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Spring 2021

Football's Future: An Analytical Interpretation of the Premier League

Hunter Witeof
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Honors Research Project Proposal

Please Print

Name: Hunter Witeof	Student ID: 4593008
Email (@zips.uakron.edu): haw34@zips.uakron.edu	
Title of Proposed Project: Football's Future: An Analytical Interpretation of the Premier League	
Major: Computer Information Systems: Programming	Graduation (semester/year): Spring/2021

Please include a brief (maximum 200 words) summary of your proposed project

This project looks to take the statistics of soccer players and run them through an algorithm to determine how well a player is performing. The system that will be designed in the project will look to accomplish 3 main goals: allow the user to enter new statistics, store the data for all 38 game weeks for all 20 teams, and compute a score for each player's performance for each game as well as the average of all of the player's scores.

Approval:

Honors Course No.: 2440 451-001	No. of Project Credits: 5
Project Sponsor Signature/Date Print name Enoch Damson Email: damson@uakron.edu	
Reader Signature/Date Douglas G. Hubert— November 17, 2020 Print name Douglas G. Hubert Email: hubert@uakron.edu	

Reader

Signature/Date

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Nov. 19, 2020

Print name Zarreen Farooqi

Email: zarreen@uakron.edu

Honors Faculty Advisor

Signature/Date

A handwritten signature in black ink, appearing to read "Sarah Hoge", in a cursive style.

Oct. 20, 2020

Print name Sarah Hoge

Email: mshoge@uakron.edu

Your approved cover sheet and proposal must be [submitted to the Williams Honors College through IdeaExchange](#)

Football's Future: An Analytical Interpretation of the Premier League

Hunter Witeof

Goals and Objectives:

In the modern era of soccer, the sport known as football globally, the game has become increasingly reliant on statistics and predictive models to determine the next up-and-coming talents. Being able to predict a soccer player's potential can prove to be a monumental benefit to any soccer club or program. This system can be used to aid in determining who to buy, who to sell, and who to give extra development to see their full potential realized. The English Premier League (EPL) will be used as a sample dataset for the system but in theory the system could be tuned to any league.

Methodology/ System Capabilities:

- Allow the user to enter teams into the system.
- Allow the user to enter players into teams.
 - When a player is entered, the system will require that the user enter a position for the player, which will be vital in the comparison process to other players. The positions that the system will allow users to input are goalie, center back, left back, right back, center mid, center defensive mid, center attacking mid, left winger, right winger, and striker.
- Allow the user to remove players from teams.
- Allow the user to enter "raw stats" about a player.
 - These "raw stats" will include minutes played, passes completed, passes attempted, dribbles completed, dribbles attempted, shots, shots on target, goals,

assists, tackles, interceptions, fouls committed, yellow cards, red cards, and fouls received.

- Additionally, goalies will have other “raw stats” entered for them, due to the nature of the position. The “raw stats” for goalies will be saves, goals conceded, passes completed, passes attempted, fouls committed, yellow cards, and red cards.
- The system will then take these “raw stats” entered and assign each player a score between the values of 0.0 and 10.0 inclusive; 0.0 representing a very poor performing player with little to no potential and 10.0 representing an extremely well performing player with a very high potential. As previously mentioned, the position of any given player will prove vital in weighing the importance of “raw stats” for that specific position.
 - Scores will be calculated for each player by taking the player’s “raw stats”, dividing them by 90 (the number of minutes in a soccer game putting the stats in the form of stat x per every 90 minutes played) and multiplying them by a weight that will be different for each “raw stat” and position ~~and~~. For instance, the weight assigned to tackles for a center back and a striker will be different. A striker may be assigned a weight of 0.3 for tackling and a center back may be assigned a weight of 1.25 for tackling due to the importance for center backs to be able to tackle compared to strikers.

Weights for “Raw Stats” per Position

	Successful Pass %	Successful Dribble %	Shots on Target %	Goals	Assists	Tackles	Interceptions	Fouls Committed	Yellow Cards	Red Cards	Fouls Received
Left Back/ Right Back	.02	.75	1	.75	1.25	.75	1	-.2	-1.5	-2	.1
Center Back	.01	.5	1	.6	.4	1.25	1	-.5	-1.5	-2	.1
Center Mid	.03	.5	.8	1	1	.6	1	-.17	-1	-2	.1
Center Defensive Mid	.03	.5	.8	.8	.8	.75	.9	-.2	-1	-2	.1
Center Attacking Mid	.04	1.1	.7	1.2	1.5	.4	1	-.15	-1	-2	.1
Left Mid/ Right Mid	.05	1	.4	1	1.25	.7	1	-.15	-1	-2	.1
Left Winger/ Right Winger	.05	.9	.5	1.6	1.5	.6	1	-.15	-.75	-2	.1
Striker	.08	.8	.5	2	1	.3	1	-.1	-.5	-2	.1

	Successful Pass %	Saves	Goals Conceded	Fouls Committed	Yellow Cards	Red Cards
Goalie	.45	2.75	-.9	-.6	-1.7	-3

- The system will also allow the user to select a player and the system will show the user similarly performing players based on the “raw stats” entered for other players and the score associated with other players.
- The system will also allow the user to look at the “raw stats” and overall score for any player for any game. It should be noted that the score that will be directly associated with a player will be the average of all the scores the player has received.
- Tentative Timeline:

Week of 10/12/20 and week of 10/17/20	Planning of project including the development of UML documents of project such as use case diagrams, ERDs, and class diagrams
Week of 10/26/20 and week of 11/02/20	Continue planning
Week of 11/23/20 and week of 11/30/20	Begin development of database which will serve all the “raw stats” entered in the system as well as the scores for each player that the system will calculate
Week of 11/9/20 and week of 11/16/20	Finish development of the database
Week of 12/7/20 and week of 12/14/20	Begin development of the website which will serve as the client application component of the system
Week of 12/21/20 and week of 12/28/20	Finish development of the website

Week of 1/4/21 and week of 1/11/21	Begin development of Java program code which will be responsible for all the computations done in the system and serve as a bridge between the database and the website
Week of 1/18/21 and week of 1/25/21	Continue development of Java code
Week of 2/1/21 and week of 2/8/21	Finish development of Java code
Week of 2/15/21 and week of 2/22/21	Debugging
Week of 3/1/21 and week of 3/8/21	Debugging
Week of 3/15/21 and week of 3/22/21	Analyze the output of the system and determine whether the scores being applied to players are accurate depictions of their performances and adjust the weights of applied to the “raw stats” where necessary
Week of 3/29/21 and week of 4/5/21	Final tweaks
Week of 4/12/21 and week of 4/19/21	Final tweaks and submit project

Outcomes:

The final project will be a website in which the user can enter “raw stats” about a player for a given game week. Two things will then happen to these stats. First, the “raw stats” will be entered into a database to be accessed at a later date. Secondly, the “raw stats” will be run through an algorithm to determine how well a player performed on a scale of 0.0 to 10.0. This score will then be stored in the database along with the “raw stats” for that given game week. Also, is an average of the different “raw stats” for the season as well as the average of the player’s scores for the season will be stored in the database.

Academic Impact:

This project will allow me to combine the skills that I have learned in the following courses: Advanced Database Management, Client Server Programming, Java II, as well as

Systems Analysis and Design. These skills will all have to be used in tandem to produce the system to its fullest potential. This project will also provide a reasonable challenge because of the complexity of having to manage 38 game weeks of data for each of the 20 teams, along with the struggle of tuning the algorithm so that the scores that are assigned to each player accurately depict their quality of performance.

Football's Future: An Analytical Interpretation of the Premier League

1. Analysis

1.1 Determine use cases

1.2 Determine Classes

2. Design

2.1 Determine overall structure of database

2.2 Determine overall structure of website

2.3 Determine overall structure of Java program

3. Development

3.1 Build database

3.2 Build website

3.3 Build Java program

4. Debugging

4.1 Test code for any errors and correct errors as needed.

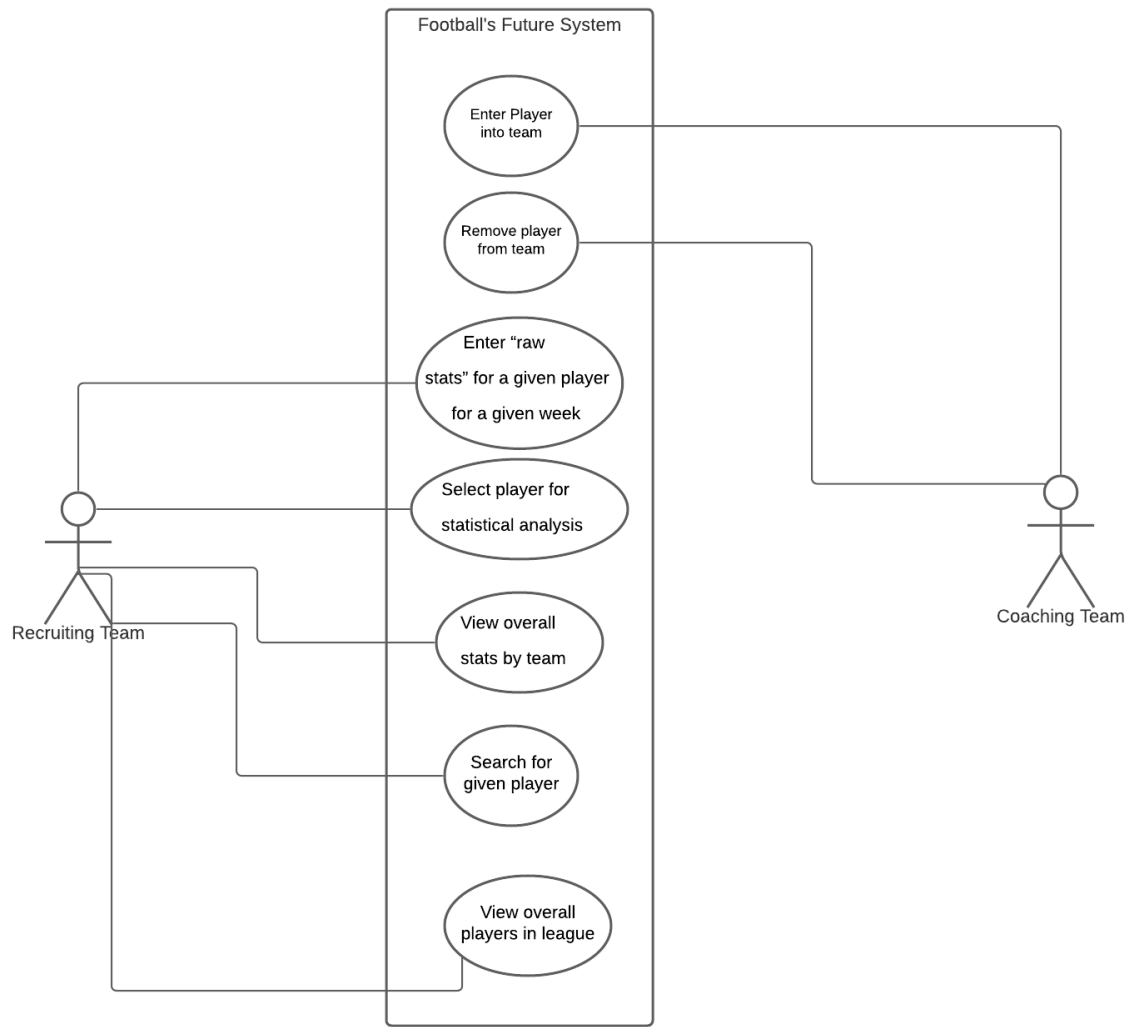
4.2 Determine if the weights used to calculate the scores for players give an accurate depiction of a player's performance and adjust weights as needed.

