Bilkent University

Department of Computer Engineering

Senior Design Project

Project short-name: Coupl

Analysis Report

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Analysis Report

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1 Introduction

Coupl is a mobile application that will create a safe environment for users to meet with new people in-person only in a matter of minutes. Event organizers will make their events available to the application and the users will join the events by scanning the QR codes provided in these event locations. The possible events include musical concerts, parties, art exhibitions and many more. Coupl will then match the users in the same event, based on their preference from the current participant pool and their history of event and matches in the application. By matching the users that are already participating in the same event and also with similar histories/profiles, Coupl aims to match the users of very similar interests/tastes. Compared to alternatives such as online swipe-based dating apps which only provide chatting functionality, this application will provide a much more dynamic experience.

In this report, the proposed system is explained in detail with comparison to the current alternatives. All the functional and nonfunctional requirements are given and then the system is analyzed through several types of UML diagrams. The plan for the overall development process is given as a set of work packages and the possible risks that can occur during the development are discussed with alternative plans.

2 Current System

The current systems that correspond to Coupl are a wide variety of different online matching/dating services that are available either as web applications or mobile applications. The first of these was Matching.com which launched in 1995 [1]. Since the last decade, mobile applications have been dominating these services with Tinder, Badoo and Bumble being the most popular ones [2]. Also, these services account for 40% of all the couples met since the last decade [1]. In all these services, users create their profiles including their personal information and then these profiles can be seen by the other users. Matches are done between two users according to whether or not they have both accepted to initiate a contact. Matching algorithms in these services are also supported by collaborative filtering and recommender systems to increase the chances of getting a response from a match [3].

These services generally provide chatting (digital messaging) for a match. Some also provide voice and video call features as well. Users can use these channels to arrange a date to meet in person later.

3 Proposed System

3.1 Overview

The main purpose of Coupl is to enable the user to meet with another user on a micro scale. Compared to the popular dating apps which provide only chatting ability between the matched users, our application will create an actual meeting/dating experience. To provide physical meetings instead of virtual ones in a feasible manner, only the users that

are already in the same place will be matched together. That way, an in-person meeting will be possible within a few minutes.

To be able to match people in the same place, the application will be based on organized social events such as musical concerts, parties, art exhibitions, etc. Place owners or other event organizers will be able to organize events in their place at a time they determine. All of these events will be visible to application users and some will be specifically recommended to the users that like these types of activities. Event organizers will be given a QR code upon organizing an event and they will be displaying this QR code at the time of the event in their place. These QR codes will be used to create virtual meeting rooms which users will join by scanning the code with their mobile phones.

When a user joins this room of event participants, they will be matched with the others according to their choices at that moment and also the correlation between their past activities and the others'. When a match occurs in the application, the pair will be united together by the application using several different methods according to the size and logistics of the event location. In one such scheme, the pair will both go to the same subarea in the event hall and meet there. As a theme of the application, female users will have priority on deciding the location in this meeting process. After they meet, the pair will have a specified amount of time to decide whether or not they will be dating for the rest of the event. In case of a positive response from both sides, their match will be complete and they will be taken out of the matching pool for the rest of the event. In case of a negative response from either of the sides, they will continue to use the application to look for further matching possibilities.

With these factors considered, Coupl will create a very interactive dating/matching experience for the users while also enjoying the social activities/events that they normally participate in. This will help reducing the social impacts of the current alternative application models[5]. Also by matching the users that participate in the same activities, it will be made sure that there is readily some similarity in their likings.

3.2 Functional Requirements

3.2.1 Core User Functionalities

3.2.1.1 Displaying the Upcoming Events

- Users will see the upcoming events that are near them and also search/filter these as they want.
- Events that are similar to the user's event history will be recommended above the less similar events.

3.2.1.2 Joining Meeting Rooms by Scanning QR Codes

- The users will join event meeting rooms by scanning the QR codes on their phones. The QR code can be scanned either from the built-in QR code scanner that the application provides or from a third-party QR code scanner.

- If the user scans the event QR code from a third-party QR code scanner without the application installed on their device, they will be redirected to a website where they can download the application first.

3.2.1.3 Seeing the Profiles of the Users in the Same Event

- A user will see the other users that joined the event via the QR code. They will also see the public profile information of these other users.
- A user will be able to like or skip these other users to make a match possible.

3.2.1.4 Matching with People in the Meeting Rooms

- The matching will be made by an algorithm taking multiple factors into consideration including:
    - Users' preference of people from the current event pool (the other users that they liked).
    - Users' past participated events.
    - Users' matches from previous events.
    - Compatibility of users based on the information from their profiles.

3.2.1.5 Meeting with the Matched Person in the Event Area

- There will be several possible schemes for this process according to the capabilities of every event and place.
- One possible scheme preferably for larger events will be:
    - One of the matched users will choose a place from the predetermined meeting areas.
    - The chosen meeting area will be marked on the event area map and displayed to both of the matched users.
- Another scheme preferably for smaller places will be:
    - One of the matched users will choose a color or an image.
    - Both of the matched users will put their phones up in a visible way so that they can see each other and meet.
- Another scheme that can be preferred in outdoors events (because GPS does not work well indoors) will be:
    - Matched users will see each other's location on a map and will walk towards each other.
- When the matched users meet in the given time limit, they will have the choice to confirm this match on the app. If the app receives confirmation from both sides, the match will be successful and they will be taken out from the meeting pool.

3.2.1.6 Reporting Other Users

- After a match happens, the two sides of the match can report each other in case of a rule violation.
- Reports are taken care of by the admin users.

3.2.1.7 Viewing Event and Match History

- Users will be able to view the events they previously attended and the people they matched with on those events. Chatting with these previous matches will be possible here after the event ends.

3.2.1.8 Creating and Modifying User Profile

- When the users create their accounts, they will be able to create a profile where they will display their preferences and their traits. This information will be seen by the possible matches and will also be used by the matching recommendation algorithm.
- Users will be able to modify their profile data.

3.2.1.9 Rating the Event

- Users that participated in an event may rate that event and that event place.

3.2.2 Event Organizer Functionalities

3.2.2.1 Organizing, Modifying and Deleting an Event

- Event organizers may organize/create new events in one of the event places registered in the system by specifying the event's name, description and time period.
- The details of the events may be modified or the events may be totally deleted by the event organizer. Changing the date or deleting the event is only possible at least one week before the starting date of the event, since people might have already made their plans according to this event.

3.2.2.2 Adding a New Event Location

- Events can be organized only at the event places added to the application, these event places can be added by either the event organizers or the admins.
- Event locations added by an event organizer can also be used by another event organizer to create events there.

3.2.2.3 Creating Event Location Partitions

- Event places may have several different partitions to be chosen in different events. These partitions consist of a list of subareas in the event place each indicated by a name and also possibly a location in map.
- These event location partitions can be added to the existing event places by any of the event organizers. These can be used by other event organizers to create events there.

3.2.2.4 Displaying Past Event Statistics

- Event organizers will be able to see the statistics about the events they have organized such as the number of participants, the number of matches, the average participation time.

3.2.2.5 Promoting Events

- Event organizers will be able to promote their events in return for money so that they pop up on the top of users' upcoming events page.

3.3 Nonfunctional Requirements

3.3.1 Usability

- The application must be easy to use for both novice users and users with experience from similar applications.
- It must be easy for place owners to set up the application for the event.

3.3.2 Privacy and Security

- The application should only use the location information of a user during the event to make sure that the user is actually attending the event.
- Only the users that actually attend the event should be able to join that event's room in the application.
- Users should give permission in order to scan the QR and should be able to disable the permission status of the application.

3.3.3 Performance

- The application should be able to verify the QR code in real-time.
- Matching recommendations must be processed in a reasonable amount of time so that the users will not wait for a noticeable time when they join an event.

