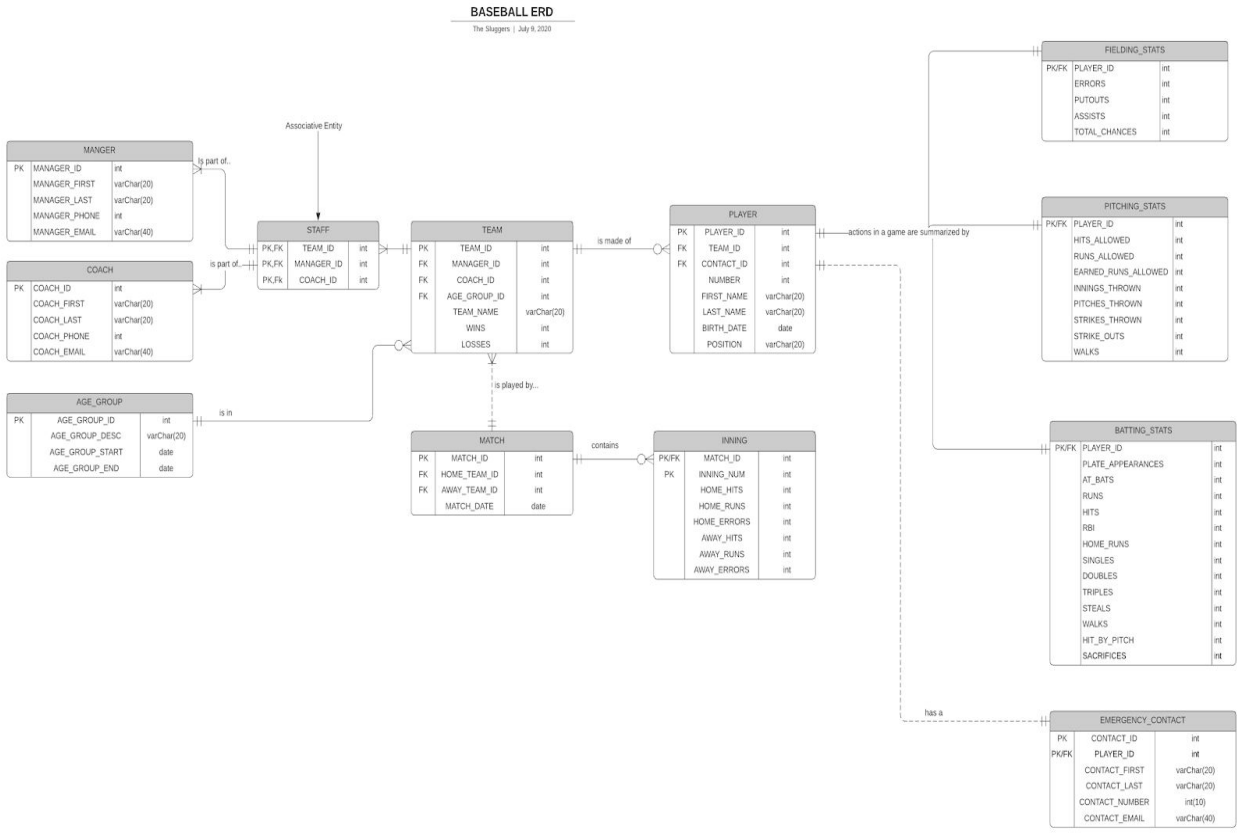
# Overview

“The Sluggers” is made up of Nicholas Winans, John Bullock, Jaspreet Ranjit, and Elias Haddad. We built a Django web application with a Postgresql database for the baseball Richmond Little League (RLL) to allow them to gain better information from the data they produce. RLL consists of many teams, each built with many players, coaches, and managers.

# Final Diagram

The final version of the database diagram is shown below or can be viewed at the following link. https://app.lucidchart.com/invitations/accept/f17d145f-bb03-40c0-af3f-98076d2f4843




# System Architecture:


# Documentation of Tables, Columns, Primary and Foreign Keys

The tables consist of the following:

PLAYER, the player table is a presentation of the player entity, and the players themselves. The player table consists of PLAYER_ID (INT), TEAM_ID (INT), CONTACT_ID (INT), NUMBER (INT), FIRST_NAME (VARCHAR), LAST_NAME (VARCHAR), BIRTH_DATE (DATE), POSITION (VARCHAR) columns. The PLAYER_ID is the primary key, TEAM_ID and CONTACT_ID are both foreign keys that reference TEAM and EMERGENCY_CONTACT respectively.

EMERGENCY_CONTACT, the emergency contact table is a presentation of the emergency contact entity and player's emergency contact. The emergency contact table consists of CONTACT_ID (INT), CONTACT_FIRST (VARCHAR), CONTACT_LAST (VARCHAR), CONTACT_NUMBER (INT), CONTACT_EMAIL (VARCHAR). CONTACT_ID is the primary key for this table.

MANAGER, the manager table is a presentation of the manager entity and the team/ player's manager. The manager table consists of MANAGER_ID (INT), MANAGER_FIRST (VARCHAR), MANAGER_LAST (VARCHAR), MANAGER_PHONE (INT), MANAGER_EMAIL (VARCHAR) columns. The MANAGER_ID attribute is the primary key.

COACH, the coach table is a presentation of the coach entity and the team/ player's coach. The coach table consists of COACH_ID (INT), COACH_FIRST (VARCHAR), COACH_LAST (VARCHAR), COACH_PHONE (INT), COACH_EMAIL (VARCHAR) columns. The COACH_ID attribute is the primary key.

AGE_GROUP, the age group table is a presentation of the age group entity and each player's age group. The age group table consists of AGE_GROUP_ID (INT), AGE_GROUP_DESC (VARCHAR), AGE_GROUP_START (DATE), AGE_GROUP_END (DATE) columns. The AGE_GROUP_ID attribute is the primary key.

