

# YourSports

Dynamic Debugger (Team 02)

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## Milestone 3

Milestone	Date
M3V2	July 22nd, 2022
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M1V1	June 9th, 2022

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## Data Definition

### Users

Users will be referring to the group of people who use our application. Users will be given wide access to features like searching news, access to live Twitter feeds, following live games, posting opinions in the discussion forum of a game, and viewing player statistics.

There will be two types of users in our application:

#### Regular User

These are the users who have not logged in. Regular users will only be able to watch scores of live games and search for news and tweets.

Regular Users will have the following attributes:

##### Tracking ID

> This refers to a unique id given to the unregistered user.

##### IP address

> This refers to the IP address of the device that the user uses to access the website.

#### Registered User

These are users who have an account. Registered users will have access to all features our application provides. Registered users inherit from regular users.

Registered users will have the following attributes:

##### User

> This refers to the tracking ID of the user.

##### Account

> This refers to the account of the user.

### Account

Each registered user will have an account that contains all the details and keys that are required to identify a user.

There will be three types of accounts in our application:

#### Basic Account

A Basic account will have access to features like searching news, access to live Twitter feeds, following live games, posting opinions in the discussion forum of a game, and viewing player statistics.

The Basic Account has the following attributes:

##### Name

> This refers to the name that the user used to sign up, and it is usually the legal name of the user.

##### Username

> This refers to the username that the user used to sign up for, and it will be used to distinguish a user from other users.


##### Email

> This refers to the email that the user used to sign up. The email will be used to associate their account with their email, and also serve as a communication method between the user and the application.

##### Password

> This refers to the set of characters that a user used to sign up, and it will be used to authenticate a user along with their email.

#### Creator Account



A Creator Account will have access to all the privileges and properties that a basic account has with the additional privilege of publishing articles to the website. Every user that has a creator account will have a basic account. A creator account will inherit from a basic account.

The creator account will have the following properties:

#### Account

> This refers to the account of the user.

#### Admin Account

An Admin account is used to regulate and ensure proper usage of the application by other accounts. An Admin account has all privileges in the application along with access to the database and backend service to manipulate, change, add and remove data. There will only be one admin account. The admin account will also inherit from the basic account.

The admin account has the following properties:

#### Account

> This refers to the account of the user.

### News

News will refer to the information that users can access from our application.

Our application will provide different types of news:

#### Tweets

These are the tweets collected from Twitter according to users' preferences and interests.

Tweets will have the following properties:

#### Username

> This is the username of the user who posted the tweet. The username will follow twitter data conventions.

#### Content

> This is the content of the tweet.

#### Articles

These are the articles posted by users who have a creator account. Articles can be searched and filtered by date posted and which sport is it used to talk about.

Articles have the following properties:

#### Post Time

> This is the date and time the article was posted.

#### Image

> This is the image that will be used as the thumbnail for the article. The acceptable image formats are png and jpeg, with a maximum size of 5 MB.

#### Heading

> This is the title of the article.

#### Subheading

> This is the subheading of the article.

#### Introduction

> This is the introduction part of the article.

#### Content

> This is the main content that contains all the detailed information of the article.

#### Conclusion

> This is the conclusion of the article.

#### Author

> This is the Author of the article.

### Sport

> This is the type of sport which the article targets. E.g. Basketball and Baseball.

## Comment

Registered users will be able to post comments on articles to express their views and opinions on the information given in the article.

Comment will have the following properties:

### Article

> This is the Article for which the comment was posted.

### Author

> This is the user who has posted the comment.

### Post Time

> This is the date and time where the comment was posted.

### Content

> This contains all the information that a user wants to convey.

## Games

This refers to the past, current, and future sports games that users can follow. Users can follow the scores, and post any opinions they have about the game.

Games will have the following properties:

### Player One Score

> This is the score of the home team.

### Player Two Score

> This is the score of the opponent team.

### Game Location

> This is the location of the game.

### Team One

> This is the home team.

### Team Two

> This is the away team.

## Group

This refers to all the groups like group chats and discussion forums that allow users to interact with other users.

There will be different types of groups:

### Discussion Forum

The discussion forum will refer to the forums of every sports game where users can post their opinions about the game. This discussion forum will have no owner and every registered user who follows a game will be able to join the discussion forum.

Discussion forums will have the following properties:

### Forum Name

> This is the name of the forum.


### Game

> This is the sports game for which the forum has been created.

### Account List

> This is the list of all the accounts of the users that are part of the forum.

### Group Chat



The group chat will refer to private groups of sports fans who share similar interests. The private group chats will have an owner and every registered user will only be able to join a private group chat upon the owner's approval.

Group chats will have the following properties:

**Group Chat Name**

> This is the name of the group chat.

**Group Chat Owner**

> This is the user who owns the group.

**Group Account**

> This is the list of all the accounts of the users that are part of the group chat.

## Posts

This refers to the message a user posts in a group. All communication between users of the application will happen between the users.

Posts have the following properties:

**Account**

> This is the account of the user who has posted the message.

**Content**

> This is the content of the message.

**Group**

> This is the group in which the user has posted a message.

## Dashboard

This refers to the Dashboard of every user that has a creator account.

Dashboard has the following properties:

**Article List**

> This is the list of all the articles that the creator has uploaded.

**Content**

> This is the number of views for each article.

**Creator**

> This is the creator account of the user who owns the dashboard.

## Backend Service

The backend service will be used frequently to refer to all the operations that will happen on the server-side like filtering and searching for articles, filtering and retrieval of tweets, fetching live updates from games, and handling messages from users, updating and retrieving player statistics.

## Website

The Website will be used frequently to refer to all the operations that will happen on the client-side like signing up and logging in, and verification and validation of data.

## Database

The database will be used frequently to refer to all the operations that involve the storage of data. It will be used to store the news, account information of users, information on sports games, information on players, and all the messages that a user posts in a group.

## Prioritize Functional Requirements

### Priority 1

#### Regular user

1. Regular users shall be able to create an account.
2. Regular users shall be able to sign up as a creator account.
3. Regular users shall be able to access the homepage.
4. Regular users shall be able to view the live scores of a game.
5. Regular users shall be able to view the duration of a game.
6. Regular users shall be able to view updated statistics of players.
7. Regular users shall be able to search for articles through a search bar.
8. Regular users shall be able to filter articles they would like to read by keywords.
9. Regular users shall be able to filter articles they would like to read by different types of sports.
10. Regular users shall be able to search articles by heading of the article.
11. Regular users shall be able to view the article heading in the search results for articles.
12. Regular users shall be able to view the article author in the search results for articles.
13. Regular users shall be able to view the article postdate in the search results for articles.
14. Regular users shall be able to view the article image as a thumbnail in the search results for articles.
15. Regular users shall be able to search games by the teams playing in the search bar.
16. Regular users shall be able to filter games by the sport type.
17. Regular users shall be able to filter games by their date.
18. Regular users shall be able to view the game score in the search results for games.
19. Regular users shall be able to view the game date in the search results for games.
20. Regular users shall be able to view the game location in the search results for games.
21. Regular users shall be able to search for player statistics according to the player name in the search bar.
22. Regular users shall be able to filter player statistics by the sport type.

#### Registered user

23. Registered users shall have the same privileges as regular users.
24. Registered users shall be able to log in.
25. Registered users shall be able to log out.
26. Registered users shall be able to reset their password.
27. Registered users shall be able to delete their account.
28. Registered users shall be able to post in the discussion forum of the game.
29. Registered users shall be able to delete their posts in the discussion forum.
30. Registered users shall be able to comment on articles.

#### Basic Account

31. Accounts shall be able to be deleted by users.
32. Accounts shall contain the name of the users.
33. Accounts shall contain the username of the users.
34. Accounts shall contain the email of the users.
35. Accounts shall contain the password of the users.

#### Creator Account

36. Creators shall have the same privileges as registered users.
37. Creators shall be able to upload articles to the website.
38. Creators shall be able to view Dashboard.

#### Admin Account

39. Admin shall have all the privileges.
40. Admin shall be able to create discussion forums for upcoming games.

#### Articles

41. Articles shall be posted by creator users.
42. Articles shall be able to be filtered by date.
43. Articles shall be able to be filtered by sports type.
44. Articles shall be able to be filtered by keywords specified by the user.
45. Articles shall contain a heading.

46. Articles shall contain a subheading.
47. Articles shall contain an introduction.
48. Articles shall contain contents.
49. Articles shall contain a conclusion.
50. Articles shall contain an image.

#### Games

51. Games shall be filtered by date.
52. Games shall be filtered by sport type.
53. Games shall be filtered by keywords specified by users in the search bar.
54. Games shall have an individual discussion forum.
55. Games shall be able to show live scores of corresponding teams.
56. Games shall be able to show the date of the game.
57. Games shall be able to show the location of the game.

#### Discussion Forum

58. Discussion forum shall be able to be viewed by all users.
59. Discussion forum shall be able to show posts from users.

#### Dashboard

60. Dashboard shall be able to show the number of views of the article.
61. Dashboard shall be able to show the heading of the article.
62. Dashboard shall be able to show the posted date of the article.