3.3.4 Scalability

- The application should be able to handle a high number of users for every single event room. Because events such as concerts may have a very large number of participants at once.
- Matching recommendation algorithm's performance should be scalable with respect to the number of all the users registered in the application.

3.4 Pseudo Requirements

- React Native and Swift will be used to develop the mobile applications for both platforms.
- MySQL will be used to manage database functionalities.
- The application will be delivered as an .apk and .ipa executable.
- Github will be used as a version control system.
- Jira will be used for project management and issue tracking.
- The application will require stable internet connection and access to GPS location.

3.5 System Models

3.5.1 Scenarios

Scenario 1	Sign Up
Actor	User
Entry Conditions	User clicks on the sign up button.
Exit Conditions	User successfully signs up and gets redirected to the app.
Flow of Events	1. User fills out the sign up form. 2. User clicks on the confirmation button. 3. User gets redirected to the profile creation page. 4. User uploads a profile picture and fills out personal information. 5. User clicks on the confirmation button.

Table 1. Scenario 1

Scenario 2	Sign In
Actor	User
Entry Conditions	User clicks on the sign in button.
Exit Conditions	User successfully signs in and gets redirected to the app.
Flow of Events	1. User inputs sign in information. 2. User clicks on the confirmation button.

Table 2. Scenario 2

Scenario 3	Update Profile
Actor	User
Entry Conditions	User clicks on the edit profile button.
Exit Conditions	User saves the new profile information.
Flow of Events	1. User edits the profile description. 2. User uploads new photos and/or removes existing photos. 3. User clicks the save button.

Table 3. Scenario 3

Scenario 4	Display Previously Joined Events
Actor	User
Entry Conditions	User clicks on the display event history button.
Exit Conditions	User leaves the event history page.
Flow of Events	1. The app displays a list of events the user previously joined, with the match info of the user for those events.

Table 4. Scenario 4

Scenario 5	Report User
Actor	User1, User2
Entry Conditions	User1 matches with User2.
Exit Conditions	User1 sends the report.
Flow of Events	1. User1 clicks the report user button on the User2's profile. 2. User1 fills the report form on the popup, indicating the reason for the report. 3. User1 clicks the send report button.

Table 5. Scenario 5

Scenario 6	Join Event with QR Code
Actor	User
Entry Conditions	User enters the event area.
Exit Conditions	User successfully joins the event pool.
Flow of Events	1. User scans the event QR code from the posters in the event area, using either the camera app or Coupl. 2. User gets redirected to the page where they can view profiles of other users in the event pool.

Table 6. Scenario 6

Scenario 7	Like or Skip Another User

Actor	User
Entry Conditions	User enters the event pool.
Exit Conditions	User exhausts the event pool or gets a match during the process.
Flow of Events	1. Profiles are displayed one by one to the user. 2. User presses the like or skip button on the profile.

Table 7. Scenario 7

Scenario 8	Meet with Another User
Actor	User1, User2
Entry Conditions	The algorithm matches User1 and User2.
Exit Conditions	User1 and User2 successfully find each other and confirm the match. Or, either one of User1 and User2 unmatches.
Flow of Events	1. The app determines which user will choose the event subarea (User1 in this scenario). 2. User1 chooses the event subarea where they will meet. 3. The app displays the meeting area to User1 and User2. 4. The app starts a countdown, displaying the remaining time period that the match can be made. 5. The app displays a color on both User1 and User2's phones to help them find each other. 6. If User1 and User2 find each other in the given time period and confirm the match, it's considered a successful match and gets displayed on event history. 7. If User1 and User2 can't find each other in the given time period or either one of User1 and User2 unmatches, both users get added back to the event pool.

Table 8. Scenario 8

Scenario 9	Leave Event
Actor	User
Entry Conditions	User clicks the leave event button.
Exit Conditions	User leaves the event pool.
Flow of Events	1. User clicks the button and confirms they want to

	leave the event. 2. User rates the event and event location. 3. The app takes User out of the event pool and they can no longer match with other people.

Table 9. Scenario 9

Scenario 10	Add Event Location
Actor	Event Organizer, Admin
Entry Conditions	Event Organizer clicks the add location button.
Exit Conditions	The location is successfully added.
Flow of Events	1. Event Organizer provides the title, description and location of the event location. 2. Event Organizer divides the event location into subareas with names. 3. Admin confirms the event location to be added into the app.

Table 10. Scenario 10

Scenario 11	Create Event
Actor	Event Organizer, Admin
Entry Conditions	Event Organizer clicks the create event button.
Exit Conditions	The event is successfully created.
Flow of Events	1. Event Organizer provides the necessary information for the event. 2. Event Organizer chooses the event location and partition from the app. 3. Admin confirms the creation of the event. 4. A QR code for the event is generated and is displayed to the Event Organizer.

Table 11. Scenario 11

Scenario 12	Cancel Event
Actor	Event Organizer
Entry Conditions	Event Organizer clicks the cancel event button.
Exit Conditions	The event is cancelled.
Flow of Events	1. Event Organizer inputs the event cancellation reason.

	2. Event Organizer confirms the event cancellation.

Table 12. Scenario 12

Scenario 13	Display Event History
Actor	Event Organizer
Entry Conditions	Event Organizer clicks the event history button.
Exit Conditions	Event Organizer leaves the history page.
Flow of Events	1. The app displays the previous events that Event Organizer created with statistics like the rating of the event and the number of users who participated.

