NBA

Group 1 from Class 3:

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1. Context

The National Basket Association needs a platform to save all the data related to one season.

There are many teams, formed by its players and its coach. Each team represents a state and a city, in which there is an arena defined by a name and its capacity.

It's important to know the players and the coaches' id, name, age and country.

The players also have their height, weight, position, draft year, draft rank and t-shirt number.

The season is composed by games, which are played between two teams. The games are characterized by a date and an hour and are played in one of the team's arena.

Each game has three referees, with an id, name, age and country.

The objective of our database is to keep track of every shot, foul, rebound, assist and other events made by each player in each instance of the game. This information will be used to create statistics for each player and each team, which can be used in multiple ways, like for a team to study their opponents before their games or for public's access.

2. UML Diagram
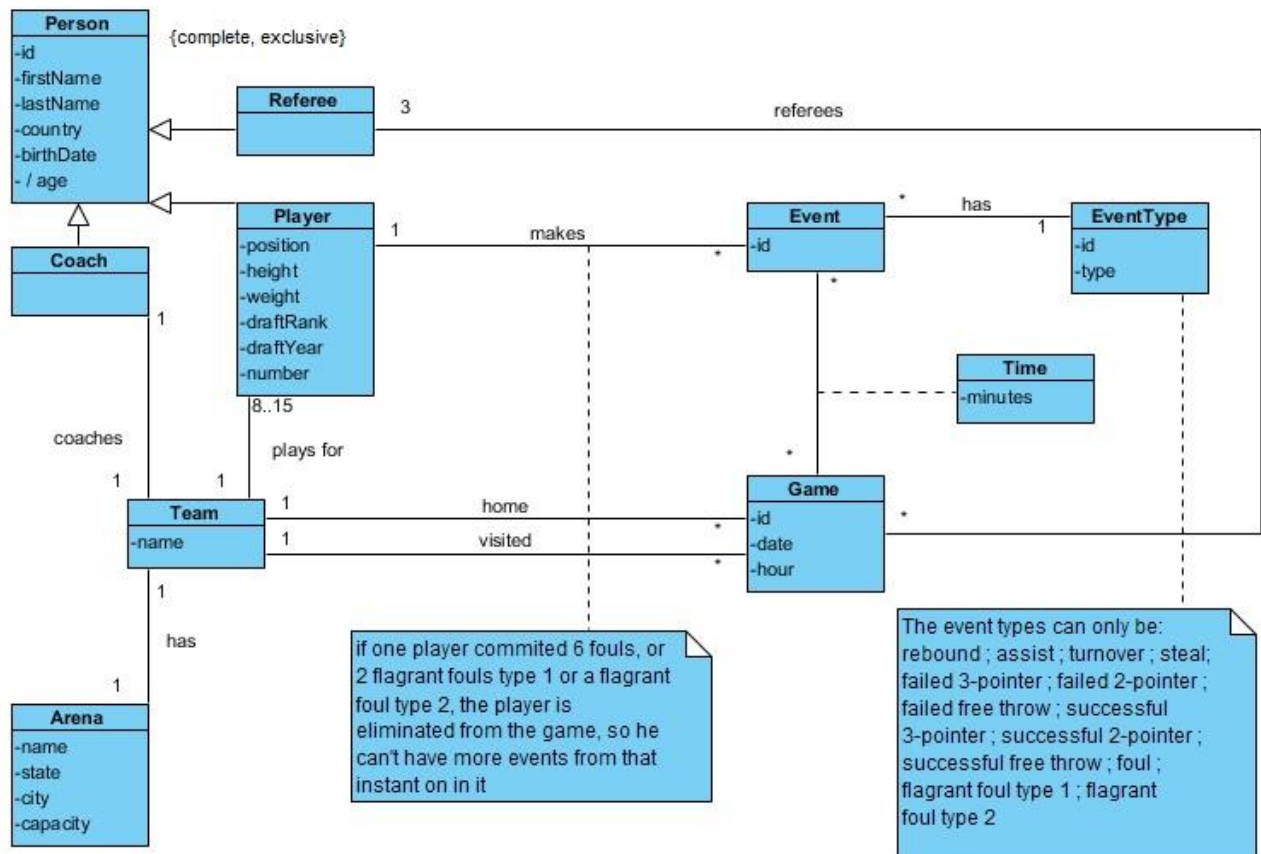
3. UML Diagram's Explanation

There were common attributes between the classes Coach, Referee and Player, therefore we put all of these in a superclass (Person). The resulting generalization is complete and exclusive.

To keep track of every rebound, foul, assist or shot done in a game, we created a class Event, associated with a game, a player and a type. Thanks to this, we know in each instant of the game if a determined type of event was made and who made it. Knowing the number of points each player scored in the game, we can know the full score for each team and deduce which team won the game. The events will also contribute to the players' personal stats.

The types of events are: rebound; assist; steal; simple foul; flagrant foul type 1; flagrant foul type 2; turnover; successful 3-pointer; successful 2-pointer; successful free throw; failed 3-pointer; failed 2-pointer; failed free throw. There's also an id in the EventType class, which will be used as the key, with the objective of saving memory space, since an integer occupies less space than a string.

A player with 6 fouls, 2 flagrant fouls type 1 or 1 flagrant foul type 2 has to be substituted by a team mate and can't play for the rest of the game.

The game also has an id, since there may be two games occurring at the same time.

We divided the association between team and game in two associations to differentiate in which team's arena the game will be played.