DrawAll Project Plan

Hayden Blomfield 2021

472462302

Edit History

Initial Draft: 9 / 8 / 2021

Updated: 10 / 8 / 2021 - Added Metacognition Sections

Updated: 20 / 8 / 2021 – Removed OnsenUI, Added Bootstrap

Shared: 11/8/2021

Project Overview

Elevator Pitch

DrawAll is a social application which will feature a fully functioning drawing canvas, that allows users to create drawings based on prompts supplied by other users. Giving users means to give opinions and thoughts through drawings instead of text creates unique interactions that could not be done through a text-based social media app, and gives friends a fun activity that they can do together.

Who the System is for

- Artists, both experienced and learning, that have trouble coming up with what they want to draw.
- Friends and social groups looking for a fun activity to do on the internet (during lockdowns, or with online friends).
- Writers and storytellers who'd like to see renditions of the ideas that they create.

Who the Application Must Protect Against

There are issues that sites, regardless of their use or intended users, must protect against. These include:

- Attackers using bots to overload the server.

  A common method of disrupting servers is to use bots, which is when an attacker tries to overload a server with requests from fake users. These bots can also be used to send advertising or malicious messages to other users in a very short amount of time. This is prevented by checking the amount of time between each request to the server, and blocking traffic which comes in too quickly.

- Attackers trying to inject SQL into the database.

  When using an SQL database, many queries will compare inputs using text supplied from front-end sources, some malicious users may try to exploit this by injecting insert SQL queries into the database. This is prevented by 'binding' parameters to a query, which tells SQL that the characters given *must* be interpreted as a string, which prevents code from being executed.

- Users trying to access pages they aren't allowed to.

  When groups are created, the intention is to only allow certain users in that group to prevent interference from random users. When permissions are not checked users will be able to access any group that they have a URL for, which removes the privacy that some groups may choose to have. This is prevented by storing a user's authority when checking a private page, and preventing data being sent if they are not allowed in that page.

However, there are issues that will be more prevalent to this site, these include:

- Users drawing profane or offensive material

  There are many situations in which users will draw images which are not allowed on the site, either due to decency of other users or for legal reasons. In these situations, those most effective way is to allow drawings to be reported, which causes the drawing to be sent to an admin or moderator to be checked further. If a post is reported by many separate users, it will be automatically removed.

- Users posting advertisements or unwanted content using bots

  Using bots to send advertisements to malicious sites is an issue which occurs on any site, however individuals or groups could take advantage of the visual medium to get past link detectors that are utilised by sites which automatically remove posts with links in them. Having a CAPTCHA on posts will prevent content from being spammed on the site, however it is rare for mobile applications to have them.

Application Hosting

At the moment, the intention is to host this application on a cloud-based webserver, provided by UptimeWebHosting. While storage space is limited on the server, being only 5gb, the site will likely not fill this space until later on in it's life, in which case the hosting plan can be upgraded or custom hosting can be considered. Due to being cloud based, there are no hardware requirements for user's or developer's computers, although its preferred to make the application efficient to reduce the amount of space required by hosting.

3rd Party Technologies and APIs

When creating applications, 3rd party applications must be utilised to manage different aspects of the experience, both for front and back end development. Systems and software are always subject to changes and upgrading, but its important to choose the right tools for the first versions of the app.

The current technologies which have been decided on are:

- HTML

HTML, also known as Hyper Text Markup Language, is one of the languages used to create the visual interface of applications. It also allows scripting to be implemented using JavaScript, which is essential for creating reliable real-time applications. HTML works with CSS to create styling, and allows the use of layout frameworks for faster styling.

- ~~OnsenUI~~

~~Onsen is a layout framework designed for mobile-first applications, and provides a variety of attractive and sleek components that are styled to be identical to IOS apps, which would normally require being made in XCode on a MacOS computer. It also provides elements designed for android applications. \~~

- Bootstrap

Bootstrap is a UI framework, and is one of the most famous examples of one. This is for good reason, as it allows an entire website to be styled without ever using CSS, and provides uniform and understandable solutions to many of the problems faced with inferior frameworks.

- JavaScript

JavaScript is the language used by front end applications for displaying data and implementing functionality to sites. The main use for JavaScript will be providing the code for creating drawings on canvases, and retrieving results from the server.

- ChibiJS by Kyle Barrow

  ChibiJS is an alternative to JQuery, designed to be far smaller and versatile in comparison. Unlike JQuery, ChibiJS works on all modern web browsers and all versions of internet explorer past IE6.

- MySQL

  MySQL is a database storage system which uses Structure Query Language for accessing data, and includes functionality for creating, reading, updating and deleting data within a database. PHP can access MySQL by using the PDO, or PHP Data Objects library, to perform actions within the database.