Table 13. Scenario 13

3.5.2 Use Case Model

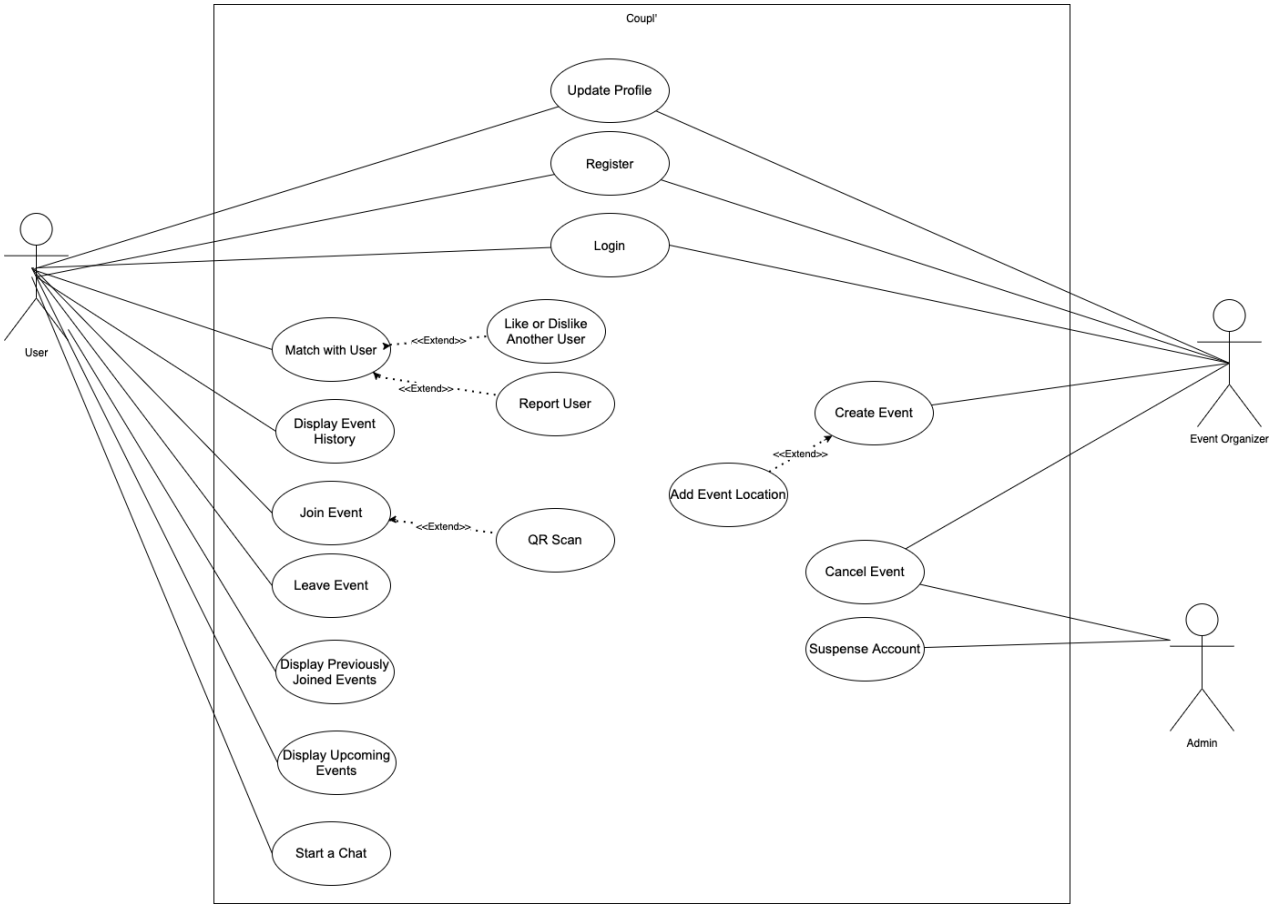


Figure 1. UML Diagram for the Use Case Model

3.5.3 Object and Class Model

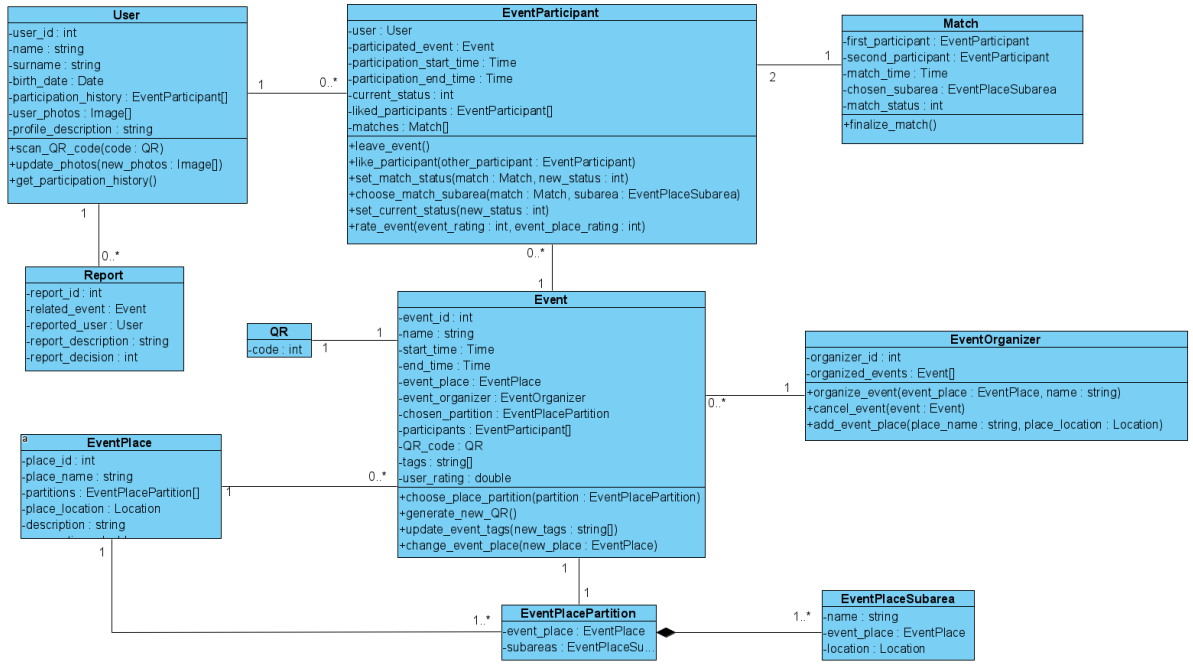


Figure 2. UML Diagram for the Object and Class Model

3.5.4 Dynamic Models

3.5.4.1 Sequence Diagram: Event Organizer Creates an Event Place

