Soccer Prediction

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Introduction

- Every year, big 5 league soccer clubs in Europe spend hundreds million euros to buy players.
- Soccer prediction using players market value.

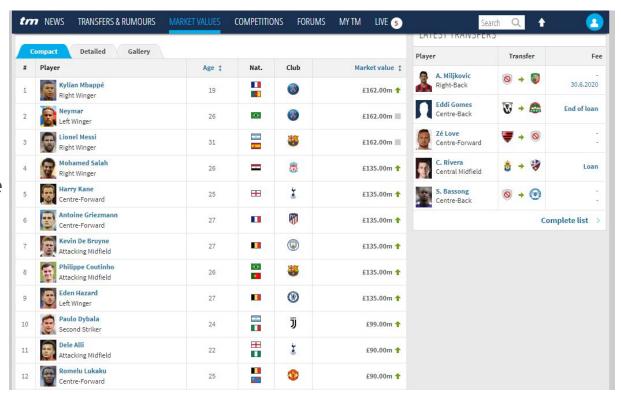Barcelona to Paris Saint-Germain €222m ($331m) in 2017

Data Sources

- Transfermarkt

- X-rates

- Rotowire

Transfermarkt

- Transfermarkt is a German-based website that has footballing information.
- Estimate market value of player.

#	Player	Age ↕	Nat.	Club	Market value ↕
1	Kylian Mbappé — Right Winger	19			£162.00m ↑
2	Neymar — Left Winger	26			£162.00m ■
3	Lionel Messi — Right Winger	31			£162.00m ■
4	Mohamed Salah — Right Winger	26			£135.00m ↑
5	Harry Kane — Centre-Forward	25			£135.00m ↑
6	Antoine Griezmann — Centre-Forward	27			£135.00m ↑
7	Kevin De Bruyne — Attacking Midfield	27			£135.00m ↑
8	Philippe Coutinho — Attacking Midfield	26			£135.00m ↑
9	Eden Hazard — Left Winger	27			£135.00m ↑
10	Paulo Dybala — Second Striker	24			£99.00m ↑
11	Dele Alli — Attacking Midfield	22			£90.00m ↑
12	Romelu Lukaku — Centre-Forward	25			£90.00m ↑

LATEST TRANSFERS

Player	Transfer	Fee
A. Miljkovic — Right-Back		30.6.2020
Eddi Gomes — Centre-Back		End of loan
Zé Love — Centre-Forward		-
C. Rivera — Central Midfield		Loan
S. Bassong — Centre-Back		-

Complete list >

Data Collection

1. Web scraping using Beautiful Soup.

2. Extract all useful information from 5
    leagues (England,Spain,Germany,Italy,
    France).

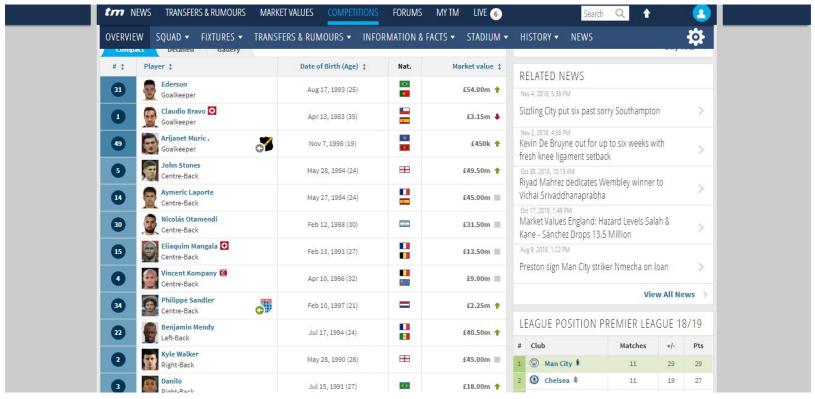3. Process data using pandas and save data
    into .csv file

