



**GEBZE TECHNICAL UNIVERSITY**  
**DEPARTMENT OF COMPUTER ENGINEERING**  
**2022 FALL CSE343 SOFTWARE ENGINEERING**

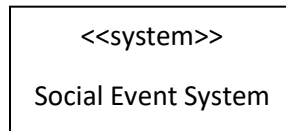
**LUDOVICO**  
**PROJECT REPORT**

## Group Members

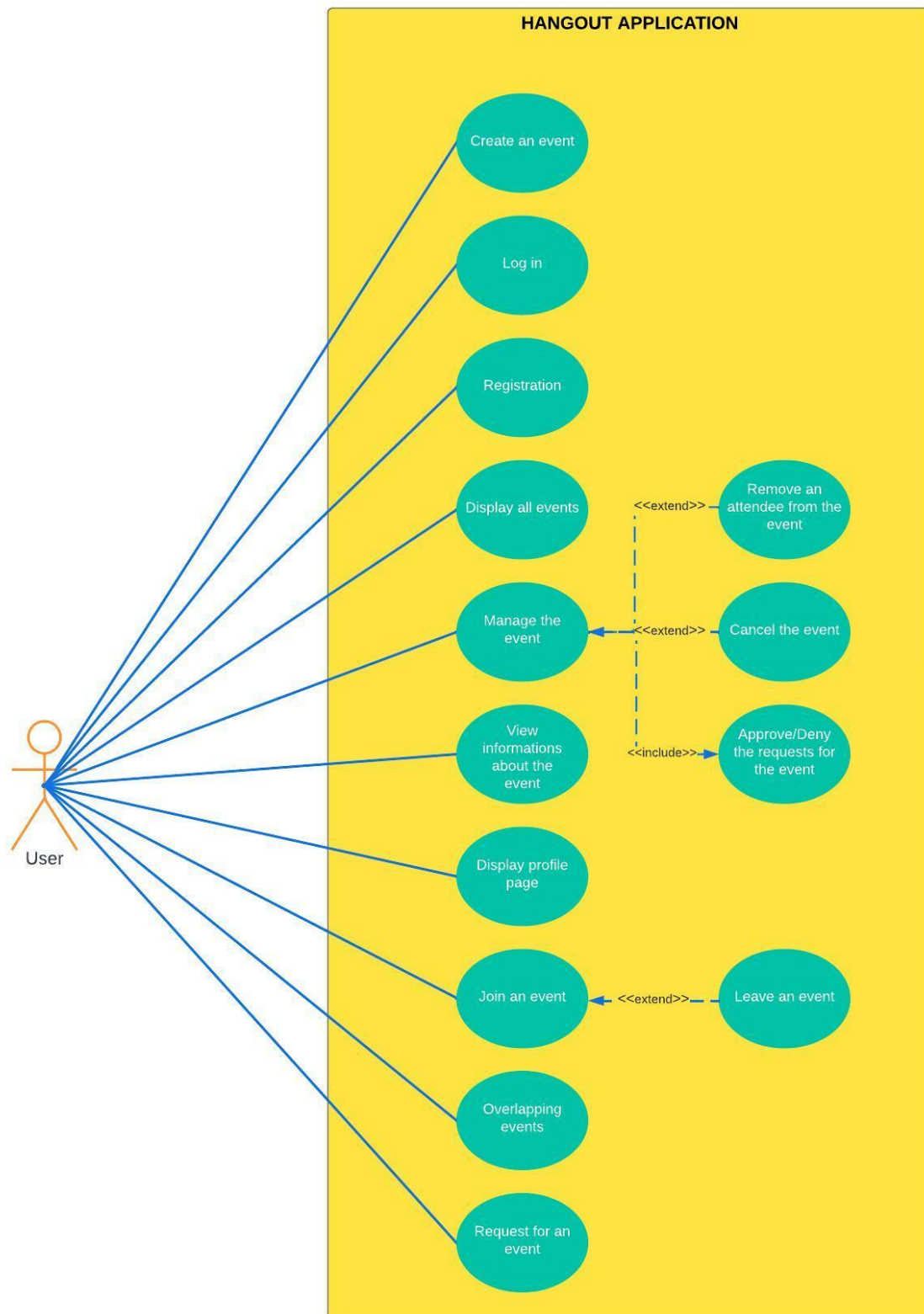
NAME	ROLE	STUDENT NUMBER
Mert Gürşimşir	Project Manager	1901042646
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## 1. UML DIAGRAMS

### a) Context Model



## b) Use Case Diagram and Detailed Tables



System	Hangout Application
Use Case	Create an Event
Actors	User
Data	Event creator's information. Special information is needed about the event; category, accessibility option(private event or public event), the number of attendees, description of the event, and place where the event is going to take place.
Stimulus	The user who clicked Create event option on the main page gives the requested inputs about the event and the data is transferred. Hangout Application controls the information which is given by the creator of the event to see whether the event is creatable or not.
Response	The Event is created and put into the Event section in the application.
Comments	The system should properly check whether the place of the event is available on the given date. Otherwise, a conflict of dates with other events might occur.

System	Hangout Application
Use Case	Login
Actors	User
Data	User's mail address with gtu.edu.tr extension and password.
Stimulus	The user's mail address with the gtu.edu.tr extension is going to be verified by the system and checked whether the mail exists in the database.
Response	If the user is registered in the system, he/she will be redirected to the main page, otherwise, the application will display an error message.
Comments	Anyone who has an email with a gtu.edu.tr extension can create an account and use the Hangout application easily.

System	Hangout Application
Use Case	Registration
Actors	User
Data	User's mail address with gtu.edu.tr and the password of the email address which has gtu.edu.tr extension.
Stimulus	The system will send a verification mail to the user's mail address with the gtu.edu.tr extension to check whether the given mail belongs to the user or not.
Response	The new user's account information is going to be saved in the database and the user will be redirected to the login page.
Comments	A bot that sends a verification mail automatically must be integrated into the application to verify mail addresses with the gtu.edu.tr extension.

System	Hangout Application
Use Case	Display All Events
Actors	User
Data	All created Event information in the database.
Stimulus	When a user clicks on the event section on the main page of the application, all available data of events will be transferred through the database.
Response	Information about all events will be loaded into the event section by application.
Comments	Events that have conflicting dates must be indicated and shown to the user properly.

System	Hangout Application
Use Case	Manage the event
Actors	User
Data	Information about the event, and information of the users who have joined the event.
Stimulus	On the user's profile page there will be modification options for created events and joined events. Through the profile page, the user will be able to modify the event status.
Response	The modification will be performed in the event and event information will be updated.
Comments	When the modification is made by the creator, the users who have joined the event must be informed immediately.

System	Hangout Application
Use Case	Remove an attendee from the event
Actors	User
Data	Information of users who have joined the event.
Stimulus	The creator of the event will be able to display the list of users who have joined the event on the profile page. By clicking remove an attendee from the event option creator of the event will be able to remove a user from the event.
Response	An attendee is removed from the event by the creator.
Comments	It would be better to inform the attendee about why he/she has been removed.

System	Hangout Application
Use Case	Cancel the event
Actors	User
Data	All the Information about the event(category, date, place, attendees)
Stimulus	The creator of the event can cancel an event through the events created button on the profile page. All information about the event will be transferred from the database and be visible in the events created button on the profile page of the event creator.
Response	The event will be removed from both creator's event-created page and the attendee's events-attended page.
Comments	The reason for event cancellation might be asked by the attendees. Later, information about cancellation might be added to the application to enlighten attendees.

System	Hangout Application
Use Case	Approve/Deny the request for the event
Actors	User
Data	Information of the user who sends a request to join the event. The number of attendees for the event.
Stimulus	Users must send a request for private events. Event creators can display requests and either approve or deny them through the event-details section on the profile page.
Response	The user either will be added to the event attendees list or denied according to the event creator's decision.
Comments	As it was mentioned in all manage the event options, an information box might be added later to notify the user about the reason for the request denial. (This information will be given by the event creator optionally not compulsorily)

System	Hangout Application
Use Case	View informations about the event
Actors	User
Data	All information about the event that is given by the event's creator
Stimulus	Both creators of the event and the attendee can view the information about the event by clicking on the event on the events-created or events-attended page.
Response	Even information will display on the event details page.
Comments	When the conflict of dates occurs, this must be indicated somehow on the event-details page.

System	Hangout Application
Use Case	Display profile page
Actors	User
Data	User's personal information, created events information, attended events information
Stimulus	Users can view his/her status from the profile page. Users can also view the created events and attended events from the profile page and perform modifications about events or their status.
Response	The user will be redirected to the profile page. The user's information and created/attended event buttons will display on the screen.
Comments	Users can make all the necessary modifications about created/attended events on the profile page.

System	Hangout Application
Use Case	Join an event
Actors	User
Data	Details about the event, event's creator information, number of attendees and the maximum capacity, accessibility of the event(private event or public event)
Stimulus	Users can join an event by clicking attend button on the main page. Information about private and public events can be viewed through the information box. Users can also see the number of attendees and the accessibility of the event.
Response	Users will attend the event directly and the status of event will be updated.
Comments	The creator of the event should indicate the special requirements for private events through the information box.

