# StatSpot

## Summary

Sports statistics analysis has picked up major interest worldwide over the past few years. Front offices have begun to analyze historical data from current and past players to predict how players will perform today, with the hope of putting together a team that can win championships. Sports fans use past game data for players to help set lineups for their fantasy games. Unfortunately, it is very difficult to find a place where all relevant data can be found for any league worldwide with ease, and it is even more tedious to scour the internet looking for this information. Our application StatSpot will cut this tedious search, providing users with data for current and past players, as well as general information about teams and leagues. Our application will also provide a subscription based email service for users to select a player to receive statistics for at a specified future time.

## Description

Participating in a fantasy league is a game of odds. Fantasy league players can determine the best overall team for their fantasy league based off of past statistics of the athletes and team performance. These statistics are constantly being changed as the athlete participates in more games, competitions or tournaments. The best way to make the best predictions for fantasy is to stay up to date with the most recent statistics. There are currently other web applications that are able to obtain statistics for the most popular fantasy sports (american football, soccer, basketball, etc.). But we thought what if there was an application that was able to provide statistics from multiple athletes and clubs across all sports.

To increase the chances of winning a fantasy game, a user can use StatSpot to pull the most recent data catered to their specific liking. Our application aims to be a central hub where users are able to obtain appropriate statistics regarding athletes, clubs, and leagues from across the world. A user is able to browse the site and view the most recent statistics of athletes and teams, whether they are searching for the specific team or just browsing through the variety of teams that StatSpot has information regarding.

For example, one possible use of our design is that there is a fan of the NBA, NHL, and the men's US national archery team. Lets now say that the user is placing bets for players in several of these leagues on a day that is in the near future. The user is then

able to obtain the most recent statistics of the players they're placing bets on all in one space. This allows for the data to become more accessible for interested users.

# Usefulness

Our chosen application is useful because it allows users to play something similar to fantasy league except with multiple sports. Fantasy league is a huge industry and In a recent article Forbes reported that almost 15 billion dollars were spent by Americans in their pursuit of fantasy glory. We are modeling our application after fantasy league however we will be differentiating ourselves by having new features. The primary one being that we will collect statistics on players across sports. This is similar to "cbssports" statistics web interface, however our application will solely focus on sports statistics, and offer an email based subscription service to get personalized emails with all recent player statistics sent to the user at a specified time. The user can select things like the time of the fantasy competition and players/clubs/and leagues that the user is interested in order to customize our application to their liking. Twelve hours before the selected competition time, we will gather the latest information and statistics about the players/clubs/and leagues that the user is interested in and send them an excel sheet via email. This is extremely useful as many fantasy league players may play fantasy in multiple sports and our application will be a centralized place to get the latest statistics on the users favorite players to build the best fantasy team. User's only need one account and one application in order to manage their multiple fantasy teams to the best of their abilities. This will save a lot of time and effort in a game where time and efficiency to plan the best strategy are key.

# Realness

The data used by this system will be a combination of data sourced from an external dataset,  manually populated data, and data stored by UI operations. Detailed description -

## 1. User Data

New users will be expected to sign up by providing their email and password. This information will be used to authenticate and authorize user logins. This information will be stored in the Google Firebase cloud database.

## 2. Player, Clubs and Leagues

Information about Players, clubs, leagues and games will be sourced from the “Football Data from Transfermarkt” dataset. The dataset includes the player details such as country, place of birth, age, market value and detailed information of the games they have played. This data includes the time they came on the pitch, the time they provided an assist and the time they scored a goal. The club and league data includes market-value, squad size, and average age. This data will be cleaned and stored in a relational database created in our service. Historical data will be stored in a non-relational database as the structure of data will vary based on the sport. Athlete and Coach data can be modified from the UI (CRUD operations will be supported).

## 3. Athletes & Coaches

Information about Athletes and Coaches will be sourced from the “2021 Tokyo Olympics” dataset. The dataset includes the name, sport, and country of each coach and athlete. This data will be cleaned and stored in a relational database created in our service.

## 4. Team Data

The application will source information about each team from the 2021 Tokyo dataset. This data will include the team name, the disciplines of sports they are participating in, the events they will be a part of, and their country name. The team data will be updated in the backend based on the addition or removal of an athlete from the UI.

## 5. Statistical Data

The 2021 Tokyo dataset also provides statistics about each team that took part in the Olympics. This information includes the number of Gold, Silver, and Bronze medals and the rank of each team. The dataset also has information about the medal count distribution between male and female participants for each sport. Our app will use this information for visualization on the UI to help fantasy players. This information will be updated from the backend based and will be available in a read-only mode in the UI.

### 6. Subscription Data

Users can subscribe to data from our system by providing the details about fantasy game time, date, players, clubs, or leagues of interest. This user-specific data will be stored in the database and picked by the scheduler to curate information and send as an email.

