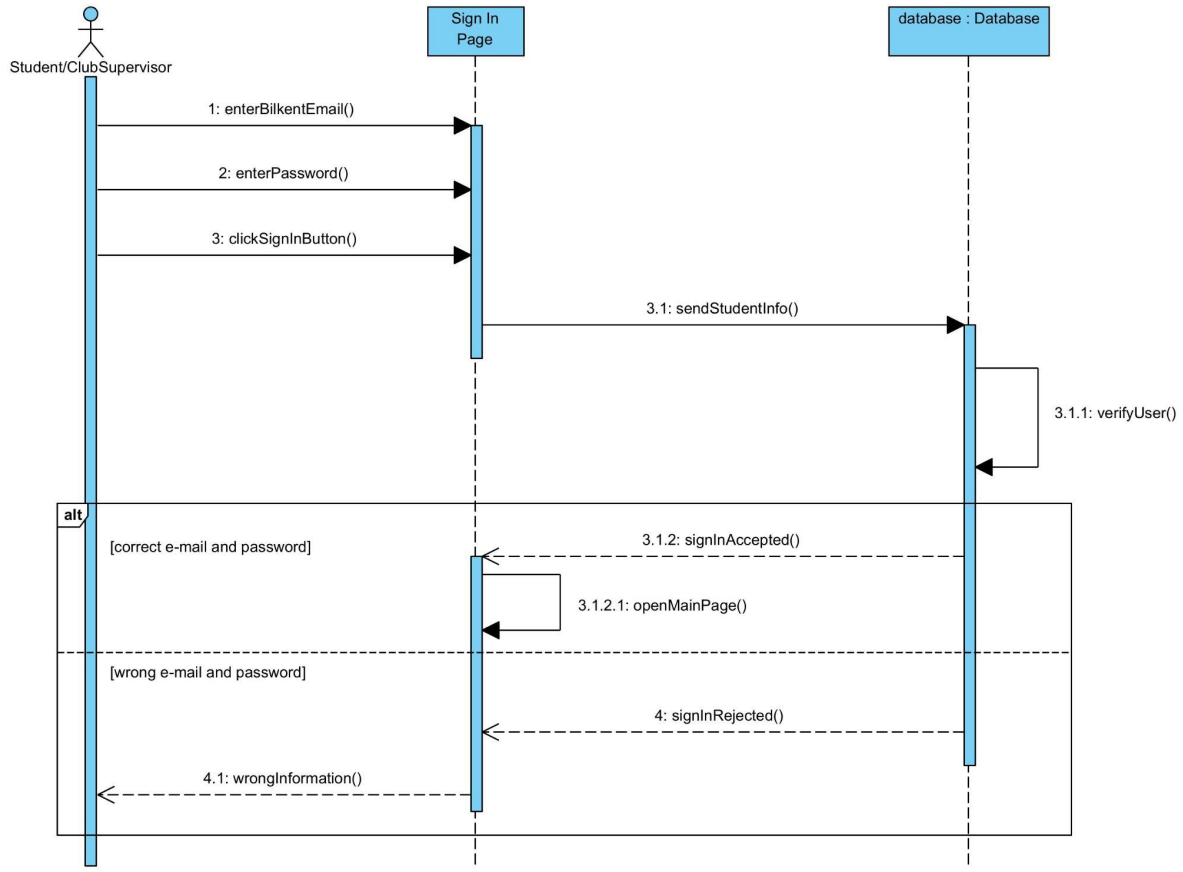

Fig. 4: *Sequence diagram showing the sequence of events when the student and club supervisor signed in to the website.*

2.5.2.1.4 Enroll in Event Sequence Diagram

Scenario: The student views the upcoming events of different student clubs as a list. Student enrolls, in any event, he/she wants by clicking the Attend button. The system adds this student to the possibleParticipants list of events. If the student cancels his/her enrollment the system deletes this student from the possibleParticipants list of the event.

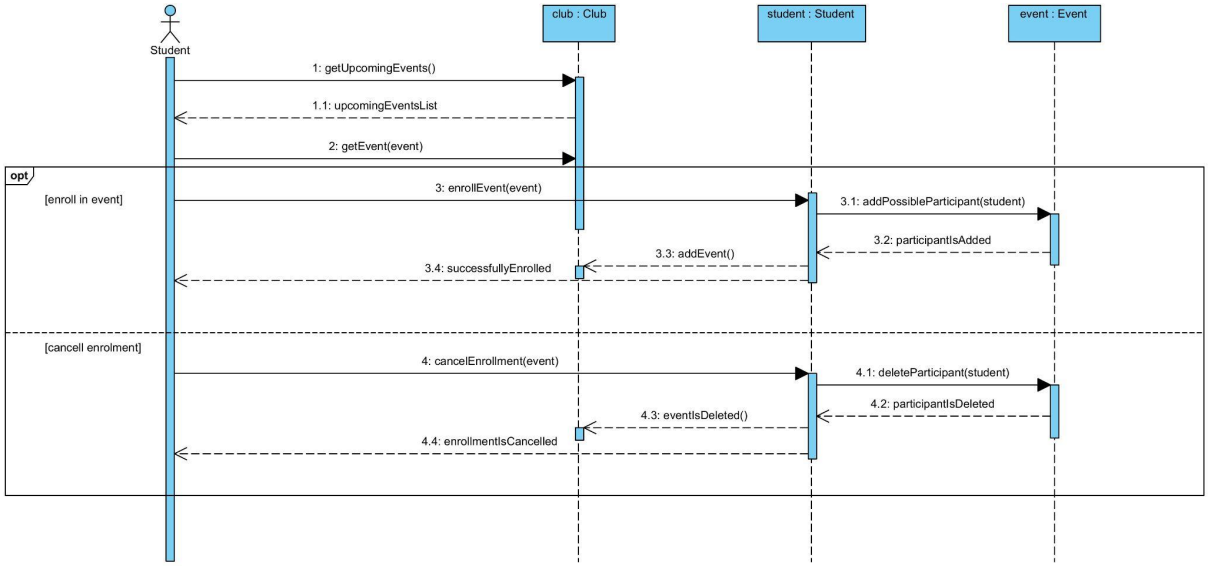

Fig. 5: *Sequence diagram showing the sequence of events when a student enrolls in a club event or cancels his/her enrollment.*

2.5.2.1.4 Promote Student Sequence Diagram

Scenario: The Club Supervisor clicks the Rank Coordinator. The Club Supervisor fills in the information of s student to become Club Coordinator. If the given information is valid, the student will be promoted to Club Coordinator and the System adds this student to the board member list of the student club. If the given information is not valid, a warning message will display.

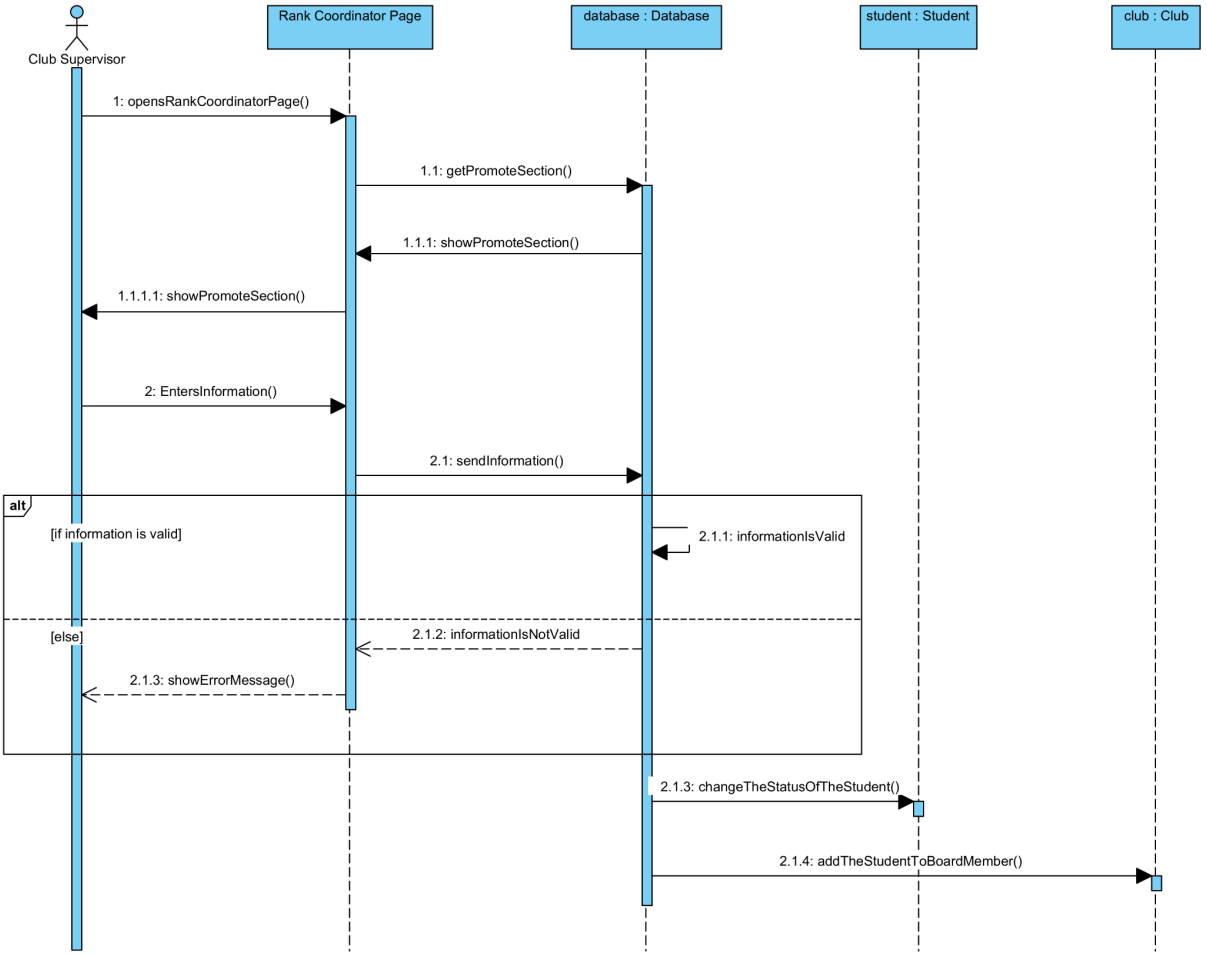

Fig. 6: *Sequence diagram showing the sequence of events when a club supervisor promotes a student as a club coordinator.*

2.5.2.2 Activity Diagrams

2.5.2.2.1 Organize Event Activity Diagram

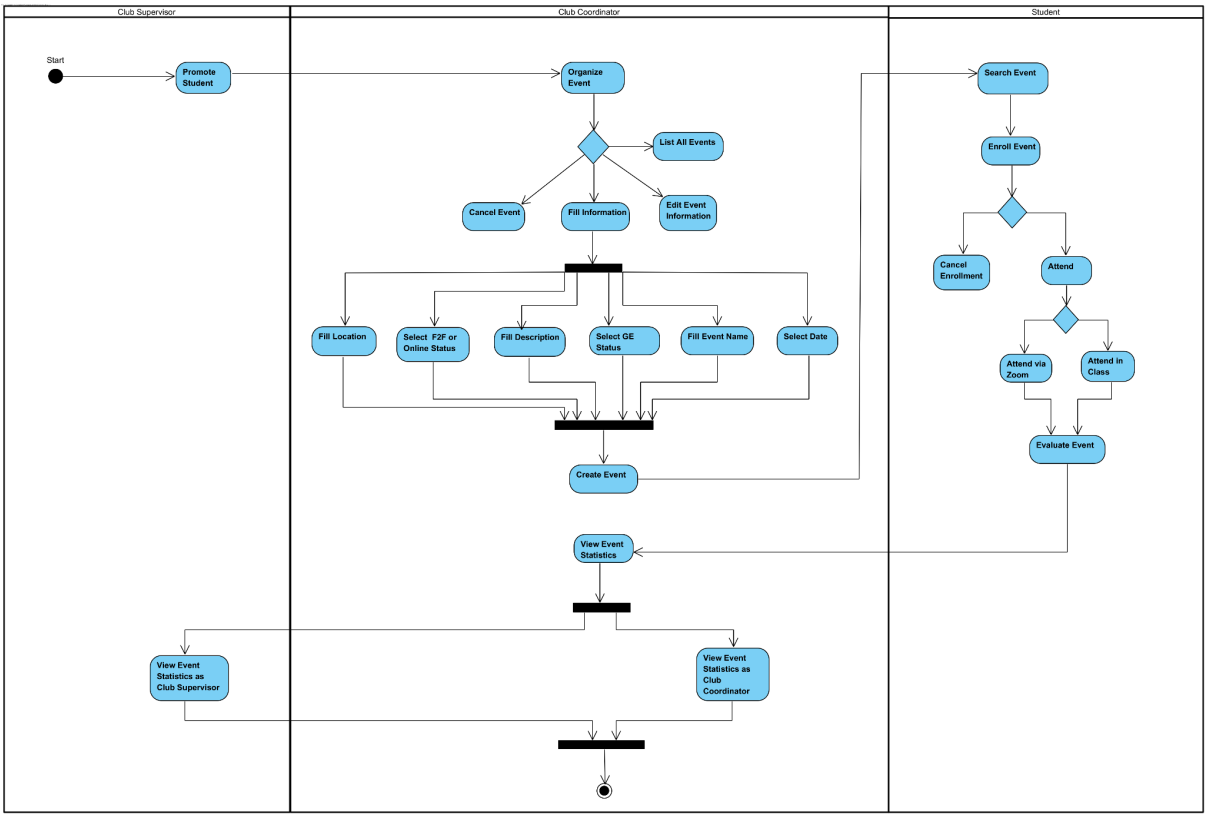

Fig 7: Activity Diagram for showing organize event activities.

