

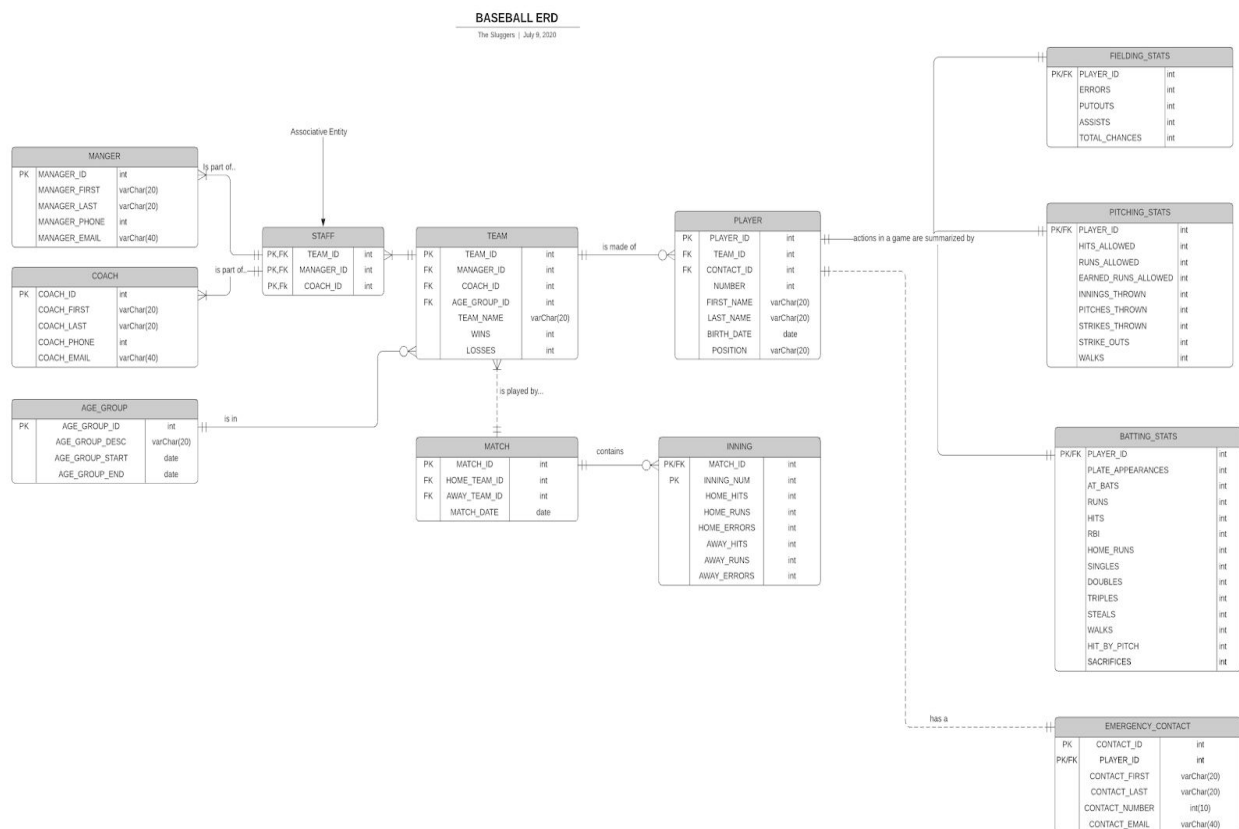
Video Presentation: <https://youtu.be/MVOxJ4jeGxU>

## Overview

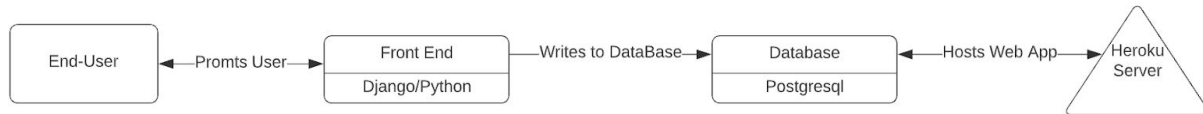
“The Sluggers” is made up of Nicholas Winans, John Bullock, Jaspreet Ranjit, and Elias Haddad. We built a Django web application with a PostgreSQL database for the baseball Richmond Little League (RLL) to allow them to gain better information from the data they produce. RLL consists of many teams, each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