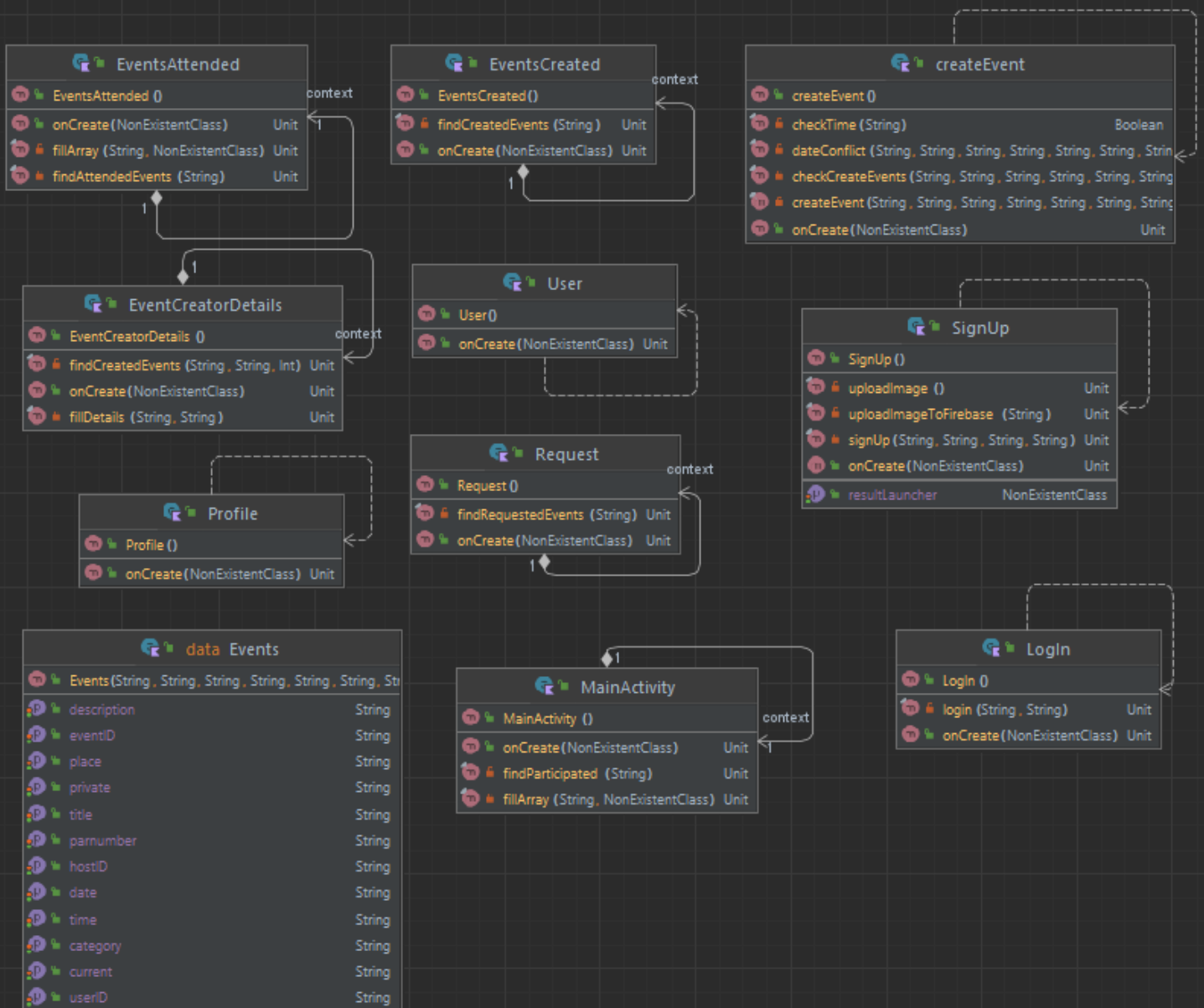
System	Hangout Application
Use Case	Leave an event
Actors	User
Data	Details of the event, user information, information of creator of the event
Stimulus	Users can leave the event from the events-attended section on the profile page.
Response	The user will be removed from the event, modification will be made to event details.
Comments	Leaving an event when it is close to the deadline could lead to problems. There could be a queue for other users who tries to attend the event but can't because of the limitation of attendees. When someone leaves the event first one in the queue automatically joins. This feature can be added later.

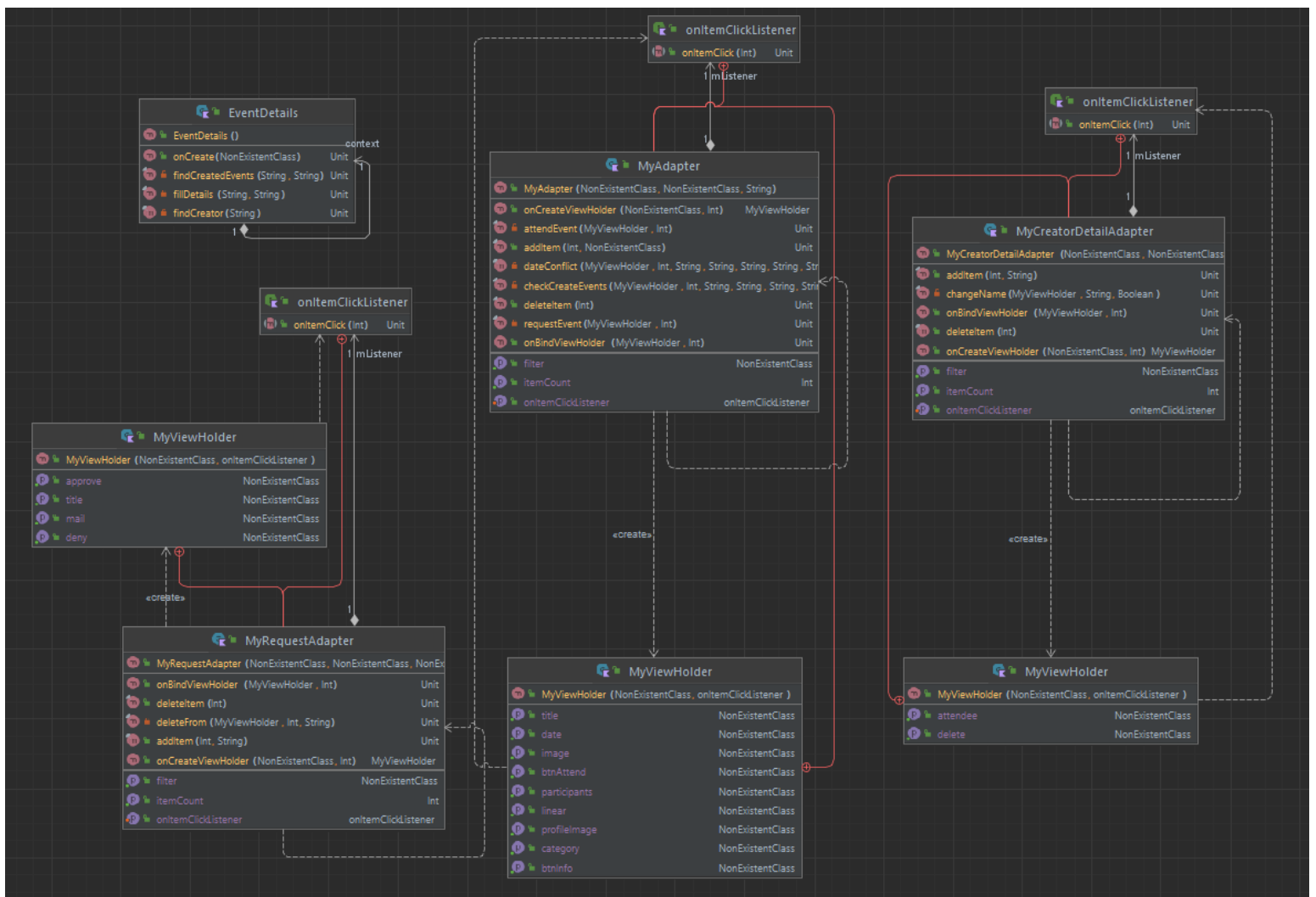
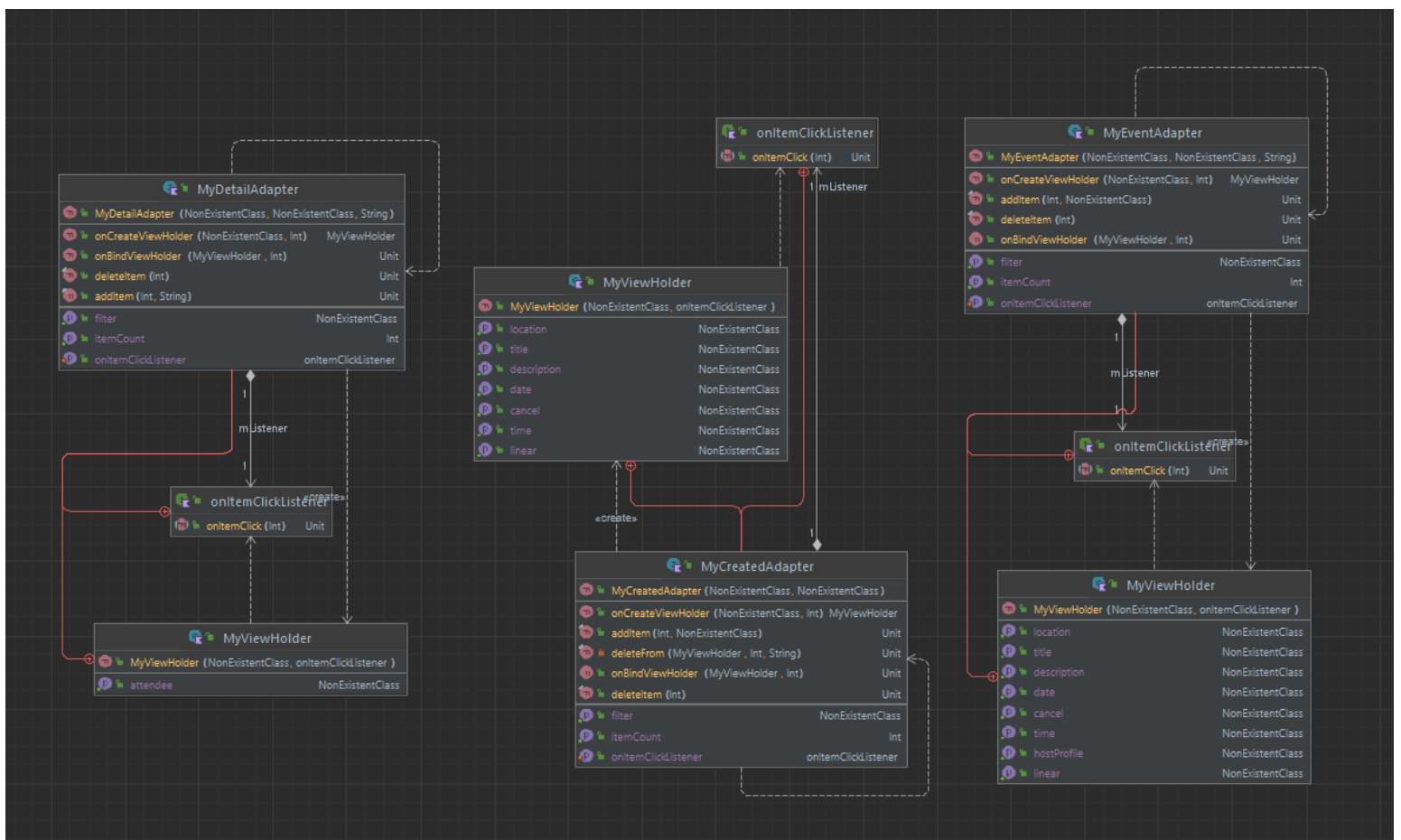
System	Hangout Application
Use Case	Request for an event
Actors	User
Data	Details about the event, event's creator information, number of attendees and the maximum capacity, accessibility of the event (private event or public event)
Stimulus	There are some events that require the approval of the event creator. In these cases, the user should check the requirements from the information box and send a request accordingly.
Response	A request for an event will be sent to the event creator by the user.
Comments	It would be better to add other options to display all requests.

