



Indiana Soccer Referees Association UI Transformation

Team 19

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Presentation Agenda

Business Case

Scope, Time and Resources

Application Demo

Technology Stack

Design Steps

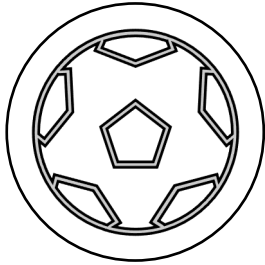
User Stories

Risks & Mitigations

Data Model

Future Steps

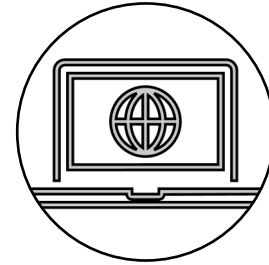
Tracking the assignment and status of referees is a full-time job at ISRA



Indiana Soccer Referees Association is responsible for assigning referees to USSF sanctioned club matches in the greater Indianapolis area



Tracking the assignment and status of referees manually is a full-time job



How can we design a custom application for ISRA where employees can manage referee and game information?




The custom application will allow seamless referee management

The application has three major functionalities

Data Entry	User can view a list of referees with their basic information. Referee records may be added, edited or deleted
Detail View with related list	User may view referee detail showing past, present and future referee games
Reports	User may download custom reports of games assigned to user within a date range and future games with unassigned positions

Application Demonstration

[D&S Website](#)

 Home Status Reports Games Directory

Football Referee & Games Page | Home

Team 19 D&S Final Project

Welcome to our final project! We hope you enjoy our solution.

🔗 Check out Our Github »

Referee Status Page


View the referee roster by name and see which games they have been assigned to. Also, check out the weather and upcoming professional games via our API connections

Go to Page »

Reports

Generate specific queries that you would like to download as CSV files!

Go to Page »



Games View

Check out the games we have within our database and the referees who are currently assigned to work them.

Go to Page »

Directory

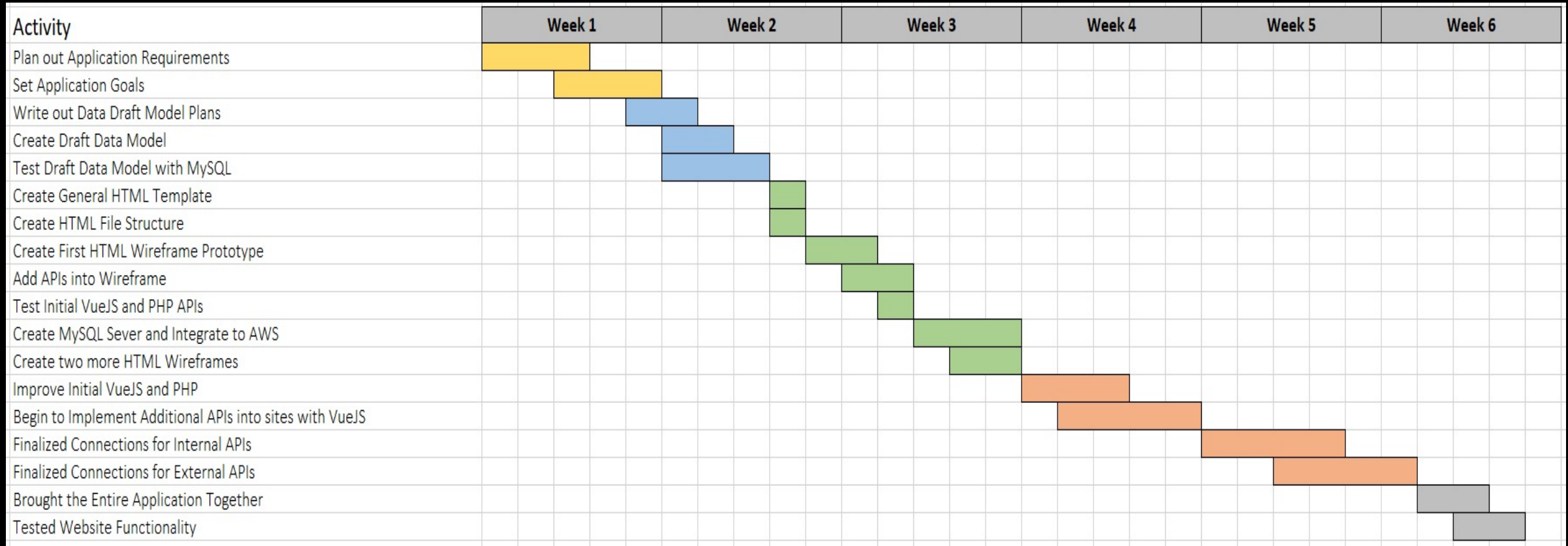
A full view of the referees and games within our database. Authorized users can make changes to this information if they need to!

