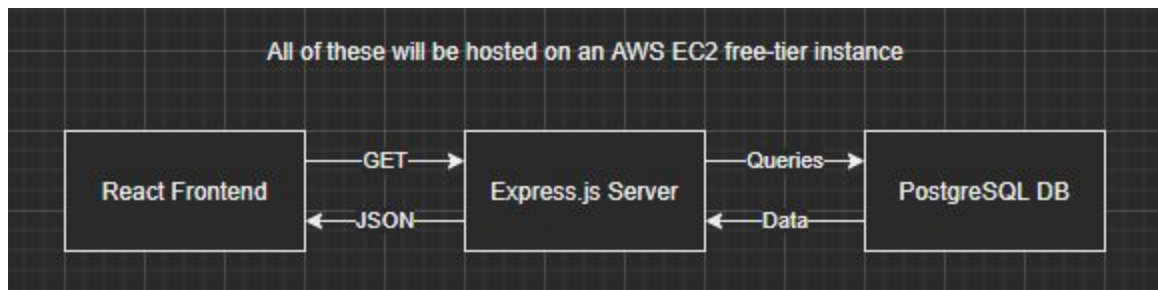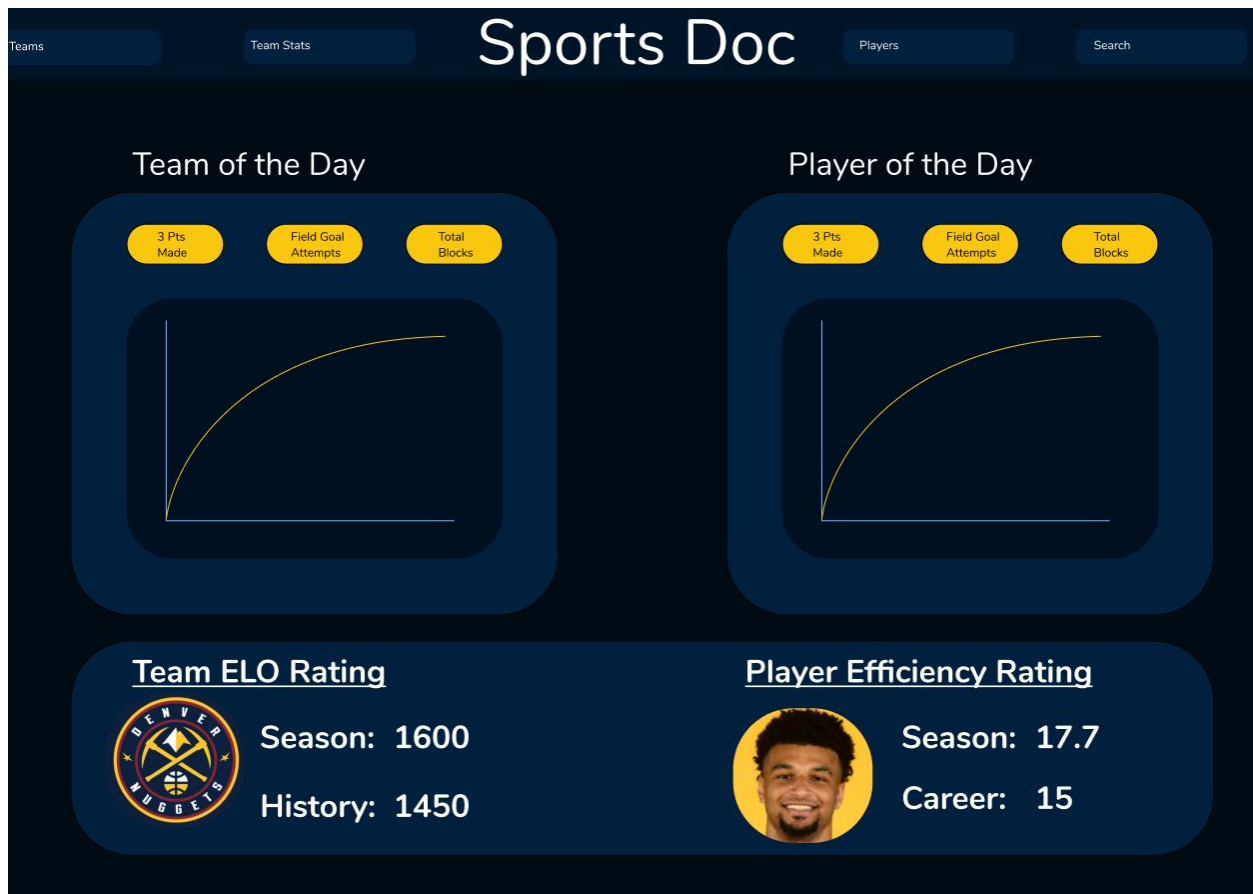## Revised List of Features:

- See basic team wins and losses
- Get extensive team and player stats using the API (what makes this different from the first bullet point is that we are getting actual game data such as blocks, points etc rather than just wins and losses)
- Display graphs on player and team statistics
- View all major sports excluding soccer
- Display Team's ELO Rating and Players PER(Player Efficiency Rating)
- Team Matchups by comparing ELO rating
- 1v1 matchup dashboard for player vs player comparisons, powered through the PER stat

Architecture Design:

Front End Design:

Season Info

Jamal Murray

Regular Season
18.5 Pts
0.8 Blocks
0.6 Steal
4 3PM
+20 PM

Playoffs
32 Pts
3 Blocks
1 Steal
6 3PM
+20 PM

3 Pts Made | Field Goal Attempts | Total Blocks

Player Efficiency Rating

Season: 17.7

Career: 15

Season: 17.7

Career: 15

Season Info

Denver Nuggets

Regular Season

46 Wins
27 Losses
.630 Win%

Playoffs

Defeated Utah
Defeated LAC
Down 1-3 vs LAL
Advanced to WCF

3 Pts Made | Field Goal Attempts | Total Blocks
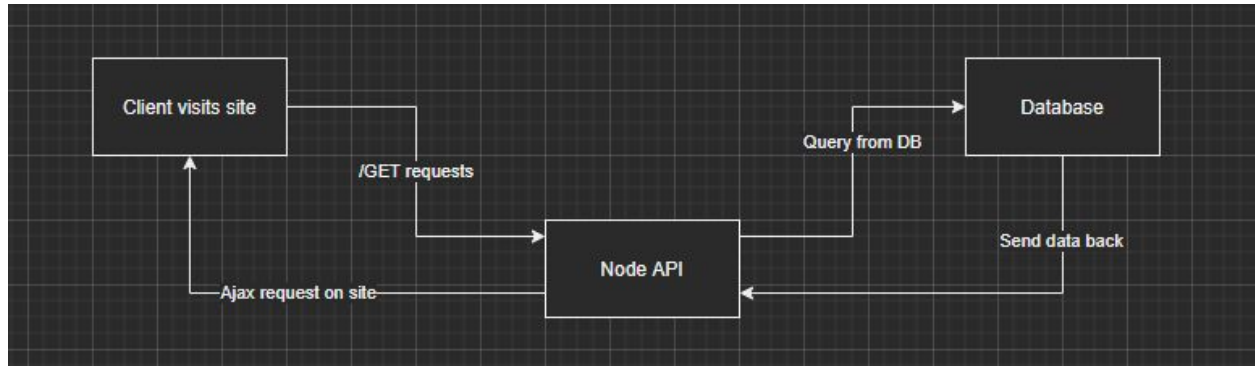
Team ELO Rating

Season: 1600

History: 1450

Season: 17.7

Career: 15

Web Service Design:

Database Design:

For each sport there are three tables, one for games, one for players, and one for teams. Each game entry references the two teams that participated by the team abbreviation, and player entries (with distinct entries for each year the player participated) references the team they were a part of for that year by the abbreviated name of the team. The soccer games table is being reworked at the moment so appears to have only one column labelled *index.*

soccer_teams

Column	Type	
index	bigint	NULL
squad_id	text	NULL
name	text	NULL
season	text	NULL
record	text	NULL
position	text	NULL
points	text	NULL
league	text	NULL
manager	text	NULL
country	text	NULL
gender	text	NULL
goals_scored	text	NULL
goals_against	text	NULL
goal_difference	text	NULL
expected_goals	text	NULL
expected_goals_against	text	NULL
expected_goal_difference	text	NULL
home_record	text	NULL
home_games	text	NULL
away_record	text	NULL
away_games	text	NULL
home_wins	text	NULL
home_draws	text	NULL
home_losses	text	NULL
away_wins	text	NULL
away_draws	text	NULL
away_losses	text	NULL
home_points	text	NULL
away_points	text	NULL

nhl_teams

Column	Type	
index	text	NULL
abbreviation	text	NULL
average_age	double	NULL
games_played	bigint	NULL
goals_against	text	NULL
goals_for	bigint	NULL
losses	bigint	NULL
name	text	NULL
overtime_losses	bigint	NULL
pdo_at_even_strength	text	NULL
penalty_killing_percentage	double	NULL
points	bigint	NULL
points_percentage	double	NULL
power_play_goals	bigint	NULL
power_play_goals_against	bigint	NULL
power_play_opportunities	bigint	NULL
power_play_opportunities_against	bigint	NULL
power_play_percentage	double	NULL
rank	bigint	NULL
save_percentage	double	NULL
shooting_percentage	double	NULL
short_handed_goals	bigint	NULL
short_handed_goals_against	bigint	NULL
shots_against	bigint	NULL
shots_on_goal	bigint	NULL
simple_rating_system	double	NULL
strength_of_schedule	double	NULL
total_goals_per_game	double	NULL
wins	bigint	NULL
year	bigint	NULL

nba_teams

Column	Type	
index	text	NULL
abbreviation	text	NULL
assists	bigint	NULL
blocks	bigint	NULL
defensive_rebounds	bigint	NULL
field_goal_attempts	bigint	NULL
field_goal_percentage	double	NULL
field_goals	bigint	NULL
free_throw_attempts	bigint	NULL
free_throw_percentage	double	NULL
free_throws	bigint	NULL
games_played	bigint	NULL
minutes_played	bigint	NULL
name	text	NULL
offensive_rebounds	bigint	NULL
opp_assists	bigint	NULL
opp_blocks	bigint	NULL
opp_defensive_rebounds	bigint	NULL
opp_field_goal_attempts	bigint	NULL
opp_field_goal_percentage	double	NULL
opp_field_goals	bigint	NULL
opp_free_throw_attempts	bigint	NULL
opp_free_throw_percentage	double	NULL
opp_free_throws	bigint	NULL
opp_offensive_rebounds	bigint	NULL
opp_personal_fouls	bigint	NULL
opp_points	bigint	NULL
opp_steals	bigint	NULL
opp_three_point_field_goal_attempts	bigint	NULL
opp_three_point_field_goal_percentage	double	NULL
opp_three_point_field_goals	bigint	NULL
opp_total_rebounds	bigint	NULL
opp_turnovers	bigint	NULL
opp_two_point_field_goal_attempts	bigint	NULL
opp_two_point_field_goal_percentage	double	NULL
opp_two_point_field_goals	bigint	NULL
personal_fouls	bigint	NULL
points	bigint	NULL
rank	bigint	NULL
steals	bigint	NULL
three_point_field_goal_attempts	bigint	NULL
three_point_field_goal_percentage	double	NULL
three_point_field_goals	bigint	NULL
total_rebounds	bigint	NULL
turnovers	bigint	NULL
two_point_field_goal_attempts	bigint	NULL
two_point_field_goal_percentage	double	NULL
two_point_field_goals	bigint	NULL
year	bigint	NULL