#### Backend Service

63. The backend service shall be able to validate the email for duplicates when users try to sign up.
64. The backend service shall be able to check for duplicate accounts when users try to sign up.
65. The backend service shall be able to create an account in the database.
66. The backend service shall be able to store posts by a user in the discussion forums.
67. The backend service shall be able to update player statistics in the database.
68. The backend service shall be able to filter articles specified by the user.
69. The backend service shall be able to filter games specified by the user.
70. The backend service shall be able to filter player statistics specified by the user.
71. The backend service shall be able to fetch updates from a game every 5 seconds.

#### Website

72. The website shall be able to check if the first name is not empty users try to sign up.
73. The website shall be able to check if the last name is not empty when a user try to sign up.
74. The website shall be able to check if the email is not empty when users try to sign up.
75. The website shall be able to check if the password is at least 8 characters before the users try to sign up.
76. The website shall be able to check if the date of birth is at least 13 years old when users try to sign up.
77. The website shall be able to check if the terms of service has been accepted when users try to sign up.

#### Comment

78. Comments shall be able to be viewed by regular users.
79. Comments shall be posted by registered users.
80. Comments shall be able to be deleted by poster.

### Priority 2

#### Regular user

1. Regular users shall be able to view the player statistics through a pie chart.
2. Regular users shall be able to be redirected to a live broadcast of the game.
3. Regular users shall be able to search for specific comments in the discussion forum.

#### Registered user

4. Registered users shall be able to like an article.
5. Registered users shall be able to dislike an article.
6. Registered users shall be able to change their profile picture.
7. Registered users shall be able to view profiles of other users.
8. Registered users shall be able to red flag other registered users for any posts in the discussion forum.
9. Registered users shall be able to follow sports games.
10. Registered users shall be able to unfollow games they are currently following.



11. Registered users shall be able to search for specific messages in the discussion forum.
12. Registered users shall be able to mark posts as read so that they don't receive notifications.
13. Registered users shall be able to mark as read on articles.
14. Registered users shall be able to receive responses to their posts in the discussion forum.

#### Creator Account

15. Creator shall be able to view the article statistics through a pie chart.
16. Creators shall be able to see the number of likes an article has received.
17. Creators shall be able to see the number of dislikes an article has received.
18. Creators shall be able to select their target audience.

#### Dashboard

19. Dashboard shall be able to show the comments on the article.
20. Dashboard shall be able to show the redflags of an article.

#### Backend Service

21. The backend service shall be able to send a verification email for users to verify their account.

#### Discussion forum

22. Discussion forum shall be sorted with specific words.

### Priority 3

#### Regular user

1. Regular users shall be able to read live twitter feeds.
2. Regular users shall be able to switch between light and dark mode.

#### Registered user

3. Registered users shall be able to bet on live and upcoming games.
4. Registered users shall receive 100 YourSports coins when signing up.
5. Registered users shall get cash by selling their YourSports coins.
6. Registered users shall win YourSports coins if they win a bet.
7. Registered users shall lose YourSports coins if they lose a bet.
8. Registered users shall be able to buy YourSports coin using actual money.
9. Registered users shall be able to view their current amount of YourSports coins in their account.
10. Registered users shall be able to enable/disable receiving emails about sports news.
11. Registered users shall be able to choose how frequently they receive emails about sports news.
12. Registered users shall be able to read live Twitter feeds.
13. Registered users shall be able to type the topics they would like to follow on Twitter.
14. Registered users shall be able to unfollow topics they are currently following.
15. Registered users shall be able to receive emails of any new tweets.
16. Registered users shall be able to enable receiving notifications by email.
17. Registered users shall be able to choose if they want to enable receiving sms that contain sports news.
18. Registered users shall be able to enable receiving notifications by messages on the phone.
19. Registered users shall be able to invite their friends to use the YourSports website.
20. Registered users shall be able to send messages in the group chat.
21. Registered users shall be able to receive messages in the group chat.
22. Registered users shall be able to view messages in the group chat.
23. Registered users shall be able to see other online users in the group chat.
24. Registered users shall be able to delete messages they previously sent in the group chat.
25. Registered users shall be able to edit messages they previously sent in the group chat.
26. Registered users shall be able to create a group chat.

#### Group Owner

27. The Group's Owner shall be able to change the group chat name.
28. The Group's Owner shall be able to invite other users to the group chat.
29. The Group's Owner shall be able to block any users in the group chat.

#### Message

30. Messages shall be able to be edited by poster.

#### Tweets

31. Tweets shall be pushed to users.



32. Different topics of tweets shall be pushed to users.

#### Notification

33. Notification shall be sent by email.

34. Notification shall include new tweets or/and sport news.

35. Notifications shall be sent by messages.

#### Backend service

36. The backend service shall be able to filter tweets by the topics a user follows.

#### Group chat

23. Group chat shall contain multiple group members.

24. Group chat shall have one group owner.

25. Joining a specific group chat shall require permission of the group owner.

26. Group members of a group chat shall be able to post messages.

#### Message

27. Messages in the group chat shall be posted by registered users.

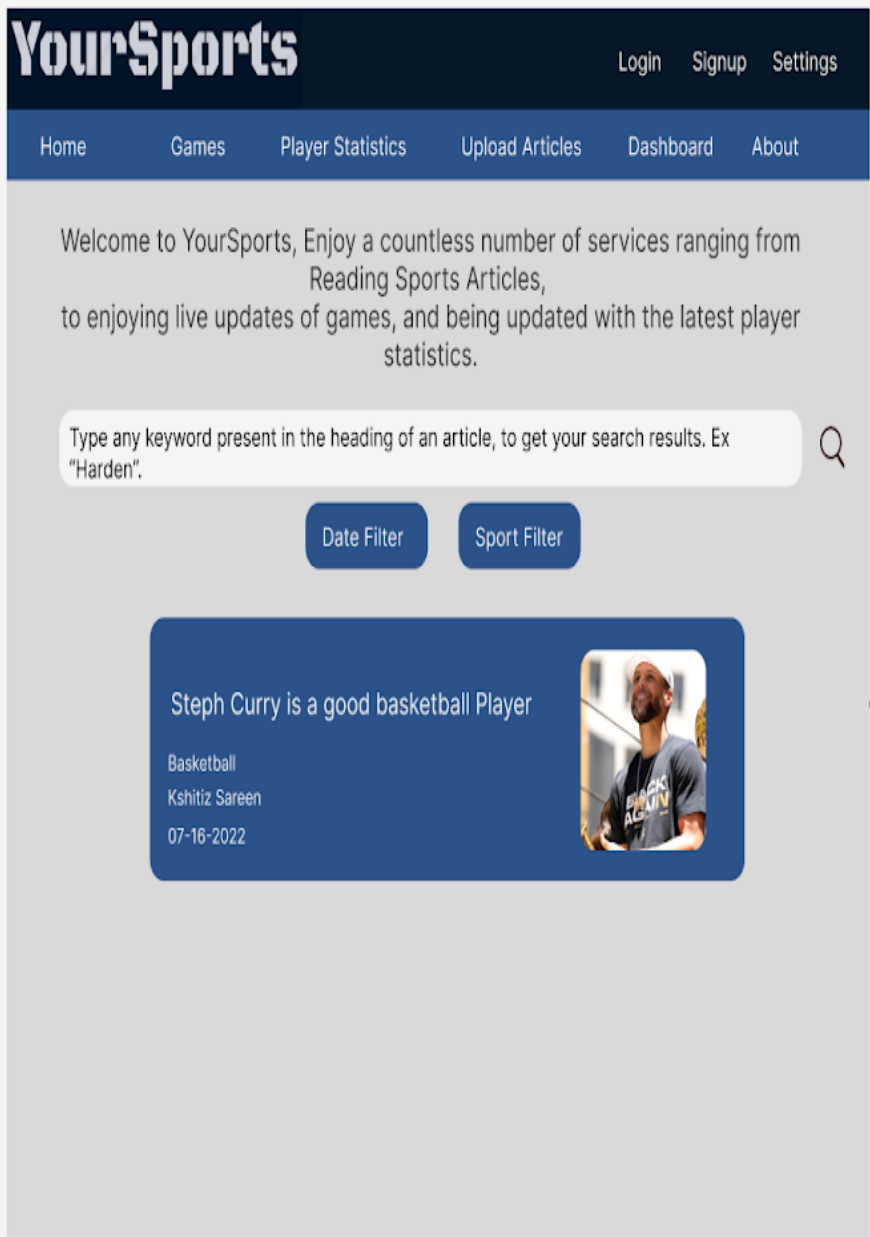
28. Messages in the group chat shall be able to be deleted by poster.

