

## CPSC 471: Final Report

**G52**

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### **Abstract**

As specified in our project proposal, our group project focuses on providing an easy to use platform for organizing and registering sports tournaments. Tournaments are events that require storing data, tracking data, modifying data and distributing data to participants and organizers. Without a user-friendly way of storing and displaying the information required to host a tournament, the organization of the tournament can become a considerable inconvenience. For a tournament to be properly organized and resistant to tampering, the information regarding a tournament should only be modifiable by the tournament organizer of that tournament. Players that register in tournaments should be offered a means to view information about a specific tournament but should not have permission to alter the database. The database itself holds information about any given tournament such as: the tournament itself, teams participating in the tournament, players who play on those teams, games played during the tournament, etc. With this in mind, our project offers a simple solution for tournament organizers to easily create/modify tournaments, and for participants to register and access information about those tournaments.

### **Introduction**

Tournaments are events seen throughout sports, and they are very popular. However, many amateur sports lack organizations to plan and organize tournaments, unlike their professional counterparts. This causes many amateur sports, especially in more funded areas, to have to go without tournaments. These tournaments are complex and require the tracking of a vast amount of information, even for a simple one. This information must be stored and shared with the appropriate parties, namely players, and this high level of required coordination increases the difficulty of putting on a tournament. Information such as game times, participating teams and players, referees, fields, and much more must be stored and easily accessible by the tournament organizers for modification or deletion. Players must also have quick access to much of this information, so they know when their games are, what fields they are playing on, what the results of previous games were, etc. To keep track of this by pencil and paper, or by spreadsheet on a computer would be incredibly cumbersome, and this problem lends itself perfectly to a web application which interfaces with an API and database.

As such, our solution to the above problem is a website that offers access to a tournament's information depending on the user. A normal user/player can create an account and log in to our website in order to register into and display information of tournaments they wish to attend. However, they are not given the option to alter or add tournaments or data of an existing tournament. The tournament organizers are given all of the functionalities of a normal user/player with the additional permissions to modify, add, and delete tournament information. Our interface uses minimal typed input, relying on

dropdown menus whenever possible. These functionalities are explored in detail in the following section.

## **Project Design**

Here we will discuss the different end users of our system, and the functionalities presented to them by our system.

### 1) Normal User/Player

- Registration: A user can create an account to our website with a unique username and a password. A user must have a registered account to Log In/Log Out.
- Log In/Log Out: A user can log into their account with their unique username and password to access the rest of the user functionalities. Once a user is logged in, they can log out, taking them back to the home screen. A user must be logged in for the remaining functionalities.
- View Teams: A user can view Teams participating in a given Tournament when they select a Tournament's ID.
- View Fields: A user can view the Fields for a given Tournament when they select a Tournament's ID.
- View Players: A user can view Players on a specific Team when they select a Team's name
- View Games: A user can view the Games held in a given Tournament when they select a Tournament's ID.
- View Game Summaries: A user can view summaries for Games that have been played in a given Tournament, when they select that Tournament's ID.
- View Tournaments: A user can view all Tournaments in the database.

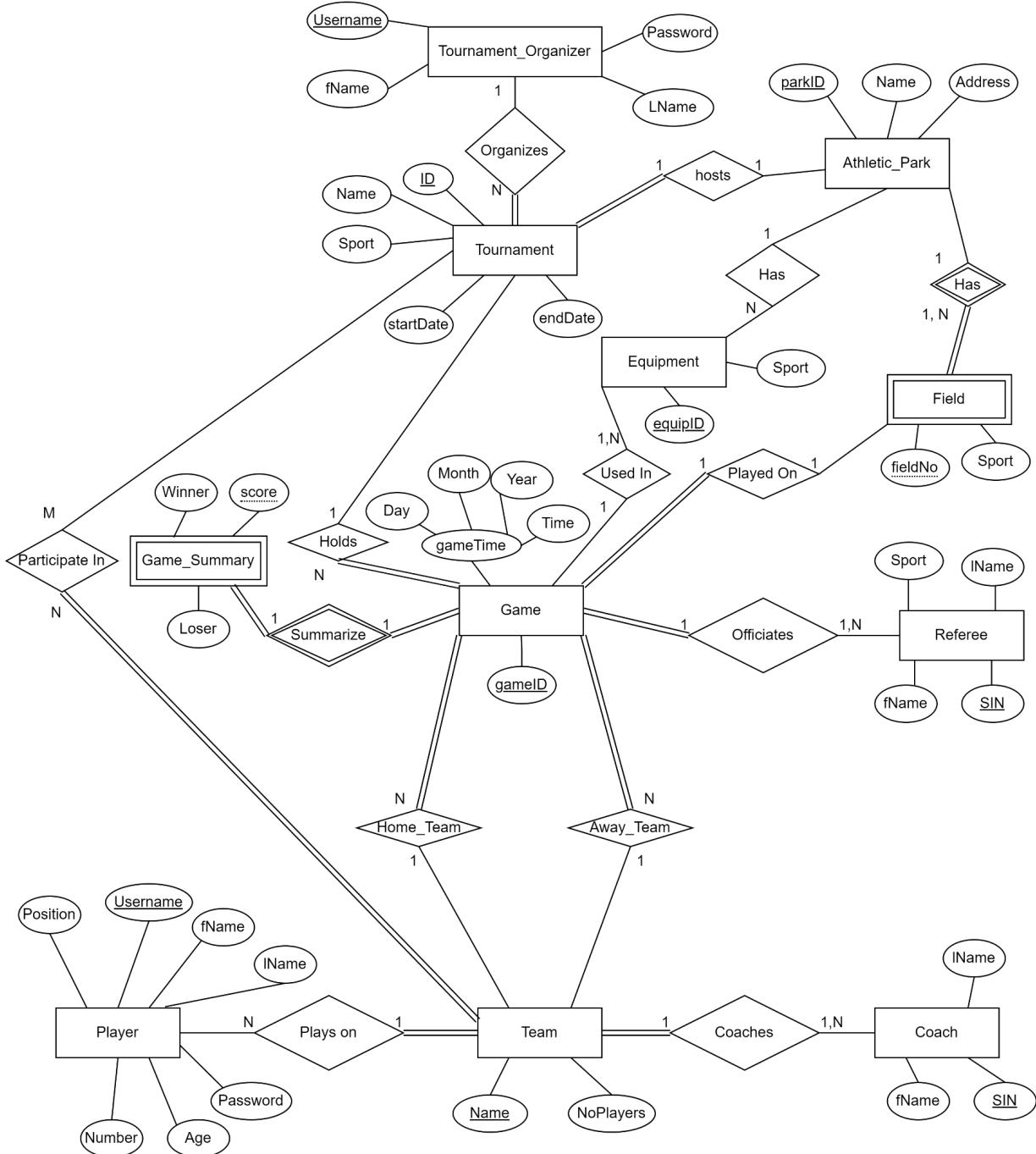
### 2) Tournament Organizer (TO):

