CA400 Functional Specification

ArtistConnect

Yury Chupahin - 19416764

Karl Doherty - 19413086

Supervisor: Gareth Jones

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1. Introduction

1.1 Overview

ArtistConnect is a client server based web application. The application will be a social media type application where the main focus is on the music community whether you are an artist or just an avid fan of music in general. It will be built using the Angular framework and use Firebase for the backend.

The application will allow users to create profiles based on their musical preferences, there will be 2 different account types artist and regular. Regular users will be able to make 2 types of posts, either promoting an event or promoting a song/album. Users with artist accounts will be able to make one more type of post which will be a collaboration post where artists can request specific artist collaborations. Users will be able to follow each other and see each other's posts. Each post a user makes will appear in a feed on their profile in chronological order. Users will also be able view posts of profiles that they follow in chronological order in one large feed on the homepage of the application. Apart from posting there will be a direct messaging feature between profiles to allow for private communication. There will be a music recommendation feature which will use Spotify's recommender API to allow users to connect their accounts and discover new songs based on the ones that come up in their feed. In addition to connecting their Spotify accounts users will be able to link their accounts from other applications like Instagram, Facebook and Soundcloud to their profiles on ArtistConnect. The promotion of gigs will be done using ticketing companies APIs like Ticketmaster, Eventbrite and the promotion of songs will be done through the Spotify API

The need for this system comes from a lack of specific platforms available to artists to promote themselves and their music as they currently must use one of the major social media platforms which causes issues as it is often hard to get noticed due to the large volume of various content on this platform. Posts on these platforms are usually disregarded so we want to create an application based around discovering new music and gigs which benefits both artists and general music enjoyers.

1.2 Business Context

Provides an overview of the business organization sponsoring the development of this system / product or in which the system / product will / could be deployed. *Note - may not be applicable to all projects*

N/A

1.3 Glossary

1. API - Application program interface (API) is a set of routines, protocols and tools for building software applications.
2. TypeScript - TypeScript is a free and open source programming language developed and maintained by Microsoft. It is a strict syntactical superset of JavaScript and adds optional static typing to the language.
3. Angular - Angular is a TypeScript-based free and open-source web application framework led by the Angular Team at Google
4. Firebase - Firebase is a set of hosting services for any type of application. It offers NoSQL and real-time hosting of databases, content, social authentication, and notifications, or services, such as a real-time communication server.

2. General Description

2.1 Product / System Function

Main Functions include:

- **User profiles** - Upon opening the application for the first time, a user will be prompted to create a profile, or log in if they have done so already. This is necessary as they will need a profile to store data like friends they follow, artists and events they like and songs they like.
- **Artist Specific profiles** - If a user wishes to sign up for an artist profile, they can do so, which has different functionality to a normal user's account. The artist profile has the ability to link their own spotify profile and promote their songs, as well as the ability to connect and collaborate with other artists through a direct messaging system.
- **Follow feature** - This feature allows users to follow other users and artists which they are fans of. Posts made by followed users will start populating the users feed so they can be kept up to date with the things they like and share.
- **Following feed** - This will show users what songs and events their friends and liked artists are listening to / releasing.
- **Profile -** This is a page where users can view their own profile, and see things they have shared and posted, as well as see a list of their followers and friends. Users can unfollow other users here as well as edit their profile for example their username and profile picture.
- **Spotify Song recommendation** - This feature allows users to see songs they might be interested in based on songs they listen to currently. To do this a user will have to connect their spotify account to the application.
- **Song/Album promotion post** - If an artist posts about an upcoming album / song they are releasing, users who are fans of that artist can share the post which will in turn have the artist's post showing up on more users' feeds, helping to promote the song.
- **Event promotion post** - If an artist posts about an upcoming event they are releasing, users who are fans of that artist can share the post which will in turn have the artists post showing up on more users' feeds, helping to promote the event.
- **Like and comment** - Users can like and comment on other users and artists posts, giving their opinions on the original post.
- **Collaboration request posts** - Artists can post looking for collaboration from other artists, so they can do a feature on eachothers song or album
- **Direct messaging** - Both types of users will be able to send and receive private messages with friends.