- PHP

  PHP is the standard programming language used by web servers, and is used to access the database and return results to the user. It also performs the functionality for all user interactions with the server, which includes managing sessions and user authentication.

While these technologies have been chosen as being the best for the first prototypes of the application, there are others which can fulfil the requirements of the application more efficiently and up-to-date with industry standards, and will be looked into further in the future. These technologies include:

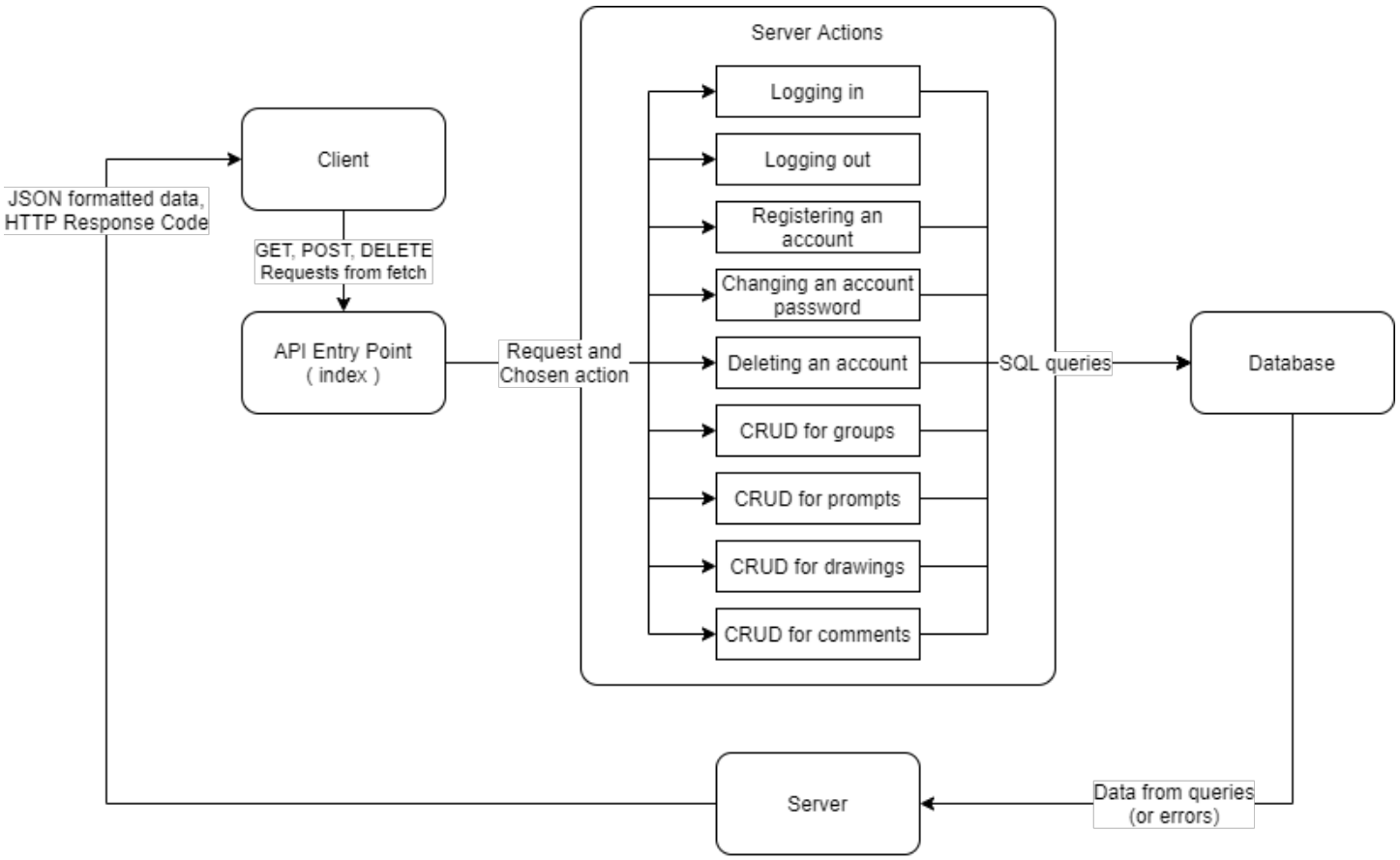
- NodeJS

  While being a framework that uses JavaScript, the way in which it functions is almost completely different to the way in which standard JavaScript is designed to function. NodeJS runs on a server in a similar manner to language such as PHP, however runs faster than PHP due to using asynchronous execution (code running multiple lines at the same time, rather than one line after the other).