- Registration: A Tournament Organizer can create an account to our website with a unique username and password similar to the user, however they have access to different functionalities with a tournament organizer account. A Tournament Organizer must create an account to Log In/Log Out.
- Log In/Log Out: A Tournament Organizer can log into their account with their unique username and password. Once a Tournament Organizer is logged in, they can log out, taking them back to the home screen. A Tournament Organizer must be logged in for the remaining functionalities.
- View Tournament: A TO can view all Tournaments in the database.
- Add Tournament: A TO can add a Tournament to the database by inputting information into a form which contains fields for all attributes of a Tournament.
- Update Tournament: A TO can update an existing Tournament by selecting an existing Tournament ID, and supplying values to the rest of the update form.
- Delete Tournament: A TO can delete an existing Tournament by selecting a Tournament ID.
- View Athletic Park: A TO can view all Athletic Parks in the database.

- Add Athletic Park: A TO can add an Athletic Park by inputting information into a form which contains fields for all of the attributes of an Athletic Park.
- Update Athletic Park: A TO can update an Athletic Park by selecting the park ID of an existing Athletic Park, and supplying values for the remaining attributes via an update form.
- Delete Athletic Park: A TO can delete an Athletic Park by selecting an existing Athletic Park to delete.
- View Equipment: A TO can view all Equipment in the database.
- Add Equipment: A TO can add Equipment by filling out a form that contains fields for all attributes of Equipment
- Update Equipment: A TO can update a piece of equipment by selecting the Equipment ID of an existing piece of information, and supplying the rest of the attributes in an update form.
- Delete Equipment: A TO can delete an existing piece of Equipment by selecting an Equipment ID
- View Field: A TO can view all Fields for a given Tournament when they select a Tournament's ID.
- Add Field: A TO can add a Field by inputting information into a form containing fields for all of a Fields attributes.
- Update Field: A TO can update a Field by selecting a Field Number, Game ID, and Park ID for an existing field and supplying information for the rest of the attributes.
- Delete Field: A TO can delete a Field by selecting the Field Number, Game ID, and Park ID for an existing field.
- View Game: A TO can view all Games within a Tournament when they select a Tournament ID.
- Add Game: A TO can add a Game by filling out a form containing all fields for all attributes of a Game.
- Update Game: A TO can update a Game by selecting a GameID from an existing Game and filling out the rest of the update form.
- Delete Game: A TO can delete a Game by selecting a Game ID for an existing Game.
- View Game Summary: A TO can view all Game Summaries for Games played in a particular Tournament by selecting the Tournament's ID.
- Add Game Summary: A TO can add a Game Summary by filling out a form containing fields for all the attributes of a Game Summary.
- Update Game Summary: A TO can update a Game Summary by selecting the score and Game ID for an existing game summary, and filling out the rest of an update form.
- Delete Game Summary: A TO can delete a Game Summary by selecting the score and Game ID for an existing Game Summary.
- View Referee: A TO can view all Referees in the database.
- Add Referee: A TO can add a Referee by filling out a form containing fields for all the attributes of a Referee.