Go to Page »

With a vision to open-source the application to help other associations, our chosen Technology stack meets all needs

PHP	Open source, extensive community support, widely used
Vue.js	Lightweight, open source, easy to use framework; employs high-decoupling
MySQL	Open source, reliable, compatible with all major hosting providers, cost-effective, and easy to manage
Amazon EC2	Eliminate need for investing in hardware for hosting, reliable, scalable, secure
Bootstrap	Readily available templates for design of webpages
Apache WebServer	Web servers are easy to customize environments , they're fast, reliable, and highly secure

Timeline



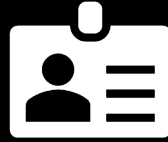
Financials

- Number of Developers/Designers 4
- Estimated number of hours $30 \text{ days} \times 1 \text{ hr/day} \times \text{\#of devs} = 120 \text{ hr}$
- Average hourly wage \$40/hr
- Software Development cost $\$40/\text{hr.} \times 120 \text{ hrs} = \4800

Vision for the future...



Add Data Validation
for all input fields



Login and
authentication for
user access



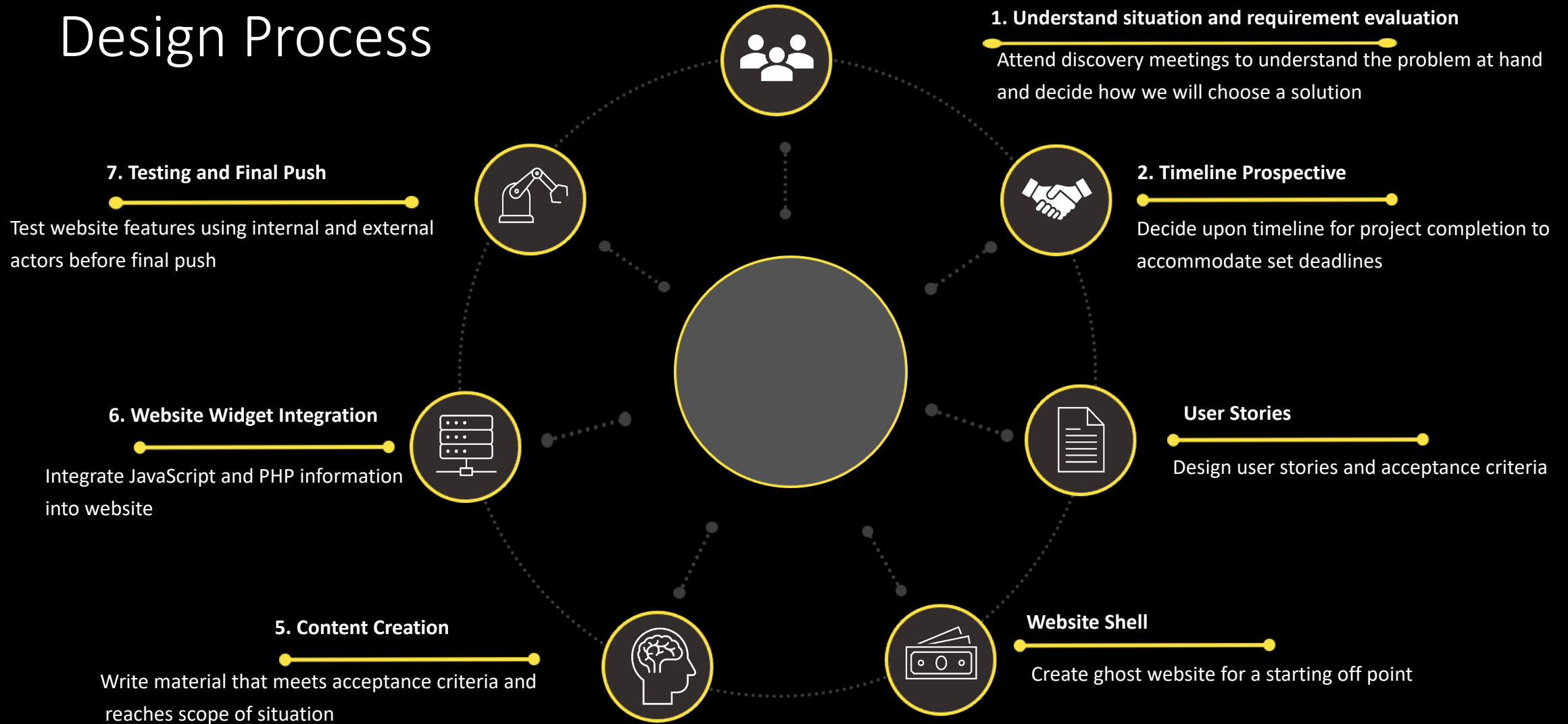
Implementing
security layers into
application