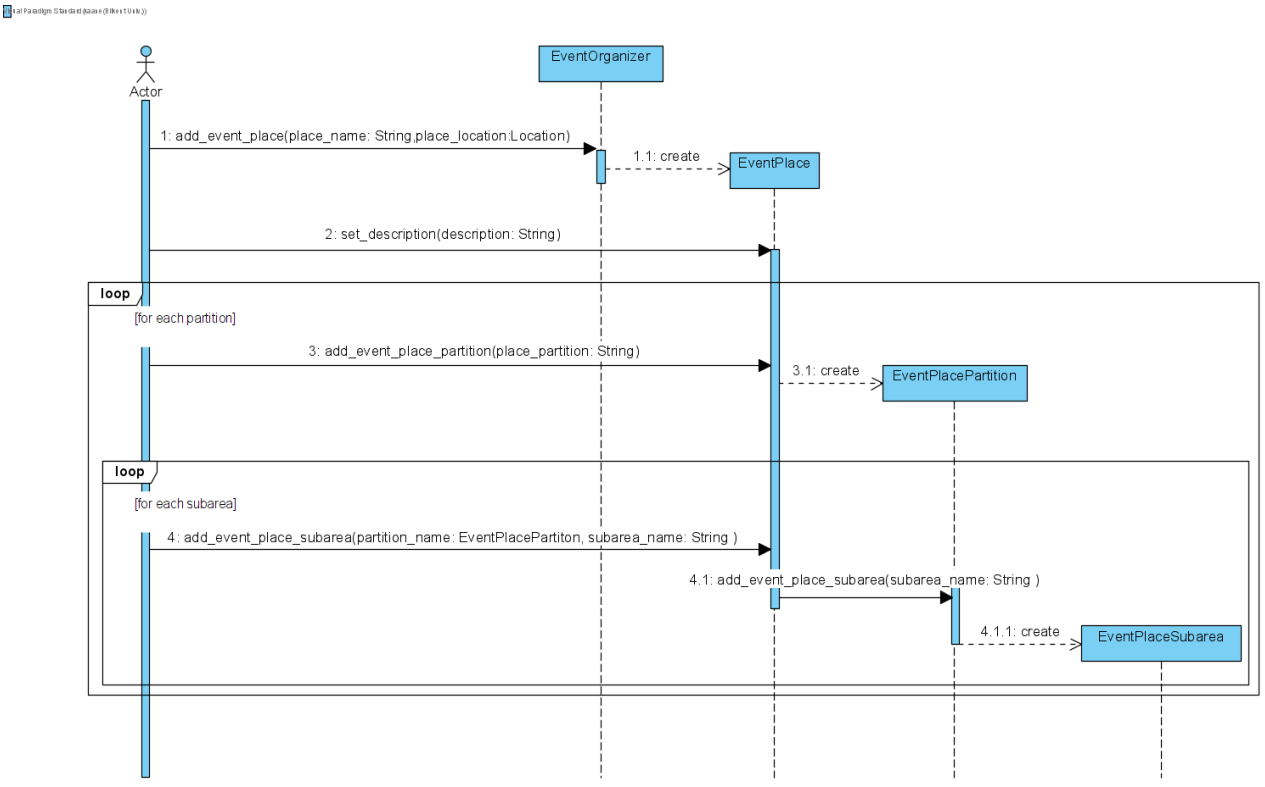


Figure 3. UML Diagram for the Event Place Creation

3.5.4.2 Sequence Diagram: Event Organizer Creates an Event

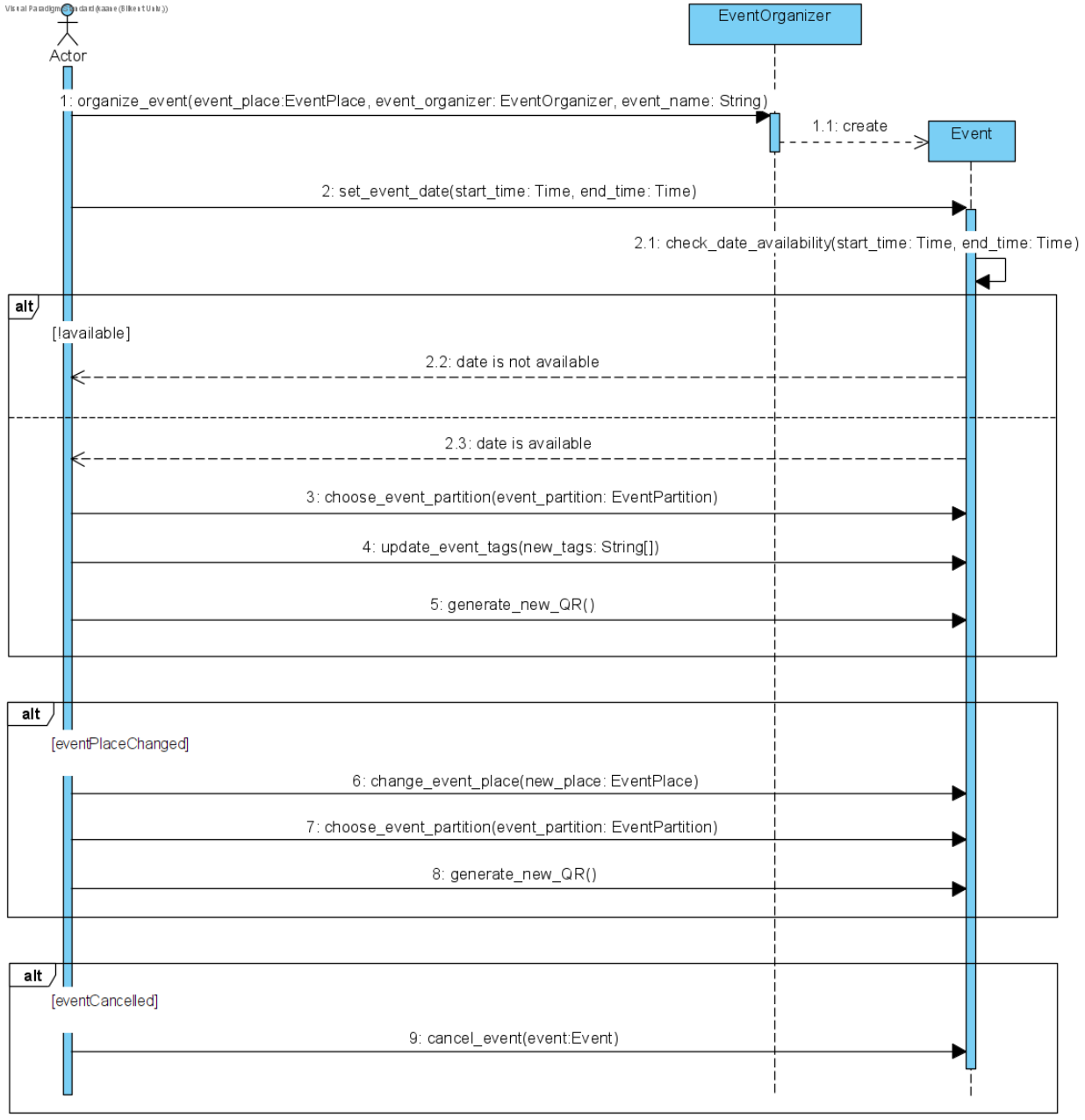


Figure 4. UML Diagram for the Event Creation

3.5.4.3 Activity Diagram: Event Participant Finds a Match

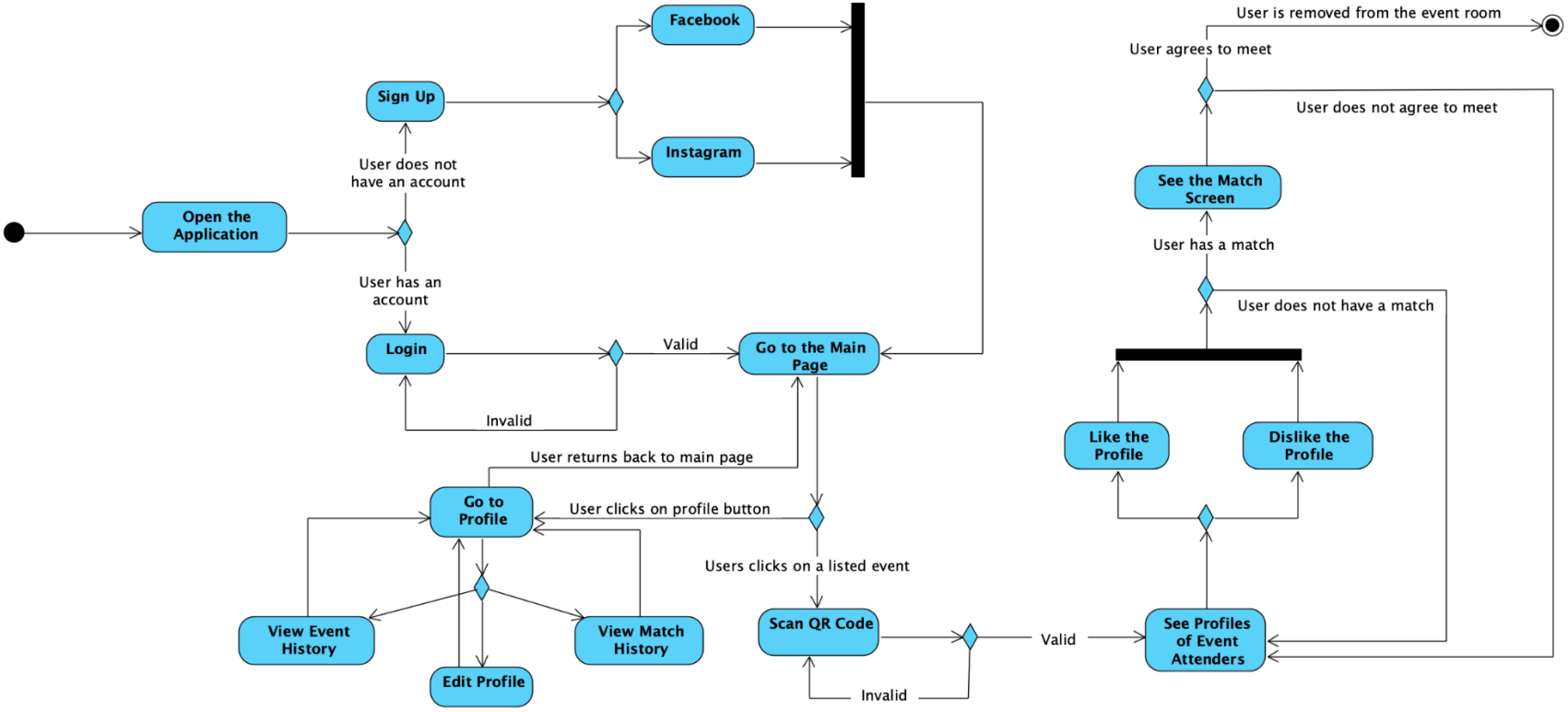