soccer_games

Column	Type	
index	text	NULL

mlb_teams

column	type	null
index	text	NULL
abbreviation	text	NULL
at_bats	bigint	NULL
average_batter_age	double	NULL
average_pitcher_age	double	NULL
away_losses	bigint	NULL
away_record	text	NULL
away_wins	bigint	NULL
balks	bigint	NULL
bases_on_balls	bigint	NULL
bases_on_walks_given	bigint	NULL
bases_on_walks_given_per_nine_innings	double	NULL
batters_faced	bigint	NULL
batting_average	double	NULL
complete_game_shutouts	bigint	NULL
complete_games	bigint	NULL
doubles	bigint	NULL
earned_runs_against	double	NULL
earned_runs_against_plus	bigint	NULL
extra_inning_losses	bigint	NULL
extra_inning_record	text	NULL
extra_inning_wins	bigint	NULL
fielding_independent_pitching	double	NULL
games	bigint	NULL
games_finished	bigint	NULL
grounded_into_double_plays	bigint	NULL
hit_pitcher	bigint	NULL
hits	bigint	NULL
hits_allowed	bigint	NULL
hits_per_nine_innings	double	NULL
home_losses	bigint	NULL
home_record	text	NULL
home_runs	bigint	NULL
home_runs_against	bigint	NULL
home_runs_per_nine_innings	double	NULL
home_wins	bigint	NULL
innings_pitched	double	NULL
intentional_bases_on_balls	bigint	NULL
interleague_record	text	NULL
last_ten_games_record	text	NULL
last_thirty_games_record	text	NULL
last_twenty_games_record	text	NULL
league	text	NULL
losses	bigint	NULL
losses_last_ten_games	text	NULL
losses_last_thirty_games	text	NULL
losses_last_twenty_games	text	NULL
losses_vs_left_handed_pitchers	bigint	NULL
losses_vs_right_handed_pitchers	bigint	NULL
losses_vs_teams_over_500	bigint	NULL
losses_vs_teams_under_500	bigint	NULL
luck	bigint	NULL
name	text	NULL
number_of_pitchers	bigint	NULL
number_players_used	bigint	NULL
on_base_percentage	double	NULL
on_base_plus_slugging_percentage	double	NULL
on_base_plus_slugging_percentage_plus	bigint	NULL
opposing_runners_left_on_base	bigint	NULL
plate_appearances	bigint	NULL
pythagorean_win_loss	text	NULL
rank	bigint	NULL
record_vs_left_handed_pitchers	text	NULL
record_vs_right_handed_pitchers	text	NULL
record_vs_teams_over_500	text	NULL
record_vs_teams_under_500	text	NULL
run_difference	double	NULL
runners_left_on_base	bigint	NULL
runs	double	NULL
runs_against	double	NULL
runs_allowed_per_game	double	NULL
runs_batted_in	bigint	NULL
sacrifice_flies	bigint	NULL
sacrifice_hits	bigint	NULL
saves	bigint	NULL
shutouts	bigint	NULL
simple_rating_system	double	NULL
single_run_losses	bigint	NULL
single_run_record	text	NULL
single_run_wins	bigint	NULL
slugging_percentage	double	NULL
stolen_bases	bigint	NULL
streak	text	NULL
strength_of_schedule	double	NULL
strikeouts	bigint	NULL
strikeouts_per_base_on_balls	double	NULL
strikeouts_per_nine_innings	double	NULL
times_caught_stealing	bigint	NULL
times_hit_by_pitch	bigint	NULL
times_struck_out	bigint	NULL
total_bases	bigint	NULL
total_runs	bigint	NULL
triples	bigint	NULL
whip	double	NULL
wild_pitches	bigint	NULL
win_percentage	double	NULL
wins	bigint	NULL
wins_last_ten_games	text	NULL
wins_last_thirty_games	text	NULL
wins_last_twenty_games	text	NULL
wins_vs_left_handed_pitchers	bigint	NULL
wins_vs_right_handed_pitchers	bigint	NULL
wins_vs_teams_over_500	bigint	NULL
wins_vs_teams_under_500	bigint	NULL
year	bigint	NULL

