Software Capstone Proposal
Bet Tracker

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Contents

Paragraph Description

This web app will allow users to log bets (or just guesses if one is not inclined to bet) on NHL games. Sports bettors need a way to keep track of what they are betting (or guessing) on and their profit/loss and accuracy. This application is an electronic log that will allow users to record their bets and money placed on the outcome of major league sporting events based on their sportsbook's odds. This is useful for someone who wants more functionality than what a simple spreadsheet can offer.

Note: the games can be from some or all of NHL, NBA, NFL, etc. I plan on starting with NHL games and see if it's practical to add others.
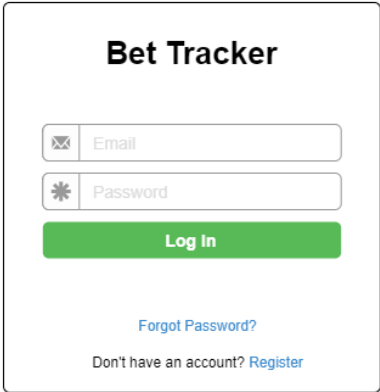
Application Type and Technologies

This will be a web application developed in Visual Studio using the open-sourced ASP.NET Core MVC framework from Microsoft. It will be deployed in the cloud as an Azure app service, have a SQL server backend, and use various HTML/CSS/JS tools for the frontend (e.g. Bootstrap, jQuery, and Datatables).

Functionality Chart

#	Feature	User (Role 1)	Admin (Role 2)
-	CRUD on NHL games (main collection):		
1	- Create new NHL game bet/guess		
2	- View NHL games bet/guessed on		
3	o Search on any field	X	
4	o Search on range		
5	o Display tabled/grid with pagination		
6	- Update NHL game bet/guessed on		
7	- Delete NHL game bet/guessed on		
8	Report of games guessed based on date range	X	
9	Chart to show guessing accuracy over date range	X	
10	Chart to show money profit/loss over date range	X	
-	'Favourite' Teams view:		
11	- List teams and have ability to designate as favourite	X	
12	- Display next 5 games for favourite teams		
-	Site metrics/charts:		
13	- Number of users		
14	- Number of bets/guesses made		X
15	- Accuracy of bets/guesses made		
16	Automatically fetch NHL game data (the event information)		X
17	Ability to manually modify NHL game data		X

Screen Mockups

Figure 1: Home Page

This is the Home page of the website with login fields, an email and password, for existing users to log in. A user will receive an error message if the login credentials are incorrect.

A user who has forgotten their password can click the "Forgot Password?" link to start the password recovery process. A new user who wishes to create an account can click the "Register" link to start the registration process.
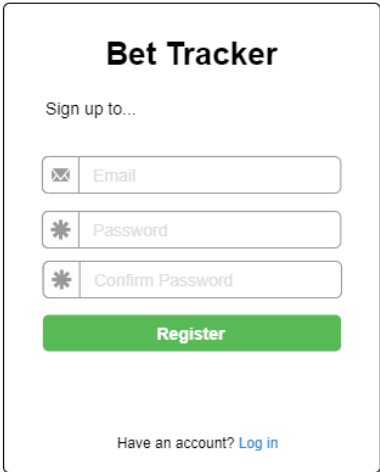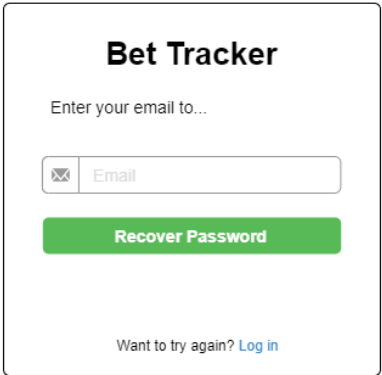
Figure 2: Register

This is the Registration page for new users who wish to create an account. It is a simple registration page with fields for email, password, and password confirmation. The application will validate: the format of the email, the password length is at least 8 characters, and the password fields match.

There is a link to go to the login screen in case the user finds themselves on this page by mistake.

Figure 3: Password Recovery

This is the Password Recovery page that prompts the user for their login email. Upon clicking "Recover Password" the user will receive an email with a temporary password to use to log in. The user will receive an error message instead if the entered email does not exist in the application database.