Figure 5. UML Diagram for the Activity of a User Finding a Match

3.5.4.4 State Diagram: States of an Event Participant

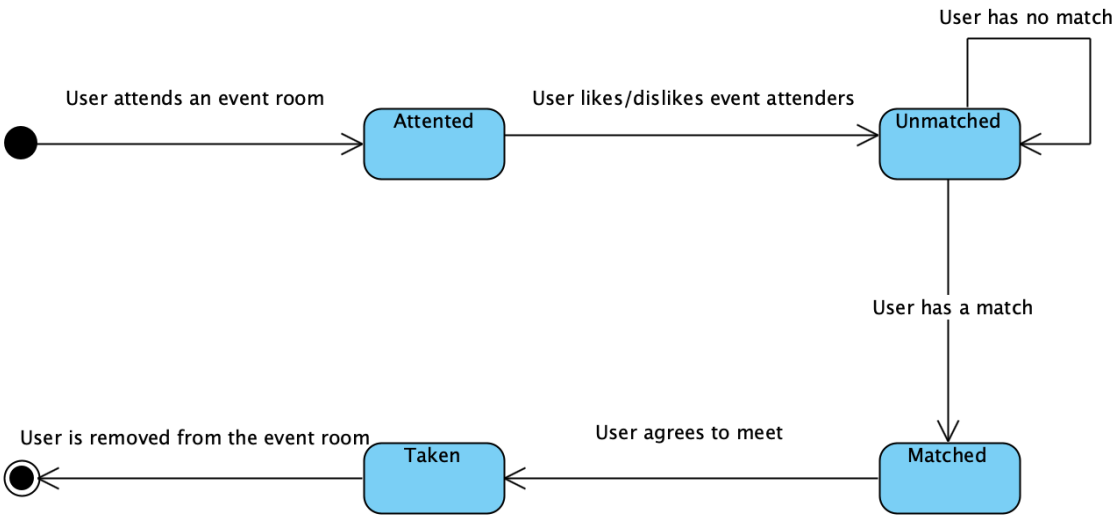
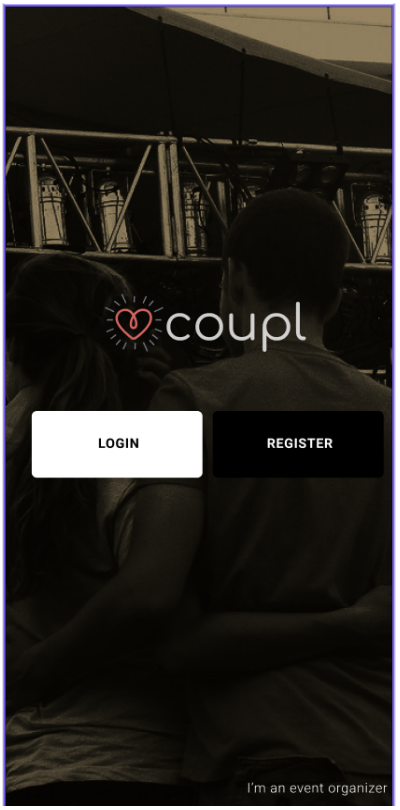


Figure 6. UML Diagram Showing the States of an Event Participant

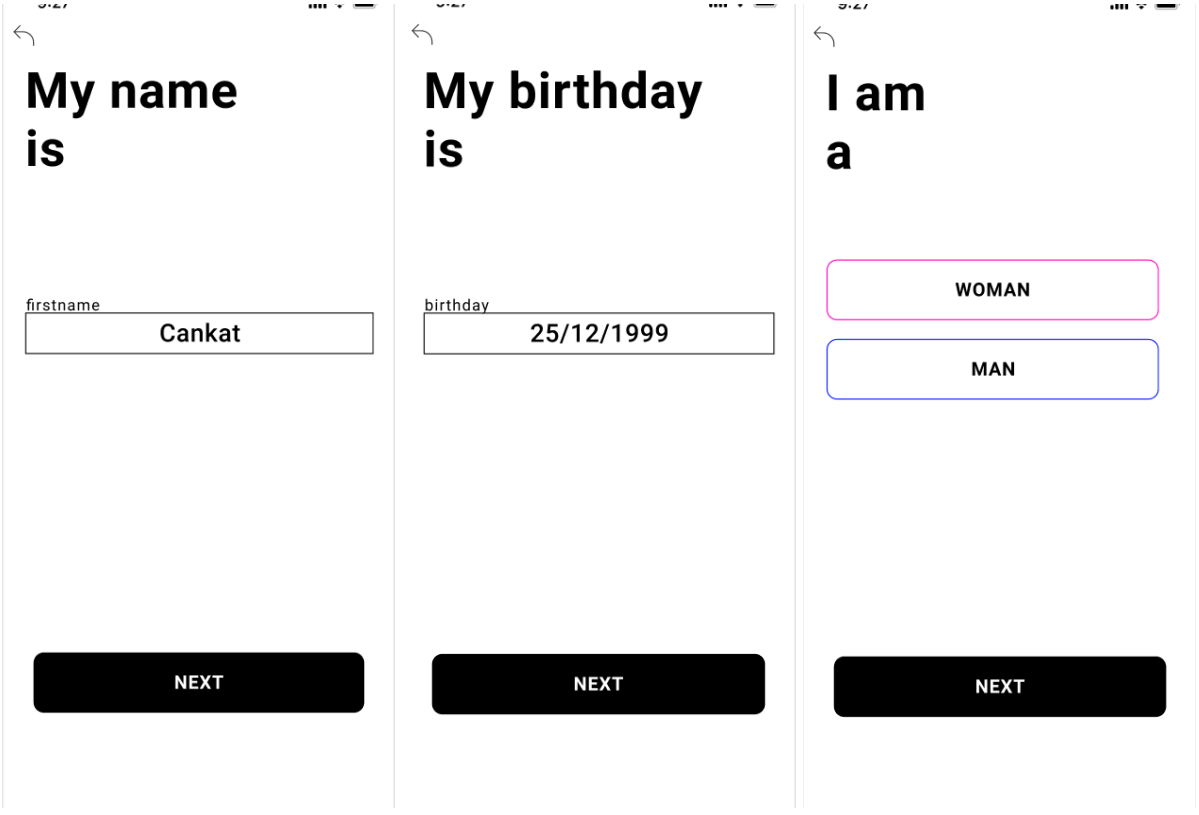
3.5.5 User Interface - Navigational Paths and Screen Mock-ups