System	Hangout Application
Use Case	Overlapping events
Actors	User
Data	Details about the event, date and time of it
Stimulus	There are some users that attend the event but that event is conflicts with the date or time of the other event.
Response	User should not be able to attend to the event. An error message will be displayed.
Comments	Conflicting event dates and/or times should be caught and proper message should be shown to the user.

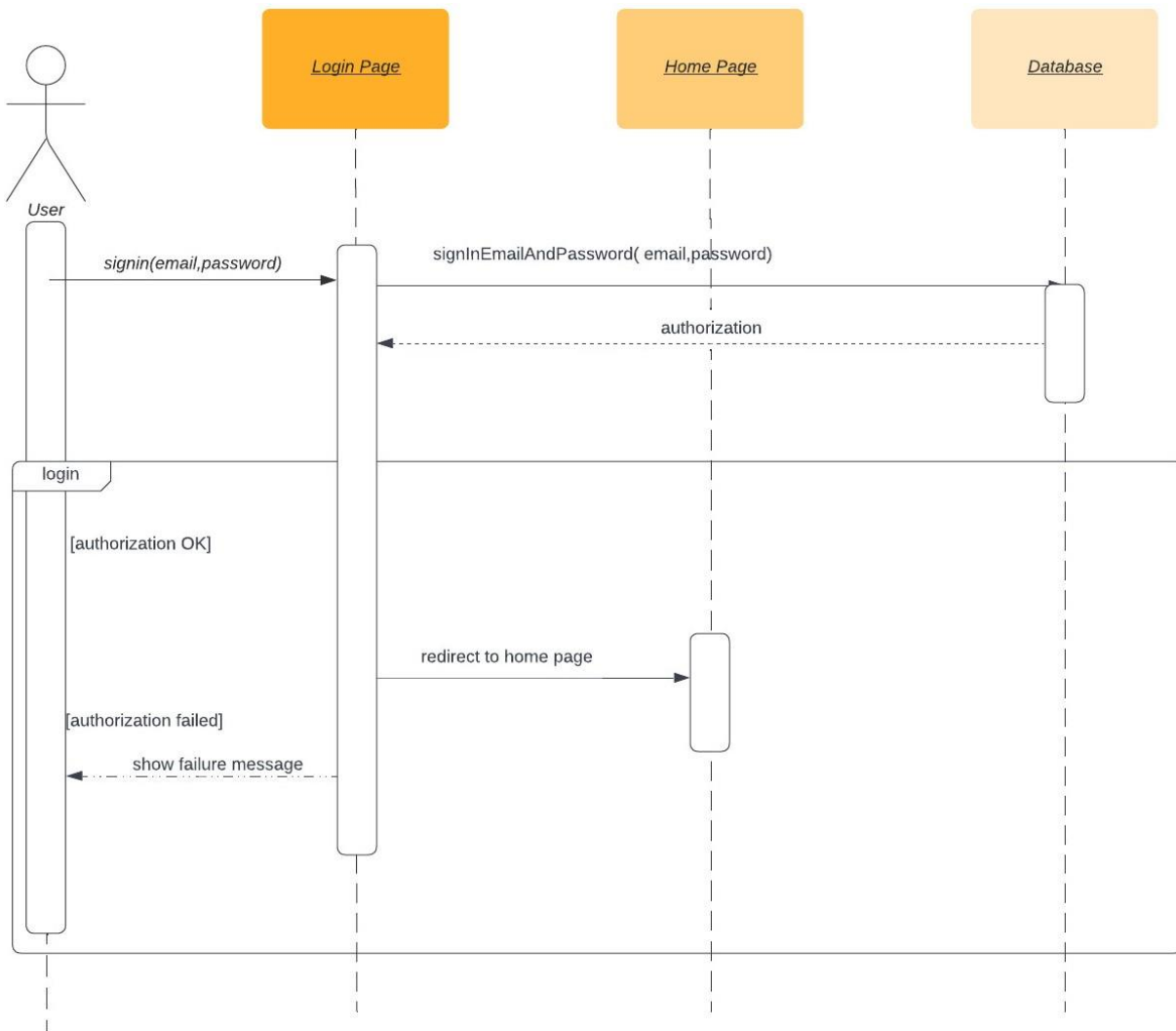


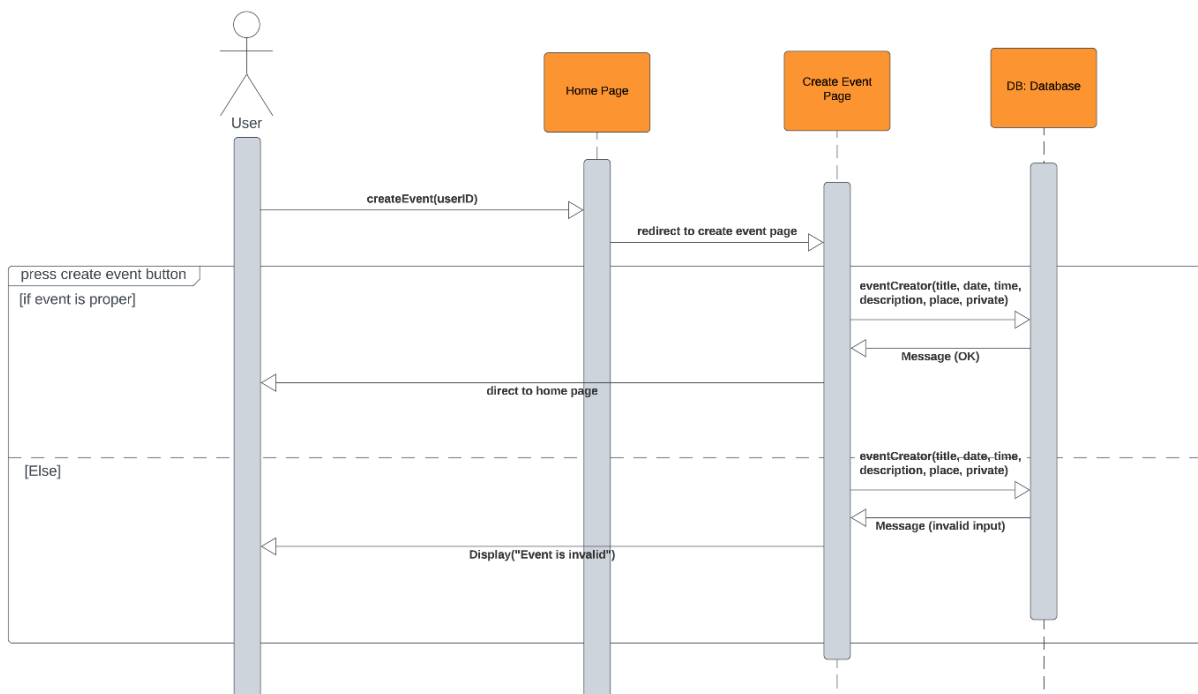
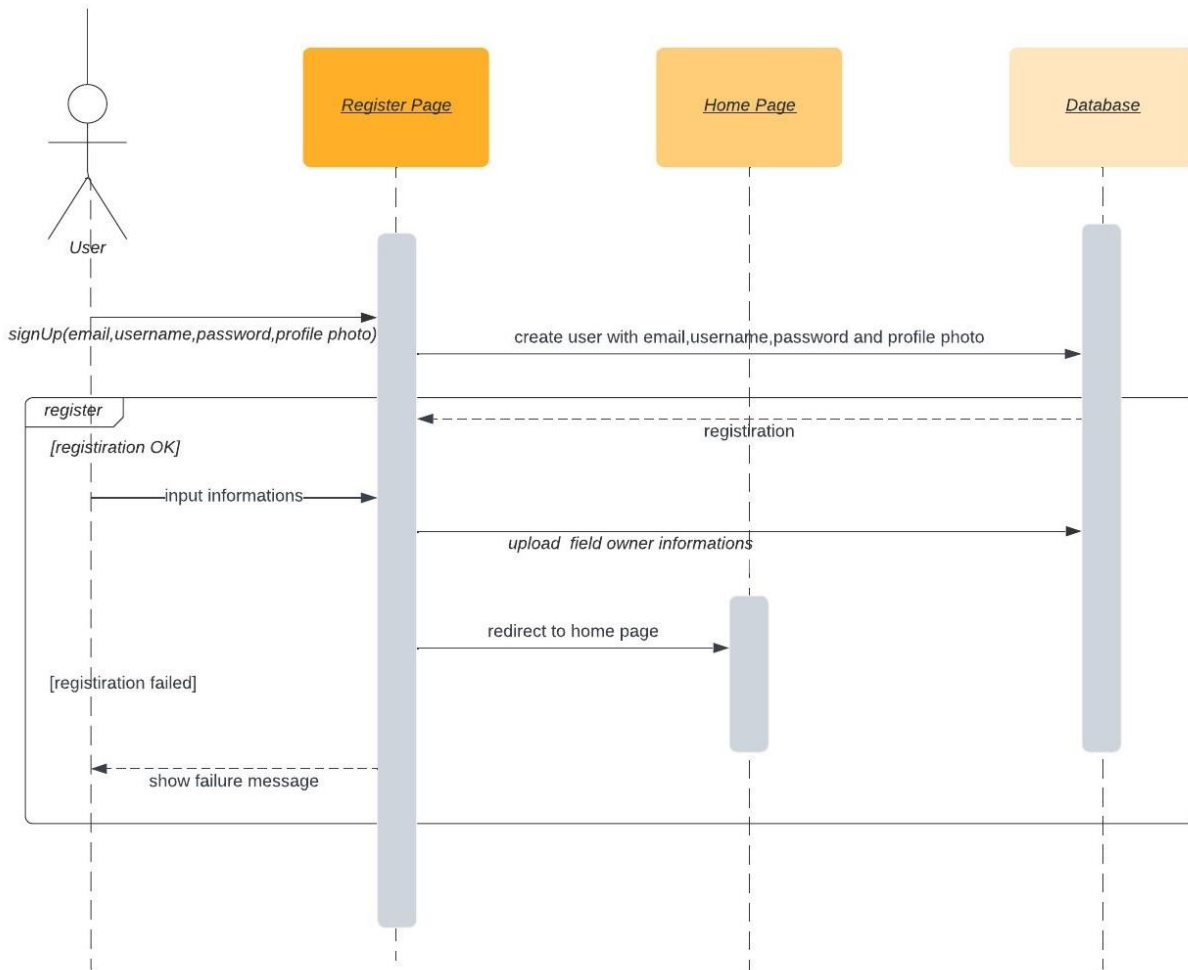
## c) Class Diagrams