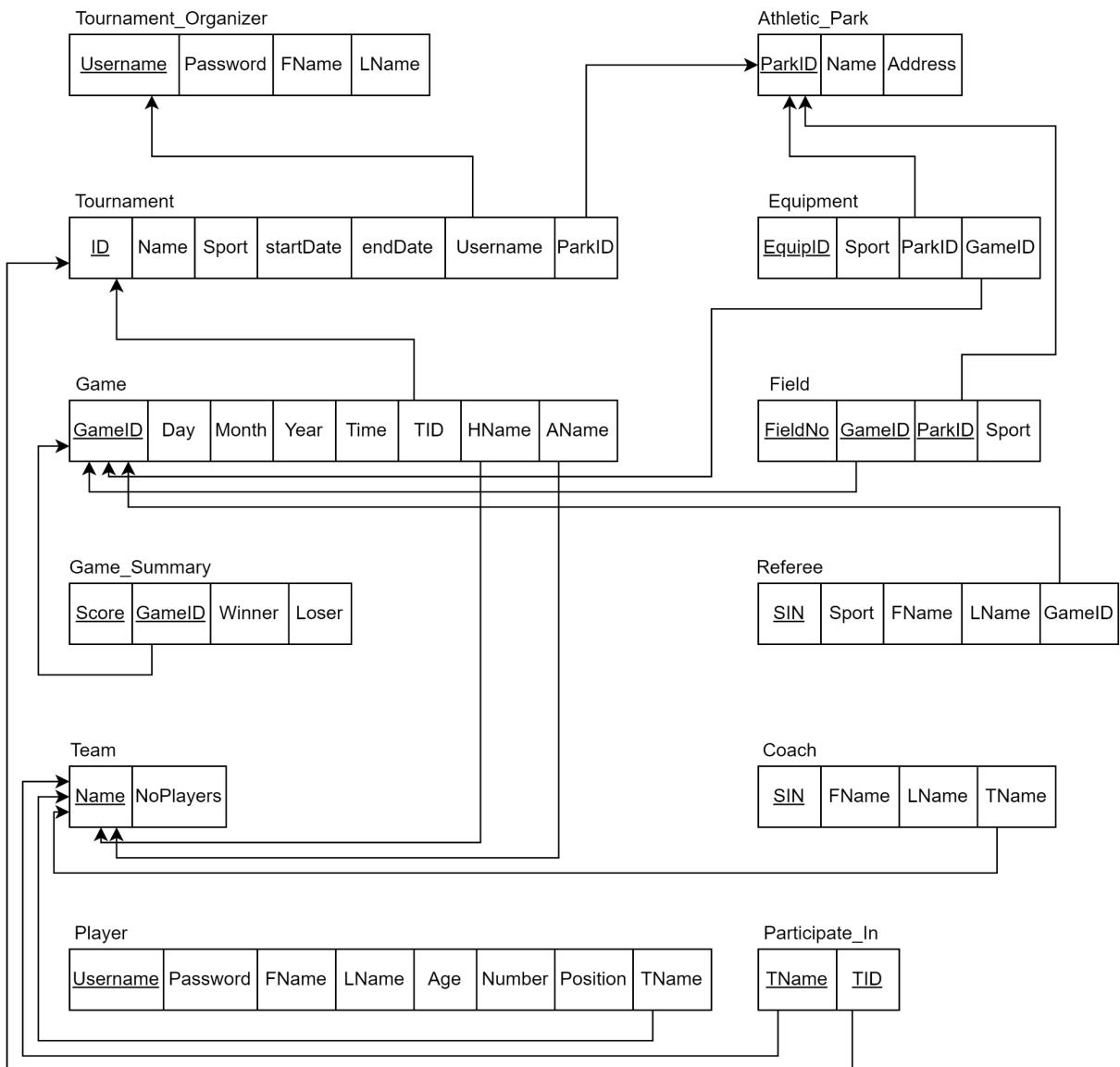
- Update Referee: A TO can update a Referee by selecting the SIN of an existing Referee and filling out the rest of the update form.
- Delete Referee: A TO can delete a Referee by selecting the SIN of an existing Referee.
- View Coaches: A TO can view all Coaches in the database.
- Add Coach: A TO can add a Coach by filling out a form with fields for all the attributes of a Coach.
- Update Coach: A TO can update a Coach by selecting the SIN of an existing Coach and filling out the rest of an update form.
- Delete Coach: A TO can delete a Coach by selecting the SIN of an existing Coach.
- View Team: A TO can view all Teams within a Tournament when they select a Tournament ID.
- Add Team: A TO can add a Team by filling out a form containing all of the attributes of a Team.
- Update Team: A TO can update a Team by selecting a Team name for an existing Team and filling out the rest of the form.
- Delete Team: A TO can delete a Team by selecting the name of an existing Team.
- View Player: A TO can view all of the Players on a particular Team by selecting the name of that Team.
- Add Player: A TO can add a Player by filling out a form containing all of the attributes of a player.
- Update Player: A TO can update a player by selecting a username for an existing Player and filling out the rest of an update form.
- Delete Player: A TO can delete a Player by selecting the username of an existing Player.
- View Participate In: A TO can view all Participate In tuples in the database.
- Add Participate In: A TO can add a Participate In tuple by filling out a form containing all of the attributes of a Participate In tuple.
- Delete Participate: A TO can delete a Participate In tuple by selecting the Team name and Tournament ID of an existing Participate In tuple.

ER/EER Diagram: No significant changes were made from the original EERD submission.



## Implementation

Relational Model: No significant changes were made from the original RM submission. This RM was derived by converting the ER/EER Diagram from the previous section using the methods discussed in lecture/tutorial. The RM provides a high-level model for the design of the website's database. The only change made from the previously submit RM is one of the arrows directions was improperly pointing to GameID in field when it should have been pointing away from this attribute to GameID in Game.



### Describing the DBMS:

Please note that all SQL statements that take user input are implemented as stored procedures to prevent SQL injection attacks.

