CA326
Functional Specification

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1. Introduction

1.1 Overview

The system we are going to develop is going to be an application developed for use on the android operating system. It will allow users to view live updates, results and fixtures for the NBA Basketball League.

Users will also be able to create an account. When they sign up they will be asked to pick a favorite team. Users will have the option of being put in a web chat group with other users who have the same favorite team. Users will also be shown a news feed specific to their favorite team.

The app will have a friendly and simplistic user-friendly interface, which accommodates users with little or no knowledge of computing. This will be achieved by using knowledge from our studied module, "CA357 -User Interface Design and Implementation".

Other features that we are toying with includes; Visualizations using past data of a team and making predictions of upcoming game results based on this data. Another idea is displaying other statistics of matches based on historical data.

1.2 Business Context

As our product is being implemented on the Android Store, we could potentially run advertisements within the app. If we were to run advertisements we would choose those related to basketball and sports as this would be our demographic for the app. This would be a great source of revenue and would allow us to recycle money back into the business and further increase the quality of the app.

We could also sometime in the future potentially sell the app to an external organization.

Both of these options would of course depend on the success of the app. The advertisements would only create revenue if we had a high enough active user base to view the advertisements, and selling the app would depend on how popular the app becomes.

1.3 Glossary

NBA - National Basketball Association(In the United States)

Android Studio - official integrated development environment for Google's Android operating system, specifically for android development.

API - Application programming interface

2. General Description

2.1 Product / System Functions

Here are the main functions for our project. This is a provisional list which we are open to change if a good idea comes to us. These functions will be described in detail in section 3.

- Fixtures / Results
- Sign up
- Log in
- Create Profile
- Edit Profile
- Visualizations
- Broad news feed
- Personalized news feed
- Log out

2.2 User Characteristics and Objectives

Users of the system can be categorized based on registered and unregistered users. Users who are registered will all have a favorite team selected. Only users who are registered will also be able to avail of the personalized news feed based on their team choice.

The system will only be available on the Android App Store. This means it is only accessible to people with access to an Android phone. The target demographic will be males and females who are interested in the NBA, majority in the age range 16-35.

The app will have a friendly and simplistic user-friendly interface. The objective of this is to not exclude anybody, and accommodate users with no experience of using tech savvy applications.

2.3 Operational Scenarios

We have designed the app in a way in which the user will be able use different functions of the website based on 2 different scenarios. These 2 scenarios are based on whether or not the user is registered. Our idea is to let the user use the app and not force them to sign up, however we shall lock some functionality to only registered users. This is detailed below:

- **Unregistered User:**

The unregistered user will be a casual browser who does not intend to use the app regularly. For this user we will need to implement functions that try and persuade the user to sign up and use the app again.

- **Broad News Feed:**

    Here the members can scroll through their news feed of news pertaining to all NBA league information. This will be all the most popular current affairs in the NBA.

- **Fixtures and Results:**

    Here the members can see all upcoming fixtures of upcoming games, and all results of recent matches.

- **Sign up:**

    The unregistered user has the ability of signing up to avail of the functions that are only available to the registered user. They will have to pick an email and password.

- **Log in:**

    If the user has signed up they will be able to use the log in function. This will let them log in to their account using the email and password they choose. Logging in will let them avail of the functions only available to the registered user.

- **Registered User (logged in):**

The registered user has access to full functionality of the site. This area will definitely benefit the user a lot, hopefully making up for the short time it takes to sign up.

- **Create Profile:**

   This is a function that is prompted by the user signing up. Immediately after signing up they will have to add a profile photo, a description about themselves, and a name and surname. The user will also be asked to pick their favorite team (this can be changed at any time).

- **Edit Profile:**

   This function will have the same functionality of the create profile function, except a user will be able to edit their profile whenever they please from the drop down menu.

- **Log Out:**

   This is a method of logging out of a user's account. The user will be returned to the main menu after logging out, and will return to the default permissions of the non registered user.

- **Personalized News Feed:**

   Here the members can scroll through their personalized news feed. The users will be shown current news pertaining to their chosen favorite team in the profile creation. This option is only available to logged in users as non-logged in users do not have the option to pick a favorite team.