nfl_teams

column	type	null
index	text	NULL
abbreviation	text	NULL
defensive_simple_rating_system	double	NULL
first_downs	bigint	NULL
first_downs_from_penalties	bigint	NULL
fumbles	bigint	NULL
games_played	bigint	NULL
interceptions	bigint	NULL
losses	bigint	NULL
margin_of_victory	double	NULL
name	text	NULL
offensive_simple_rating_system	double	NULL
pass_attempts	bigint	NULL
pass_completions	bigint	NULL
pass_first_downs	bigint	NULL
pass_net_yards_per_attempt	double	NULL
pass_touchdowns	bigint	NULL
pass_yards	bigint	NULL
penalties	bigint	NULL
percent_drives_with_points	double	NULL
percent_drives_with_turnovers	double	NULL
plays	bigint	NULL
points_against	bigint	NULL
points_contributed_by_offense	double	NULL
points_difference	bigint	NULL
points_for	bigint	NULL
post_season_result	text	NULL
rank	bigint	NULL
rush_attempts	bigint	NULL
rush_first_downs	bigint	NULL
rush_touchdowns	bigint	NULL
rush_yards	bigint	NULL
rush_yards_per_attempt	double	NULL
simple_rating_system	double	NULL
strength_of_schedule	double	NULL
turnovers	bigint	NULL
win_percentage	double	NULL
wins	bigint	NULL
yards	bigint	NULL
yards_from_penalties	bigint	NULL
yards_per_play	double	NULL
year	bigint	NULL

nba_players

column	type	null
index	text	NULL
and_ones	text	NULL
assist_percentage	double	NULL
assists	bigint	NULL
block_percentage	double	NULL
blocking_fouls	text	NULL
blocks	bigint	NULL
box_plus_minus	double	NULL
center_percentage	bigint	NULL
defensive_box_plus_minus	double	NULL
defensive_rebound_percentage	double	NULL
defensive_rebounds	bigint	NULL
defensive_win_shares	double	NULL
dunks	text	NULL
effective_field_goal_percentage	double	NULL
field_goal_attempts	bigint	NULL
field_goal_perc_sixteen_foot_plus_two_pointers	double	NULL
field_goal_perc_ten_to_sixteen_feet	double	NULL
field_goal_perc_three_to_ten_feet	double	NULL
field_goal_perc_zero_to_three_feet	double	NULL
field_goal_percentage	double	NULL
field_goals	bigint	NULL
free_throw_attempt_rate	double	NULL
free_throw_attempts	bigint	NULL
free_throw_percentage	double	NULL
free_throws	bigint	NULL
games_played	bigint	NULL
games_started	bigint	NULL
half_court_heaves	bigint	NULL
half_court_heaves_made	bigint	NULL
height	text	NULL
lost_ball_turnovers	text	NULL
minutes_played	bigint	NULL
nationality	text	NULL
net_plus_minus	text	NULL
offensive_box_plus_minus	double	NULL
offensive_fouls	text	NULL
offensive_rebound_percentage	double	NULL
offensive_rebounds	bigint	NULL
offensive_win_shares	double	NULL
on_court_plus_minus	text	NULL
other_turnovers	text	NULL
passing_turnovers	text	NULL
percentage_field_goals_as_dunks	text	NULL
percentage_of_three_pointers_from_corner	text	NULL
percentage_shots_three_pointers	text	NULL
percentage_shots_two_pointers	text	NULL
percentage_sixteen_foot_plus_two_pointers	double	NULL
percentage_ten_to_sixteen_footers	double	NULL
percentage_three_to_ten_footers	double	NULL
percentage_zero_to_three_footers	double	NULL
personal_fouls	bigint	NULL
player_efficiency_rating	double	NULL
player_id	text	NULL
point_guard_percentage	bigint	NULL
points	bigint	NULL
points_generated_by_assists	text	NULL
position	text	NULL
power_forward_percentage	bigint	NULL
salary	bigint	NULL
shooting_distance	double	NULL
shooting_fouls	text	NULL
shooting_fouls_drawn	text	NULL
shooting_guard_percentage	bigint	NULL
shots_blocked	text	NULL
small_forward_percentage	bigint	NULL
steal_percentage	double	NULL
steals	bigint	NULL
take_fouls	text	NULL
team_abbreviation	text	NULL
three_point_attempt_rate	double	NULL
three_point_attempts	bigint	NULL
three_point_percentage	double	NULL
three_point_shot_percentage_from_corner	text	NULL
three_pointers	bigint	NULL
three_pointers_assisted_percentage	text	NULL
total_rebound_percentage	double	NULL
total_rebounds	bigint	NULL
true_shooting_percentage	double	NULL
turnover_percentage	double	NULL
turnovers	bigint	NULL
two_point_attempts	bigint	NULL
two_point_percentage	double	NULL
two_pointers	bigint	NULL
two_pointers_assisted_percentage	text	NULL
usage_percentage	double	NULL
value_over_replacement_player	double	NULL
weight	bigint	NULL
win_shares	double	NULL
win_shares_per_48_minutes	double	NULL
year	bigint	NULL
team	text	NULL
player_name	text	NULL
birth_date	timestamp	NULL