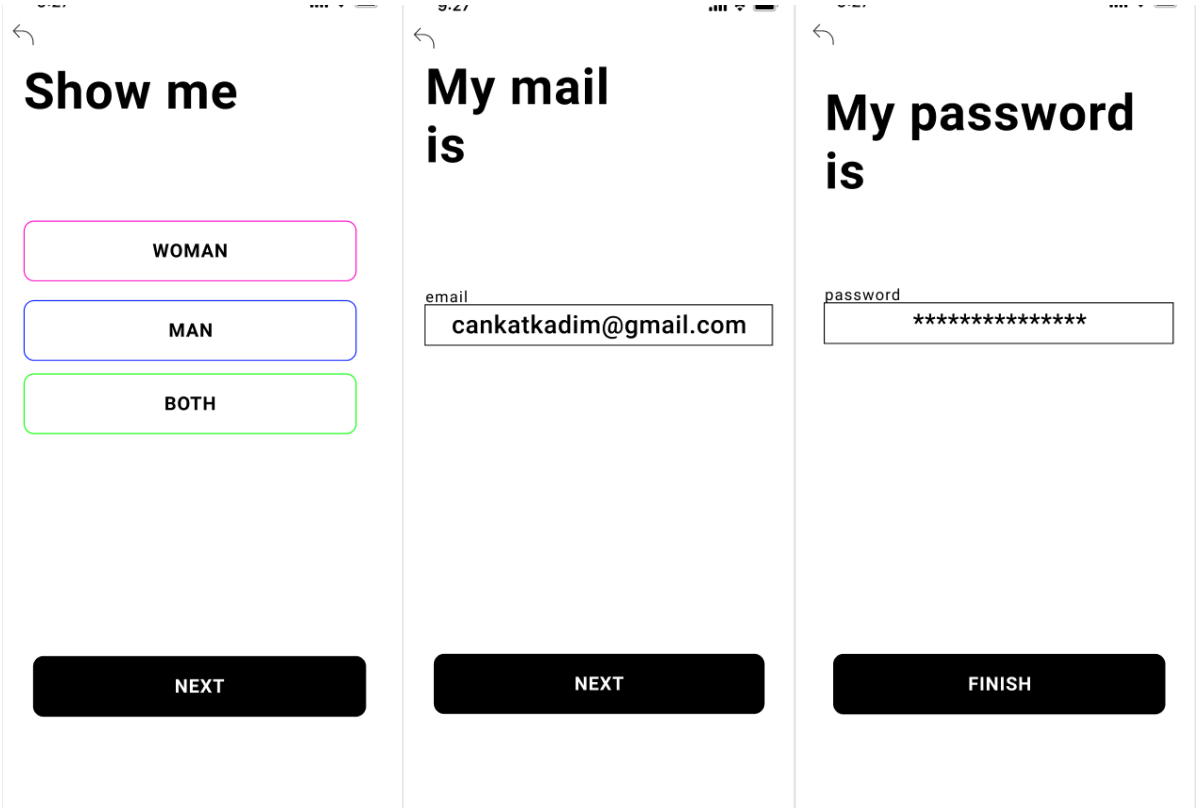
3.5.5.1 Interface for Normal Users

The first screen user that freshly installs the application will see is the login and signup screen. This screen will also allow the event organizers to signup and login.

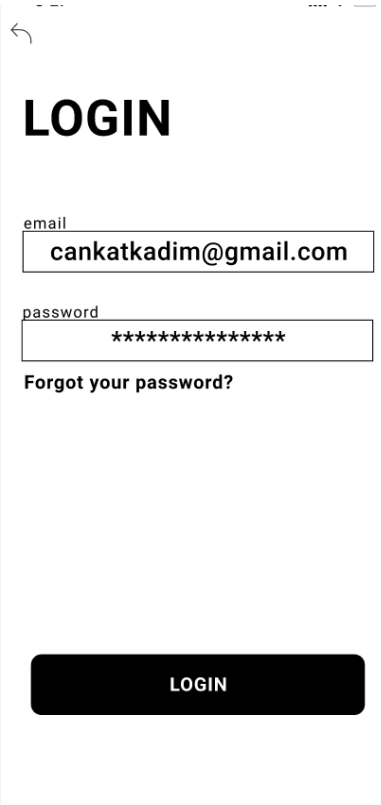


If the user hasn't used Coupl before they will press the Register button where their Name, Date of Birth, Gender and Sexual Preferences will be noted. At the end the user will enter an email they wish to use and a password to secure their account.

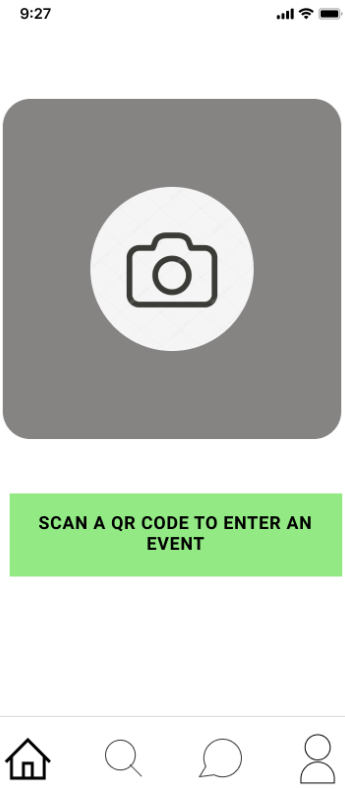




After the registration user will now be able to login from another device if they wish, using their previously set email and password.



After logging in the user will be greeted by the main page. If the user is not at any event currently at this page the user will be prompted to scan a Coupl QR code at an event to enter that event's room in the application.

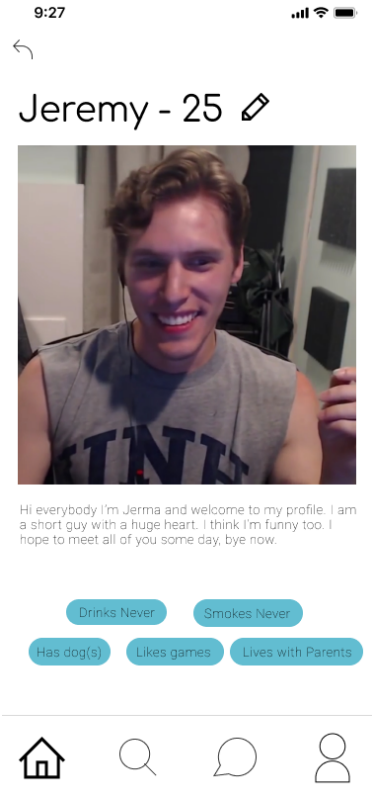


Users can use the main page to access other pages even when they are not currently attending an event. First of all the user can view upcoming events using the search shown button at the bottom. Or they can go to the chat window to see their previous matches and chat with them. Or they can go to their profile using the profile button at the bottom right. And if they wish to come back to the main page they can press the home button to be returned to the main page.

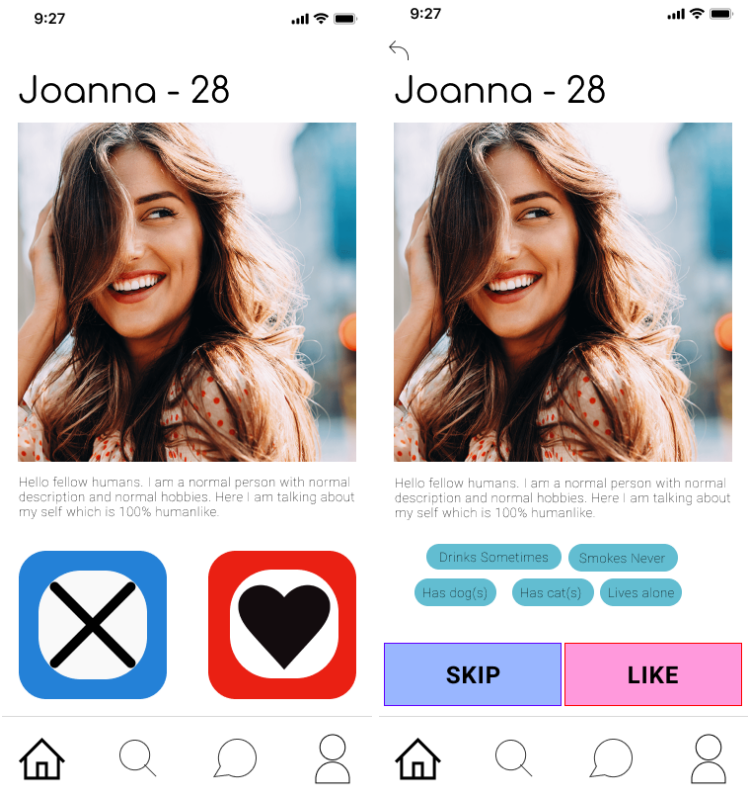
In the event window each event's location, date and time as well as the user rating of the location is shown. On the bottom of the event window there are also small information bars regarding the event type, for example if it will be for all the ages or if it will be alcohol free and such.

In the chat window, all previous chats with other users are shown. If the user clicks on one of the chat dialogues the chat history and ability to send new chat messages will be available to the user.

In the profile window the user will be able to see his pictures, add or remove their pictures, change their name and age, change their description and also change their “features”, small information that they share with other users where this information gives some idea to others what our user is like.



On top of all these functionalities when a user enters an event by scanning the Coupl QR code at the venue their main page will update to show them possible matches depending on their sexual preference. Also, users can view the profiles of other users by clicking on their name to decide more clearly to like or skip the other user.