Get all Tournament Organizers

```
SELECT * FROM TournamentOrganizers
```

Login Tournament Organizer

```
SELECT * FROM TournamentOrganizers  
WHERE Username = @Username AND Password = @Password;
```

Register a Tournament Organizer

```
INSERT INTO TournamentOrganizers  
VALUES (@Username, @Password, @FName, @LName);
```

Login Player

```
SELECT * FROM Players  
WHERE Username = @Username AND Password = @Password;
```

Get Player by Username

```
SELECT * FROM Players  
WHERE Username = @Username;
```

Get all Players on a Team

```
SELECT p.Username, p.Password, p.FName, p.LName, p.Age, p.Number, p.Position, p.TName  
FROM Players as p, Teams as t  
WHERE p.TName = t.Name AND t.Name = @TName;
```

Register a Player

```
INSERT INTO Players  
VALUES (@Username, @Password, @FName, @LName, @Age, @Number, @Position, @TName);
```

Update a Player

```
UPDATE Players  
SET Password = @Password, FName = @FName, LName = @LName, Age = @Age,  
    Number = @Number, Position = @Position, TName = @TName  
WHERE Username = @Username;
```

Delete a Player

```
DELETE FROM Players  
WHERE Username = @Username;
```

Get All Tournaments

```
SELECT * FROM Tournaments;
```

Add a Tournament

```
INSERT INTO Tournaments  
VALUES (@ID, @Name, @Sport, @startDate, @endDate, @Username, @ParkID);
```

Update a Tournament

```
UPDATE Tournaments  
SET Name = @Name, Sport = @Sport, startDate = @startDate, endDate = @endDate,  
    Username = @Username, ParkID = @ParkID  
WHERE ID = @ID;
```

Delete a Tournament

```
DELETE FROM Tournaments  
WHERE ID = @ID;
```

Get all Teams

```
SELECT * FROM Teams;
```

Get Team by Tournament

```
SELECT t.Name, t.NoPlayers  
FROM Teams as t, Participate_Ins as p  
WHERE p.TID = @ID AND p.TName = t.Name;
```

Add a Team

```
INSERT INTO Teams  
VALUES (@Name, @NoPlayers);
```

Update a Team

```
UPDATE Teams  
SET NoPlayers = @NoPlayers  
WHERE Name = @Name;
```

Delete a Team

```
DELETE FROM Teams  
WHERE Name = @Name;
```

Get all ParticipateIn

```
SELECT * FROM Participate_Ins;
```

Add a ParticipateIn

```
INSERT INTO Participate_Ins  
VALUES (@TName, @TID);
```

Delete a ParticipateIn

```
DELETE Participate_Ins  
WHERE TName = @TName AND TID = @TID;
```

Get all Games

```
SELECT * FROM Games;
```

Get Game by Tournament

```
SELECT g.GameID, g.Day, g.Month, g.Year, g.Time, g.TID, g.HName, g.AName  
FROM Games as g, Tournaments as t  
WHERE t.ID = @ID AND g.TID = t.ID;
```

Add a Game

```
INSERT INTO Games  
VALUES (@GameID, @Day, @Month, @Year, @Time, @TID, @HName, @AName);
```

Update a Game

```
UPDATE Games  
SET Day = @Day, Month = @Month, Year = @Year, Time = @Time, TID = @TID,  
    HName = @HName, AName = @AName  
WHERE GameID = @GameID;
```

Delete a Game

```
DELETE FROM Games  
WHERE GameID = @GameID;
```

Get all Coaches

```
SELECT * FROM Coaches;
```

Add a Coach

```
INSERT INTO Coaches  
VALUES (@SIN, @FName, @LName, @TName);
```

Update a Coach

```
UPDATE Coaches  
SET FName = @FName, LName = @LName, TName = @TName  
WHERE SIN = @SIN;
```

Delete a Coach

```
DELETE FROM Coaches  
WHERE SIN = @SIN;
```

Get all Equipment

```
SELECT * FROM Equipments;
```

Add an Equipment

```
INSERT INTO Equipments  
VALUES (@EquipID, @Sport, @ParkID, @GameID);
```

Update an Equipment

```
UPDATE Equipments  
SET Sport = @Sport, ParkID = @ParkID, GameID = @GameID  
WHERE EquipID = @EquipID;
```

Delete an Equipment

```
DELETE Equipments  
WHERE EquipID = @EquipID;
```

Get all Fields

```
SELECT * FROM Fields;
```

Get Field by Tournament

```
SELECT f.FieldNo, f.GameID, f.ParkID, f.Sport  
FROM Fields as f, Tournaments as t, Games as g  
WHERE t.ID = @ID AND t.ParkID = f.ParkID AND g.GameID = f.GameID AND g.TID = t.ID;
```

Add a Field

```
INSERT INTO Fields  
VALUES (@FieldNo, @GameID, @ParkID, @Sport);
```

Update a Field

```
UPDATE Fields  
SET Sport = @Sport  
WHERE FieldNo = @FieldNo AND GameID = @GameID AND ParkID = @ParkID;
```

Delete a Field

```
DELETE FROM Fields  
WHERE FieldNo = @FieldNo AND GameID = @GameID AND ParkID = @ParkID;
```

Get all Referees

```
SELECT * FROM Referees;
```

Add a Referee

```
INSERT INTO Referees  
VALUES (@SIN, @Sport, @FName, @LName, @GameID);
```

Update a Referee

```
UPDATE Referees  
SET Sport = @Sport, FName = @FName, LName = @LName, GameID = @GameID  
WHERE SIN = @SIN;
```

Delete a Referee

```
DELETE FROM Referees  
WHERE SIN = @SIN;
```

Get all Athletic Parks

```
SELECT * FROM AthleticParks;
```

Add an Athletic Park

```
INSERT INTO AthleticParks  
VALUES (@ParkID, @Name, @Address);
```

Update an Athletic Park

```
UPDATE AthleticParks  
SET Name = @Name, Address = @Address  
WHERE ParkID = @ParkID;
```

Delete an Athletic Park

```
DELETE FROM AthleticParks  
WHERE ParkID = @ParkID;
```