2.2 User Characteristics and Objectives

There are 2 main users of our application - Music fans and music creators / event organisers. There are few requirements for a user to use our application apart from having an internet connection and possibly a spotify account to make use of the song recommender. Apart from this, users will vary greatly in age, location, interests and technical capability

Technical Capability
Our application will have an easy to use UI to make it as simple as possible. Due to the sparse requirements for users on our application, it is likely that our application will be used by users who vary largely in terms of technical ability. Therefore, it is important that the application is user friendly and easy to navigate and use for users of all skill levels

Accessibility
Our application will conform to standard accessibility practises. A few examples of this would include the design of the application for users with poor eyesight, so high contrast colours, large text and large buttons which make the app and its features clearly visible and easy to use for users of all kinds.

2.3 Operational Scenarios

Signing Up and setting up a profile - When a user visits the web application for the first time using their browser they will be greeted with a login menu or an option to register a new account. When they select to register a new account they will be shown a form where they must register an email address, username, password (with a prompt specifying the necessary complexity for the password), city/area and country. They will then be prompted with a screen to select their favourite music genres which is optional and can be changed later. Finally they will be asked to connect other accounts such as Spotify, Instagram, Facebook.

Creating a post for a song or event - When a user would like to create a post they will have two options either select the new post button from the navigation menu or the floating button that will be pinned in the bottom right corner. When the “post song” button is clicked the user will be asked to submit a link to the song with any additional information about the song that they would like to share. Depending on the origin of the link either the song information alongside the artwork or an embedded player will be displayed. When the “post event” button is clicked the user will be asked to enter the date, time and location of the event alongside any additional information. If online tickets are available for the event the user can attach a link. For both types of posts the user can tag other profiles that they follow in the post.

Interacting with posts on the feed - When the user is on their main feed they will be shown posts made by other profiles that they follow, these posts will be displayed vertically in chronological order. The user will be able to scroll through these posts and interact with them. Interacting with posts the user will be able to like the post,

comment on the post and repost the post. When the user reposts a post it will appear on their own profile with their username above it.

Searching for a profile or post - When the user is utilising the search bar function they will select either post or profile from the drop down provided. When search by profile is selected the user can search for other profiles on the platform by name. When the search by post option is selected the user can search for posts on the platform using things like keywords and locations.

Viewing and Interacting with a profile - A user can view another user's profile through either search or by clicking on their username on a post. Once they are on the user's profile they can view any linked accounts that the profile may have, see information like country and favourite genres. The user can also view all the posts and reposts made by that profile in a similar layout to the main feed. The user can decide to follow the profile so any future posts by them will appear in the main feed.

Direct messaging - If a user wishes to directly message a user for the first time they must first visit their profile and select message

Getting song recommendations - When a user connects their spotify they can choose songs / albums / artists they like and the recommender system will suggest songs / albums / artists they may not have heard of before which sound similar to the one they originally chose

Requesting a collaboration - Artists can post specifically looking for a collaboration for an upcoming song / album. If an artist needs a duet / feature from another artist with a specific style they can post looking for this and other artists can interact with this and comment recommendations or else privately message the poster with an offer of collaboration.

2.4 Constraints

Time Constraint

Due to the large number of separate features our application provides to the users, proper planning and time management will have to be implemented to ensure all tasks get completed to the best of our ability. Tasks will have to be divided between us and prioritised so that we can plan ahead and try to get the more complex tasks complete first, allocating the most time to them.

Storage Constraint

As the user base grows, the size of the database increases exponentially. Handling the data and structuring the database is important before development begins as without proper database structure the database could grow unnecessarily large.

Internet Connection dependency

One of the main constraints of the application is that a user will have to be connected to the internet at all times while using the application. If the connection drops, the user will be unable to use the application until the connection is reinstated.

3. Functional Requirements

3.1 Account registration and set up

Description

When a user launches the application for the first time, they will be prompted to register for an account and asked to input some information like name, email address, password and location for location based events.

Criticality

This is one of the most vital features of the application as without it users access the wall or use any of the functionality of the application.

Technical Issues

It is important for security that all users are verified and authenticated. This can be done using an email address verification function.