2.4 Constraints

Below are the constraints which we will face while the project is being developed.

Time Constraints:

Time will definitely be the biggest constraint we face in relation to this project. Our submission deadline is Friday 24th February 2023. Careful consideration and planning has gone into this project and we think we will be able to complete it with great satisfaction before the due date. However this project is a very big one, possibly the biggest either of us has ever undertaken. Certain aspects of the project could be a lot harder than originally thought, we might even encounter roadblocks which could cause us weeks of delay, and some parts of the project might just be too difficult to implement. All of these possibilities are perfectly reasonable, and for this reason time will definitely be our biggest constraint.

Financial Constraints:

The API we are thinking of using only has so many free uses per month. We will need to make sure we do not overuse our monthly responses as this could end up costing us more money than we can afford.

3. Functional Requirements

3.1 Fixtures/Results

Description
The user has downloaded the app off the Android App Store. The user can now look through the fixtures and the results of the NBA.

Criticality
This is essential for the overall system as it will bring users into the app and persuade them to sign up to the app. It also gives the user the main information that we are providing.

Technical Issues
An API will be used in order to get the information on the fixtures and results. We may run into trouble with the API as we will only have a number of calls to the API for testing.

Dependencies with other requirements
This has a link with the broad news feed as a user can look at both of these without signing up to the app.

3.2 Sign Up

Description
This is how the user will register for our app. The user will click on the "Sign up" link which will be at the top of the page. This will bring the user to a sign up form where they will supply an email and a password. The user will then be in the database and can move on to create a profile.

Criticality
The sign up is very important as it will allow us to protect our users' private content. It will also allow us to give our users a personalized experience.

Technical Issues
The main technical issue with this will be making sure that the user's email and password will be stored in the database so that the user can login with their information.

Dependencies with other requirements

The sign up will be connected to the fixtures and results page and the broad news page. This will be where you can sign up from. It will also take you to the page where you can create a profile.

3.3 Create Profile

Description
The user will be able to create a profile where they can add their name and surname, a profile picture and a description of themselves. They can also pick their favorite team which can be changed at any time.

Criticality
This is critical as the user will then get their personalized news feed for their favorite team.

Technical Issues
Again same as the sign up, we will need to make sure that the users information is stored in the database, especially their favorite team as this is used for a personalized experience.

Dependencies with other requirements
This will only become available when a user signs up to the app so it has a direct link with the sign up requirement. It also connects with the personalized news feed as the user picks the team that they will receive news about in the create profile page.

3.4 Login

Description
The user will be able to login to their own account which is stored in the database.This will give the user access to their personalized news feed.

Criticality
This is important as it allows the user to access the personalized content from their favorite team.

Technical Issues
The main technical issue would be making sure that , when a user logs in to the app, the database will sign the user into the correct account with the correct personalized content. It is very important that the user is logged in to the right account.

Dependencies with other requirements
In order for a user to login, they must sign up and create a profile first which means they have a direct link to each other. Login will also enable the personalized experience so it has a link to the personalized news feed.

3.5 Edit Profile

Description
This will allow the user to edit their profile. The user could change the description of themselves and also their favorite teams.

Criticality
This is not the most critical aspect as there is a chance that a user will never change their profile, but it is important to give them the option to.

Technical Issues
The main technical issue here would be making sure that, when the user makes a change to their profile, the information is updated on the database.

Dependencies with other requirements
Editing a profile will depend on a user signing up, creating a profile and logging in to the account. It will also be connected to the personalized news feed as you can change your favorite team when editing a profile.

3.6 Visualizations

Description
We are going to use visualizations to show some data to the users. We are going to create a graph which takes a team's last ten games and it will show their win/loss rate over these games. We also want to compare this data with the team who they are playing next on a graph.

Criticality
This is not critical but it will provide the user with more information and should enhance their experience on the app.

Technical Issues
The main technical issues would be getting the information from the API and transferring it onto a graph using Android Studio .

Dependencies with other requirements
This will have a link with the fixtures/results page as this is where the information will be provided. You will not need to make an account to see these graphs so there is no link with sign up or log in.