Web Scraping With
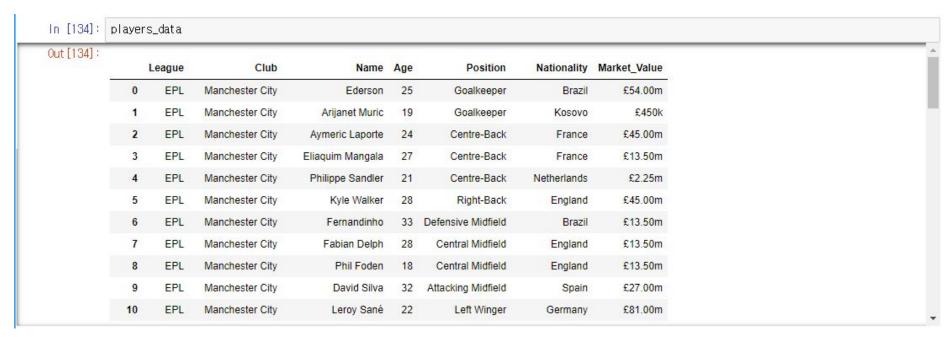Python and BeautifulSoup

Collect Players Data

1. Collect all url of teams.

2. Collect players information
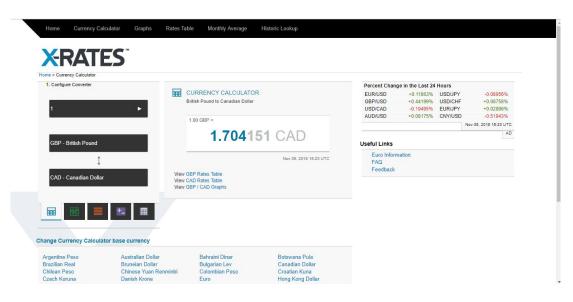   (League, Club, Name, Age, Nationality, Market Value)

Players Data

```
In [134]: players_data
```

Out [134]:

	League	Club	Name	Age	Position	Nationality	Market_Value
0	EPL	Manchester City	Ederson	25	Goalkeeper	Brazil	£54.00m
1	EPL	Manchester City	Arijanet Muric	19	Goalkeeper	Kosovo	£450k
2	EPL	Manchester City	Aymeric Laporte	24	Centre-Back	France	£45.00m
3	EPL	Manchester City	Eliaquim Mangala	27	Centre-Back	France	£13.50m
4	EPL	Manchester City	Philippe Sandler	21	Centre-Back	Netherlands	£2.25m
5	EPL	Manchester City	Kyle Walker	28	Right-Back	England	£45.00m
6	EPL	Manchester City	Fernandinho	33	Defensive Midfield	Brazil	£13.50m
7	EPL	Manchester City	Fabian Delph	28	Central Midfield	England	£13.50m
8	EPL	Manchester City	Phil Foden	18	Central Midfield	England	£13.50m
9	EPL	Manchester City	David Silva	32	Attacking Midfield	Spain	£27.00m
10	EPL	Manchester City	Leroy Sané	22	Left Winger	Germany	£81.00m

4123 players.

Need to convert market value to canadian dollar.

X-rates

- Provide world currency exchange rate, converters, and historic data.
- Using BeautifulSoup, extract the exchange rate British Pound to Canadian Dollar.