nfl_players

Column	Type	Null
index	text	NULL
adjusted_net_yards_per_attempt_index	text	NULL
adjusted_net_yards_per_pass_attempt	text	NULL
adjusted_yards_per_attempt	text	NULL
adjusted_yards_per_attempt_index	text	NULL
all_purpose_yards	double	NULL
approximate_value	bigint	NULL
assists_on_tackles	double	NULL
attempted_passes	text	NULL
birth_date	text	NULL
blocked_punts	text	NULL
catch_percentage	text	NULL
completed_passes	text	NULL
completion_percentage_index	text	NULL
espn_qbr	text	NULL
extra_point_percentage	text	NULL
extra_points_attempted	text	NULL
extra_points_made	text	NULL
field_goal_percentage	text	NULL
field_goals_attempted	text	NULL
field_goals_made	text	NULL
fifty_plus_yard_field_goal_attempts	text	NULL
fifty_plus_yard_field_goals_made	text	NULL
fourth_quarter_comebacks	text	NULL
fourty_to_fourty_nine_yard_field_goal_attempts	text	NULL
fourty_to_fourty_nine_yard_field_goals_made	text	NULL
fumbles	double	NULL
fumbles_forced	double	NULL
fumbles_recovered	double	NULL
fumbles_recovered_for_touchdown	double	NULL
game_winning_drives	text	NULL
games	double	NULL
games_started	double	NULL
height	text	NULL
interception_percentage	text	NULL
interception_percentage_index	text	NULL
interceptions	double	NULL
interceptions_returned_for_touchdown	double	NULL
interceptions_thrown	text	NULL
kickoff_return_touchdown	double	NULL
kickoff_return_yards	double	NULL
kickoff_returns	double	NULL
less_than_nineteen_yards_field_goal_attempts	text	NULL
less_than_nineteen_yards_field_goals_made	text	NULL
longest_field_goal_made	text	NULL
longest_interception_return	double	NULL
longest_kickoff_return	double	NULL
longest_pass	text	NULL
longest_punt	text	NULL
longest_punt_return	text	NULL
longest_reception	text	NULL
longest_rush	text	NULL
name	text	NULL
net_yards_per_attempt_index	text	NULL
net_yards_per_pass_attempt	text	NULL
passer_rating_index	text	NULL
passes_defended	double	NULL
passing_completion	text	NULL
passing_touchdown_percentage	text	NULL
passing_touchdowns	text	NULL
passing_yards	text	NULL
passing_yards_per_attempt	text	NULL
player_id	text	NULL
position	text	NULL
punt_return_touchdown	text	NULL
punt_return_yards	text	NULL
punt_returns	text	NULL
punts	text	NULL
qb_record	text	NULL
quarterback_rating	text	NULL
receiving_touchdowns	text	NULL
receiving_yards	text	NULL
receiving_yards_per_game	text	NULL
receiving_yards_per_reception	text	NULL
receptions	text	NULL
receptions_per_game	text	NULL
rush_attempts	text	NULL
rush_attempts_per_game	text	NULL
rush_touchdowns	text	NULL
rush_yards	text	NULL
rush_yards_per_attempt	text	NULL
rush_yards_per_game	text	NULL