TEAM, the team table is a presentation of the team entity, and the team itself. The TEAM table consists of TEAM_ID (INT), MANAGER_ID (INT), COACH_ID (INT), AGE_GROUP_ID (INT), FIRST_NAME (VARCHAR), LAST_NAME (VARCHAR), BIRTH_DATE (DATE), TEAM_NAME (VARCHAR), WINS (INT), LOSSES (INT) columns. The TEAM_ID is the primary key, AGE_GROUP_ID, COACH_ID, and MANAGER_ID are all foreign keys that reference AGE_GROUP, COACH, and MANAGER respectively.

STAFF, the staff table is a presentation of the staff entity, and the staff itself. The STAFF table consists of MANAGER_ID (INT), COACH_ID (INT), TEAM_ID (INT) columns. They are all primary and foreign keys.

MATCH, the match table is a presentation of the match entity, and the match itself. The MATCH table consists of MATCH_ID (INT), HOME_TEAM_ID (INT), AWAY_TEAM_ID (INT), MATCH_DATE (DATE) columns. The MATCH_ID is the primary key, HOME_TEAM_ID, AWAY_TEAM_ID, and MANAGER_ID are both foreign keys that reference to HOME_TEAM_ID and AWAY_TEAM_ID respectively.

INNING, the inning table is a presentation of the inning entity and each inning in a match. The inning table consists of MATCH_ID (INT), INNING_NUM (INT), HOME_HITS (INT), HOME_RUNS (INT), HOME_ERRORS (INT), AWAY_HITS (INT), AWAY_RUNS (INT), AWAY_ERRORS (INT) columns. The INNING_NUM is the primary key, MATCH_ID is the foreign key that references MATCH respectively.

BATTING_STATS, the batting stats table is a presentation of the batting_stats entity and the batting statistics of each player. The BATTING_STATS table consists of PLAYER_ID (INT), PLATE_APPEARANCES (INT), AT_BATS (INT), SACRIFICES (INT), HITS (INT), RBI (INT), HOME_RUNS (INT), SINGLES (INT), DOUBLES (INT), TRIPLES (INT), STEALS (INT), WALKS (INT), HIT_BY_PITCH (INT) columns. The PLAYER_ID is the primary key and foreign key that references the player ID.

PITCHING_STATS, the pitching stats table is a presentation of the pitching_stats entity and the pitching statistics of each player. The PITCHING_STATS table consists of PLAYER_ID (INT), HITS_ALLOWED (INT), RUNS_ALLOWED (INT), EARNED_RUNS_ALLOWED (INT), INNINGS_THROWN (INT), PITCHES_THROWN (INT), PITCHES_THROWN (INT), STRIKES_THROWN (INT), STRIKE_OUTS (INT), WALKS (INT) columns. The PLAYER_ID is the primary key and foreign key that references the player ID.

FIELDING_STATS, the fielding stats table is a presentation of the fielding_stats entity and the fielding statistics of each player. The FIELDING_STATS table consists of PLAYER_ID (INT),

ERRORS (INT), PUTOUTS (INT), ASSISTS (INT), TOTAL_CHANCES (INT) columns. The PLAYER_ID is the primary key and foreign key that references the player ID.

# Baseball Specific Attribute Explanations:

**INNING:**

- INNING_NUM: the number that corresponds to inner number from a game (order of innings from any given match)
- HOME_HITS: number of hits that the home team records in that inning
- HOME_RUNS: number of runs that the home team scores in that inning
- HOME_ERRORS: number of errors that the home team records in that inning
- AWAY_HITS: number of hits that the away team records in that inning
- AWAY_RUNS: number of runs that the away team scores in that inning
- AWAY_ERRORS: number of errors that the away team records in that inning

**BATTING_STATS: (in one game)**

- PLATE_APPEARANCES: total number of times a player comes to the plate
- AT_BATS: total number of times a player records a hit or putout (does not include walks, hit by pitches, errors, or sacrifices)
- SACRIFICES: a sacrifice fly or bunt in which a player gives himself up to advance a runner to a further base
- HITS: total number of times a player records a hit
- RBI: total number of runs scored as a result of a player's hit
- HOME_RUNS: total number of times a player records a homerun
- SINGLES: total number of times a player records a single
- DOUBLES: total number of times a player records a double
- TRIPLES: total number of times a player records a triple
- STEALS: total number of times a player records a steal
- WALKS: total number of times a player was walked
- HIT_BY_PITCH: total number of times a player was hit by a pitch

**PITCHING_STATS: (in one game)**

- HITS_ALLOWED: total number of times a hit was allowed
- RUNS_ALLOWED: total number of times a run was allowed
- EARNED_RUNS_ALLOWED: total number of times an earned run was allowed. An earned run occurs when a player scores without the benefit of an error
- INNINGS_THROWN: total number of innings a pitcher was throwing for. If a pitcher does not complete a full inning, it is broken into thirds by how many outs were achieved.

- PITCHES_THROWN: total number of pitches thrown by a pitcher
- STRIKES_THROWN: total number of strikes thrown by a pitcher
- STRIKE_OUTS: total number of strikeouts completed by a pitcher
- WALKS: total number of walks administered by a pitcher

**FIELDING_STATS:**

- ERRORS: number of errors recorded by a fielder
- ASSISTS: number of assists recorded by a fielder. An assist is when a player touches the ball before the out is recorded by another player.
- PUTOUTS: number of putouts recorded by a fielder. A putout is when a player records an out.
- TOTAL_CHANCES: total number of chances a fielder had at playing the ball. Equal to the number of errors, assists and putouts.

# Initial Data

## Instructions for installation, startup and operation

Our site is located at http://database-sluggers.herokuapp.com. To view the site there is no login required. To edit data, click the login button on the top and create an account. After creating an account, if you navigate through the site you will notice edit buttons at the top of pages allowing you to add, edit and delete objects.

No further installation is required to use our website, but if desired, our code is located at https://github.com/EliasHaddad00/Baseball_Database_cs4750 and can be accessed by anyone.

