

Exploratory Data Analysis(EDA) of FIFA Data

```
In [1]: # Loading the required libraries
import pandas as pd
from matplotlib import pyplot as plt
import seaborn as sns
```

The Data

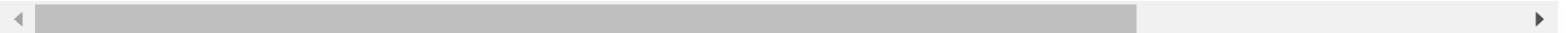
```
In [3]: fifa = pd.read_csv('Documents\players_20.csv')
```

```
In [4]: fifa.head()
```

```
Out[4]:
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm
0	158023	https://sofifa.com/player/158023/lionel-messi/...	L. Messi	Lionel Andrés Messi Cuccittini	32	1987-06-24	170	72	Argentina	FC Barcelona	...	68+2	66+2
1	20801	https://sofifa.com/player/20801/cristiano-dos-santos-aveiro	Cristiano Ronaldo	Cristiano Ronaldo dos Santos Aveiro	34	1985-02-05	187	83	Portugal	Juventus	...	65+3	61+3
2	190871	https://sofifa.com/player/190871/neymar-da-silva-santos-junior	Neymar Jr	Neymar da Silva Santos Junior	27	1992-02-05	175	68	Brazil	Paris Saint- Germain	...	66+3	61+3
3	200389	https://sofifa.com/player/200389/jan-oblak/2019	J. Oblak	Jan Oblak	26	1993-01-07	188	87	Slovenia	Atlético Madrid	...	NaN	NaN
4	183277	https://sofifa.com/player/183277/eden-hazard/2019	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	...	66+3	63+3

5 rows × 104 columns



```
In [5]: for col in fifa.columns:  
        print(col)
```

```
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 [6]: `fifa.shape`

Out[6]: (18278, 104)

In [7]: `18278*104`

Out[7]: 1900912

In [8]: `1667/18278`

Out[8]: 0.09120253857095963

```
In [9]: fifa['nationality'].value_counts()
```

```
Out[9]: England          1667  
Germany          1216  
Spain            1035  
France           984  
Argentina        886  
...  
Liberia           1  
São Tomé & Príncipe    1  
Puerto Rico      1  
Bahrain           1  
Indonesia         1  
Name: nationality, Length: 162, dtype: int64
```

```
In [10]: fifa['nationality'].value_counts()[0:10]
```

```
Out[10]: England          1667  
Germany          1216  
Spain            1035  
France           984  
Argentina        886  
Brazil           824  
Italy            732  
Colombia         591  
Japan            453  
Netherlands      416  
Name: nationality, dtype: int64
```

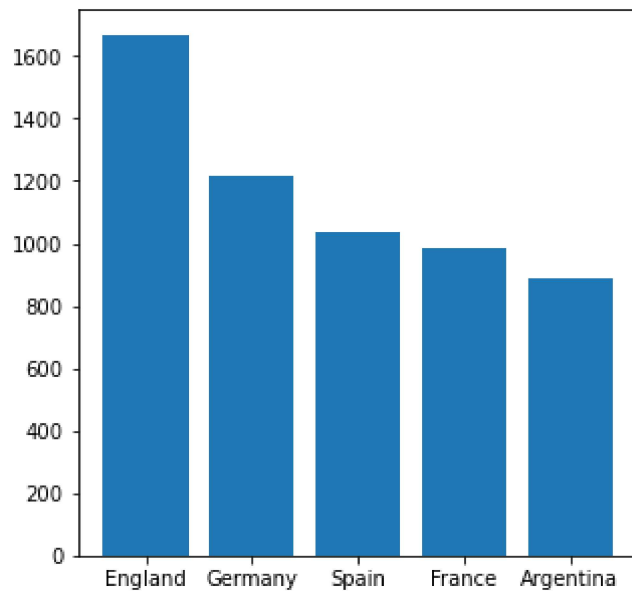
```
In [11]: fifa['nationality'].value_counts()[0:5].keys()
```

```
Out[11]: Index(['England', 'Germany', 'Spain', 'France', 'Argentina'], dtype='object')
```

```
In [12]: fifa['nationality'].value_counts()[0:5]
```

```
Out[12]: England      1667  
Germany      1216  
Spain        1035  
France        984  
Argentina      886  
Name: nationality, dtype: int64
```

```
In [13]: plt.figure(figsize=(5,5))  
plt.bar(list(fifa['nationality'].value_counts()[0:5].keys()),list(fifa['nationality'].value_counts()[0:5]))  
plt.show()
```



```
In [14]: player_salary=fifa[['short_name','wage_eur']]
```

```
In [15]: player_salary.head()
```

```
Out[15]:
```

	short_name	wage_eur
0	L. Messi	565000
1	Cristiano Ronaldo	405000
2	Neymar Jr	290000
3	J. Oblak	125000
4	E. Hazard	470000

