High-Level Design Document

TransferRoom.POC.EPL.Squads – Full Stack Tech Assignment

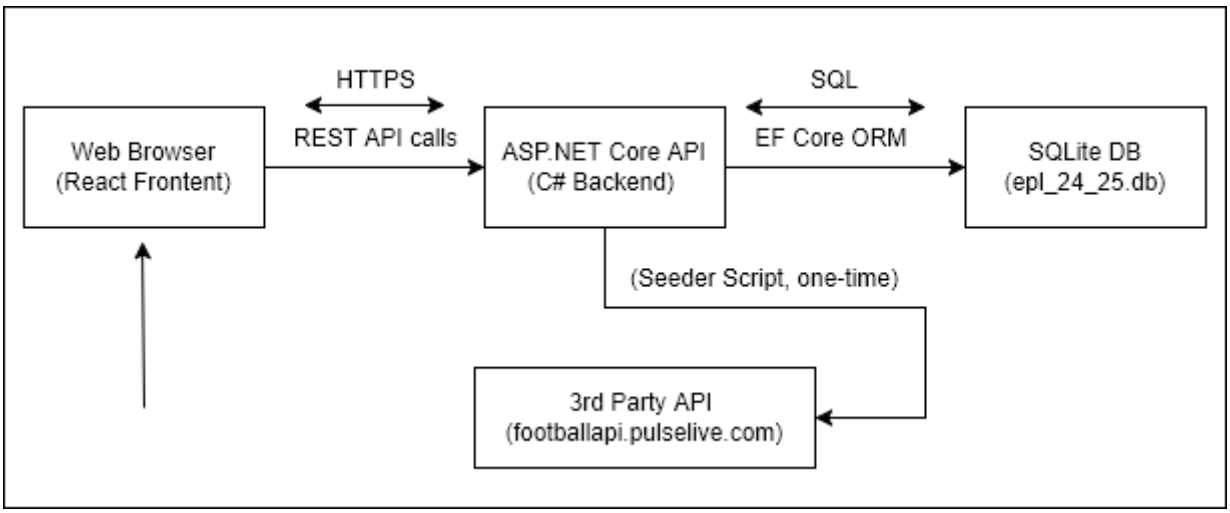
1. Overview

This document describes the high-level design for a proof-of-concept (POC) web application that allows users to select any team in the 2024/25 English Premier League season and view detailed squad information. The solution demonstrates skills using React (frontend), C# ASP.NET Core (backend), SQLite (database), and Render.com (CI/CD deployment).

2. Requirements Mapping

Requirement	Solution Implementation
Web-based app for EPL squad info	React frontend + ASP.NET Core backend
Query by team name or nickname	Search supports both club names and nicknames
Return profile picture, name, birthdate, position	API and UI display all required player details
React frontend	Implemented with React + TypeScript
C# middleware	Implemented with ASP.NET Core Web API
CI/CD deployment	Automated deployment via Render.com
3rd party API integration	Data sourced from footballapi.pulselive.com
Public GitHub repo with documentation	All code and docs in public repo
High-level design document	This document

3. Architecture Diagram



4. Component Descriptions

- **Frontend (React + TypeScript):**
  - User interface for searching and selecting EPL teams.
  - Displays squad details (profile picture, first name, surname, birthdate, position).
  - Supports search by team name or nickname.
  - Communicates with backend via REST API.
- **Backend (ASP.NET Core Web API):**
  - Exposes endpoints for teams and squads.
  - Serves data from a pre-seeded SQLite database.
  - Supports search by name or nickname.
  - Swagger UI for API documentation.
- **Database (SQLite):**
  - Stores EPL teams and squad data for the 2024/25 season.
  - Pre-seeded using a Node.js script.
- **Seeder Script (Node.js):**
  - Fetches latest EPL data from footballapi.pulselive.com.
  - Populates or updates the SQLite database.
  - Not required for normal usage (DB is included).
- **CI/CD (Render.com):**
  - Automated deployment of backend and frontend.
  - Public demo available.

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5. Key Design Decisions

- **React & TypeScript:** Modern, widely-used frontend stack for rapid UI development.
- **ASP.NET Core (C#):** Robust, scalable backend framework with strong typing and tooling.
- **SQLite:** Lightweight, file-based DB suitable for POC and easy distribution.
- **Render.com:** Simple, free CI/CD and hosting for both frontend and backend.
- **3rd Party API:** Used unofficial footballapi.pulselive.com for up-to-date EPL data.
- **Nickname Search:** Nicknames sourced and mapped to teams for flexible search.

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6. API Overview

- `GET /api/teams` — List all teams (supports `?search=`)
- `GET /api/teams/{id}` — Get team by ID
- `GET /api/teams/{id}/squad` — Get squad for a team

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7. Deployment & CI/CD

- **CI/CD:**
  - GitHub repository connected to Render.com.
  - On push, code is built and deployed automatically.
  - Demo: https://epl-squads-24-25-poc.onrender.com/
- **Note:**
  - Free plan may cause backend to "sleep" when idle; first API call may be slow or fail due to time out.

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8. Technical Challenges & Considerations

- **3rd Party API Limitations:**
  - Unofficial API may change or become unavailable.
- **Free Hosting Cold Starts:**
  - Render.com free plan puts backend to sleep, causing slow initial response.
- **Data Updates:**
  - Seeder script provided for potential data refreshes.

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9. Future Improvements

- Add authentication and user accounts.
- Enhance error handling and loading states in UI.
- Support for additional leagues or seasons.
- Automated tests for backend and frontend.

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10. Appendix

- **Source Code:** GitHub Repository
- **Live Demo:** https://epl-squads-24-25-poc.onrender.com/

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