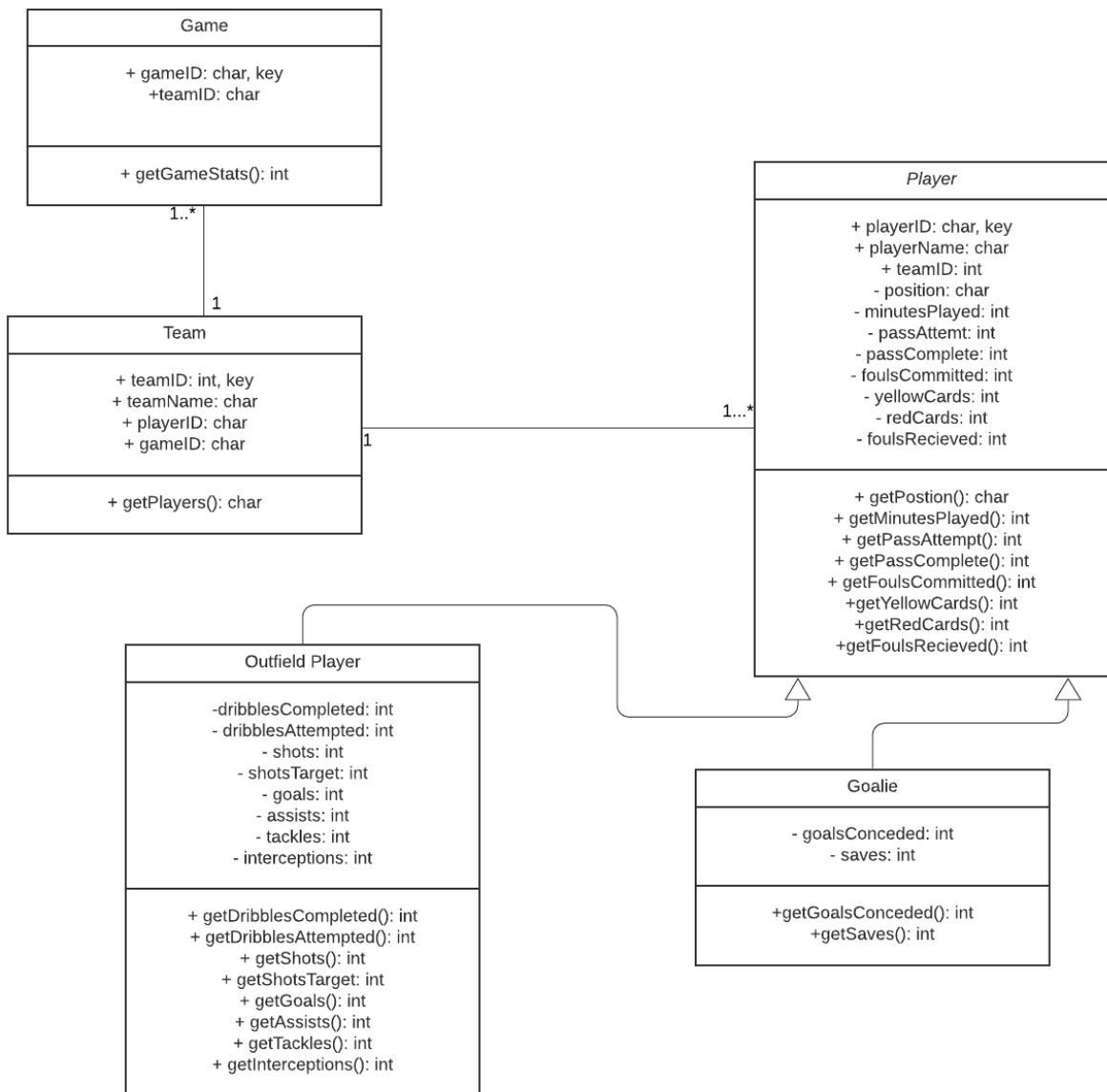
Analysis

- FURPS
 - Functional
 - User enters player into team
 - User enters stats for given game week for a given player
 - User removes player from team
 - User selects player for statistical analysis
 - User views overall stats by team
 - User looks at stats for a given player by searching for them by name
 - User can view the top performing players in the league by position or overall
 - Usability
 - The System should be able to function on any desktop platform
 - Reliability
 - Inputs have data validation to ensure that the user does not enter a value that they shouldn't
 - Performance
 - The client end of the system should provide the user a response to their query with in half a second and should provide necessary updates to data based on user input with in three seconds
 - Security
 - System will be password protected and require user to reset password every 60 days and not allow a password that was previously used

- Business Events
 - User enters player into team
 - User enters stats for given game week for a given player
 - User removes player from team
 - User selects player for statistical analysis
 - User views overall stats by team
 - User looks at stats for a given player by searching for them by name
 - User can view the top performing players in the league by position or overall

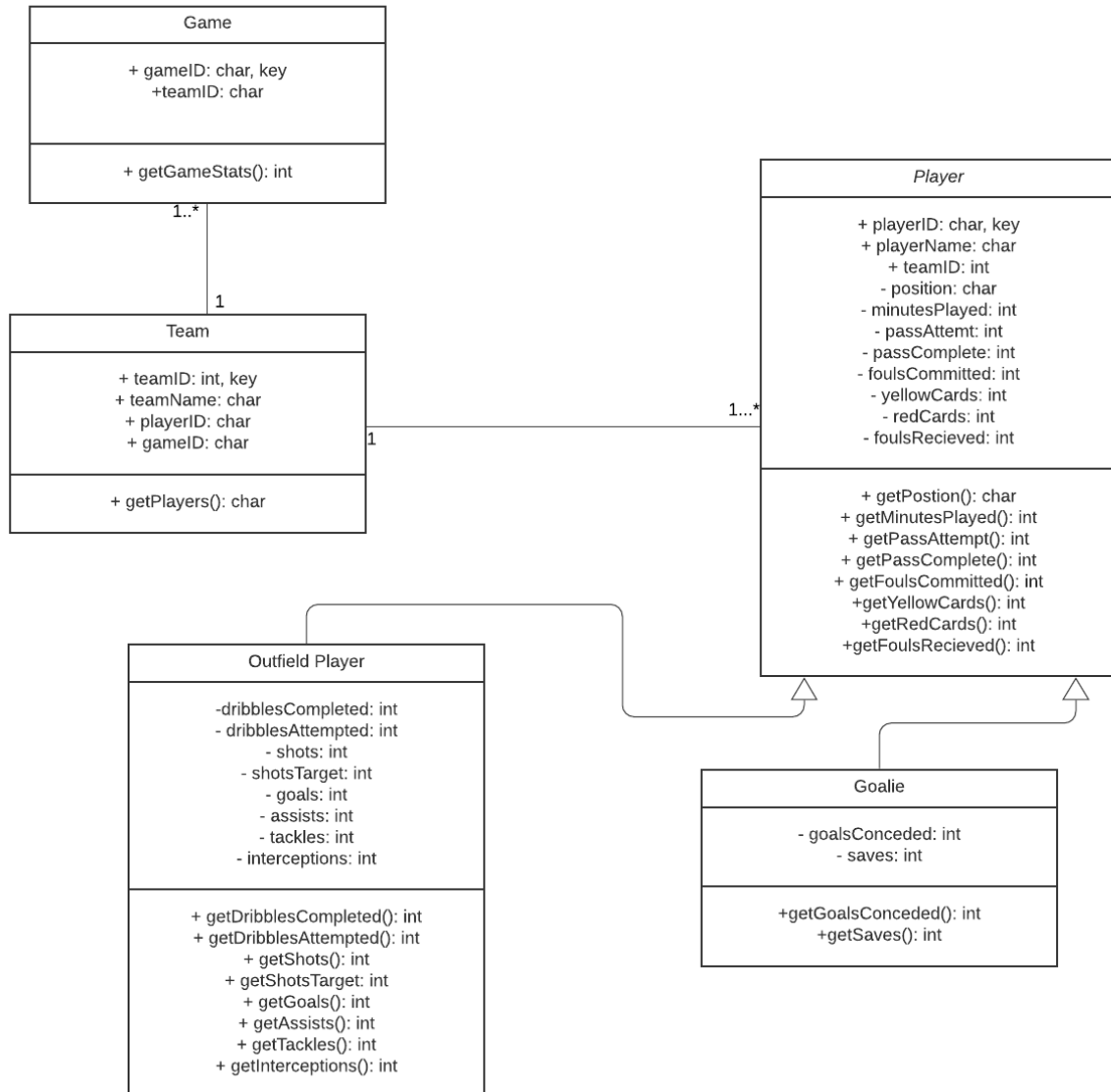
Football's Future System	
Use Cases	Users/ Actors
Enter player into team	Coaching staff
Remove player into team	Coaching staff
Enter "raw stats" for a given player for a given week	Recruiting team
Select player for statistical analysis	Recruiting team
View overall stats by team	Recruiting team
Search for given player	Recruiting team
View overall players in league	Recruiting team



