

Assignment 4

Working with FIFA Data

1. loading the required libraries

```
import pandas as pd
from matplotlib import pyplot as plt
import seaborn as sns
```

2.

```
fifa=pd.read_csv('fifa_data.csv')
fifa.head()
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm	rdm	rv
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	66+2	66+2	68+
1	20801	https://sofifa.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	61+3	61+3	61+3	65+
2	190871	https://sofifa.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	61+3	61+3	61+3	66+
3	200389	https://sofifa.com/player/200389/jan-oblak/2019-2020	J. Oblak	Jan Oblak	26	1993-01-07	188	87	Slovenia	Atlético Madrid	...	NaN	NaN	NaN	NaN	NaN
4	183277	https://sofifa.com/player/183277/eden-hazard/2019-2020	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	...	66+3	63+3	63+3	63+3	66+

5 rows × 104 columns

3.

```
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

4.

fifa.shape

(18278, 104)

5.

18278*104

1900912

6.

1667/18278

0.09120253857095963

7.

fifa['nationality'].value_counts()

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

8.

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

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

9.

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

```
Index(['England', 'Germany', 'Spain', 'France', 'Argentina'], dtype='object', name='nationality')
```

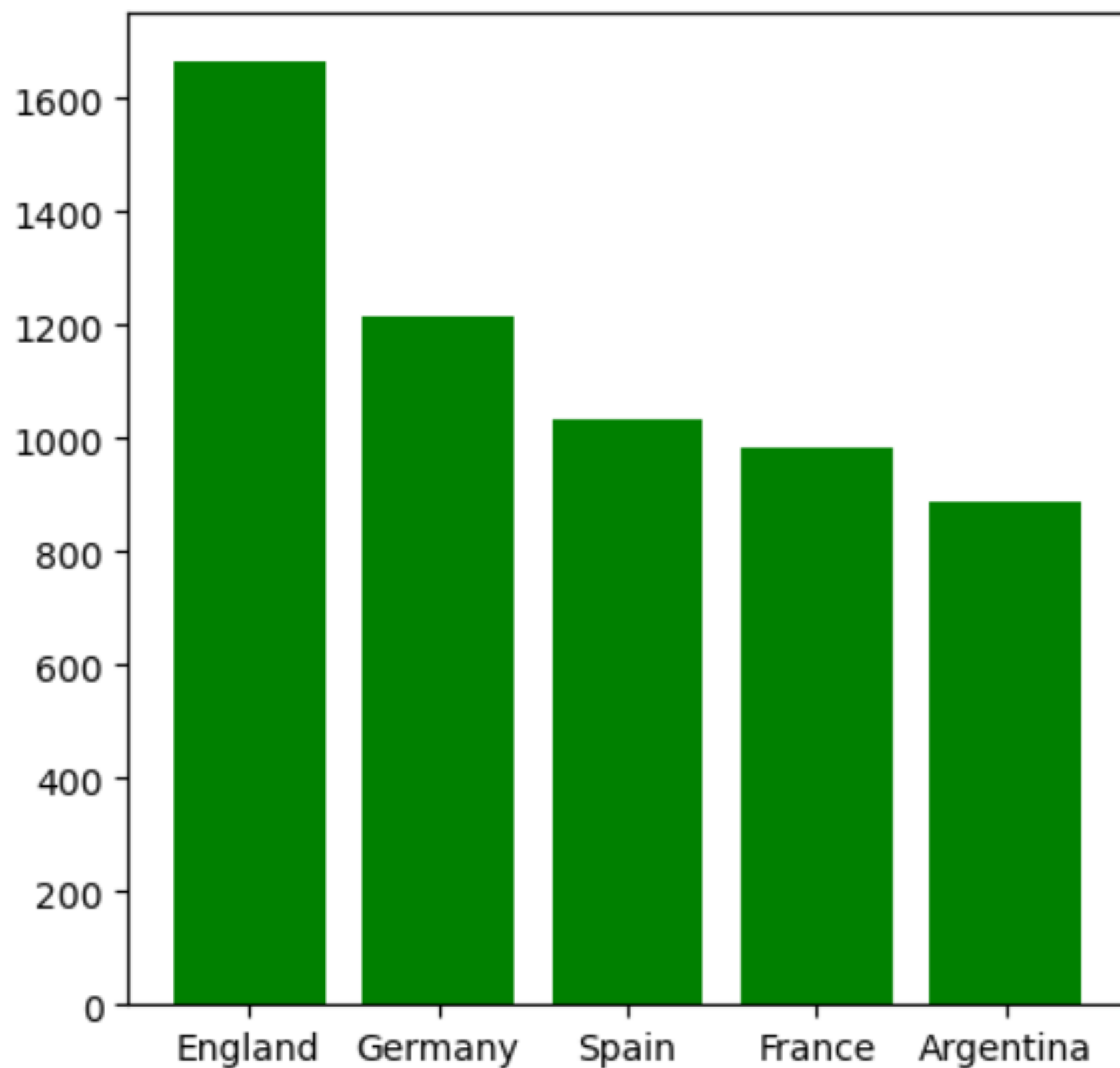
10.