# Screenshots Fulfilling Requirements

**** These are high level requirements that were generated early on in the project, see next section for more detailed requirements on each page and their accompanying screenshots*

1. The models must have a user-friendly way for managers of the team to be able to input new data and view all data inputted, by following a path to a specific URL.
2. To prevent bias, Richmond Little League manager(s) will input the data to the web application for each team after every game.
3. This data will be sent to the database, which must consist of minimal redundancies and minimal error-prone methods.
4. This data must be easily accessible to the managers of each team and to the public, via View/Template, the HTML template will access the model and display the data to the

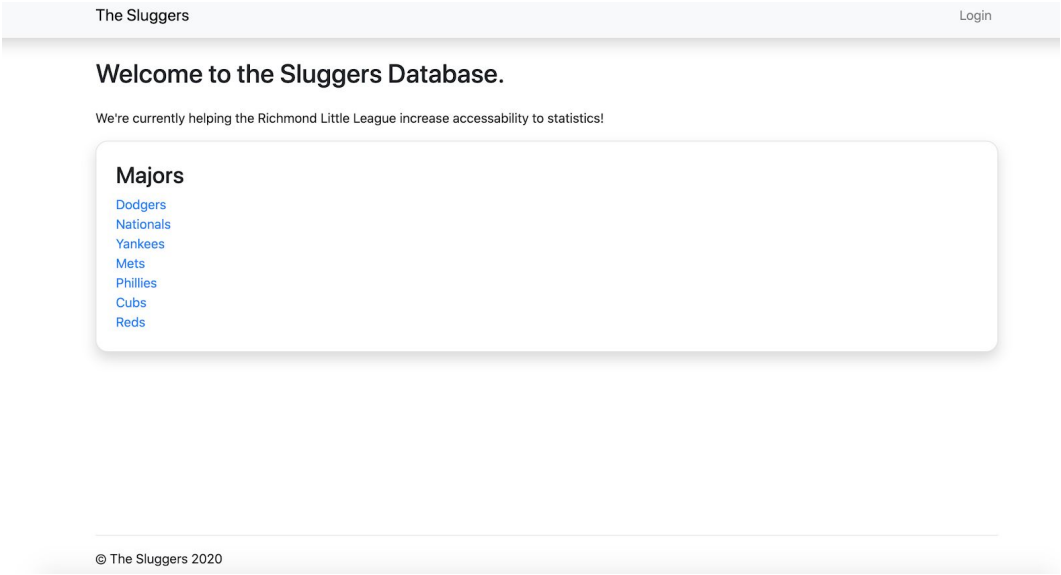
screen in an organized fashion in order for the end-user (managers) to gain the most meaningful information possible.

5. We must have a page for inputting data,
6. We must have a page for adjusting data
7. We must have a page for viewing data.