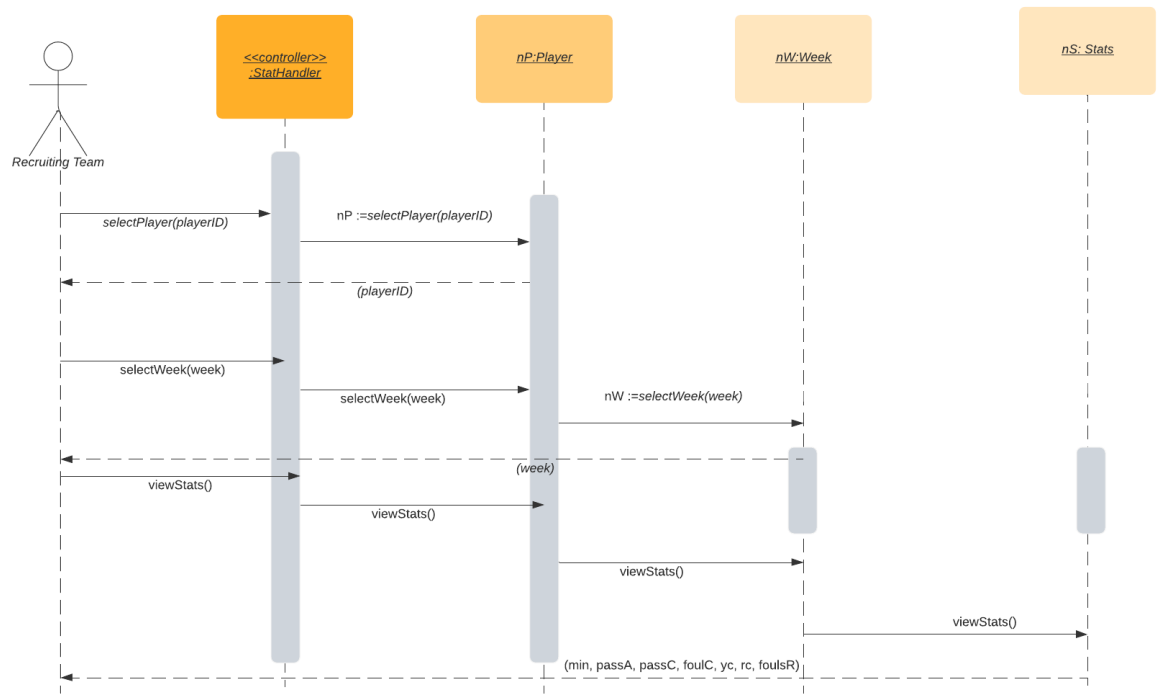
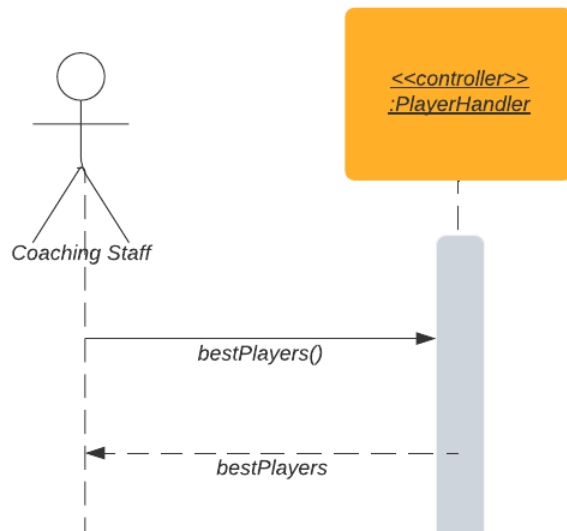


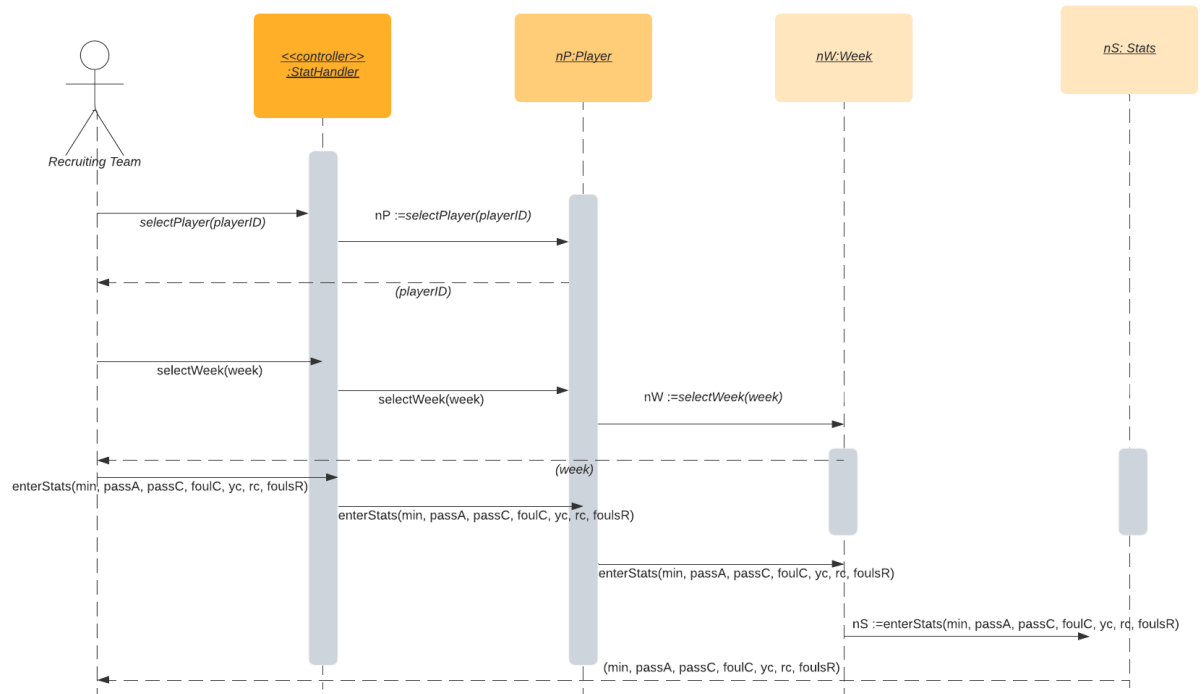
Design

1. Domain Model Class Diagram

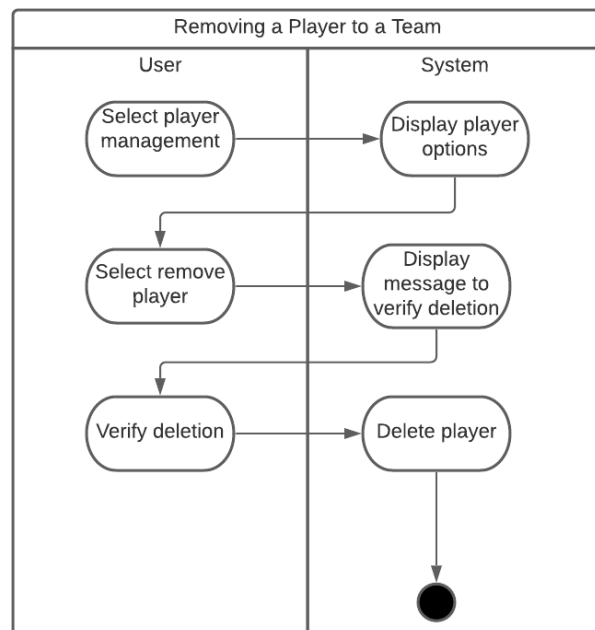
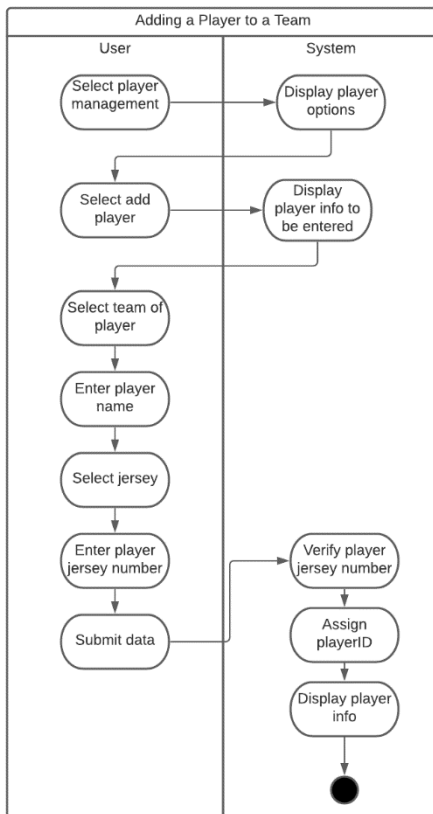