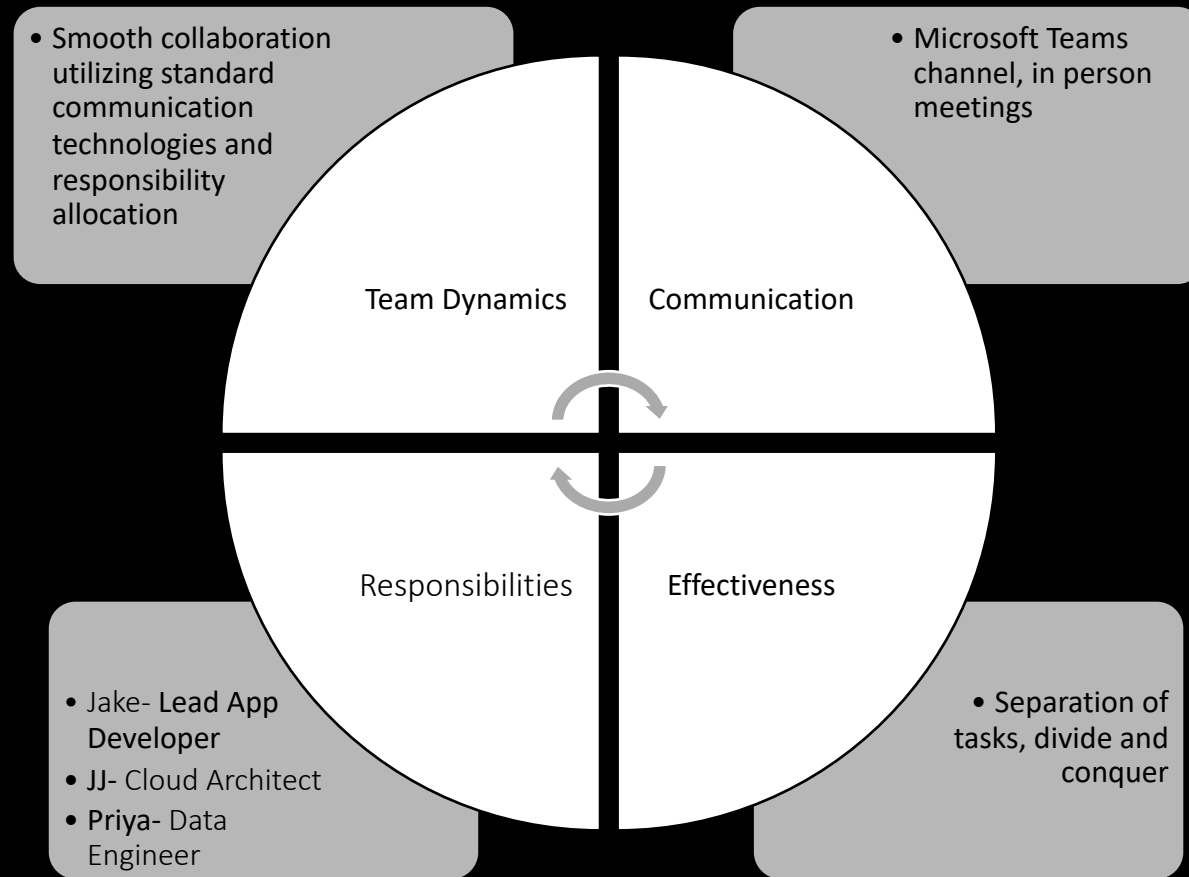
Open-sourcing of
project with
community
development and
maintenance