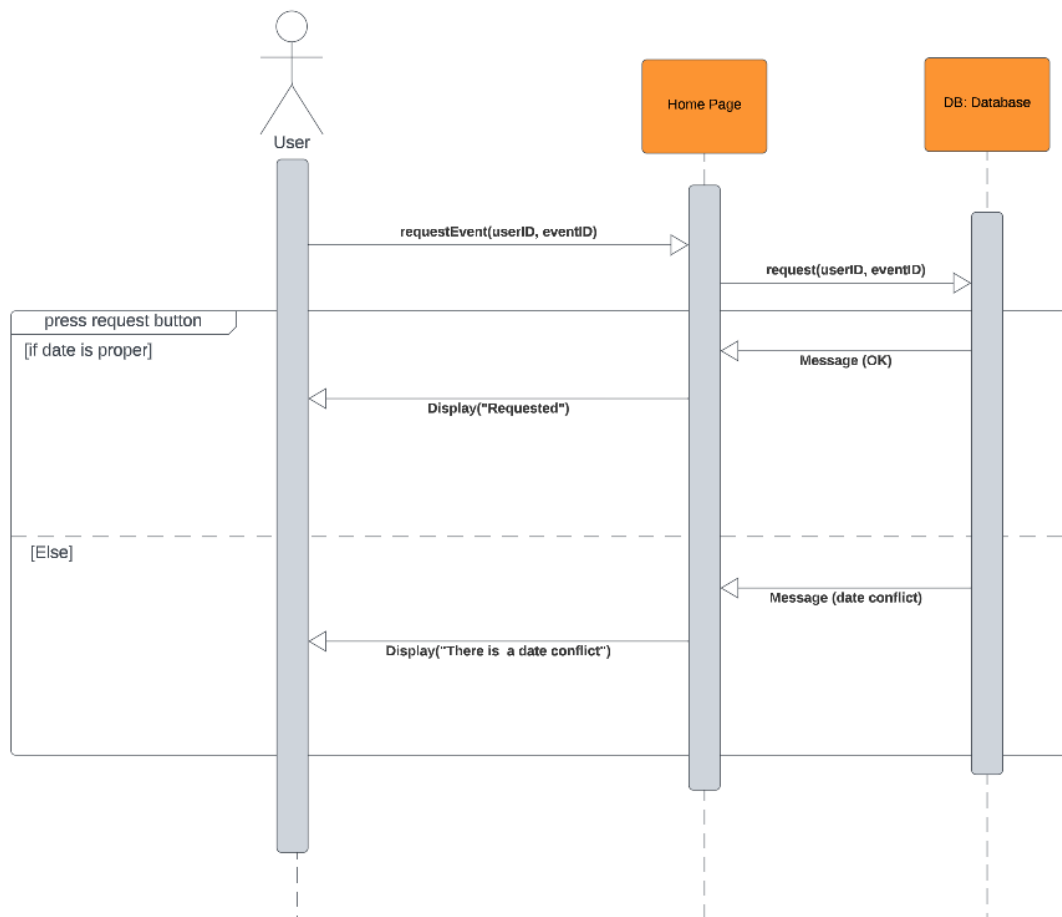
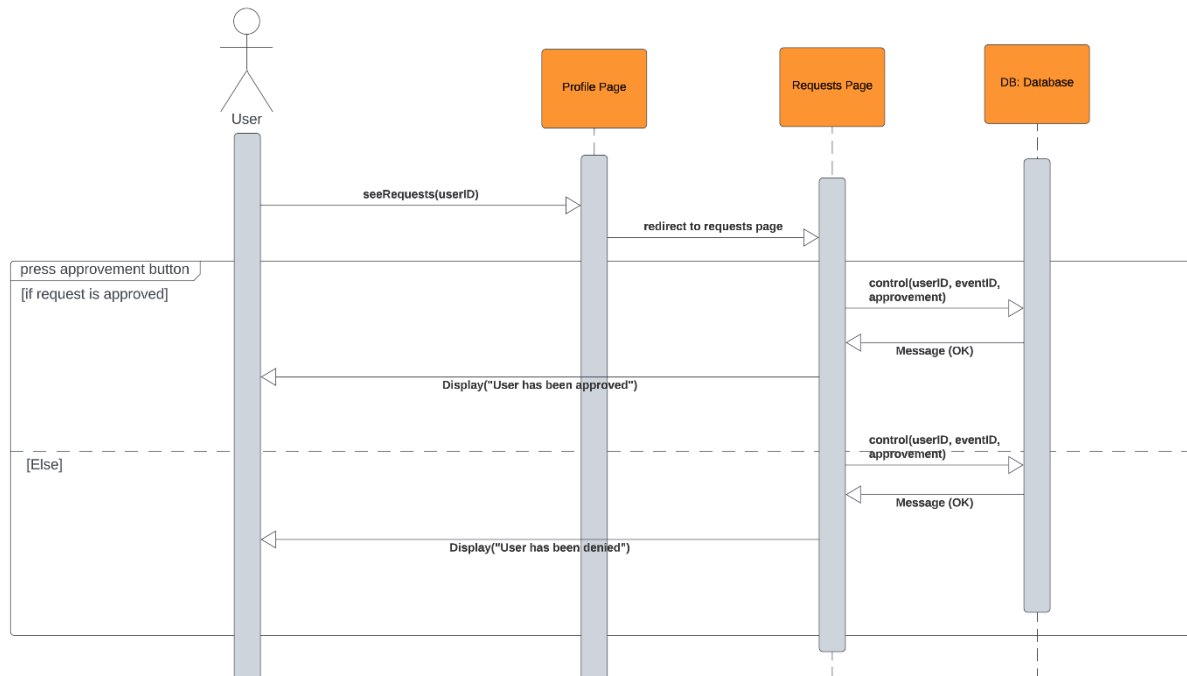