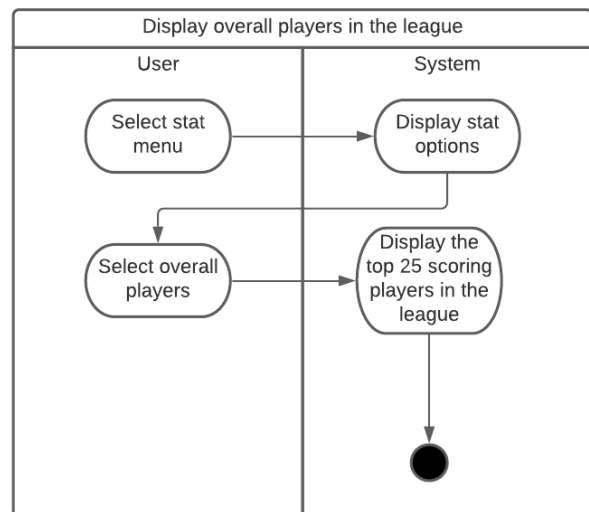
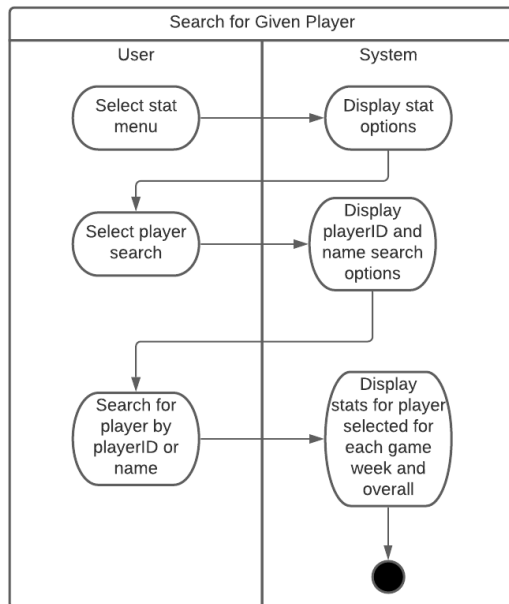
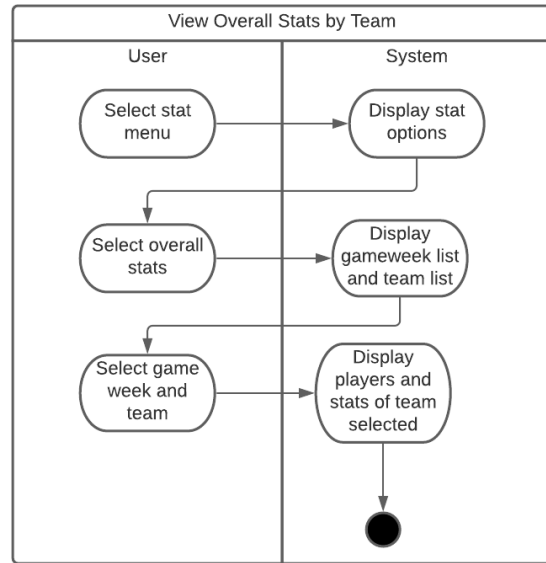
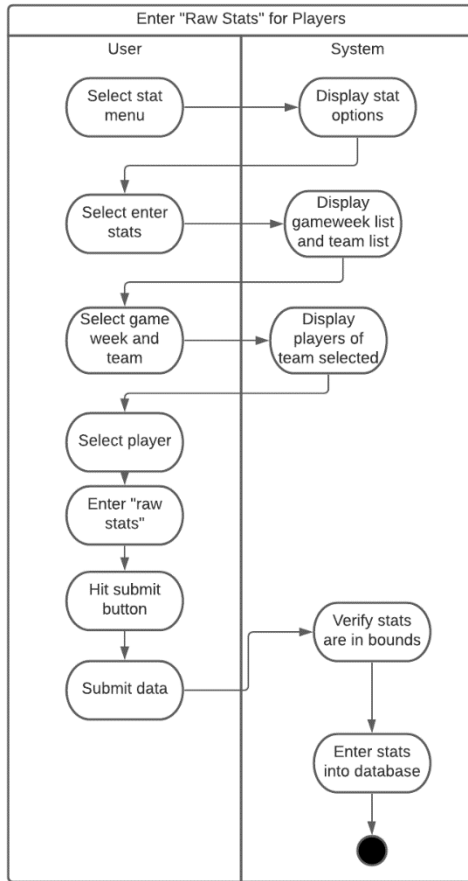
2. SSD



