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CS 3200 Database Design

Project Description

The premise for this project is that I've been approached by a group of friends looking to move their fantasy football league to a DBMS for the purpose of potentially starting a new fantasy football platform as well as easier consumption and analysis of football players' stats and fantasy team data.

As such, we can start with a **league** table. With each new football season, as well as any new groups of friends or even strangers, comes the need for a new league. Each league has a name, a commissioner, a certain number of teams, and a couple league settings, such as an is_full attribute and ppr (points per reception), a decimal to be used for scoring player performances.

Next comes a **user** table. Each row in this table represents a user of this fantasy football platform. Users can be league commissioners and/or team owners. Each user has a first and last name, email address, and password.

Next comes a **fantasy_team** table where each row in this table represents a fantasy team managed by a user. A fantasy team belongs to a league and also has a name and abbreviation.

As fantasy football is based on the actual production of real athletes, a **player** table is needed containing every player that can be drafted to a fantasy team. Each player plays for an NFL team and has a first and last name, as well as a position.

There are also tables for **position**, **nfl_team**. The positions table consists of the available positions and their abbreviations, and the NFL teams table consists of the 32 NFL teams' cities, names, abbreviations, and bye weeks.

Furthermore, there is a **roster** table. Each row in this table consists of a player and fantasy team said to own that player in the particular team's league. A fantasy team can own up to 17 players. A player can only be on one fantasy team per league. It should be noted that rosters can change frequently, as team owners add, drop, and trade players.

Related to a fantasy team's roster is its **weekly_lineup**. As perhaps implied by the name, each row in this table corresponds to a fantasy team's lineup for a particular week. Each lineup consists of a subset of the team's roster at the time, with restrictions based on player position such that a lineup consists of 1 quarterback, 2 running backs, 2 wide receivers, 1 tight end, 1 flex (running back, wide receiver, or tight end), a defense, and a kicker. A single player can not be in a particular lineup more than once.

From this comes the **matchup** table. A matchup consists of a week number, and two fantasy teams in the same league. From each team's lineup for the given week, we can determine the scores of each team based on the player performances of each team's lineup.

As such, the last table is **player_performance**. Each row will correspond to a player's statistics for a particular week. A player's score for a certain week can be calculated based on a league's scoring settings.

Required Tasks

a) Register a new user
b) Make a new 10-team fantasy league with the newly created user as the commissioner
c) Add a fantasy team to the newly created league named “Best Team” with abbreviation “BT” managed by the newly registered user
d) Change a league’s is_full attribute to True
e) Release a player from a fantasy team
f) Add a player to a fantasy team
g) Complete a trade between 2 fantasy teams
h) Update a player’s NFL team (such as in the event they are traded in real life)
i) Add a new lineup for a specified fantasy team and week
j) Find how many points a player scored for a given week