
Baseball Travels

— Optimizing distance and cost for
visiting baseball stadiums —

Background

Known as America's pastime, going to baseball games is a common summertime activity. One popular way is to go on a stadium tour and travel across the country, watching a game at each stadium.

Our application creates an optimal schedule for fans of all types to attending games at MLB stadiums in 2024, given user inputted parameters.

Users are able to optimize for cost, time, or distance, choosing either the cheapest route, quickest route, or the route with the least travel, and can view the journey on a map.

MLB Stadiums



Data Sources

2024 MLB Schedule

- This data source is from Baseball Reference. One limitation is that it is in the form of text on a webpage, and will need to be scraped into a table. It provides the teams playing, the date of the game, and the time of the game.

US Stadium Locations

- This data source has the latitude and longitude of all of the MLB baseball teams for plotting specific points for each stadium. One limitation is that it will need to be updated when a team moves to a new stadium, which may take some time.

World Cities Database

- This data source is from simple maps, and is a table that can be exported into a csv that contains over 30,000 rows. It provides each city and several details, and will mainly be used to grab the coordinates of each city, for distance calculation usage.

Consumer Airfare Report

- This data source is from the US Department of Transportation. It is in the form of a table that can be exported into a csv and contains over 600,000 rows. It will mainly be used to provide the prices of flights between two cities. One limitation is that a flight may not exist for every combination of cities, and will need to be accounted for.

Use Cases

Use Case: Generate Schedules

The objective of the user interaction is to use the system to generate and view legal schedules for a baseball-focused trip.

The expected interactions are that the user inputs parameters for desired stadium visitations and dates, the system uses those parameters to generate potential legal schedules, and outputs them in the form of a table for users to look through, with details such as travel time, distance, or cost.

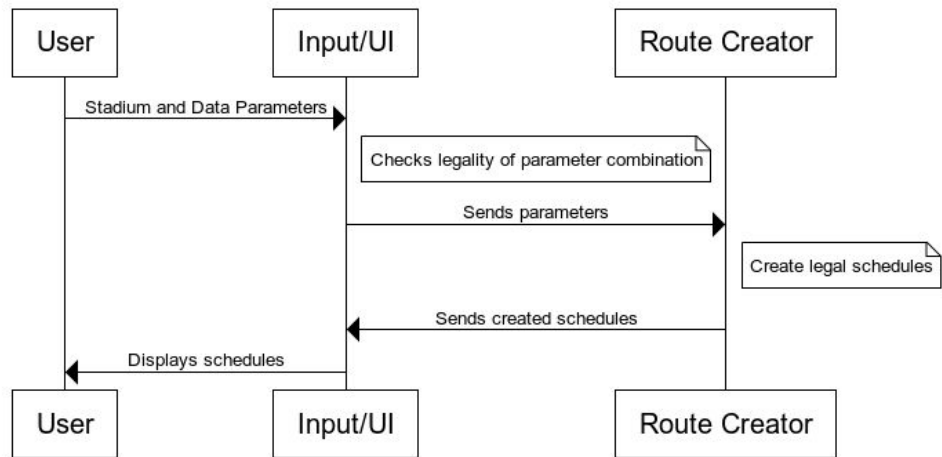
Use Case: View Routes and Costs on Map

The objective of the user interaction is to view the outputted schedules and routes on a map alongside costs and distances

The expected interactions are that after the user generates schedules, they can view and interact with the map portion of the UI and hover over cities and routes with their map. The system will display the map and other information depending on what the user chooses to view on the UI.