Figure 4: Profile

This is the Profile page for a user to change their login email or their password. There are email and password fields that will have validation to ensure the correct values have been entered.

Figure 5: View Games

This is the View Games page for the user to view a list of available games and create a bet record. The table will have options for showing, sorting, searching, and paging the results.

Clicking "Create Bet" will reveal a modal, shown below the footer in Figure 5, with details and input fields to record information. Note that in the live version the modal will in the center of the screen.

In the "Create Bet" Modal the user will be able to select which team and the bet type for their bet along with any appropriate value (for spreads and totals), odds, and amount (if wagering money). Upon clicking "Create", the bet record will appear in the user's "My Bets" page.

For Admins, there will be additional features to "Fetch NHL Games" and manually "Edit" the games in the list. These features will also update the scores of completed games. These links will not be visible to a non-admin (regular) user.

Figure 6: My Bets

This is the My Bets page for the user to view a list of their created. The table will have options for showing, sorting, searching (on any field and/or by a range type), and paging the results. The user can also update their bet record or delete it. Edits will occur inline in the table. Deleting will prompt the user to confirm before the record is deleted.

Note that this page will only show pending bets. To see historical bets the user will use a report under Statistics.

Figure 7: Favourite Teams

This is the Favourite Teams page for a user to keep track and view the schedule of their favourite teams. All teams will be listed in the first section where a user can click to toggle a team as favourite. A star will appear next to the team name and their schedule will appear in the table below. All favourite teams will be listed with their next 5 scheduled games.
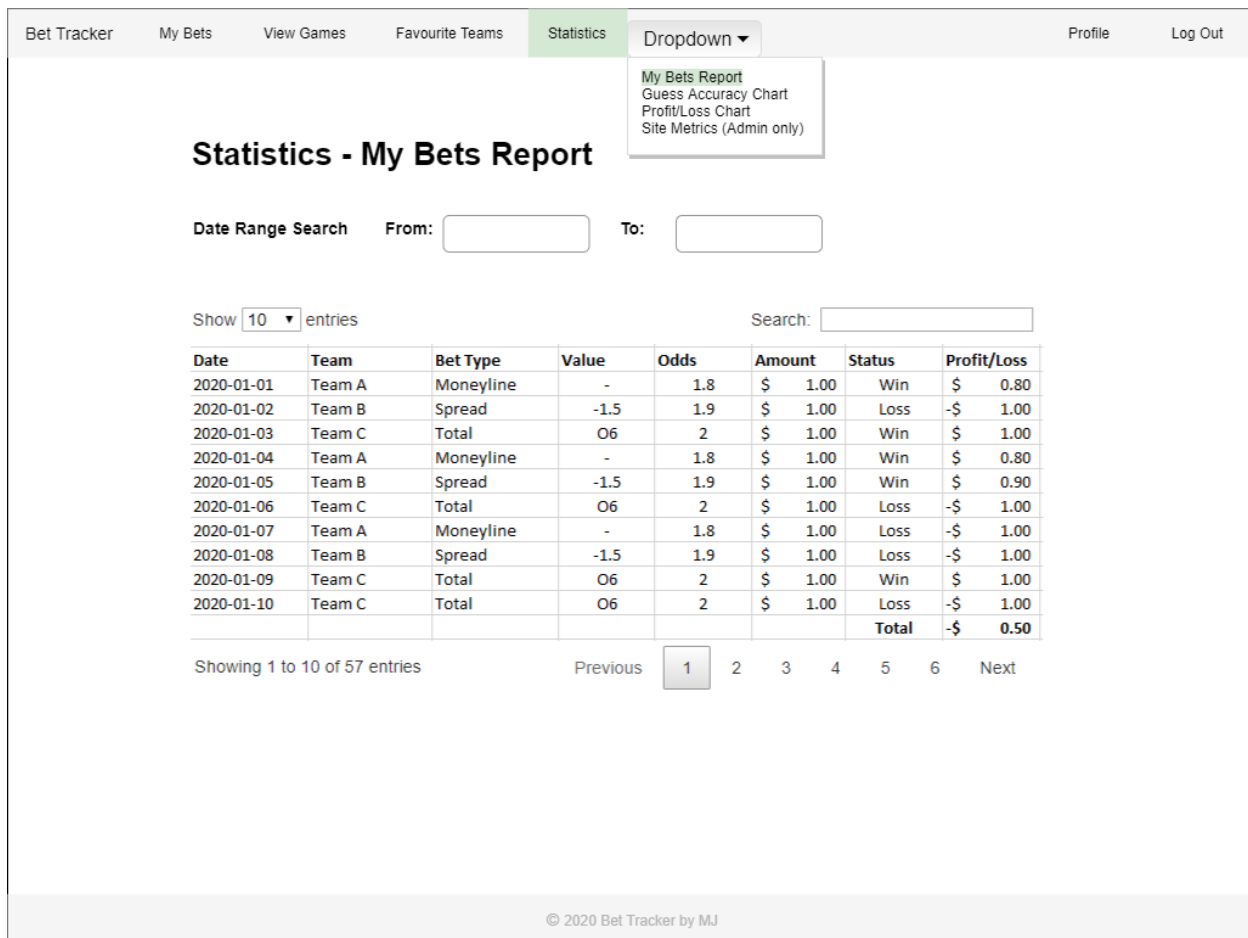
Figure 8: Statistics – My Bets Report