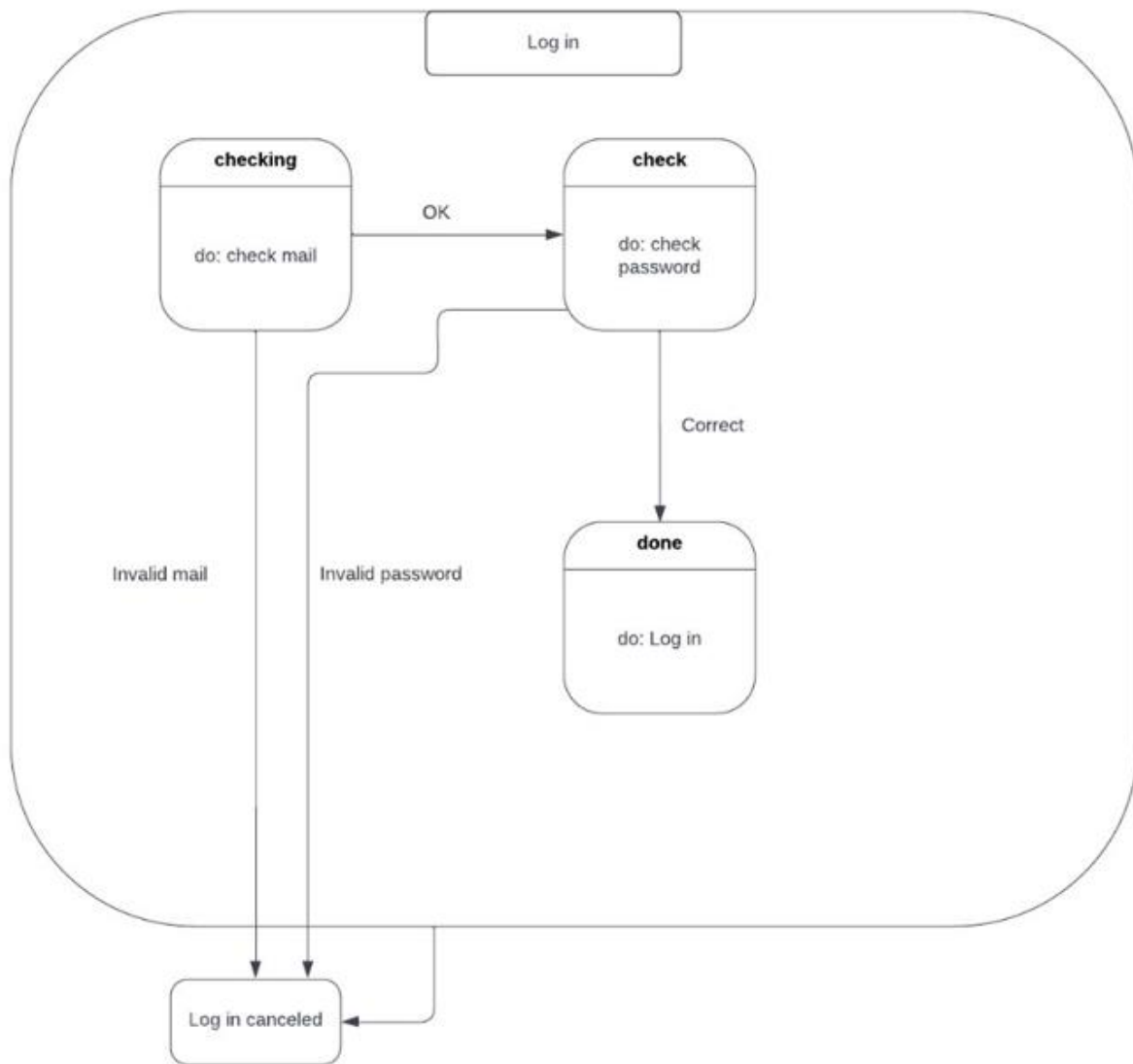
## d) Sequence Diagrams

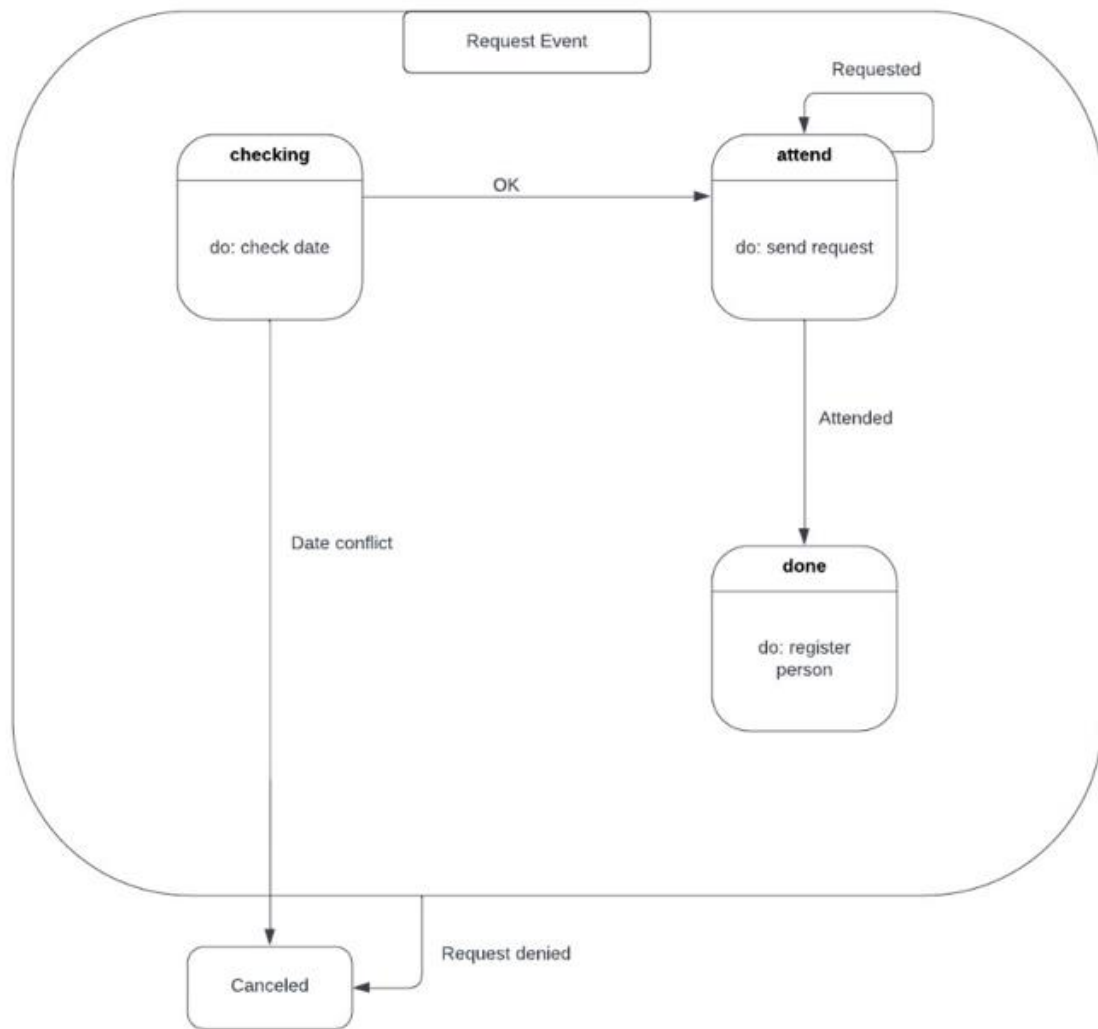




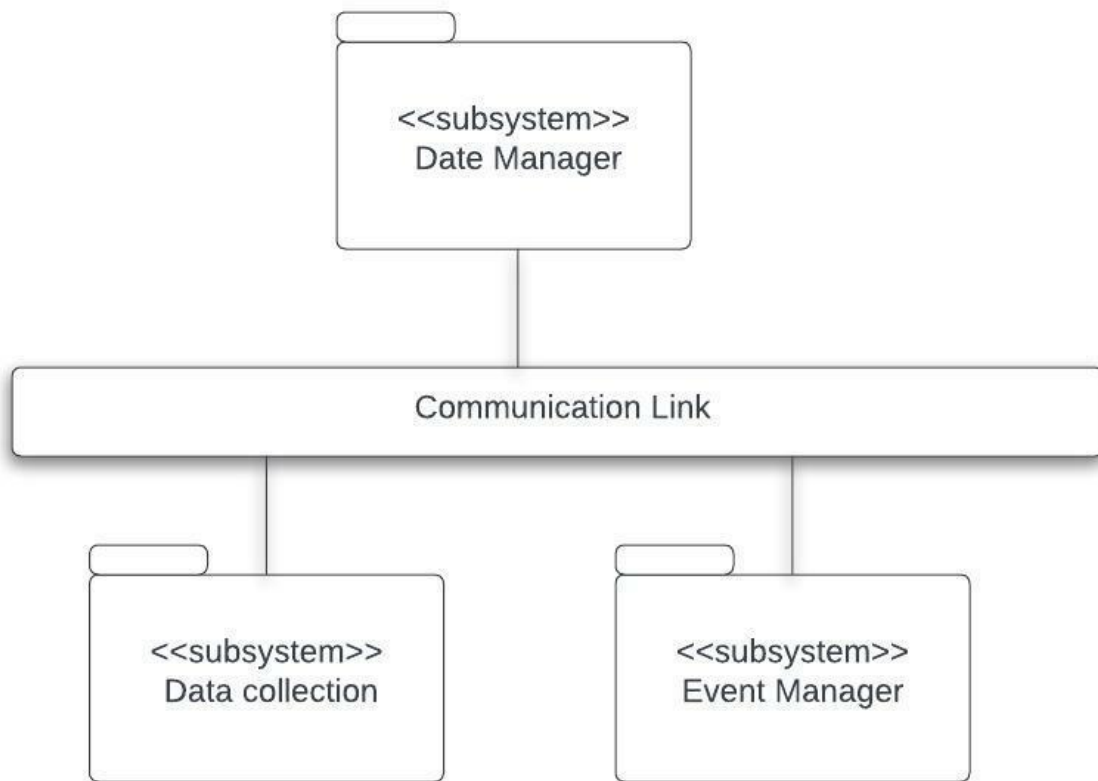


## e) State Diagrams



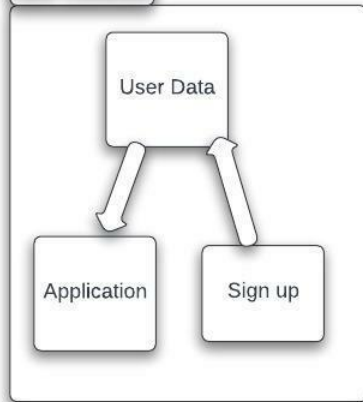


## **2. SIMPLE SYSTEM ARCHITECTURE**

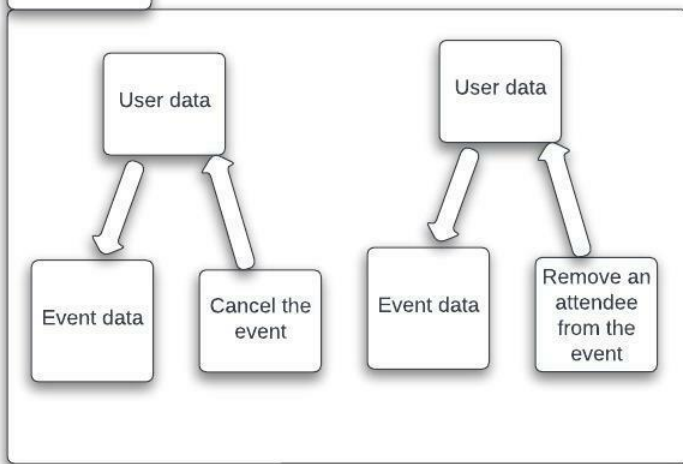




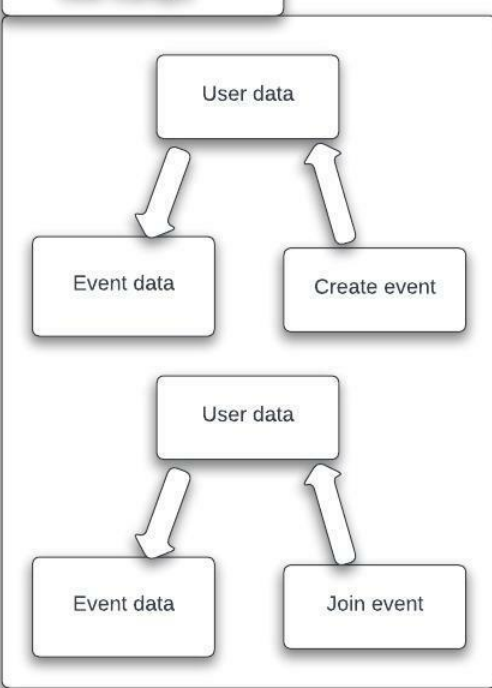
### Data Collection



### Event Manager



### Date Manager



### **Data Collection**

When the user becomes a member, all the information received is sent to the user data and then this data is retrieved by the application.

### **Event Manager**

When the event creator cancels the event, the event is first removed from the list of attendees' events (user data) and then removed from the events page (event data).

When the event creator removes an attendee from his event, that event is deleted from that attendee's events first (user data) and then the number of attendees for that event is reduced (event data).

### **Date Manager**

When the user wants to create an event, first the data of that user is checked (user data), then the created event is added to the event data (event data).

When a user wants to participate in an event, first the data is checked to see if that user has an event on that date (user data), and then the number of participants of that event is increased (event data).

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## ***SELECTED MODEL: AGILE***

We have used Agile Model to reduce overheads. At each sprint we have completed, we consult our product manager who acts as a customer to involve customer to project which is one of the advantages of this model.