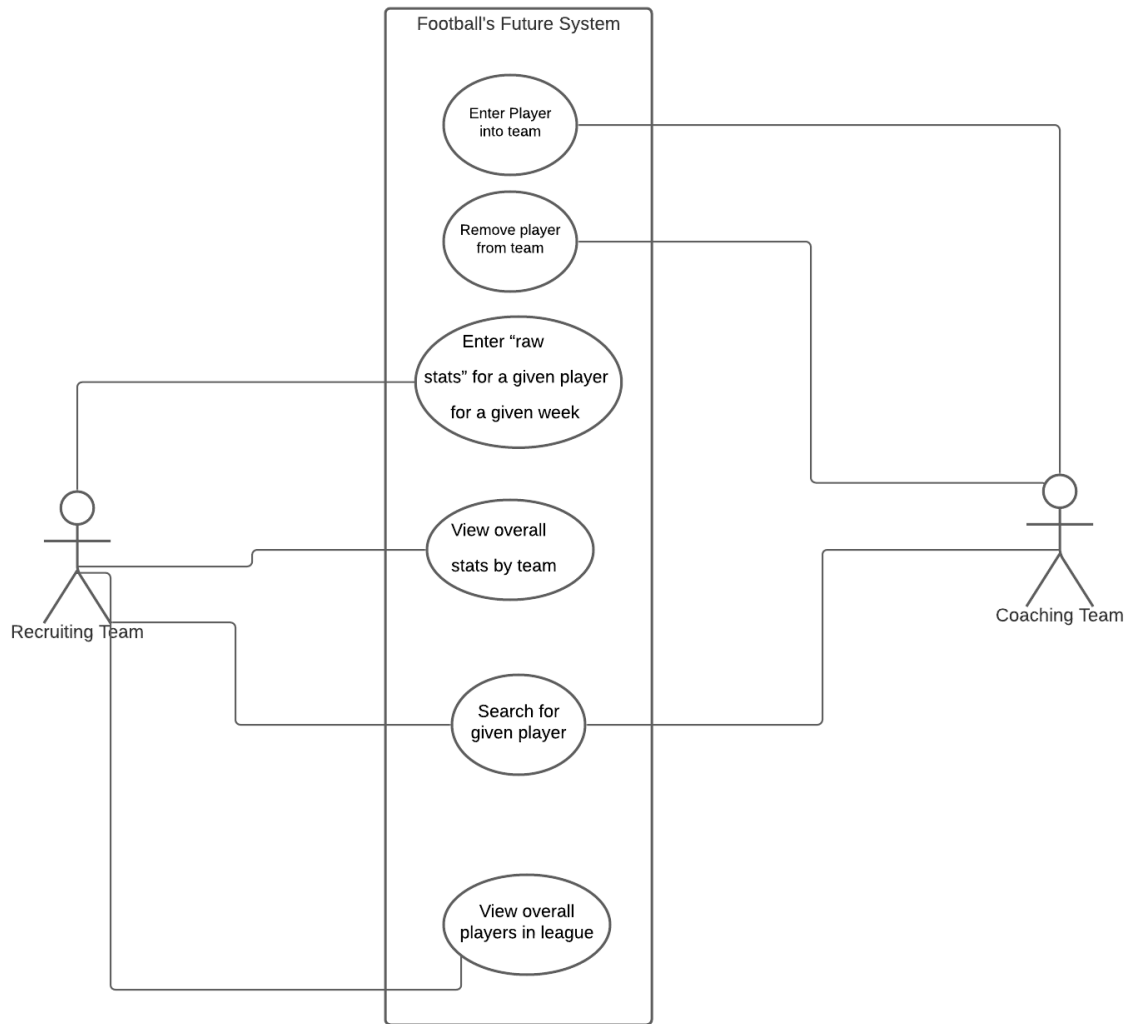


3. Activity Diagrams





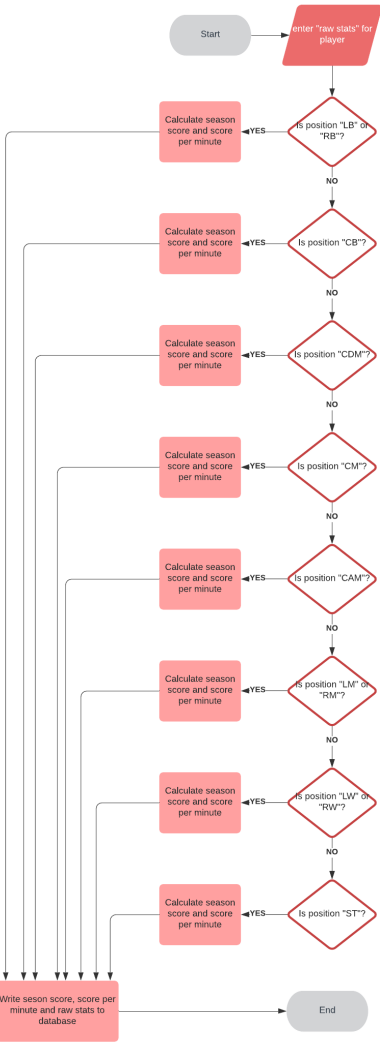
4. Use Cases



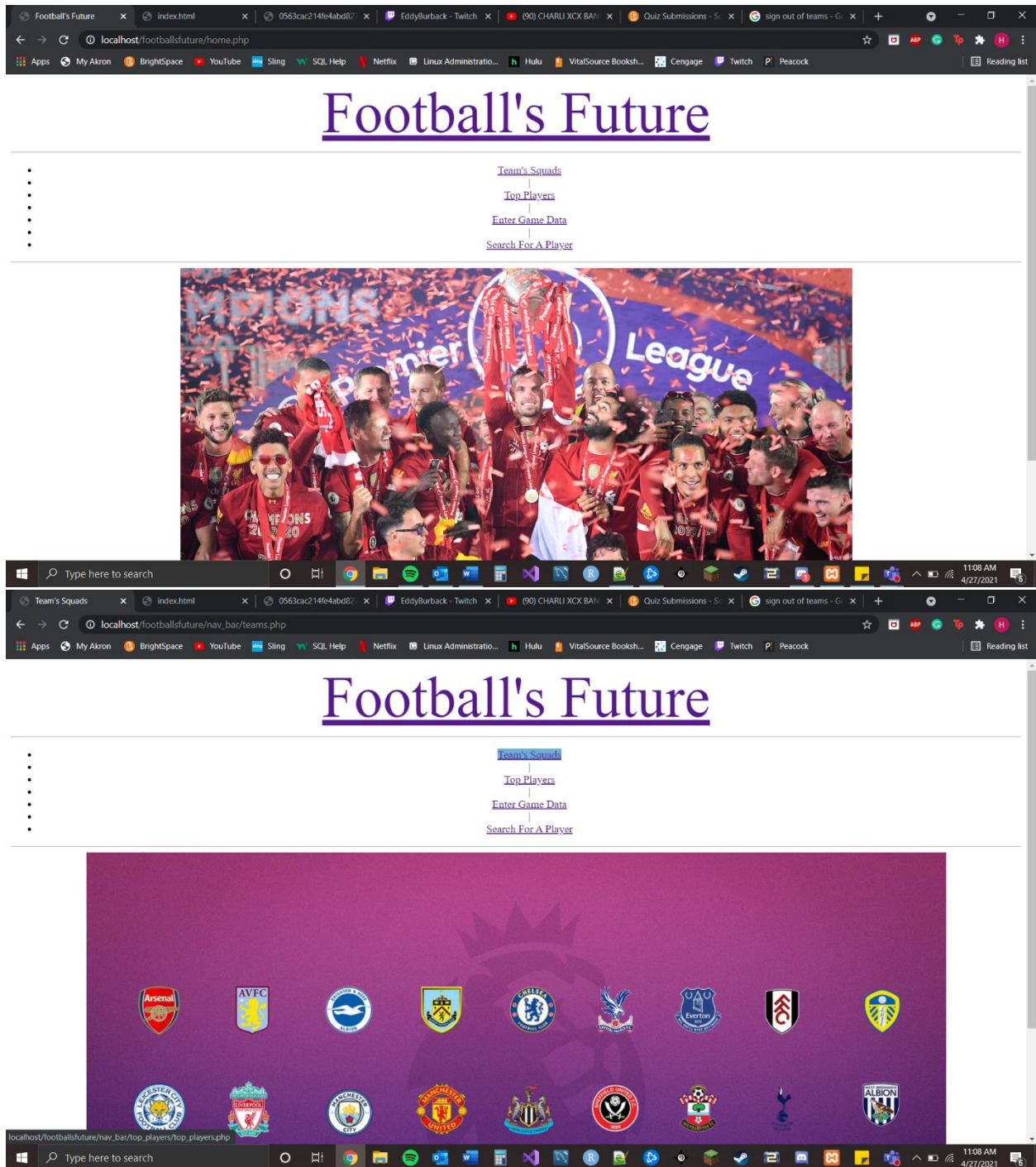
Football's Future System		
Use Cases	Users/ Actors	Descriptions
Player Maintenance Menu		
Enter player into team	Coaching staff	When entering a player into a team the user will need to enter basic information about the player into the system such as their name position, and jersey number. Also when a player is entered into the system the system will assign a playerId for that player. The playerId will consist of an abbreviation of the team the player plays for and the players jersey number
Remove player from team	Coaching staff	If a player needs to remove a player from the system the user will have to search for the player by their playerId or by their name. When the search is complete if a player was found the user will have to select the player and confirm that they would like to remove the player from the system. The data for the player will not be deleted though. This player will just no longer have any association with the team that they previously apart of
Player Stats Menu		
Enter "raw stats" for a given player for a given week	Recruiting team	For each game week, that will be able to be selected in a dropdown menu, the user will be able to enter the "raw stats" for a given player into the system.
View overall stats by team	Recruiting team	Teams can be selected in a drop down menu and the user will then be presented

		with the overall stats for the players of the team
Search for given player	Recruiting team, Coaching	Enter the players name or playerID and be presented with information about the player
View overall players in league	Recruiting team	Tab that will show the top 10 players in the league by the calculated score. Updated after every game week is entered.

5. Algorithm



Interface at Design Time



Football's Future

Arsenal



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[Team's Squads](#)

[Top Players](#)

[Enter Game Data](#)

[Search For A Player](#)

Player ID	Player Name	Position	Score	Minutes Played	Score Per Minute
ars13	Runar Alex Runarsson	GK	0.000	0	0.000
ars44	Karl Hein	GK	0.000	0	0.000
ars01	Bernd Leno	GK	0.000	0	0.000
ars33	Mat Ryan	GK	0.000	0	0.000
ars22	Pablo Mari	CB	15.293	270	5.664
ars16	Rob Holding	CB	72.827	1395	5.221
ars06	Gabriel Magalhaes	CB	57.450	1051	5.466
ars21	Calum Chambers	CB	0.000	0	0.000
ars23	David Luiz	CB	27.986	661	4.234
ars02	Hector Bellerin	RB	81.269	1460	5.566
ars17	Cedric Soares	RB	9.030	96	9.407
ars03	Kieran Tierney	LB	100.631	1520	6.620
ars25	Mohamed Elneny	CDM	46.480	897	5.182
ars34	Granit Xhaka	CDM	80.050	1176	6.807
ars18	Thomas Partey	CDM	42.299	365	11.589
ars08	Dani Ceballos	CM	78.563	1019	7.710
ars07	Bukayo Saka	LM	109.709	1491	7.358
ars11	Martin Odegaard	CAM	0.000	0	0.000

Football's Future

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Rank	Player ID	Player Name	Position	Score	Minutes Played	Score Per Minute
1	mc127	Joao Cancelo	RB	152.334	1280	11.901
2	lce23	James Justin	RB	144.807	1710	8.468
3	lce03	Wesley Fofana	CB	133.193	1222	10.900
4	asv10	Jack Grealish	LW	131.285	1527	8.598
5	che19	Mason Mount	CAM	129.668	1530	8.475
6	liv11	Mohamed Salah	RW	129.148	1472	8.774
7	mc117	Kevin De Bruyne	CAM	124.782	1417	8.806
8	liv10	Sadio Mane	LW	118.757	1510	7.865
9	liv26	Andrew Robertson	LB	115.920	1710	6.779
10	eve22	Ben Godfrey	CB	115.083	1050	10.960
11	liv66	Trent Alexander-Arnold	RB	114.458	1396	8.199
12	mc107	Raheem Sterling	LW	111.914	1428	7.837
13	mc102	Kyle Walker	RB	110.898	1200	9.242
14	ars07	Bukayo Saka	LM	109.709	1491	7.358
15	lce15	Harvey Barnes	LM	107.898	1370	7.876
16	mc116	Rodri	CDM	107.827	1540	7.002
17	asv18	Matt Target	LB	107.749	1604	6.717
18	lce09	Jamie Vardy	ST	105.667	1477	7.154

[By Season Score](#)

[By Score Per Minute](#)

[By Position](#)

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[Enter Game Data](#)

[Search For A Player](#)

Select the Minimum number of minutes to be considered:

Rank	Player ID	Player Name	Position	Score	Minutes Played	Score Per Minute
1	mc127	Joao Cancelo	RB	152.334	1280	11.901
2	asv21	Anwar El Ghazi	RW	62.302	547	11.390
3	eve04	Mason Holgate	CB	78.389	711	11.025
4	eve22	Ben Godfrey	CB	115.083	1050	10.960
5	lce03	Wesley Fofana	CB	133.193	1222	10.900
6	asv15	Bertrand Traore	RW	82.324	758	10.861
7	lce25	Wilfred Ndidi	CDM	85.185	821	10.376
8	ars09	Alexandre Lacazette	ST	96.953	1033	9.386
9	che29	Kai Havertz	CAM	82.218	884	9.301
10	mc102	Kyle Walker	RB	110.898	1200	9.242
11	eve10	Gylfi Sigurdsson	CAM	83.106	900	9.234
12	eve17	Alex Iwobi	LW	79.700	870	9.161
13	eve23	Seamus Coleman	RB	52.226	575	9.083
14	che22	Hakim Ziyech	RW	49.811	549	9.073
15	mc117	Kevin De Bruyne	CAM	124.782	1417	8.806
16	liv11	Mohamed Salah	RW	129.148	1472	8.774
17	lce10	James Maddison	CAM	97.651	1115	8.758

[By Season Score](#)

[By Score Per Minute](#)

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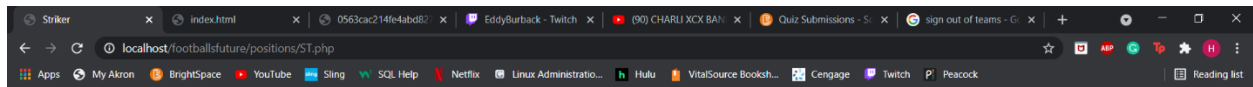
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[By Position](#)





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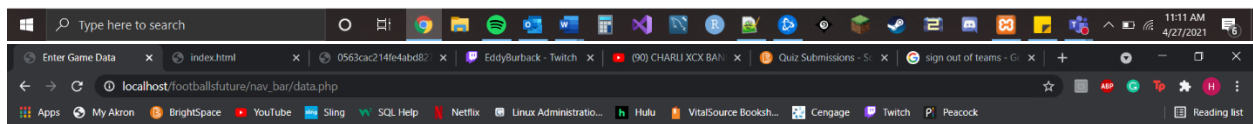
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Strikers

Select the Minimum number of minutes to be considered:

	Rank	Player ID	Player Name	Position	Score	Minutes Played	Score Per Minute
	1	ars09	Alexandre Lacazette	ST	96.953	1033	9.386
	2	lcc17	Ayoze Perez	ST	47.847	567	8.439
By Season Score	3	che09	Tammy Abraham	ST	67.670	898	7.536
	4	mci09	Gabriel Jesus	ST	62.728	866	7.243
By Score Per Minute	5	lcc09	Jamie Vardy	ST	105.667	1477	7.154
	6	eve09	Dominic Calvert-Lewin	ST	96.648	1404	6.884
By Position	7	asv11	Ollie Watkins	ST	103.576	1620	6.394
	8	liv09	Roberto Firmino	ST	88.657	1420	6.243
	9	che11	Timo Werner	ST	75.344	1396	5.397
	10	ars14	Pierre-Emerick Aubameyang	ST	69.776	1514	4.609