Final Players Data

out [10]:
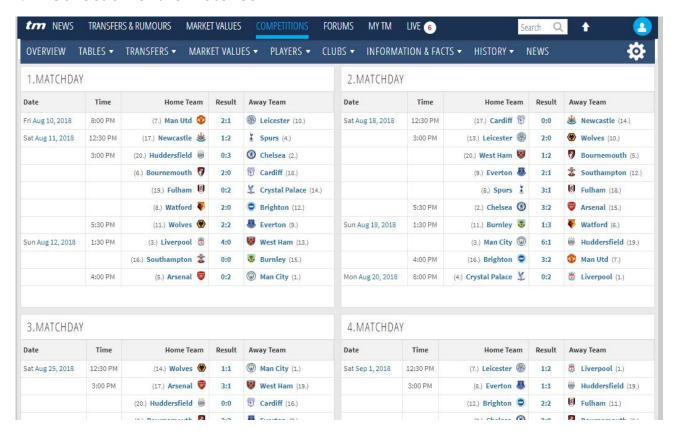
	League	Club	Name	Age	Position	Nationality	Market_Value	Name_en	Club_en	Market_Value_CAD
538	LaLiga	FC Barcelona	Lionel Messi	31	Right Winger	Argentina	£162.00m	Lionel Messi	FC Barcelona	272,274,858.00
2085	Ligue1	Paris Saint-Germain	Kylian Mbappé	19	Right Winger	France	£162.00m	Kylian Mbappe	Paris Saint-Germain	272,274,858.00
2084	Ligue1	Paris Saint-Germain	Neymar	26	Left Winger	Brazil	£162.00m	Neymar	Paris Saint-Germain	272,274,858.00
36	EPL	Chelsea FC	Eden Hazard	27	Left Winger	Belgium	£135.00m	Eden Hazard	Chelsea FC	226,895,715.00
21	EPL	Manchester City	Kevin De Bruyne	27	Attacking Midfield	Belgium	£135.00m	Kevin De Bruyne	Manchester City	226,895,715.00
304	EPL	Tottenham Hotspur	Harry Kane	25	Centre-Forward	England	£135.00m	Harry Kane	Tottenham Hotspur	226,895,715.00
264	EPL	Liverpool FC	Mohamed Salah	26	Right Winger	Egypt	£135.00m	Mohamed Salah	Liverpool FC	226,895,715.00
558	LaLiga	Atlético Madrid	Antoine Griezmann	27	Centre-Forward	France	£108.00m	Antoine Griezmann	Atletico Madrid	181,516,572.00
537	LaLiga	FC Barcelona	Philippe Coutinho	26	Attacking Midfield	Brazil	£108.00m	Philippe Coutinho	FC Barcelona	181,516,572.00
1535	SerieA	Juventus FC	Paulo Dybala	24	Second Striker	Argentina	£99.00m	Paulo Dybala	Juventus FC	166,390,191.00
301	EPL	Tottenham Hotspur	Dele Alli	22	Attacking Midfield	England	£90.00m	Dele Alli	Tottenham Hotspur	151,263,810.00
1533	SerieA	Juventus FC	Cristiano Ronaldo	33	Left Winger	Portugal	£90.00m	Cristiano Ronaldo	Juventus FC	151,263,810.00
65	EPL	Manchester United	Romelu Lukaku	25	Centre-Forward	Belgium	£90.00m	Romelu Lukaku	Manchester United	151,263,810.00
1795	SerieA	Inter Milan	Mauro Icardi	25	Centre-Forward	Argentina	£85.50m	Mauro Icardi	Inter Milan	143,700,619.50
60	EPL	Manchester United	Paul Pogba	25	Central	France	£81.00m	Paul Pogba	Manchester United	136,137,429.00

Sorted by market value

Collect Results of all matches in this season.

1. Collect url of the matches

2. Collect the starting lineup

Result Data

Add all market values of the players for each lineup.
Let Result : homewin = 1 , draw = 0, visitwin = -1

Out [103] +

	League	Home	Visit	Lineup_Home	Lineup_Visit	Score	Diff	Lineup_Home_Value	Lineup_Visit_Value	Result
0	EPL	Manchester United	Leicester City	[David de Gea, Victor Lindelöf, Eric Bailly, L…	[Kasper Schmeichel, Wes Morgan, Harry Maguire,…	2:1	1	682,199,783.10	332,780,382.00	1
1	EPL	Newcastle United	Tottenham Hotspur	[Martin Dubravka, Ciaran Clark, Jamaal Lascell…	[Hugo Lloris, Jan Vertonghen, Davinson Sánchez…	1:2	-1	139,919,024.25	857,665,802.70	-1
2	EPL	AFC Bournemouth	Cardiff City	[Asmir Begovic, Nathan Aké, Steve Cook, Charli…	[Neil Etheridge, Sean Morrison, Bruno Ecuele M…	2:0	2	162,608,595.75	62,774,481.15	1
3	EPL	Fulham FC	Crystal Palace	[Fabri, Maxime Le Marchand, Calum Chambers, Jo…	[Wayne Hennessey, Mamadou Sakho, James Tomkins…	0:2	-2	242,022,096.00	208,744,057.80	-1
4	EPL	Watford FC	Brighton & Hove Albion	[Ben Foster, Craig Cathcart, Christian Kabasel…	[Mathew Ryan, Shane Duffy, Lewis Dunk, Bernard…	2:0	2	145,969,576.65	131,221,355.17	1
5	EPL	Huddersfield Town	Chelsea FC	[Ben Hamer, Terence Kongolo, Zanka, Christophe…	[Kepa, Antonio Rüdiger, David Luiz, Marcos Alo…	0:3	-3	111,178,900.35	756,319,050.00	-1
6	EPL	Wolverhampton Wanderers	Everton FC	[Rui Patrício, Ryan Bennett, Willy Boly, Conor…	[Jordan Pickford, Michael Keane, Phil Jagielka…	2:2	0	230,677,310.25	357,738,910.65	0
7	EPL	Liverpool FC	West Ham United	[Alisson, Virgil van Dijk, Joe Gomez, Andrew R…	[Lukasz Fabianski, Angelo Ogbonna, Fabián Balb…	4:0	4	965,063,107.80	222,357,800.70	1
8	EPL	Southampton FC	Burnley FC	[Alex McCarthy, Wesley Hoedt, Jannik Vestergaa…	[Joe Hart, Ben Mee, James Tarkowski, Stephen W…	0:0	0	217,819,886.40	154,289,086.20	0
9	EPL	Arsenal FC	Manchester City	[Petr Cech, Sokratis, Shkodran Mustafi, Ainsle…	[Ederson, Aymeric Laporte, John Stones, Benjam…	0:2	-2	524,885,420.70	915,146,050.50	-1

```
In [39]:   match_lst_value['Result'].value_counts()

Out[39]:    1    206
           -1    150
            0    125
           Name: Result, dtype: int64
```