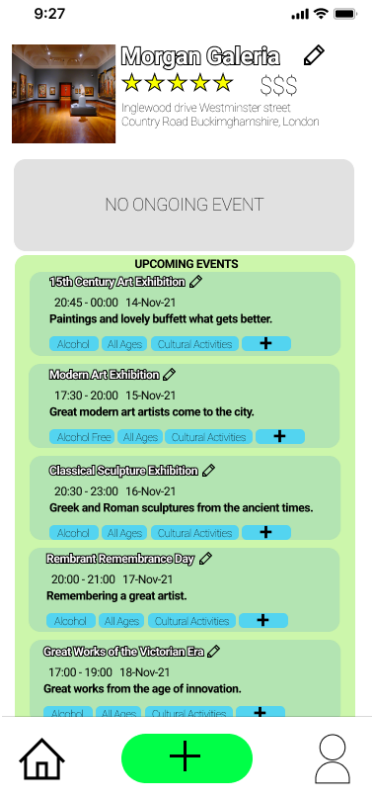


If both the users like each other then both the users will be notified and decide on a place to meet inside the venue. And they will also be added to each other's chat dialogues so they can communicate even after the event is over.

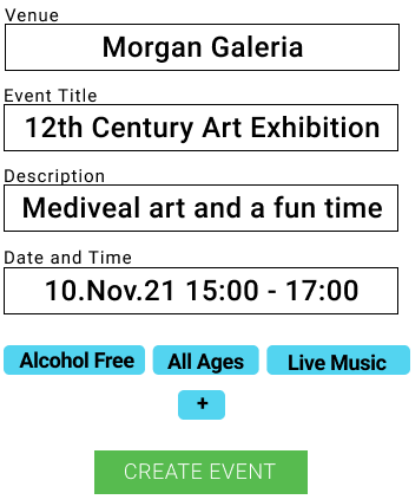
3.5.5.2 Interface for Event Organizers

The event organizer unlike its user counterpart will need to be verified by the admins. The organizer uses the small text at the bottom of the register screen to register providing important details such as their name, the organization they work for, their phone number and more.

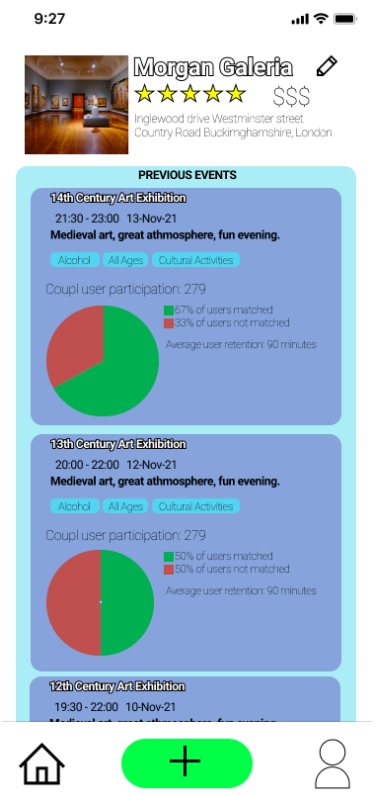
After the event organizer logs in to their account they will be greeted with their main page which will prompt them to choose the venue their event will take place in so that they can see the user rating for the venue, the venues' price range, ongoing and upcoming events that will take place in the venue as well as modify their information or the information of any upcoming event the event organizer has created.



Just like in the case of our user functionality plays an important role in our UI design, so the event organizer, just like the normal user, will have access to a navigation bar at the bottom of their screen. Using the buttons they can navigate to the home screen, create an event or go to their profile. If they click the create a new event button, they will be prompted to enter the details of the event, such as the venue the event will take place in, events title, description, date and time and information about the event from a pop-up form.



The event organizer can also see their previous events in any venue, by selecting the venue on the top, in their profile page, see how many users using Coupl attended the event and what percentage of the people were matched with each other.



4 Other Analysis Elements

4.1 Consideration of Various Factors in Engineering Design

4.1.1 Public Health

There is no direct effect of Coupl on public health. However, there are studies that relate higher levels of distress and depression to the usage of common swipe-based dating applications [4, 5]. In that sense, returning to real in-person dates instead of digital ones with Coupl will reduce these effects.

4.1.2 Public Safety

Since the events on Coupl are already organized outside of the application, the main responsibility of providing safety throughout the event is up to the event organizers or the place owner. The users that violate the rules and threaten the safety of the other users will be banned and therefore not be allowed in the later events. The only safety implication for the application side might be the safety of the user data. Private information of all the users will be stored securely for that purpose.

4.1.3 Public Welfare

Coupl has no relation to public welfare.

4.1.4 Global Factors

Although the first service area of the application will be Turkey, the idea of Coupl is applicable in any country. Because of that, having support for more languages (primarily English) is required.

4.1.5 Cultural Factors

Coupl already aims to work with many different types of events also including a diversity of cultural activities. Other than the people that are already participating in such events, other users will also be motivated to participate in such events with the help of Coupl.

4.1.6 Social Factors

By matching people together in the events, Coupl allows the participants to actively socialize. Also compared to the alternative applications, Coupl highly motivates its users to socialize in-person.

There will be no discrimination of people while joining to the event rooms. That is, every user participating in an event will be able to scan the QR code and use the application except the users that cannot participate in the event itself because of the event or event place specific limitations.

4.1.7 Sustainability

There are no direct sustainability implications of the application. However, Coupl can be associated with socio-ecological sustainability through its social and cultural effects and since it interacts with the social networks by forming new relationships between individuals.

Factor	Effect Level	Effect
Public Health	3	A healthier design compared to the alternative applications.
Public Safety	4	The user data must be secured. Uncomplying users must be banned.
Public Welfare	0	-
Global Factors	3	English language option must be available at some point if not at launch.
Cultural Factors	6	Coupl must motivate the users to participate in new cultural activities.
Social Factors	7	All event participants should be able to use the application.
Sustainability	2	No direct effect, but already related to cultural and social factors.

Table 14. Effects of Various Factors

4.2 Risks and Alternatives

Two possible risks that can occur during the implementation and execution of the application are explained below with an alternative plan.

4.2.1 Uncomplete Mobile Application in Either Android or IOS

Originally, we were planning to develop full applications for both Android and iOS platforms. However, if it seems we cannot fully implement both of these due to the time constraints, we can decide to put our full focus on only one of these platforms to have a complete application at the launch time. The unfinished application for the other platform may be implemented later on.

4.2.2 Not Being Able to Test the Product With a Real Event

After the completion of the implementation, ideally, the application will be tested with real events and real event participants. However, in case such an event cannot be arranged, such events will need to be simulated by us to test the end product usage. To not have this risk, we must have at least a mostly complete product some time before the end of CS492.

Risk	**Likelihood**	**Effect on the project**	**B Plan Summary**
Uncomplete Mobile Application in Either Android or IOS	Low	Loss of a big portion of the potential users.	Focus on one platform before the launch and implement the other application later
Not Being Able to Test the Product With a Real Event	Medium	Loss of quality feedback from real users	Simulate the events with mock events and mock users.

Table 15. Risks and corresponding B Plans

4.3 Project Plan

WP#	Work package title	Leader	Members involved
WP1	Project Specification Report	Rüzgar Ayan	All Members
WP2	Analysis Report	Emre Derman	All Members
WP3	High-Level Design Report	Kaan Erkan	All Members
WP4	Prototype Presentation and Demo	Cankat Kadim	All Members
WP5	Low-Level Design Report	Cankat Kadim	All Members
WP6	Final Report	Ege Türker	All Members

WP7	iOS Mobile Application Development	Emre Derman	Emre Derman, Kaan Erkan
WP8	Android Mobile Application Development	Rüzgar Ayan	Rüzgar Ayan, Kaan Erkan
WP9	Back-end Development	Ege Türker	Ege Türker, Cankat Kadim

Table 16. List of Work Packages

Below are the explanations for each work package.