Organize Event Activity Diagram Explanation:

When a club supervisor promotes a student to a club coordinator for organizing an event, the system waits for his/her to choose. The club coordinator can list all events, cancel an event, fill in information for an event, and edit event information.

If the club coordinator chooses the list all events option, s/he can view all the events on a list.

If the club coordinator chooses the cancel event option, s/he can cancel an event.

If the club coordinator chooses the edit event information option, s/he will be able to edit the event's location, F2F or online option, description, GE status, name, and date.

If the club coordinator chooses the fill information option, s/he should enter the event's location, F2F or online option, description, GE status, name and date. After entering all this information, s/he will be able to create the event. After creating the event, the student can find this event by searching. Then the student can enroll in this event.

If a student enrolls in an event, s/he will have two options. One is the cancel enrollment option, the other one is the attend option.

If a student chooses the cancel enrollment option, s/he will be deregistered from the event.

If a student chooses the attend option, s/he will be able to attend the enrolled event. Depending on the F2F and online option of the event, s/he can participate in the event via Zoom or in the class. After attending the event, the student can evaluate the event. The event statistics can be viewed by the club supervisor and the club coordinator after the event evaluations are done.

2.5.2.2.2 Sign In & Sign Up Activity Diagram

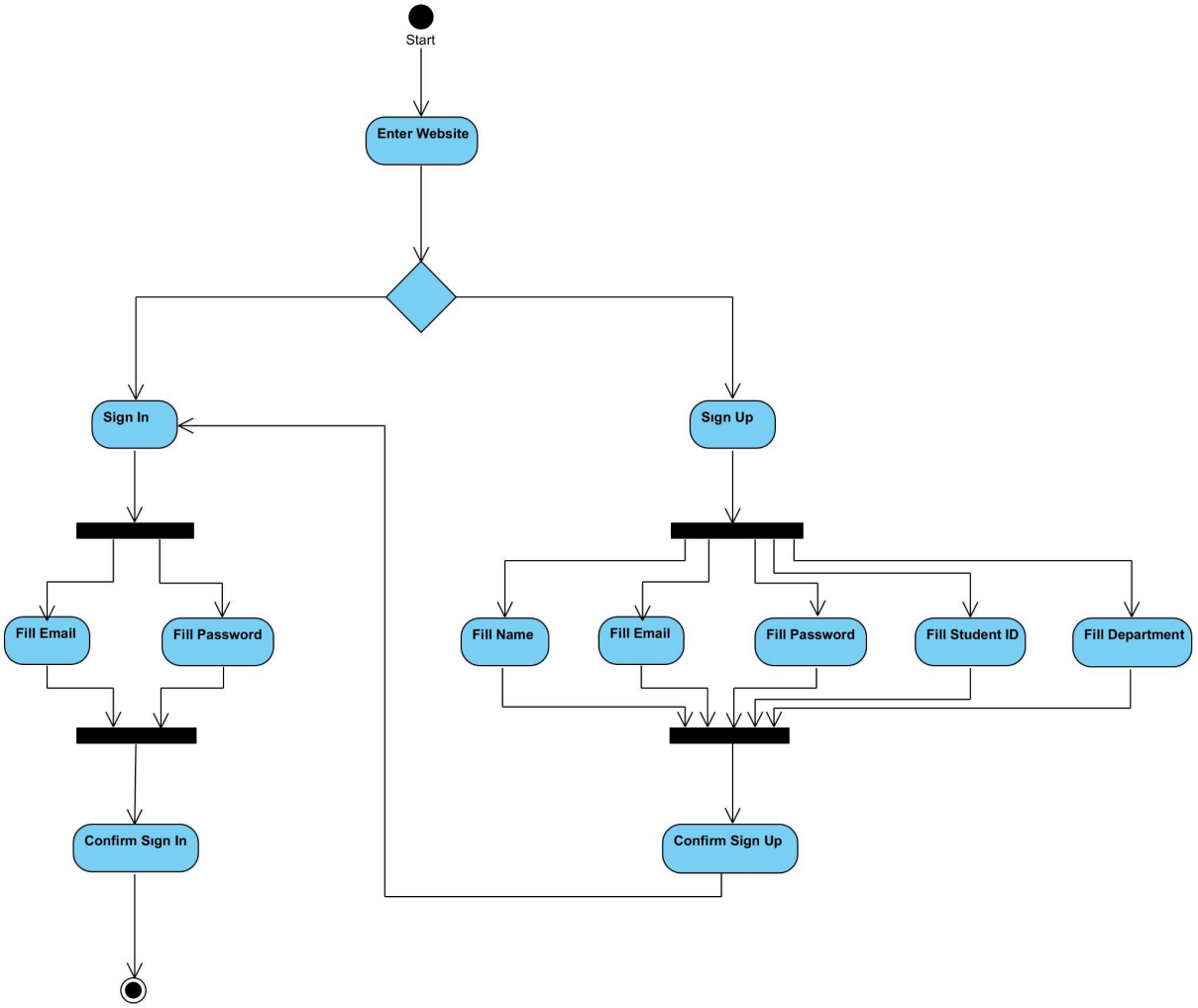

Fig. 8: Activity Diagram for showing sign in & sign up activities.

Sign In & Sign Up Activity Diagram Explanation:

When a student or a responsible club member enters the web application, there will be two options for them. One is sign in, the other one is sign up. However, the club

supervisors cannot sign up, because their emails will be their own bilkent e-mails and the passwords will be given to them.

If the user selects the sign up option, s/he should enter his/her full name, the Bilkent email, a password, the Bilkent ID and department. Then the user will confirm his/her registration. If all information is entered correctly, the user will be registered to the application. After these steps, the sign in page will welcome the user. The user should write his/her email and password to enter the application. If all information is entered correctly, the user will be able to enter the application.

If the user selects the sign in option, s/he should enter his/her Bilkent ID or Bilkent e-mail and his/her password. If the user has correctly entered his/her information and clicked the sign in button, s/he will be able to enter the application.

2.5.2.3 State Diagrams

2.5.2.3.1 State of an Event

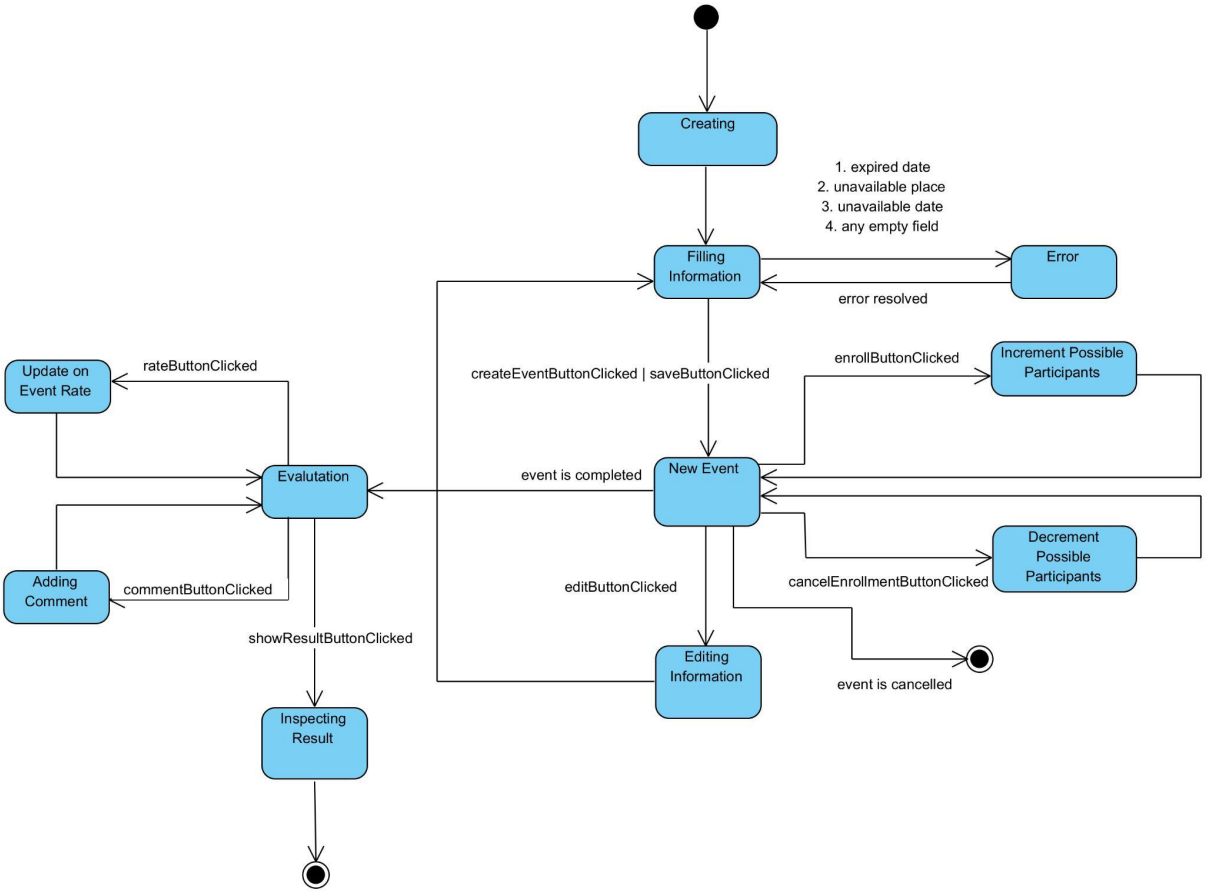

Fig. 9: State Diagram of an Event object

The initial state of an event is its creation. This state is directly linked to the event information filling state. If the user enters a past date, enters an unavailable location, enters an unavailable date, or leaves any field blank, it will go to the error state and return to the old state when the error is resolved. When the event creation button is clicked, a new event is

created. In the new event state, every time the event is enrolled, the state transitions into increment possible participants state. From here, the old state is turned after the number of participants is increased. Moreover, if desired, it can be switched from this state to editing event information. Editing information goes directly to filling information. Moreover, when the event is completed in the new event state, it transitions into the event evaluation state. Here, the status of adding comments and updating the event rate is repeatedly visited. When the results are requested to be inspected, an event object transitions into the inspection state of the results. This is the final state.