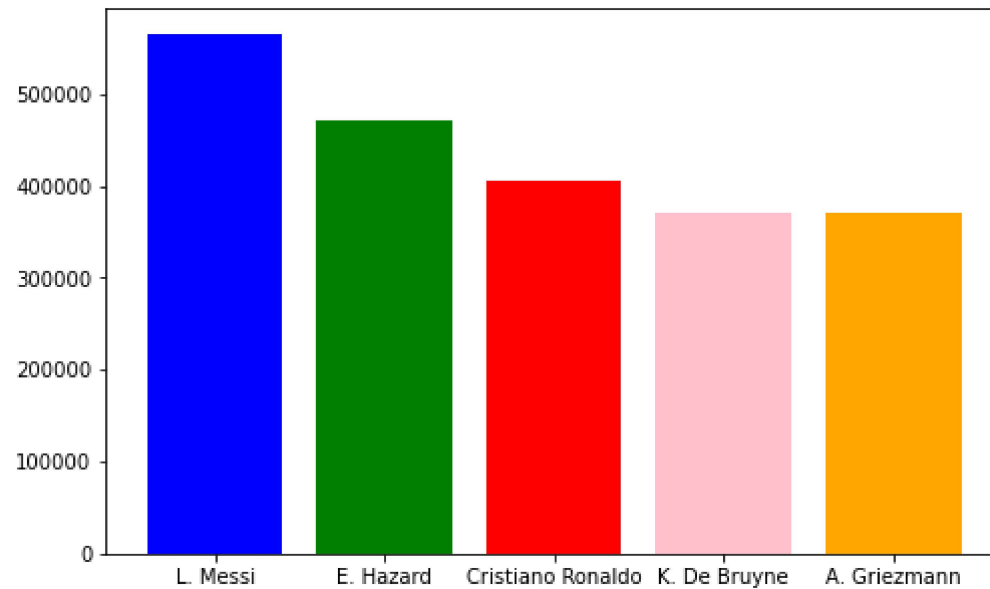
```
In [16]: player_salary=player_salary.sort_values(by=['wage_eur'],ascending=False)
```

```
In [17]: player_salary.head()
```

```
Out[17]:
```

	short_name	wage_eur
0	L. Messi	565000
4	E. Hazard	470000
1	Cristiano Ronaldo	405000
5	K. De Bruyne	370000
22	A. Griezmann	370000

```
In [19]: plt.figure(figsize=(8,5))  
plt.bar(list(player_salary['short_name'])[0:5],list(player_salary['wage_eur'])[0:5],color=["blue","green","red","pink","orange"])  
plt.show()
```




```
In [20]: fifa['nationality']=='Germany'
```

```
Out[20]: 0      False
1      False
2      False
3      False
4      False
...
18273  False
18274  False
18275  False
18276  False
18277  False
Name: nationality, Length: 18278, dtype: bool
```

Germany

```
In [21]: Germany = fifa[fifa['nationality']=='Germany']
Germany.head()
```

```
Out[21]:
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldn
6	192448	https://sofifa.com/player/192448/marc-andre-te...	M. ter Stegen	Marc-André ter Stegen	27	1992-04-30	187	85	Germany	FC Barcelona	...	NaN	NaN
31	167495	https://sofifa.com/player/167495/manuel-neuer/...	M. Neuer	Manuel Neuer	33	1986-03-27	193	92	Germany	FC Bayern München	...	NaN	NaN
36	182521	https://sofifa.com/player/182521/toni-kroos/20...	T. Kroos	Toni Kroos	29	1990-01-04	183	76	Germany	Real Madrid	...	75+3	79+
37	188350	https://sofifa.com/player/188350/marco-reus/20...	M. Reus	Marco Reus	30	1989-05-31	180	71	Germany	Borussia Dortmund	...	69+3	65+
49	178603	https://sofifa.com/player/178603/mats-hummels/...	M. Hummels	Mats Hummels	30	1988-12-16	191	94	Germany	Borussia Dortmund	...	77+3	83+

5 rows × 104 columns