481 matches

Multinomial Logistic Regression

Accuracy_score = 0.5031185031185031

Homewin :
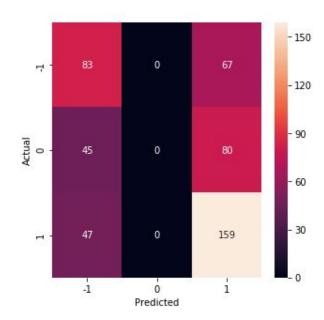
Accuracy_score where the predicted probability > 0.5

= 0.7155963302752294

Visit win:

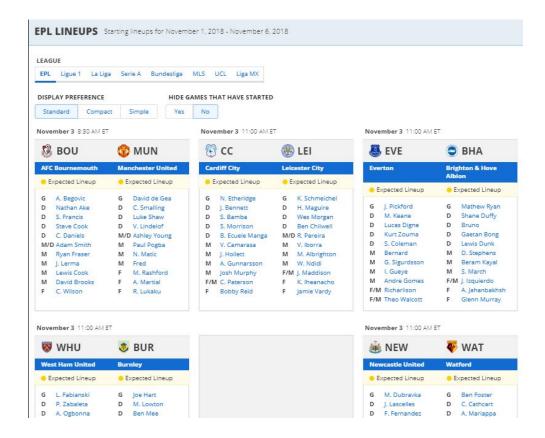Accuracy_score where the predicted probability > 0.5

= 0.6451612903225806

Rotowire

Update expected lineup and confirmed lineup for upcoming matches of the week.

EPL LINEUPS Starting lineups for November 1, 2018 - November 6, 2018

LEAGUE

EPL Ligue 1 La Liga Serie A Bundesliga MLS UCL Liga MX

DISPLAY PREFERENCE

HIDE GAMES THAT HAVE STARTED

Standard Compact Simple

Yes No

November 3 8:30 AM ET

BOU — MUN

AFC Bournemouth	Manchester United
● Expected Lineup	● Expected Lineup

G	A. Begovic	G	David de Gea
D	Nathan Ake	D	C. Smalling
D	S. Francis	D	Luke Shaw
D	Steve Cook	D	V. Lindelof
D	C. Daniels	M/D	Ashley Young
M/D	Adam Smith	M	Paul Pogba
M	Ryan Fraser	M	N. Matic
M	J. Lerma	M	Fred
M	Lewis Cook	F	M. Rashford
M	David Brooks	F	A. Martial
F	C. Wilson	F	R. Lukaku