2.5.2.3.2 State of a Club

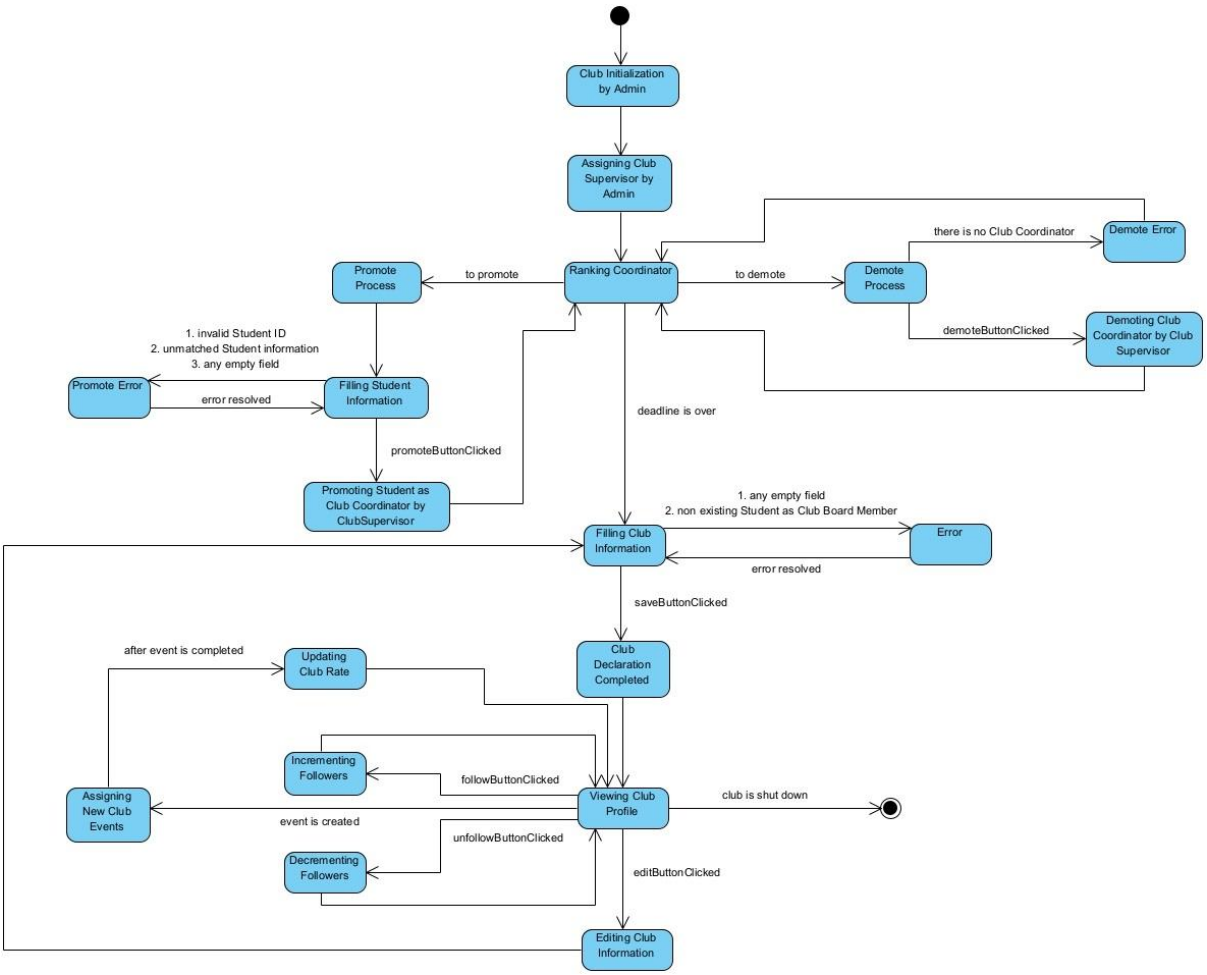

Fig. 10: State Diagram of a Club object

The initial state of a club is the initialization of the club object by the admin panel. This state is directly linked to assigning the club supervisor to the club object by the admin panel. This state directly interacts with the ranking coordinator state. This state transitions into either the promote process state to promote or the demote process state to demote. If it goes to the demote process state and there is no club coordinator in the list, the demote error state occurs and it turns back to the ranking coordinator state. If it goes to the demote process state and there is any club coordinator in the list, demoting club coordinator happens and it turns back to the ranking coordinator state. On the other hand, if the ranking coordinator state goes to the promote process state, the promote process state is directly linked to filling the student information state to be promoted. In this state, if there is an invalid ID or any

unmatched student information or any empty field, the promote error state occurs. When the error is resolved, this error state turns back to the filling information state. After promoting a student as a club coordinator, the new state becomes again the ranking coordinator state. When the deadline is over, this state interacts with the filling club information state. If there is an empty field or any unmatched student information, it goes to the error state. When the error is resolved, it turns back to the filling club information state. When there is no error, the filling club information state transitions into the club declaration completed state. This state is directly linked to the viewing club profile state. Here, incrementing and decrementing followers states are repeatedly visited. When an event is created, this state transitions into the assigning new club event state which interacts with the updating club rate state if the event is over. The updating club rate state is directly linked to the viewing club profile state. Moreover, if it is desired, the viewing club profile state transitions into the editing club information state which directly interacts with the filling club information state. To reach the final state, the club should be shut down, i.e., the club object should be deleted from the database.

2.5.3. Object and class model

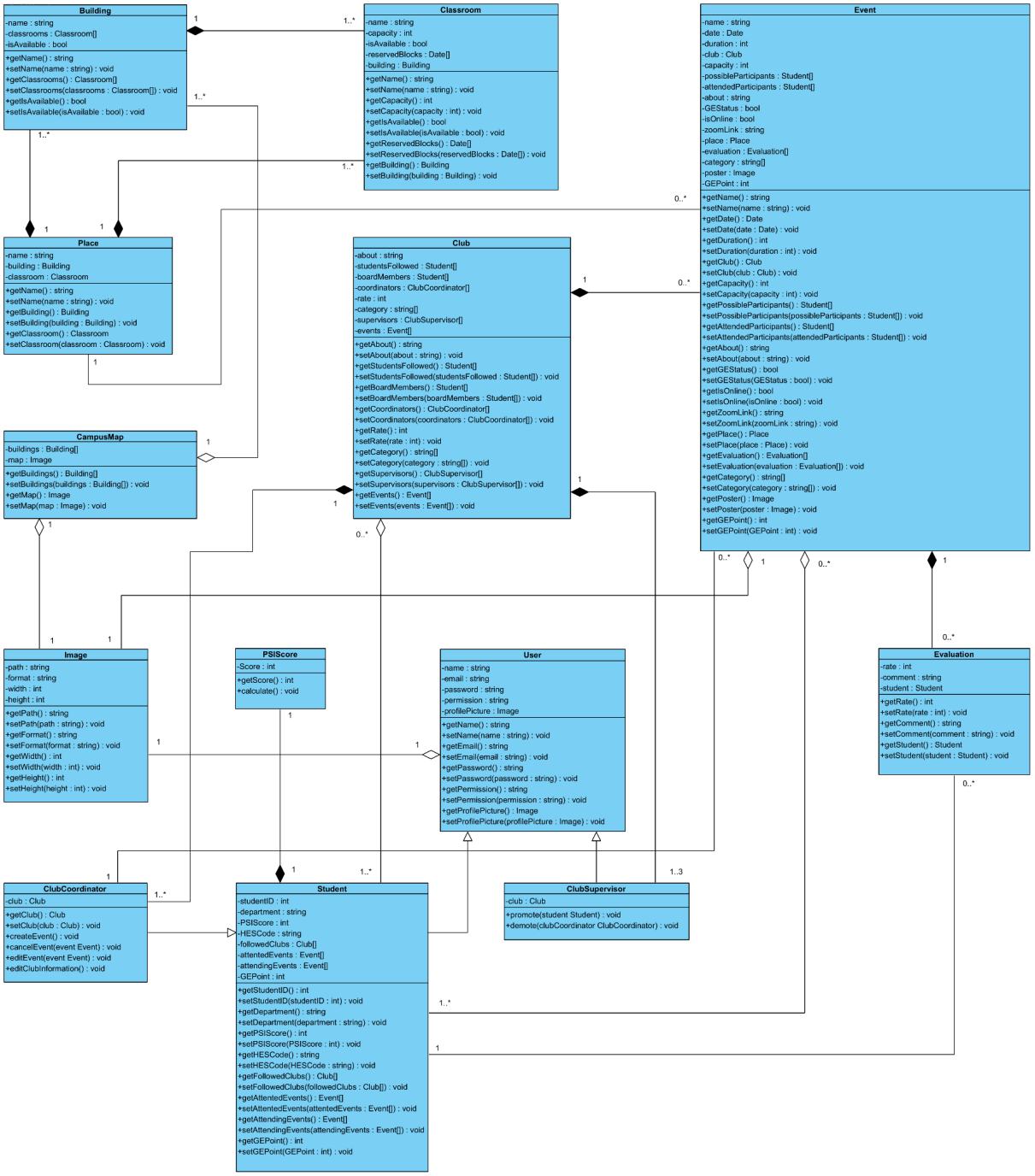

Fig. 11: The class diagram of the application

The class diagram of the web-based application is given above. The application's class diagram consists of 13 classes. This class diagram shows the relations between base classes.

User Class: This class is an abstract class and it is a superclass. Its subclasses are Student class and ClubSupervisor class.

Student Class: This class is a subclass of the User class and superclass of the ClubCoordinator class. 0 to many Event classes consists of 1 to many Student classes and 0 to many Club classes consists of 1 to many Student classes. Also, the Student class has associations with PSI Score and Evaluation classes.

ClubSupervisor Class: This class is a subclass of the User class. One Club class consists of 1 to 3 ClubSupervisor classes. ClubSupervisor classes can promote the students to become ClubCoordinator. Then these promoted students will be able to create, cancel and edit Events.

ClubCoordinator Class: This class is a subclass of the Student class. One Club class consists of 1 to many ClubCoordinator classes. ClubCoordinator classes can create many Events.

PSIScore Class: This class has an association with the Student class. This class shows the PSI score of a student.

ImageClass: This class is for images. This class has associations with CampusMap, User and Event classes. An Event and a User class may have one image.

Club Class: This class consists of 0 to many Event classes, 1 to many ClubCoordinator and Student classes and 1 to 3 ClubSupervisor classes.

Event Class: This class has associations with Place, Club, Image, Student and Evaluation classes. This class is for the information of the events. 0 to many Event classes may have 1 to many Student classes, one Place class and one Club class. One Event class may have one Image class and 0 to many Evaluation classes.

Evaluation Class: This class is for evaluations. It has associations with Event and Student classes. One Student class can have 1 Evaluation class and one Event class may have 0 to many Evaluation classes.

CampusMap Class: This class has associations with Building and Image classes. This class is for the campus map. One Campus map class has exactly one Image class and 1 to many Building classes.

Place Class: This class is a superclass. Its subclasses are Building and Classroom classes. Also, it has association with Event class. This class is for the place information of the events. One Place class may have 0 to many Event classes, 1 to many Building and Classroom classes.

Building Class: This class is a subclass of the Place class. It has associations with Classroom, Place and CampusMap classes. One Building class may have 1 to many Classroom classes and one Place and CampusMap class consists of 1 to many Building classes. This class is for the building information of an event.

Classroom Class: This class is a subclass of the Place class. Also, it has an association with the Building class. One Building and Place class consists of 1 to many Classroom classes. This class is for the classroom information of an event.