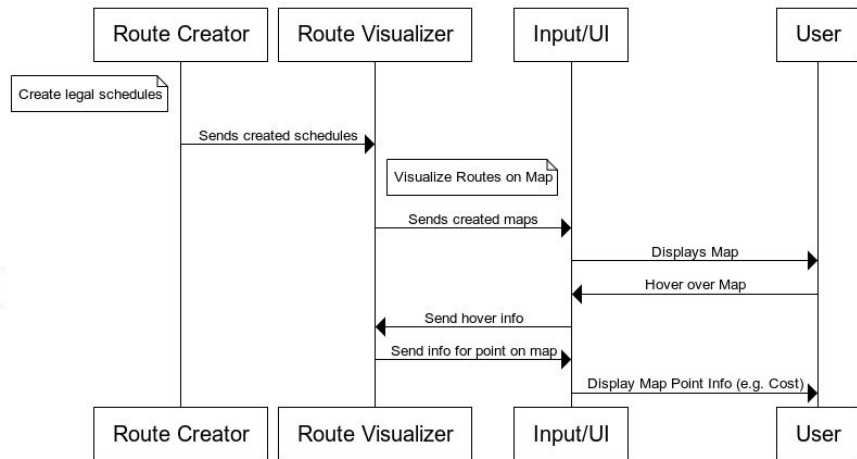
Design

Generate Schedule



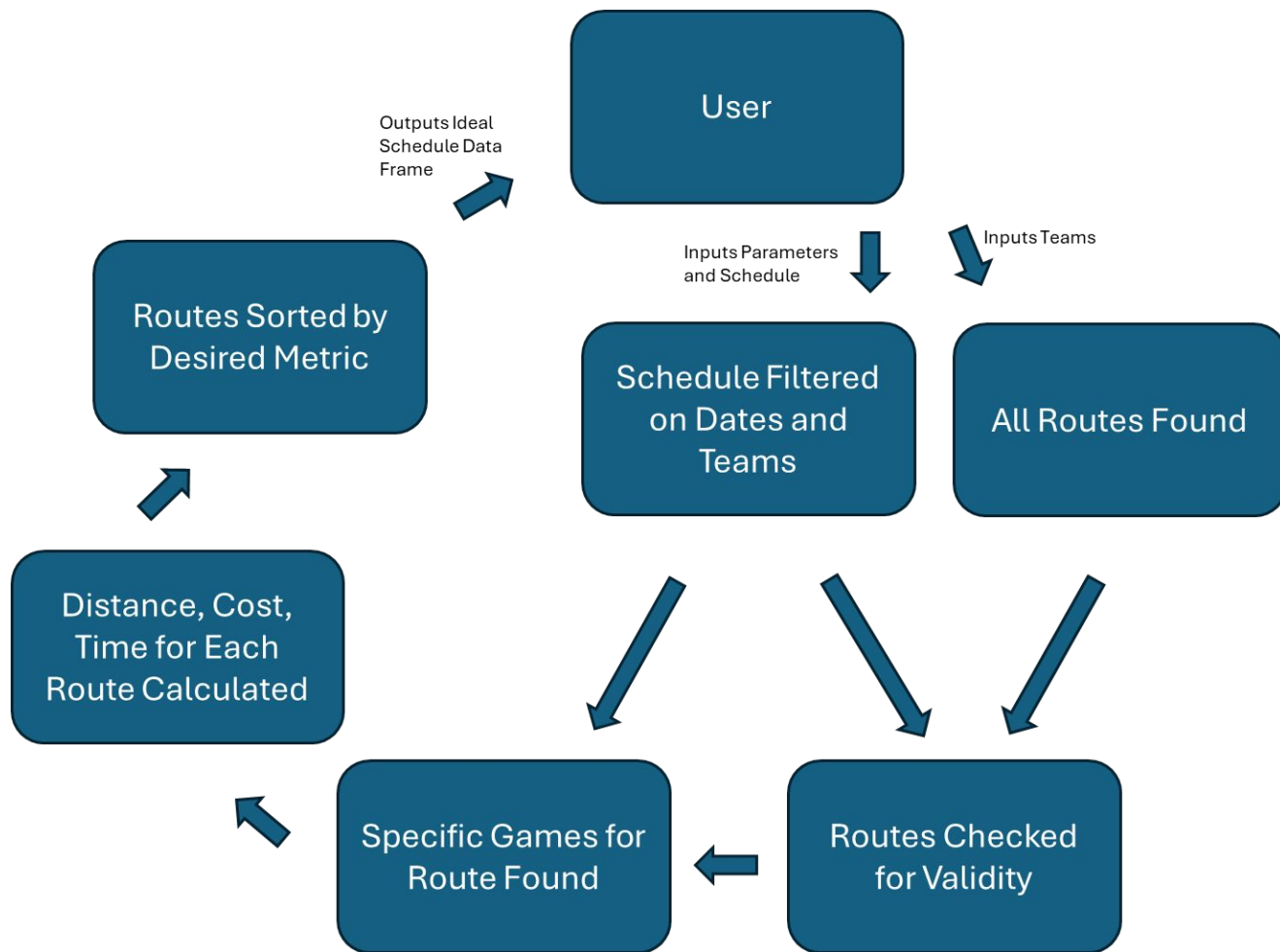
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View Routes and Costs on Map