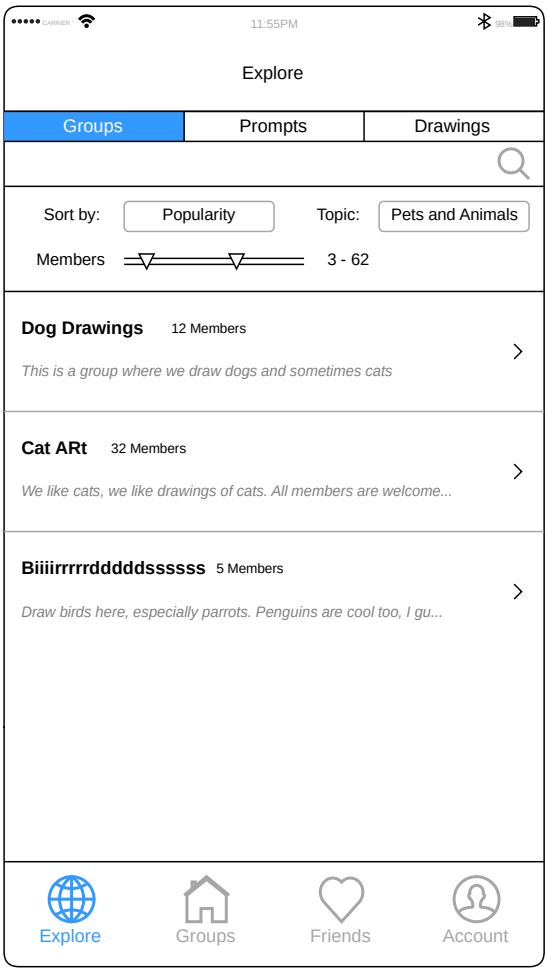
- MongoDB

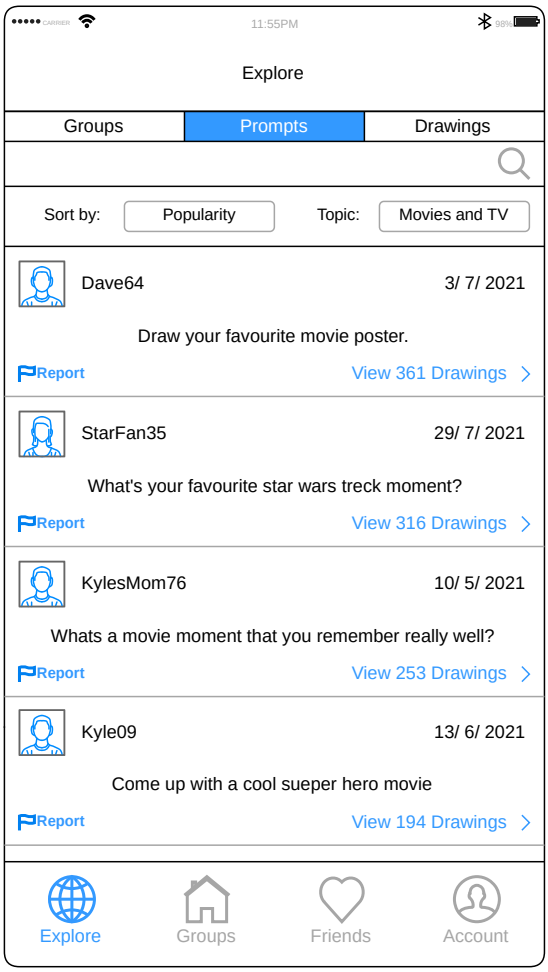
  Unlike MySQL, MongoDB does not run using SQL commands, instead being given instructions in a JSON format. This means that MongoDB is safe from most types of injection compared to SQL. MongoDB stores information within JSON formats, allowing it to easily be read by any programming language, and making it easy for data to be read from the front end sites.

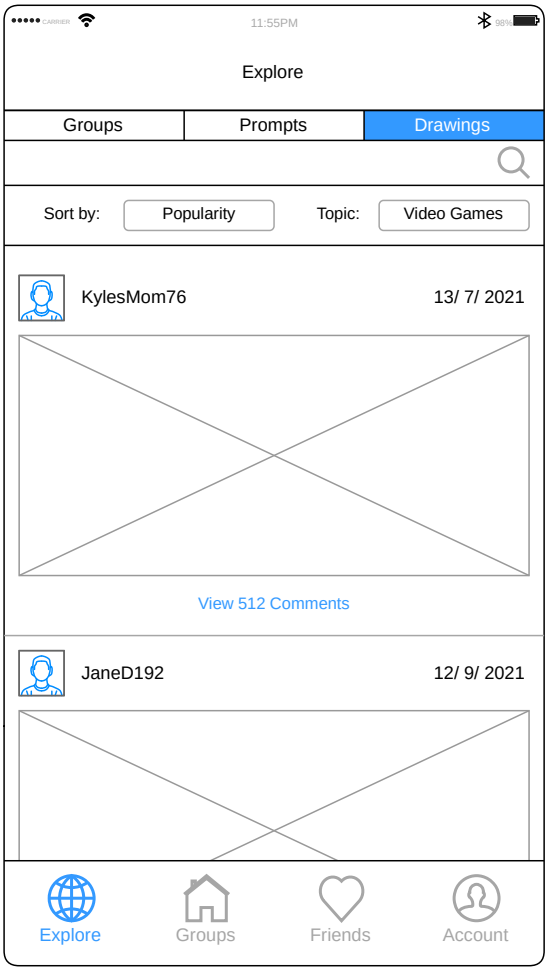
How the Client, Server and Database Connect