## Requirements for Each Page

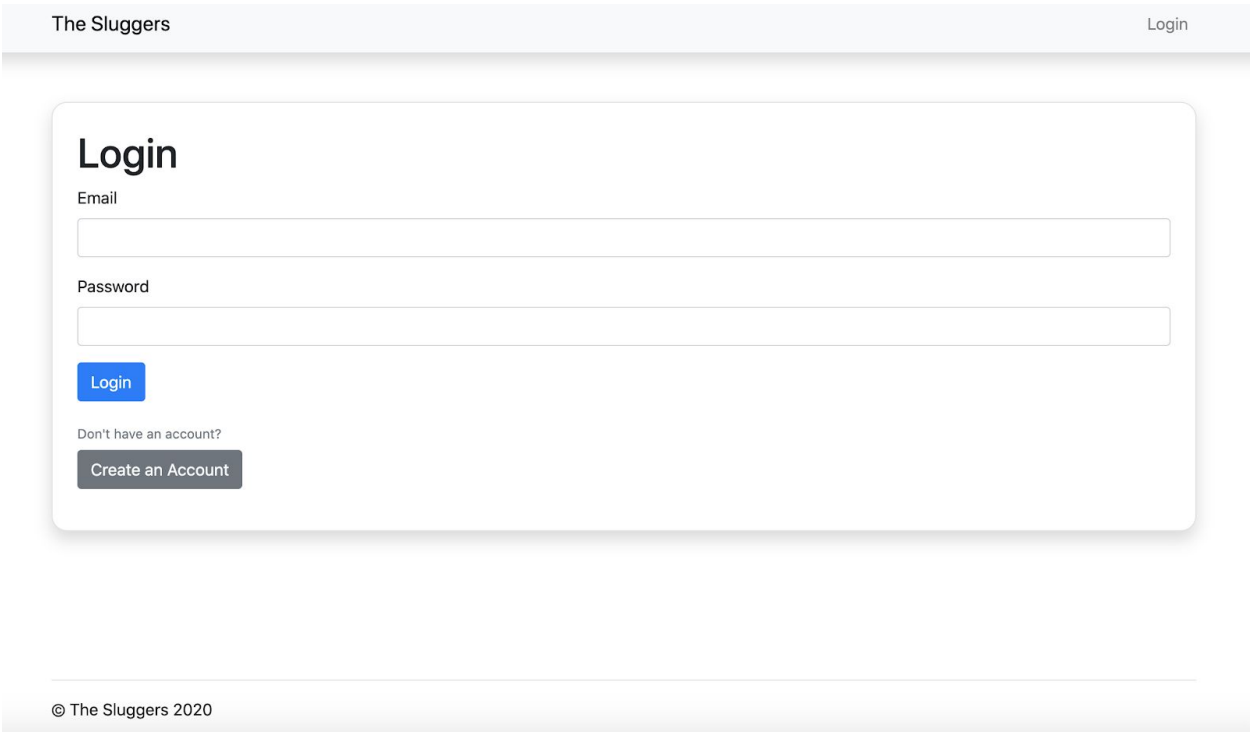
### Landing Page

- Short description of league



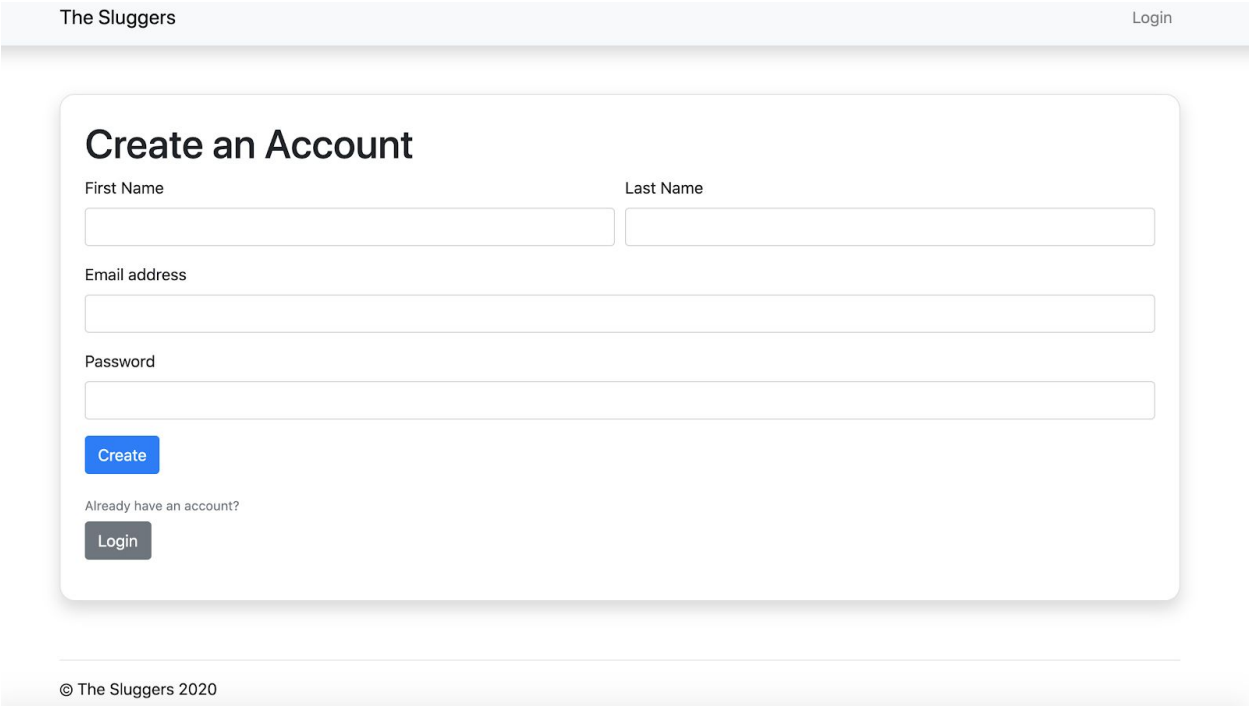

Login Page

- email/password



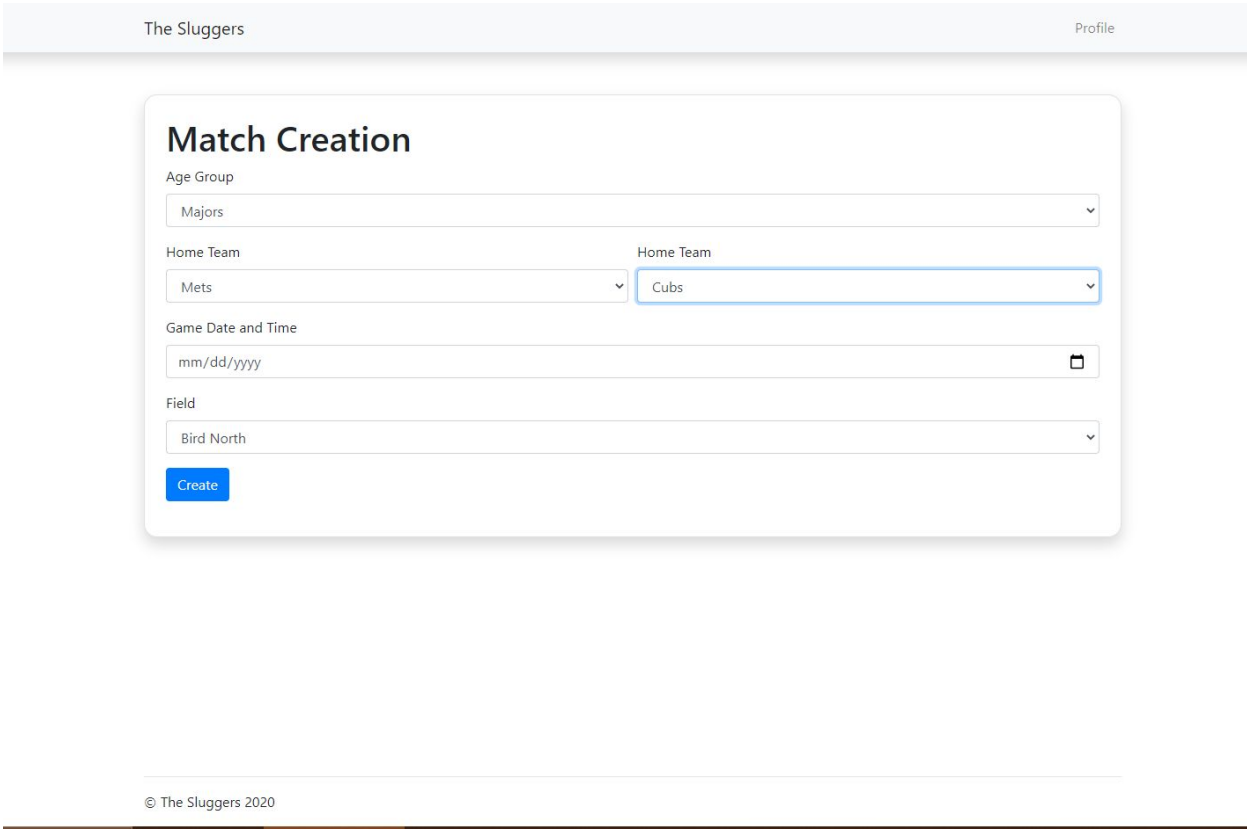