Estimated Costs- Development Costs - $\$40 \times 300\text{hrs} = \12000

Design Process



Overview of Lessons Learned through the Application Development Process



Lessons Learned – Jake Joseph



Jake Joseph

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Lead App Developer

- Building in debugging mechanisms will help locate errors efficiently
- File structure is key to communication between the different features of the application
- Setting up an MVP to test in the cloud will allow the team to fix cloud synergy issues before the deadline
- Creating a plan and goals before starting the actual programming is key to decreasing the amount of unusable code

Lessons Learned – JJ Bogner



JJ Bogner
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Cloud Architect

- There are a lot of different ways to do something - googling can quickly show different applicable methods available.
- Do not be afraid to ask your team for help when you have issues
- Start early
- Small errors can be huge complications – copy & paste code whenever possible instead of typing.
- Double-check everything that has been manually typed before moving on to next step

Lessons Learned – Priya Huddar



Priya Huddar

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Data Engineer

- Importance of writing clean code that is understood by all team members
- Learning to look for and describe errors to teammates
- Most errors that we come across have already been resolved by others – Google, look into Teams channel for classmates' insights
- Importance of communication and playing to the strengths of all team members

Lessons Learned – Vivi Armacost



Vivi Armacost

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UI Designer

- Collaborative Programming
- Navigating opposing design perspectives within a team
- Virtually collaborating on code utilizing GitHub and Docker
- Over communicate at all points, especially when not working in person
- Ask for another pair of eyes when you cannot find a bug in your code

Appendix

User Story

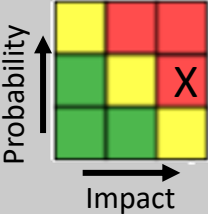
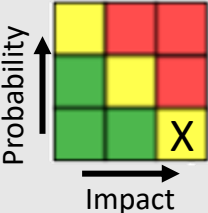
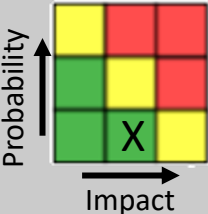
Risks and Mitigations Expanded

Data Model

User Stories that guided our development

User Story	Acceptance Criteria
As a user, I want to view a list of referees with their basic information	Webpage displays a table with referee name. User can click on a particular name to view details- name, age, referee grade, skill level
As a user I assign a particular referee to a game	User is able to select referee and enter the game to be assigned. The data is updated in the table
As a user, I want to download reports that show all games assigned to referees in a given date range	User can select start and end dates from a calendar. A .csv report can be downloaded including games assigned in the date range

Risks and Mitigation

Risk	Risk Profile	Mitigation
The application does not have security layers. It is prone to common external attacks such as SQL injection.	 <p>A 3x3 Risk Profile Matrix. The vertical axis is labeled 'Probability' with an upward arrow, and the horizontal axis is labeled 'Impact' with a rightward arrow. The matrix cells are colored: top row (Yellow, Red, Red), middle row (Green, Yellow, Red with 'X'), and bottom row (Green, Green, Yellow).</p>	In the future development phases, we plan to incorporate a robust security upgrade to the site.
We are using public APIs for viewing weather information which have a risk of going down / out of service.	 <p>A 3x3 Risk Profile Matrix. The vertical axis is labeled 'Probability' with an upward arrow, and the horizontal axis is labeled 'Impact' with a rightward arrow. The matrix cells are colored: top row (Yellow, Red, Red), middle row (Green, Yellow, Red), and bottom row (Green, Green, Yellow with 'X').</p>	In the future we plan to develop a API monitoring process and identify alternative public APIs in the case that one of our current APIs is down for an extended period of time.
Our current application requires a manual process for updating the server after we make changes to the original repository.	 <p>A 3x3 Risk Profile Matrix. The vertical axis is labeled 'Probability' with an upward arrow, and the horizontal axis is labeled 'Impact' with a rightward arrow. The matrix cells are colored: top row (Yellow, Red, Red), middle row (Green, Yellow, Red), and bottom row (Green, Green with 'X', Yellow).</p>	In future application updates, we will create an automatic process for pulling data from GitHub to our server.

Data Model

- Database Structure- ER Diagram