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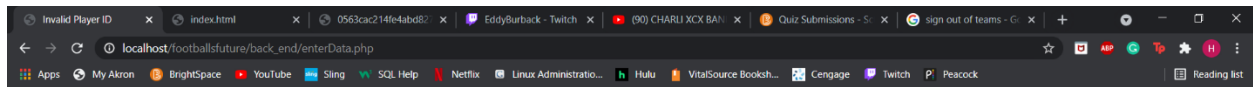
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Player ID:	<input type="text"/>	Select a Gameweek:	<input type="text" value="1"/>
Minutes (Between 1 and 90):	<input type="text"/>		
Fouls Committed:	<input type="text"/>	Fouls Received:	<input type="text"/>
Passes Attempted:	<input type="text"/>	Passes Completed:	<input type="text"/>
Yellow Cards:	<input type="text"/>	Red Cards:	<input type="text"/>
Dribbles Attempted:	<input type="text"/>	Dribbles Completed:	<input type="text"/>
Shots:	<input type="text"/>	Shots on Target:	<input type="text"/>
Goals:	<input type="text"/>	Assists:	<input type="text"/>
Tackles:	<input type="text"/>	Interceptions:	<input type="text"/>



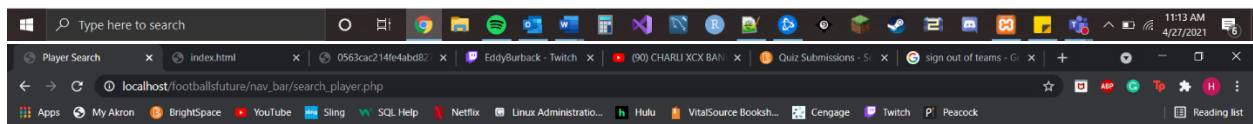


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Enter a Player ID to be Searched for:

Please fill out this field.



Player Search Results x index.html x 0563ca214fe4abd82 x EddyBurback - Twitch x (90) CHARLI XCX BAN x Quiz Submissions - S x sign out of teams - G x +

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Mohamed Salah

GameWeek	Minutes	Passes Attempted	Passes Completed	Fouls Committed	Fouls Recieved	Yellow Cards	Red Cards	Dribbles Attempted	Dribbles Completed	Shots	Shots on Target	Goals	Assists	Tackles	Interceptions	Game Score
1	90	49	38	1	0	0	0	13	9	7	1	3	0	3	0	16.172
2	90	65	54	0	0	0	0	4	2	3	1	0	0	3	0	6.042
3	90	39	30	1	0	0	0	2	1	4	2	0	0	1	1	5.758
4	90	38	34	0	2	0	0	4	3	2	2	2	0	2	0	12.959
5	90	31	27	0	1	0	0	6	1	6	4	1	0	2	0	8.080
6	90	37	30	1	3	0	0	5	1	4	1	0	0	0	0	3.457
7	89	33	26	1	2	0	0	2	1	2	0	1	0	0	0	6.414
8	90	20	16	0	2	0	0	2	0	1	0	1	0	0	0	5.350
10	63	21	17	1	1	0	0	0	0	1	0	0	1	0	1	5.129

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Football's Future

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[Team's Squads](#)

[Top Players](#)

[Enter Game Data](#)

[Search For A Player](#)

Please enter a valid player ID

[Click here to return to the player search page](#)


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Database Schema


- Schema for all databases gameweek 1 through gameweek 19

Name	Type	Collation	Attributes	Null	Default
playerID 	char(5)	latin1_swedish_ci		No	<i>None</i>
minutes	int(11)			Yes	<i>NULL</i>
passAttempt	int(11)			Yes	<i>NULL</i>
passComplete	int(11)			Yes	<i>NULL</i>
foulCommit	int(11)			Yes	<i>NULL</i>
foulReceived	int(11)			Yes	<i>NULL</i>
yCard	int(11)			Yes	<i>NULL</i>
rCard	int(11)			Yes	<i>NULL</i>
dribbleAttempt	int(11)			Yes	<i>NULL</i>
dribbleComplete	int(11)			Yes	<i>NULL</i>
shots	int(11)			Yes	<i>NULL</i>
shotTarget	int(11)			Yes	<i>NULL</i>
goals	int(11)			Yes	<i>NULL</i>
assists	int(11)			Yes	<i>NULL</i>
tackles	int(11)			Yes	<i>NULL</i>
interceptions	int(11)			Yes	<i>NULL</i>
gameScore	decimal(11,3)			Yes	<i>NULL</i>

- Schema for squads table

Name	Type	Collation
playerID 	char(5)	utf8_swedish_ci
teamID	char(4)	latin1_swedish_ci
playerName	char(35)	utf8_swedish_ci
pos	char(3)	latin1_swedish_ci


- Schema for scores table

Name	Type	Collation
playerID 	char(5)	latin1_swedish_ci
minutesPlayed	int(11)	
seasonScore	decimal(10,3)	
scorePerMinute	decimal(10,3)	


- Schema for positions table

Name	Type	Collation
pos 	char(3)	latin1_swedish_ci
weight	int(11)	

- Schema for prem table

Name	Type	Collation
teamID 	char(4)	latin1_swedish_ci
teamName	char(35)	latin1_swedish_ci

- Schema for users table

Name	Type	Collation
uid 	int(11)	
userName	varchar(128)	latin1_swedish_ci
pwd	varchar(128)	latin1_swedish_ci
privilege	tinyint(1)	

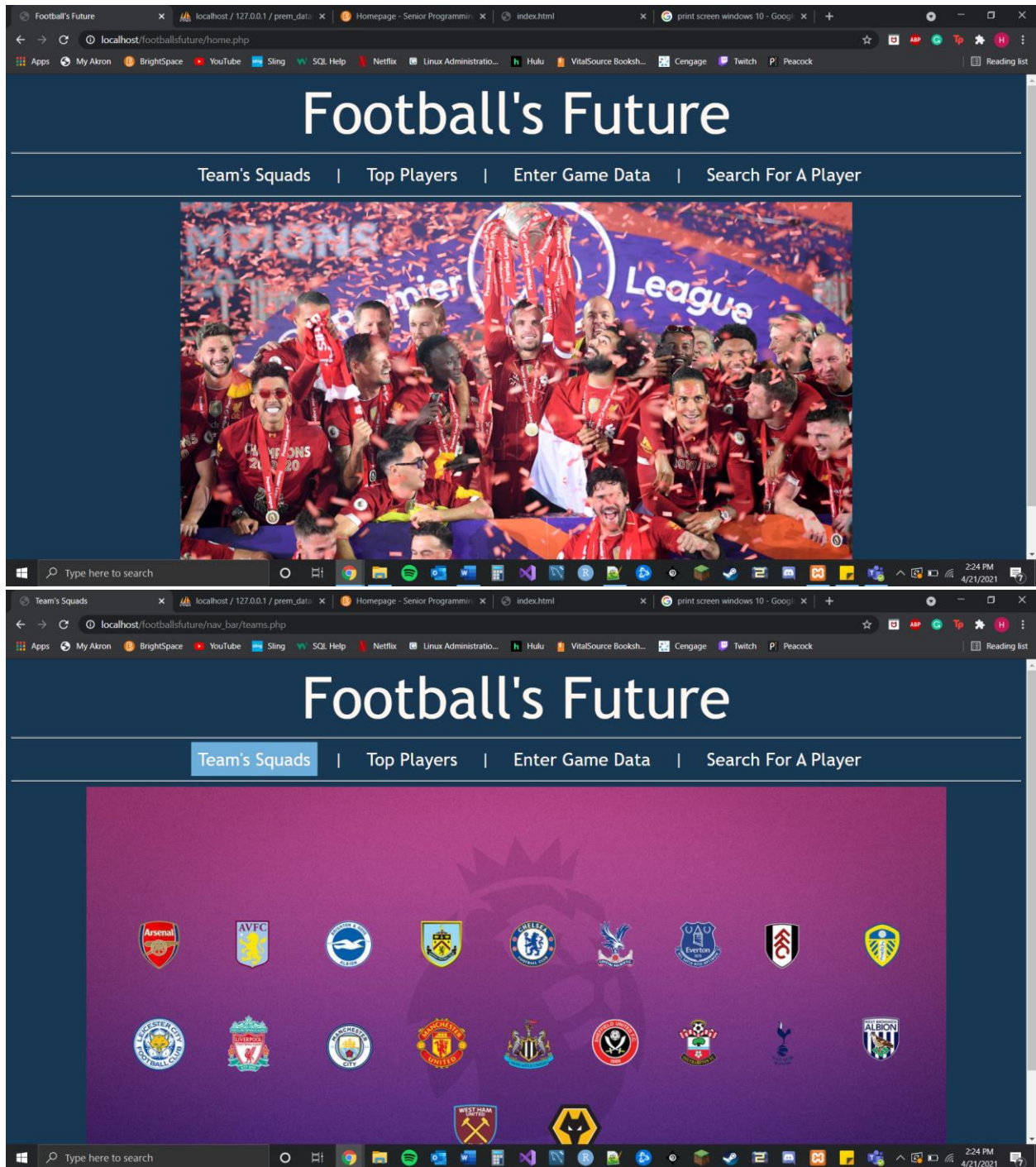
Sample Data

- Invalid Data
 - Player ID: Mom
 - Gameweek: 1
 - Fouls Committed: 0
 - Fouls Received:0
 - Passes Attempted:1
 - Passes Completed:2
 - Yellow Cards: 0
 - Red Cards: 0
 - Dribbles Attempted: 1
 - Dribbles Completed:2
 - Shots: 1
 - Shots on Target:2
 - Goals: 0
 - Assists: 0
 - Tackles: 0
 - Interceptions:
- This data is invalid for three reasons. The first reason is that the Player ID entered is invalid. The second reason this data is invalid is because passes completed, dribbles completed and shots on target can not be greater than passes attempted, dribbles attempted, or shots respectively. The third reason why this data is invalid is because the interception field is left blank. All fields are required to be filled out in order for a dataset to be considered valid. This data was used on the “Enter Game Data” screen.