This is the My Bets Report page for a user to view a list of their settled bets based on a date range. The table will have options for showing, sorting, searching (on any field and/or by a date range), and paging the results. The table has a total row to show the overall Profit/Loss for the date range. Note that this page only shows settled bets. To see pending bets the user will use the My Bets page.
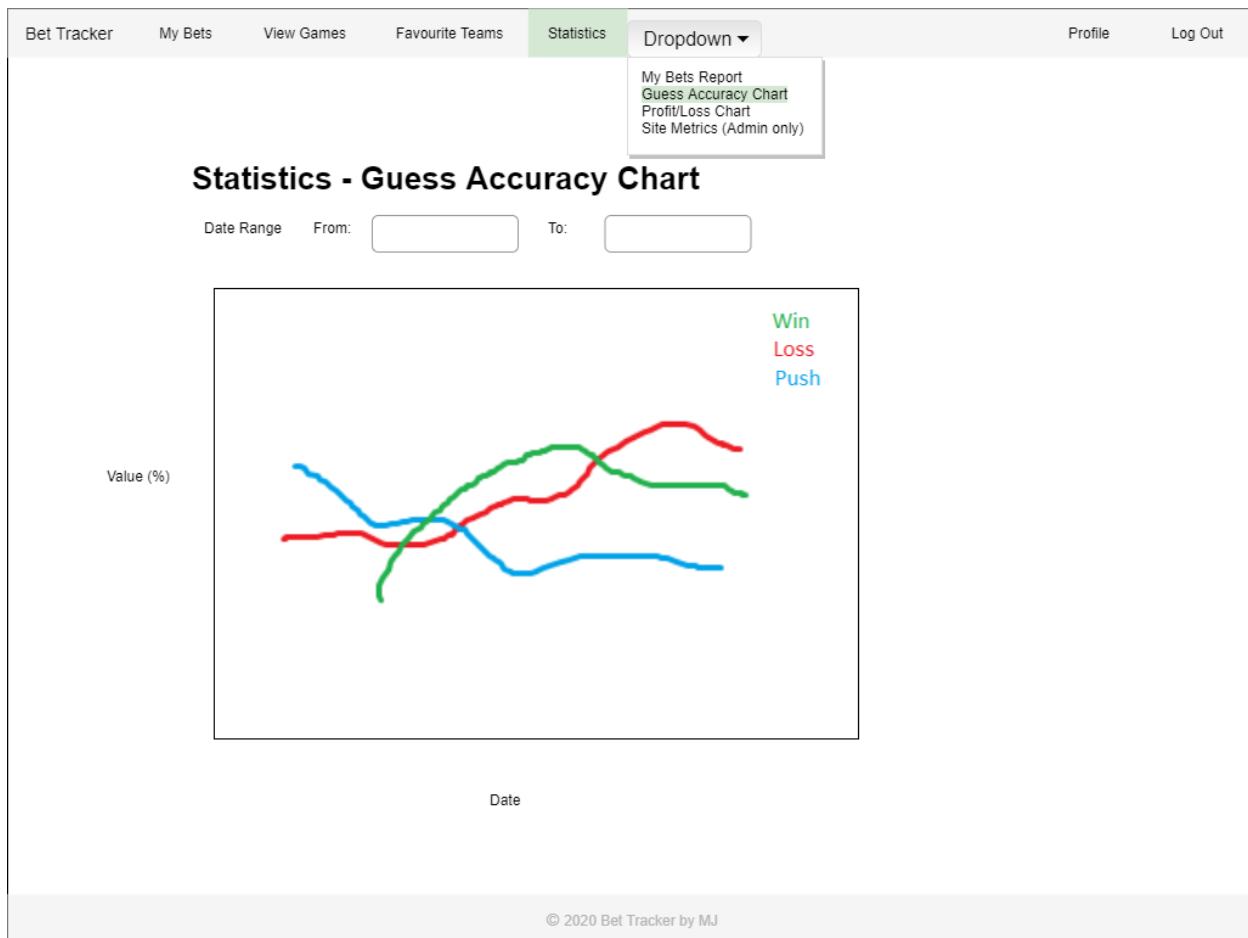
Figure 9: Statistics – Guess Accuracy Chart