## Create an Account Page

- Choose role (coach/manager/parent)
- Email and Password




## New Game in Schedule (Game Entry)

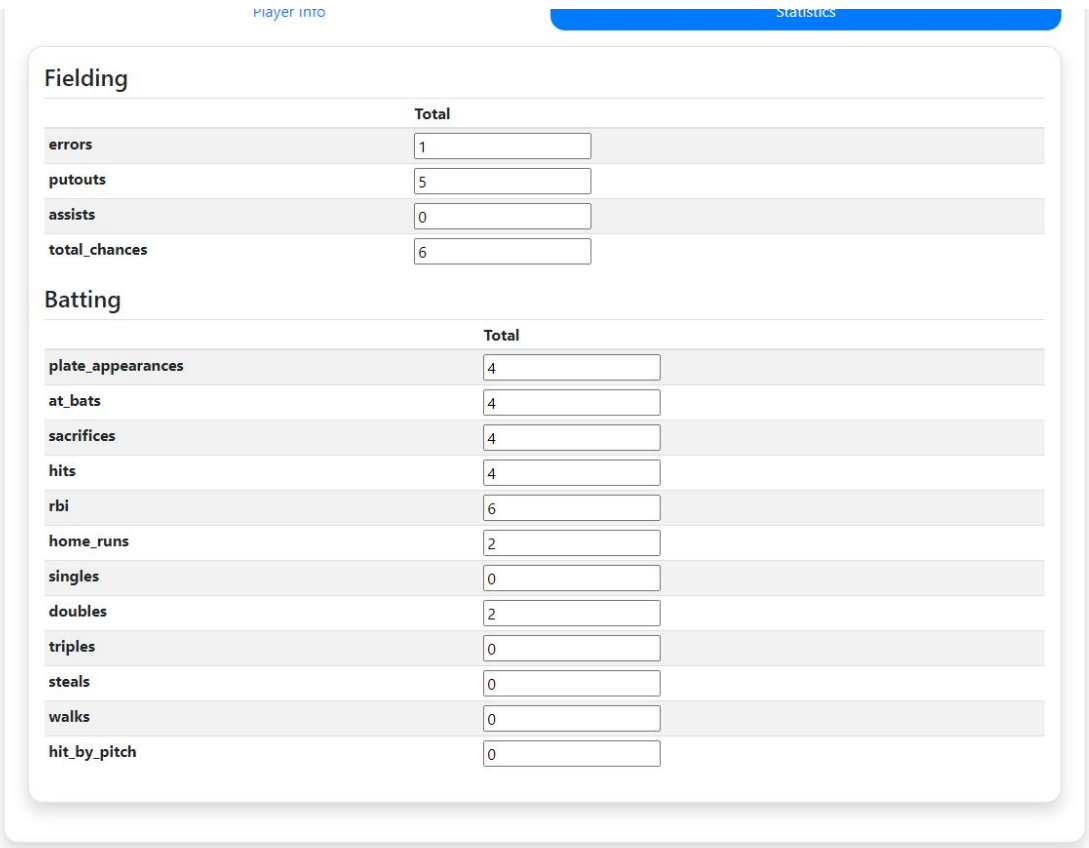
- Create a new game between two teams (shows up on both team's schedules)
- Set game time

