DATA EXPLORATION ON FIFA-20

BY- KARAN DESAI

LINKEDIN PROFILE- https://www.linkedin.com/in/karan-desai-80b7a4148/

GIT PROFILE- https://github.com/karandesai24/

In [ ]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.graph_objects as go
import plotly.express as px
from IPython.display import display,HTML
import plotly
import re

%matplotlib inline
```

In [ ]:

```
#load the fifa 2020 dataset
path="https://github.com/karandesai24/fifa20-player-analysis/raw/main/players_20.csv"
df = pd.read_csv(path)
df.head()
```

Out[ ]:

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	overall	potential	value_eur	wage_eur	player_positions	preferred_foot	international_reputation	weak_foot	skill_moves	work_rate	body_type	real_face	release_clause_eur	player_tags	team_position	team_jersey_number	loaned_from	joined	contract_valid_until	nation_position	nation_jersey_number	pace	shooting	passing	dribbling	defending	physic	gk_diving	gk_handling	gk_kicking	...	m
0	158023	https://sofifa.com/player/158023/lionel-messi/...	L. Messi	Lionel Andrés Messi Cuccittini	32	1987-06-24	170	72	Argentina	FC Barcelona	94	94	95500000	565000	RW, CF, ST	Left	5	4	4	Medium/Low	Messi	Yes	195800000.0	#Dribbler, #Distance Shooter, #Crosser, #FK Sp...	RW	10.0	NaN	2004-07-01	2021.0	NaN	NaN	87.0	92.0	92.0	96.0	39.0	66.0	NaN	NaN	NaN	...
1	20801	https://sofifa.com/player/20801/c-ronaldo-dos-...	Cristiano Ronaldo	Cristiano Ronaldo dos Santos Aveiro	34	1985-02-05	187	83	Portugal	Juventus	93	93	58500000	405000	ST, LW	Right	5	4	5	High/Low	C. Ronaldo	Yes	96500000.0	#Speedster, #Dribbler, #Distance Shooter, #Acr...	LW	7.0	NaN	2018-07-10	2022.0	LS	7.0	90.0	93.0	82.0	89.0	35.0	78.0	NaN	NaN	NaN	...
2	190871	https://sofifa.com/player/190871/neymar-da-sil...	Neymar Jr	Neymar da Silva Santos Junior	27	1992-02-05	175	68	Brazil	Paris Saint-Germain	92	92	105500000	290000	LW, CAM	Right	5	5	5	High/Medium	Neymar	Yes	195200000.0	#Speedster, #Dribbler, #Playmaker, #Crosser,...	CAM	10.0	NaN	2017-08-03	2022.0	LW	10.0	91.0	85.0	87.0	95.0	32.0	58.0	NaN	NaN	NaN	...
3	200389	https://sofifa.com/player/200389/jan-oblak/20/...	J. Oblak	Jan Oblak	26	1993-01-07	188	87	Slovenia	Atlético Madrid	91	93	77500000	125000	GK	Right	3	3	1	Medium/Medium	Normal	Yes	164700000.0	NaN	GK	13.0	NaN	2014-07-16	2023.0	GK	1.0	NaN	NaN	NaN	NaN	NaN	NaN	87.0	92.0	78.0	...
4	183277	https://sofifa.com/player/183277/eden-hazard/2...	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	91	91	115500000	350000	LW	Left	4	4	4	High/Medium	Normal	Yes	184500000.0	#Speedster, #Dribbler, #Acrobat	LW	7.0	NaN	2019-07-01	2024.0	LF	10.0	91.0	83.0	86.0	94.0	35.0	66.0	NaN	NaN	NaN	...

5 rows × 104 columns

In [ ]:

```
#checking how many rows and columns we have
df.shape
```

Out[ ]:

```
(18278, 104)
```

In [ ]:

```
#checking columns
col=list(df.columns)
col
```

Out[ ]:

```
['sofifa_id',
 'player_url',
 'short_name',
 'long_name',
 'age',
 'dob',
 'height_cm',
 'weight_kg',
 'nationality',
 'club',
 'overall',
 'potential',
 'value_eur',
 'wage_eur',
 'player_positions',
 'preferred_foot',
 'international_reputation',
 'weak_foot',
 'skill_moves',
 'work_rate',
 'body_type',
 'real_face',
 'release_clause_eur',
 'player_tags',
 'team_position',
 'team_jersey_number',
 'loaned_from',
 'joined',
 'contract_valid_until',
 'nation_position',
 'nation_jersey_number',
 'pace',
 'shooting',
 'passing',
 'dribbling',
 'defending',
 'physic',
 'gk_diving',
 'gk_handling',
 'gk_kicking',
 'gk_reflexes',
 'gk_speed',
 'gk_positioning',
 'player_traits',
 'attacking_crossing',
 'attacking_finishing',
 'attacking_heading_accuracy',
 'attacking_short_passing',
 'attacking_volleys',
 'skill_dribbling',
 'skill_curve',
 'skill_fk_accuracy',
 'skill_long_passing',
 'skill_ball_control',
 'movement_acceleration',
 'movement_sprint_speed',
 'movement_agility',
 'movement_reactions',
 'movement_balance',
 'power_shot_power',
 'power_jumping',
 'power_stamina',
 'power_strength',
 'power_long_shots',
 'mentality_aggression',
 'mentality_interceptions',
 'mentality_positioning',
 'mentality_vision',
 'mentality_penalties',
 'mentality_composure',
 'defending_marking',
 'defending_standing_tackle',
 'defending_sliding_tackle',
 'goalkeeping_diving',
 'goalkeeping_handling',
```

```
'goalkeeping_kicking',
'goalkeeping_positioning',
'goalkeeping_reflexes',
'ls',
'st',
'rs',
'lw',
'lf',
'cf',
'rf',
'rw',
'lam',
'cam',
'ram',
'lm',
'lcm',
'cm',
'rcm',
'rm',
'lwb',
'ldm',
'cdm',
'rdm',
'rwb',
'lb',
'lcb',
'cb',
'rcb',
'rb']
```

In [ ]:

```
#Dropping some useless columns
useless_columns = ['sofifa_id', 'player_url', 'body_type', 'real_face', 'loaned_from' ]
df=df.drop(useless_columns,axis=1)
```

In [ ]:

```
df.head(5)
```

Out[ ]:

	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	overall	potential	value_eur	wage_eur	player_positions	preferred_foot	international_reputation	weak_foot	skill_moves	work_rate	release_clause_eur	player_tags	team_position	team_jersey_number	joined	contract_valid_until	nation_position	nation_jersey_number	pace	shooting	passing	dribbling	defending	physic	gk_diving	gk_handling	gk_kicking	gk_reflexes	gk_speed	gk_positioning	player_traits	attacking_crossing	...	mentality_aggres
0	L. Messi	Lionel Andrés Messi Cuccittini	32	1987-06-24	170	72	Argentina	FC Barcelona	94	94	95500000	565000	RW, CF, ST	Left	5	4	4	Medium/Low	195800000.0	#Dribbler, #Distance Shooter, #Crosser, #FK Sp...	RW	10.0	2004-07-01	2021.0	NaN	NaN	87.0	92.0	92.0	96.0	39.0	66.0	NaN	NaN	NaN	NaN	NaN	NaN	Beat Offside Trap, Argues with Officials, Earl...	88	...
1	Cristiano Ronaldo	Cristiano Ronaldo dos Santos Aveiro	34	1985-02-05	187	83	Portugal	Juventus	93	93	58500000	405000	ST, LW	Right	5	4	5	High/Low	96500000.0	#Speedster, #Dribbler, #Distance Shooter, #Acr...	LW	7.0	2018-07-10	2022.0	LS	7.0	90.0	93.0	82.0	89.0	35.0	78.0	NaN	NaN	NaN	NaN	NaN	NaN	Long Throw-in, Selfish, Argues with Officials,...	84	...
2	Neymar Jr	Neymar da Silva Santos Junior	27	1992-02-05	175	68	Brazil	Paris Saint-Germain	92	92	105500000	290000	LW, CAM	Right	5	5	5	High/Medium	195200000.0	#Speedster, #Dribbler, #Playmaker ... #Crosser,...	CAM	10.0	2017-08-03	2022.0	LW	10.0	91.0	85.0	87.0	95.0	32.0	58.0	NaN	NaN	NaN	NaN	NaN	NaN	Power Free-Kick, Injury Free, Selfish, Early C...	87	...
3	J. Oblak	Jan Oblak	26	1993-01-07	188	87	Slovenia	Atlético Madrid	91	93	77500000	125000	GK	Right	3	3	1	Medium/Medium	164700000.0	NaN	GK	13.0	2014-07-16	2023.0	GK	1.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	87.0	92.0	78.0	89.0	52.0	90.0	Flair, Acrobatic Clearance	13	...
4	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	91	91	90000000	470000	LW, CF	Right	4	4	4	High/Medium	184500000.0	#Speedster, #Dribbler, #Acrobat	LW	7.0	2019-07-01	2024.0	LF	10.0	91.0	83.0	86.0	94.0	35.0	66.0	NaN	NaN	NaN	NaN	NaN	NaN	Beat Offside Trap, Selfish, Finesse Shot, Spee...	81	...

5 rows × 99 columns

In [ ]:

```
#displaying columns for given list
df[['short_name','player_positions']]
```

Out[ ]:

	short_name	player_positions
0	L. Messi	RW, CF, ST
1	Cristiano Ronaldo	ST, LW
2	Neymar Jr	LW, CAM
3	J. Oblak	GK
4	E. Hazard	LW, CF
...	...	...
18273	Shao Shuai	CB
18274	Xiao Mingjie	CB
18275	Zhang Wei	CM
18276	Wang Haijian	CM
18277	Pan Ximing	CM

18278 rows × 2 columns

In [ ]:

```
#displaying player with min age by sorting in list
player_age = df[['short_name','age','club']]
player_age.sort_values(by=['age']).head()
```

Out[ ]:

	short_name	age	club
18171	J. Starbuck	16	Grimsby Town
4764	A. Hložek	16	Sparta Praha
18243	E. Sartorius	16	Lincoln City
17827	D. Burns	16	St. Patrick's Athletic
17614	D. Obbekjær	16	Odense Boldklub

In [ ]:

```
#displaying player with top-5 high wage players
player_salary = df[['short_name','wage_eur','club']]
player_salary.head(5)
```

Out[ ]:

	short_name	wage_eur	club
0	L. Messi	565000	FC Barcelona
1	Cristiano Ronaldo	405000	Juventus
2	Neymar Jr	290000	Paris Saint-Germain
3	J. Oblak	125000	Atlético Madrid
4	E. Hazard	470000	Real Madrid

In [ ]:

```
#Filling Missing Values by median
```

```
columns = ["dribbling", "defending", "physic", "passing", "shooting", "pace"]
df[columns]
```

Out[ ]:

	dribbling	defending	physic	passing	shooting	pace
0	96.0	39.0	66.0	92.0	92.0	87.0
1	89.0	35.0	78.0	82.0	93.0	90.0
2	95.0	32.0	58.0	87.0	85.0	91.0
3	NaN	NaN	NaN	NaN	NaN	NaN
4	94.0	35.0	66.0	86.0	83.0	91.0
...	...	...	...	...	...	...
18273	33.0	47.0	51.0	28.0	23.0	57.0
18274	35.0	48.0	48.0	33.0	24.0	58.0
18275	45.0	48.0	51.0	44.0	35.0	54.0
18276	47.0	45.0	52.0	47.0	35.0	59.0
18277	45.0	47.0	55.0	51.0	32.0	60.0

18278 rows × 6 columns

In [ ]:

```
#how many NaN values are there in these columuns
df[columns].isnull().sum()
```

Out[ ]:

```
dribbling     2036
defending     2036
physic        2036
passing       2036
shooting      2036
pace          2036
dtype: int64
```

In [ ]:

```
#filling the NaN values with the median of the respective column
for col in columns:
  df[col] = df[col].fillna(df[col].median())
```

In [ ]:

```
df[columns]
```

Out[ ]:

	dribbling	defending	physic	passing	shooting	pace
0	96.0	39.0	66.0	92.0	92.0	87.0
1	89.0	35.0	78.0	82.0	93.0	90.0
2	95.0	32.0	58.0	87.0	85.0	91.0
3	64.0	56.0	66.0	58.0	54.0	69.0
4	94.0	35.0	66.0	86.0	83.0	91.0
...	...	...	...	...	...	...
18273	33.0	47.0	51.0	28.0	23.0	57.0
18274	35.0	48.0	48.0	33.0	24.0	58.0
18275	45.0	48.0	51.0	44.0	35.0	54.0
18276	47.0	45.0	52.0	47.0	35.0	59.0
18277	45.0	47.0	55.0	51.0	32.0	60.0

18278 rows × 6 columns

In [ ]:

```
#filling all NaN values in the dataframe with 0
df=df.fillna(0)
df.head(20)
```

Out[ ]:

	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	overall	potential	value_eur	wage_eur	player_positions	preferred_foot	international_reputation	weak_foot	skill_moves	work_rate	release_clause_eur	player_tags	team_position	team_jersey_number	joined	contract_valid_until	nation_position	nation_jersey_number	pace	shooting	passing	dribbling	defending	physic	gk_diving	gk_handling	gk_kicking	gk_reflexes	gk_speed	gk_positioning	player_traits	attacking_crossing	...	mentality_ag
0	L. Messi	Lionel Andrés Messi Cuccittini	32	1987-06-24	170	72	Argentina	FC Barcelona	94	94	95500000	565000	RW, CF, ST	Left	5	4	4	Medium/Low	195800000.0	#Dribbler, #Distance Shooter, #Crosser, #FK Sp...	RW	10.0	2004-07-01	2021.0	0	0.0	87.0	92.0	92.0	96.0	39.0	66.0	0.0	0.0	0.0	0.0	0.0	0.0	Beat Offside Trap, Argues with Officials, Earl...	88	...
1	Cristiano Ronaldo	Cristiano Ronaldo dos Santos Aveiro	34	1985-02-05	187	83	Portugal	Juventus	93	93	58500000	405000	ST, LW	Right	5	4	5	High/Low	96500000.0	#Speedster, #Dribbler, #Distance Shooter, #Acr...	LW	7.0	2018-07-10	2022.0	LS	7.0	90.0	93.0	82.0	89.0	35.0	78.0	0.0	0.0	0.0	0.0	0.0	0.0	Long Throw-in, Selfish, Argues with Officials,...	84	...
2	Neymar Jr	Neymar da Silva Santos Junior	27	1992-02-05	175	68	Brazil	Paris Saint-Germain	92	92	105500000	290000	LW, CAM	Right	5	5	5	High/Medium	195200000.0	#Speedster, #Dribbler, #Playmaker, #Crosser,...	CAM	10.0	2017-08-03	2022.0	LW	10.0	91.0	85.0	87.0	95.0	32.0	58.0	0.0	0.0	0.0	0.0	0.0	0.0	Power Free-Kick, Injury Free, Selfish, Early C...	87	...
3	J. Oblak	Jan Oblak	26	1993-01-07	188	87	Slovenia	Atlético Madrid	91	93	77500000	125000	GK	Right	3	3	1	Medium/Medium	164700000.0	0	GK	13.0	2014-07-16	2023.0	GK	1.0	69.0	54.0	58.0	64.0	56.0	66.0	87.0	92.0	78.0	89.0	52.0	90.0	Flair, Acrobatic Clearance	13	...
4	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	91	91	90000000	470000	LW, CF	Right	4	4	4	High/Medium	184500000.0	#Speedster, #Dribbler, #Acrobat	LW	7.0	2019-07-01	2024.0	LF	10.0	91.0	83.0	86.0	94.0	35.0	66.0	0.0	0.0	0.0	0.0	0.0	0.0	Beat Offside Trap, Selfish, Finesse Shot, Spee...	81	...
5	K. De Bruyne	Kevin De Bruyne	28	1991-06-28	181	70	Belgium	Manchester City	91	91	90000000	370000	CAM, CM	Right	4	5	4	High/High	166500000.0	#Dribbler, #Playmaker, #Engine, #Distance Sh...	RCM	17.0	2015-08-30	2023.0	RCM	7.0	76.0	86.0	92.0	86.0	61.0	78.0	0.0	0.0	0.0	0.0	0.0	0.0	Power Free-Kick, Avoids Using Weaker Foot, Div...	93	...
6	M. ter Stegen	Marc-André ter Stegen	27	1992-04-30	187	85	Germany	FC Barcelona	90	93	67500000	250000	GK	Right	3	4	1	Medium/Medium	143400000.0	0	GK	1.0	2014-07-01	2022.0	SUB	22.0	69.0	54.0	58.0	64.0	56.0	66.0	88.0	85.0	88.0	90.0	45.0	88.0	Swerve Pass, Acrobatic Clearance, Flair Passes	18	...
7	V. van Dijk	Virgil van Dijk	27	1991-07-08	193	92	Netherlands	Liverpool	90	91	78000000	200000	CB	Right	3	3	2	Medium/Medium	150200000.0	#Tackling, #Tactician, #Strength, #Complete ...	LCB	4.0	2018-01-01	2023.0	LCB	4.0	77.0	60.0	70.0	71.0	90.0	86.0	0.0	0.0	0.0	0.0	0.0	0.0	Diver, Avoids Using Weaker Foot, Leadership, L...	53	...
8	L. Modrić	Luka Modrić	33	1985-09-09	172	66	Croatia	Real Madrid	90	90	45000000	340000	CM	Right	4	4	4	High/High	92300000.0	#Dribbler, #Playmaker, #Crosser, #Acrobat, #...	RCM	10.0	2012-08-01	2020.0	0	0.0	74.0	76.0	89.0	89.0	72.0	66.0	0.0	0.0	0.0	0.0	0.0	0.0	Argues with Officials, Finesse Shot, Speed Dri...	86	...
9	M. Salah	Mohamed Salah Ghaly	27	1992-06-15	175	71	Egypt	Liverpool	90	90	80500000	240000	RW, ST	Left	3	3	4	High/Medium	148900000.0	#Speedster, #Dribbler, #Acrobat, #Clinical Fin...	RW	11.0	2017-07-01	2023.0	RW	10.0	93.0	86.0	81.0	89.0	45.0	74.0	0.0	0.0	0.0	0.0	0.0	0.0	Beat Offside Trap, Argues with Officials, Earl...	79	...
10	K. Mbappé	Kylian Mbappé	20	1998-12-20	178	73	France	Paris Saint-Germain	89	95	93500000	155000	ST, RW	Right	3	4	5	High/Low	191700000.0	#Speedster, #Dribbler, #Acrobat	RW	7.0	2018-07-01	2022.0	RM	10.0	96.0	84.0	78.0	90.0	39.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	Beat Offside Trap, Selfish, Early	78	...

	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	overall	potential	value_eur	wage_eur	player_positions	preferred_foot	international_reputation	weak_foot	skill_moves	work_rate	release_clause_eur	player_tags	team_position	team_jersey_number	joined	contract_valid_until	nation_position	nation_jersey_number	pace	shooting	passing	dribbling	defending	physic	gk_diving	gk_handling	gk_kicking	gk_reflexes	gk_speed	gk_positioning	player_traits	attacking_crossing	...	mentality_ag
11	K. Koulibaly	Kalidou Koulibaly	28	1991-06-20	187	89	Senegal	Napoli	89	91	67500000	150000	CB	Right	3	3	2	Medium/High	119800000.0	#Tackling , #Tactician , #Strength, #Complete ...	LCB	26.0	2014-07-01	2021.0	0	0.0	71.0	28.0	54.0	67.0	89.0	87.0	0.0	0.0	0.0	0.0	0.0	0.0	Long Passer (CPU AI Only)	30	...
12	H. Kane	Harry Kane	25	1993-07-28	188	89	England	Tottenham Hotspur	89	91	83000000	220000	ST	Right	3	4	3	High/High	159800000.0	#Engine, Shooter, #Clinical	ST	10.0	2010-07-01	2024.0	ST	9.0	70.0	91.0	79.0	81.0	47.0	83.0	0.0	0.0	0.0	0.0	0.0	0.0	Injury Free, Avoids Using Weaker Foot, Argues ...	75	...
13	Alisson	Alisson Ramses Becker	26	1992-10-02	191	91	Brazil	Liverpool	89	91	58000000	155000	GK	Right	3	3	1	Medium/Medium	111700000.0	0	GK	1.0	2018-07-19	2024.0	0	0.0	69.0	54.0	58.0	64.0	56.0	66.0	85.0	84.0	85.0	89.0	51.0	90.0	Flair, Swerve Pass	17	...
14	De Gea	David De Gea Quintana	28	1990-11-07	192	82	Spain	Manchester United	89	90	56000000	205000	GK	Right	4	3	1	Medium/Medium	110600000.0	0	GK	1.0	2011-07-01	2020.0	GK	1.0	69.0	54.0	58.0	64.0	56.0	66.0	90.0	84.0	81.0	92.0	58.0	85.0	Flair, Second Wind, Flair Passes	17	...
15	N. Kanté	N'Golo Kanté	28	1991-03-29	168	72	France	Chelsea	89	90	66000000	235000	CDM, CM	Right	3	3	2	Medium/High	130400000.0	#Tackling , #Tactician	RCM	7.0	2016-07-16	2023.0	LDM	13.0	78.0	65.0	77.0	81.0	87.0	83.0	0.0	0.0	0.0	0.0	0.0	0.0	Diver	68	...
16	G. Chiellini	Giorgio Chiellini	34	1984-08-14	187	85	Italy	Juventus	89	89	24500000	215000	CB	Left	4	3	2	Medium/High	40400000.0	#Tackling , #Tactician , #Strength, #Complete ...	LCB	3.0	2005-07-01	2020.0	LCB	3.0	68.0	46.0	58.0	60.0	90.0	82.0	0.0	0.0	0.0	0.0	0.0	0.0	Inflexible, Power Free-Kick, Injury Prone, Lon...	54	...
17	S. Agüero	Sergio Leonel Agüero del Castillo	31	1988-06-02	173	70	Argentina	Manchester City	89	89	60000000	300000	ST	Right	4	4	4	High/Medium	111000000.0	#Dribbler, #Clinical Finisher, #Complete Forward	ST	10.0	2011-07-28	2021.0	ST	9.0	80.0	90.0	77.0	88.0	33.0	74.0	0.0	0.0	0.0	0.0	0.0	0.0	Avoids Using Weaker Foot, Outside Foot Shot	70	...
18	Sergio Ramos	Sergio Ramos García	33	1986-03-30	184	82	Spain	Real Madrid	89	89	31500000	300000	CB	Right	4	3	3	High/Medium	64600000.0	#Aerial Threat, #Tackling , #Tactician , #Comp...	LCB	4.0	2005-08-01	2020.0	RCB	15.0	72.0	68.0	75.0	73.0	87.0	85.0	0.0	0.0	0.0	0.0	0.0	0.0	Injury Prone, Avoids Using Weaker Foot, Leader...	66	...
19	L. Suárez	Luis Alberto Suárez Díaz	32	1987-01-24	182	86	Uruguay	FC Barcelona	89	89	53000000	355000	ST	Right	5	4	3	High/Medium	108700000.0	#Distance Shooter, #Strength, #Clinical Finish...	ST	9.0	2014-07-11	2021.0	0	0.0	73.0	89.0	80.0	84.0	51.0	84.0	0.0	0.0	0.0	0.0	0.0	0.0	Diver, Speed Dribbler (CPU AI Only)	78	...

20 rows × 99 columns

In [ ]:

```
#count the NaN values again
df.isnull().sum()
```

Out[ ]:

```
short_name     0
long_name      0
age            0
dob            0
height_cm      0
              ..
lb             0
lcb            0
cb             0
rcb            0
rb             0
Length: 99, dtype: int64
```

In [ ]:

```
#Scatter Plot (colored by Age) year 2020 - Overall Rating vs Value in Euros
fig=go.Figure(data=go.Scatter(x=df['overall'],y=df['value_eur'],mode='markers',marker=dict(size=10,color=df['age'],showscale=True),text=df['short_name']))
fig.update_layout(title='Scatter Plot- Overall Ratings vs Values in Euros',
xaxis_title='Overall Ratings',
yaxis_title='Values in Euros')
fig.show()
```

In [ ]:

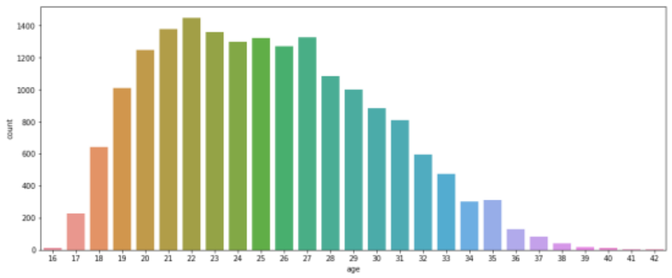
```
#Pie chart proportion of right-foot players vs left-foot players
fig = px.pie(df, names='preferred_foot', title='Percentage of Players by Preferred Foot')
fig.show()
```

In [ ]:

```
#Histrogram of Player Age
plt.figure(figsize=(15,6))
sns.countplot(x="age",data=df)
```

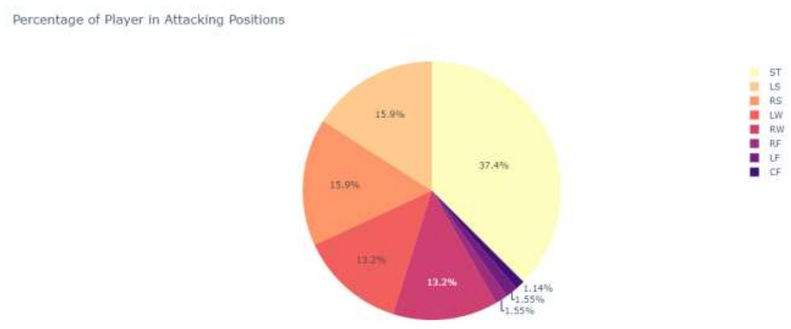
Out[ ]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x7f2677b5acd0>
```



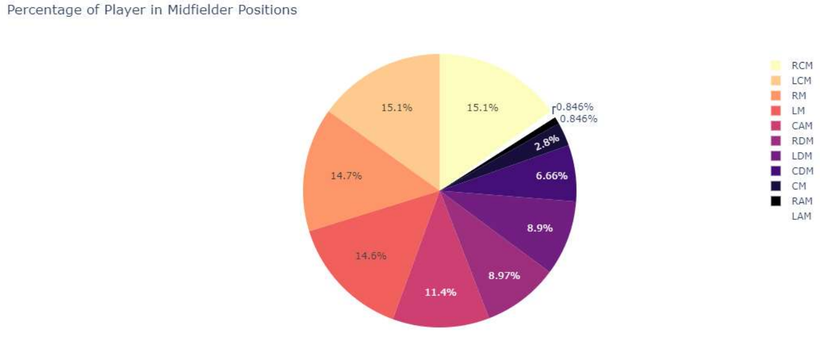
In [ ]:

```
#Pie chart Describing the Percentage of Players in different Attacker positions
attack = ['RW', 'LW', 'ST', 'CF', 'LS', 'RS', 'RF', 'LF']
sample = df.query('team_position in @attack')
fig = px.pie(sample, names ='team_position', color_discrete_sequence=px.colors.sequential.Magma_r,title='Percentage of Player in Attacking Positions')
fig.show()
```



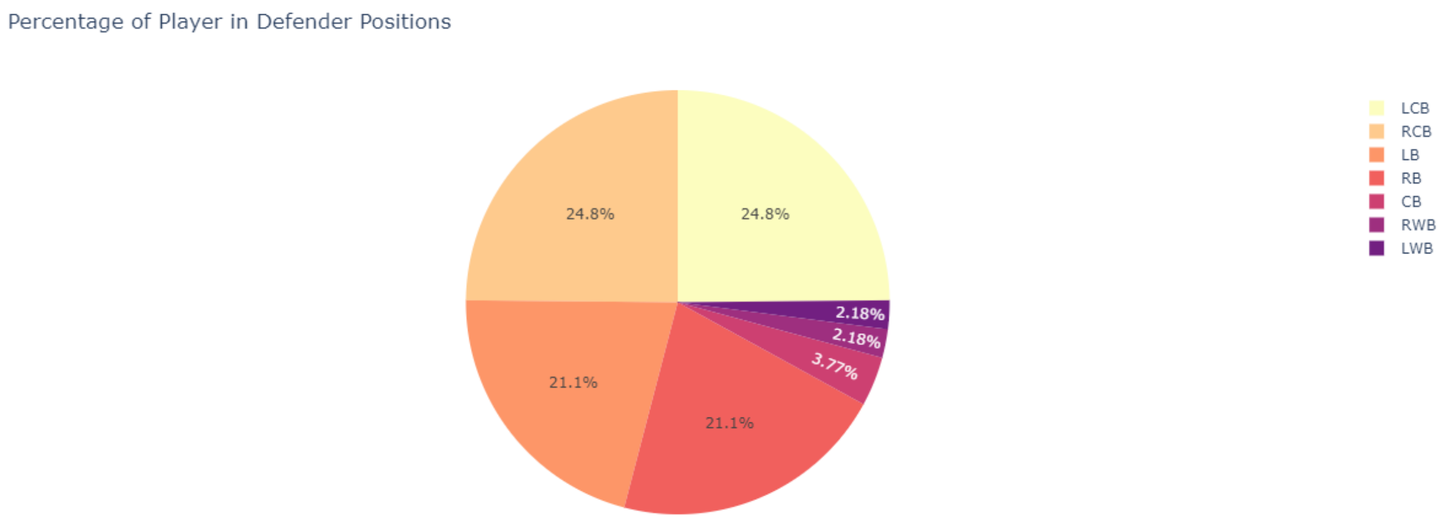
In [ ]:

```
#Pie chart Describing the Percentage of Players in different Midfielder positions
mid = ['CAM', 'RCM', 'CDM', 'LDM', 'RM', 'LCM', 'LM', 'RDM', 'RAM','CM', 'LAM']
sample = df.query('team_position in @mid')
fig = px.pie(sample, names ='team_position', color_discrete_sequence=px.colors.sequential.Magma_r,title='Percentage of Player in Midfielder Positions')
fig.show()
```



In [ ]:

```
#Pie chart Describing the Percentage of Players in different Defender positions
defence = ['LCB', 'RCB', 'LB', 'RB', 'CB', 'RWB', 'LWB']
sample = df.query('team_position in @defence')
fig = px.pie(sample, names ='team_position', color_discrete_sequence=px.colors.sequential.Magma_r,title='Percentage of Player in Defender Positions')
fig.show()
```