2.5.4 User interface - navigational paths and screen mock-ups

2.5.4.1 Navigational Path

Fig. 12: The navigational path of the user interface screens for Student

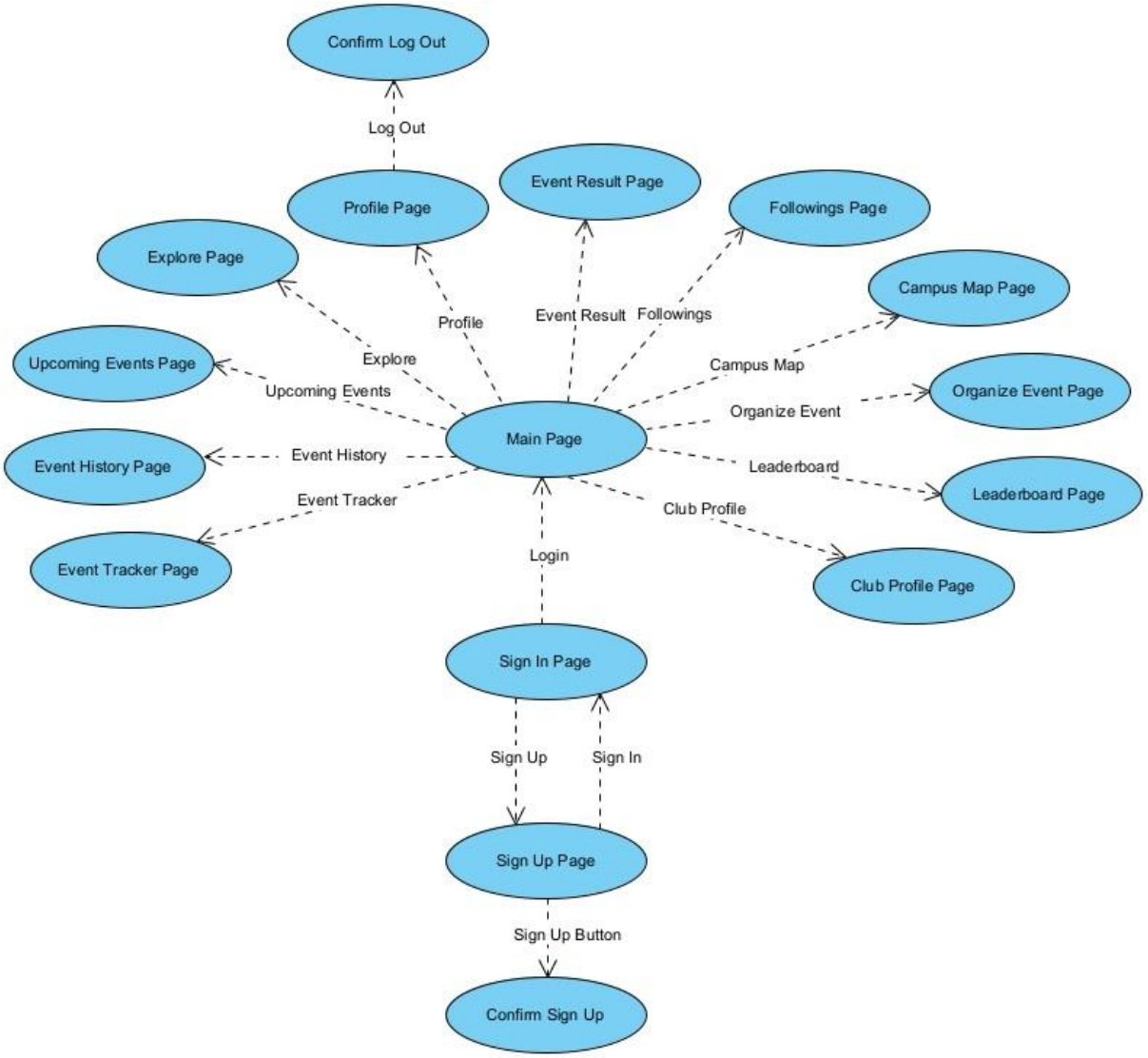

Fig. 13: The navigational path of the user interface screens for Club Coordinator

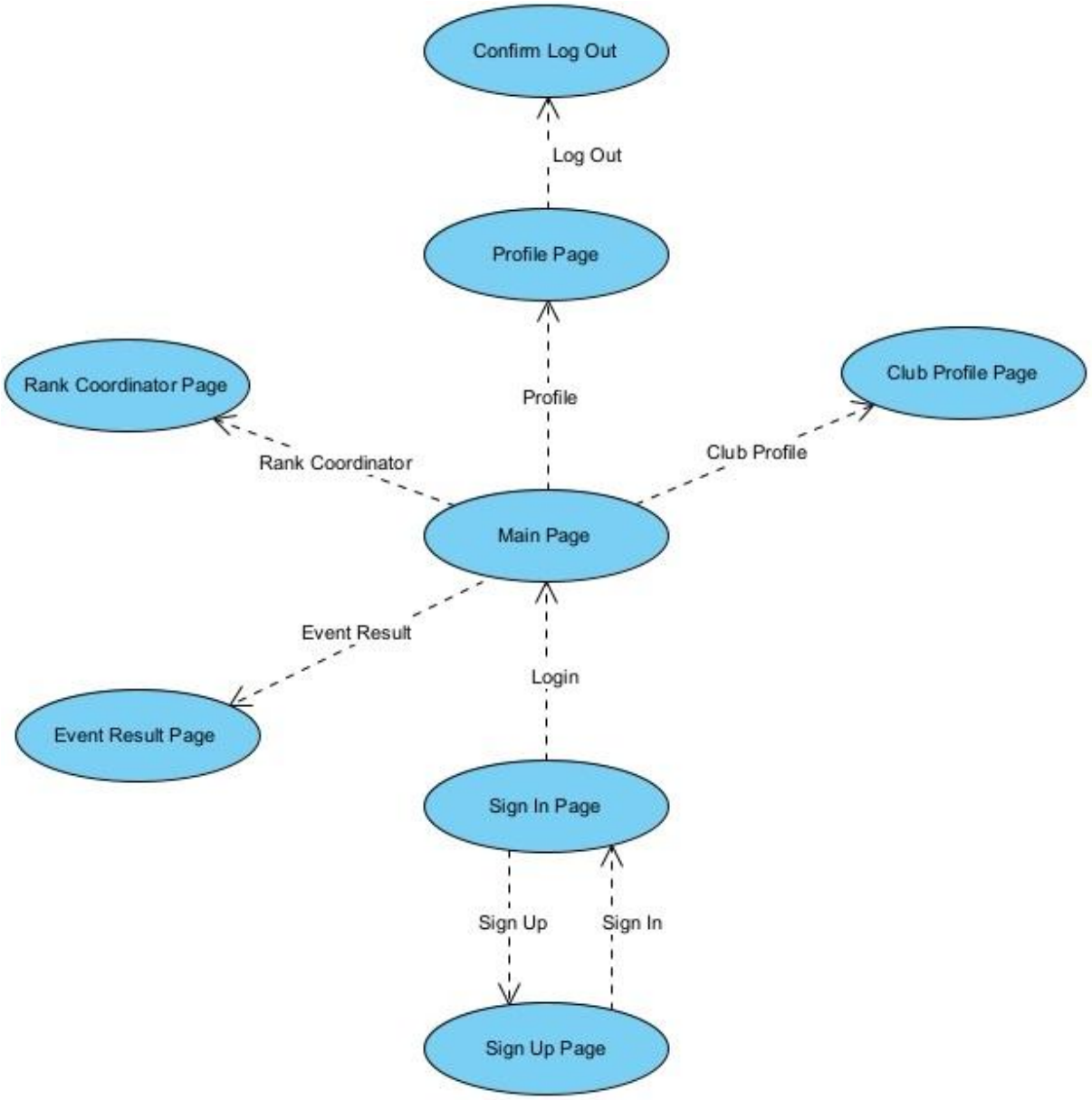

Fig. 14: The navigational path of the user interface screens for Club Supervisor

2.5.4.2 Screen Mock-ups

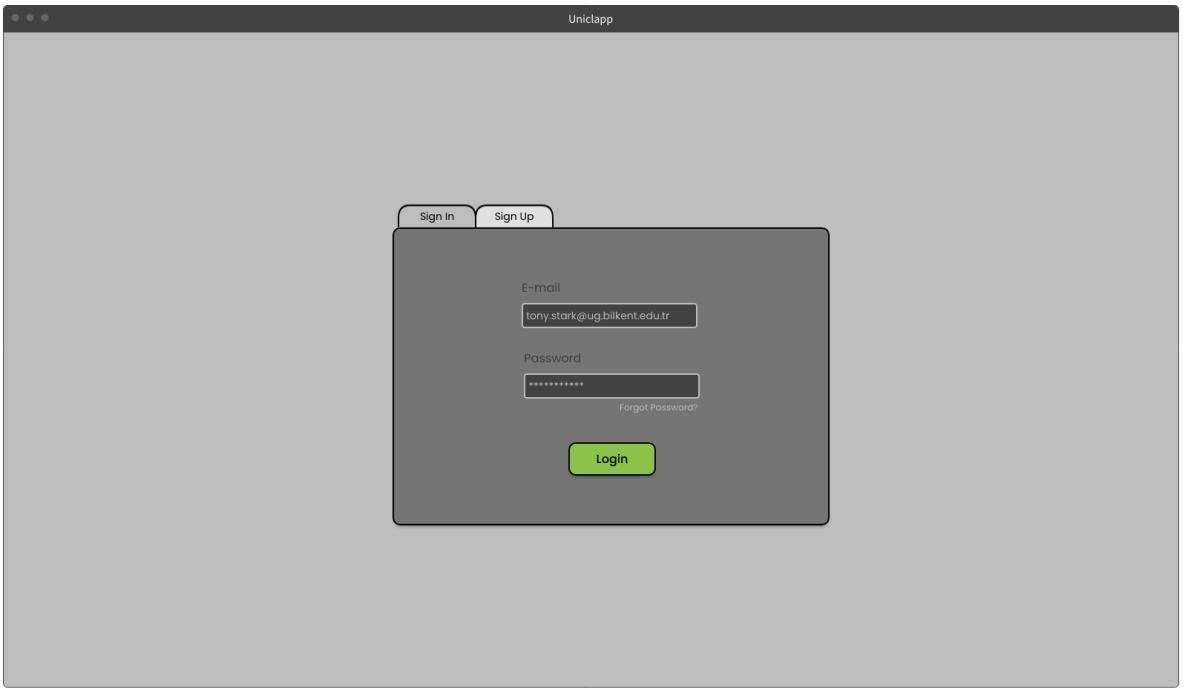

Fig. 15: Sign In

This is the welcome screen that the user sees when he/she enters the website. If the user has an account, the user can successfully log in by pressing the login button after entering his email address and password correctly.

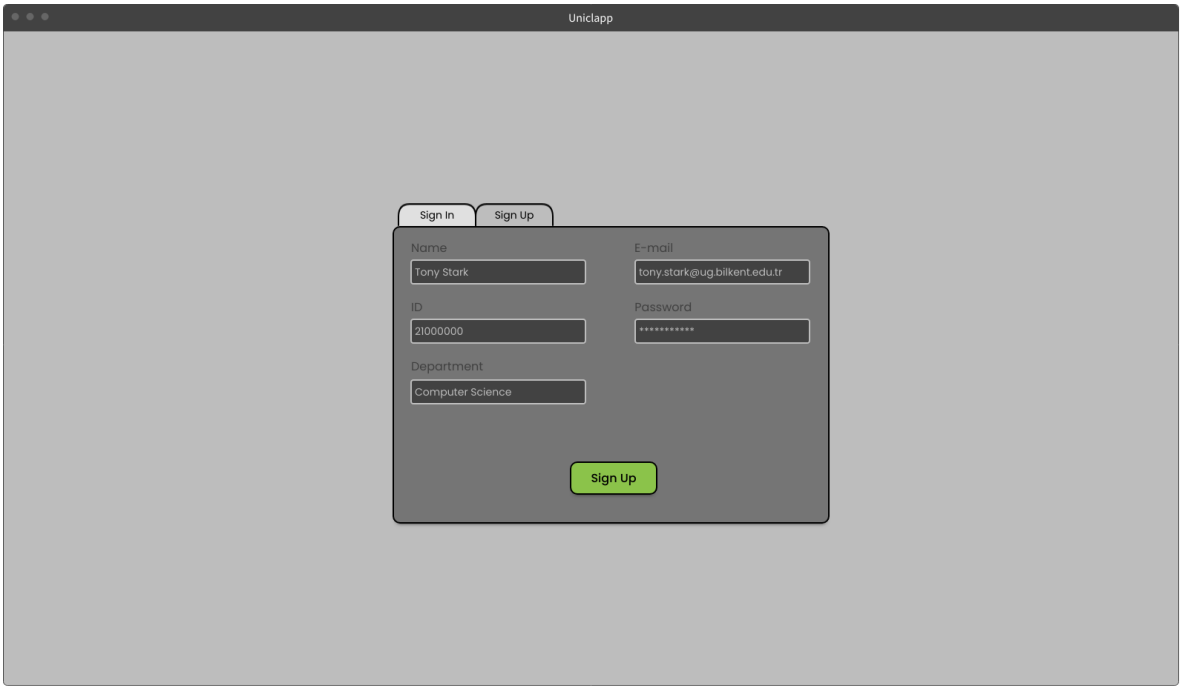

Fig. 16: Sign Up

If the student does not have an account he/she can create a new account by filling in the required information such as email, student ID located in the Sign Up screen. After entering the information and clicking the Sign Up button, the accuracy of the information will be checked. If the entered information matches the student information in the Bilkent University database, a confirmation email will be sent to the entered email address.

Club Supervisor accounts will be created by the system and account's information will be provided to them. Therefore, the Club Supervisor does not need to create an account.