# Functionality

## Application Data

Our application will consist of different data across varying sports leagues. The data will be both general on a league wide basis (i.e. goals scored in a certain year), as well as general statistics specific to each athlete. We will have historical data for leagues and competitions like the olympics as well as historical data for past and current players. This data will include general game statistics as well as nationality, primary and secondary positions, salary/market value (if current player), and age.

## Functions

Users will be able to search our platform for specific players, teams, and leagues worldwide. Upon interaction with a player/team/league, users will be presented with recent data (such as goals, assists, games played, etc.) and demographic information pertaining to the player/team/league. Users will be able to add their own player/teams/leagues with their statistics to their platform and edit their additions to the platform, as well as delete these additional data. Users will also be able to have visualized data in the form of graphs. Users will be able to filter the data to get personalized graphs of historical data, as well as see the specific data points in each graph upon interaction. Overall, users will be able to receive data, visualized and raw, for present and past athletes from leagues worldwide.

1. **View and Search Players, Clubs & Leagues**

   Users will be able to view all details of players, clubs and leagues on the Statics Page of the application. A server-side search function will be provided which can search across all clubs, leagues and players.

2. **Add/Update/Delete Players, Clubs & Leagues**

   Users will be able to add new players and edit details of existing players, clubs or leagues. A delete function will be provided to delete a player, club or league.

3. **View Historic Competition Statistics**

   Statistics from historic competitions like the 2021 Tokyo Olympics will be displayed as a bar graph and pie chart. This will be read-only information based on the data sourced from the backend.

