

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

In [2]: fifa = pd.read_csv('players_20.csv')
fifa.head()
```

	soffia_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb
0	158023	https://soffia.com/player/158023/lionel-messi/...	L. Messi	Lionel Andrés Messi Cuccittini	32	1987-06-24	170	72	Argentina	FC Barcelona	...	68+2
1	20801	https://soffia.com/player/20801/cristiano-ronaldo-dos-santos-aveiro	Cristiano Ronaldo	Cristiano Ronaldo dos Santos Aveiro	34	1985-02-05	187	83	Portugal	Juventus	...	65+3
2	190871	https://soffia.com/player/190871/neymar-da-silva-junior	Neymar Jr	Neymar da Silva Santos Junior	27	1992-02-05	175	68	Brazil	Paris Saint-Germain	...	66+3
3	200389	https://soffia.com/player/200389/jan-oblak/20...	J. Oblak	Jan Oblak	26	1993-01-07	188	87	Slovenia	Atlético Madrid	...	NaN
4	183277	https://soffia.com/player/183277/eden-hazard/2...	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	...	66+3

5 rows × 104 columns

```
In [3]: #print the names of the columns.
for col in fifa.columns:
    print(col)
```

soffia_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
chilly
rwb
lb
lcb
cb
rcb
rb

```
In [4]: fifa.shape
```

(18278, 104)

```
In [5]: #Number of cells
15465*104
```

1608360

```
In [6]: #Number of players belonging to each nationality.
fifa['nationality'].value_counts()
```

England	1667
Germany	1216
Spain	1035
France	984
Argentina	886
Indonesia	1
South Sudan	1
Guam	1
Chinese Taipei	1
Belize	1

Name: nationality, Length: 162, dtype: int64

```
In [7]: #Top 10 countries(nationality) with maximum number of players.
fifa['nationality'].value_counts() [0:10]
```

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 [8]: #Extract top 10 countries(nationality) with maximum number of players.
fifa['nationality'].value_counts() [0:10].keys()
```

Index(['England', 'Germany', 'Spain', 'France', 'Argentina', 'Brazil', 'Italy', 'Colombia', 'Japan', 'Netherlands'], dtype='object')

```
In [ ]: #Extract the number of players for top 10 countries(nationality) with maximum number of players.
fifa['nationality'].value_counts() [0:10]
```

```
In [9]: #make a bar plot for top 5 countries with maximum number of same nationality.
plt.figure(figsize=(7,5))
plt.bar(list(fifa['nationality'].value_counts() [0:5].keys()), list(fifa['nationality'].value_counts() [0:5]),
        color=['red','green','blue','orange','pink'])
plt.show()
```

```
In [10]: #Salary of players
salary = fifa[['short_name','wage_eur']]

In [11]: salary.head()
```

	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 [12]: #Top 5 players with maximum salaries
salarytop=salary.sort_values(by=['wage_eur'],ascending=False)
```

```
In [14]: salarytop.head(5)
```

	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 [17]: #make a bar-plot for above result
plt.figure(figsize=(8,5))
plt.bar(list(salarytop['short_name'])[0:5], list(salarytop['wage_eur'])[0:5], color=['r','g','b','yellow','skyblue'])
plt.show()
```

```
In [45]: #Analysis over Germany
ger = fifa['nationality']=='Germany'

In [20]: ger.value_counts()
```

False	17062
True	1216

Name: nationality, dtype: int64

```
In [ ]: #There are 1216 players from germany

In [23]: ger = fifa[fifa['nationality']=='Germany']
ger.head()
```

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

5 rows × 104 columns

```
In [36]: #Sort by height
ger.sort_values(by=['height_cm'], ascending=False).head()
```

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

5 rows × 104 columns

```
In [37]: #Sort by Weight
ger.sort_values(by=['weight_kg'], ascending=False).head()
```

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

5 rows × 104 columns

```
In [38]: #Sort by Salary(wages)
ger.sort_values(by=['wage_eur'], ascending=False).head()
```

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

5 rows × 104 columns

```
In [43]: # Top 5 plays of germany with maximum salary
ger[['short_name','wage_eur']].sort_values(by=['wage_eur'],ascending=False).head()
```

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

```
In [46]: #Shooting

In [47]: #Which player has maximum number of shontings
max_shooting = fifa[['short_name','shooting']]

In [49]: max_shooting.sort_values(by=['shooting'], ascending=False).head()
```

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

```
In [50]: #Defending

In [51]: #Make a data Ermae for defending players
defending = fifa[['short_name','defending','nationality','club']]

In [56]: #Now extract top 5 players with most defends
defending.sort_values(by=['defending'],ascending=False).head()
```

	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. Godin	89.0	Uruguay	Inter
49	M. Hummels	89.0	Germany	Borussia Dortmund

```
In [57]: #Analysis on Real Madrid

In [58]: realmadrid = fifa[fifa['club']=='Real Madrid']

In [59]: realmartid.head()
```

	soffia_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb
4	183277	https://soffia.com/player/183277/eden-hazard/2...	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	...	66+3
8	177003	https://soffia.com/player/177003/luka-modric/2...	L. Modrić	Luka Modrić	33	1985-09-09	172	66	Croatia	Real Madrid	...	81+3
18	155862	https://soffia.com/player/155862/sergio-ramos...	Sergio Ramos	Sergio Ramos García	33	1986-03-30	184	82	Spain	Real Madrid	...	80+3
28	192119	https://soffia.com/player/192119/thibaut-courtois...	T. Courtois	Thibaut Courtois	27	1992-05-11	199	96	Belgium	Real Madrid	...	NaN
36	182521	https://soffia.com/player/182521/toni-kroos/20...	T. Kroos	Toni Kroos	29	1990-01-04	183	76	Germany	Real Madrid	...	75+3

5 rows × 104 columns

```
In [60]: realmartid.sort_values(by=['wage_eur'],ascending=False).head()
```

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

5 rows × 104 columns

```
In [63]: realmartid.sort_values(by=['shooting'],ascending=False).head()
```

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

5 rows × 104 columns

```
In [62]: realmartid.sort_values(by=['defending'],ascending=False).head()
```

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

5 rows × 104 columns

```
In [61]: realmartid['nationality'].value_counts()
```

Spain	13
Brazil	6
France	3
Belgium	2
Japan	1
Croatia	1
Uruguay	1
Costa Rica	1
Dominican Republic	1
Germany	1
Wales	1
Colombia	1
Serbia	1

Name: nationality, dtype: int64