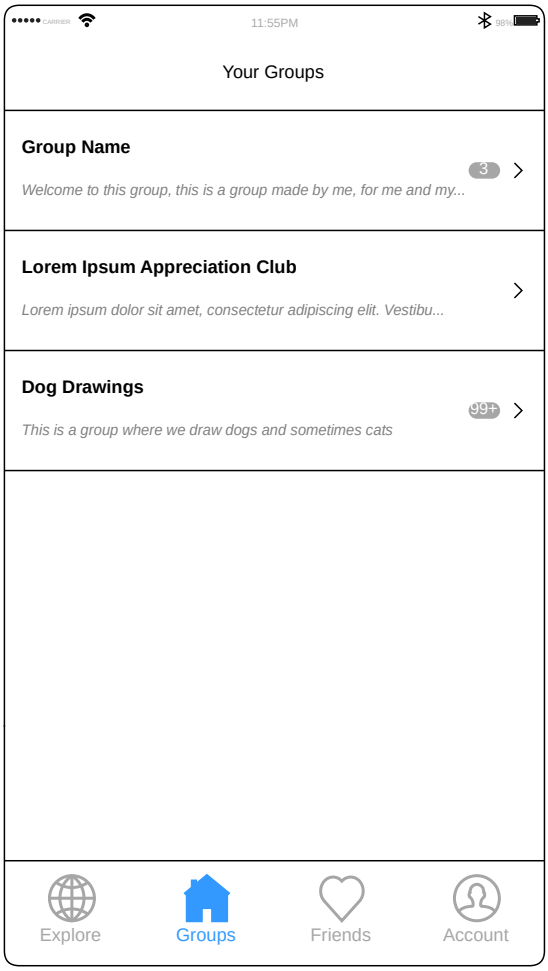


Project Wireframes









11:55PM

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Group Name

Prompts | Members | Info

JSmith20 1/ 8/ 2021

Draw a picture of your pet!

Report View 13 Drawings >

JaneD192 29/ 7/ 2021

Draw your favourite vegetable...

Report View 20 Drawings >

Dave64 20/ 7/ 2021

It'd be cool to see a picture of a wombat with a tophat,...

Report View 0 Drawings >

Explore Groups Friends Account

11:55PM

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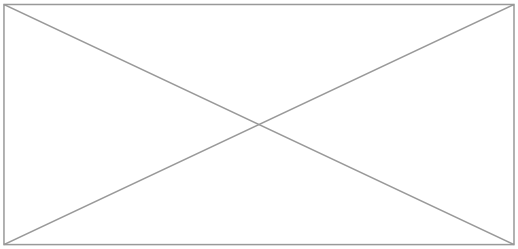
Viewing 13 Drawings

Draw a picture of your pet!

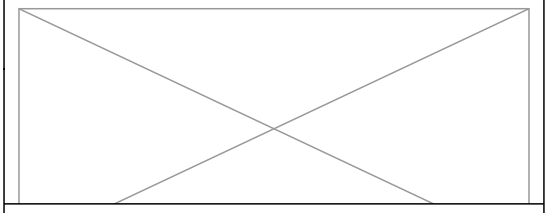
Post a drawing

Dave-64 2/ 8/ 2021



View 4 Comments

JaneD192 4/ 8/ 2021



Explore Groups Friends Account

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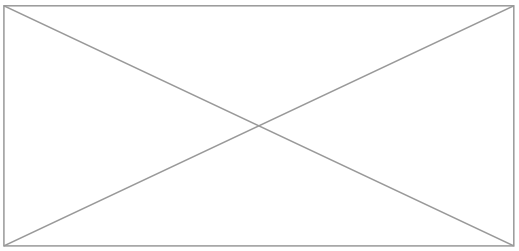
Viewing Comments

Dave-64 2/ 8/ 2021



4 Comments

JSmith20: Hey, thats a really swood drawing you've got there :)