This is the Guess Accuracy Chart page for a user to view their guessing accuracy for settled bets for a date range. There will be three lines for Win, Loss, and Push (when a bet gets cancelled).
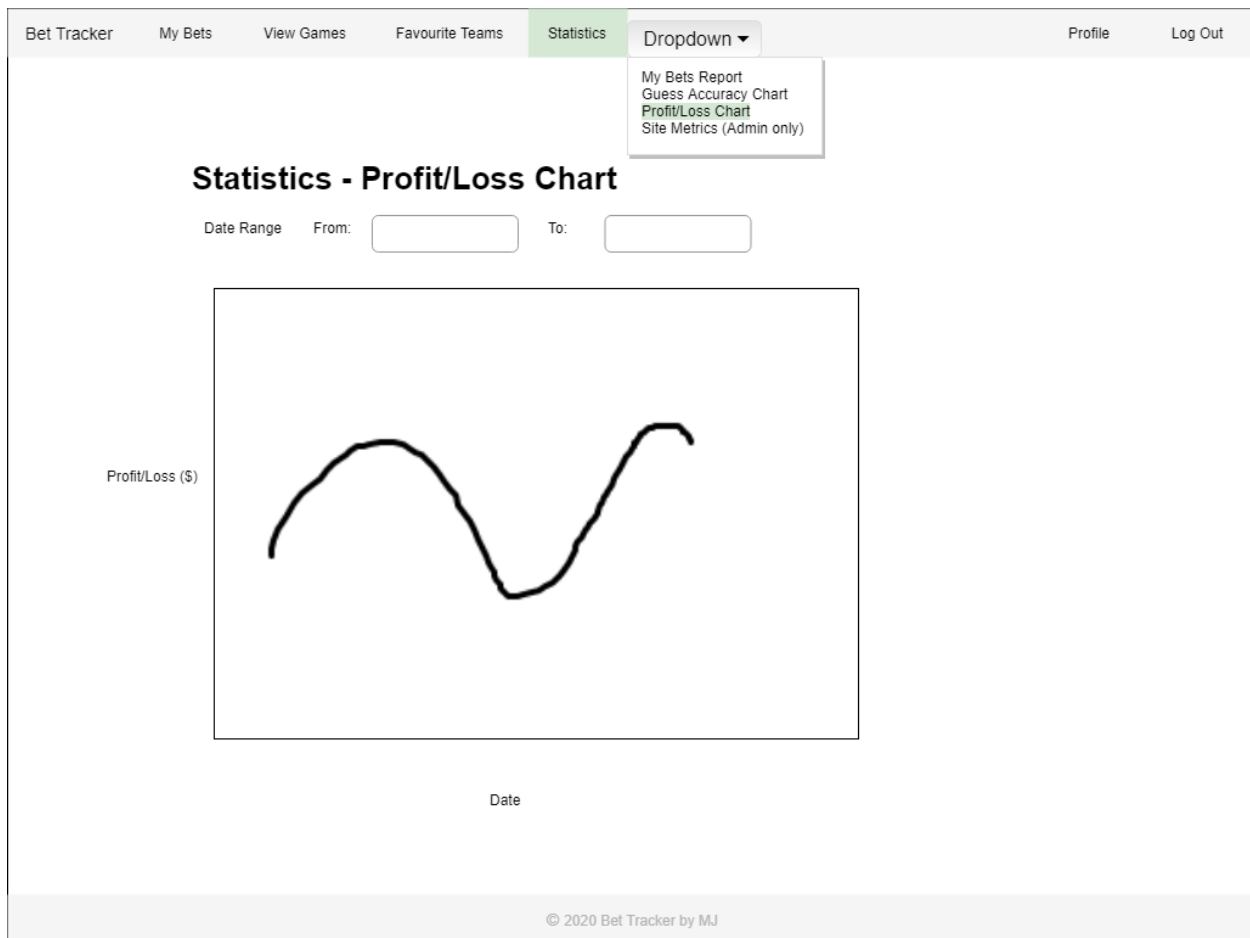
Figure 10: Statistics – Profit/Loss Chart