Get all Game Summaries

```
SELECT * FROM GameSummaries;
```

Get Game Summary by Tournament

```
SELECT g.Score, g.GameID, g.Winner, g.Loser  
FROM GameSummaries as g, Games as ga, Tournaments as t  
WHERE ga.GameID = g.GameID AND ga.TID = @ID AND ga.TID = t.ID;
```

Add a Game Summary

```
INSERT INTO GameSummaries  
VALUES (@Score, @GameID, @Winner, @Loser);  
Update a Game Summary  
UPDATE GameSummaries  
SET Winner = @Winner, Loser = @Loser  
WHERE Score = @Score AND GameID = @GameID;
```

Delete a Game Summary

```
DELETE FROM GameSummaries  
WHERE Score = @Score AND GameID = @GameID;
```

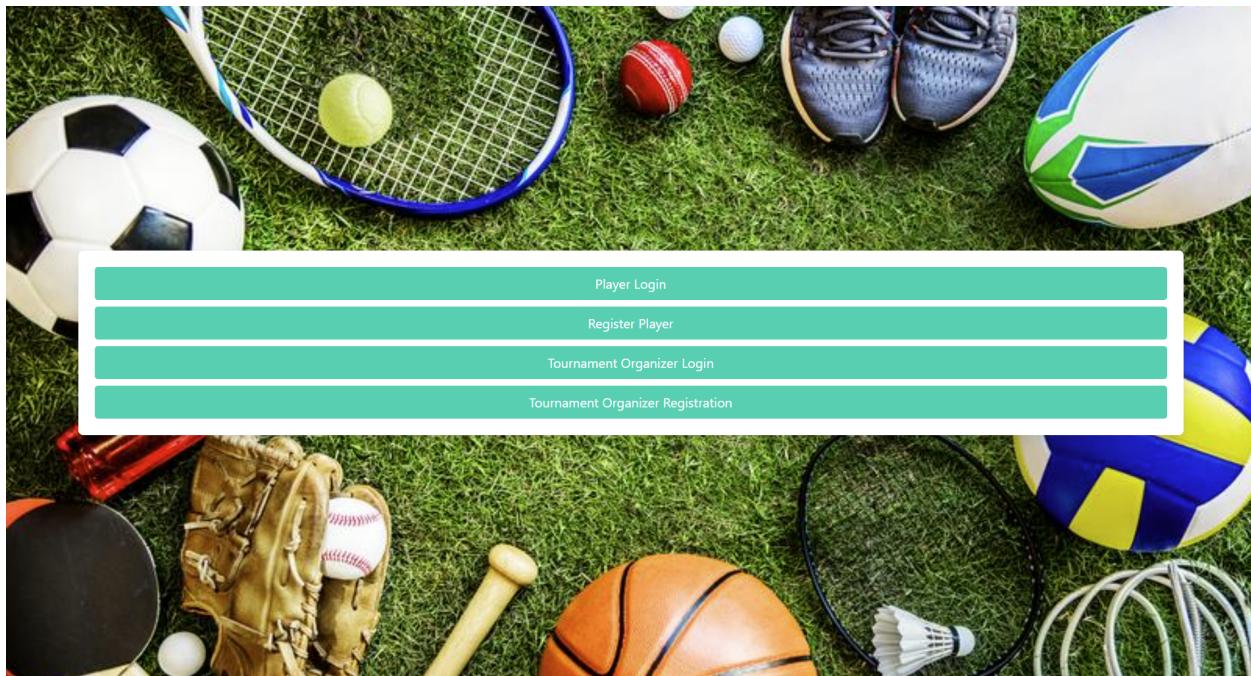
## API Documentation

Visit the following link to see the API documentation, done using the Postman tool:

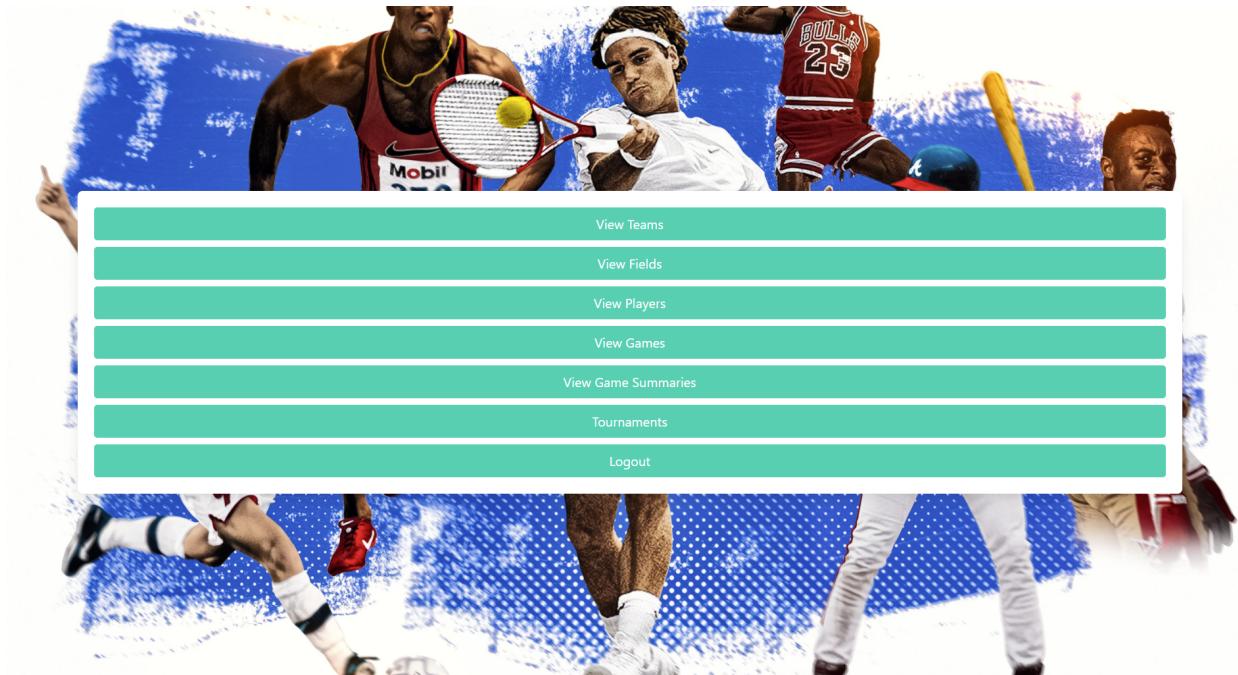
<https://documenter.getpostman.com/view/18828705/UVRAJ7MS>