Dave-64: @JSmith20 thanks

CCarlson1998: thats a cool one, dog ears flopyppy

Dave-64: @CCarlson1998 *floppy

Post a Comment

Explore Groups Friends Account

11:55PM

Back

Group Name

Prompts | Members | Info

5 Members

Name	Prompts	Drawings	Joined
Beats182x	0	3	3/ 7 / 2021
CCarlson1998	0	20	8/ 7 / 2021
Dave-64	1	12	12/ 6 / 2021
JaneD192	1	45	5/ 6 / 2021
JSmith20	1	24	5/ 8 / 2021

Explore Groups Friends Account

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Group Name

Prompts | Members | Info

Group Name

Created by: JaneD192 on 5/ 6/ 2021

Description

Welcome to this group, this is a group made by me, for me and my fri...

Topic: Miscellaneous

This group is private

Owner:

JaneD192

Admins:

Dave-64

CCarlson1998

Leave Group Name

Explore | Groups | Friends | Account

11:55PM

Friends

Beats182x Unfriend

CCarlson1998 Unfriend

Dave-64 Unfriend

Outgoing Requests

JaneD192 Cancel

Incoming Requests

JSmith20 Accept Decline

Explore | Groups | Friends | Account

11:55PM

My Account

Dave-64

356 Public Drawings

52 Public Prompts

About Me

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Vesti...

Recent Drawings View 356 Drawings >

Recent Prompts View 52 Prompts >

It'd be cool to see a picture of a wombat with a tophat,...

20/ 7/ 2021 0 Responses

Explore | Groups | Friends | Account

Business and User Rules

Content includes groups, prompts, drawings and comments.

- Users can sign in using a google account.
- Users must have an account in order to create content on the site.
- Users must verify their account after creating it, using a 4 digit code which is sent to their email address.
- Users cannot create content until their account is verified, however they may join groups and send friend requests.
- Users who are logged in can only view content, not create it.
- Groups have options for their groups visibility, these include
    - Private - Only users who are members of the group may view it. The group will not be shown in the explore section.
    - Unlisted - Non-users may still view the group, however the group will still not be shown in the explore section.
    - Public - All users may view the group, and the group will appear in the explore section.
- Groups have options for their groups joining, these include
    - Admin invites only - Only admins can invite users to join.
    - Request to join - Users can request admins to allow them to join.
    - Free joining - Users can join without needing permission.
- All groups can have designated admin users, which are decided by the group owner.
- Admins have the power to kick any standard member from the group, except for admins. (owner counts as an admin)
- Admins can also remove any content from standard members.
- Users can only create drawings using the front-end application.