One of our goals was delivering our job in incremental manner. First, we have specified our sprint time, which is 2 weeks, and then we have tried to deliver our increments in each 2 weeks. Reviewing each work that is going to be done and then planning the sprint with online/offline scrums helped us to progress in our project.

Our purpose includes maintaining the simplicity and testing every build. All in all, our progress consists of incremental development, small releases, simple design, refactoring, continuous integration.

## ***EVENT-DRIVEN MODELLING***

In our project, we have external and internal events. We have many but finite number of states and stimulus cause transition between them. For example, making a new event entry on the system can be explained with an event called "Event Created". This approach helps us to make our design clear because specifying our states and stimulus is important things to progress in a simple and understandable manner.

## ***ARCHITECTURE OVERVIEW***

Hangout is an application for students & academicians of Gebze Technical University. It works on Android systems.

We, as a LUDOVICO team, has made a survey with GTU students and found out that lack of social events in university is a major problem for them and also for us. Therefore, we have developed Hangout to make socializing easier.

Main functions include creating an event, see the event details, viewing the events that are created or attended, requesting for an event, attending to an event, canceling events and removing attendees. Our program is also able to detect date conflicts and give warnings for the users.

## ***SYSTEM ARCHITECTURE***

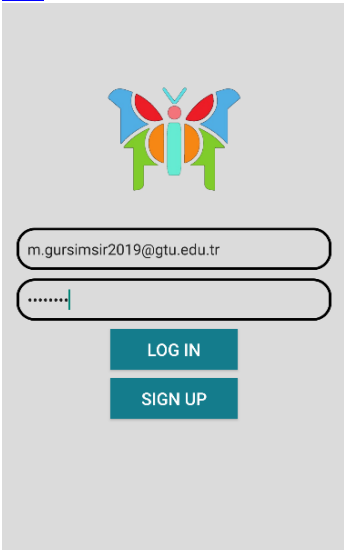

UI: Hangouts application's user interface is firstly built with Figma. Then to design pages in android studio, XML is used.

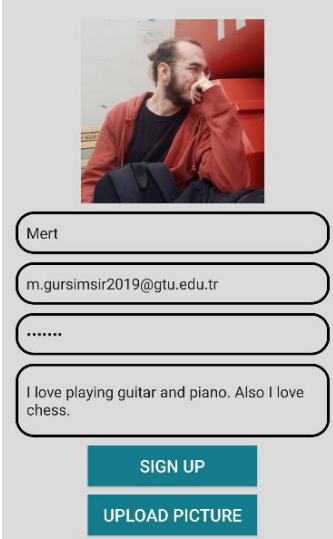
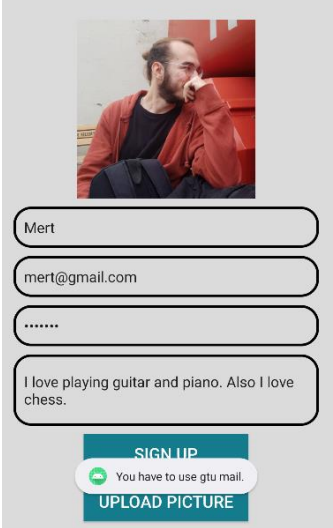
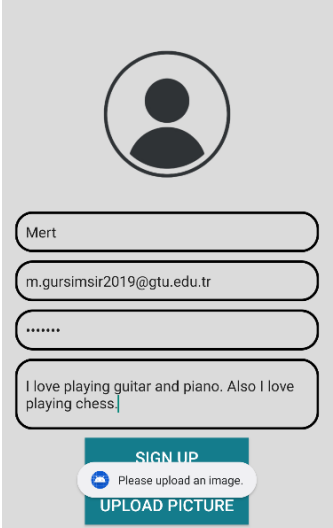
Functionality: Functionality of Hangout application is coded with Kotlin. Some libraries are used to implement some functionalities.





Backend: The Hangout application's backend is built with Firebase. Firebase creates functions that are triggered by Firebase products, and it changes the data in the Realtime database.

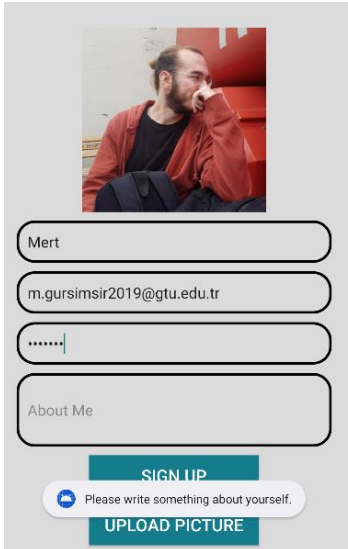
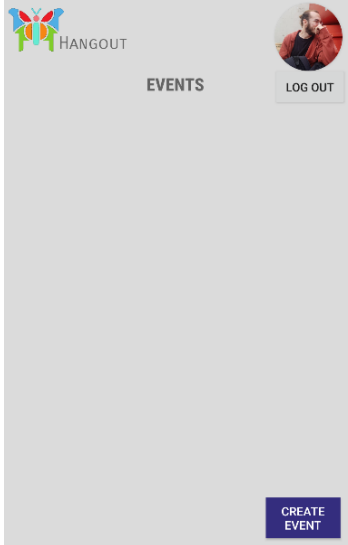
Database: The hangout application uses a firebase database system to store detailed user and event data.

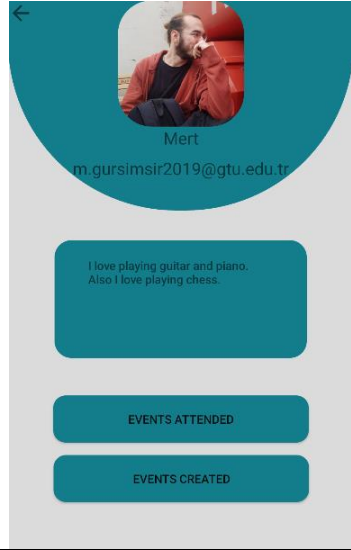
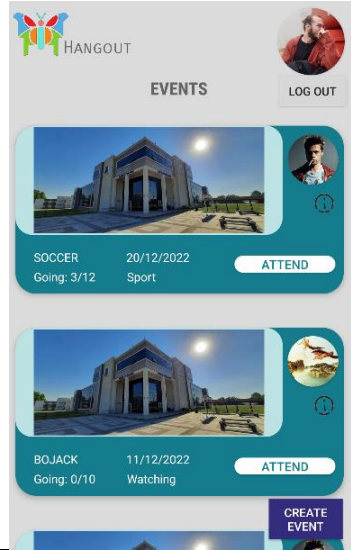

### 3. TEST REPORTS

I D	DESCRI PTION	STEPS TO EXECUTE	TEST DATA / INPUT	EXPECTE D RESULTS
T-01	Check customer log in with valid data	<ol style="list-style-type: none"> <li>Go to the log in page</li> <li>Enter e-mail with <a href="mailto:mertgursimsir16@gtu.edu.tr">gtu.edu.tr</a> extension that is signed up</li> <li>Enter password</li> <li>Log in</li> </ol>	Email: <a href="mailto:mertgursimsir16@gmail.com">mertgursimsir16@gmail.com</a> 	User should log in successfully  <b>PASSED</b>
T-02	Check customer log in with invalid data	<ol style="list-style-type: none"> <li>Go to the log in page</li> <li>Enter any e-mail</li> <li>Enter password</li> <li>Log in</li> </ol>	Email: <a href="mailto:mert@gmail.com">mert@gmail.com</a> 	User should not log in into application  <b>PASSED</b>
T-03	Check customer sign up with proper mail	<ol style="list-style-type: none"> <li>Go to the sign up page</li> <li>Enter name</li> </ol>	Email: <a href="mailto:m.gursimsir2019@gtu.edu.tr">m.gursimsir2019@gtu.edu.tr</a>	User should sign up successfully

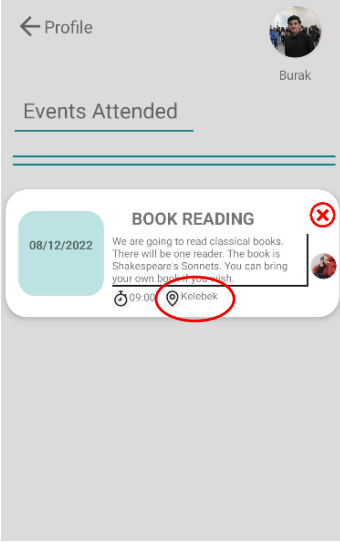
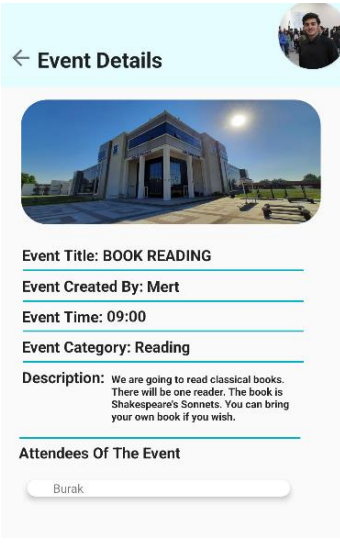

		<ol style="list-style-type: none"> <li>Enter e-mail with <a href="mailto:gtu.edu.tr">gtu.edu.tr</a> extension</li> <li>Enter password</li> <li>Fill other inputs validly – Don't leave them empty</li> <li>Sign up</li> </ol>		PASSED
T-04	Check customer sign up with invalid data	<ol style="list-style-type: none"> <li>Go to the sign up page</li> <li>Enter name</li> <li>Enter any e-mail</li> <li>Enter password</li> <li>Try invalid inputs too</li> <li>Sign up</li> </ol>	<p>Email: <a href="mailto:mert@gmail.com">mert@gmail.com</a></p>  	<p>User should not sign up into application.</p> <p>PASSED</p>