3.7 Broad News Feed

Description
The broad news feed will be available for users that are not signed up to the app. It will show news from all around the NBA, keeping the user informed on what is happening in the NBA.

Criticality
This is not critical but we thought it would be a good aspect to add as it keeps the user in the loop.

Technical Issues
We will need to make sure that the API is scraping for the relevant articles. We will then need to display a number of these articles on our app so we will need to stay in control of the amount of articles that are displayed.

Dependencies with other requirements
This will have a link with the fixtures/results page as articles could be talking about results or fixtures and then a user can go to the fixtures/results page and check the fixture/result. A user will not need to sign up for this feature.

3.8 Personalized News Feed

Description
This will be a personalized news feed, which gives a user that has signed up and picked a favorite team, specific news based on their favorite team.

Criticality
We feel that this is a critical part of the app as it gives a reason for the user to sign up. The user will be able to see information about their favorite team easily and in one place with no other news around it.

Technical Issues
Again we need to make sure that the API is scraping for relevant articles which are related to the users team and then display them properly on our app.

Dependencies with other requirements
This will have a link with the fixtures/results page as you can look at news on your favorite team and then check their fixtures or results. It also has a link with create profile and edit profile as this is where you pick your favorite team in order to get the specific news.

3.9 Log Out

Description
This is how the user will log out of the app. There will be a "Logout" link at the top of the page. When pressed the user will be returned to the main menu and the user will have the default permissions.

Criticality
This is critical as a user has to be able to log out of their account in order to keep their information private.
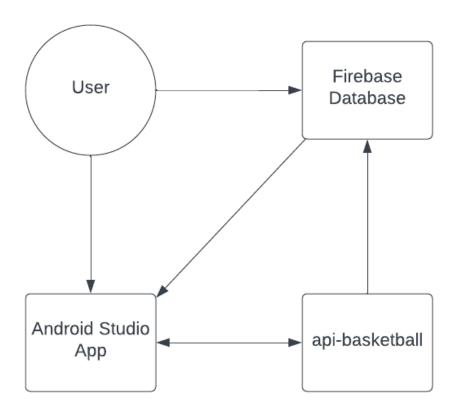
Technical Issues
The same as the login, we have to make sure that when a user logs out, they are actually logged out of their account.

Dependencies with other requirements
This will have a link with sign up and login as you can log out unless you have an account. It will also be linked with the fixtures/results, the Broad news feed page and the Personalized news feed page as it will be at the top of all of these so that the user can log out easily.

4. System Architecture

4.1 Android Studio

Android studio is what we are going to use for the frontend of the project. It will be what the user sees when using our app. We will get the information from api-basketball and show this information on the page. We will also do visualizations with the information from api-basketball in the Android studio .

4.2 Api-basketball

Api-basketball is the api that we are going to use to get information on the NBA. This information will go into our database and be shown on our app. The historical data that it gives us will be made into graphs. This is going to give the user the main information that they need to know, like fixtures and results.

4.3 Firebase Database

We are going to use firebase as our database as it has a link with Android studio so we can have our app and database in the same place. The database is going to store the users information and information taken from api.

5. High-Level Design

- ● Step 1: Sign up
    - - Register a username and password to give you the ability to login to the site.

- ● Step 2: Log in
    - - Log in to the members area using the username and password obtained above.

- ● Step 3: Create Profile
    - - Allows the user to add a profile photo, description, name etc.

- ● Step 4: Edit Profile
    - - Allows the user to change information about themselves.

- ● Step 5: Visualizations
    - - Visualizations of data based on statistics of player performance.

- ● Step 6: Broad News Feed
    - - Shows a news feed pertaining to all NBA League news.

- ● Step 7: Personalized News Feed
    - - Shows a news feed based on the user's favorite team.

- ● Step 8: Log out
    - - Allows the user to log out of their account.

Sign Up
↓
Log In
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Create Profile
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6. Preliminary Schedule

Below you can see our preliminary schedule demonstrated on a GANTT chart. We have color coded the tasks. Any red block of tasks is anything we have to submit to DCU. Anything in yellow is our planning and anything in blue is personal deadlines that myself and Leigh have set.