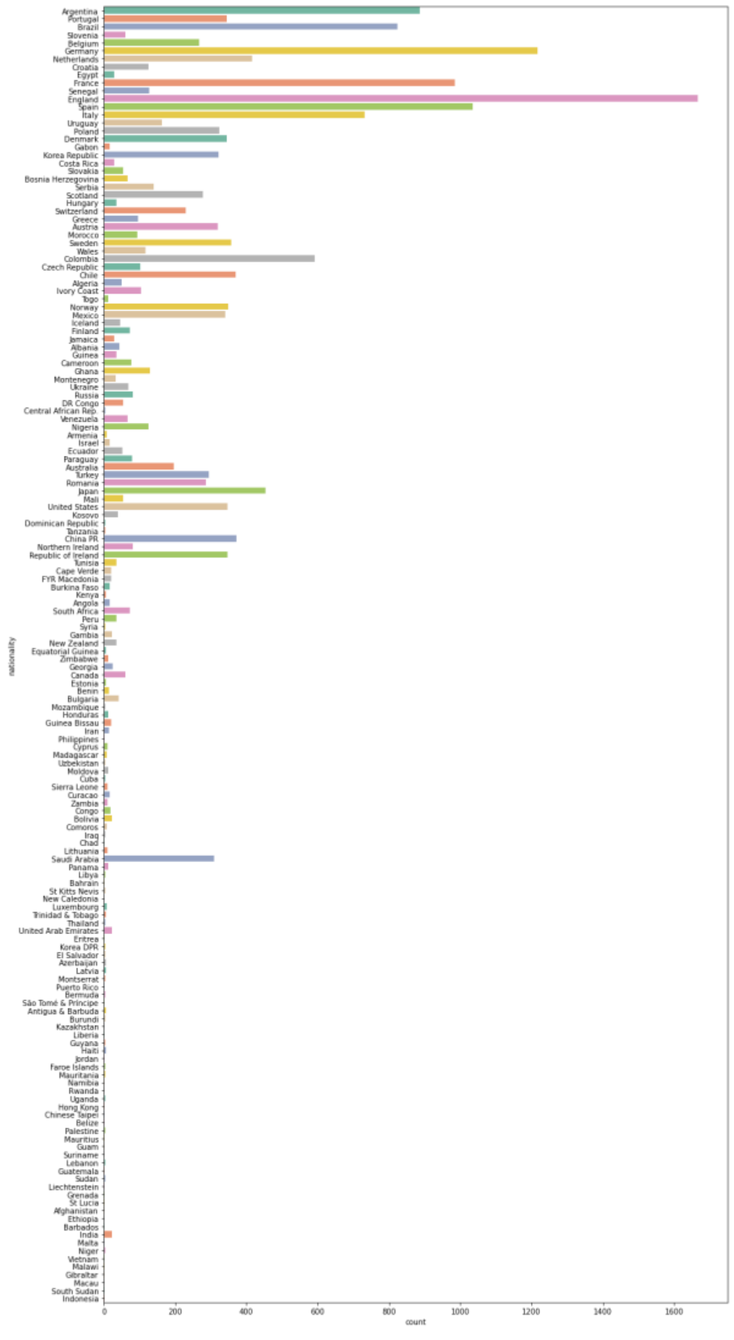


In [ ]:

```
#nationwise players count
plt.figure(figsize=(15,32))

sns.countplot(y = df.nationality,palette="Set2")
```

Out[ ]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x7f2677e1ca50>
```



In [ ]:

```
#players comparison messi vs ronaldo
skills=['pace',
        'dribbling',
        'shooting',
        'passing',
        'physic',
        'attacking_short_passing',
        'attacking_finishing',
        'attacking_crossing',
```

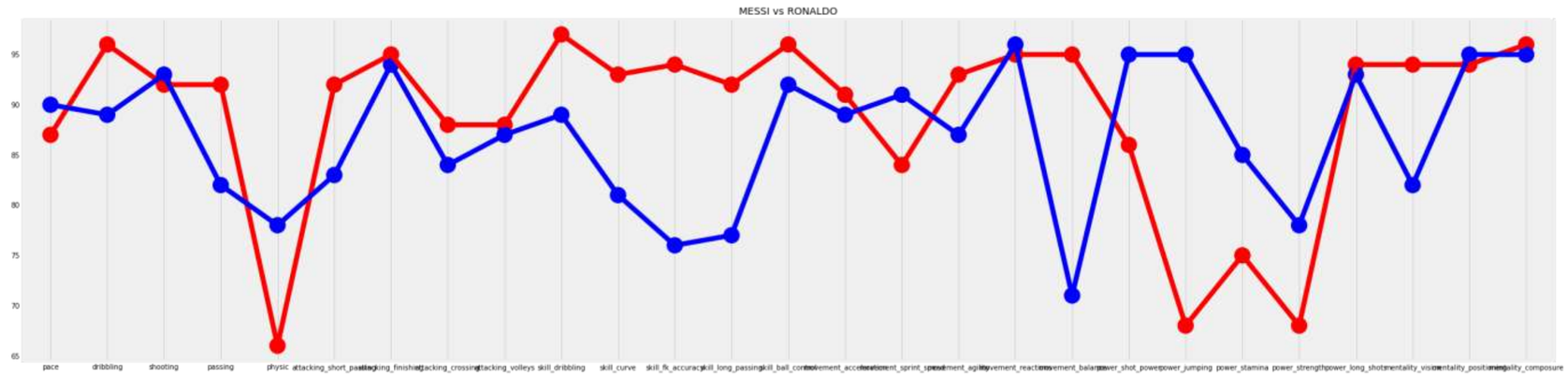
```
        'attacking_volleys',
        'skill_dribbling',
        'skill_curve',
        'skill_fk_accuracy',
        'skill_long_passing',
        'skill_ball_control',
        'movement_acceleration',
        'movement_sprint_speed',
        'movement_agility',
        'movement_reactions',
        'movement_balance',
        'power_shot_power',
        'power_jumping',
        'power_stamina',
        'power_strength',
        'power_long_shots',
        'mentality_vision',
        'mentality_positioning',
        'mentality_composure',

]
```

In [ ]:

```
messi=df.loc[df['short_name']=='L. Messi']
messi=pd.DataFrame(messi,columns=skills)

ronaldo=df.loc[df['short_name']=='Cristiano Ronaldo']
ronaldo=pd.DataFrame(ronaldo,columns=skills)
```

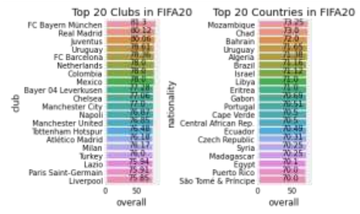
In [ ]:

```
plt.figure(figsize=(35,9))
sns.pointplot(data=messi,color='red')
sns.pointplot(data=ronaldo,color='blue')
plt.title("MESSI vs RONALDO")
plt.grid()
```



In [ ]:

```
#ploting chart of top 20 club & countries by overall player rating
plt.subplot(121)
top_clubs = df.groupby(['club']).overall.mean().sort_values(ascending = False)[:20]
plt.title("Top 20 Clubs in FIFA20")
sns.barplot(y = top_clubs.index, x = top_clubs)
for index, value in enumerate(top_clubs):
    plt.text(value//2, index, str(round(value,2)))

plt.subplot(122)
top_countries = df.groupby(['nationality']).overall.mean().sort_values(ascending = False)[:20]
plt.title("Top 20 Countries in FIFA20")
sns.barplot(y = top_countries.index, x = top_countries)
for index, value in enumerate(top_countries):
    plt.text(value//2, index, str(round(value,2)))

plt.tight_layout()
```



In [ ]:

```
#displaying players of club & country
def Club(x):
    return df[df['club'] == x ][
        ['short_name','age','club',"team_jersey_number","player_positions","overall","value_eur"]].sort_values(by=['overall'],ascending=False)

#Function to extract specific country players
def Country(x):
    return df[df['nationality'] == x ][['short_name','age','nationality',"player_positions",
                                        "overall","value_eur"]].sort_values(by=['overall'],ascending=False)
```

In [ ]:

```
#there are 33 players of FCB
print(Club("FC Barcelona"))
```

```
           short_name  age           club  ...  player_positions overall  value_eur
0             L. Messi   32  FC Barcelona  ...          RW, CF, ST      94   95500000
6         M. ter Stegen   27  FC Barcelona  ...                GK      90   67500000
19            L. Suárez   32  FC Barcelona  ...                ST      89   53000000
21      Sergio Busquets   30  FC Barcelona  ...           CDM, CM      89   55000000
22         A. Griezmann   28  FC Barcelona  ...        CF, ST, LW      89   69000000
29                Piqué   32  FC Barcelona  ...                CB      88   38000000
51           Jordi Alba   30  FC Barcelona  ...                LB      87   40000000
59            S. Umtiti   25  FC Barcelona  ...                CB      86   50000000
64            I. Rakitić   31  FC Barcelona  ...           CM, CDM      86   38000000
75            F. de Jong   22  FC Barcelona  ...           CM, CDM      85   52000000
84            C. Lenglet   24  FC Barcelona  ...                CB      85   45000000
91                 Neto   29  FC Barcelona  ...                GK      85   31000000
110          O. Dembélé   22  FC Barcelona  ...            RW, LW      84   42500000
115              Arthur   22  FC Barcelona  ...                CM      84   41000000
142            A. Vidal   32  FC Barcelona  ...           CM, CDM      84   23500000
274       Sergi Roberto   27  FC Barcelona  ...        RB, RM, CM      82   22000000
249       Nélson Semedo   25  FC Barcelona  ...           RB, RM      82   26000000
344             Rafinha   26  FC Barcelona  ...       CAM, CM, RW      81   22000000
602        Junior Firpo   22  FC Barcelona  ...       LB, LM, LWB      79   15500000
```

```
1276             Aleñá   21  FC Barcelona  ...        CM, RW, CAM      76   12000000
4042        Riqui Puig   19  FC Barcelona  ...                 CM      71    5000000
4045         J. Todibo   19  FC Barcelona  ...            CB, CDM      71    4800000
4068          M. Wagué   20  FC Barcelona  ...        RB, RWB, LB      71    3700000
4781           L. Reis   19  FC Barcelona  ...            CDM, CM      70    3100000
4780            H. Abe   20  FC Barcelona  ...              LM, RM      70    3400000
6634         Abel Ruiz   19  FC Barcelona  ...              ST, LW      68    1900000
7711    Oriol Busquets   20  FC Barcelona  ...            CDM, CM      67    1600000
7712     Carles Pérez    21  FC Barcelona  ...              RM, RW      67    1700000
7713          Miranda    19  FC Barcelona  ...              LB, CB      67    1500000
9908            Chumi    20  FC Barcelona  ...                 CB      65    1100000
9938      Álex Collado   20  FC Barcelona  ...              CM, LW      65    1200000
9970      Jorge Cuenca   19  FC Barcelona  ...                 CB      65     950000
11042       Iñaki Peña   20  FC Barcelona  ...                 GK      64     850000

[33 rows x 7 columns]
```

In [ ]:

```
#886 players are from argentina
print(Country("Argentina"))
```

```
          short_name  age nationality player_positions  overall  value_eur
0            L. Messi   32   Argentina       RW, CF, ST       94   95500000
17          S. Agüero   31   Argentina               ST       89   60000000
23          P. Dybala   25   Argentina          CAM, RW       88   76500000
66         A. Di María   31   Argentina           RW, LW       86   39000000
93          M. Icardi   26   Argentina               ST       85   46000000
...               ...  ...         ...              ...      ...        ...
17526         J. Hass   21   Argentina               GK       54      90000
17580        G. Bruna   28   Argentina      CM, CAM, LM       54      70000
17657     R. Ferrario   19   Argentina               GK       53     110000
17712  L. Finochietto   22   Argentina               GK       53      80000
17922   N. Forastiero   20   Argentina               GK       52      60000

[886 rows x 6 columns]
```

In [ ]:

```
#Best Playing XI
#considering the following playing formation, 4-3-3. So here, we need to find 4 best defenders, 3 best mid-fielders and 3 best attackers
a = 0.5
b = 1
c= 2
d = 3

#Finding The Best Goalkeeper
df['gk_Shot_Stopper'] = (b*df.movement_reactions + b*df.mentality_composure + a*df.gk_speed + a*df.power_strength + c*df.power_jumping + b*df.gk_positioning + c*df.gk_diving + d*df.gk_reflexes + b*df.gk_handling)/(2*a + 4*b + 2*c + 1*d)
df['gk_Sweeper'] = (b*df.movement_reactions + b*df.mentality_composure + b*df.gk_speed  + a*df.power_long_shots + b*df.power_jumping + b*df.gk_positioning + b*df.gk_diving + d*df.gk_reflexes + b*df.gk_handling + d*df.gk_kicking + c*df.mentality_vision)/(2*a + 4*b + 3*c + 2*d)
```

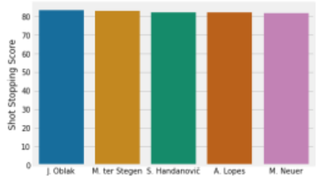
In [ ]:

```
plt.figure()

# Generate sequential data and plot
sd = df.sort_values('gk_Shot_Stopper', ascending=False)[:5]
x1 = np.array(list(sd['short_name']))
y1 = np.array(list(sd['gk_Shot_Stopper']))
sns.barplot(x1, y1, palette= "colorblind")
plt.ylabel("Shot Stopping Score")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'Shot Stopping Score')
```



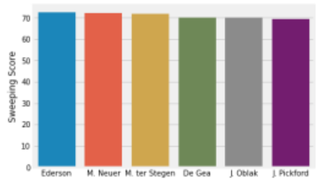
In [ ]:

```
plt.figure()
sd = df.sort_values('gk_Sweeper', ascending=False)[:6]
x2 = np.array(list(sd['short_name']))
y2 = np.array(list(sd['gk_Sweeper']))
sns.barplot(x2, y2)
plt.ylabel("Sweeping Score")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'Sweeping Score')
```



In [ ]:

```
#Based on the two parameters we used, we can conclude that M.ter Stegen would be the best choice goalkeeper
```

In [ ]:

```
#Finding The Best Defenders
df['df_centre_backs'] = ( d*df.movement_reactions + c*df.mentality_interceptions + d*df.defending_sliding_tackle + d*df.defending_standing_tackle + b*df.mentality_vision+ b*df.mentality_composure + b*df.attacking_crossing +a*df.attacking_short_passing + b*df.skill_long_passing+ c*df.movement_acceleration + b*df.pace
+ d*df.power_stamina + d*df.power_jumping + d*df.attacking_heading_accuracy + b*df.power_long_shots + d*df.defending_marking + c*df.mentality_aggression)/(6*b + 3*c + 7*d)
df['df_wb_Wing_Backs'] = (b*df.skill_ball_control + a*df.dribbling + a*df.defending_marking + d*df.defending_sliding_tackle + d*df.defending_standing_tackle + a*df.attacking_volleys + c*df.mentality_vision + c*df.attacking_crossing + b*df.attacking_short_passing + c*df.skill_long_passing + d*df.movement_acceleration +d*df.pace + c*df.power_stamina + a*df.attacking_finishing)/(4*a +
2*b + 4*c + 4*d)
#Based on the above parameters, we'll be predicting 4 best defenders: 2 Centre backs and 2 wing backs.
```

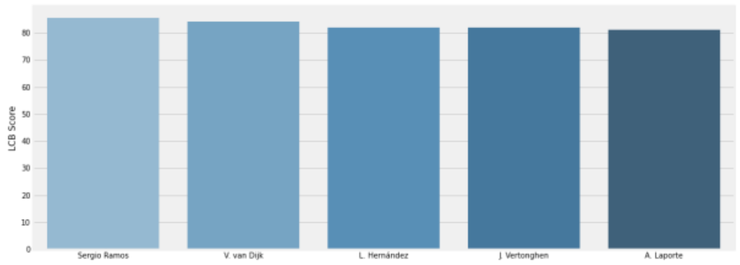
In [ ]:

```
plt.figure(figsize=(15,6))
sd = df[(df['team_position'or  'player_positions'] == 'LCB')].sort_values('df_centre_backs', ascending=False)[:5]
x2 = np.array(list(sd['short_name']))
y2 =  np.array(list(sd['df_centre_backs']))
sns.barplot(x2, y2, palette=sns.color_palette("Blues_d"))
plt.ylabel("LCB Score")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'LCB Score')
```



In [ ]:

```
#Based on the left centre back characteristics, it can be inferred that Sergio Ramos is the Best Left Central Defender.
```

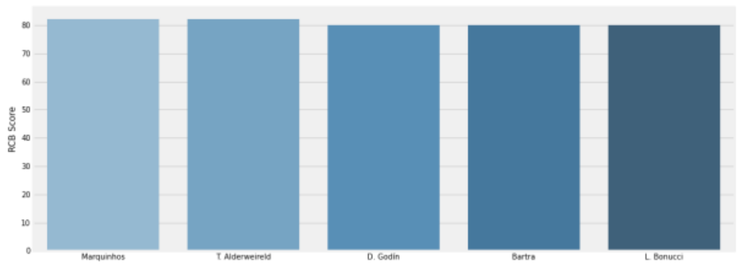
In [ ]:

```
plt.figure(figsize=(15,6))

sd = df[(df['team_position'or  'player_positions'] ==  'RCB')].sort_values('df_centre_backs', ascending=False)[:5]
x2 = np.array(list(sd['short_name']))
y2  =  np.array(list(sd['df_centre_backs']))
sns.barplot(x2, y2, palette=sns.color_palette("Blues_d"))
plt.ylabel("RCB Score")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'RCB Score')
```



In [ ]:

```
#Based on the right centre back characteristics, it can be inferred that Marquinhos is the Best Right Central Defender.
```

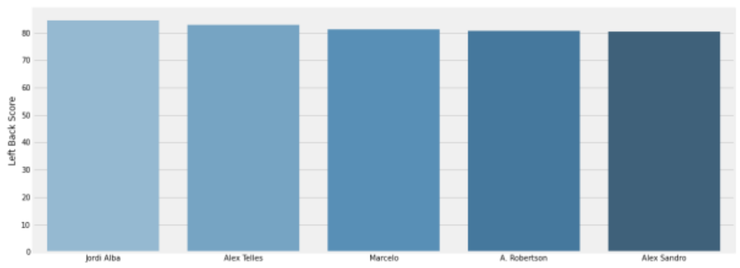
In [ ]:

```
plt.figure(figsize=(15,6))

sd = df[(df['team_position'or 'player_positions'] == 'LWB') | (df['team_position'or 'player_positions'] == 'LB')].sort_values('df_wb_Wing_Backs', ascending=False)[:5]
x4 = np.array(list(sd['short_name']))
y4 = np.array(list(sd['df_wb_Wing_Backs']))
sns.barplot(x4, y4, palette=sns.color_palette("Blues_d"))
plt.ylabel("Left Back Score")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'Left Back Score')
```



In [ ]:

```
#Based on the left wing back characteristics, it can be inferred that jordi alba is the Best Left wing back.
```

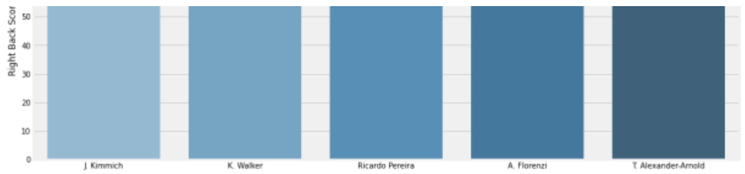
In [ ]:

```
plt.figure(figsize=(15,6))
sd = df[(df['team_position'or 'player_positions'] == 'RWB') | (df['team_position'or 'player_positions'] == 'RB')].sort_values('df_wb_Wing_Backs', ascending=False)[:5]
x5 = np.array(list(sd['short_name']))
y5 = np.array(list(sd['df_wb_Wing_Backs']))
sns.barplot(x5, y5, palette=sns.color_palette("Blues_d"))
plt.ylabel("Right Back Score")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'Right Back Score')
```



In [ ]:

```
#Based on the right wing back characteristics, it can be inferred that J.kimmich is the Best Right wing back.
```

In [ ]:

```
#Finding The Best Mid-Fielders
#As per my game formation 4-3-3, we have to choose 3 midfielders. In order to find these,we'll be analyzing the data for the below mentioned parameters:
#Playmaker: A playmaker is someone who will move the ball to the attacking 3rd from defence or midfield.
#Beast:A beast is a typical box-to-box player with loads of energy and who can boss the midfield.
#Controller:A controller is the person who is orchestrating your midfield engine by either sitting back or going forward based on dynamic needs.
```

In [ ]:

```
df['mf_playmaker'] = (d*df.skill_ball_control+ d*df.dribbling + a*df.attacking_volleys + d*df.movement_reactions + d*df.mentality_vision + c*df.mentality_positioning + c*df.attacking_crossing + d*df.attacking_short_passing + c*df.skill_long_passing + c*df.skill_curve + b*df.power_long_shots + c*df.skill_fk_accuracy)/(1*a + 1*b + 4*c + 4*d)
df['mf_beast'] = (d*df.movement_agility + c*df.movement_balance + b*df.power_jumping + c*df.power_strength + d*df.power_stamina + a*df.pace + c*df.movement_acceleration + d*df.attacking_short_passing + c*df.mentality_aggression+ d*df.movement_reactions + b*df.attacking_volleys+ b*df.defending_standing_tackle + b*df.defending_sliding_tackle + b*df.mentality_interceptions)/(1*a + 5*b + 4*c + 4*d)
df['mf_controller'] = (b*df.weak_foot + d*df.skill_ball_control + a*df.dribbling + a*df.attacking_volleys + a*df.movement_reactions + c*df.mentality_vision + c*df.mentality_composure + d*df.attacking_short_passing + d*df.skill_long_passing)/(2*c + 3*d + 4*a)
```

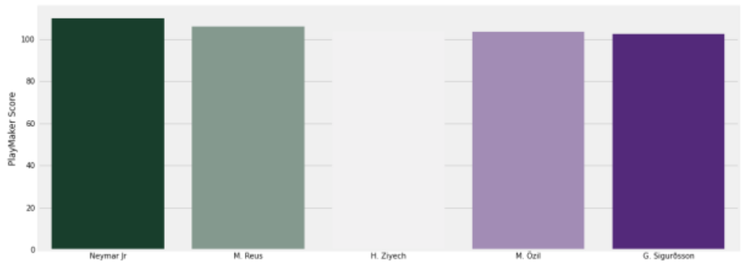
In [ ]:

```
plt.figure(figsize=(15,6))

ss = df[(df['team_position'or 'player_positions'] == 'CAM') | (df['team_position'or 'player_positions'] == 'LAM') | (df['team_position'or 'player_positions'] == 'RAM')].sort_values('mf_playmaker', ascending=False)[:5]
x3 = np.array(list(ss['short_name']))
y3 = np.array(list(ss['mf_playmaker']))
sns.barplot(x3, y3, palette=sns.diverging_palette(145, 280, s=85, l=25, n=5))
plt.ylabel("PlayMaker Score")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'PlayMaker Score')
```



In [ ]:

```
#As per the above analysis, we'll pick Neymar Jr as the best Playmaker
```

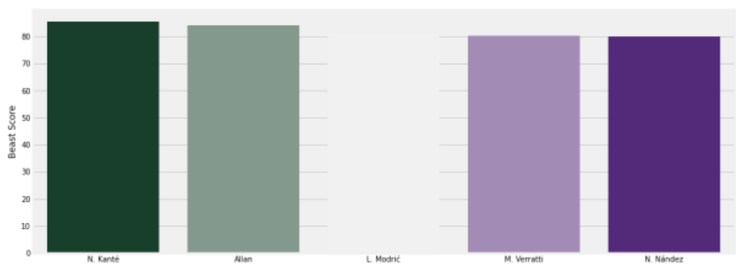
In [ ]:

```
plt.figure(figsize=(15,6))

ss = df[(df['team_position'or 'player_positions'] == 'RCM') | (df['team_position'or 'player_positions'] == 'RM')].sort_values('mf_beast', ascending=False)[:5]
x2 = np.array(list(ss['short_name']))
y2 = np.array(list(ss['mf_beast']))
sns.barplot(x2, y2, palette=sns.diverging_palette(145, 280, s=85, l=25, n=5))
plt.ylabel("Beast Score")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'Beast Score')
```



In [ ]:

```
#As per the above analysis, I'll pick N' Golo Kante as the best Beast/ Right Central Midfielder.
```

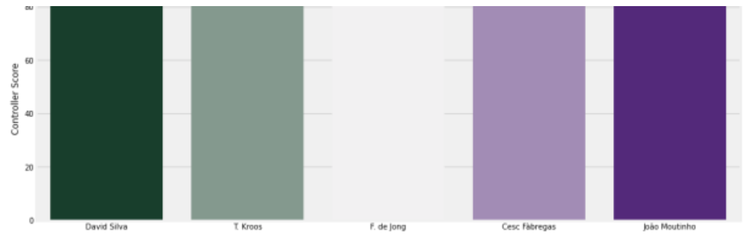
In [ ]:

```
plt.figure(figsize=(15,6))

# Generate some sequential data
ss = df[(df['team_position' or 'player_positions' ] == 'LCM') | (df['team_position' or 'player_positions'] == 'LM')].sort_values('mf_controller', ascending=False)[:5]
x1 = np.array(list(ss['short_name']))
y1 = np.array(list(ss['mf_controller']))
sns.barplot(x1, y1, palette=sns.diverging_palette(145, 280, s=85, l=25, n=5))
plt.ylabel("Controller Score")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'Controller Score')
```



In [ ]:

```
#As per the above analysis, I'll pick David silva as the best controller/ Left Central Midfielder.
```

In [ ]:

```
#Finding The Best Attackers
#In order to find the best attacker, I'll be analyzing the below mentioned parameters:
#Attacking Left Wing: He is a player, attacking from the left flank.
#Attacking Right Wing: He is a player, attacking from the right flank.
#Striker: A player attacking from the center.
```

In [ ]:

```
df['att_left_wing'] = (c*df.weak_foot + c*df.skill_ball_control + c*df.dribbling + c*df.pace + d*df.movement_acceleration + b*df.mentality_vision + c*df.attacking_crossing + b*df.attacking_short_passing + b*df.skill_long_passing + b*df.mentality_aggression + b*df.movement_agility + a*df.skill_curve + c*df.power_long_shots + b*df.skill_fk_accuracy + d*df.attacking_finishing)/(a + 6*b + 6*c + 2*d)
df['att_right_wing'] = (c*df.weak_foot + c*df.skill_ball_control + c*df.dribbling + c*df.pace + d*df.movement_acceleration + b*df.mentality_vision + c*df.attacking_crossing + b*df.attacking_short_passing + b*df.skill_long_passing + b*df.mentality_aggression + b*df.movement_agility + a*df.skill_curve + c*df.power_long_shots + b*df.skill_fk_accuracy + d*df.attacking_finishing)/(a + 6*b + 6*c + 2*d)
df['att_striker'] = (b*df.weak_foot + b*df.skill_ball_control + a*df.mentality_vision + b*df.mentality_aggression + b*df.movement_agility + a*df.skill_curve + a*df.power_long_shots + d*df.movement_balance + d*df.attacking_finishing + d*df.attacking_heading_accuracy+ c*df.power_jumping + c*df.dribbling)/(3*a + 4*b + 2*c + 3*d)
```

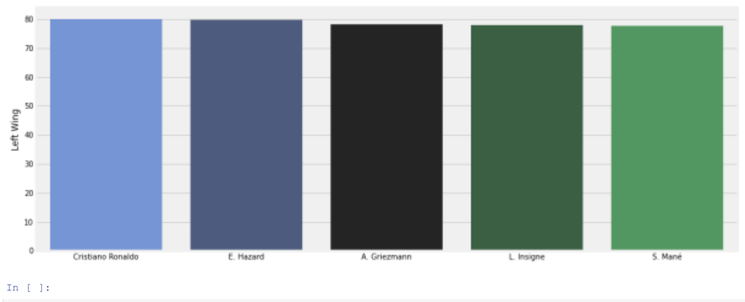
In [ ]:

```
plt.figure(figsize=(15,6))

ss = df[(df['team_position' or 'player_positions'] == 'LW') | (df['team_position' or 'player_positions'] == 'LM') | (df['team_position' or 'player_positions'] == 'LS')].sort_values('att_left_wing', ascending=False)[:5]
x1 = np.array(list(ss['short_name']))
y1 = np.array(list(ss['att_left_wing']))
sns.barplot(x1, y1, palette=sns.diverging_palette(255, 133, l=60, n=5, center="dark"))
plt.ylabel("Left Wing")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'Left Wing')
```



In [ ]:

```
#As per the above analysis, we'll pick Ronaldo as the left wing attacker.
```

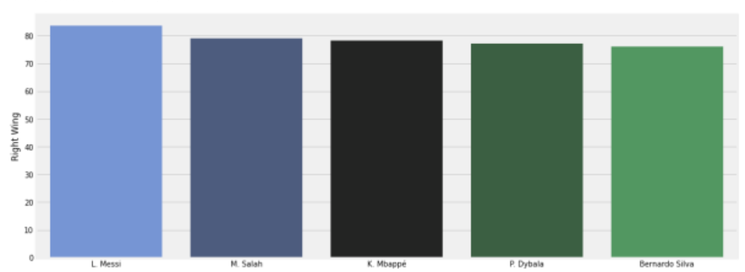
In [ ]:

```
plt.figure(figsize=(15,6))

ss = df[(df['team_position' or 'player_positions'] == 'RW') | (df['team_position' or 'player_positions'] == 'RM') | (df['team_position' or 'player_positions'] == 'RS')].sort_values('att_right_wing', ascending=False)[:5]
x2 = np.array(list(ss['short_name']))
y2 = np.array(list(ss['att_right_wing']))
sns.barplot(x2, y2, palette=sns.diverging_palette(255, 133, l=60, n=5, center="dark"))
plt.ylabel("Right Wing")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'Right Wing')
```



In [ ]:

```
#It's quite evident from the above plot that L.Messi is the best right Wing Attacker
```

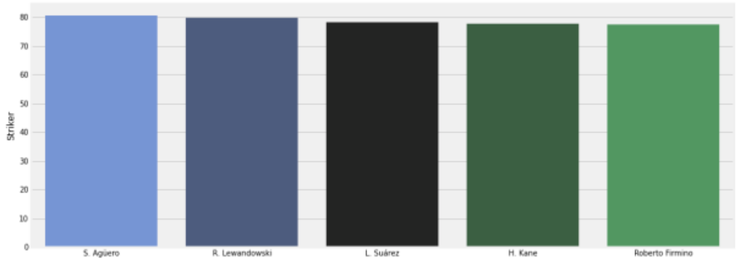
In [ ]:

```
plt.figure(figsize=(15,6))
ss = df[(df['team_position' or 'player_positions'] == 'ST') | (df['team_position' or 'player_positions'] == 'LS') | (df['team_position' or 'player_positions'] == 'RS') | (df['team_position' or 'player_positions'] == 'CF')].sort_values('att_striker', ascending=False)[:5]
x3 = np.array(list(ss['short_name']))
y3 = np.array(list(ss['att_striker']))
sns.barplot(x3, y3, palette=sns.diverging_palette(255, 133, l=60, n=5, center="dark"))
plt.ylabel("Striker")
```

```
/usr/local/lib/python3.7/dist-packages/seaborn/_decorators.py:43: FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
```

Out[ ]:

```
Text(0, 0.5, 'Striker')
```



In [ ]:

```
#As per the above analysis, the best striker would be S.Aguero.
```

In [ ]:

```
# the below image represents the Best Playing XI for  the 4-3-3(attack) lineup.
```