3.2 Posting music

Description

When a user is registered as an artist, they are able to make posts promoting their own music. They can include clickable links to spotify / soundcloud so users that see the post can quickly navigate to the song and listen.

Criticality

This is another vital function of the application as it is what one of the main ideas of the application was originally. Without this it is just any other social media application.

Technical Issues

A possible issue is if a users internet connection is disrupted while posting the post may not be made successfully

3.3 Posting Events

Description

A user can make a post promoting their upcoming events, like DJ's playing in nightclubs or artists hosting concerts. They can include dates, times and locations and can include links to tickets on ticketmaster / eventbrite using the built in API's

Criticality

Once again this feature is critical as it is another aspect which sets this application apart from other mainstream social media platforms.

Technical Issues

An issue could arise with the API not showing the event in question and the post not allowing users to directly access the event tickets from the post

3.4 Search

Description

Users can search for posts / users / artists with a search bar located at the top of every page.

Criticality

This is an important feature as it will allow users revisit pages / posts they have seen previously and show them to their friends / colleagues for example

Technical Issues

A possible issue could arise where the information is not found in the search if it is not spelled / phrased correctly.

3.5 Interacting with other profiles

Description

When a user creates a profile and logs in, they can add other users as friends and like artist accounts. The posts by liked accounts / friends and other interactions they make will be populated on the users wall.

Criticality

It is essential for any social media application to allow its users to interact with each other whether it be adding friends or seeing posts friends make with each other.

Technical Issues

A possible technical issue that could arise is if a users internet connection is disrupted when they click the follow button they may not be added as a friend and not see their friends posts

3.6 Direct Messaging

Description

Users can privately start a chat with other users they are friends with to allow them to communicate with each other without other users on the application seeing the chats.

Criticality

This feature, while not critical for the application to be viable, is a nice feature as it will allow users to communicate privately with each other on our application without having to go to another application.

Technical Issues

A possible technical issue could be users' messages from previous conversations not being saved and a blank conversation being started every time.

3.7 Post Interaction

Description

Users can like, comment and share posts they see on their wall and interact with other users who comment on the post. Friends of users can see posts they like and share.

Criticality

This feature is commonplace with social networking applications, and brings more constant interaction with posts. It will not affect the main functionality of the application but will help attract more users to post more regularly.

Technical Issues

Possible technical issues could arise where users cannot see comments on posts until they refresh the page.

3.8 Song Recommendation

Description

When a user connects their spotify account they will have the ability to have songs recommended to them which are similar to songs they listen to already.

Criticality

This is another feature which is not essential to the functionality of the application but is important for setting our application apart from existing social media platforms.

Technical Issues

There may be issues if a user has a small playlist and the recommender does not have enough data to give accurate recommendations

3.9 Linking Accounts

Description

Users can connect to their spotify / soundcloud / ticketmaster / eventbrite accounts using the third party API's, and access features such as song recommendation and direct links to buying tickets for events.