29. Messages in the group chat shall be able to be marked using a red flag.

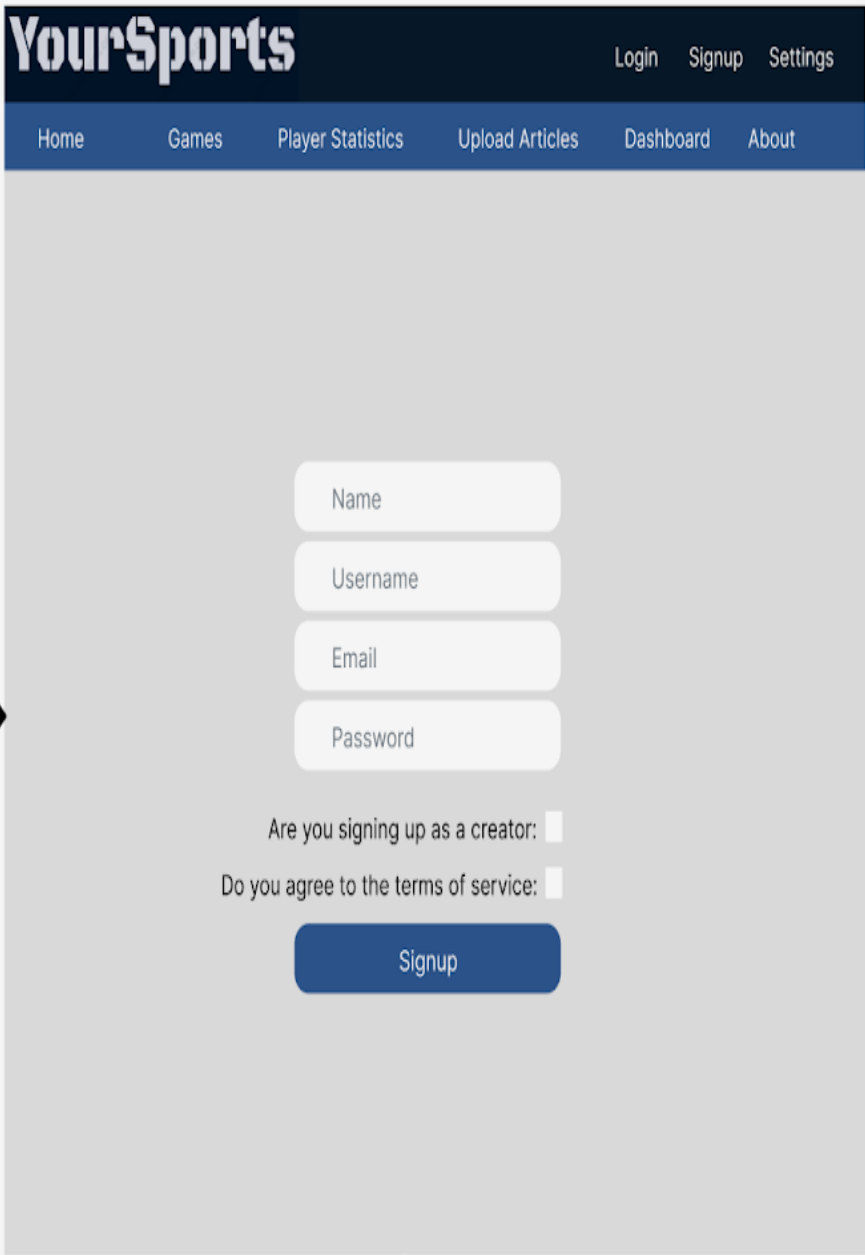
30. Messages in the group chat shall be responded to by other registered users.

Wireframes

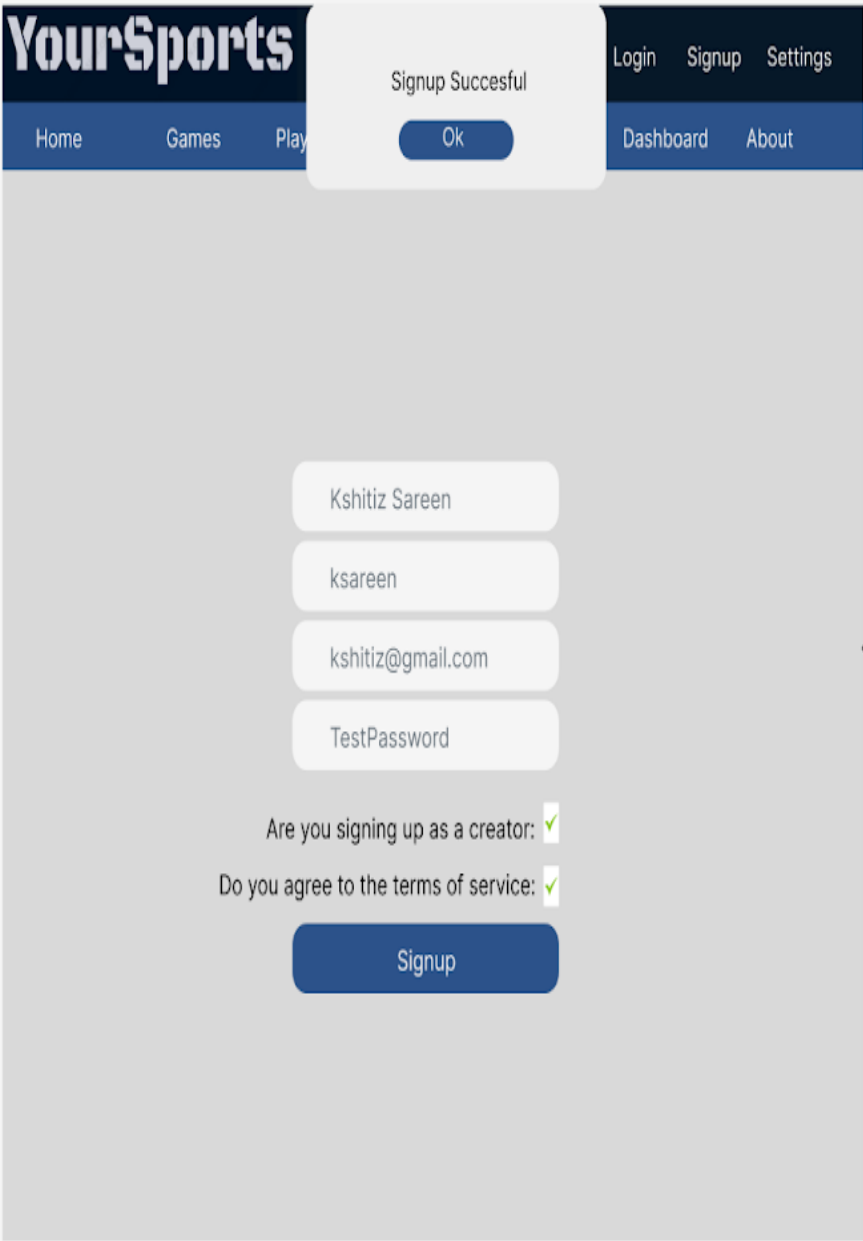
Signing Up Wireframes



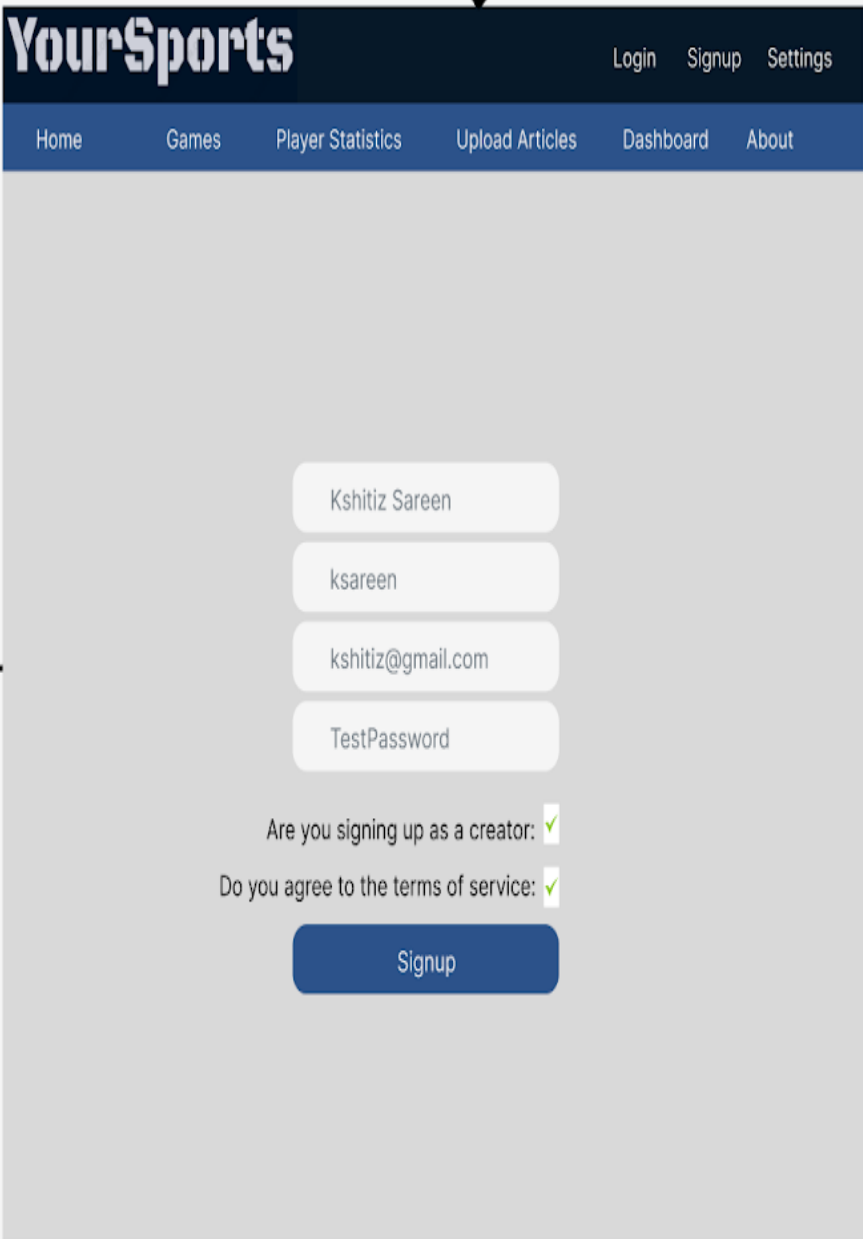
When Clicking on Signup,  
it redirects to the Signup page