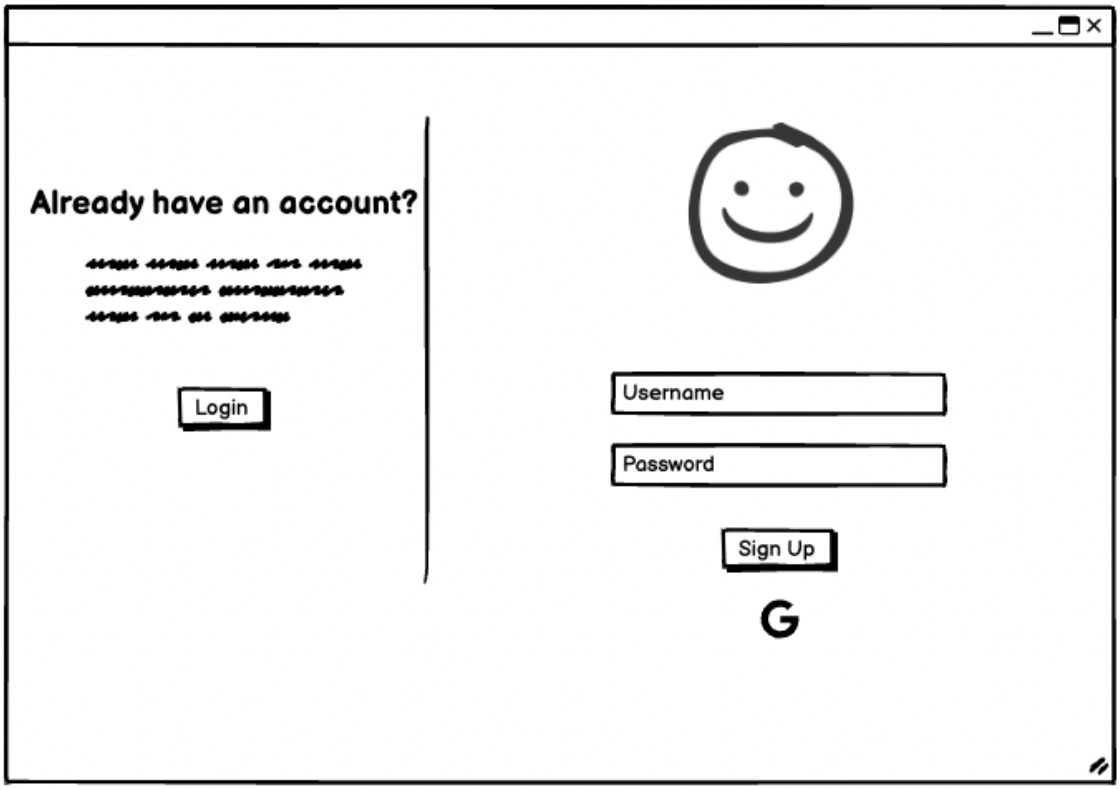
4. **Subscribe to Information**

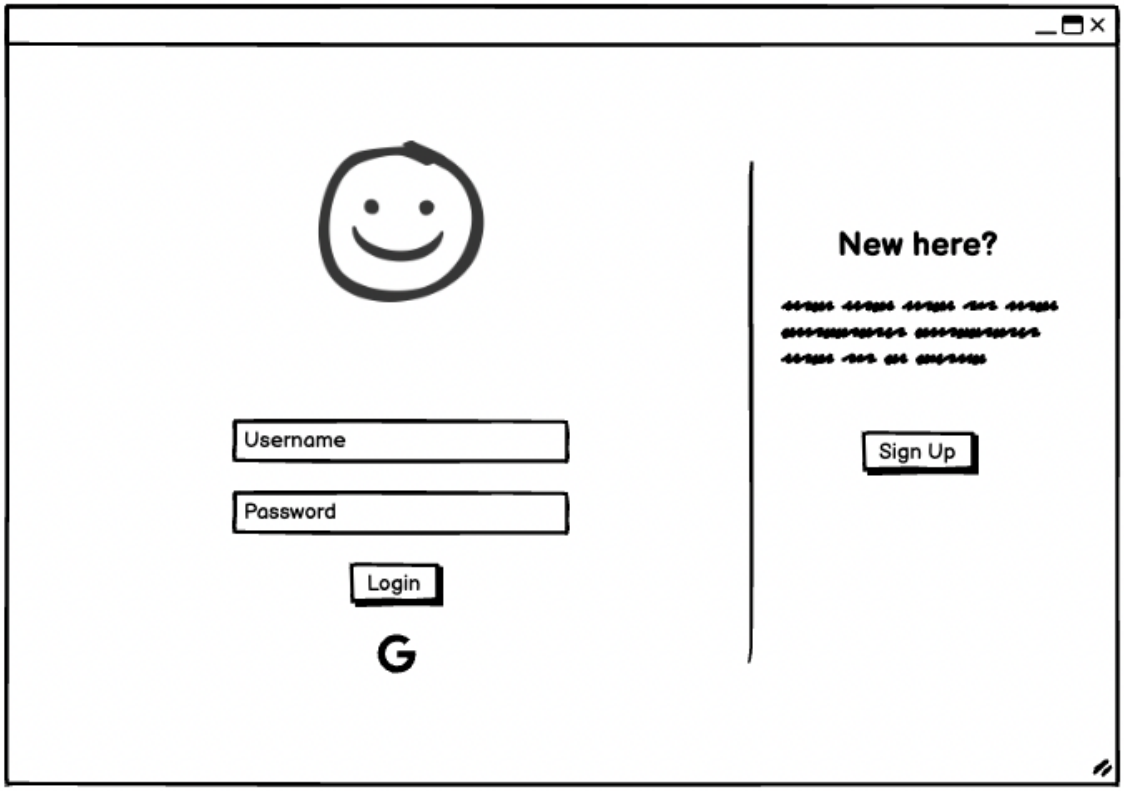
   Users can subscribe to the information in our application using the subscription service. Users are expected to provide the fantasy game time and date with information about the players, clubs and leagues of interest. The latest information available will be sent to the user as an email 12hrs before the game to help the user take calculated decisions.

# Low-fidelity UI mockups

1. **User Login and Sign-up page**

   The Sign-up page will be used by first time users of the application to register with their username and password. Once the user has signed up, the same credentials can be used to login to the application.