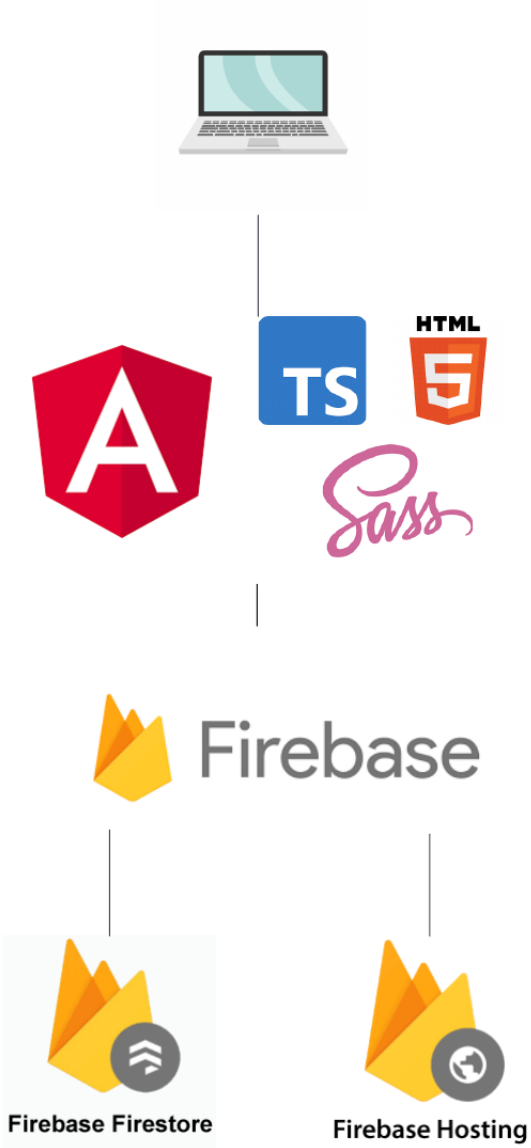
Criticality

This is a feature which is important to our application which allows it to be used in conjunction with other applications of the same genre.

Technical Issues

A possible technical issue could arise with saving the fact that a user has linked their account and not making them have to re-link their account every time.

4. System Architecture

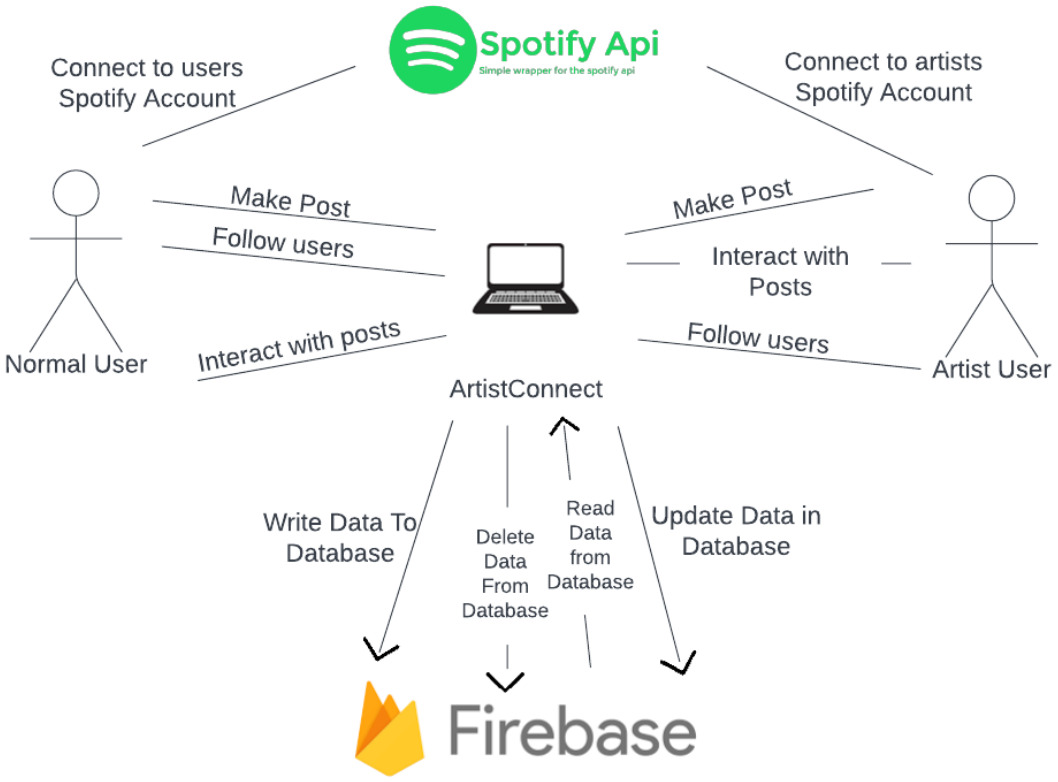


Description

This is a diagram representing the system architecture of our project. At the bottom level, the backend will consist of firebase, a firestore database, firebase email password authentication, and firebase hosting to host the application. The database will hold all the users, posts, and other data needed to make the app work. The front end is designed in Angular. The functionality of the site is developed in TypeScript, the layout of the application is done using HTML and the application is styled using SCSS.