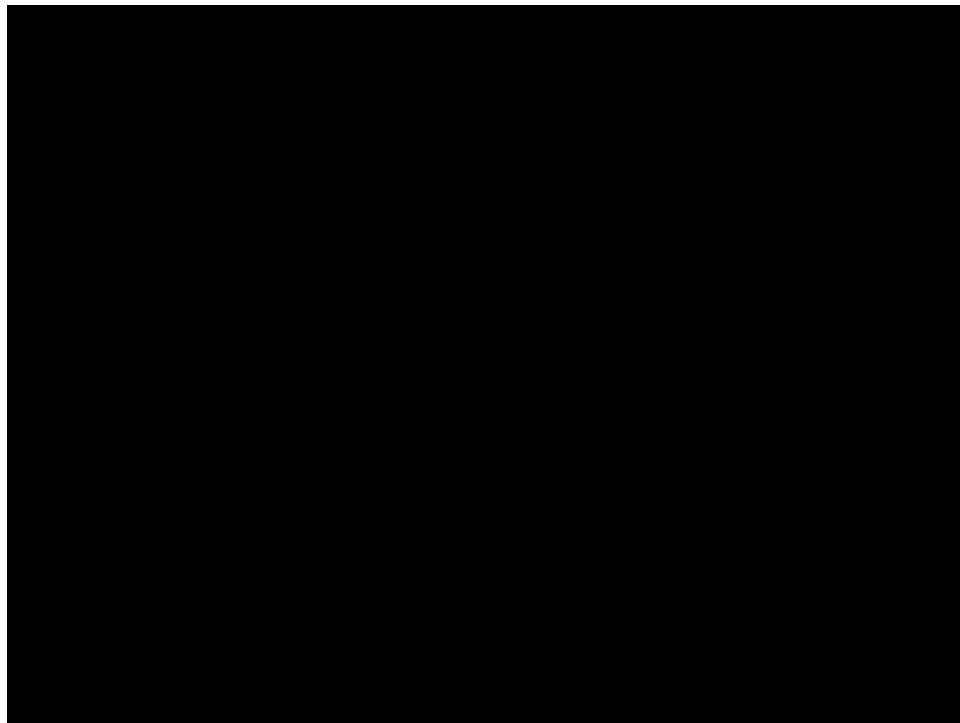


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Design



Demo



Lessons Learned

- Understand limitations of outside packages: while helpful, they will probably not solve all aspects of your problem and you shouldn't expect them to.
- Robust tests are needed, there are a lot more edge cases than you may anticipate
- Follow proper naming conventions, or pylint as you go - it's easier to change a variable, function or package early before it's used across multiple files.

Future Work

- Optimize search algorithm to remove team entry limit and reduce runtime and loading time.
- Introduce method to choose specific games, especially for more advanced fans. These can be based on the away teams, home team promotions, or even specific player appearances.
- Incorporate live flight costs and stadium ticket prices and add to the total cost.