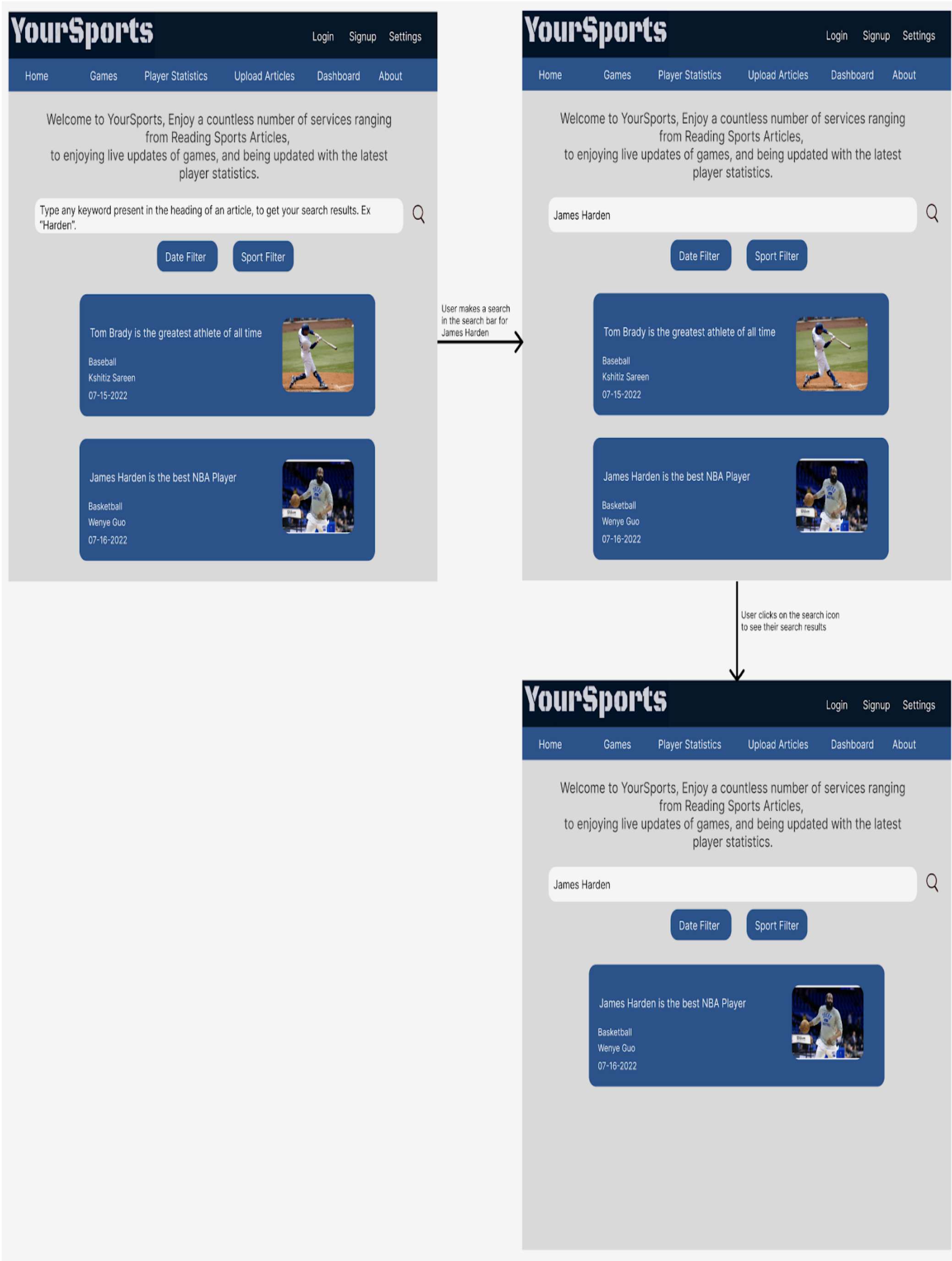
The User fills in the details



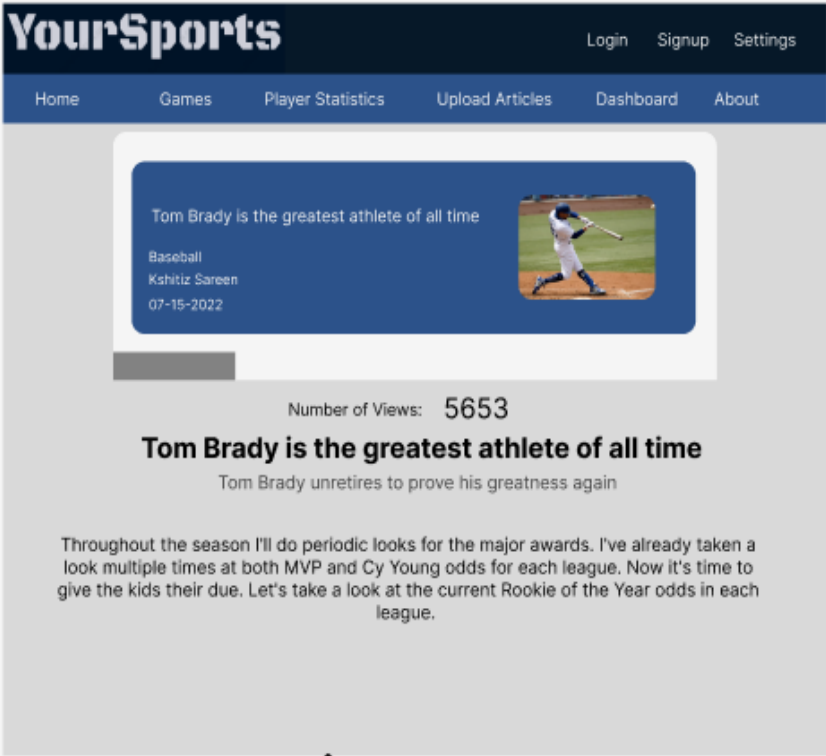
The user signs up and  
receives a signup confirmation



Checking Sports News Wireframes



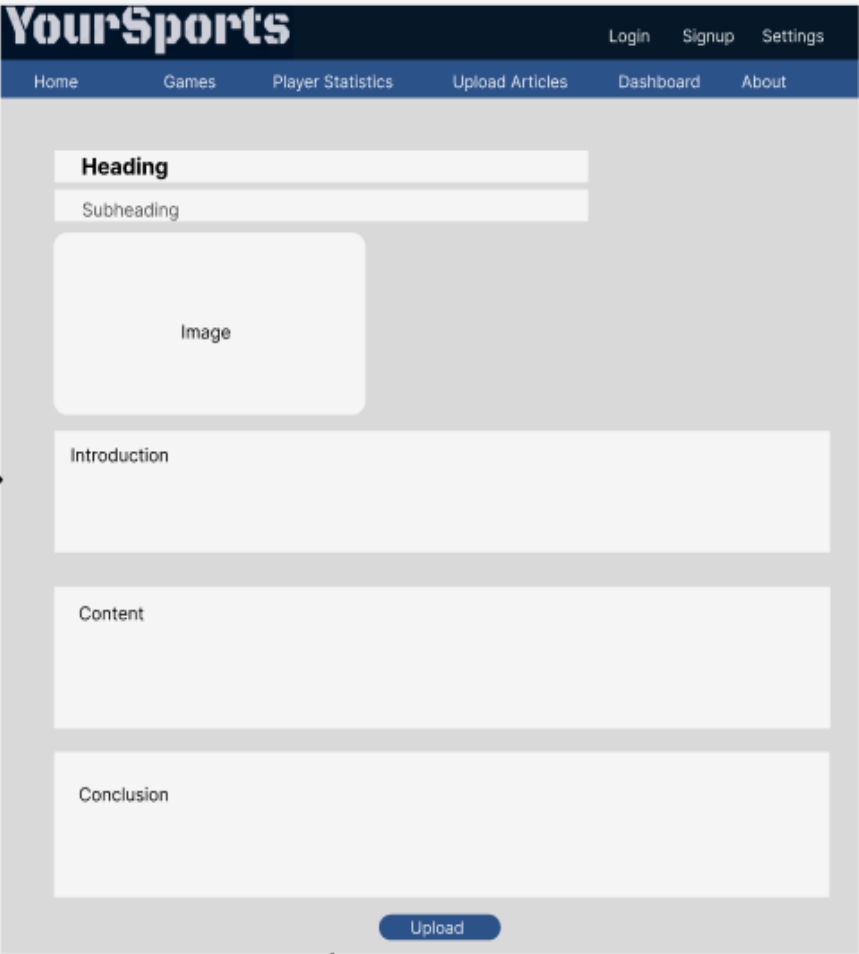
Posting News Articles Wireframes



User clicks on Dashboard, to view the articles they have uploaded.