5. High-Level Design

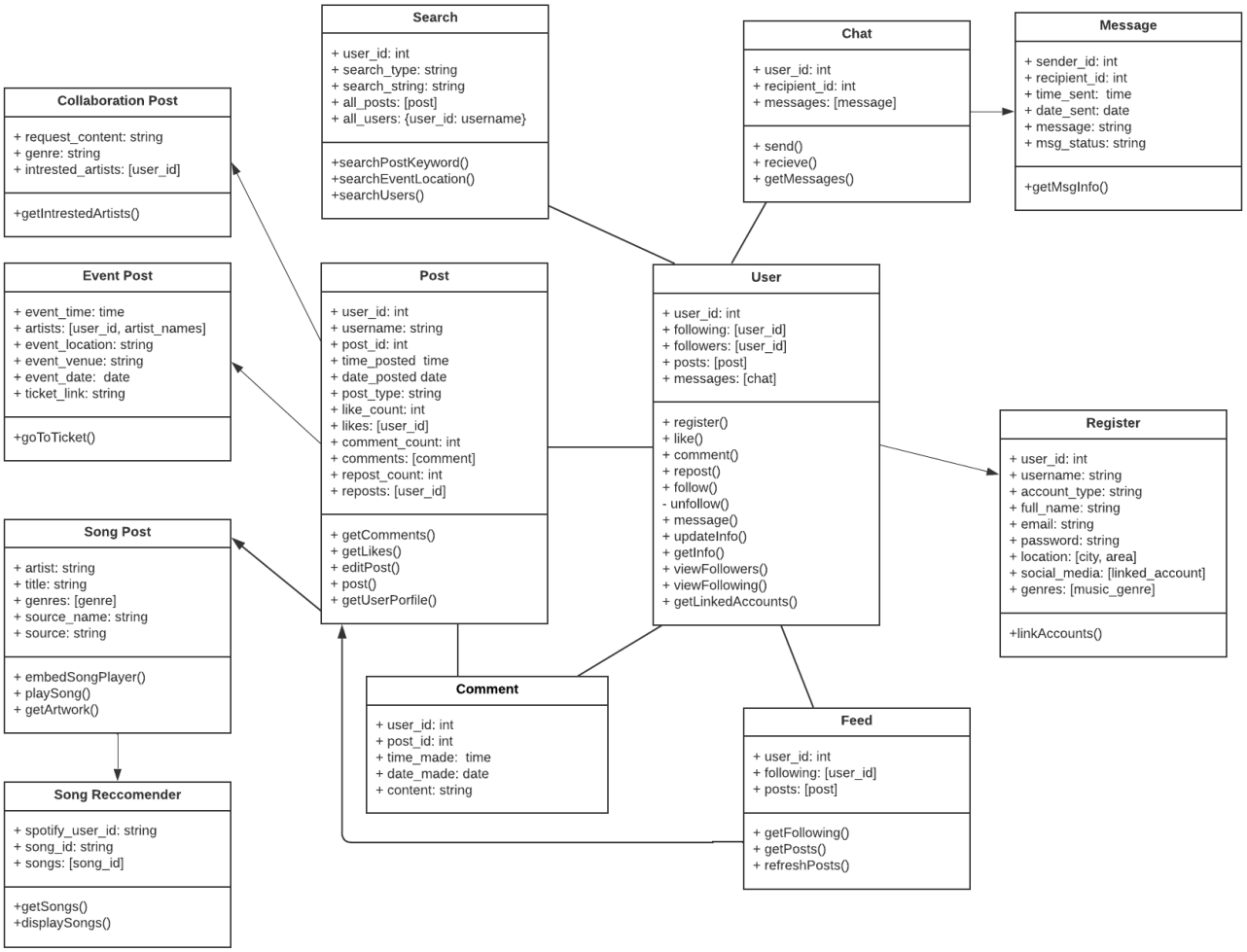
5.1 Context Diagram



Description

This diagram represents a high level flow between the different types of users on the application, the application itself, the backend database as well as any third party API's.