Fig. 17: Main Page for Students

If the Student logs in successfully, this screen appears. The Students can see their profile picture, full name and PSI score at the upper left side of the screen. This screen consists of 8 different tabs.

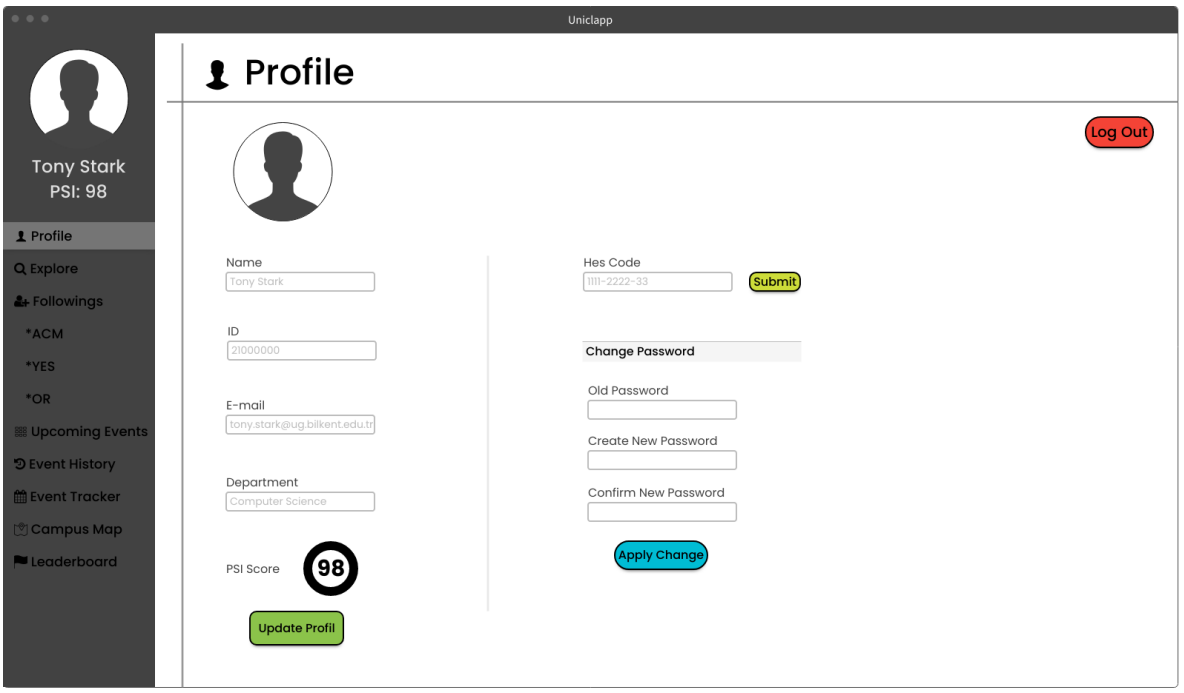

Fig. 18: Profile Page for Students

In the Profile Tab Student can view him/her account information. Student can also update him/her account information by pressing Update Profile button. Since Hayat Eve Sığar (HES) code information is mandatory when entering club events, this field is required to be filled. Student can link to HES Code to him/her account by clicking the Submit button. Student can also change his/her HES Code. If the Student wishes, he/she can successfully update him/her password by entering the information in the change password panel. Lastly, Student can log out by clicking the red button at the top right of the screen.

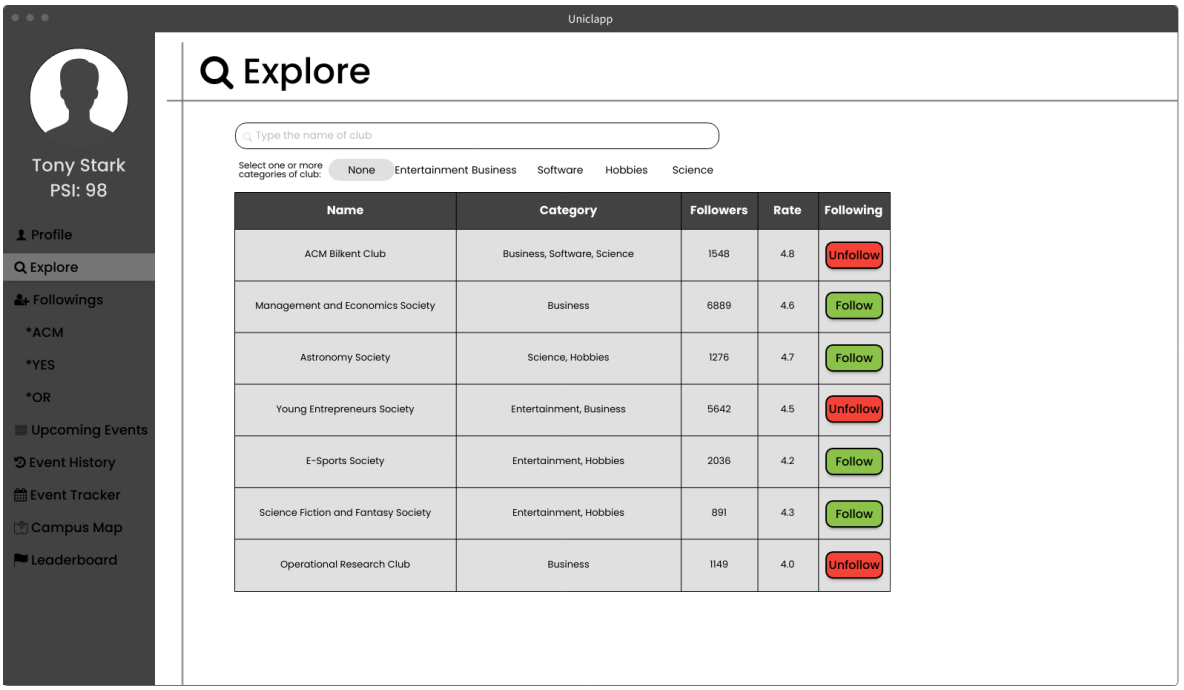

Fig. 19: Explore

The Student can view all Bilkent University student clubs with information of name, category, followers and rate. The student can filter student clubs according to their categories. The Student can follow and unfollow any student club he/she wants by clicking Follow or Unfollow buttons.

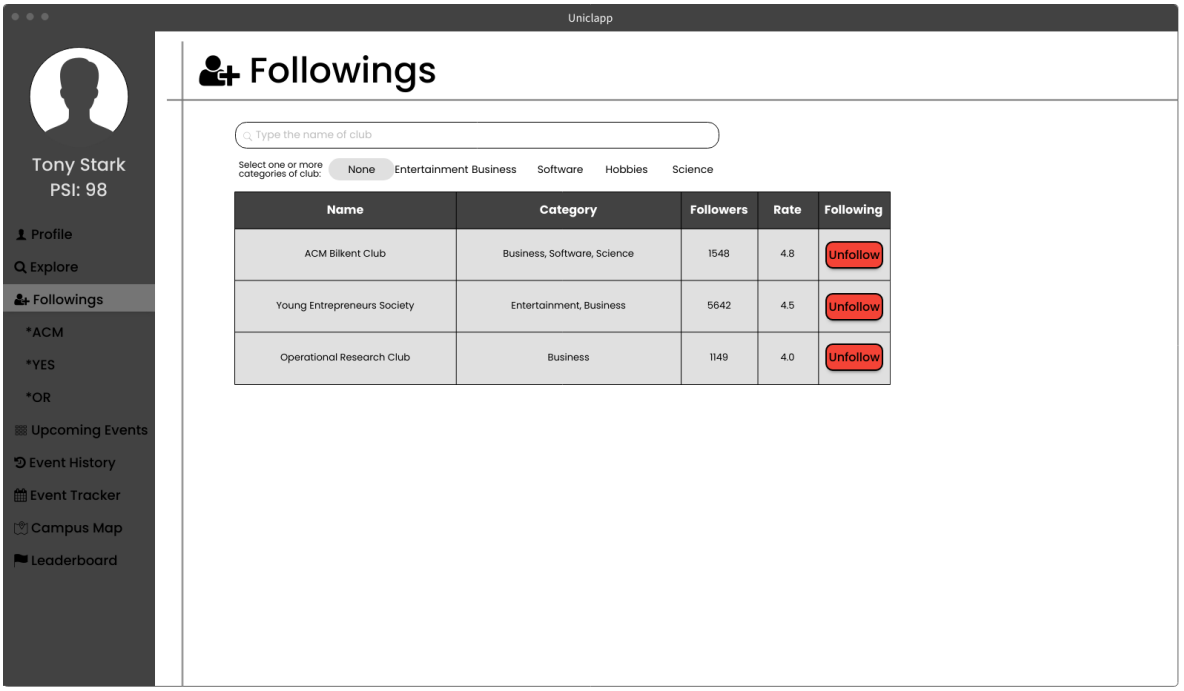

Fig. 20: Followings

The Student can view just student clubs that he/she follows. The Student can also filter the clubs according to their categories. The Student can unfollow the student club he/she follows by clicking the Unfollow button.

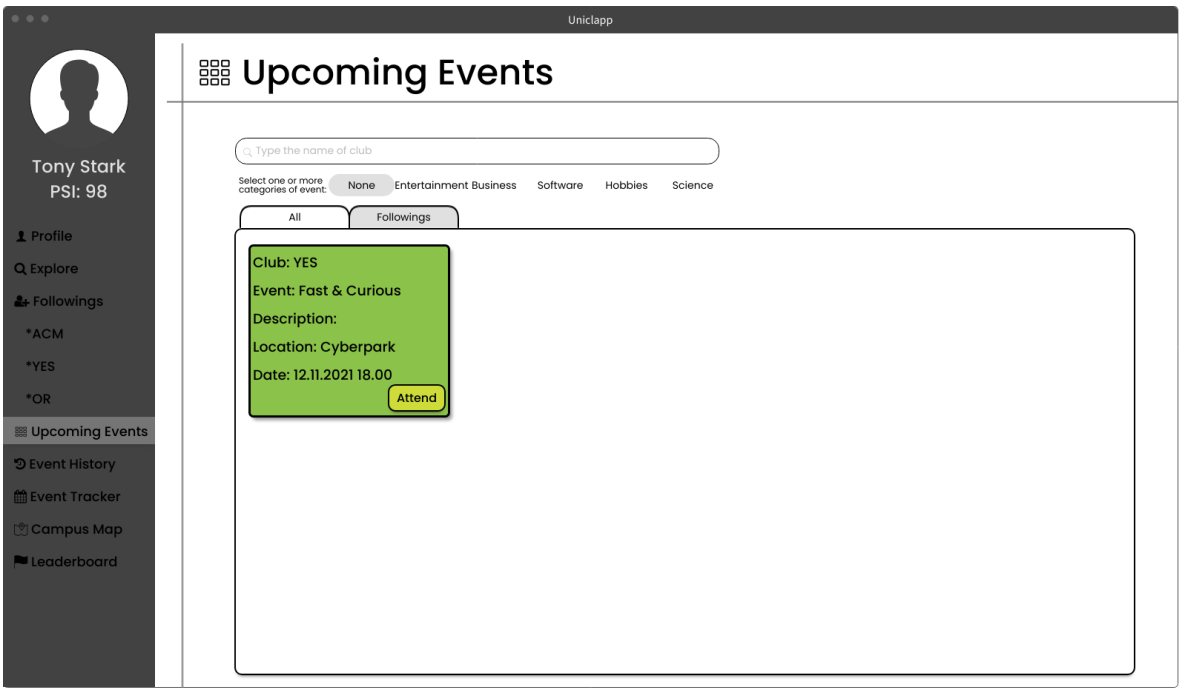

Fig. 21: Upcoming Events

By default, the Student can view different events organized by different student clubs. If the Student clicks the Followings button he/she can view the only events organized by student clubs that he/she follows. The Student can announce their participation in the event by clicking the Attend button located on the event card. If the Student decides not to attend, he/she can change his/her status from will attend to will not attend.