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

```
nationality
England      1667
Germany      1216
Spain        1035
France        984
Argentina     886
Name: count, dtype: int64
```

11.

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



12.

```
player_salary = fifa[['short_name','wage_eur']]
player_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

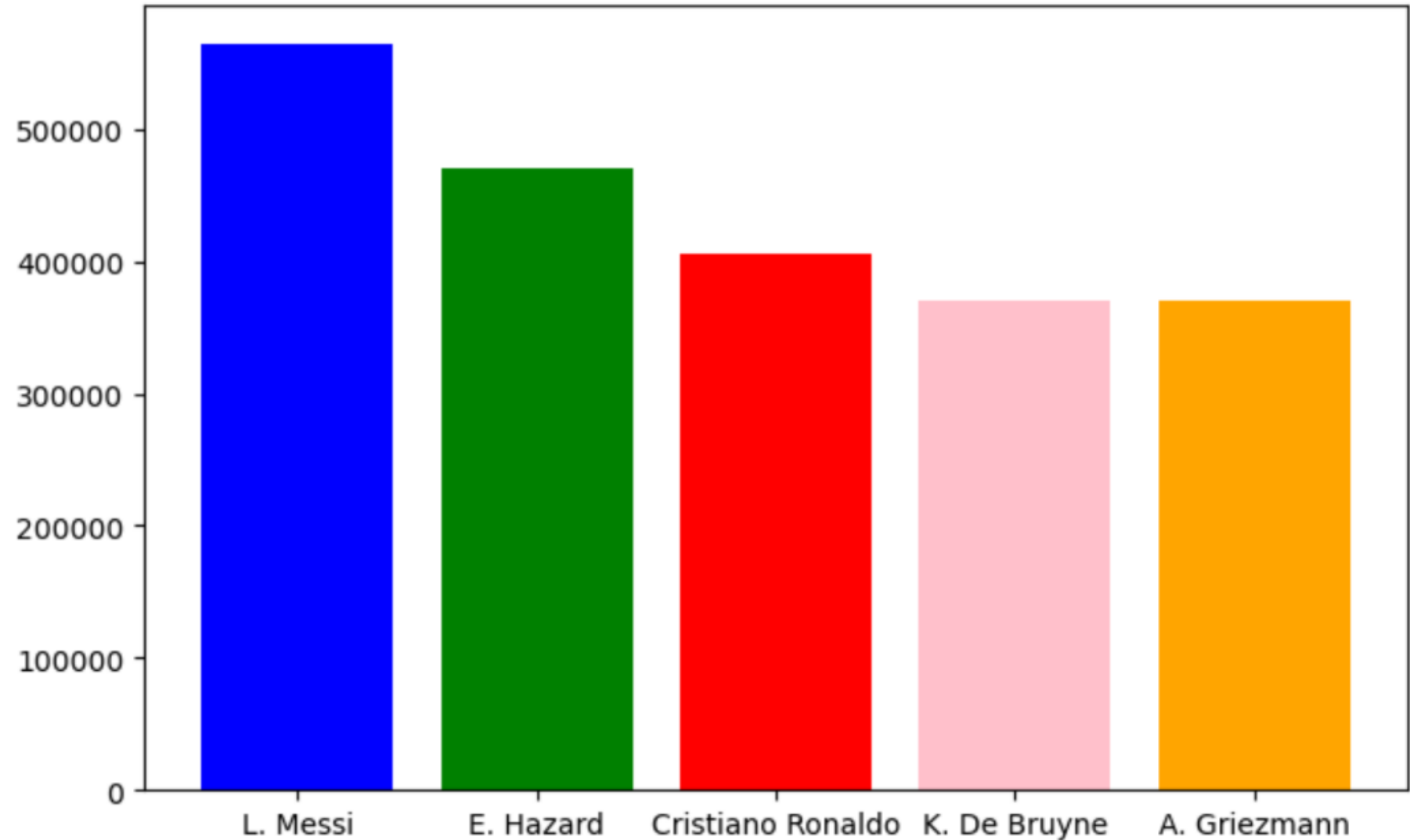
13.