This is the Profit/Loss Chart page for a user to view their profit/loss for settled bets for a date range.
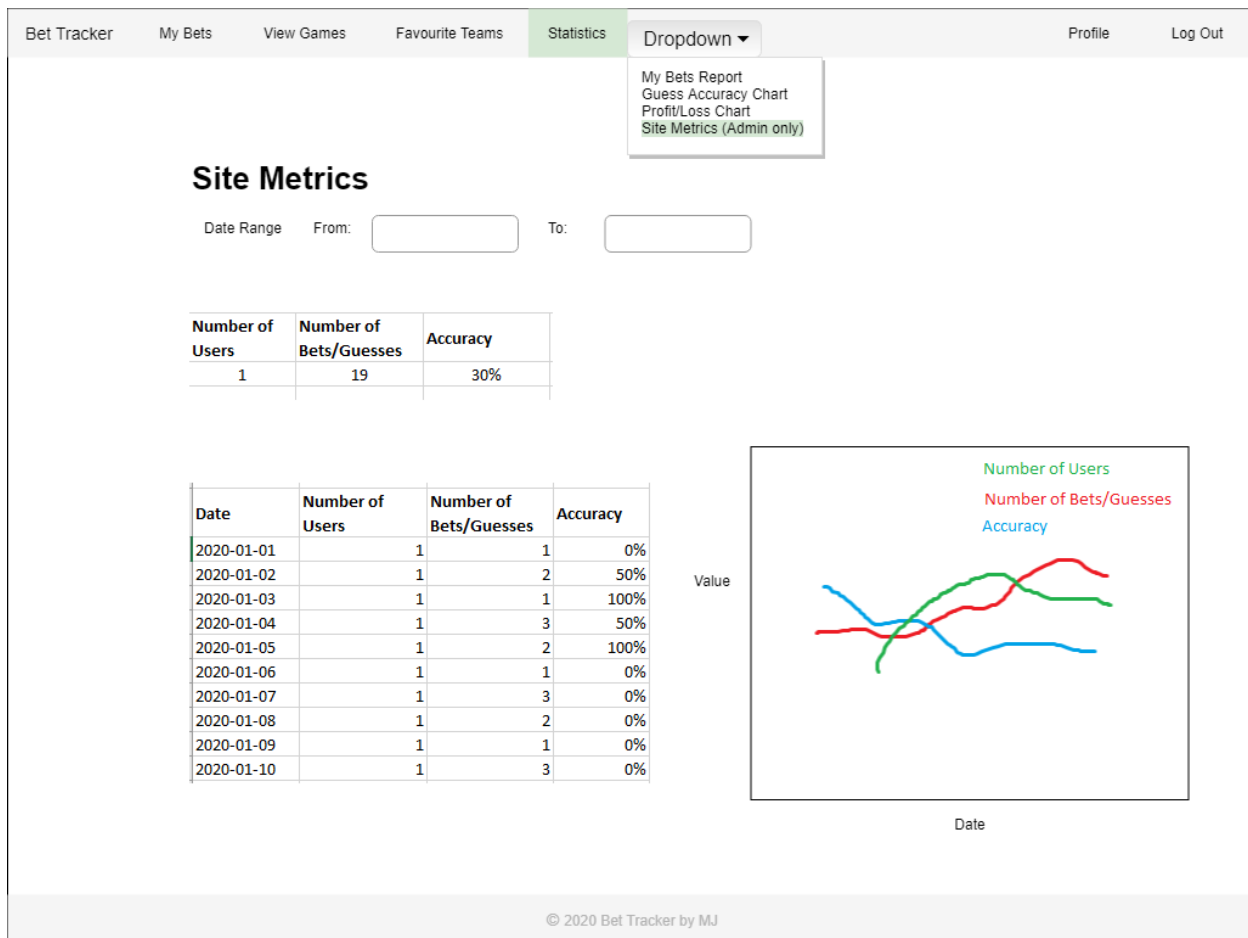
Figure 11: Statistics – Site Metrics