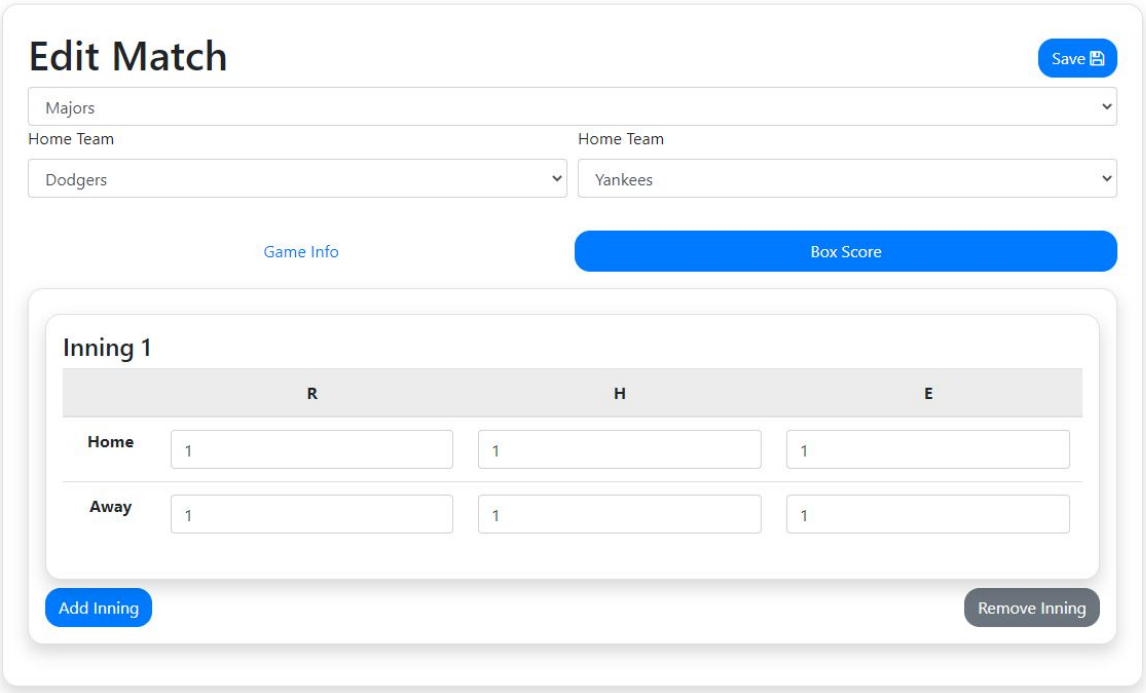



-

**Game Entry Screen (Data Entry)**

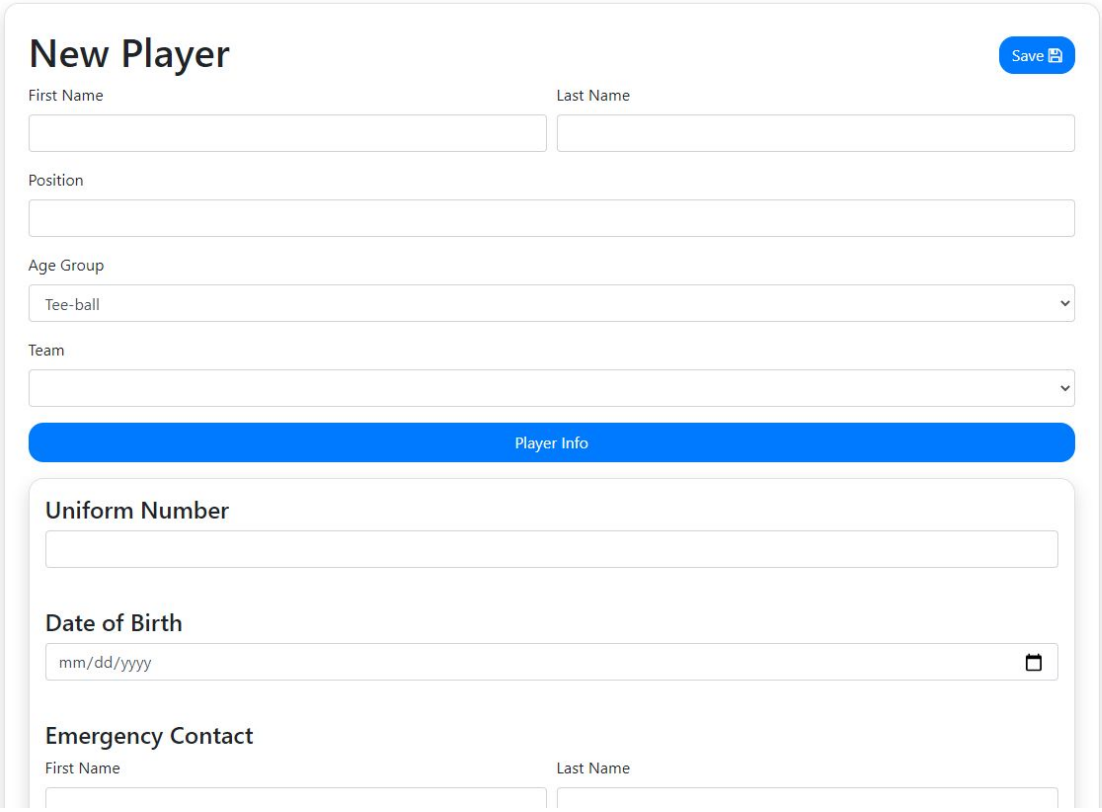
- Create box score for game
- Enter in player statistics
    - Table of players with statistics next to them
        - Starts empty, coach adds players who played that game
    - Section for Hitting/Fielding stats
    - Section for Pitching stats




**Player Creation Page (Data Entry)**

- Emergency Contact
- Age
- Position
- Name




**Team Page (Data Display)**

- Statistics summary
    - Wins/Losses
    - Team Hitting Average
- Schedule
- Past Results
- Player List

# Dodgers

Edit

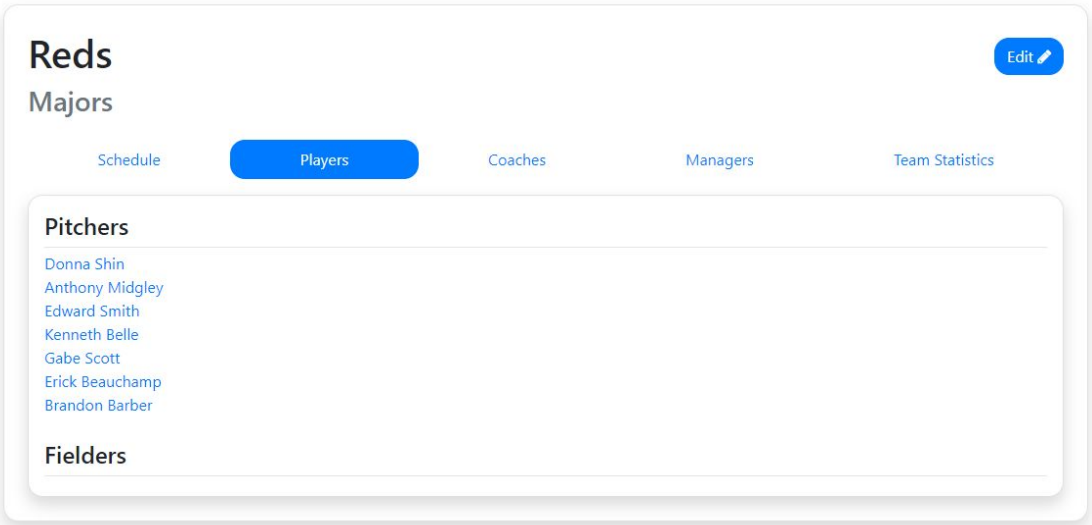
## Majors

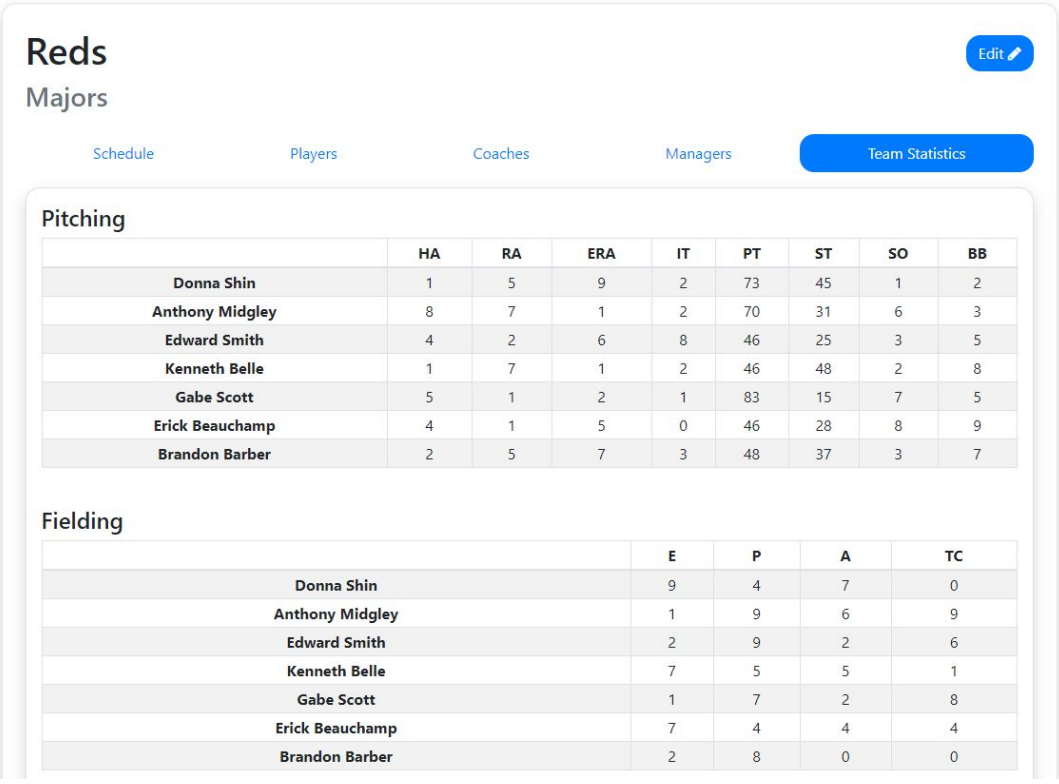
Schedule | Players | Coaches | Managers | Team Statistics