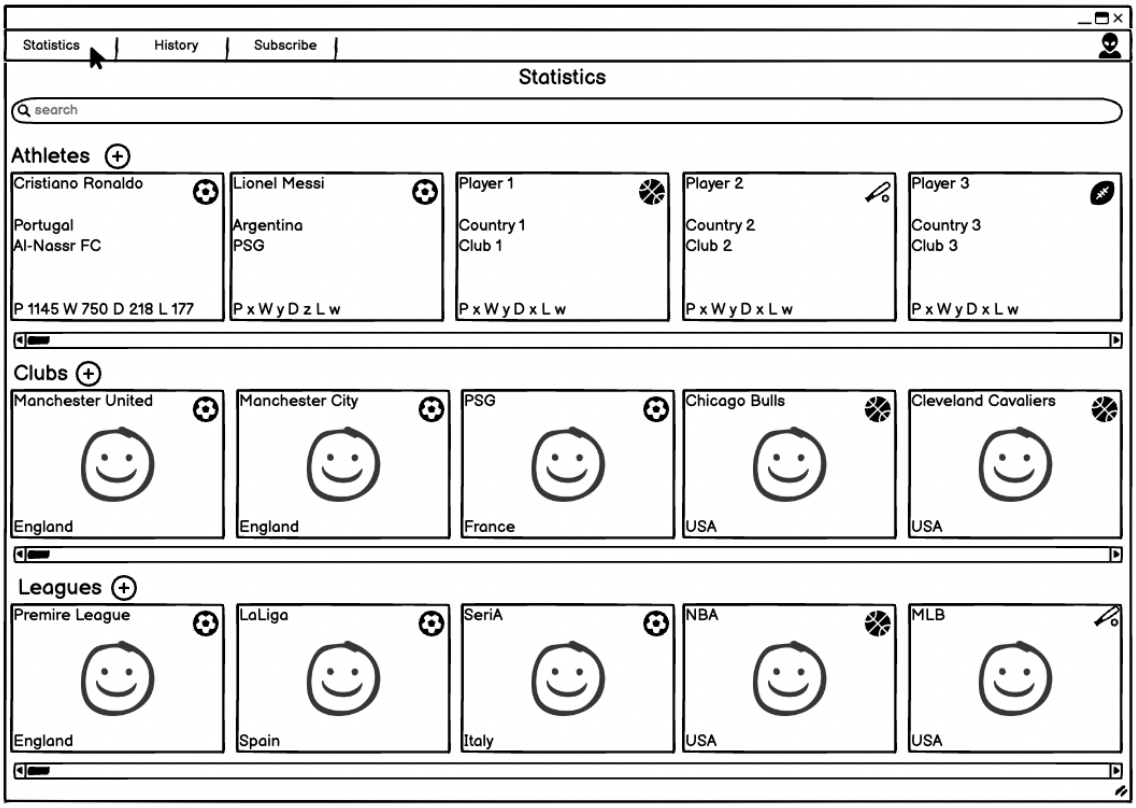

Already have an account?
Login
Username
Password
Sign Up
G


Username
Password
Login
G
New here?
Sign Up

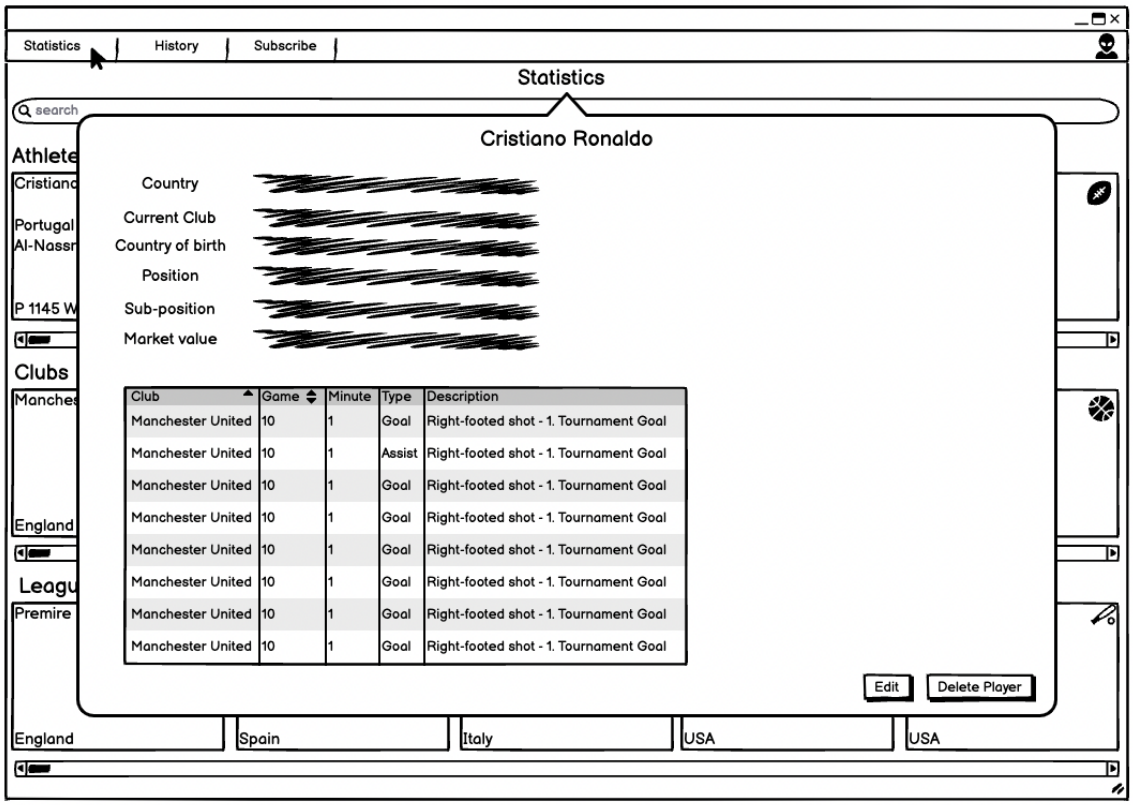
## 2. Statistics Page

The statistics page is the landing page of the application. This page will contain details about players, clubs and leagues. All the information is displayed in a tile format. The user can Add, Edit, Update or Delete players, clubs, or leagues from this page. Information presented in this page will be sourced from multiple datasets. One such dataset will be the “Football Data from Transfermarkt” dataset on Kaggle.