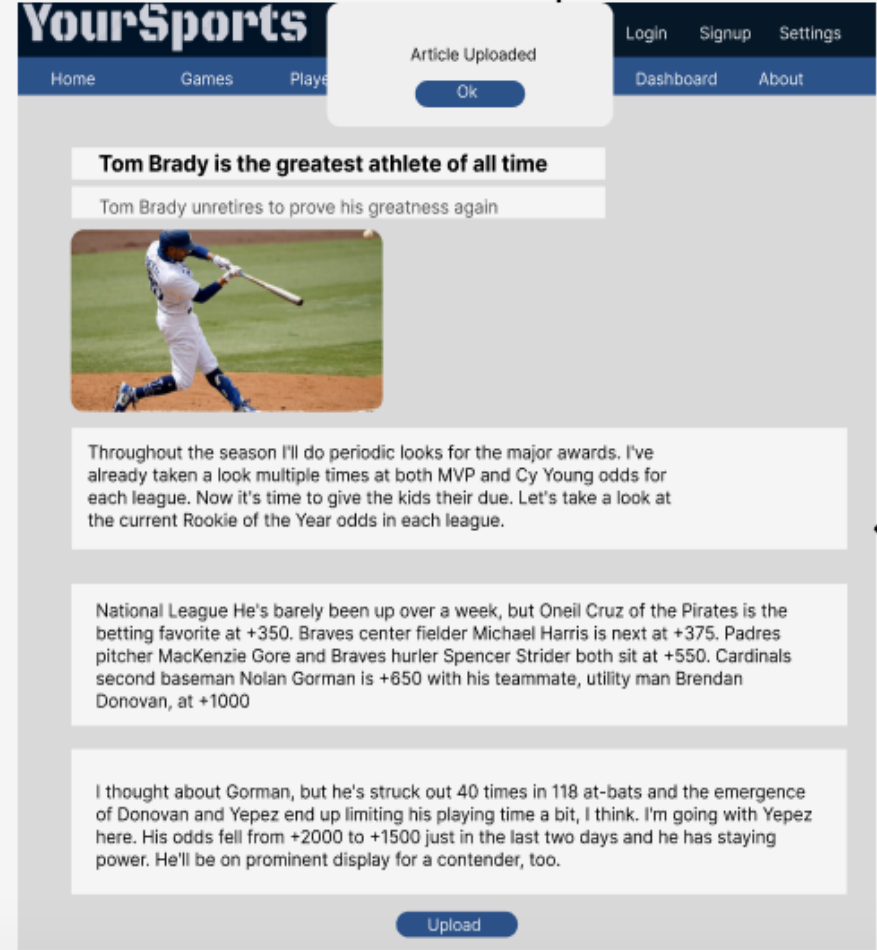


User clicks on the Upload Articles Page

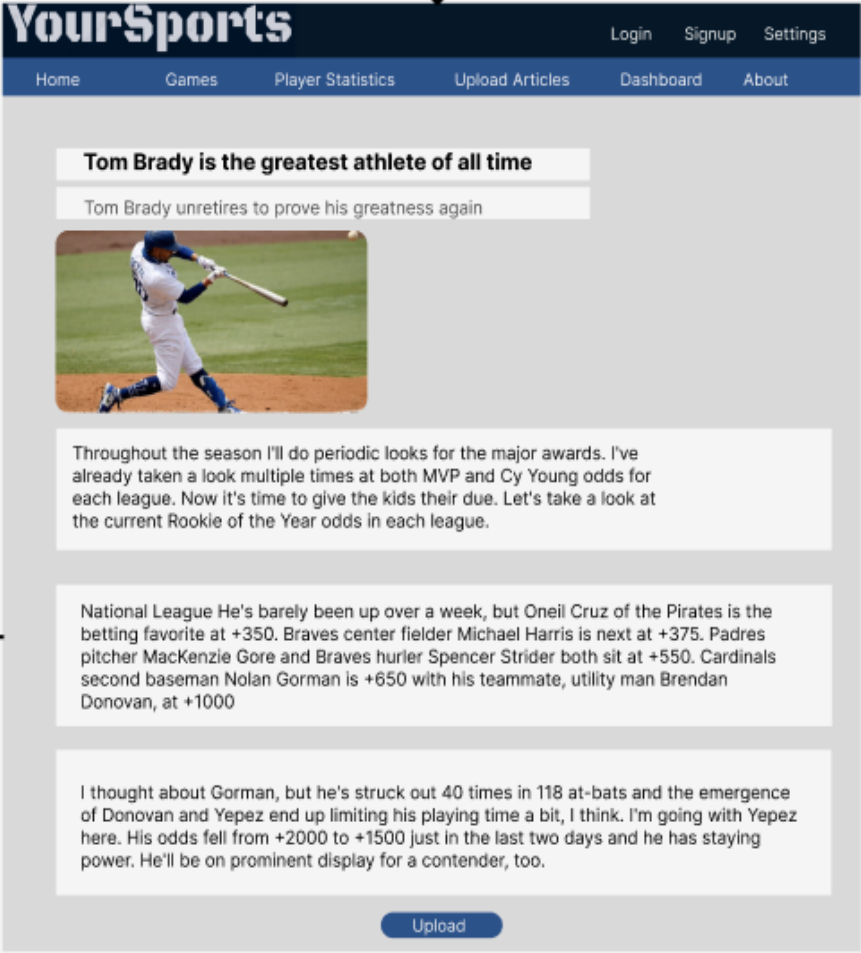


User fills in on the details of the article that they want to upload

Once the user clicks on the Ok button in the Article Uploaded popup, the user is redirected to the previous page, which in this case is the home page



User clicks on Upload Button, and receives a confirmation on whether article has been uploaded

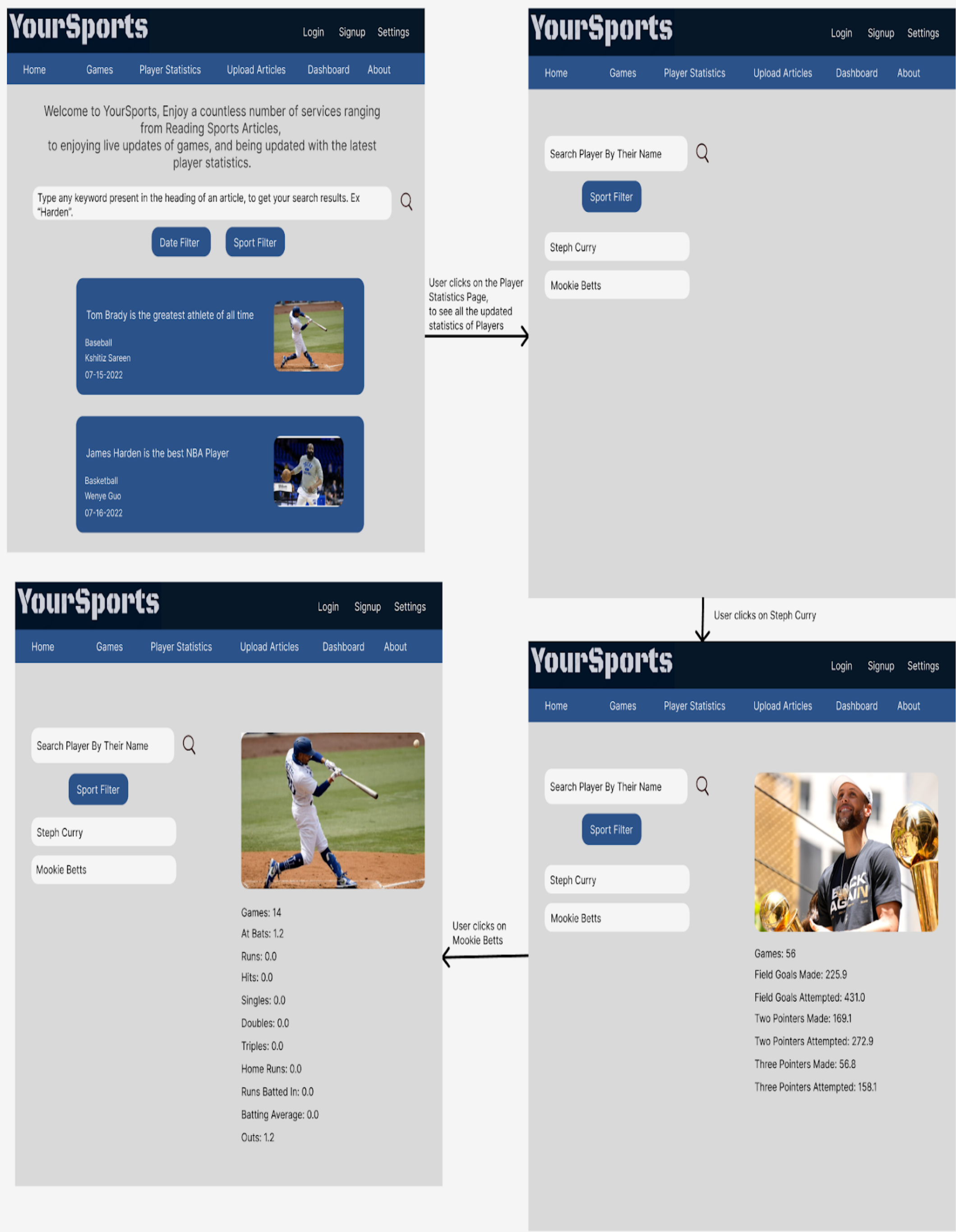




Following Sports Games Wireframes



Checking Player Statistics Wireframes



## Database Architecture and Organization

### Business Rules

- 1. A regular user shall be or not be a registered user.
- 2. A registered user shall be able to use many devices to login the account.
- 3. A registered user shall be able to post many posts in game discussion forums.
- 4. A discussion forum shall contain many posts.
- 5. A post shall be able to be replied to many times.
- 6. An account shall be either a creator or an admin.
- 7. A game shall have at most one discussion forum under the games page.
- 8. An admin shall be able to manage many discussion forums.
- 9. An admin shall be able to manage many games.

