FanDuel Trading Solutions Coding Challenge – NFL Depth Charts

Here at FanDuel, understanding sports and the underlying data and information related to those sports is key to how we approach technology and product development. In Trading Solutions, it's what helps us provide the most efficient betting markets and the best product offering to our customers.

As you go through the coding challenge, please reach out to your Talent Acquisition contact for any clarifications on any of the deliverables or on the questions themselves. Please answer the below question to the best of your ability. While we discourage getting outside counsel from any of your peers, you are allowed to use any Libraries and resources you wish to help implement your solution.

NFL Depth Charts

In the NFL, all 32 teams are required to produce a standardized Depth Chart for each week of the NFL season. This depth chart is the official ranking of players for each position on the team. At FanDuel, our ability to analyze depth charts helps us with our Player Projections and markets for Player Props, as we're able to use this data as one of the inputs aimed at projecting a player's potential performance within their next game.

Pos	No.	Player 1	No	Player 2	No	Player 3	No	Player 4	No	Player 5
OFFENSE										
LWR	13	Evans, Mike 14/1	1	Darden, Jaelon 21/4	10	Miller, Scott 19/6				
RWR	18	Johnson, Tyler 20/5	16	Perriman, Breshad SF21	15	Grayson, Cyril P/Dal				
LT	76	Smith, Donovan 15/2	72	WELLS, JOSH SF19						
LG	74	Marpet, Ali 15/2	60	Leverett, Nick CF20						
C	66	JENSEN, RYAN U/Bal	70	Hainsey, Robert 21/3						
RG	65	Cappa, Alex 18/3	64	Stinnie, Aaron W/Ten						
RT	78	Wirfs, Tristan 20/1	72	WELLS, JOSH SF19						
TE	80	Howard, OJ 17/1	84	BRATE, CAMERON CF14						
TE	87	GRONKOWSKI, ROB T/NE								
QB	12	BRADY, TOM U/NE	11	GABBERT, BLAINE SF19	2	Trask, Kyle 21/2				
RB	7	Fournette, Leonard W/Jax	27	Jones II, Ronald 18/2	21	Vaughn, Ke'Shawn 20/3	25	BERNARD, GIOVANI SF21		

In the example above for the Tampa Bay Buccaneers, you can see that Tom Brady is 1st on the Depth Chart at Quarterback (QB), followed by Blaine Gabbert, and then Kyle Trask.

The goal of the coding challenge is to implement functionality that will allow us to manage and work with these depth charts.

As part of this exercise, we will provide the full 2022 Tampa Bay Buccaneers Depth Chart, as a saved Webpage. https://www.ourlads.com/nfldepthcharts/depthchart/TB is where we got the data from, but this data can change based on any Roster moves made by the team.

Data Model

Assume player objects generally look like the below example. Some notes on the Data Model…

- A player can be listed on the Depth Chart for multiple positions
  1. In the Tampa Bay example above, Josh Wells is listed as the number two player in the Depth chart at both Left Tackle (LT) and Right Tackle (RT).
- You can also assume that a number within the team uniquely identifies that player.

```
{
        "number": 12,
        "name": "Tom Brady",
        "position": "QB"
}
```

Use Cases to Implement:

- addPlayerToDepthChart (position, player, position_depth)
  - Adds a player to the depth chart at a given position
  - Adding a player without a position_depth would add them to the end of the depth chart at that position
  - The added player would get priority. Anyone below that player in the depth chart would get moved down a position_depth
- removePlayerFromDepthChart(position, player)
  - Removes a player from the depth chart for a given position and returns that player
  - An empty list should be returned if that player is not listed in the depth chart at that position
- getBackups (position, player)
  - For a given player and position, we want to see all players that are "Backups", those with a lower position_depth
  - An empty list should be returned if the given player has no Backups
  - An empty list should be returned if the given player is not listed in the depth chart at that position
- getFullDepthChart()
  - Print out the full depth chart with every position on the team and every player within the Depth Chart

Some Sample Inputs / Outputs

```
var TomBrady = { "number": 12, "name": "Tom Brady" }
var BlaineGabbert = { "number": 11, "name": "Blaine Gabbert" }
var KyleTrask = { "number": 2, "name": "Kyle Trask" }

var MikeEvans = { "number": 13, "name": "Mike Evans" }
var JaelonDarden = { "number": 1, "name": "Jaelon Darden" }
var ScottMiller = { "number": 10, "name": "Scott Miller" }


addPlayerToDepthChart("QB", TomBrady, 0);
addPlayerToDepthChart("QB", BlaineGabbert, 1);
addPlayerToDepthChart("QB", KyleTrask, 2);

addPlayerToDepthChart("LWR", MikeEvans, 0);
addPlayerToDepthChart("LWR", JaelonDarden, 1);
addPlayerToDepthChart("LWR", ScottMiller, 2);


getBackups("QB", TomBrady)
/* Output */
#11 – Blaine Gabbert
#2 – Kyle Trask

getBackups("QB", JaelonDarden)
/* Output */
#10 – Scott Miller

getBackups("QB", MikeEvans)
/* Output */
<NO LIST>

getBackups("QB", BlaineGabbert)
/* Output */
#2 - Kyle Trask

getBackups("QB", Kyle Trask)
/* Output */
<NO LIST>

getFullDepthChart()
/* Output */
QB – (#12, Tom Brady), (#11, Blaine Gabbert), (#2, Kyle Trask)
LWR – (#13, Mike Evans), (#1, Jaelon Darden), (#10, Scott Miller)

removePlayerFromDepthChart("WR", MikeEvans)
/* Output */
#13 – Mike Evans

getFullDepthChart()
/* Output */
QB – (#12, Tom Brady), (#11, Blaine Gabbert), (#2, Kyle Trask)
LWR - (#1, Jaelon Darden), (#10, Scott Miller)
```

Important Notes

- How do we scale the solution?
    1. Adding more Sports? MLB, NHL, NBA
    2. Adding all the NFL teams?
- How do you go about testing your solution?
    1. Are you handling all the various edge cases correctly?
    2. Can you add any automated unit tests to your solution?
- Think about your code organization, maintainability, and other factors that improve readability and understanding of your code
- If there is anything that seems unclear, please feel free to get in touch with us

Submission

Here are some possible options for submitting your solution to us – Please work with the FanDuel Talent Acquisition team on this

- Link to your GitHub Respository – We'll need access to it!
- Zip file containing your Source Code and any accompaniments (excluding binaries)

Please also provide a README.md file at the root level of your solution with the following

- How should we build and run your code?
- Any additional instructions you need to tell us
- Any other assumptions you've made

PLEASE AIM TO COMPLETE THE CODING CHALLENGE WITHIN 72 HOURS OF RECEIPT

We hope you have fun working on this coding challenge!