- Valid Data
 - Player ID: wol09
 - Gameweek: 1
 - Fouls Committed: 0
 - Fouls Received: 4
 - Passes Attempted: 42
 - Passes Completed: 35
 - Yellow Cards: 0
 - Red Cards: 0
 - Dribbles Attempted: 4
 - Dribbles Completed: 3
 - Shots: 5
 - Shots on Target: 2
 - Goals: 1
 - Assists: 0
 - Tackles: 0
 - Interceptions: 2

- This data is valid because the player ID is a valid player ID, the values of all fields are within the proper range, and all fields are filled out. This data was used on the “Enter Game Data” screen.

User Interface at Implementation



Football's Future

Arsenal

Team's Squads | Top Players | Enter Game Data | Search For A Player

Player ID	Player Name	Position	Score	Minutes Played	Score Per Minute
ars44	Karl Hein	GK	0.000	0	0.000
ars01	Bernd Leno	GK	0.000	0	0.000
ars33	Mat Ryan	GK	0.000	0	0.000
ars13	Runar Alex Runarsson	GK	0.000	0	0.000
ars22	Pablo Mari	CB	15.293	270	5.664
ars16	Rob Holding	CB	72.827	1395	5.221
ars06	Gabriel Magalhães	CB	57.450	1051	5.466
ars21	Calum Chambers	CB	0.000	0	0.000
ars23	David Luiz	CB	27.986	661	4.234
ars02	Hector Bellerin	RB	81.269	1460	5.566
ars17	Cedric Soares	RB	9.030	96	9.407
ars03	Kieran Tierney	LB	100.631	1520	6.620
ars34	Granit Xhaka	CDM	80.050	1176	6.807
ars18	Thomas Partey	CDM	42.299	365	11.589
ars25	Mohamed Elneny	CDM	46.480	897	5.182
ars08	Dani Ceballos	CM	78.563	1019	7.710
ars07	Bukayo Saka	LM	109.709	1491	7.358
ars32	Emile Smith Rowe	CAM	30.137	399	7.553
ars11	Martin Odegaard	CAM	0.000	0	0.000
ars24	Reiss Nelson	RW	6.673	71	9.398
ars12	Willian	RW	64.236	914	7.028
ars19	Nicolas Pepe	RW	48.791	482	10.123

Football's Future

Team's Squads | Top Players | Enter Game Data | Search For A Player

By Season Score

By Score Per Minute

By Position

Rank	Player ID	Player Name	Position	Score	Minutes Played	Score Per Minute
1	mci27	Joao Cancelo	RB	152.334	1280	11.901
2	lcc23	James Justin	RB	144.807	1710	8.468
3	lcc03	Wesley Fofana	CB	133.193	1222	10.900
4	asv10	Jack Grealish	LW	131.285	1527	8.598
5	che19	Mason Mount	CAM	129.668	1530	8.475
6	liv11	Mohamed Salah	RW	129.148	1472	8.774
7	mci17	Kevin De Bruyne	CAM	124.782	1417	8.806
8	liv10	Sadio Mane	LW	118.757	1510	7.865
9	liv26	Andrew Robertson	LB	115.920	1710	6.779
10	eve22	Ben Godfrey	CB	115.083	1050	10.960
11	liv66	Trent Alexander-Arnold	RB	114.458	1396	8.199
12	mci07	Raheem Sterling	LW	111.914	1428	7.837
13	mci02	Kyle Walker	RB	110.898	1200	9.242
14	ars07	Bukayo Saka	LM	109.709	1491	7.358
15	lcc15	Harvey Barnes	LM	107.898	1370	7.876
16	mci16	Rodri	CDM	107.827	1540	7.002
17	asv18	Matt Target	LB	107.749	1604	6.717
18	lcc09	Jamie Vardy	ST	105.667	1477	7.154
19	liv03	Fabinho	CDM	104.834	1472	7.122
20	asv11	Ollie Watkins	ST	103.576	1620	6.394
21	ars03	Kieran Tierney	LB	100.631	1520	6.620
22	lcc10	James Maddison	CAM	97.651	1115	8.758
23	lcc08	Yves Tilmann	CM	87.160	1664	5.895

Top Players by Score Per Minute | localhost / 127.0.0.1 / prem_data / ... | Homepage - Senior Programmi... | index.html | print screen windows 10 - Goog... | +

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Football's Future

Team's Squads | **Top Players** | Enter Game Data | Search For A Player

By Season Score

By Score Per Minute

By Position

Select the Minimum number of minutes to be considered:

0

Submit

Rank	Player ID	Player Name	Position	Score	Minutes Played	Score Per Minute
1	mci27	Joao Cancelo	RB	152.334	1280	11.901
2	asv21	Anwar El Ghazi	RW	62.302	547	11.390
3	eve04	Mason Holgate	CB	78.389	711	11.025
4	eve22	Ben Godfrey	CB	115.083	1050	10.960
5	lcc03	Wesley Fofana	CB	133.193	1222	10.900
6	asv15	Bertrand Traore	RW	82.324	758	10.861
7	lcc25	Wilfred Ndidi	CDM	85.185	821	10.376
8	ars09	Alexandre Lacazette	ST	96.953	1033	9.386
9	che29	Kai Havertz	CAM	82.218	884	9.301
10	mci02	Kyle Walker	RB	110.898	1200	9.242
11	eve10	Gylfi Sigurdsson	CAM	83.106	900	9.234
12	eve17	Alex Iwobi	LW	79.700	870	9.161
13	eve23	Seamus Coleman	RB	52.226	575	9.083
14	che22	Hakim Ziyech	RW	49.811	549	9.073
15	mci17	Kevin De Bruyne	CAM	124.782	1417	8.806
16	liv11	Mohamed Salah	RW	129.148	1472	8.774
17	lcc10	James Maddison	CAM	97.651	1115	8.758
18	asv10	Jack Grealish	LW	131.285	1527	8.598
19	mci20	Bernardo Silva	CAM	83.461	973	8.578
20	che19	Mason Mount	CAM	129.668	1530	8.475
21	lcc23	James Justin	RB	144.807	1710	8.468
22	lcc17	Ayoze Perez	ST	47.847	567	8.439

Type here to search

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Select Position | localhost / 127.0.0.1 / prem_data / ... | Homepage - Senior Programmi... | index.html | print screen windows 10 - Goog... | +

localhost/footballsfuture/nav_bar/top_players/position.php

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Football's Future

Team's Squads | **Top Players** | Enter Game Data | Search For A Player

By Season Score

By Score Per Minute

By Position

Type here to search

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Striker

localhost / 127.0.0.1 / prem_data... | Homepage - Senior Programmin... | index.html | print screen windows 10 - Goog... | +

localhost/footballsfuture/positions/ST.php

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Football's Future

Team's Squads | Top Players | Enter Game Data | Search For A Player

Strikers

By Season Score

By Score Per Minute

By Position

Rank	Player ID	Player Name	Position	Score	Minutes Played	Score Per Minute
1	ars09	Alexandre Lacazette	ST	96.953	1033	9.386
2	lcc17	Ayoze Perez	ST	47.847	567	8.439
3	che09	Tammy Abraham	ST	67.670	898	7.536
4	mci09	Gabriel Jesus	ST	62.728	866	7.243
5	lcc09	Jamie Vardy	ST	105.667	1477	7.154
6	eve09	Dominic Calvert-Lewin	ST	96.648	1404	6.884
7	asv11	Ollie Watkins	ST	103.576	1620	6.394
8	liv09	Roberto Firmino	ST	88.657	1420	6.243
9	che11	Timo Werner	ST	75.344	1396	5.397
10	ars14	Pierre-Emerick Aubameyang	ST	69.776	1514	4.609

Select the Minimum number of minutes to be considered:

Enter Game Data

localhost / 127.0.0.1 / prem_data... | Homepage - Senior Programmin... | index.html | print screen windows 10 - Goog... | +

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Football's Future

Team's Squads | Top Players | Enter Game Data | Search For A Player

Player ID:

Select a Gameweek:

Minutes (Between 1 and 90):

Fouls Committed:

Fouls Received:

Passes Attempted:

Passes Completed:

Yellow Cards:

Red Cards:

Dribbles Attempted:

Dribbles Completed:

Shots:

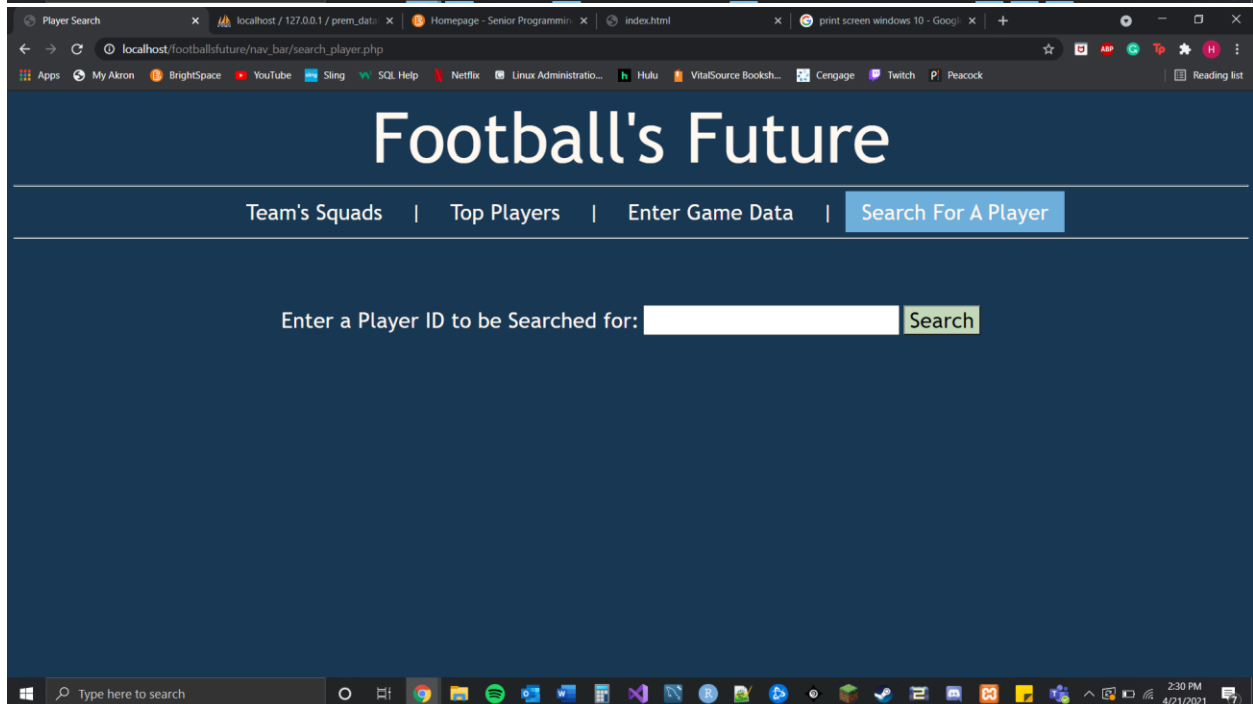
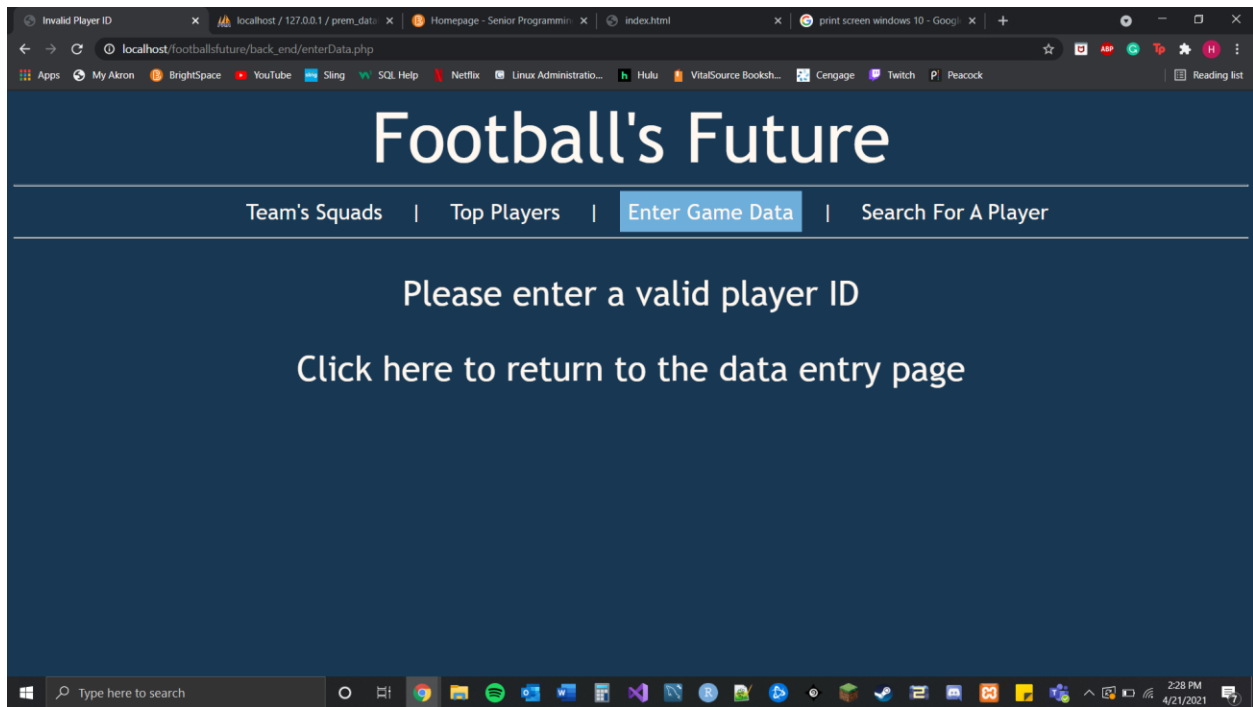
Shots on Target:

Goals:

Assists:

Tackles:

Interceptions:



Player Search Results | localhost / 127.0.0.1 / prem_data... | Homepage - Senior Programmin... | index.html | print screen windows 10 - Goog... | +

localhost/footballsfuture/back_end/search.php

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Football's Future

Team's Squads | Top Players | Enter Game Data | [Search For A Player](#)

Mohamed Salah

GameWeek	Minutes	Passes Attempted	Passes Completed	Fouls Committed	Fouls Recieved	Yellow Cards	Red Cards	Dribbles Attempted	Dribbles Completed	Shots	Shots on Target	Goals	Assists	Tackles	Interceptions	Game Score
1	90	49	38	1	0	0	0	13	9	7	1	3	0	3	0	16.172
2	90	65	54	0	0	0	0	4	2	3	1	0	0	3	0	6.042
3	90	39	30	1	0	0	0	2	1	4	2	0	0	1	1	5.758
4	90	38	34	0	2	0	0	4	3	2	2	2	0	2	0	12.959
5	90	31	27	0	1	0	0	6	1	6	4	1	0	2	0	8.080
6	90	37	30	1	3	0	0	5	1	4	1	0	0	0	0	3.457
7	89	33	26	1	2	0	0	2	1	2	0	1	0	0	0	6.414
8	90	20	16	0	2	0	0	2	0	1	0	1	0	0	0	5.350
10	63	21	17	1	1	0	0	0	0	1	0	0	1	0	1	5.129
11	90	47	42	0	1	0	0	4	3	3	2	1	1	1	0	10.756
12	83	28	21	1	0	0	0	1	1	2	1	1	0	2	0	9.300
13	90	52	41	1	1	0	0	6	4	4	4	1	0	1	1	9.832
14	34	29	29	0	0	0	0	0	0	2	2	2	1	0	0	11.750
15	90	58	53	1	1	0	0	1	0	3	0	0	0	0	0	2.691
16	89	24	20	2	1	0	0	0	0	2	1	0	0	0	0	3.050
17	90	17	11	1	0	0	0	3	2	2	0	0	0	1	0	4.058
18	34	26	21	0	2	0	0	2	0	2	1	0	0	1	0	3.973
19	90	44	40	2	1	0	0	2	1	3	0	0	0	1	0	4.377
Totals	1472	658	550	13	18	0	0	57	29	53	22	13	3	18	3	129.148

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Football's Future

Team's Squads | Top Players | Enter Game Data | [Search For A Player](#)

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<https://www.youtube.com/playlist?list=PL0eyrZgxdwhwBToawjm9faF1ixePexft->

User Manual

How to Access the System

1. In order to use the system, you will first need to download and install a local server that can be run on your machine. The server that I used while developing the software called XAMPP can be found for download at [here](#). It is important to note that you will need both an Apache and SQL server which the one I used provides both.
2. Once the server is installed you will need to move the files for the system into the proper folder on the server. For example, the folder that the files will need to go in on an XAMPP server is called “htdocs”.
3. Now that the files are on the server it is time to start the server. To start the server, go to the folder where you installed the server to, likely your C drive. Once there, there will be a folder named “xampp”. Open the xampp folder and scroll to the bottom. There will be an application named “xampp-control”. Open the application, and you will see five options to start. Click start for the Apache and MYSQL options. It is important to note that you can not have another service running on the ports of these services while using XAMPP.
4. Now that the server is running you will need to add the database and its data into the database server. To

do this on the XAMPP server you will need to open a web browser and go to the address

"localhost/phpmyadmin". Now on the left-hand side you will need to press the new button. This will create a new database for you to use. Make sure you name the database "prem_database". Next you will need to click on the tab at the top of the page labeled "SQL". In the text box on this page is where you will paste the entirety of the contents of the SQL file named "prem_database". You will then need to press the button labeled "go" on the right-hand side of the screen and then the data base will be all set up.

5. Now that the back end for the system is all set up to use the system all you will need to do is go to the address "localhost/footballsfuture" in a web browser. It is important to note that in order to use the "enter game data" feature you will need to use the username "football_admin" and password "Salah11" to login.
6. It is also important to note that depending on the server you are using you may need to edit the values of the variables in the file includes/dbHandler.php to be the appropriate values for your server.

Alternate Way of Using System

1. Alternatively, the system can be accessed by going to the website "hwhiteof.com". The same credentials of

“football_admin” as the username and “Salah11” as the password should be used to access the “enter game data” feature.

How to Use the System

- Once you have accessed the system are now ready to start using and exploring all of its features. Each of the system’s feature’s will be outlined below.
- **Team’s Squads:**
 - On this page the user will be able to view the squads of each team in the Premier League. Simply click on the badge of the team that you would like to view, and you will be brought to a page giving you information on that team’s squad. The information that will be presented on this page to the user is player ID, player name, position, season score, minutes played, and score per minute of each player in that respective squad.
- **Top Players:**
 - On this page the user will be presented with three different methods of viewing the top players in the league based on the statistics that have been entered into the system. These methods of viewing who the top players are: season score, score per minute, and score by position.
 - **Season Score:** A measure of the overall performance of a player over the season. The

sum of the scores from all the matches the player played in. On this page the user can view the top 25 players sorted by their season score.

- Score Per Minute: Calculated by dividing the season score of a player by the minutes the player has played. This value is then multiplied by 100 for readability. On this page the user can view the top 25 players sorted by their score per minute.
- By Position: On this page the user can view the top players per position sorted by their score per minute.

- **Enter Game Data:**

- On this page the user can enter statistics for a player into the system. The user will enter in the player ID for a player followed by the data for that player. The data that will be entered here is the gameweek, minutes played, fouls committed, fouls received, passes attempted, passes completed, yellow cards, red cards, dribbles attempted, dribbles completed, shots, shots on target, goals, assists, tackles, and interceptions.
- Errors to watch out for when entering data:
 - All fields must be filled out in order to enter the data into the system.
 - A valid player ID must be entered.

- If data has already been entered for a player in a given gameweek then data cannot be entered again.
- Passes attempted, dribbles attempted, and shots must be greater than or equal to passes completed, dribbles completed, and shots on target respectively.
- **Search For a Player:**
 - On this page the user can enter a player ID and be returned with the stats from each game that the player participated in, along with the game score for each gameweek and the overall season score for the player.
 - Errors to watch out for when entering data:
 - A valid player ID must be entered.