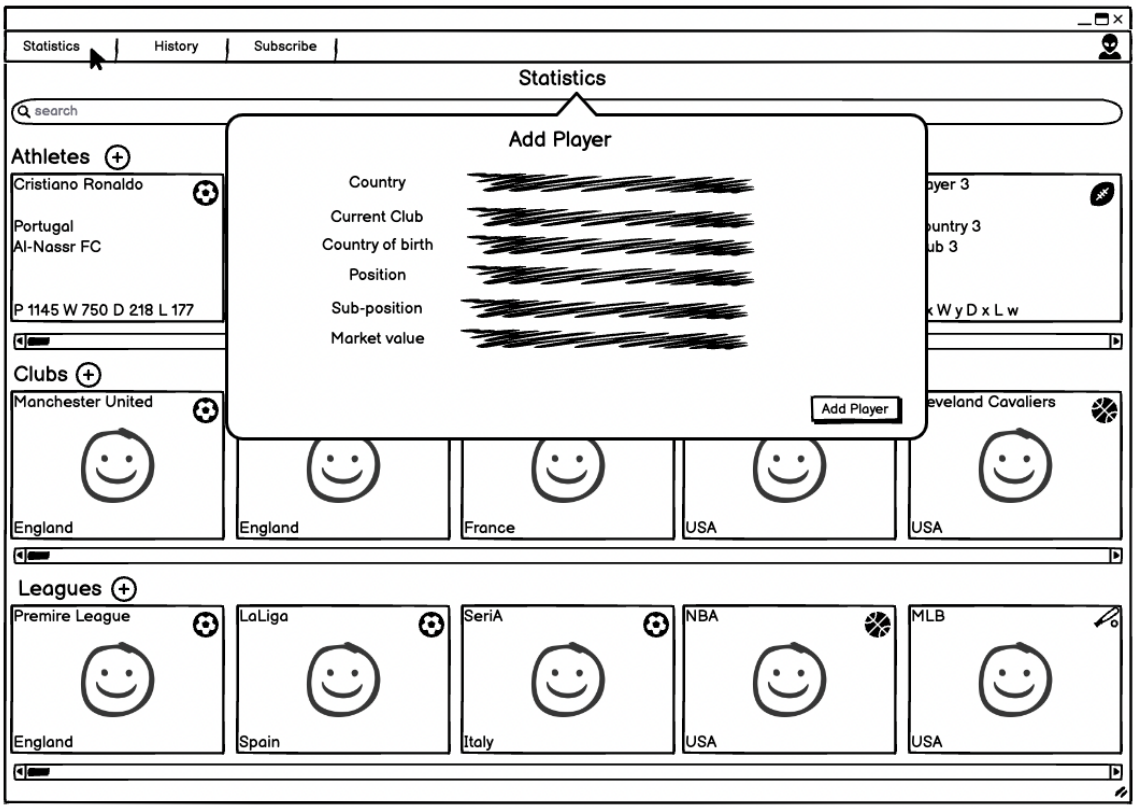
Landing Page -




Clicking a tile provides view, edit and delete options -



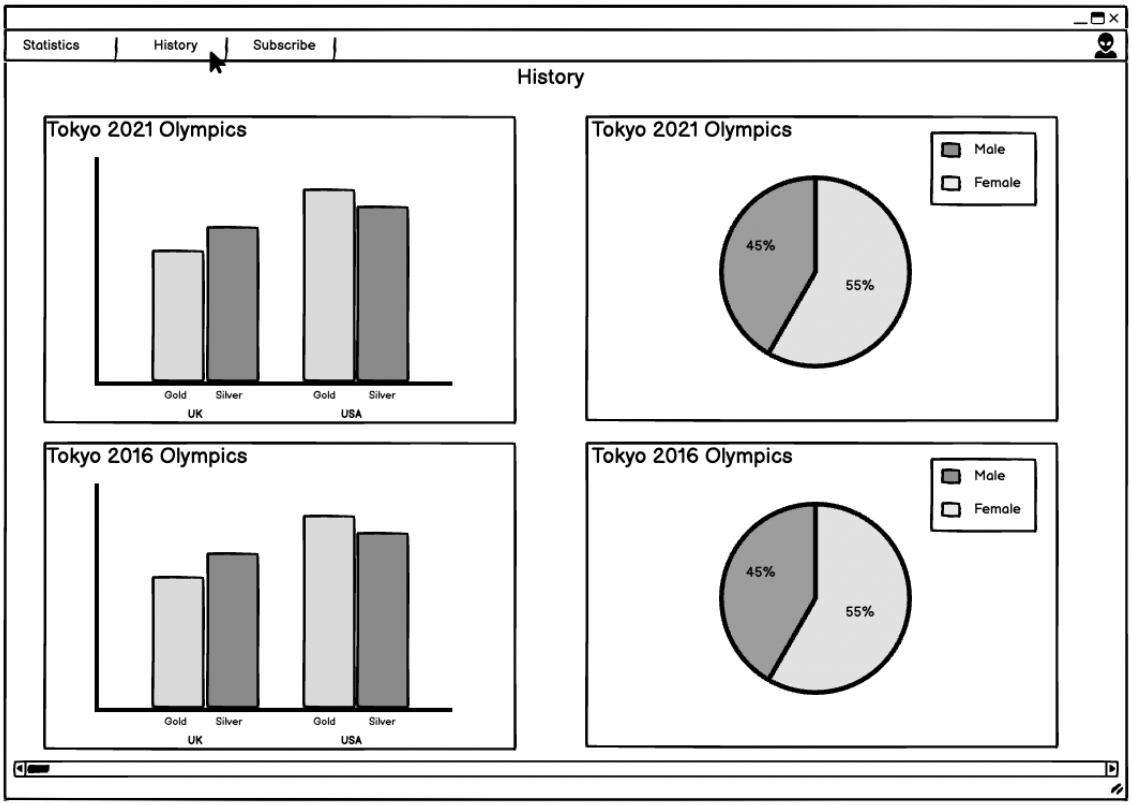

The “+” button can be used to add a new player -



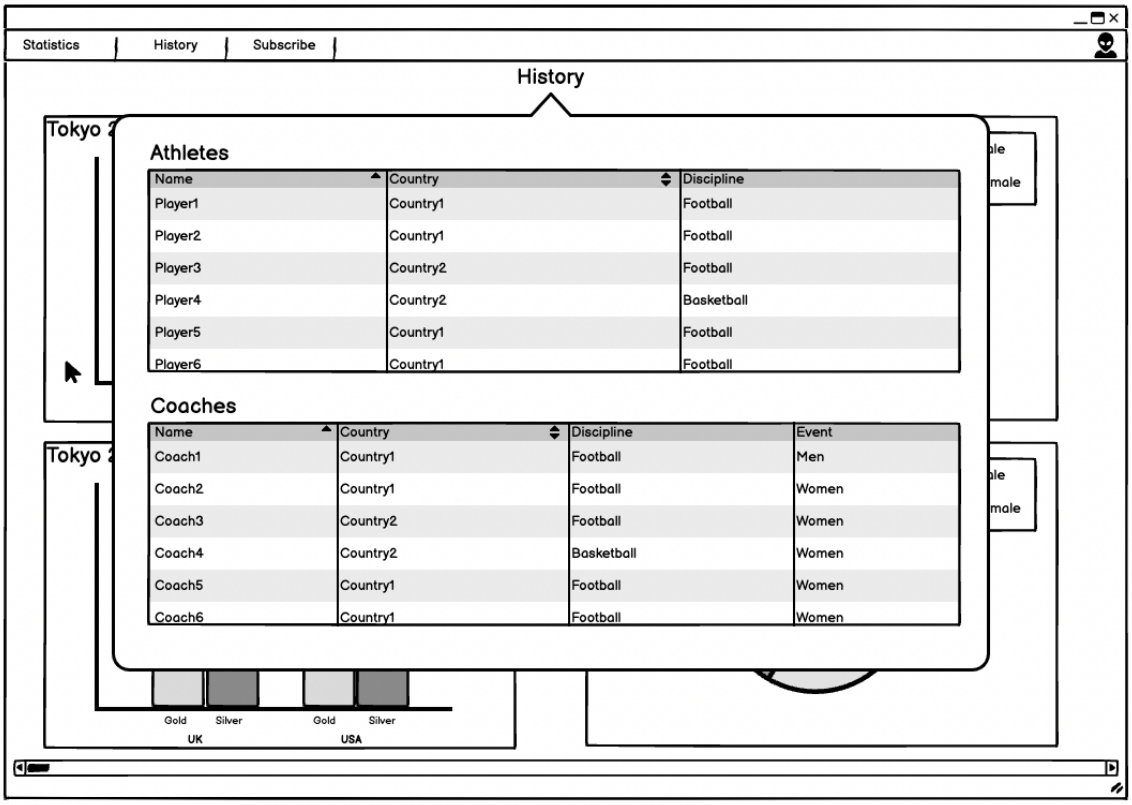

### 3. History Page

Historical data related to past tournaments are displayed in the History page. This page will be a read-only page with details sourced from external datasets. One such dataset will be the “2021 Olympics in Tokyo” dataset from Kaggle. The representation of data will be either a bar graph or a pie chart. Clicking a tile will show player and coach details from the tournament.

