Football League Simulator

A backend simulation of a football league implemented in Go (Golang), complete with REST API endpoints, match logic based on team strength, and editable match results. This project is built for testing and showcasing API design, basic simulations, and data management using SQLite.

Project Structure

```
— main.go
                                   # Entry point of the application
 — api.go
                                   # REST API handlers and route
definitions
                                   # Database connection and
├─ db.go
initialization logic
 — models/
                                   # GORM models for teams and matches
   └─ models.go
  - league/
   — league.go
                                   # Core league logic (fixtures,
simulation, table)
                                   # Team struct and goal difference
   — team.qo
method
                                   # Match struct
      - match.go
   └─ simulator.go
                                   # Match simulation logic based on team
strength
├─ static/
                                   # Minimal frontend to interact with
   └─ index.html
the API
 — postman/
   football-league-api.postman_collection.json # Postman collection
for testing
└─ go.mod / go.sum
                                 # Go module dependencies
```

Live Demo

You can test the app live using the built-in frontend or connect to the API directly. **Accessing live demo** can take some time. Please wait 30 seconds for loading.

⚠ Note:

- Since the deployed version uses Render's free tier, it may take 20–30 seconds to wake up before responding to the first request. Alternatively, you can clone the repository from GitHub and run the project locally.
- A Postman collection is also provided to help you test all API endpoints both locally and on the deployed server. You can import the collection into Postman and try the requests directly.

Running the Project Locally

Prerequisites

- Go 1.18 or newer
- Git
- Postman (for API testing, optional)
- SQLite (optional, for viewing DB manually)

📦 Installation & Running

1. Clone the repository

git clone https://github.com/AlperErd0gan/football-league-simulator.git
cd football-league-simulator

2. Run the application

go run .

- 3. Visit the interface
- http://localhost:8080

API Testing with Postman

Postman Collection

A ready-to-use Postman collection is provided:

- 1. Open Postman
- 2. Click Import
- 3. Choose the file found in postman folder in the Github directory
- 4. Import local json for local testing or deployed URL

Included Endpoints

Endpoint	Method	Description
/league	GET	Returns current league table and last match results
/play/week	POST	Simulates the next week's matches
/play/all	POST	Simulates all remaining matches in the season
/restart	POST	Resets league state and clears match history

Endpoint	Method	Description
/results/all	GET	Fetches all match results grouped by week
/edit/match	POST	Edits a match score by ID and recalculates standings

Example POST /edit/match Body

```
"ID": 3,
                           "HomeGoals": 2,
                           "AwayGoals": 1
Tootball-leag | POST /get/league | POST /play/all (de | POST https://foo | POST https://f
                                                                                                                                                                                                                                                                                                                                                                                                                        No environment V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Share
    https://football-league-simulator-1.onrender.com/edit/match
                                                                                                                                                                                                                                                                                                                                                                                                                    🖺 Save 🗸
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           </>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2
        POST
                                         https://football-league-simulator-1.onrender.com/edit/match
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Send
     Params
                                Authorization Headers (8)
                                                                                                                                  Body • Scripts Settings
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Cookies
      ○ none ○ form-data ○ x-www-form-urlencoded ○ raw ○ binary ○ GraphQL JSON ∨
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Beautify
            2
                                 "ID": 1,
                                "HomeGoals": 2,
            3
                                "AwayGoals": 3
            4
            5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       03
  Body Cookies Headers (12) Test Results
                                                                                                                                                                                                                                                                                                                                                                 200 OK • 403 ms • 397 B • 🛱 🚥
                                                                                                                                                                                                                                                                                                                                                                                                             = Q 0 0
    {} JSON ✓ ▷ Preview 🍪 Visualize ✓
                                            "status": "match updated and standings recalculated"
```

How It Works

- Teams are initialized with names and strength levels.
- Fixtures are generated using a double round-robin algorithm.
- Match results are simulated using Poisson-based logic scaled by team strength.

- Data is stored using SQLite and managed via GORM.
- Stats like Wins, Draws, Losses, Games Played, Goal Difference, and Points are updated live.

• League state is retained in memory and synced with the database after simulations or edits.

Features

- Match simulation with randomness and team strength
- Dynamic league table with full stats
- Editable match results via API
- SQLite integration (no external DB needed)
- Minimal frontend to view results
- Postman collection included

1 Author

- Alper Erdogan
- GitHub: @AlperErdOgan