This is the Site Metrics page for an admin user to view site metrics and a chart for a date range to display the number of users, number of bets/guesses made, and the accuracy of bets/guesses made. There will be a summary table for the selected date range and another table to show the statistics for individual dates. The table will have options for showing, sorting, and paging the results.

Database Schema

Figure 12: Application Entity Relationship Diagram (ERD)

Test Plan

Unit tests will be created using Selenium to test the various features of the application using the following plan:

Account Management
1. Create a user:
    a. Fail validation
    b. Pass validation (email format, password length 8+ chars, fields match)
2. Log in as a user
3. Verify Admin only features cannot be seen
4. Log out as a user
5. Change email
6. Change password
7. Password recovery

Admin Features (note: an admin user will be created as part of development)
1. Automatically fetch NHL game data
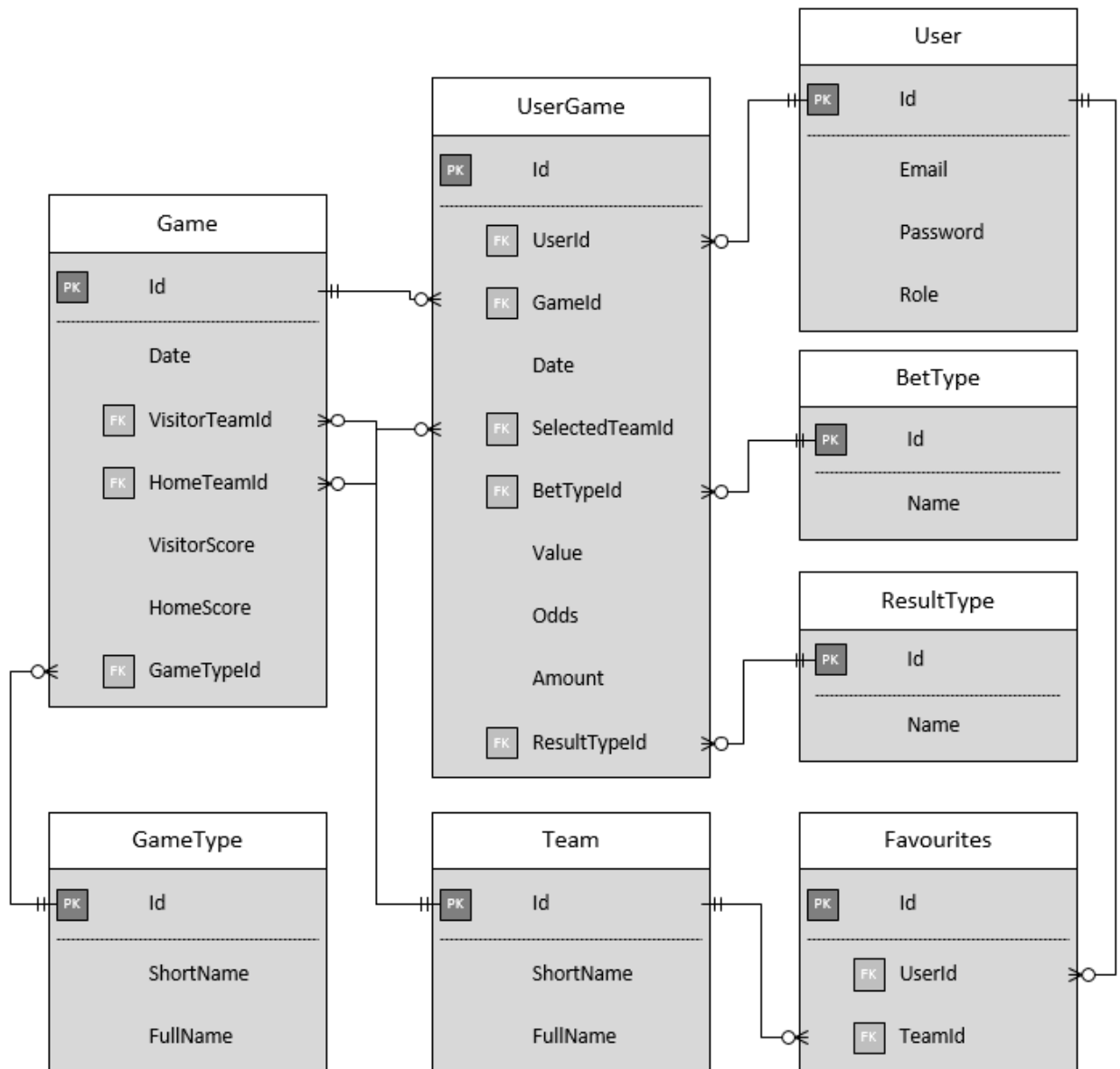2. Manually edit game data
3. Display site metrics