### Entities

#### Regular User (Strong)

Tracking\_id (INT, PK, Not null, AI)  
IP\_Address (INT, Not null)

#### Account (weak)

Account\_ID (INT, PK, Not null, AI)  
Name (VARCHAR,Not null)  
Username (VARCHAR,Unique,Not null)  
Email (VARCHAR, Unique,Not null)  
Password (VARCHAR, Not null)

#### Admin (weak)

Admin\_ID (INT, PK, Not null, AI)  
Account\_id (INT, Not null, Unique, FK to Account(Account\_ID))

#### Registered user (Weak)

Tracking\_id (INT, Not null, FK to Regular User(Tracking\_id))  
Account\_id (INT, Not null, Unique, FK to Account(Account\_ID))

#### Game (Strong)

Game\_ID (INT, PK, Not null, AI)  
Game\_Home\_Team (VARCHAR, Not null)  
Game\_Away\_Team (VARCHAR, Not null)  
Game\_Location (VARCHAR, Not null)  
Home\_Team\_Score (INT, Not null)  
Away\_Team\_Score (INT, Not null)  
Duration (INT, Not null)

#### Discussion forum (Weak)

Forum\_id (INT, PK, Unique, Not null, AI)  
Game\_id (INT, Unique, Not null, FK to Game(Game\_ID))  
Forum\_Name (VARCHAR, Not null)

#### Posts (Weak)

Post\_id (INT, PK, Unique, Not null, AI)  
account\_ID (INT, Not null, FK to Account(Account\_ID))  
Content (VARCHAR, Not null)  
forum\_id (INT, Not null, FK to Discussion Forum(Forum\_id))



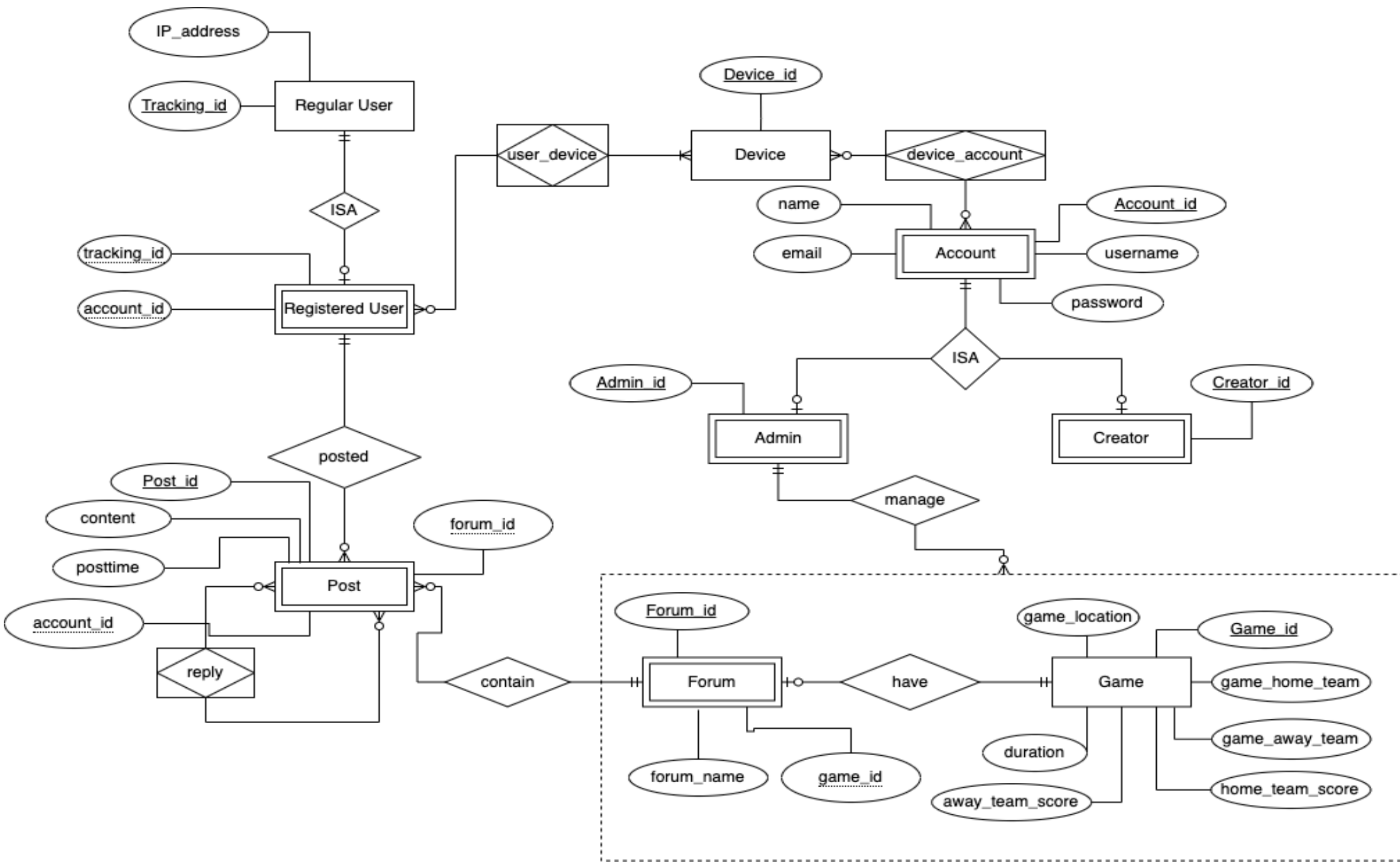


Post Time (DATE, Not null)

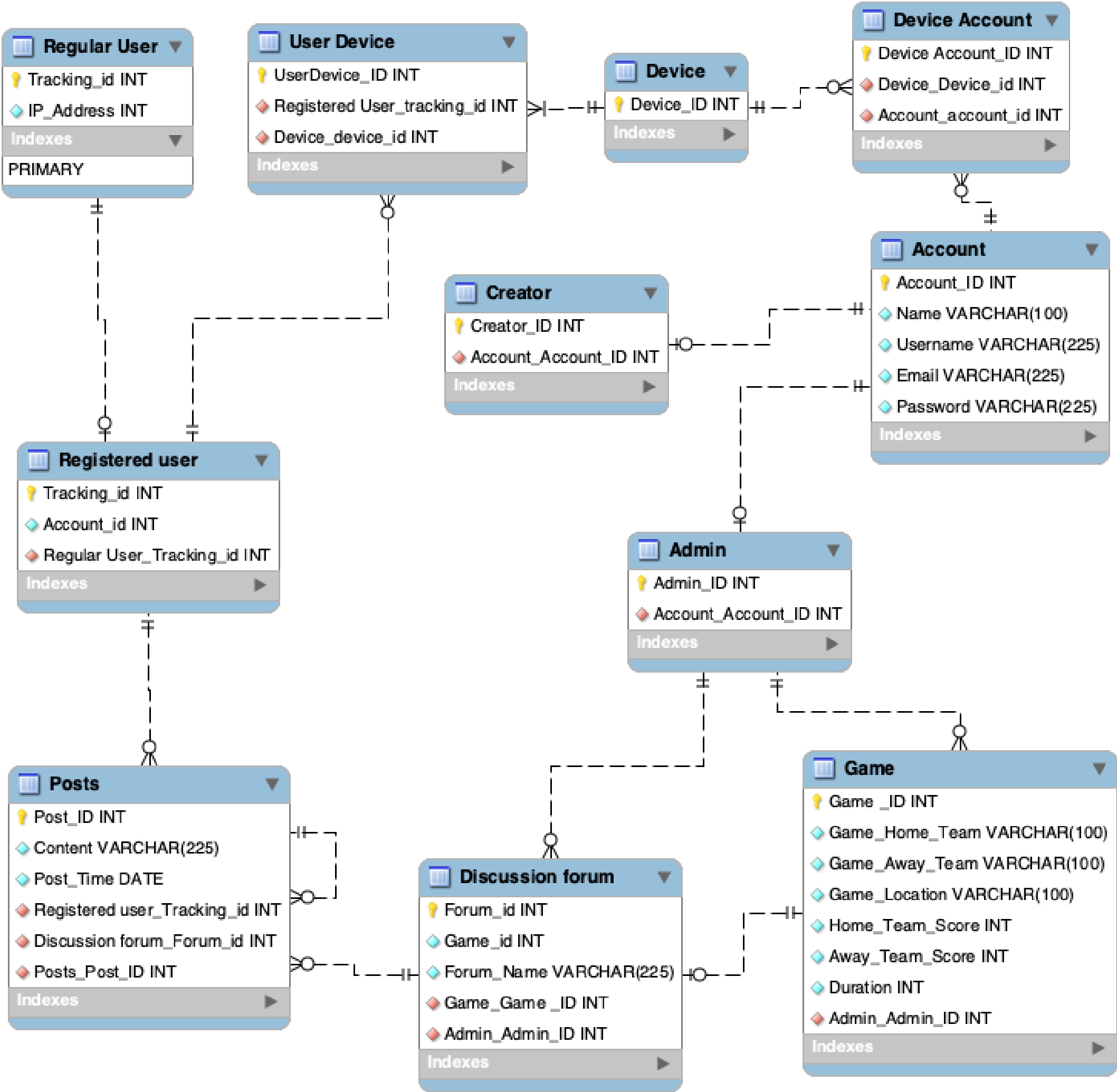
Device (Strong)

Device\_ID (INT, PK, Not null)

Entity Relationship Diagram (ERD)



Database Model



Database that will be used

We will use MySQL database as it supports relational databases, and our database administrator is proficient with MySQL.