## User Guide:

Upon program start, you will be brought to the main landing page of the website:

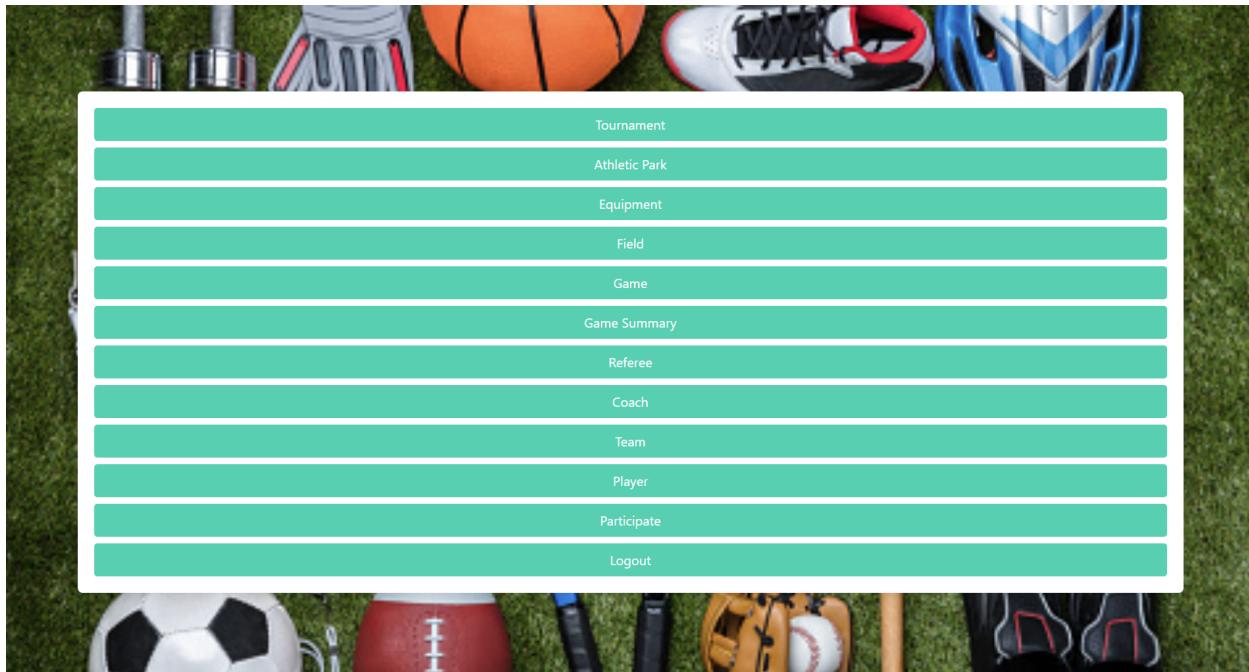


From here, you can login as a Player, register as a Player, login as a Tournament Organizer, or register as a Tournament Organizer. Once logged in as a Player, you will be taken to the Player landing page:

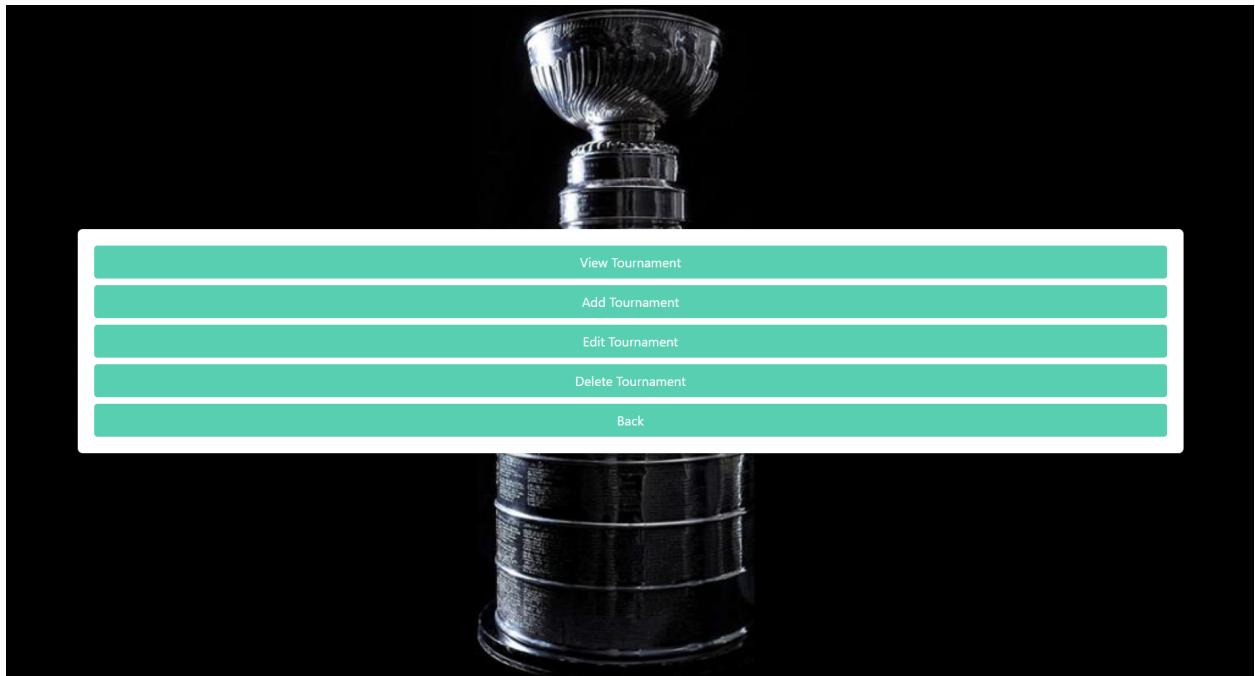


From this page, a Player can view a variety of different information about the Tournament, as indicated by the buttons on this page.

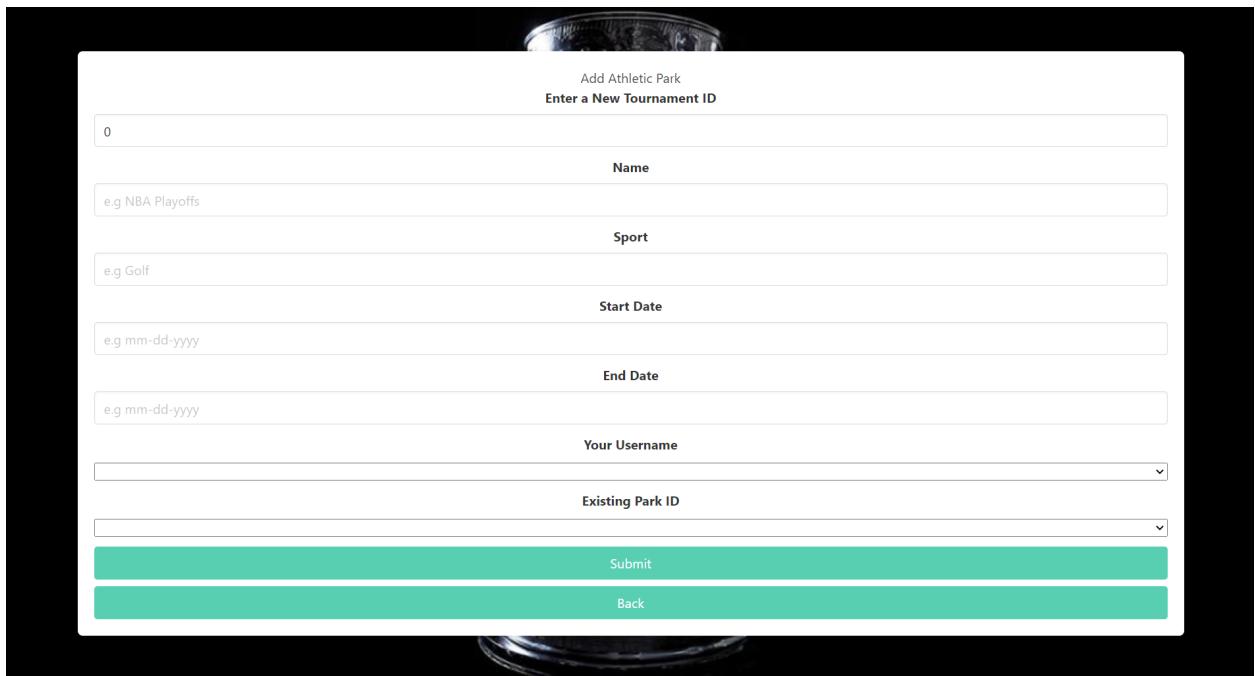
Once logged in as a Tournament Organizer, you will be brought to the Tournament Organizer landing page, and can view, add, edit, and delete information related to the tournament:



For example, clicking on Tournament will bring you to this page:



From here, clicking on Add Tournament will bring you to this page:



On this page, you can input information, and insert a Tournament into the database. All of the other buttons on the Tournament Organizer landing page work in a very similar way to the example provided above.

## User Guide

Software Requirements:

- NodeJS
- Microsoft SQL Server
- Microsoft SQL Server Management Studio
- Microsoft Visual Studio 2022

Program Stack:

- C#
- SQL
- TypeScript (via Angular)

How to Run:

Start by unzipping the file and copy pasting the 471-Site folder somewhere in your computer's directory. In order to run the front end you must have the 32 bit windows version of Node js version 16.13.1 installed. This is used for npm, unsure if other nodejs versions on different operating systems will work. You will want to be running windows powershell on administrator mode and change directories until you reach the 471-Site folder. At this point you will want to enter the command npm install in order to create a node modules folder in the 471-Site folder. This is needed because these node modules will be different for users so self installation is necessary. Then enter command npm start. Finally enter the command npm install --save bulma in order to add bulma to the project. This is the framework our group used in order to make the site look relatively nice. At this point the front end can be set to run on localhost:4200 with the command ng serve.

The database was implemented with Microsoft SQL Server. Use the .sql script file provided in the folder to generate the database, schemas, and stored procedures. Then, launch Microsoft SQL Server Management Studio, and connect to the database.