```
In [24]: Germany.sort_values(by=['height_cm'],ascending=False).head()
```

```
Out[24]:
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb
8016	236831	https://sofifa.com/player/236831/aaron-seydel/...	A. Seydel	Aaron Seydel	23	1996-02-07	199	90	Germany	1. FSV Mainz 05	...	46+
1217	200212	https://sofifa.com/player/200212/michael-esser...	M. Esser	Michael Esser	31	1987-11-22	198	97	Germany	Hannover 96	...	NaN
1389	199833	https://sofifa.com/player/199833/lars-unnersta...	L. Unnerstall	Lars Unnerstall	28	1990-07-20	198	103	Germany	PSV	...	NaN
11859	167437	https://sofifa.com/player/167437/dominik-stroh...	D. Stroh-Engel	Dominik Stroh-Engel	33	1985-11-27	197	94	Germany	SpVgg Unterhaching	...	39+
13576	239746	https://sofifa.com/player/239746/lukas-watkowi...	L. Watkowiak	Lukas Watkowiak	23	1996-03-06	197	103	Germany	SV Wehen Wiesbaden	...	NaN

5 rows × 104 columns



```
In [25]: Germany.sort_values(by=['weight_kg'],ascending=False).head()
```

```
Out[25]:
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb
13576	239746	https://sofifa.com/player/239746/lukas-watkowi...	L. Watkowiak	Lukas Watkowiak	23	1996-03-06	197	103	Germany	SV Wehen Wiesbaden	...	NaN
1389	199833	https://sofifa.com/player/199833/lars-unnersta...	L. Unnerstall	Lars Unnerstall	28	1990-07-20	198	103	Germany	PSV	...	NaN
518	179783	https://sofifa.com/player/179783/ralf-fahrman...	R. Fährmann	Ralf Fährmann	30	1988-09-27	197	98	Germany	Norwich City	...	NaN
1217	200212	https://sofifa.com/player/200212/michael-esser...	M. Esser	Michael Esser	31	1987-11-22	198	97	Germany	Hannover 96	...	NaN
77	212190	https://sofifa.com/player/212190/niklas-sule/2...	N. Süle	Niklas Süle	23	1995-09-03	195	97	Germany	FC Bayern München	...	71+2

5 rows × 104 columns



```
In [26]: Germany.sort_values(by=['wage_eur'],ascending=False).head()
```

```
Out[26]:
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb
36	182521	https://sofifa.com/player/182521/toni-kroos/20...	T. Kroos	Toni Kroos	29	1990-01-04	183	76	Germany	Real Madrid	...	75+3 7
6	192448	https://sofifa.com/player/192448/marc-andre-te...	M. ter Stegen	Marc-André ter Stegen	27	1992-04-30	187	85	Germany	FC Barcelona	...	NaN ↑
55	222492	https://sofifa.com/player/222492/leroy-sane/20...	L. Sané	Leroy Sané	23	1996-01-11	183	75	Germany	Manchester City	...	65+2 5
146	186942	https://sofifa.com/player/186942/ilkey-gundoga...	I. Gündoğan	İlkay Gündoğan	28	1990-10-24	180	80	Germany	Manchester City	...	76+3 7
70	189596	https://sofifa.com/player/189596/thomas-muller...	T. Müller	Thomas Müller	29	1989-09-13	186	75	Germany	FC Bayern München	...	69+3 6

5 rows × 104 columns



```
In [28]: Germany[['short_name', 'wage_eur']].sort_values(by=['wage_eur'],ascending=False).head()
```

```
Out[28]:
```

	short_name	wage_eur
36	T. Kroos	330000
6	M. ter Stegen	250000
55	L. Sané	195000
146	I. Gündoğan	180000
70	T. Müller	170000

Shooting

```
In [29]: player_shooting=fifa[['short_name', 'shooting']]
```

```
In [30]: player_shooting.sort_values(by=['shooting'],ascending=False).head()
```

```
Out[30]:
```

	short_name	shooting
1	Cristiano Ronaldo	93.0
0	L. Messi	92.0
12	H. Kane	91.0
17	S. Agüero	90.0
205	F. Quagliarella	89.0