nhl_players

Column	Type	Null
index	text	NULL
adjusted_assists	bigint	NULL
adjusted_goals	bigint	NULL
adjusted_goals_against_average	text	NULL
adjusted_goals_created	bigint	NULL
adjusted_points	bigint	NULL
age	double	NULL
assists	bigint	NULL
average_time_on_ice	text	NULL
blocks_at_even_strength	double	NULL
corsi_against	double	NULL
corsi_for	double	NULL
corsi_for_percentage	double	NULL
defensive_point_shares	double	NULL
defensive_zone_start_percentage	double	NULL
even_strength_assists	bigint	NULL
even_strength_goals	bigint	NULL
even_strength_goals_allowed	text	NULL
even_strength_save_percentage	text	NULL
even_strength_shots_faced	text	NULL
faceoff_losses	double	NULL
faceoff_percentage	double	NULL
faceoff_wins	double	NULL
fenwick_against	double	NULL
fenwick_for	double	NULL
fenwick_for_percentage	double	NULL
game_winning_goals	bigint	NULL
games_played	bigint	NULL
giveaways	double	NULL
goal_against_percentage_relative	text	NULL
goalie_point_shares	text	NULL
goals	bigint	NULL
goals_against	text	NULL
goals_against_average	text	NULL
goals_against_on_ice	double	NULL
goals_created	bigint	NULL
goals_for_on_ice	double	NULL
goals_saved_above_average	text	NULL
height	text	NULL
hits_at_even_strength	double	NULL
league	text	NULL
losses	text	NULL
minutes	text	NULL
name	text	NULL
offensive_point_shares	double	NULL
offensive_zone_start_percentage	double	NULL
pdo	double	NULL
penalties_in_minutes	bigint	NULL
player_id	text	NULL
plus_minus	bigint	NULL
point_shares	double	NULL
points	bigint	NULL
power_play_assists	bigint	NULL
power_play_goals	bigint	NULL
power_play_goals_against_on_ice	bigint	NULL
power_play_goals_allowed	text	NULL
power_play_goals_for_on_ice	bigint	NULL
power_play_save_percentage	text	NULL
power_play_shots_faced	text	NULL
quality_start_percentage	text	NULL
quality_starts	text	NULL
really_bad_starts	text	NULL
relative_corsi_for_percentage	double	NULL
relative_fenwick_for_percentage	double	NULL
save_percentage	text	NULL
save_percentage_on_ice	text	NULL
saves	text	NULL
season	text	NULL
shooting_percentage	double	NULL
shooting_percentage_on_ice	double	NULL
shootout_attempts	text	NULL
shootout_goals	text	NULL
shootout_misses	text	NULL
shootout_percentage	text	NULL
short_handed_assists	bigint	NULL
short_handed_goals	bigint	NULL
short_handed_goals_allowed	text	NULL
short_handed_save_percentage	text	NULL
short_handed_shots_faced	text	NULL
shots_against	text	NULL
shots_on_goal	bigint	NULL
shutouts	text	NULL

Individual Contributions:

Enrico - Made a search bar, team/player of the day, and cleaned up the code base. Made API endpoints to get all teams and all players for a specific sport.
Last commit - https://github.com/CSCI-3308-CU-Boulder/102_3_F20/commit/6be69f916fd5fc3bf3d59be184f459fdefc063f8

AJ - Continued to stylize the frontend, as well as develop and equation based on the ELO system to come up with an overall player rating

Abdul - Stylized frontend with AJ enough to display stats on front page as a preview for what the user will see for each sport, working on creating graphs

Evan - Helped out Enrico with API work and currently working on graph data alongside Abdul

Henry - Added database and information gathering infrastructure for the rest of the sports.