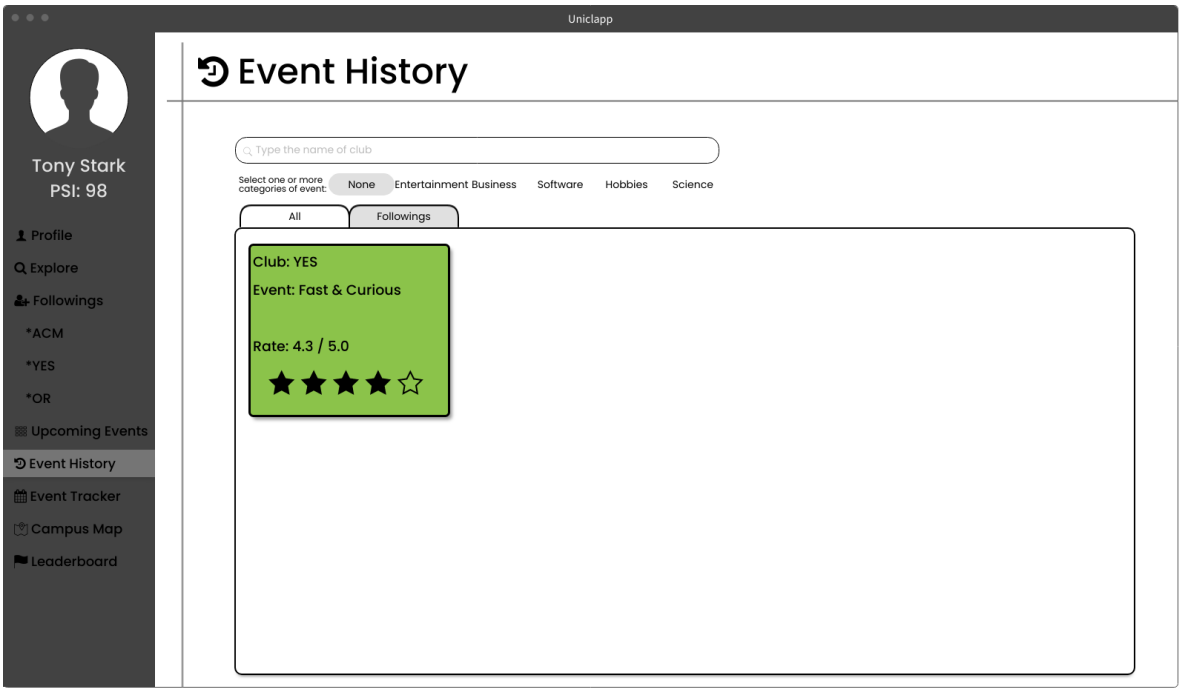

Fig. 22: Event History

The Student can view the events he/she attended. Each event is represented as a card and this card contains the name of the student club, the name of the event and the rate given by students, respectively.

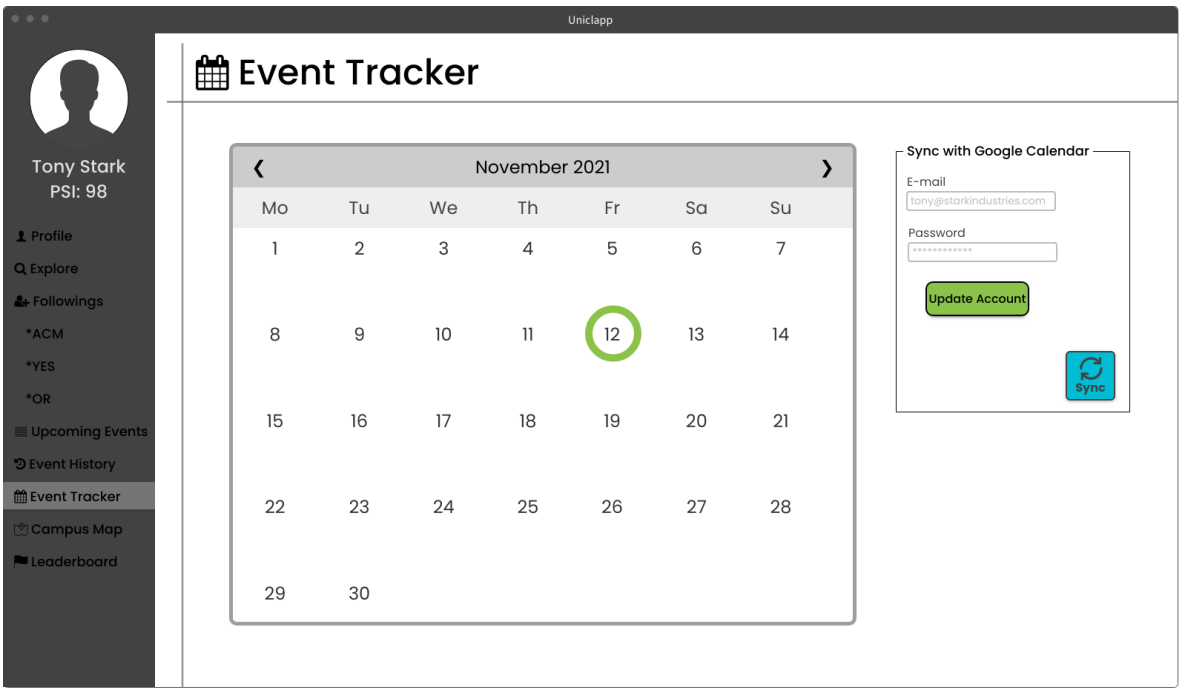

Fig. 23: Event Tracker

The Student can view the events to be attended as marked on the calendar. The Student can also synchronize this calendar with Google Calendar via filling the necessary information.

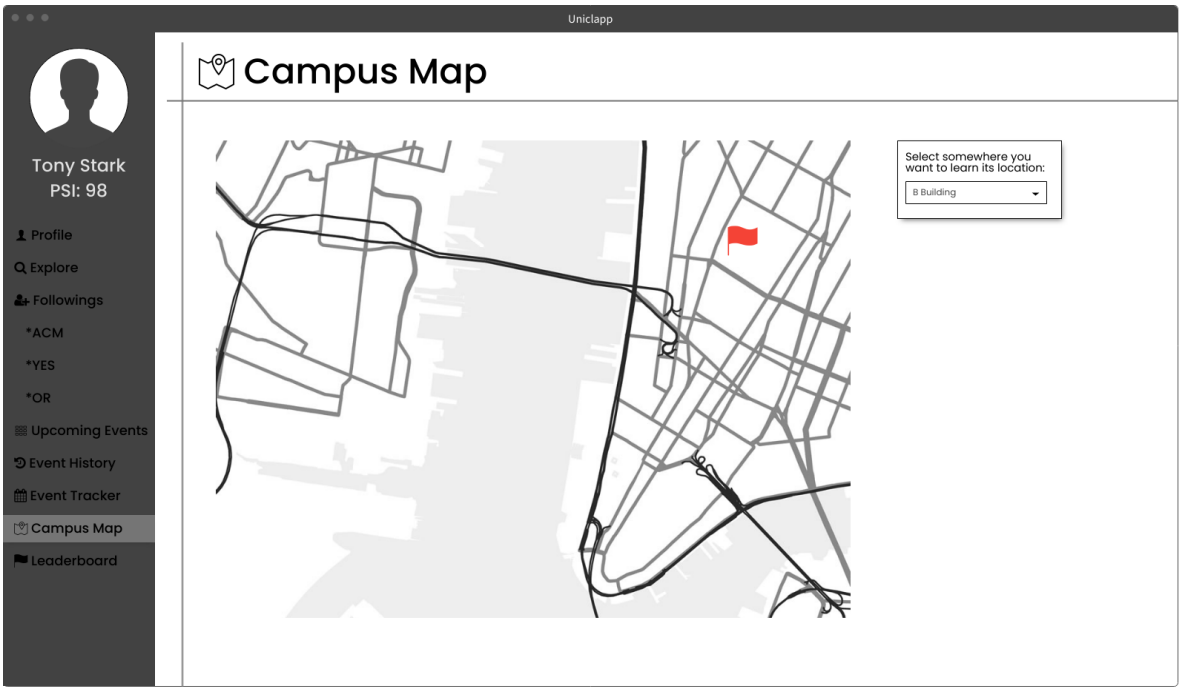

Fig. 24: Campus Map

The Student can find the building located in Bilkent University by selecting from the drop-down menu at the top right of the page.

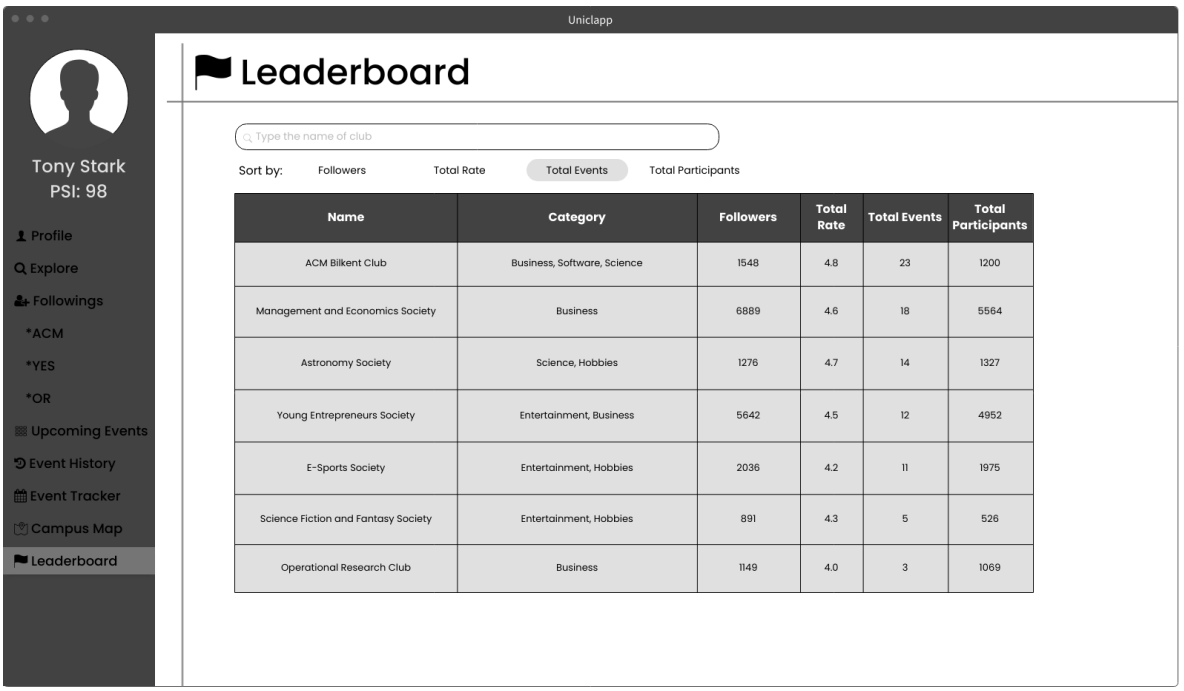

Fig. 25: Leaderboard

The Student can view the list of student clubs with their information according to various criteria such as the number of followers, total rate, total events and total participants. The Student can select the criteria from the menu above the leaderboard.

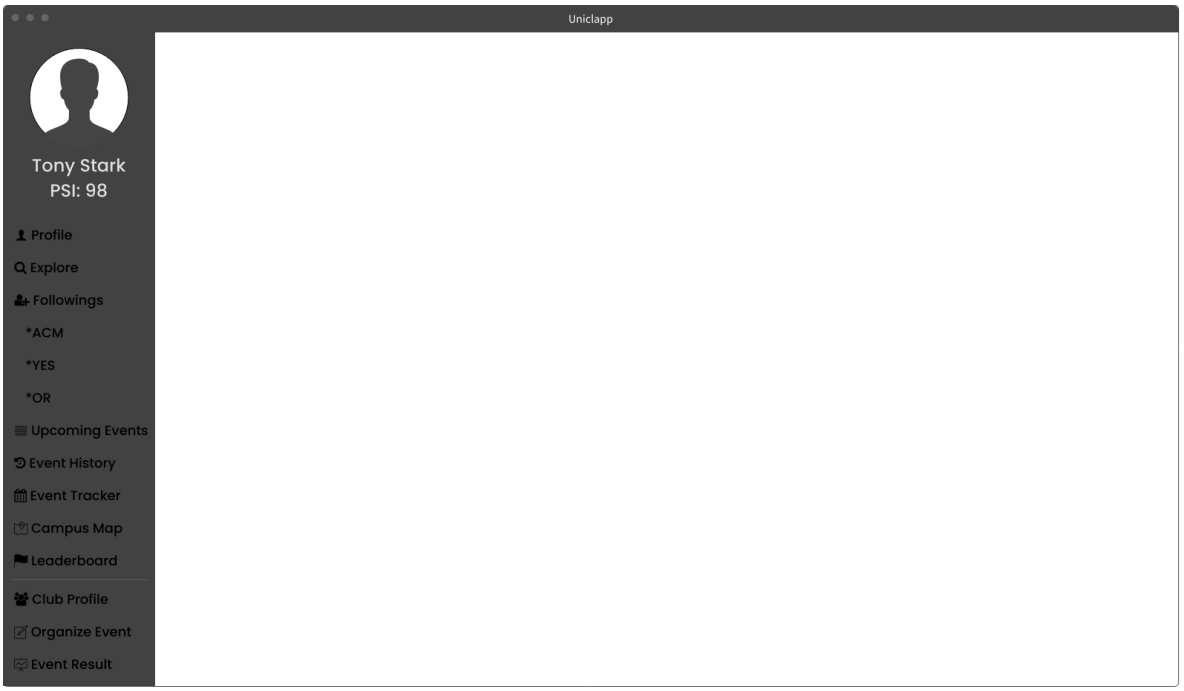

Fig. 26: Main Page for Club Coordinators

Unlike the Student, the Club Coordinator can view three additional menus. These are Club Profile, Organize Event and Event Result, respectively.