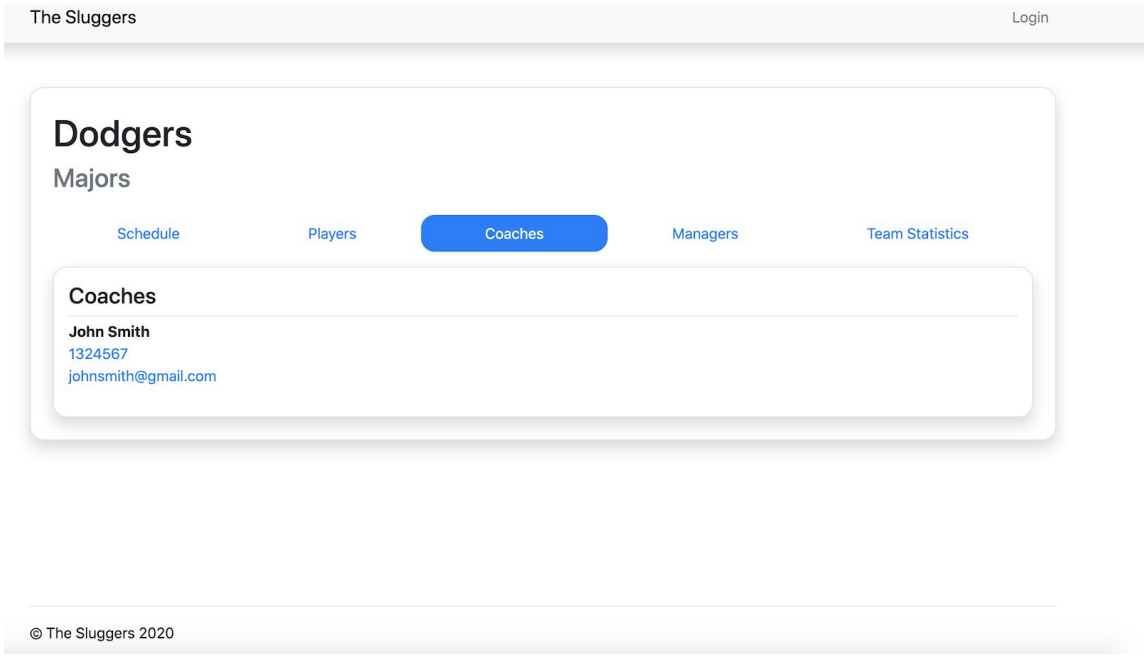
*No upcoming matches*

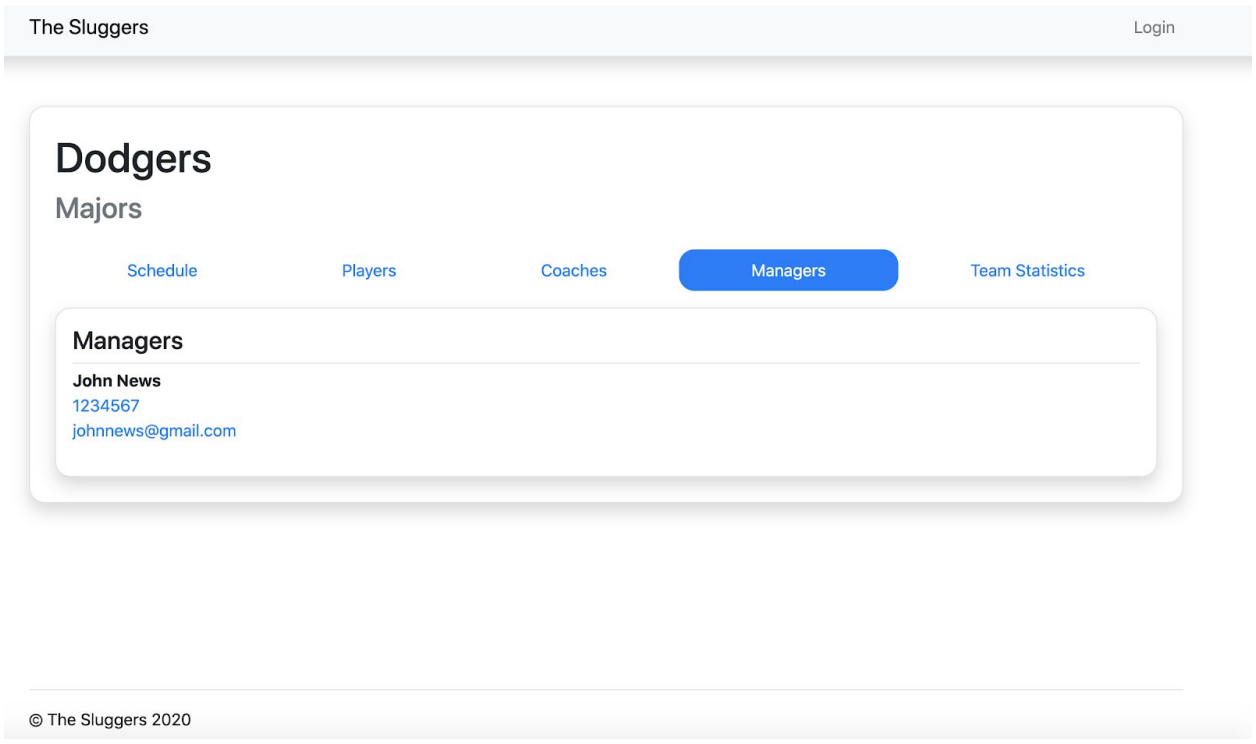
### Past Results

June 8, 2018 - T (1-1) - Yankees
May 20, 2020 - L (4-7) - Nationals


Reds
Edit
Majors
Schedule
Players
Coaches
Managers
Team Statistics
Pitchers
Donna Shin
Anthony Midgley
Edward Smith
Kenneth Belle
Gabe Scott
Erick Beauchamp
Brandon Barber
Fielders