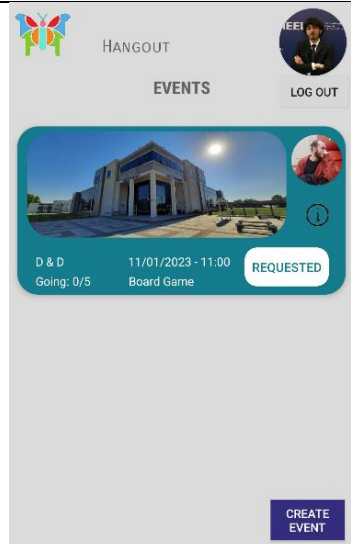
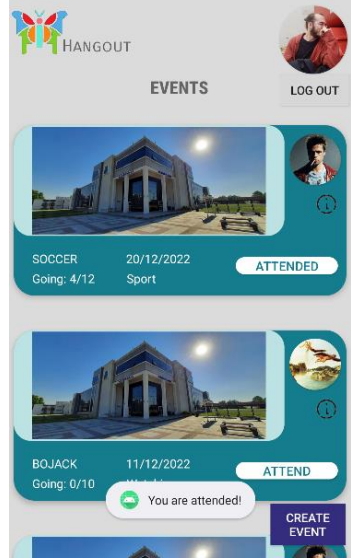
			<div><div><div>Name</div><div>m.gursimsir2019@gtu.edu.tr</div><div>*****</div><div>I love playing guitar and piano. Also I love playing chess.</div><div><div>SIGN UP</div><div> Name cannot be empty.</div><div>UPLOAD PICTURE</div></div></div></div> <div><div><div>Mert</div><div>m.gursimsir2019@gtu.edu.tr</div><div>Password</div><div>I love playing guitar and piano. Also I love playing chess.</div><div><div>SIGN UP</div><div> Please enter stronger password.</div><div>UPLOAD PICTURE</div></div></div></div>	
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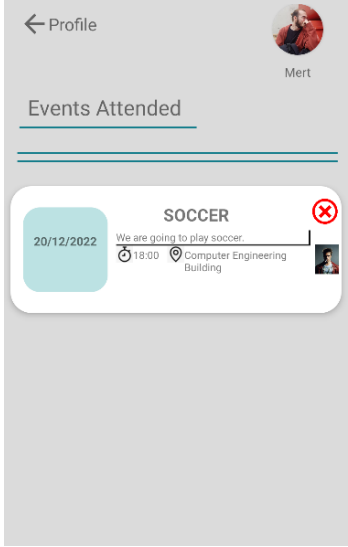
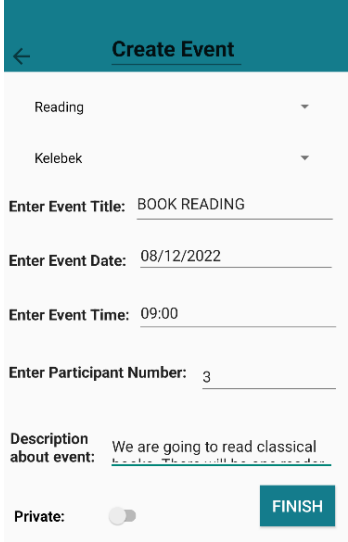
				
T-05	Check if user is directed to proper home page	<ol style="list-style-type: none"> <li>1. Enter proper e-mail and password</li> <li>2. Click log in button</li> </ol>	<p>Email: <a href="mailto:mertgursimsir16@gmail.com">mertgursimsir16@gmail.com</a></p> <p>Password: {user's password he/she gave while signing up}</p> 	<p>User should see the home page</p> <p><b>PASSED</b></p>

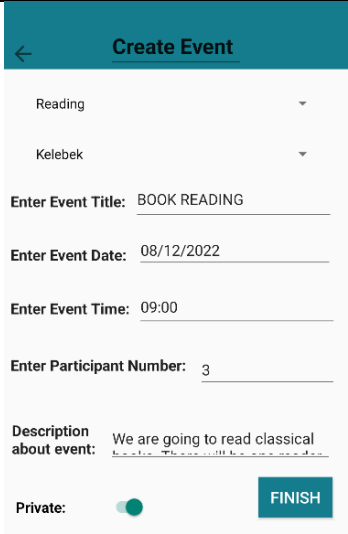
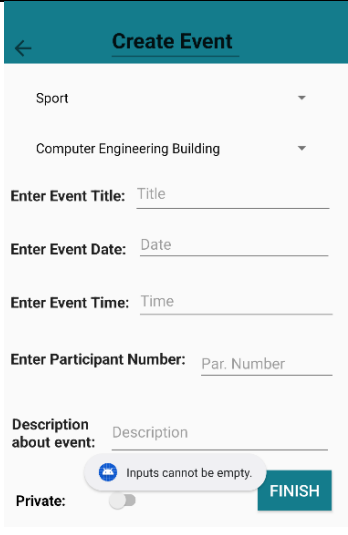
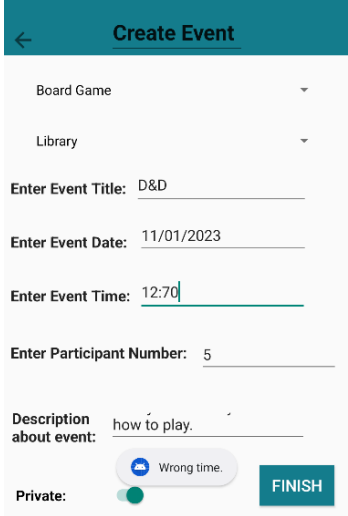
T-06	Check if user can be directed to the profile from the home page	<ol style="list-style-type: none"> <li>1. Go to the home page</li> <li>2. Click profile icon</li> </ol>	 <p>The image shows a user profile for 'Mert' with email 'm.gursimsir2019@gtu.edu.tr'. The bio says 'I love playing guitar and piano. Also I love playing chess.' Below the bio are two buttons: 'EVENTS ATTENDED' and 'EVENTS CREATED'.</p>	<p>User should access to his/her profile successfully</p> <p><b>PASSED</b></p>
T-07	Check if user can see all the events at the home page	<ol style="list-style-type: none"> <li>1. Go to the home page</li> </ol>	 <p>The image shows the 'EVENTS' section on the home page. It lists two events: 'SOCCER' on 20/12/2022 (Sport) and 'BOJACK' on 11/12/2022 (Watching). Each event has an 'ATTEND' button. A 'CREATE EVENT' button is visible at the bottom right.</p>	<p>All events should be listed at the home page</p> <p><b>PASSED</b></p>
T-08	Check if user can see the information about the events at the home page	<ol style="list-style-type: none"> <li>1. Go to the home page</li> <li>2. Click to “view more info” button</li> </ol>	 <p>The image shows the 'Event Details' page for an event titled 'D &amp; D'. It includes fields for 'Event Created By: Mert', 'Event Time: 11:00', and 'Event Category: Board Game'. The description says: 'We are going to play dungeons and dragons. Please join us if you know how to play.' At the bottom, there is a section for 'Attendees Of The Event'.</p>	<p>Informations should be successfully accessed</p> <p><b>PASSED</b></p>

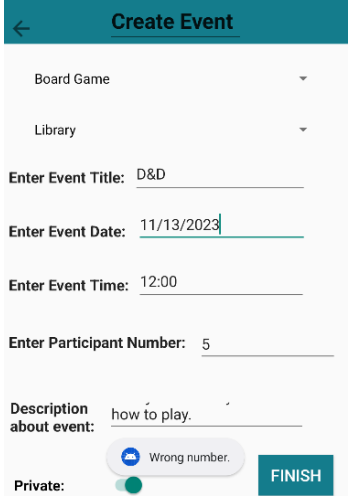
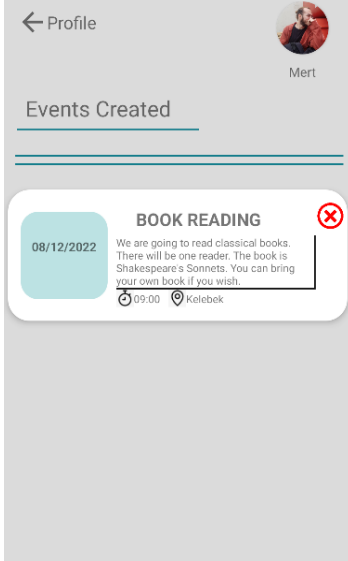
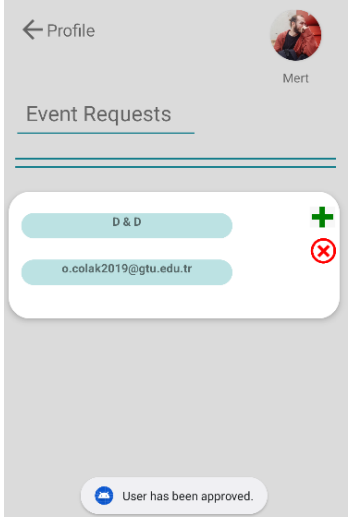


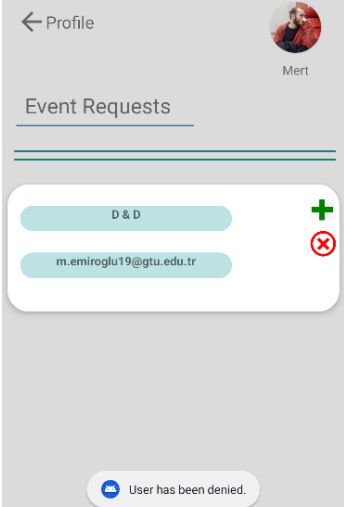
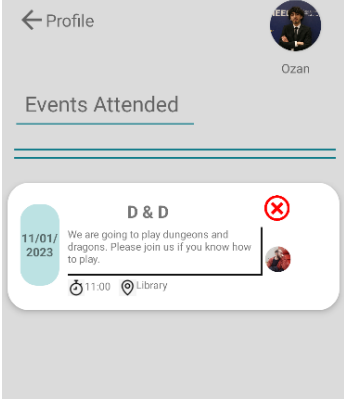

T-09	Check if user can see the location of the event	<ol style="list-style-type: none"> <li>1. Go to the profile page</li> <li>2. Click to “events attended” button</li> <li>3. Click on the event</li> </ol>	 	<p>User should see location of the event</p> <p><b>PASSED</b></p>
T-10	Check if user can see the attendees of the event	<ol style="list-style-type: none"> <li>1. Go to the profile page</li> <li>2. Click to “events attended” button</li> <li>3. Click on the event</li> </ol>		<p>User should see attendees of the event</p> <p><b>PASSED</b></p>





