Project: Fantasy League Management System

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1 Application Domain

I propose a **Fantasy League Management System** that lets football fans build and manage virtual teams, set lineups, and compete in head-to-head league fixtures. Teams score points from simulated match events (goals, assists, clean sheets, cards, etc.), and weekly fantasy team matchups determine league standings.

Difference between mine and FPL

- **Simplicity:** Unlike feature-heavy platforms (e.g., Fantasy Premier League), our system focuses on the core loop – pick a starting 11 and make limited, meaningful changes each gameweek.

- **Team Chemistry Bonus:** If six or more players remain in the same fantasy team for five consecutive gameweeks, the team earns a +15 point boost. This rewards consistency and team-building rather than endless chasing of individual high scorers.

- **League-style competition:** Instead of only cumulative points, fantasy teams directly "play" against each other each week. The team with higher points wins the match and earns 3 points for a win, 1 for a draw, similar to real football leagues. This structure makes the fantasy game feel more competitive and dynamic.

Realness (Data Sources)

- Public football statistics: goals, assists, clean sheets, cards; optionally xG/xa data.

- Simulation: When real data are incomplete, I'll simulate events using historical team strength and player propensities.

2 Planned Functionality

Basic Functions

- CRUD operations for teams, players, stadiums, matches, gameweeks, and fantasy teams.

- User registration, fantasy team creation, lineup selection with captain/vice.

- Views: match schedule/results, league table, player leaderboards.

- Queries: multi-table joins (e.g., player–team–match) and aggregate queries (e.g., clean sheets by team).

Advanced Functions

- **Chemistry Engine:** Award +15 once per streak when ≥ 6 players remain unchanged for 5 consecutive weeks.

- **Budgeted Triplet Recommender:** Recommend triplets of players that maximize expected points within a given budget and positional limits.

3 ER Diagram Assumptions

- TEAM–STADIUM: one-to-one.

- PLAYER–TEAM: many-to-one.

- MATCH: occurs in one stadium and gameweek; has home and away teams.

- USER–FANTASY_TEAM: one-to-one.

- FANTASY_LINEUP: weak entity identified by (ft_id, gw_code, slot).

- TRANSFER: weak entity identified by (ft_id, gw_code, sub_no).

- PLAYER_MATCH: resolves many-to-many between PLAYER and MATCH; stores per-match stats.

- LEAGUE_TABLE: derived relation aggregating results.

ER DIAGRAM
PROJECT: FANTASY LEAGUE

Entities and attributes:

- current strength
- historical strength
- name
- **TEAM**
- code

- id
- name
- **STADIUM**
- capacity

- **owns** (TEAM → STADIUM)

- **contracted** (TEAM → PLAYER)

- **Play** (PLAYER → MATCH)

- **used** (MATCH → STADIUM)

- id
- position
- **PLAYER**
- name
  - first
  - last
- cost

- **player match** (PLAYER ↔ MATCH)
  - goals
  - assists
  - points
  - yellow card
  - red card
  - clean sheet

- home goals
- **MATCH**
- id
- game time
- away goals

- **involve** (MATCH → GAMEWEEK)

- code
- **GAMEWEEK**
- time
  - start
  - end

An entity-relationship diagram.

USER (entity) with attributes: id (underlined/key), uname, email

FANTASY TEAM (entity) with attributes: id (underlined/key), name

USER — makes — FANTASY TEAM

FANTASY TEAM — makes — TRANSFER

FANTASY TEAM — has — FANTASY LINEUP

TRANSFER (weak entity) with attribute: Sub n#

FANTASY LINEUP (weak entity) with attributes: slot, Captain

TRANSFER — made — GAMEWEEK

FANTASY LINEUP — involved — GAMEWEEK

TRANSFER — in/out — PLAYER

FANTASY LINEUP — appears in — PLAYER

GAMEWEEK (weak entity)

PLAYER (weak entity)