User Features (note: multiple test users will be created)
1. View Games, test the View Games table features:
    a. Showing
    b. Sorting
    c. Searching
    d. Paging
2. Create bet record
3. My Bets, Test the View My Bets table features (like #1 and add):
    a. Ranged Searching:
        i. Date
        ii. Odds
        iii. Amount
4. Modify bet record
5. Delete bet record
6. Favourite Teams:
    a. Toggle favourite team yes (verify scheduled games appear in table)
    b. Toggle favourite team no (verify scheduled games disappear in table)
7. Statistics:
    a. My Bets Report, Test the View My Bets table features (like #3 and add):
        i. Verify Total column accuracy
    b. Guess Accuracy Chart, test Guess Accuracy Chart date range search
    c. Profit/Loss Chart, test Profit/Loss Chart date range search

Deliverables Timeline (Project Plan)

Week	Start Date	Finish Date	Task/Deliverable Description
1	9/8/2020	9/11/2020	- Set up development environment - Create models and database
2	9/14/2020	9/18/2020	- Develop account management features: login page, password recovery, user profile
3	9/21/2020	9/25/2020	- Create an admin account - Create unit tests for account management per test plan (defer Admin only test) - Run unit tests - Bug fixes and rerunning unit tests
4	9/28/2020	10/2/2020	- Develop admin features (defer site metrics) - Deploy to Azure
5	10/5/2020	10/9/2020	- Create unit tests for admin features per plan (defer site metrics test) - Create unit test for deferred Admin only test - Run new unit tests - Bug fixes and rerunning unit tests
6	10/12/2020	10/16/2020	- Develop user feature View Games - Develop user feature create a bet
7	10/19/2020	10/23/2020	- Develop user feature My Bets - Develop user feature Favourites
8	10/26/2020	10/30/2020	- Develop user features Statistics - Start creating unit tests for all user features
9	11/2/2020	11/6/2020	- Finish creating unit tests for all user features - Run new unit tests - Bug fixes and rerunning unit tests
10	11/9/2020	11/13/2020	- Create admin site metrics features - Create unit test for admin site metrics - Run new unit tests - Bug fixes and rerunning unit tests
11*	11/16/2020	11/20/2020	- Bug fixes and rerunning unit tests *Early deadline for Bonus 10%
12	11/23/2020	11/27/2020	- Final testing - Create project report
13	11/30/2020	12/4/2020	- Finish project report