History Page -

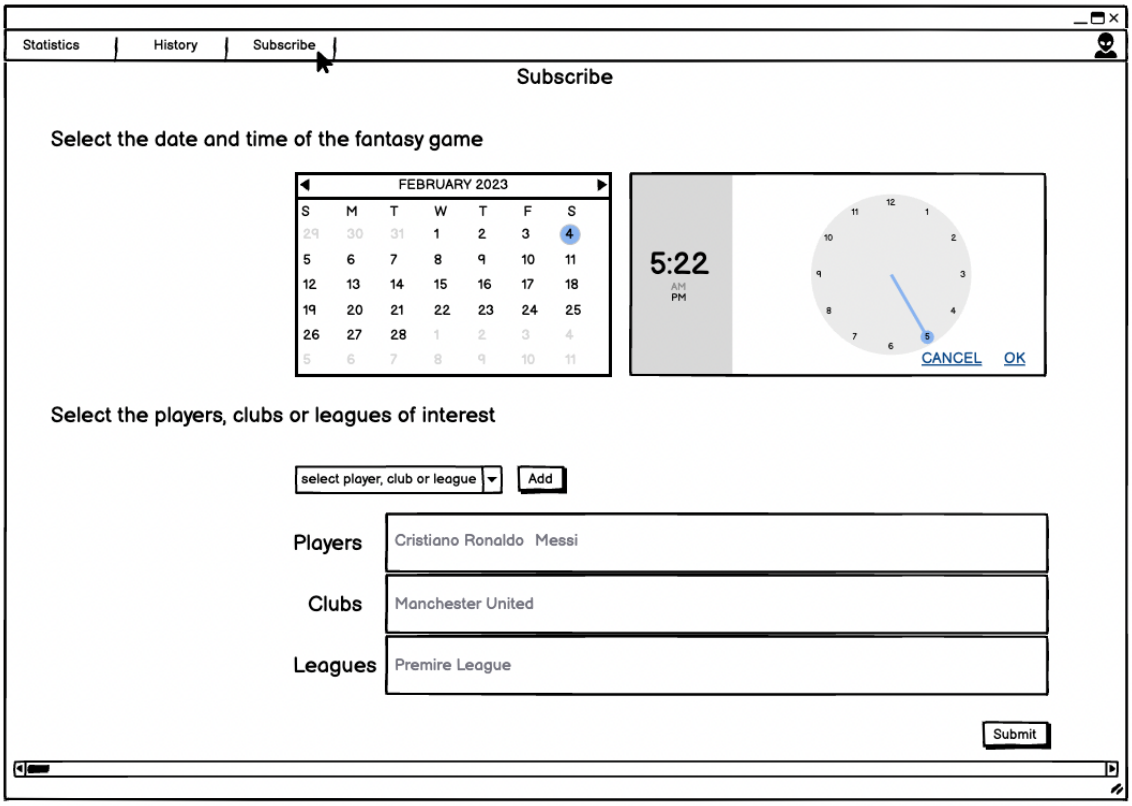


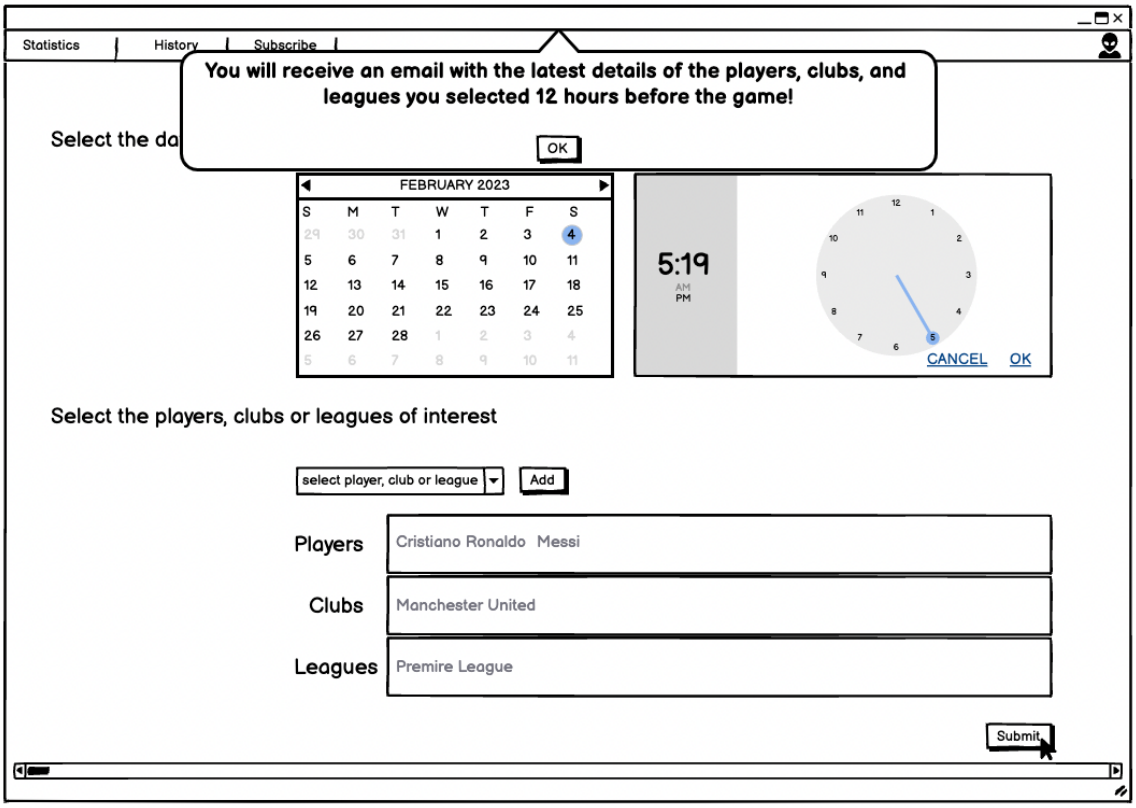

Clicking a graph tile will show more details of the tournament -




## 4. Subscription page

Users who want the latest information about players can use the subscription page to provide the date and time of the competition. The user also gives a list of interested players, clubs and the country they are interested in.