T-11	Check if user can see time of the event	<ol style="list-style-type: none"> <li>Go to the profile page</li> <li>Click to “events attended” button</li> <li>Click on the event</li> </ol>		<p>User should see time of the event</p> <p><b>PASSED</b></p>
T-12	Check if user can send request to an event that needs requests to attend	<ol style="list-style-type: none"> <li>Go to the home page</li> <li>Find an event that needs a request</li> <li>Click to “send request” button</li> </ol>		<p>User should send request to the creator of the event</p> <p><b>PASSED</b></p>
T-13	Check if user can attend directly to an event that needs no requests to attend	<ol style="list-style-type: none"> <li>Go to the home page</li> <li>Find an event that needs no request</li> <li>Click to “attend” button</li> </ol>		<p>User should see information that indicates he/she attended the event.</p> <p><b>PASSED</b></p>

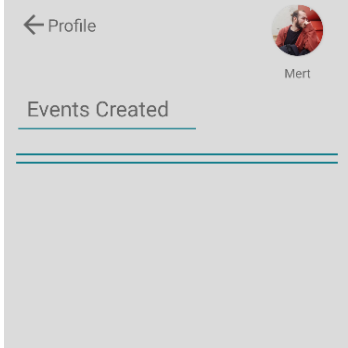
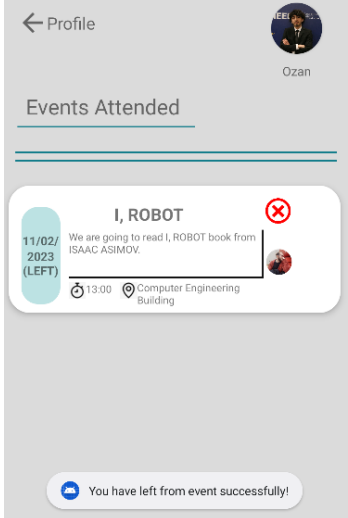
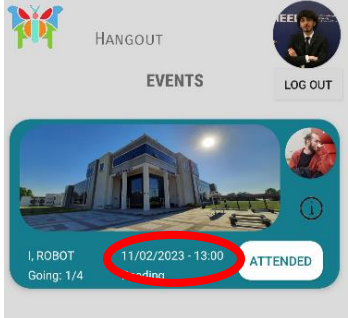
T-14	Check if user can see the event that he/she is attended with no request at his/her profile	<ol style="list-style-type: none"> <li>1. Go to the home page</li> <li>2. Click “attend” for an event that needs no request</li> <li>3. Go to the profile page</li> <li>4. Click to “Attended events” button</li> </ol>		<p>User should be able to see the attended events</p> <p><b>PASSED</b></p>
T-15	Check if user can create an event with no request needed	<ol style="list-style-type: none"> <li>1. Go to the home page</li> <li>2. Click to the “Create Event” button</li> <li>3. Fill the informations about the event</li> <li>4. Don’t click “private” radio button</li> <li>5. Finish event</li> </ol>		<p>User should create an event successfully</p> <p><b>PASSED</b></p>

T-16	Check if user can create an event with request needed	<ol style="list-style-type: none"> <li>1. Go to the home page</li> <li>2. Click to the "Create Event" button</li> <li>3. Fill the informations about the event</li> <li>4. Click "request" radio button</li> <li>5. Finish event</li> </ol>		<p>User should create an event succesfully with request needed</p> <p><b>PASSED</b></p>
T-17	Check if application can detect empty inputs while creating the event	<ol style="list-style-type: none"> <li>1. Go to the home page</li> <li>2. Click to the "Create Event" button</li> <li>3. Leave empty the informations about the event</li> <li>4. Finish event</li> </ol>		<p>User should not be able to create the event</p> <p><b>PASSED</b></p>
T-18	Check if inputs are valid while user creating the event	<ol style="list-style-type: none"> <li>1. Go to the home page</li> <li>2. Click to the "Create Event" button</li> <li>3. Fill inputs invalidly</li> <li>4. Finish event</li> </ol>		<p>User should not be able to create the event</p> <p><b>PASSED</b></p>

				
T-19	Check if user can see the event that he/she created at his/her profile	<ol style="list-style-type: none"> <li>Go to the profile page</li> <li>Click to “Created events” button</li> </ol>		<p>User should be able to see the created events</p> <p><b>PASSED</b></p>
T-20	Check if user can accept the request that is sent to one of his/her events	<ol style="list-style-type: none"> <li>Go to the profile page</li> <li>Click to the requests button</li> <li>Check if there is a request</li> <li>If there is a request, accept it. Otherwise wait for it.</li> </ol>		<p>User should accept the request come to him/her</p> <p><b>PASSED</b></p>

T-21	Check if user can reject the request that is sent to one of his/her events	<ol style="list-style-type: none"> <li>1. Go to the profile page</li> <li>2. Click to the requests button</li> <li>3. Check if there is a request</li> <li>4. If there is a request, reject it. Otherwise wait for it.</li> </ol>		<p>User should reject the request come to him/her</p> <p><b>PASSED</b></p>
T-22	Check if user can attend the event which requires a request	<ol style="list-style-type: none"> <li>1. Go to the profile page</li> <li>2. Click to the requests button</li> <li>3. Check if there is a approval for the request, otherwise wait for approval.</li> <li>4. Go to the profile page</li> <li>5. Click to “Attended events” button</li> <li>6. See the event there</li> </ol>		<p>User should be able to see the attended events (Check T-12 and T-20)</p> <p><b>PASSED</b></p>
T-23	Check if user can remove an attendee from the event that he/she created.	<ol style="list-style-type: none"> <li>1. Go to the profile page</li> <li>2. Go to the “Created events” page</li> <li>3. Click on the event</li> <li>4. Click to the “X” button next to an user</li> </ol>		<p>User should be able to remove an attendee that he/she wants.</p> <p><b>PASSED</b></p>

			<div><div><div><div><div><div>← Event Details</div><div></div></div></div><div></div><div><div>Event Title: D &amp; D</div><div>Event Time: 11:00</div><div>Event Category: Board Game</div><div>Description: We are going to play dungeons and dragons. Please join us if you know how to play.</div><div>Attendees Of The Event</div></div></div></div></div>	
T-24	Check if user can cancel the event that he/she created.	<div><div><div>1. Go to the profile page</div><div>2. Go to the “Created events” page</div><div>3. Click to the “X” button on the event</div></div></div>	<div><div><div><div><div>← Profile</div><div><div>Ozan</div></div></div></div><div><div>Events Attended</div><div></div></div></div></div> <div><div><div><div><div>← Profile</div><div><div>Mert</div></div></div></div><div><div>Events Created</div><div></div></div><div><div><div><div><div>11/01/2023</div><div>CANCEL</div><div>Fri 11 PM</div></div><div><div>D &amp; D</div><div>We are going to play dungeons and dragons. Please join us if you know how to play.</div><div><div>11:00</div><div>Library</div></div></div></div><div><div>✕</div></div></div></div><div><div>Event has been cancelled successfully!</div></div></div></div>	<div><div>User should be able to cancel the event.</div><div>PASSED</div></div>

				
T-25	Check if user can leave an event that he/she attended.	<ol style="list-style-type: none"> <li>1. Go to the profile page</li> <li>2. Go to the “Attended events” page</li> <li>3. Click to the “X” button on the event</li> </ol>		<p>User should be able to leave the event.</p> <p><b>PASSED</b></p>
T-26	Check for the date conflicts	<ol style="list-style-type: none"> <li>1. Go to the home page</li> <li>2. Click to the “Create Event” button</li> <li>3. Fill informations correctly other than date and time</li> <li>4. Enter date and time such that user has an event at that time</li> <li>5. Finish event</li> </ol>		<p>User should not create the event.</p> <p><b>PASSED</b></p>



			<div><div><div><div><div><div>←</div><div>Create Event</div></div></div><div><div><div>Sport</div><div>▼</div></div><div><div>Computer Engineering Building</div><div>▼</div></div></div><div><div>Enter Event Title:</div><div>CONFLICT</div></div><div><div>Enter Event Date:</div><div>11/02/2023</div></div><div><div>Enter Event Time:</div><div>13:00</div></div><div><div>Enter Participant Number:</div><div>4</div></div><div><div>Description about</div><div>CONFLICTED EVENT</div><div><div><div></div><div>You have another event at the same time.</div></div></div></div><div><div>Private:</div><div><input type="checkbox"/></div></div><div><div>FINISH</div></div></div></div></div>	
T-27	Check for the date conflicts	<div><div><div>1. Go to the home page</div><div>2. Find an event that's time conflicts with the event that user has already</div><div>3. Try to attend</div></div></div>	<div><div><div><div><div><div>HANGOUT</div><div>EVENTS</div><div>LOG OUT</div></div></div><div><div><div><div><div><div><div></div><div>I, ROBOT</div><div>Going: 1/4</div></div><div><div>11/02/2023 - 13:00</div></div><div><div>ATTENDED</div></div></div></div></div></div><div><div><div><div><div><div></div><div>1984</div><div>Going: 0/5</div></div><div><div>11/02/2023 - 13:00</div></div><div><div>ATTEND</div></div></div></div></div></div><div><div><div>CREATE EVENT</div></div></div></div></div><div><div><div><div><div><div>HANGOUT</div><div>EVENTS</div><div>LOG OUT</div></div></div><div><div><div><div><div><div><div></div><div>I, ROBOT</div><div>Going: 1/4</div></div><div><div>11/02/2023 - 13:00</div></div><div><div>ATTENDED</div></div></div></div></div></div><div><div><div><div><div><div></div><div>1984</div><div>Going: 0/5</div></div><div><div>You have joined another event at the same time.</div></div></div></div></div></div><div><div><div>CREATE EVENT</div></div></div></div></div></div></div></div></div>	<div>User should not be able to attend to event.</div> <div>PASSED</div>

#### **4. IS OUR PROJECT ACCESSIBLE TO THE POTENTIAL USERS**

Our project has potential users of GTU students and academicians. A user can easily create an event that either needs a request or does not need any request. Each user can see all the events listed at the home page and choose between them according to their interests. We keep users' and events' information in our database (Firebase) and we managed to install our project in our mobile phones. So any user that can access the APK file of our project, can easily use our application. We have spoken with GTU students and they said that they may use this app to find event according to their interests. We, as LUDOVICO team members, are the potential users of Hangout.