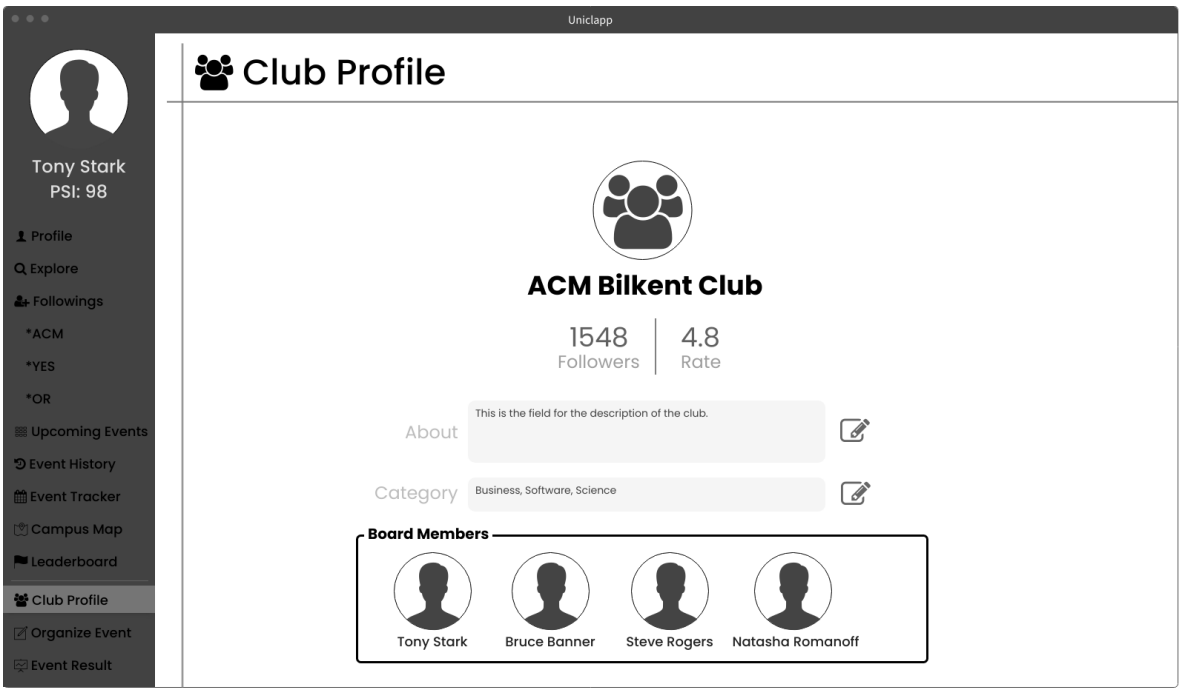

Fig. 27: Club Profile

The Club Coordinator can view and edit the information of the student club he/she is coordinator of. The Club Coordinator can edit the About and Category section. The Club Coordinator can add new students or remove existing students in the Board Members section.

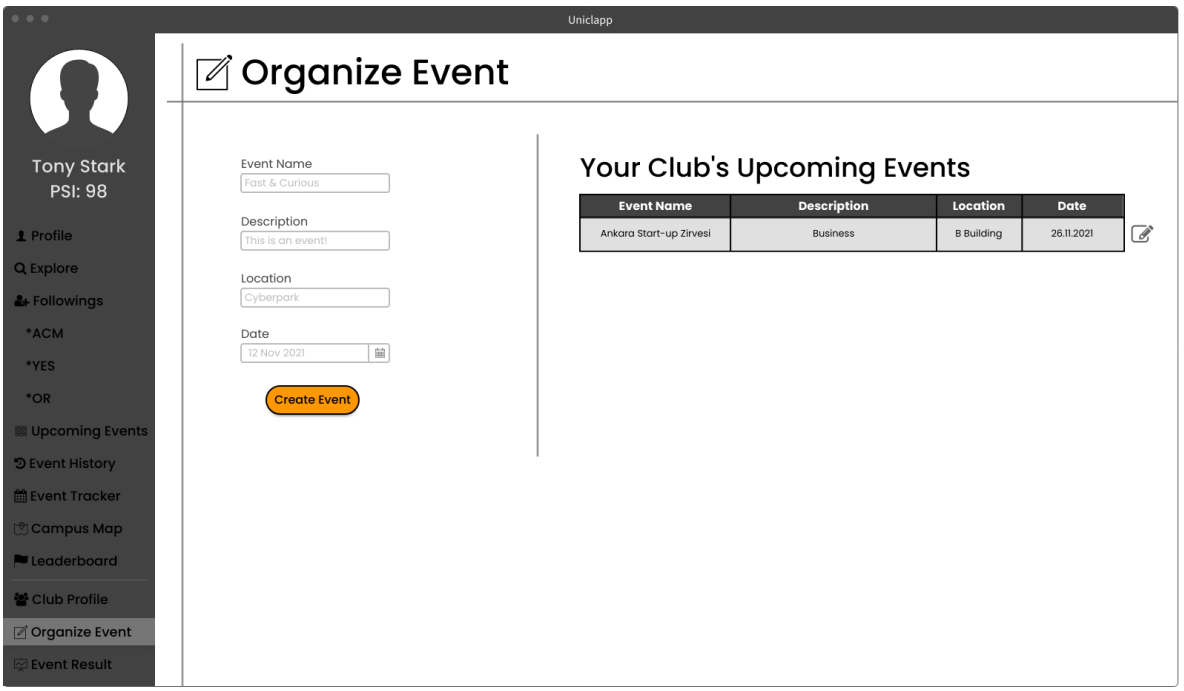

Fig. 28: Organize Event

The Club Coordinator can create an event by filling the necessary information such as Event Name, Description, Location and Date. Events added by the Club Coordinator are displayed as a list and the Club Coordinator can edit the information of the event or cancel the event.

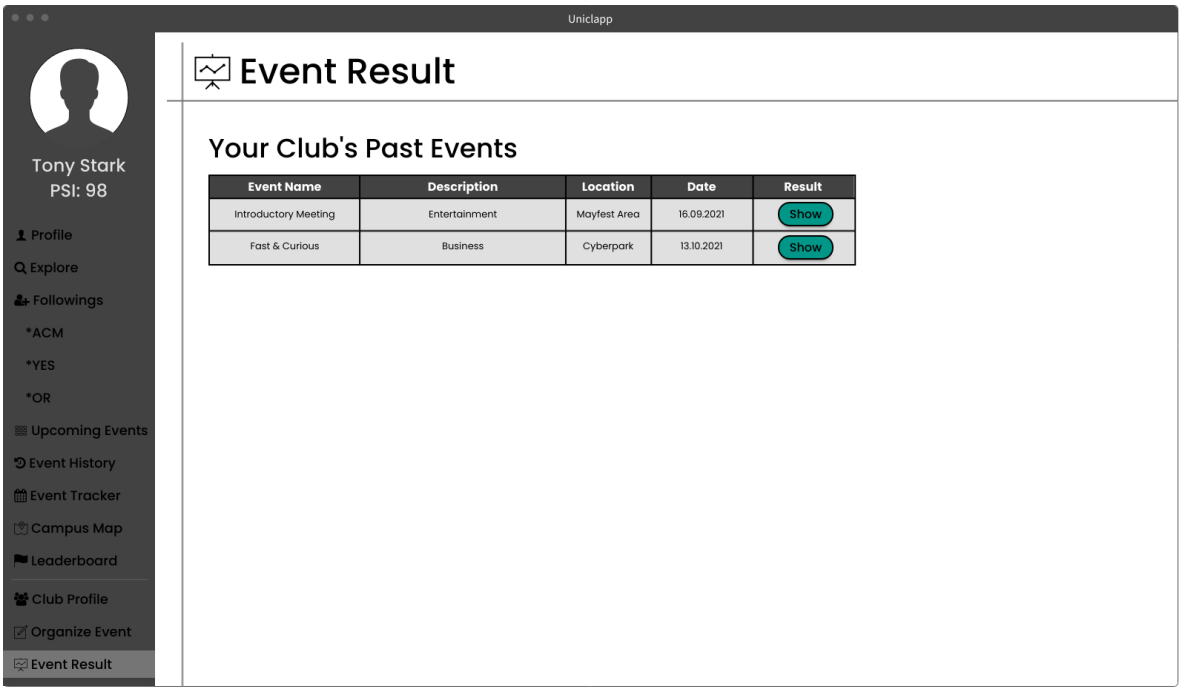

Fig. 29: Event Result

In this screen, the Club Coordinator can display all completed events as a list. The Club Coordinator can view the details of the past events by clicking the Show button.

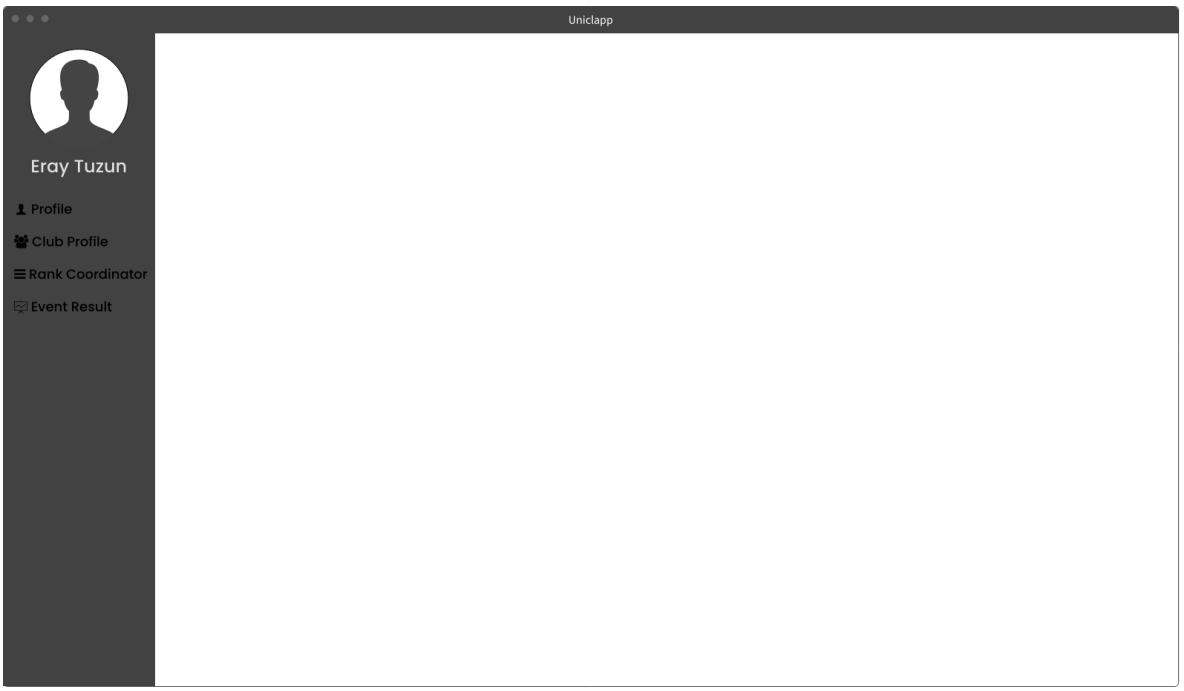

Fig. 30: Main Page for Club Supervisor

The Club Supervisor can view 4 sub menus. These are Profile, Club Profile, Rank Coordinator and Event Result, respectively.