Media Storage

Our application will only deal with images, and text formats of data. The images will be stored in Google Cloud Storage. Each image will only be in a JPEG or PNG file format, with a maximum size of 5MB. The only entity that will require images are the Articles. Each record in the Article table will point to the URL of the image that is stored in the Google Cloud Storage bucket of our project. The Article table will consist of a field that has a datatype of VARCHAR (255). The field will store the URL of the thumbnail of the article. When the front-end requests data from the database, the URL of the image will also be returned, as it is stored in the table. The query to return the articles, that contain the URL of the image is:

```
SELECT * FROM Article, Account WHERE Article_ID = inArticleID AND fk_Author_ID = Account_ID;
```

Since we are returning everything (\*), the URL of the image will also be returned. Here is a sample record of an article thumbnail URL stored in the database.

Article_ID	PostDate	Image_url	Heading
▶ 42	2022-08-01	https://firebasestorage.googleapis.com/v0/b/yoursports-352701.appspot...	LeBron James is the greatest Basketball Player

### Search architecture and implementation

Our search architecture will be implemented for searching articles.

To search our articles, we will use three constraints:

1. Search text specified in the search bar

If a search text is specified, the articles will be filtered according to the text provided in the search bar. To filter articles according to search text, we will use the like operator in our MySQL database to find articles that have a heading that have the same pattern specified as the text that is provided in the search bar.

```
SELECT image_URL,heading,subHeading,posttime,name as `Author`,sport FROM (SELECT image_URL,heading,subHeading,fk_authorid,posttime,sport FROM Article WHERE (heading LIKE CONCAT('%',inSearchText,'%') OR inSearchText is NULL) ) AS Articles JOIN RegisteredUser ON user_id = Articles.fk_authorid ORDER BY posttime DESC;
```

2. Date filter provided in the filter panel

If we only filter articles by date, we will return all the articles that have been posted after and including the date that has been specified in the filter.

```
SELECT image_URL,heading,subHeading,posttime,name as `Author`,sport FROM (SELECT image_URL,heading,subHeading,fk_authorid,posttime,sport FROM Article WHERE (posttime >= inPostdate OR inPostdate is NULL)) AS Articles JOIN RegisteredUser ON user_id = Articles.fk_authorid ORDER BY posttime DESC;
```

3. Sport type filter provided in the filter panel

If we only filter articles via the type of sport, we will return all the articles that talk about the sport specified in the filter.

```
SELECT image_URL,heading,subHeading,posttime,name as `Author`,sport FROM (SELECT image_URL,heading,subHeading,fk_authorid,posttime,sport FROM Article WHERE (sport = inSport OR inSport is NULL )) AS Articles JOIN RegisteredUser ON user_id = Articles.fk_authorid ORDER BY posttime DESC;
```

Combining the conditions for all the three filters will result in a search query like the one below.

```
SELECT image_URL,heading,subHeading,posttime,name as `Author`,sport FROM (SELECT image_URL,heading,subHeading,fk_authorid,posttime,sport FROM Article WHERE (posttime >= inPostdate OR inPostdate is NULL) AND (sport = inSport OR inSport is NULL ) AND (heading LIKE CONCAT('%',inSearchText,'%') OR inSearchText is NULL)) AS Articles JOIN RegisteredUser ON user_id = Articles.fk_authorid ORDER BY posttime DESC;
```

If we don't specify any filters, then all articles in the database will be returned.

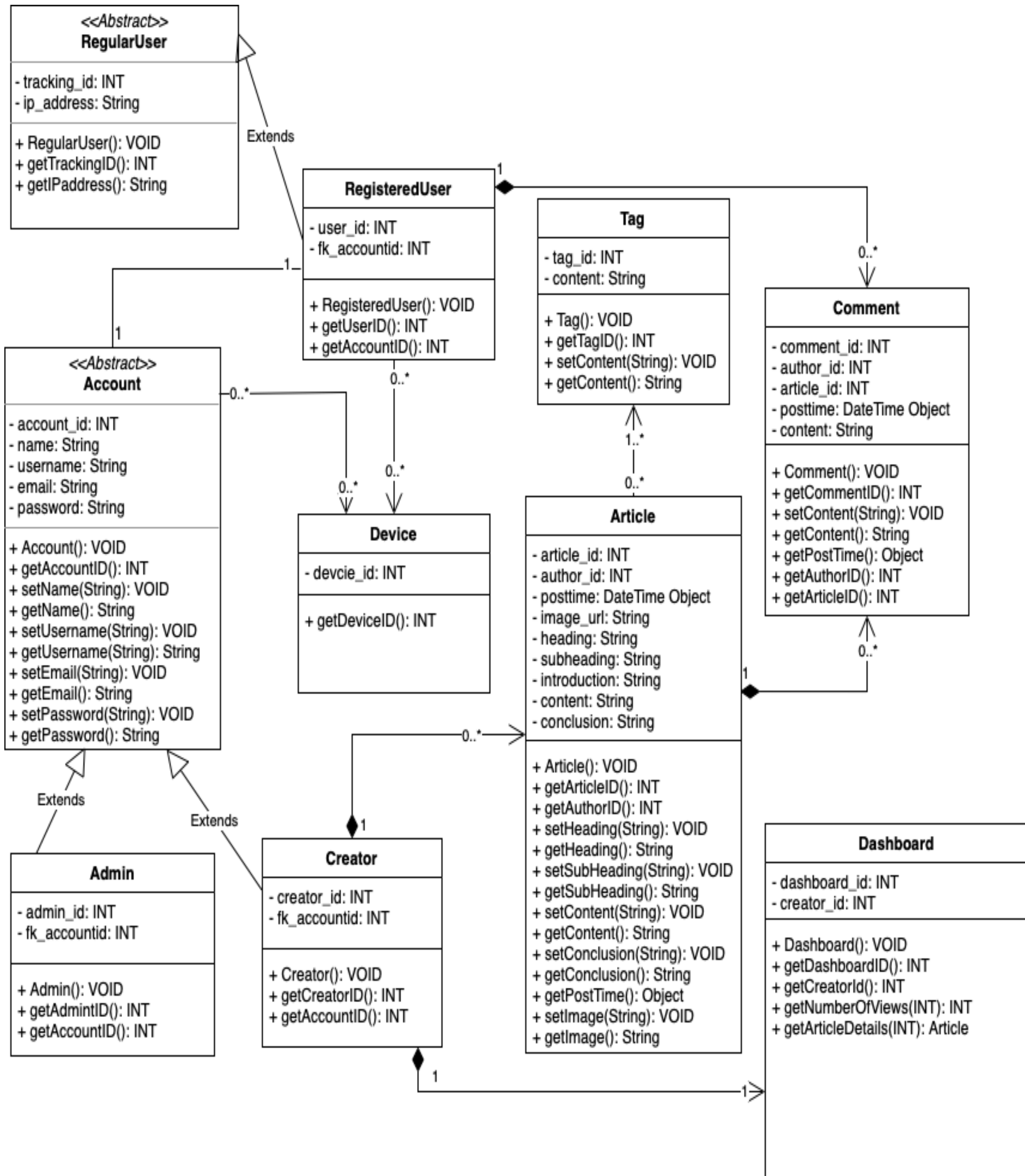
All articles returned from the backend service to the user will be organized according to the date they were posted in descending order. This basically means that users will be able to view the latest articles on the website.