Statistics
History
Subscribe
Subscribe
Select the date and time of the fantasy game
FEBRUARY 2023
S M T W T F S
29 30 31 1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 1 2 3 4
5 6 7 8 9 10 11
5:22
AM
PM
CANCEL
OK
Select the players, clubs or leagues of interest
select player, club or league
Add
Players
Cristiano Ronaldo Messi
Clubs
Manchester United
Leagues
Premire League
Submit


Statistics
History
Subscribe
You will receive an email with the latest details of the players, clubs, and leagues you selected 12 hours before the game!
OK
Select the da
FEBRUARY 2023
S M T W T F S
29 30 31 1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 1 2 3 4
5 6 7 8 9 10 11
5:19
AM
PM
CANCEL
OK
Select the players, clubs or leagues of interest
select player, club or league
Add
Players
Cristiano Ronaldo Messi
Clubs
Manchester United
Leagues
Premire League
Submit

# Project work distribution

| Task | Description | Assignee |
|---|---|---|
| Login & SignUp | 1. UI, UX and Backend design of the Login and SignUp page<br>2. Enable Google Firebase authentication and authorization for Google Login<br>3. Store session related information in the MySQL@GCP database<br>4. UI validation for email and password<br>5. APIs design for sign-up and sign-in with backend validation | Anthony (arihani2) |
| Data sourcing and cleanup - 2021 Olympics in Tokyo | 1. Write a backend script to read data from the kaggle dataset "2021 Olympics in Tokyo"<br>2. Design and create tables to hold the sourced data<br>3. Data cleanup will be done wherever necessary<br>4. Trigger should be written to update the statistical data like win/loss count on addition of new player data (should be transactional) | Anthony (arihani2) |
| Data sourcing and cleanup - Football Data from Transfermarkt | 1. Write a backend script to read data from the kaggle dataset "Football Data from Transfermarkt "<br>2. Design and create tables to hold the sourced data<br>3. Data cleanup will be done wherever necessary<br>4. Trigger should be written to update the statistical data like win/loss count on addition of new player data (should be transactional) | Akshath (sk117) |
| Statistics - Landing Page View | 1. UI, UX and backend design for the Statistics landing page<br>2. Data sourced from the "Football Data from Transfermarkt " dataset will be displayed in the landing page<br>3. The tile view will show a summary of the player, club or league<br>4. Clubs and leagues will have their logo displayed on the screen (default logo if not available<br>5. Provide backend API to GET data sourced from the dataset and stored in the MySQL GCP tables<br>6. Users will have a search bar to search across clubs, | Jaelyn (jaelyne2) |

| | | |
|---|---|---|
| | players and leagues | |
| Statistics - Add, Edit & Delete Operations | 1. UI, UX and backend design to support add, edit and delete of club, player and league<br>2. 3 backend APIs to POST, PUT and DELETE data from the tables<br>3. Both UI and backend APIs will have validations<br>4. Successful data modifications should be immediately visible on the UI | Anthony (arihani2) |
| History Page - Visualizations | 1. Data sourced from the "2021 Olympics in Tokyo" dataset will be displayed on the History Page<br>2. UI should be able to generate Bar Graphs and Pie Charts for any competition (generic solution)<br>3. Backend API to provide an API to provide data to render the pie chart and bar graph | Jaelyn (jaelyne2) |
| History Page - More Details | 1. Data related to athletes and coaches sourced from the "2021 Olympics in Tokyo" dataset will be displayed on the History Details Page<br>2. UI displays the More Details page on click of the bar graph or the pie chart<br>3. Details about the Players and Coaches are displayed as a table on this screen<br>4. API to provide Player and Coach details for the selected competition | Jessica (js81) |
| Subscribe Page - New Subscription | 1. UI, UX and Backend design for the subscription page<br>2. This page will have a date time picker which works in the user's timezone<br>3. The search functionality will search through players, clubs, leagues together<br>4. POST API at the backend will store the subscription details for each user | Akshath (sk117) |
| Subscribe Page - Scheduler | 1. The backend cron scheduler will check for all mails to be sent every 5 mins<br>2. Mails are expected to be sent 12 hours before the fantasy game start time<br>2. The subscription details including players, clubs and leagues are taken from the DB including the user details | Jessica (js81) |
| Subscribe Page - Excel | 1. For each subscribed user, the players of interest, clubs and leagues are retrieved from the DB | Jessica (js81) |

| | | |
|---|---|---|
| | 2. Use a Java Excel library to create an excel in the backend | |
| Subscribe Page - Email | 1. Setup an SMTP server to send emails<br>2. The subscribed data will be sent to the user 12 hrs before the start time of the fantasy game<br>3. The excel will be an attachment to the email | Jaelyn (jaelyne2) |
| Deployment on GCP | UI, Backend, DB should be deployed on Google Cloud | Akshath (sk117) |