The API is implemented using the .NET 6.0 Web API framework with Visual Studio 2022. Open the TournamentApp.sln file, and open the AppSettings.json file. Configure the DevConnection string so that it contains the connection string for your Microsoft SQL Server. Run the Tournament.sln file. A browser window will open, and you will be directed to localhost:5131/api.

Once the SQL Server, API, and Angular server are running, you can use the website interface, which runs on localhost:4200.

## References

### Images Used for Website

- <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.shutterstock.com%2Fsearch%2Ftournament&psig=AOvVaw1UsK1f2qzAVjWRk1Et9Jb-&ust=1639965451624000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCNCJgdzh7vQCFQAAAAAdAAAAABAD>
- <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.nhl.com%2Fnews%2Fnhl-stanley-cup-champions-winners-complete-list%2Fc-287705398&psig=AOvVaw2QM6dPf1Js6QZWT3MtEr7G&ust=1639965717947000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCMD7hsLi7vQCFQAAAAdAAAAABAD>
- <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.cdc.gov%2Fdotw%2Fconcussions%2Findex.html&psig=AOvVaw2yqkTRMd7FJaDZsPVW7io0&ust=1639965806161000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCPDF1vHi7vQCFQAAAAAdAAAAABAE>
- [https://res.cloudinary.com/people-matters/image/upload/q\\_auto,f\\_auto/v1545238540/1545238539.jpg](https://res.cloudinary.com/people-matters/image/upload/q_auto,f_auto/v1545238540/1545238539.jpg)
- <https://www.lhebdojournal.com/wp-content/uploads/sites/22/2021/03/sports.jpg>
- [https://cdn.shopify.com/s/files/1/2336/0143/products/CCM-OFFICIAL-150-REFEREE-JERSEY-WITH-SNAPS-V61-CCM-Sports-Replay-Sports-Excellence\\_800x.jpg?v=1629048235](https://cdn.shopify.com/s/files/1/2336/0143/products/CCM-OFFICIAL-150-REFEREE-JERSEY-WITH-SNAPS-V61-CCM-Sports-Replay-Sports-Excellence_800x.jpg?v=1629048235)
- <https://www.google.com/url?sa=i&url=https%3A%2F%2Fkitchener.citynews.ca%2Fjobs-of-the-future%2Fsports-science-becoming-more-prevalent-for-athletes-3618448&psig=AOvVaw0Lzj3As0LHo2L6vY1cPGkq&ust=1639966173430000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCIjUIZ3k7vQCFQAAAAAdAAAABAD>
- <https://thumbs.dreamstime.com/b/young-athletes-school-sports-team-holding-winning-trophy-kids-champion-sport-boys-prize-cup-children-rising-winner-golden-140370756.jpg>
- [https://media.istockphoto.com/vectors/group-of-basketball-players-set-of-isolated-vector-silhouettes-team-vector-id1092683126?k=20&m=1092683126&s=612x612&w=0&h=dFhpKILIX9DGESFA\\_GJpXFxmCBL5ebyHO4zeAhd5-0=](https://media.istockphoto.com/vectors/group-of-basketball-players-set-of-isolated-vector-silhouettes-team-vector-id1092683126?k=20&m=1092683126&s=612x612&w=0&h=dFhpKILIX9DGESFA_GJpXFxmCBL5ebyHO4zeAhd5-0=)
- [https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.business2community.com%2Fcontent-marketing%2F4-reasons-participate-companys-content-marketing-program-01540296&psig=AOvVaw2DfyBPSpho8NKoITDiYjhW&ust=1639966639584000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCID6\\_nl7vQCFQAAAAAdAAAABAD](https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.business2community.com%2Fcontent-marketing%2F4-reasons-participate-companys-content-marketing-program-01540296&psig=AOvVaw2DfyBPSpho8NKoITDiYjhW&ust=1639966639584000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCID6_nl7vQCFQAAAAAdAAAABAD)
- [https://media.istockphoto.com/photos/various-sport-equipments-on-grass-picture-id949190736?b=1&k=20&m=949190736&s=170667a&w=0&h=f3ofVqhbmg2XSVOa3dqmvGtHc4VLA\\_rtbboRGaC8eNo=](https://media.istockphoto.com/photos/various-sport-equipments-on-grass-picture-id949190736?b=1&k=20&m=949190736&s=170667a&w=0&h=f3ofVqhbmg2XSVOa3dqmvGtHc4VLA_rtbboRGaC8eNo=)
- [https://media.gq.com/photos/59e76a0566e2d56abcd79e99/3:2/w\\_3000,c\\_limit/GQ\\_50Greatest\\_final\\_v2.jpg](https://media.gq.com/photos/59e76a0566e2d56abcd79e99/3:2/w_3000,c_limit/GQ_50Greatest_final_v2.jpg)
- <https://www.google.com/url?sa=i&url=https%3A%2F%2Fvarsityscoreboards.com%2Fscoreboards%2Fbasketball-scoreboards%2F2246.html&psig=AOvVaw06WnpHOqif2KIQq5FV47xk&ust=163966779603000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCIjK0Lzm7vQCFQAAAAAdAAAABAD>
- <https://media.gettyimages.com/photos/ice-hockey-puck-and-sticks-in-faceoff-picture-id78457119?s=612x612>
- <https://acis.com/wp-content/uploads/2015/08/wembley6.jpg>

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- <https://www.gograph.com/clipart/continuous-single-drawn-one-line-sports-coach-trainer-gg122661280.html>
- <https://cms.nhl.bamgrid.com/images/photos/291655750/1024x576/cut.jpg>