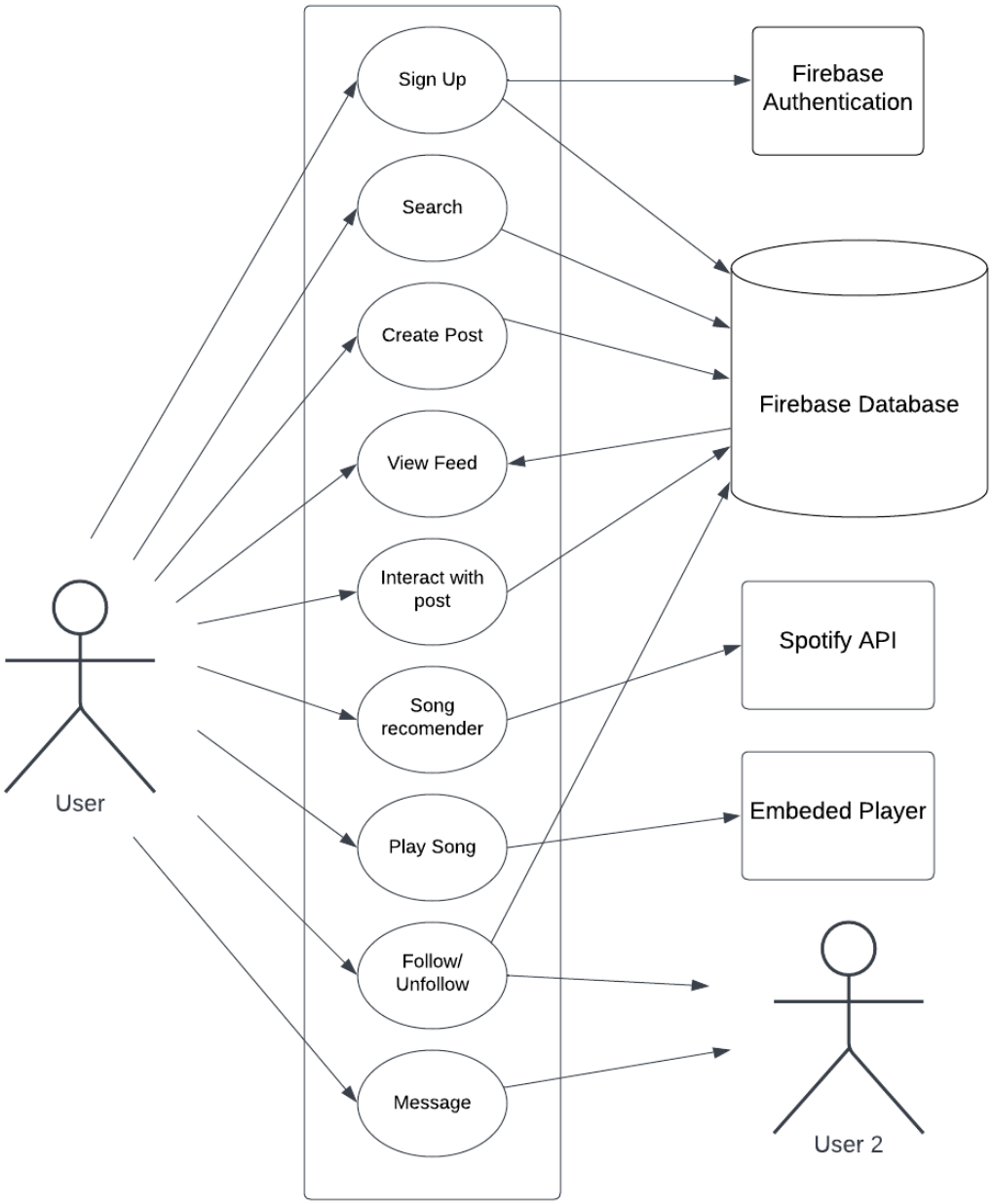
5.2 Class Diagram



Description

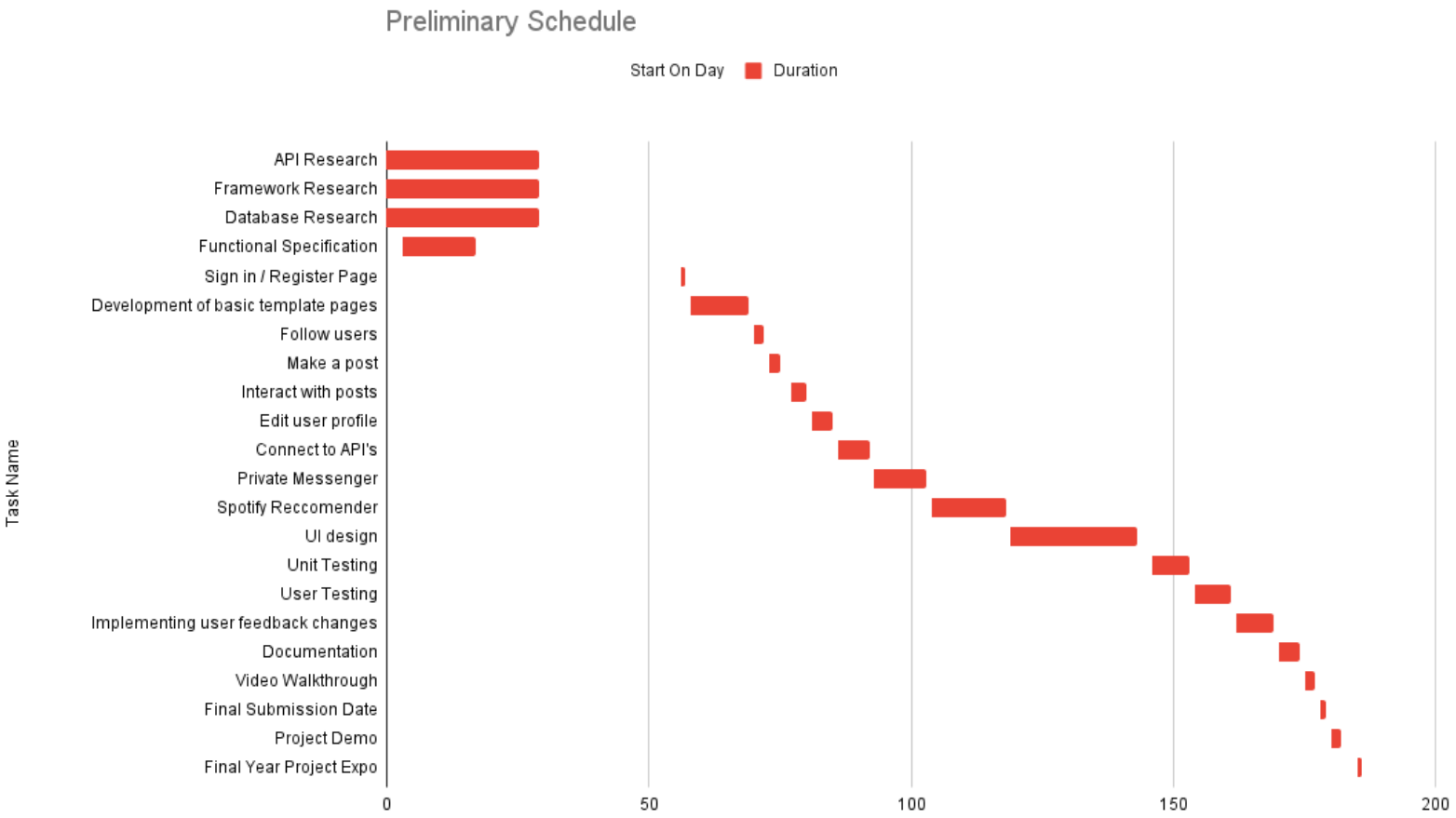
This diagram describes the structure of a system by showing the system's classes, their attributes, operations, and the relationships among objects.

5.3 Use case diagram



This section should set out the high-level design of the system. It should include one or more system models showing the relationship between system components and the systems and its environment. These might be object-models, DFD, etc.

6. Preliminary Schedule



7. Appendices

Firebase

https://firebase.google.com/docs?gclid=Cj0KCQiA99ybBhD9ARIsALvZavU66AucxMM0yTqoCGNT7pLzyERIqx9tE1helvTID3C908ud6f01Lu4aAkwuEALw_wcB&gclsrc=aw.ds

Angular

https://angular.io/docs

TypeScript

https://www.typescriptlang.org/docs/

Spotify Developer Tools

https://developer.spotify.com/documentation/