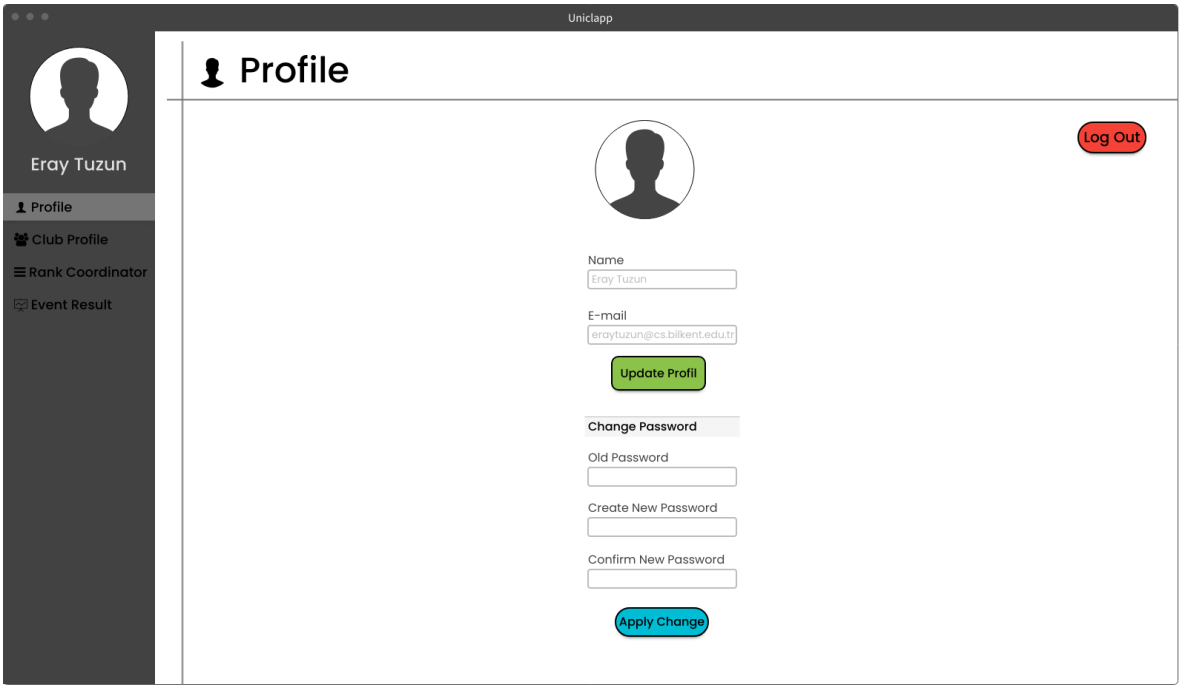

Fig. 31: Profile Page for Club Supervisor

The Club Supervisor can view and edit their account's information. Unlike Student and Club Coordinator, Club Supervisor can change his/her email address. Lastly, Student can log out by clicking the red button at the top right of the screen.

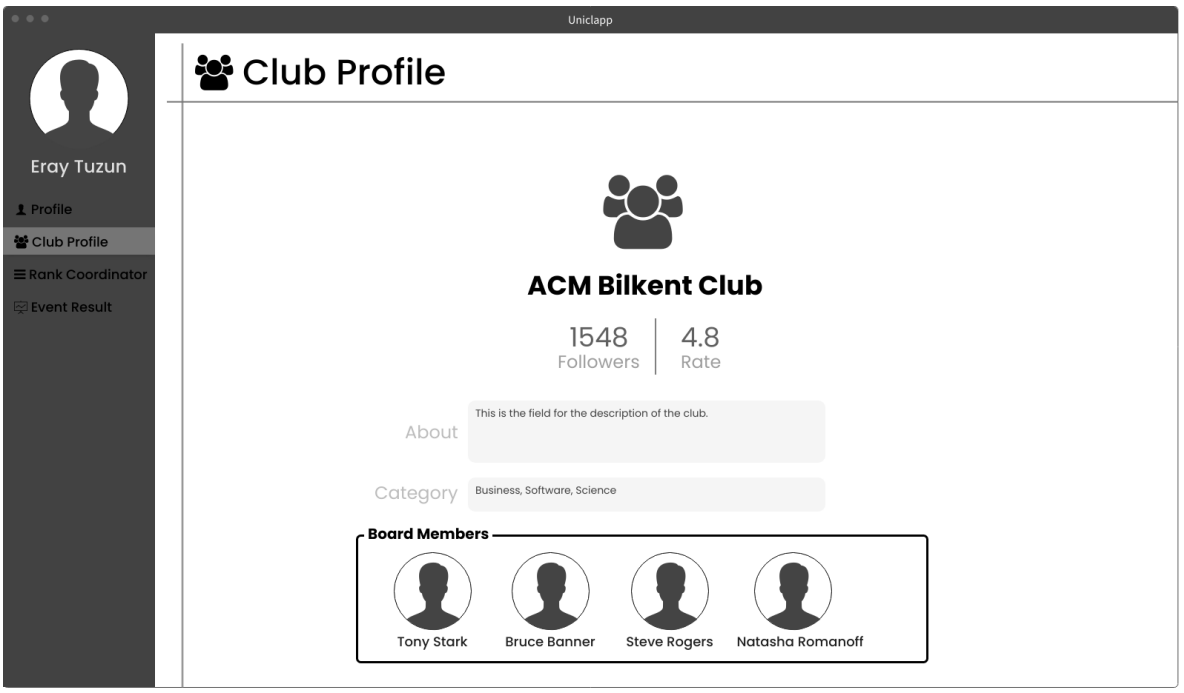

Fig. 32: Club Profile for Club Supervisor

In this page the Club Supervisor can display the information of the student club he/she is supervisor of.

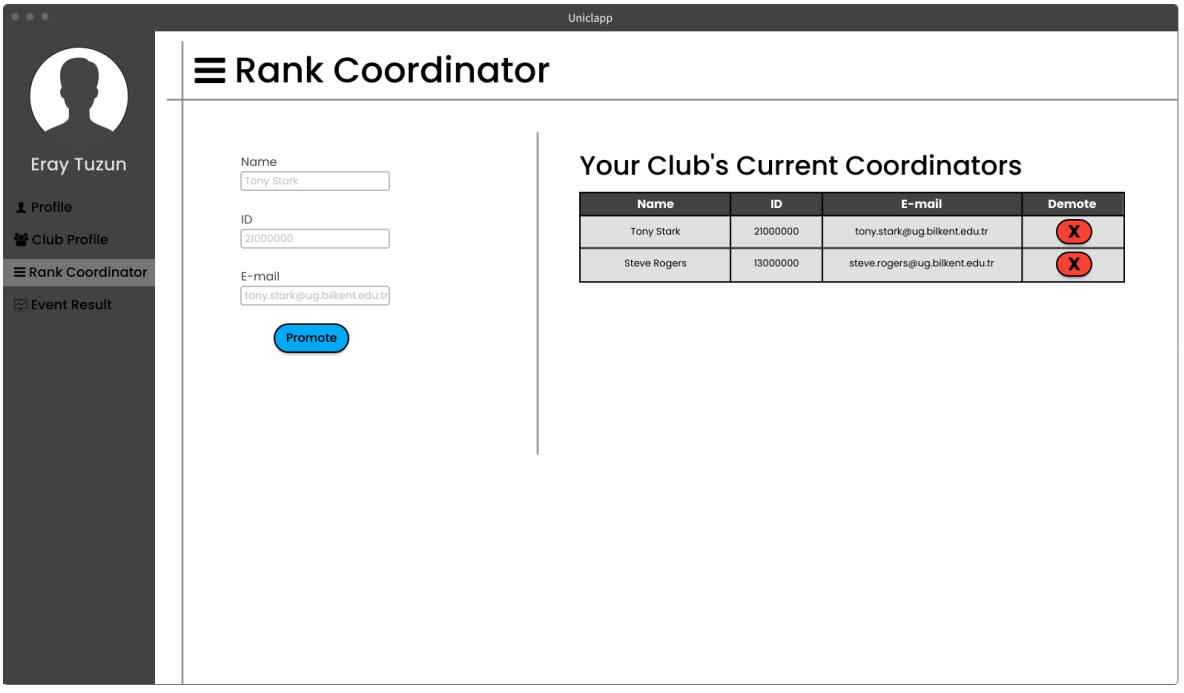

Fig. 33: Rank Coordinator

The Club Supervisor can change the status of Student as Club Coordinator by filling the information of student correctly. The Club Supervisor can demote the Club Coordinators by clicking the Demote button.

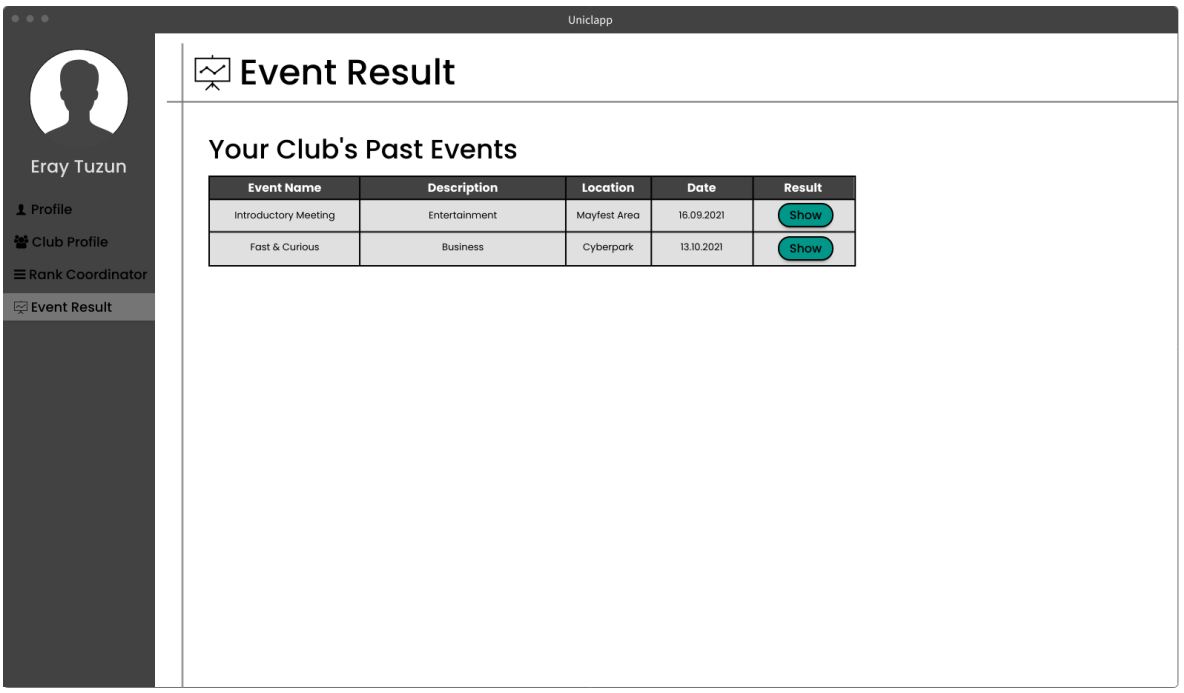

Fig. 34: Event Result

Like the Club Coordinator, Club Supervisor can display the details of the completed events of the student club he/she is supervisor of by clicking the Show button.

3. Glossary & References

3.1 Glossary

PSI: This term is the abbreviation of Personal Sociability Intelligence. This score indicates how social a person is. This score will be calculated by an algorithm determined by the system. The events that the user participates in, the clubs the user follows, the clubs the user is the board member of will affect the calculation of this score.

3.2 References

[1] “Web Content Accessibility Guidelines (WCAG) 2.1”. https://www.w3.org/TR/WCAG21/. [Accessed: Oct 23, 2021].

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[3] “The Progressive JavaScript Framework”. https://vuejs.org/. [Accessed: Oct 23, 2021].

[4] “PostgreSQL: The World's Most Advanced Open Source Relational Database”. https://www.postgresql.org/. [Accessed: Oct 23, 2021].