Enrico Last Commit -

https://github.com/CSCI-3308-CU-Boulder/102_3_F20/commit/83a2b03eb3f2562ae1ce23c81d5354e843b3008c
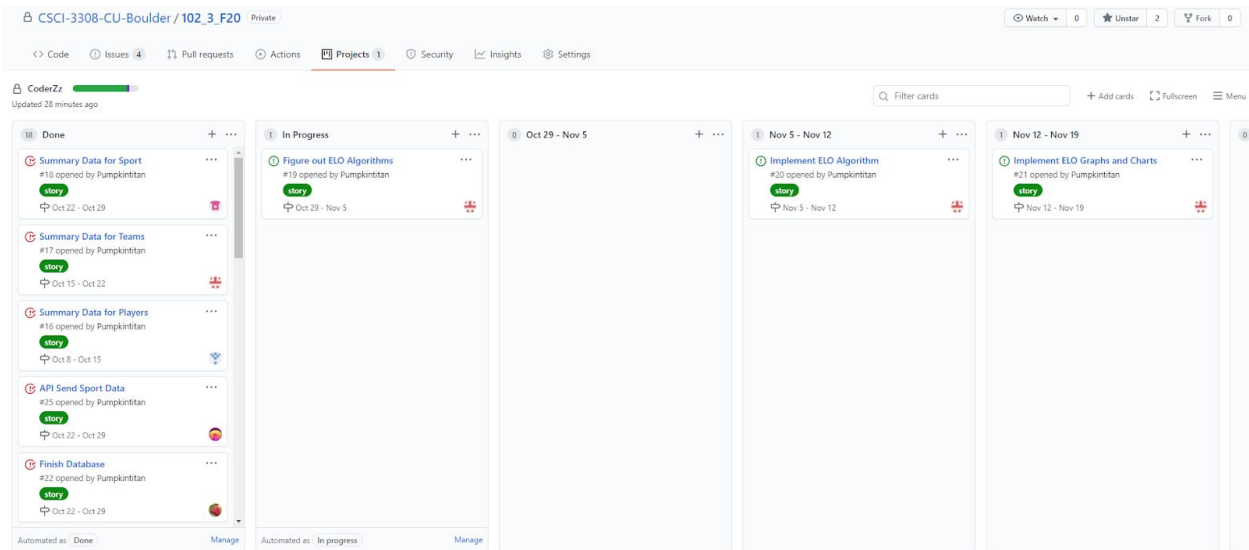
Evan Last Commit -

https://github.com/CSCI-3308-CU-Boulder/102_3_F20/commit/90e1c9b278a98ca3d480bb339068fd1d511501c0

Henry Last Commit -

https://github.com/CSCI-3308-CU-Boulder/102_3_F20/commit/79e7fb4deecf7692053bb4cd623e494dbe0bc83b

Abdul Last Commit -

https://github.com/CSCI-3308-CU-Boulder/102_3_F20/commit/dcc64d946749baa57cc03125cad54625b5d8cccd

Challenges:

1. The front-end of the app does not look good so we are working on fixing that as a top priority alongside displaying graphs
2. We don't have any graphs so far in the app though we have the necessary data to generate them
3. We have managed to include 4 sports: Basketball, Baseball, Hockey and American Football, the exclusion of soccer it due to the fact that the data in the api for soccer is formatted entirely differently from data for those other 4 sports so in the interest of time we have lowered the priority of adding soccer to our website. Once we create a final product for all other sports we will look into including soccer as a stretch goal.
4.

Backup Plans:

1. Front end is being worked on, there is not case in which our front-end will be completely missing, it's a simple matter of dedicating more resources and time to styling the pages
2. Since we have the necessary data to generate graphs this should mitigate any issues we have in this area
3. Realistically soccer will only be able to be added to the website as a stretch goal due to the nature of the data's formatting. It would require a completely separate set of code to be written specifically to get the data for soccer which would take as much time to create as it did to create the code for the other 4 sports though we anticipate that if we are ahead of schedule we will be able to add this.