WP 1: *Project Specification Report*			
Start date: *22.09.2021* **End date:** *19.10.2021*			
Leader:	*Rüzgar Ayan*	**Members involved:**	*All Members*
Objectives: Deciding on the project topic and *writing the Project Specification Report.*			
Tasks: ***Task 1.1 Project topic:*** *Deciding on the project topic from two alternatives. Conducting a meeting with the supervisor to get his ideas on these topics.* ***Task 1.2 Project specifications:*** *Deciding on the name of the project. Examining the current alternatives to the proposed system. Deciding on the constraints and the functional/non-functional requirement for the project.* ***Task 1.3 Innovation Expert:*** *Finding a suitable innovation expert for a mobile application project. Presenting our idea to the innovation expert to get further feedback.*			
Deliverables ***D1.1:*** *Project Specification Report* ***D1.2:*** *Innovation Expert Evaluation Form* ***D1.3:*** *Project Website*			

Table 17. Detailed Explanation of WP 1

WP 2: *Analysis Report*			
Start date: *20.10.2021* **End date:** *15.11.2021*			
Leader:	*Emre Derman*	**Members involved:**	*All Members*
Objectives: Make a detailed analysis of the project and find the possible issues			
Tasks: ***Task 2.1 Find and research current systems for comparison*** ***Task 2.2 Improve the functional and nonfunctional requirements from the specification report*** ***Task 2.3 Decide on the pseudo requirements*** ***Task 2.4 Draw several different types of UML diagrams to give a complete description of the system*** ***Task 2.5 Analyze the considerations of various factors in engineering design with their effects*** ***Task 2.6 Make a project plan together with possible risks and their B plans***			

Deliverables ***D2.1:*** *Analysis Report*

Table 18. Detailed Explanation of WP 2

WP 3: *High-Level Design Report*			
Start date: *15.11.2021* **End date:** *24.12.2021*			
Leader:	*Kamil Kaan Erkan*	**Members involved:**	*All Members*
Objectives: Writing the *High-Level Design Report.*			
Tasks: ***Task 3.1 High-Level Design Report:*** *Dividing the system into subsystems, determining the hardware/software mapping and persistent data management, considering the access control & security and boundary conditions and writing the report. High-level design will help us structure the project and make the implementation easier.*			
Deliverables ***D3.1:*** *High-Level Design Report*			

Table 19. Detailed Explanation of WP 3

WP 4: *Prototype Presentation and Demo*			
Start date: *15.12.2021* **End date:** *30.12.2021*			
Leader:	*Cankat Kadim*	**Members involved:**	*All Members*
Objectives: Preparation of a presentable prototype with basic functionalities and an informative presentation			
Tasks: ***Task 4.1: Implementation of the basic functionalities in back-end and at least one of the mobile platforms***			
Deliverables ***D4.1:*** *A basic protoype*			

Table 20. Detailed Explanation of WP 4

WP 5: *Low-level Design Report*			
Start date: *TBD* **End date:** *TBD*			
Leader:	*Cankat Kadim*	**Members involved:**	*All Members*
Objectives: Explain the design patterns and the other design trade-offs used in the development			
Tasks: ***Task 5.1: Deciding and explaining the design patterns used*** ***Task 5.2: Defining the packages***			

Task 5.3: Defining the class interfaces
Deliverables ***D5.1:*** *Low-level Design Report*

Table 21. Detailed Explanation of WP 5

WP 6: *Final Report*			
Start date: *TBD* **End date:** *TBD*			
Leader:	*Ege Türker*	**Members involved:**	*All Members*
Objectives: *Writing the final report.*			
Tasks: ***Task 6.1 Writing the final report representing the final product.***			
Deliverables ***D6.1:*** *Final report*			

Table 22. Detailed Explanation of WP 6

WP 7: *Android Mobile Application Development*			
Start date: *22.11.2021* **End date:** *2 weeks before the Final demos*			
Leader:	*Rüzgar Ayan*	**Members involved:**	*Rüzgar Ayan, Kaan Erkan*
Objectives: Design of an easy-to-use UI. Development of the front-end part of the project for Android devices.			
Tasks: ***Task 7.1 Learning React Native***. ***Task 7.2 UI design:*** *Putting on top of the Section 3.5.5 of this report, a complete UI design will be made for the mobile application.* ***Task 7.3 Development of register and login screens*** ***Task 7.4 Development of user related components*** ***Task 7.5 Development of event organizer related components*** ***Task 7.6 Testing every component with the finished back-end*** ***Task 7.7 Preparing a user manual***			
Deliverables ***D7.1:*** *Android Mobile Application* ***D7.1:*** *Android Mobile Application User Manual*			

Table 23. Detailed Explanation of WP 7

WP 8: *iOS Mobile Application Development*			
Start date: *22.11.2021* **End date:** *2 weeks before the Final demos*			
Leader:	*Emre Derman*	**Members involved:**	*Emre Derman, Kaan Erkan*

Objectives: Design of an easy-to-use UI. Development of the front-end part of the project for iOS devices.
Tasks: ***Task 8.1 Learning Swift.*** ***Task 8.2 UI design*** ***Task 8.3 Development of register and login screens*** ***Task 8.4 Development of user related components*** ***Task 8.5 Development of event organizer related components*** ***Task 8.6 Testing every component with the finished back-end*** ***Task 8.7 Preparing a user manual***
Deliverables ***D8.1:*** *iOS Mobile Application* ***D8.1:*** *iOS Mobile Application User Manual*

Table 24. Detailed Explanation of WP 8

WP 9: *Back-end Development*			
Start date: *22.11.2021* **End date:** *2 weeks before the Final demos*			
Leader:	*Ege Türker*	**Members involved:**	*Ege Türker, Cankat Kadim*
Objectives: *Development of the back-end of the system.*			
Tasks: ***Task 9.1 Designing and deciding on database schemas.*** ***Task 9.2 Creating the database.*** ***Task 9.3 Implementing the MVT architecture.*** ***Task 9.4 Implementing the matching algorithms.***			
Deliverables ***D9.1:*** *Complete back-end source code* ***D9.2:*** *Database schemas*			

Table 25. Detailed Explanation of WP 9

4.4 Ensuring Proper Teamwork

To ensure proper teamwork and fair distribution of the workload, we decided to use the following tools:

- **Discord:** Discord is a group chatting platform that supports text messages, voice calls and video calls. [6] Throughout the development of the project, we will use Discord to communicate and collaborate with each other.
- **Jira**: Jira is a software used for project management. [7] We will use Jira to create and assign issues (pieces of work) to each group member. This will help us keep track of the progress of the project. Also, since Jira shows each group member's workload, this will help us distribute the workload fairly.

- **GitHub:** Github is a version control tool. [8] We will use GitHub to allow contributions between group members and to keep track of each group members' commits. This will help us ensure proper teamwork.

4.5 Ethics and Professional Responsibilities

During this project, we will recognize the ACM Code of Ethics and Professional Conduct [9] as a guideline. We will be careful with the user data and ensure their safety. These data will not be shared with third-parties and will be deleted upon the request of its owner. Also, every event participant will be equal while using the application, there will be no discrimination. During the development, the external libraries and tools will be used in accordance with their licences.

4.6 Planning for New Knowledge and Learning Strategies

Firstly, no group member has earlier mobile development experience. During the year, we plan on learning mobile development before and during the implementation. Since most of us know the React.js framework already, we have chosen React Native for learning easier. Because, these two frameworks are quite similar in structure. However, there will still be a lot to learn about native functionalities while scanning QR codes, using the GPS locations of the users and so on.

Swift will also be learned from scratch to implement the application on the iOS platform. To accomplish these, we will start the implementation process as soon as possible and be aware of the problems ahead of time. Overall, we will be constantly experimenting with the tools and libraries we use to learn them during the development.

For the back-end, we already have some knowledge and experience from the project in CS353 course. However, there will be many new libraries we will need to utilize. Learning and using some design paradigm will also be helpful because this project will be much larger and complexities can be handled easier with design paradigms.

5 References

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