Logos and Colour Palettes

Full-Sized Logo

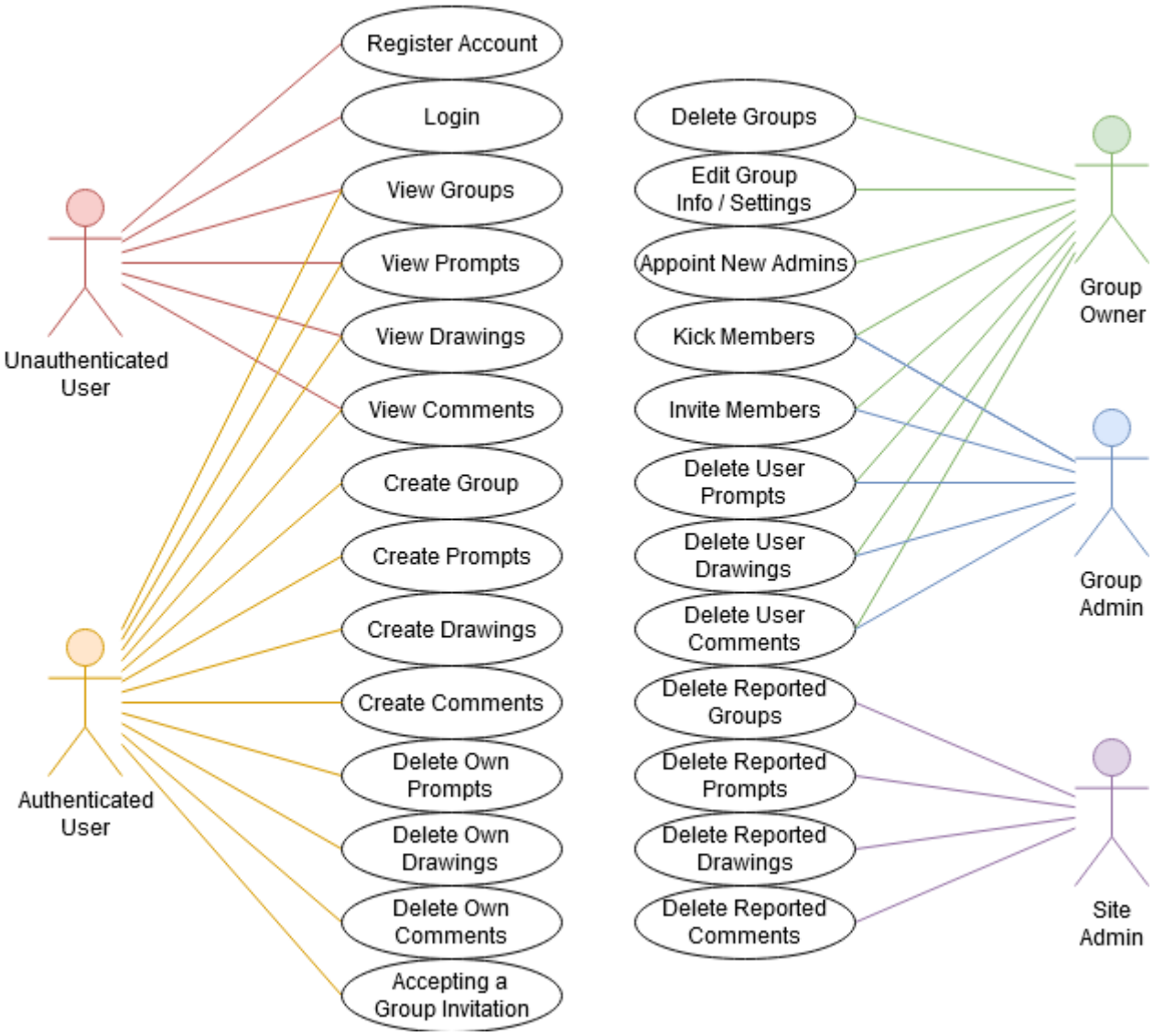
Icon

The logo uses design practices from 90s-00s logo design, in which smooth colourful gradients are used alongside serif fonts, to ensure that the logo is comfortable and readable for users.

While the application itself will use a standard black, white and blue colour scheme to match IOS specifications, users drawing using the built-in drawing tool will have a selection of colours avaliable for use. While these are standard rainbow colours, they are slightly hue shifted to have a bit more blue, which makes the colours softer on the eyes and gives them a unique feel. Indigo has been removed from the colours this application will use as it is too similar to standard blue for effective contrast.

Technical Diagrams

UML Use Case Diagram



Data Dictionary

Users

Attribute Name	Data Type, Length	Signed or Unsigned	Range	Auto Increment	Primary Key	Foreign Key	Unique Key	Required Field
UserID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	Yes	No	Yes	Yes
Username	VARCHAR, 10	N/A	N/A	N/A	No	No	Yes	Yes
Email	VARCHAR, 255	N/A	N/A	N/A	No	No	Yes	Yes
Password	VARCHAR, 255	N/A	N/A	N/A	No	No	Yes	Yes
UserBio	TEXT, 1024	N/A	N/A	N/A	No	No	No	No
IsVerified	BOOL	N/A	0 OR 1	N/A	No	No	No	Yes
VerificationCode	INT, 4	UNSIGNED	1000 to 9999	N/A	No	No	No	Yes
IsSiteAdmin	BOOL	N/A	0 OR 1	N/A	No	No	No	Yes

UserFriends

Attribute Name	Data Type, Length	Signed or Unsigned	Range	Auto Increment	Primary Key	Foreign Key	Unique Key	Required Field
UserFriendID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	Yes	No	Yes	Yes
SendingUserID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
TargetUserID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
RequestAccepted	BOOL	N/A	0 OR 1	N/A	No	No	No	Yes

Group Topics

Attribute Name	Data Type, Length	Signed or Unsigned	Range	Auto Increment	Primary Key	Foreign Key	Unique Key	Required Field
TopicID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	Yes	No	Yes	Yes
Name	VARCHAR, 255	N/A	N/A	N/A	No	No	Yes	Yes
Description	VARCHAR, 255	N/A	N/A	N/A	No	No	No	No
ShownPublically	BOOL	N/A	0 OR 1	N/A	No	No	No	Yes

Groups

Attribute Name	Data Type, Length	Signed or Unsigned	Range	Auto Increment	Primary Key	Foreign Key	Unique Key	Required Field
GroupID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	Yes	No	Yes	Yes
CreatorID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
OwnerID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
TopicID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
Description	TEXT, 1024	N/A	N/A	N/A	No	No	No	Yes
CreationDate	TIMESTAMP	N/A	N/A	N/A	No	No	No	Yes
InviteType	INT, 1	UNSIGNED	1 to 3	N/A	No	No	Yes	Yes
Visibility	INT, 1	UNSIGNED	1 to 3	N/A	No	No	Yes	Yes

