APCS :: Basketball Stats Program part I

You should now have enough tools in your tool belt to get some work done on the Stats program.

Before you begin make sure your program has the following classes:

- **Player** – maintains individual player stats
- **Team** – maintains a list of Players and a score
- **Game** – maintains references to two teams, designated as “home” and “Visitor” respectively.
- **Main** – runs the UI and parses commands.

Here is a typical box-score for one team showing stats for a game. We will use this as our guide as we proceed for this part of the assignment we will only concern ourselves with fga, fgm and pts.

<table>
<thead>
<tr>
<th>PLAYER</th>
<th>POS</th>
<th>MIN</th>
<th>FGM-A</th>
<th>3GM-A</th>
<th>FTM-A</th>
<th>OFF</th>
<th>DEF</th>
<th>TOT</th>
<th>A</th>
<th>PF</th>
<th>STL</th>
<th>TO</th>
<th>BLK</th>
<th>PTS</th>
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<td>0</td>
<td>20</td>
<td></td>
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<td>G</td>
<td>24:27</td>
<td>3-11</td>
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<td>2</td>
<td>3</td>
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<td>1</td>
<td>6</td>
<td>18</td>
<td></td>
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<td>5-14</td>
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</table>

Please implement the following commands in the Game class and test them to make sure they work. You may hard-code the building of teams in main in order to test.

Please note: IN ALL CASES, your user interface should handle improperly constructed commands gracefully. That is, if the command cannot be parsed or the arguments aren’t correct, you should print a helpful error message to the screen.

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**fga**

**PURPOSE** Record a “Field Goal Attempt” for a player on some team. The command should update team and player statistics
accordingly.

**USAGE**

\[
\text{fga H|V num pts }
\]

**ARGS**

- **H|V**: A single character “H” or “V” (not necessarily upper case) that represents whether the player who took the shot is on the “Home” or “Visiting” team.
- **num**: the number of the player who took the shot.
- **pts**: The number of points scored by the player when they took the shot: 0 indicates a miss, 2 indicates a make. 1 is not valid because that would come from a free throw attempt (see fta). **NOTE**: 3 is a valid value only if you don’t plan to implement the 3pt command — which is okay.

**EXAMPLES**:

\[
f\text{ga H 21 2}
\]

This would indicate that player with number 21 for the home team took a shot and scored two points. The player’s fga and fgm stats should be updated, as well as the players total points. The Home team should also have two points recorded for the team score.

\[
f\text{ga H 21 0}
\]

Would indicate that player 21 on the home team took a shot and missed.

---

**PURPOSE**

Record a “Rebound” for a player on some team. The command should update team and player statistics accordingly.

**USAGE**

\[
\text{reb H|V num [O|D]}
\]

**ARGS**

- **H|V**: A single character “H” or “V” that represents whether the player who got the rebound is on the “Home” or “Visiting” team.
- **num**: the number of the player who got the rebound.
- **[O|D]**: OPTIONAL a single character “O” or “D” to indicate an offensive or defensive rebound.

**EXAMPLES**:

\[
\text{reb H 21}
\]

This would indicate that player with number 21 for the home team took got a rebound. The player’s total rebounds should be incremented. Typically, team rebounds are statistic that’s calculated when the game is over, but you can update this team stat in real time if you like — just like points.
reb H 21 D

Would indicate that player 21 on the home team got a “Defensive” rebound.

NOTES: To implement this command you’ll need to add a field to the Player to keep track of this stat, and methods to the Player, Team and Game classes to set it properly. Use the fga command as a model.

print / p

PURPOSE Print a pre-defined report. You may want to break this up into different commands rather than trying to fit it all into one.

USAGE print {score|team} [H|V]

ARGS score|team -- These are two named reports that could be printed.

[H|V] – required by team report, ignored by score report.

EXAMPLES:

print score

Print the score of the game. Simple, one or two lines.

print team H

Print the roster for the home team

NOTES: Printing the roster should be easy since the Team class has a method that does this. Printing the score should print the team names and their current number of points.

add

PURPOSE Add a team to the game or a player to a roster.

USAGE add player H|V name number

ARGS player – this arg is here for the future when we might want to add other things, like teams.

H|V – a single character “H” or “V” is the player on the home team or visiting team?

name – the name of the player being added.

number – the player’s number
**EXAMPLES:**  
add player H Baker 14

Add a player to the home team roster with the name “Baker” and number 14.