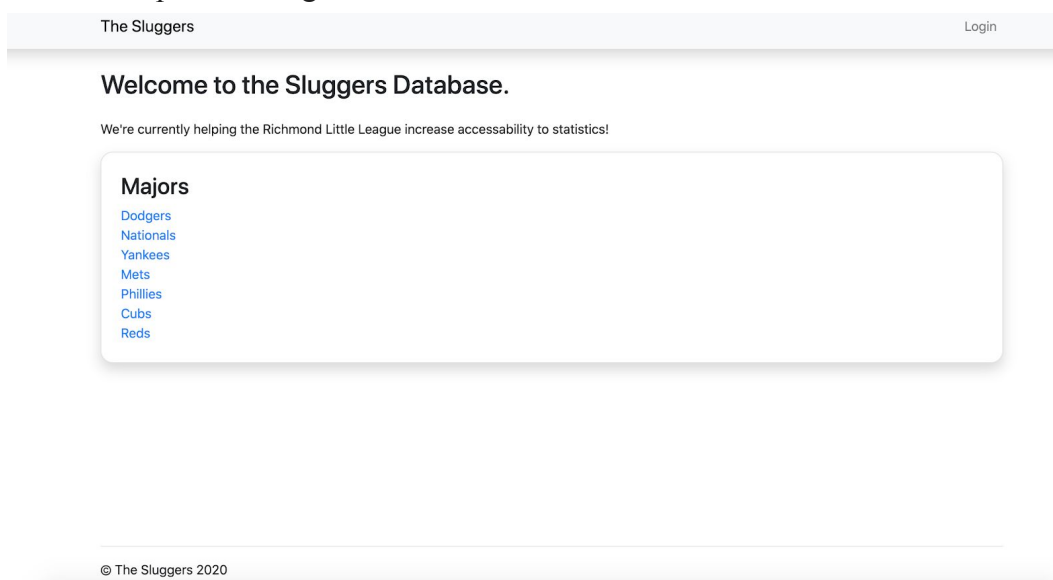
screen in an organized fashion in order for the end-user (managers) to gain the most meaningful information possible.

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

The Sluggers

Login

## Login

Email

Password

Login

Don't have an account?

Create an Account

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### Create an Account Page

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

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Login

## Create an Account

First Name

Last Name

Email address

Password

Create

Already have an account?

Login

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### New Game in Schedule (Game Entry)

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

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Profile

### Match Creation

Age Group

Majors

Home Team

Mets

Home Team

Cubs

Game Date and Time

mm/dd/yyyy

Field

Bird North

Create

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### 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 Info

Statistics

Fielding

	Total
errors	<input type="text" value="1"/>
putouts	<input type="text" value="5"/>
assists	<input type="text" value="0"/>
total_chances	<input type="text" value="6"/>

Batting

	Total
plate_appearances	<input type="text" value="4"/>
at_bats	<input type="text" value="4"/>
sacrifices	<input type="text" value="4"/>
hits	<input type="text" value="4"/>
rbi	<input type="text" value="6"/>
home_runs	<input type="text" value="2"/>
singles	<input type="text" value="0"/>
doubles	<input type="text" value="2"/>
triples	<input type="text" value="0"/>
steals	<input type="text" value="0"/>
walks	<input type="text" value="0"/>
hit_by_pitch	<input type="text" value="0"/>

Edit Match

Save

Majors

Home Team

Home Team

Dodgers

Yankees

Game Info

Box Score

Inning 1

	R	H	E
Home	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="1"/>
Away	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="1"/>


Add Inning

Remove Inning

Player Creation Page (Data Entry)

- Emergency Contact
- Age
- Position
- Name

## New Player

Save 

First Name

Last Name

Position

Age Group

Tee-ball

Team

Player Info

Uniform Number

Date of Birth

mm/dd/yyyy

Emergency Contact

First Name

Last Name

### Team Page (Data Display)

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

# Dodgers

## Majors

Edit

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

Majors

Edit

Schedule

Players

Coaches

Managers

Team Statistics

Pitchers

Donna Shin

Anthony Midgley

Edward Smith

Kenneth Belle

Gabe Scott

Erick Beauchamp

Brandon Barber

Fielders

Reds

Majors

Edit

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

The Sluggers

Login

Dodgers

Majors

Schedule

Players

Coaches

Managers

Team Statistics

Coaches

John Smith

1324567

johnsmith@gmail.com

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Login

Dodgers

Majors

Schedule

Players

Coaches

Managers

Team Statistics

Managers

John News

1234567

johnnews@gmail.com

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### 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](#)

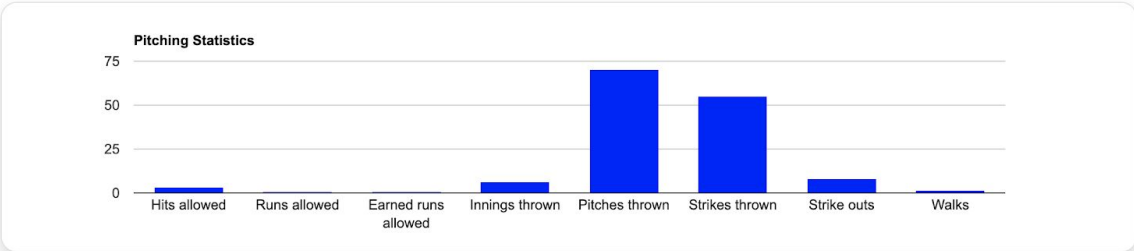
# Clayton Kershaw

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