GroupMembers

Attribute Name	Data Type, Length	Signed or Unsigned	Range	Auto Increment	Primary Key	Foreign Key	Unique Key	Required Field
UserID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	Yes	No	Yes	Yes
GroupID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
IsGroupAdmin	BOOL	N/A	0 OR 1	N/A	No	No	No	Yes
IsInviteAccepted	BOOL	N/A	0 OR 1	N/A	No	No	No	Yes

Prompts

Attribute Name	Data Type, Length	Signed or Unsigned	Range	Auto Increment	Primary Key	Foreign Key	Unique Key	Required Field
PromptID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	Yes	No	Yes	Yes
CreatorID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
GroupID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
CreationDate	TIMESTAMP	N/A	N/A	N/A	No	No	No	Yes
Description	TEXT, 1024	N/A	N/A	N/A	No	No	No	Yes
IsNSFW	BOOL	N/A	0 OR 1	N/A	No	No	No	Yes

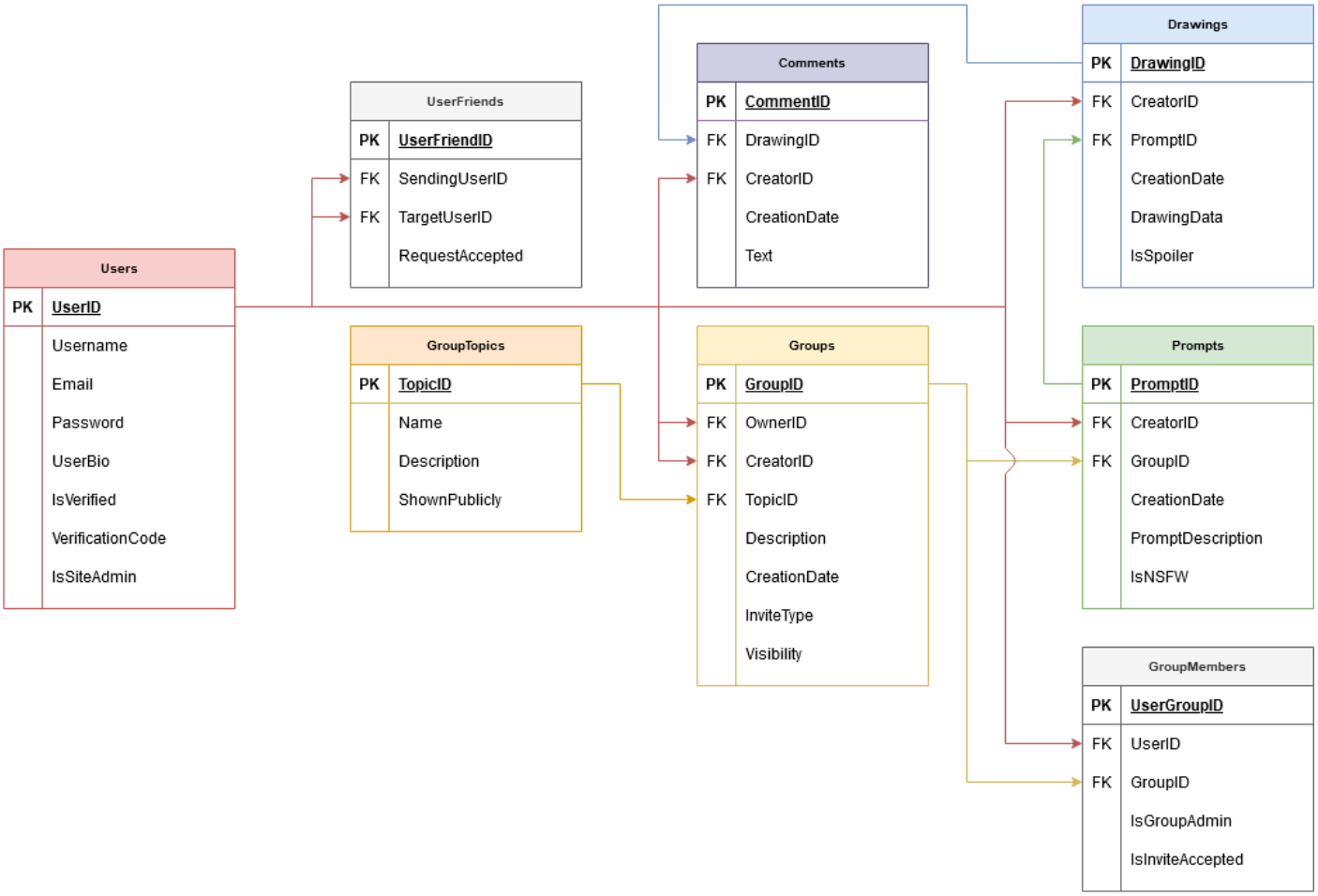
Drawings

Attribute Name	Data Type, Length	Signed or Unsigned	Range	Auto Increment	Primary Key	Foreign Key	Unique Key	Required Field
DrawingID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	Yes	No	Yes	Yes
CreatorID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
PromptID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
CreationDate	TIMESTAMP	N/A	N/A	N/A	No	No	No	Yes
DrawingData	VARCHAR, 1024	N/A	N/A	N/A	No	No	No	Yes
IsSpoiler	BOOL	N/A	0 OR 1	N/A	No	No	No	Yes

Comments

Attribute Name	Data Type, Length	Signed or Unsigned	Range	Auto Increment	Primary Key	Foreign Key	Unique Key	Required Field
CommentID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	Yes	No	Yes	Yes
CreatorID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
DrawingID	INT, 10	UNSIGNED	0 to $9x10^{10}$-1	No	No	Yes	No	Yes
CreationDate	TIMESTAMP	N/A	N/A	N/A	No	No	No	Yes
Text	VARCHAR, 512	N/A	N/A	N/A	No	No	No	Yes

Entity Relationship Diagram



Crud Matrix

	Users	UserFriends	GroupTopics	Groups	GroupMembers	Prompts	Drawings	Comments
Registering an Account	CR							
Logging into an Account	R							
Sending Friend Requests	R	CR						
Accepting Friend Requests	R	RU						
Declining Friend Requests	R	RD						
Viewing Groups			R	R	R			
Viewing Prompts					R	R		
Viewing Drawings					R		R	
Viewing Comments					R			R
Creating Groups			CR	C	C			
Creating Prompts				R	R	C		
Creating Drawings				R	R	R	C	
Creating Comments				R	R	R	R	C
Deleting Own Prompts					R	RD		
Deleting Own Drawings					R		RD	
Deleting Own Comments					R			RD
Deleting Owned Groups				RD				
Editing Group Info				RUD				
Appointing Admins for Groups					RU			
Kicking Members from Groups					RD			
Inviting Members to Groups					CR			
Accepting Group Invitiations					RU			

Metacognition

Why Project Overviews and Technical Diagrams are Important

When making any project, a project overview is essential not only to assist with planning development and fleshing out ideas, but to also give clients an understanding of the application that you or your company intends on giving them. If a project overview isn't supplied, the client wouldn't understand what you intended to create for them, and they wouldn't be able to give effective input on what could be added or removed. Providing planning for database systems also allows databases to be planned effectively so that they can take up as little space as possible.