November 3 11:00 AM ET

CC — LEI

Cardiff City	Leicester City
● Expected Lineup	● Expected Lineup

G	N. Etheridge	G	K. Schmeichel
D	J. Bennett	D	H. Maguire
D	S. Bamba	D	Wes Morgan
D	S. Morrison	D	Ben Chilwell
D	B. Ecuele Manga	M/D	R. Pereira
M	V. Camarasa	M	V. Iborra
M	J. Hoilett	M	M. Albrighton
M	A. Gunnarsson	M	W. Ndidi
M	Josh Murphy	F/M	J. Maddison
F/M	C. Paterson	F	K. Iheanacho
F	Bobby Reid	F	Jamie Vardy

November 3 11:00 AM ET

EVE — BHA

Everton	Brighton & Hove Albion
● Expected Lineup	● Expected Lineup

G	J. Pickford	G	Mathew Ryan
D	M. Keane	D	Shane Duffy
D	Lucas Digne	D	Bruno
D	Kurt Zouma	D	Gaetan Bong
D	S. Coleman	D	Lewis Dunk
M	Bernard	M	D. Stephens
M	G. Sigurdsson	M	Beram Kayal
M	I. Gueye	M	S. March
M	Andre Gomes	F/M	J. Izquierdo
F/M	Richarlison	F	A. Jahanbakhsh
F/M	Theo Walcott	F	Glenn Murray

November 3 11:00 AM ET

WHU — BUR

West Ham United	Burnley
● Expected Lineup	● Expected Lineup

G	L. Fabianski	G	Joe Hart
D	P. Zabaleta	D	M. Lowton
D	A. Ogbonna	D	Ben Mee

November 3 11:00 AM ET

NEW — WAT

Newcastle United	Watford
● Expected Lineup	● Expected Lineup

G	M. Dubravka	G	Ben Foster
D	J. Lascelles	D	C. Cathcart
D	F. Fernandez	D	A. Mariappa

Collect lineup and calculate the value

	League	Time	Home	Visit	Confirmed/Expected	Lineup_Home	Lineup_Visit	Lineup_Home_Value	Lineup_Visit_Value
0	EPL	November 3 8:30 AM ET	AFC Bournemouth	Manchester United	Expected Lineup	[G\nA. Begovic, D\nNathan Ake, D\nS. Francis, ...	[G\nDavid de Gea, D\nC. Smalling, D\nLuke Shaw...	202,693,505.40	821,362,488.30
1	EPL	November 3 11:00 AM ET	Cardiff City	Leicester City	Expected Lineup	[G\nN. Etheridge, D\nJ. Bennett, D\nS. Bamba, ...	[G\nK. Schmeichel, D\nWes Morgan, D\nH. Maguir...	74,119,266.90	322,191,915.30
2	EPL	November 3 11:00 AM ET	Everton	Brighton & Hove Albion	Expected Lineup	[G\nJ. Pickford, D\nS. Coleman, D\nM. Keane, D...	[G\nMathew Ryan, D\nShane Duffy, D\nBruno, D\n...	385,722,715.50	120,632,888.47
3	EPL	November 3 11:00 AM ET	West Ham United	Burnley	Expected Lineup	[G\nL. Fabianski, D\nP. Zabaleta, D\nA. Ogbonn...	[G\nJoe Hart, D\nM. Lowton, D\nBen Mee, D\nJ. ...	216,307,248.30	151,263,810.00
4	EPL	November 3 11:00 AM ET	Newcastle United	Watford	Expected Lineup	[G\nM. Dubravka, D\nJ. Lascelles, D\nF. Fernan...	[G\nBen Foster, D\nC. Cathcart, D\nA. Mariappa...	156,558,043.35	119,498,409.90
5	EPL	November 3 1:30 PM ET	Arsenal	Liverpool	Expected Lineup	[G\nBernd Leno, D\nS. Mustafi, D\nS. Lichtstei...	[G\nAlisson, D\nT. Alexander-Arnold, D\nJoe Go...	580,096,711.35	738,167,392.80