Defending

```
In [31]: player_defending=fifa[['short_name','defending','nationality','club']]
```

```
In [32]: player_defending.sort_values(by=['defending'],ascending=False).head()
```

```
Out[32]:
```

	short_name	defending	nationality	club
16	G. Chiellini	90.0	Italy	Juventus
7	V. van Dijk	90.0	Netherlands	Liverpool
11	K. Koulibaly	89.0	Senegal	Napoli
35	D. Godín	89.0	Uruguay	Inter
49	M. Hummels	89.0	Germany	Borussia Dortmund

```
In [33]: real_madrid=fifa[fifa['club']=='Real Madrid']
```

```
In [34]: real_madrid.sort_values(by=['wage_eur'],ascending=False).head()
```

```
Out[34]:
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	c
4	183277	https://sofifa.com/player/183277/eden-hazard/2...	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	...	66+3	63+3	6
8	177003	https://sofifa.com/player/177003/luka-modric/2...	L. Modrić	Luka Modrić	33	1985-09-09	172	66	Croatia	Real Madrid	...	81+3	81+3	8
36	182521	https://sofifa.com/player/182521/toni-kroos/20...	T. Kroos	Toni Kroos	29	1990-01-04	183	76	Germany	Real Madrid	...	75+3	79+3	7
18	155862	https://sofifa.com/player/155862/sergio-ramos-...	Sergio Ramos	Sergio Ramos García	33	1986-03-30	184	82	Spain	Real Madrid	...	80+3	84+3	8
46	165153	https://sofifa.com/player/165153/karim-benzema...	K. Benzema	Karim Benzema	31	1987-12-19	185	81	France	Real Madrid	...	62+3	62+3	6

5 rows × 104 columns



```
In [35]: real_madrid.sort_values(by=['shooting'],ascending=False).head()
```

```
Out[35]:
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm
100	173731	https://sofifa.com/player/173731/gareth-bale/2...	G. Bale	Gareth Frank Bale	29	1989-07-16	185	82	Wales	Real Madrid	...	72+3	69+3
106	198710	https://sofifa.com/player/198710/james-rodrigu...	J. Rodríguez	James David Rodríguez Rubio	27	1991-07-12	180	75	Colombia	Real Madrid	...	67+3	67+3
4	183277	https://sofifa.com/player/183277/eden-hazard/2...	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	...	66+3	63+3
46	165153	https://sofifa.com/player/165153/karim-benzema...	K. Benzema	Karim Benzema	31	1987-12-19	185	81	France	Real Madrid	...	62+3	62+3
161	232432	https://sofifa.com/player/232432/luka-jovic/20...	L. Jović	Luka Jović	21	1997-12-23	182	85	Serbia	Real Madrid	...	55+2	53+2

5 rows × 104 columns



```
In [36]: real_madrid.sort_values(by=['defending'], ascending=False).head()
```

```
Out[36]:
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm
18	155862	https://sofifa.com/player/155862/sergio-ramos-...	Sergio Ramos	Sergio Ramos García	33	1986-03-30	184	82	Spain	Real Madrid	...	80+3	84+3
42	200145	https://sofifa.com/player/200145/carlos-henriq...	Casemiro	Carlos Henrique Venancio Casimiro	27	1992-02-23	185	84	Brazil	Real Madrid	...	78+3	84+3
76	201535	https://sofifa.com/player/201535/raphael-varan...	R. Varane	Raphaël Varane	26	1993-04-25	191	81	France	Real Madrid	...	74+3	79+3
94	204963	https://sofifa.com/player/204963/daniel-carvaj...	Carvajal	Daniel Carvajal Ramos	27	1992-01-11	173	73	Spain	Real Madrid	...	83+3	82+3
332	240130	https://sofifa.com/player/240130/eder-gabriel-...	Éder Militão	Éder Gabriel Militão	21	1998-01-18	186	78	Brazil	Real Madrid	...	78+2	76+2

5 rows × 104 columns



```
In [37]: real_madrid['nationality'].value_counts()
```

```
Out[37]: Spain                13  
Brazil                6  
France                3  
Belgium               2  
Croatia               1  
Germany               1  
Costa Rica            1  
Wales                 1  
Colombia              1  
Serbia                1  
Dominican Republic   1  
Uruguay               1  
Japan                 1  
Name: nationality, dtype: int64
```

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```
In [ ]:
```