The properties returned from the database for each article are the:

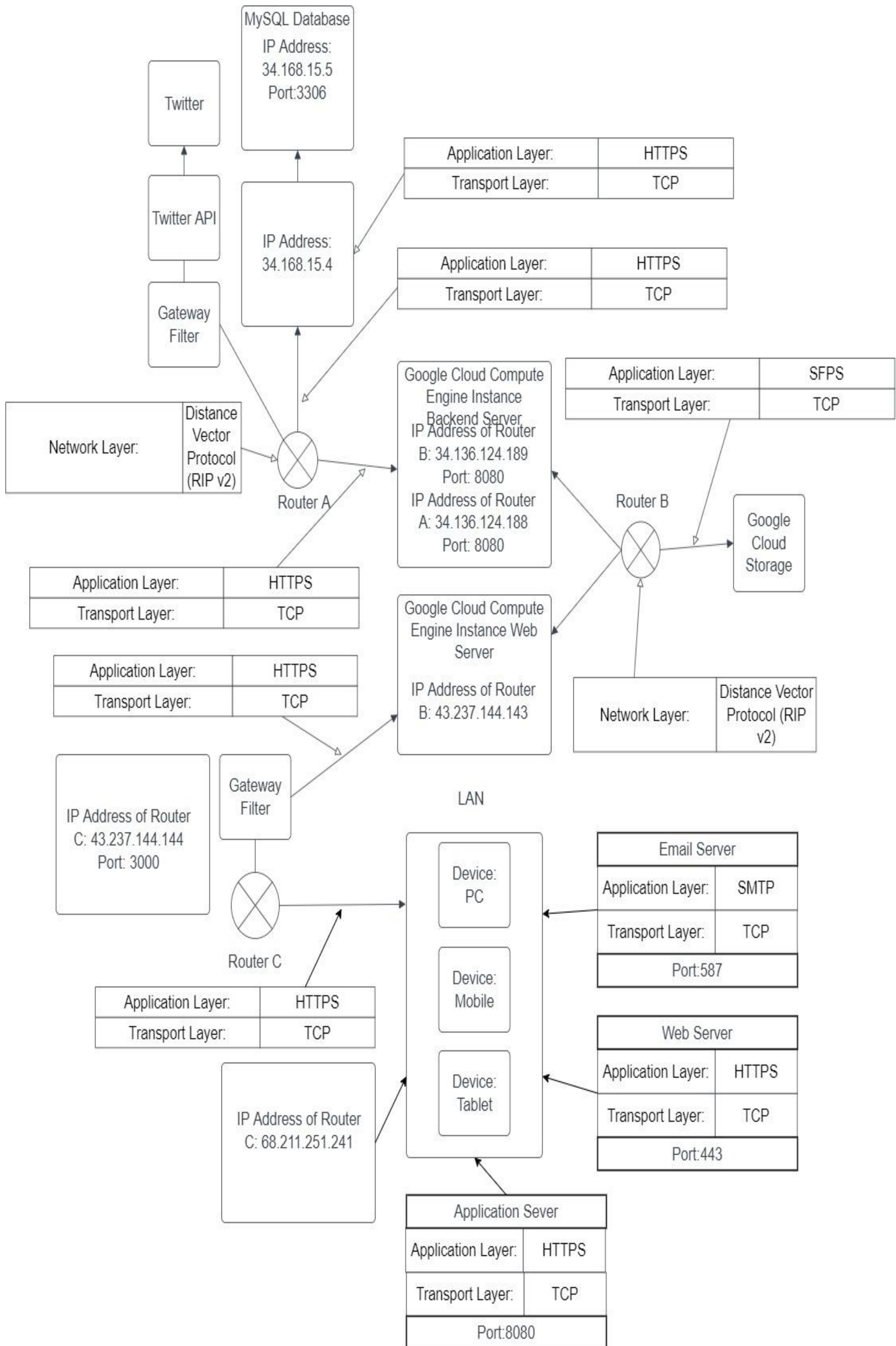
- image\_URL
  - > This is the thumbnail image of the article.
- heading
  - > This is the title of the article.
- subHeading
  - > This is the subHeading of the article.
- posttime
  - > This is the date and time the article was posted.
- sport
  - > This is the sport that the article is providing information for.
- Author
  - > This is the name of the author who created the article.

## High Level Diagram

### UML Diagram

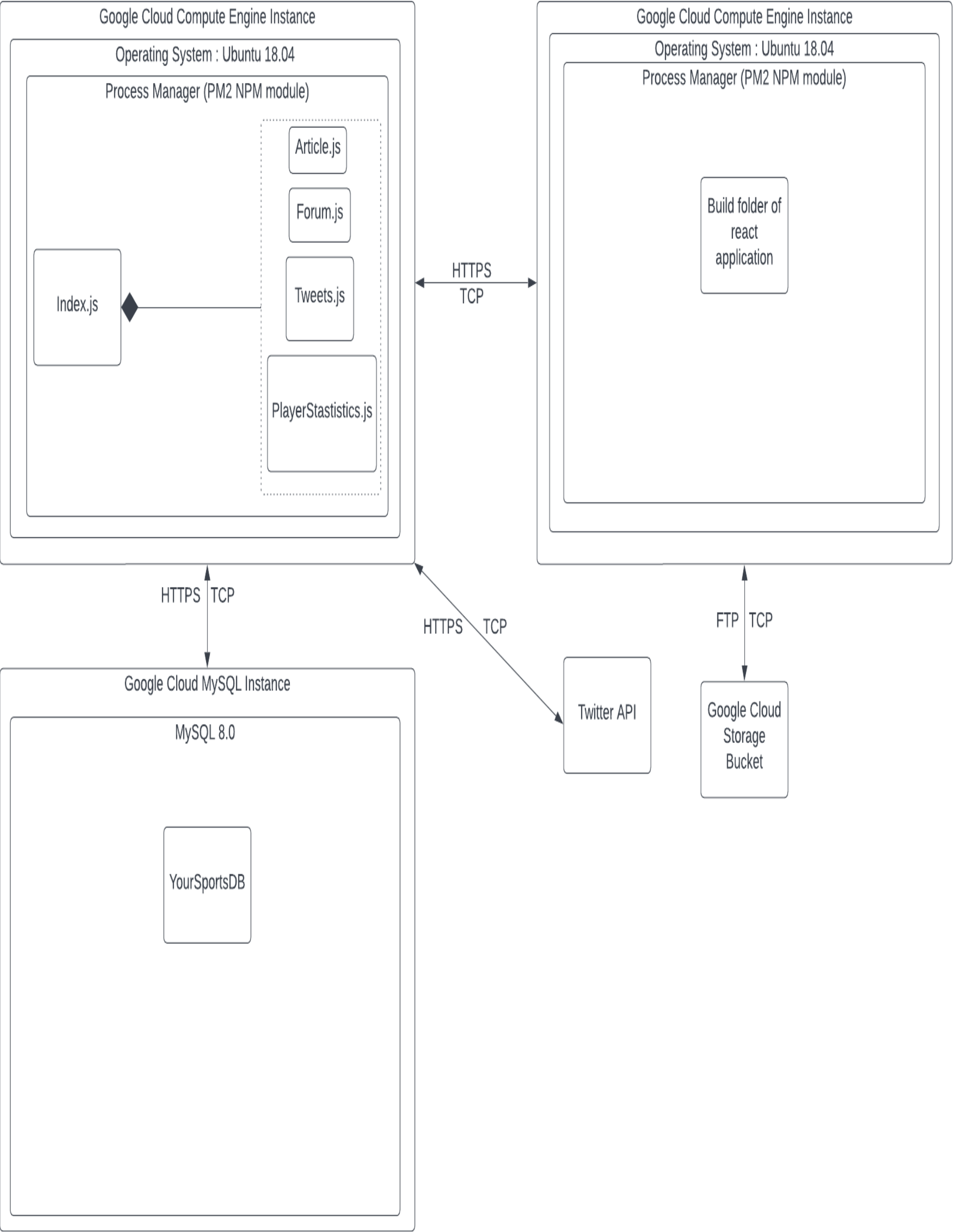


## Application Network Diagram





Deployment Diagram





## List of Team Contributions

### Kshitiz Sareen (Team Lead, Back-end Lead)

Helped in creating the Posting News Articles wireframes, Following Sports games wireframes, and Checking Player Statistics wireframes. Organized team meetings and set team agendas

### Kevin Islas (Front-end Lead)

Helped in implementing the front end for the games feature and player statistics. Provided insight on the course of the individual webpages.

### Shamar Ireland (Front-end Developer)

Helped in implementing new front end features such as Uploading Articles and Dashboard. Also helped to update the login, signup and account settings page.

### Wenye Guo (Database Administrator)

Helped in adding new requirements, and in high level database architecture and organization.

### Sabur Saigani (Functional Lead)

Helped in adding new requirements, and in high level database architecture and organization

### Jonathan Ip (Functional Assistant)

Helped in rearranging functional requirements. Also helped in formatting and organizing the documentation's layout as well as checking the documentation's grammar.

### Mathew O Abiola (Github Master)

Helped in creating the Sign Up wireframes, and Checking Sports News wireframes.



## Horizontal prototype feedback

### Home page

1. Font size: Welcome part bigger, nav bar smaller
2. Filter part bigger
3. Filter Sports type show selected result, same as date
4. search meaningless word, need feedbacks(

**Your search - ... - did not match any documents.**

**Suggestions:**

- Make sure all words are spelled correctly.
- Try different keywords.
- Try more general keywords.

)

### Game page

1. Navbar suggestion need change
2. Detailed info position is incorrect
3. Add some explanation about this page to guide user, same as "welcome" in home page

### Signup

1. password/username... add requirements
2. Terms of service should be mandatory(services should be a link to another page)
3. add a link to login

### Login

1. Add "forget password", a link to reset password page
2. Add "create a new account", a link to signup page

### Player page

1. Need to change the layout

### Upload articles

1. All put in the Left, waste space

### Setting

1. Reset password page need to implement
2. Add footer(links of social media or some contact info)