48 games

Apply Logistic Regression Model for Prediction

	League	Time	Home	Visit	Confirmed/Expected	Lineup_Home	Lineup_Visit	Lineup_Home_Value	Lineup_Visit_Value	Result_pred	Home_win_pred_prob	Draw_pred_prob	Visit_win_pred_prob
0	EPL	November 3 8:30 AM ET	AFC Bournemouth	Manchester United	Expected Lineup	[G\nA. Begovic, D\nNathan Ake, D\nS. Francis, ...	[G\nDavid de Gea, D\nC. Smalling, D\nLuke Shaw...	202,693,505.40	821,362,488.30	-1	0.15	0.18	0.68
1	EPL	November 3 11:00 AM ET	Cardiff City	Leicester City	Expected Lineup	[G\nN. Etheridge, D\nJ. Bennett, D\nS. Bamba, ...	[G\nK. Schmeichel, D\nWes Morgan, D\nH. Maguir...	74,119,266.90	322,191,915.30	-1	0.25	0.27	0.47
2	EPL	November 3 11:00 AM ET	Everton	Brighton & Hove Albion	Expected Lineup	[G\nJ. Pickford, D\nS. Coleman, D\nM. Keane, D...	[G\nMathew Ryan, D\nShane Duffy, D\nBruno, D\n...	385,722,715.50	120,632,888.47	1	0.57	0.28	0.15
3	EPL	November 3 11:00 AM ET	West Ham United	Burnley	Expected Lineup	[G\nL. Fabianski, D\nP. Zabaleta, D\nA. Ogbonn...	[G\nJoe Hart, D\nM. Lowton, D\nBen Mee, D\nJ. ...	216,307,248.30	151,263,810.00	1	0.43	0.31	0.26
4	EPL	November 3 11:00 AM ET	Newcastle United	Watford	Expected Lineup	[G\nM. Dubravka, D\nJ. Lascelles, D\nF. Fernan...	[G\nBen Foster, D\nC. Cathcart, D\nA. Mariappa...	156,558,043.35	119,498,409.90	1	0.40	0.32	0.28
5	EPL	November 3 1:30 PM ET	Arsenal	Liverpool	Expected Lineup	[G\nBernd Leno, D\nS. Mustafi, D\nS. Lichtstei...	[G\nAlisson, D\nT. Alexander-Arnold, D\nJoe Go...	580,096,711.35	738,167,392.80	1	0.46	0.24	0.31

Select the predicted probability is greater than 0.8

	League	Time	Home	Visit	Confirmed/Expected	Lineup_Home	Lineup_Visit	Lineup_Home_Value	Lineup_Visit_Value	Result_pred	Home_win_pred_prob	Draw_pred_prob	Visit_win_pred_prob
7	EPL	November 4 10:00 AM ET	Manchester City	Southampton	Expected Lineup	[G\nEderson, D\nB. Mendy, D\nA. Laporte, D\nJo...	[G\nA. McCarthy, D\nJ. Stephens, D\nR. Bertran...	900,019,669.50	214,794,610.20	1	0.82	0.15	0.03
8	EPL	November 4 11:00 AM ET	Chelsea	Crystal Palace	Expected Lineup	[G\nK. Arrizabalaga, D\nA. Rudiger, D\nDavid L...	[G\nW. Hennessey, D\nJ. Tomkins, D\nM. Sakho, ...	945,398,812.50	189,079,762.50	1	0.84	0.14	0.02
11	LaLiga	November 3 11:15 AM ET	Real Madrid	Valladolid	Expected Lineup	[G\nT. Courtois, D\nSergio Ramos, D\nNacho, D\...	[G\nJordi Masip, D\nJavi Moyano, D\nCalero, D\...	818,337,212.10	22,840,835.31	1	0.82	0.15	0.02
13	LaLiga	November 3 3:45 PM ET	Rayo Vallecano	Barcelona	Expected Lineup	[G\nA. Garcia Cabrera, D\nAlex Moreno, D\nL. A...	[G\nM. ter Stegen, D\nJordi Alba, D\nGerard Pi...	49,312,002.06	966,575,745.90	-1	0.06	0.11	0.83
39	Ligue1	November 2 3:45 PM ET	Paris Saint-Germain	Lille	Expected Lineup	[G\nG. Buffon, D\nMarquinhos, D\nJuan Bernat, ...	[G\nMike Maignan, D\nJose Fonte, D\nA. Soumaor...	1,022,543,355.60	142,187,981.40	1	0.87	0.12	0.01

All prediction is correct!

Summary / Next Step

- Compare predicted probability to the betting odds.

- Difficult to predict results only using players value.

- Find other variable to improve prediction accuracy.