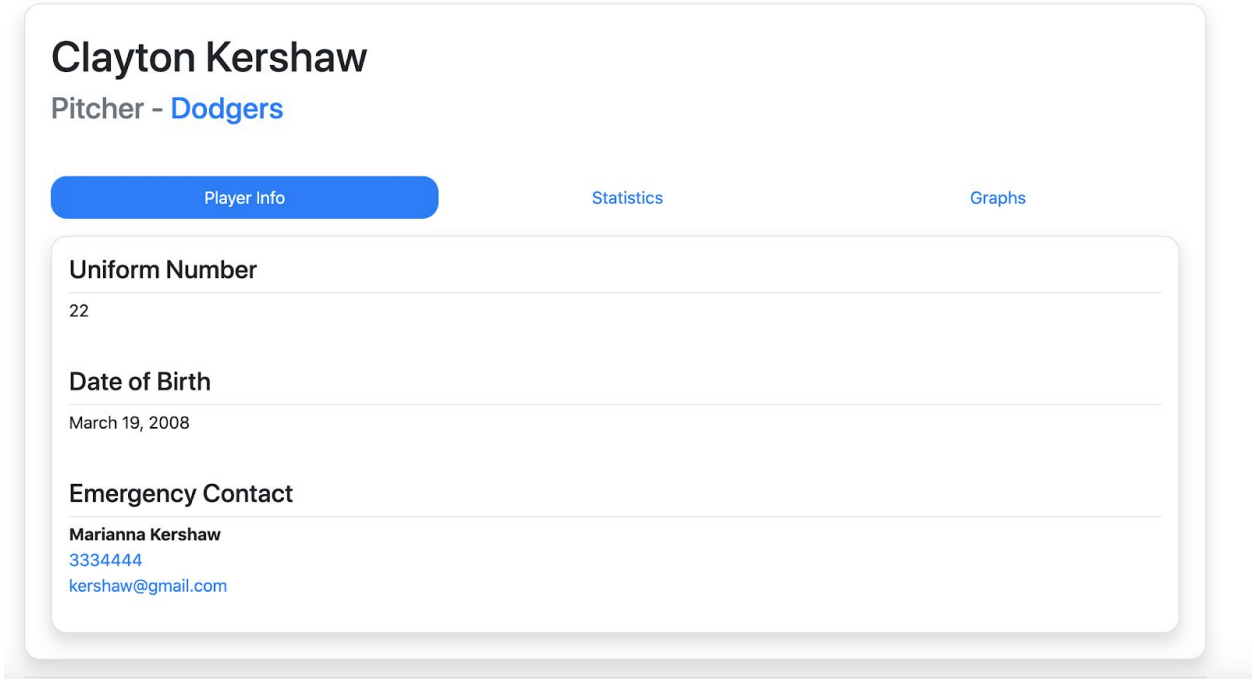

Reds
Edit
Majors
Schedule
Players
Coaches
Managers
Team Statistics
Pitching
HA RA ERA IT PT ST SO BB
Donna Shin 1 5 9 2 73 45 1 2
Anthony Midgley 8 7 1 2 70 31 6 3
Edward Smith 4 2 6 8 46 25 3 5
Kenneth Belle 1 7 1 2 46 48 2 8
Gabe Scott 5 1 2 1 83 15 7 5
Erick Beauchamp 4 1 5 0 46 28 8 9
Brandon Barber 2 5 7 3 48 37 3 7
Fielding
E P A TC
Donna Shin 9 4 7 0
Anthony Midgley 1 9 6 9
Edward Smith 2 9 2 6
Kenneth Belle 7 5 5 1
Gabe Scott 1 7 2 8
Erick Beauchamp 7 4 4 4
Brandon Barber 2 8 0 0




**Player Summary Page (Data Display)**

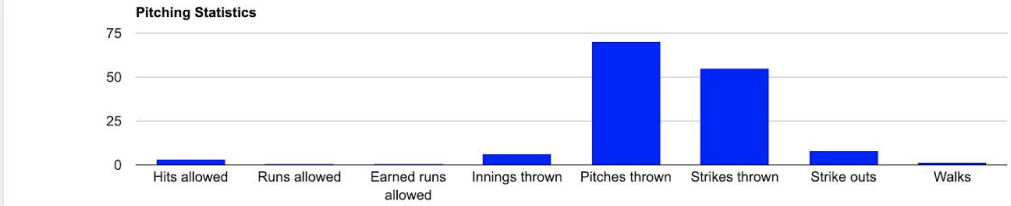
- List of all available statistics, stored and derived
- Relative player performance charts (to teammates (and league?)) (WAR?)
    - Summary statistics that compare players


Clayton Kershaw
Pitcher - Dodgers
Player Info
Statistics
Graphs
Uniform Number
22
Date of Birth
March 19, 2008
Emergency Contact
Marianna Kershaw
3334444
kershaw@gmail.com

# Clayton Kershaw

## Pitcher - Dodgers

Player Info | Statistics | **Graphs**




# Clayton Kershaw

## Pitcher - Dodgers

Player Info | **Statistics** | Graphs

### Pitching

| | Total |
|---|---|
| **Hits allowed** | 3 |
| **Runs allowed** | 0 |
| **Earned runs allowed** | 0 |
| **Innings thrown** | 6 |
| **Pitches thrown** | 70 |
| **Strikes thrown** | 55 |
| **Strike outs** | 8 |
| **Walks** | 1 |