Technical diagrams give a visual representation of the movement of data throughout your systems, and give effective planning for database designers to build upon and develop further. This allows clients to give feedback on data systems, which is something that is typically too advanced for a client (clients would typically make comments regarding the end result for users and the front end design of the applications, as they are what can be easily seen and changed) and provide feedback on what could be desired.

Missing Portions of the Above Sections

There are multiple items which are missing from the sections above, one of them being a description of the business. While in this project, we are creating personal applications, in a business situation we would have to give a clear description of the client's business's goals, this is so that the client knows we understand the goals of the application and of their business, and can create something tailored for their needs.

A GANTT chart or time structure would be helpful for getting the recommended amount of time required for the application, as suggested by developers, and working it into the needs of the clients such as their deadlines and availability. This gives developers a structure for managing their time, and clients a rough estimate on how their projects would be moving along.

A roadmap for future updates and considerations would give the client an idea on what could be accomplished after the first production version of the app, which can give incentive for the client to continue supporting developers. It also gives a good understanding to developers on when they would be able to implement features that they would like to see in the program.

A sign-off for the client. Even though for this project we are working for our own clientele, it is a good practice to include a sign off as it gives the developers confirmation that the client was able to read the specifications and understands the content within them.

Updating Changes to the Document

Changes to the document are tracked on the cover page, so that the client would be able to see any changes before even needing to read through the pages. If the space on the cover page is insufficient, the page after the cover page could be used.

How the Document will be Refereed to when Testing

When testing the application, this document will be referenced, as it gives a diagram of the relationship of the database entities, a crud chart and a use case diagram. These are helpful as they give perspective on the conditions that could be tested for the application, for example, testing an admin function as an unauthorised user could use the use case diagram as a reference on what should be possible. The entity relationship diagram is helpful as it shows the connections of data in the database, and understanding the way the database works could be key to fixing many issues that would be faced due to private and foreign key relationships.