```
player_salary=player_salary.sort_values(by=['wage_eur'],ascending=False)
player_salary.head()
```

	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

14.

```
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()
```



15.

fifa['nationality']=='Germany'

```
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
```

16.

Germany=fifa[fifa['nationality']=='Germany']

Germany.head(10)

	sofifa_id		player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm	rdm
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	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	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+3	79+3	79+3
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+3	65+3	65+3
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+3	83+3	83+3
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	59+2	59+2	59+2
61	212622	https://sofifa.com/player/212622/joshua-kimmic...	J. Kimmich	Joshua Kimmich	24	1995-02-08		176	73	Germany	FC Bayern München	...	83+3	82+3	82+3	82+3
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	68+3	68+3	68+3
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	77+2	77+2	77+2
109	235790	https://sofifa.com/player/235790/kai-havertz/2...	K. Havertz	Kai Havertz	20	1999-06-11		188	83	Germany	Bayer 04 Leverkusen	...	65+2	63+2	63+2	63+2

17.

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

sofifa_id			player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm
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+2	43+2	43+2	4
1217	200212	https://sofifa.com/player/200212/michael-esser/...	M. Esser	Michael Esser	31	1987-11-22	198	97	Germany	Hannover 96	...	NaN	NaN	NaN	
1389	199833	https://sofifa.com/player/199833/lars-unnerstall/...	L. Unnerstall	Lars Unnerstall	28	1990-07-20	198	103	Germany	PSV	...	NaN	NaN	NaN	
11859	167437	https://sofifa.com/player/167437/dominik-stroh-engel/...	D. Stroh-Engel	Dominik Stroh-Engel	33	1985-11-27	197	94	Germany	SpVgg Unterhaching	...	39+2	45+2	45+2	4
13576	239746	https://sofifa.com/player/239746/lukas-watkowiak/...	L. Watkowiak	Lukas Watkowiak	23	1996-03-06	197	103	Germany	SV Wehen Wiesbaden	...	NaN	NaN	NaN	

18.

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

sofifa_id			player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm	rdi
13576	239746	https://sofifa.com/player/239746/lukas-watkowiak/...	L. Watkowiak	Lukas Watkowiak	23	1996-03-06	197	103	Germany	SV Wehen Wiesbaden	...	NaN	NaN	NaN	Na	
1389	199833	https://sofifa.com/player/199833/lars-unnerstall/...	L. Unnerstall	Lars Unnerstall	28	1990-07-20	198	103	Germany	PSV	...	NaN	NaN	NaN	Na	
518	179783	https://sofifa.com/player/179783/ralf-fahrman/...	R. Fahrman	Ralf Fahrman	30	1988-09-27	197	98	Germany	Norwich City	...	NaN	NaN	NaN	Na	
1217	200212	https://sofifa.com/player/200212/michael-esser/...	M. Esser	Michael Esser	31	1987-11-22	198	97	Germany	Hannover 96	...	NaN	NaN	NaN	Na	
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	77+2	77+2	77+	

5 rows × 104 columns

19.

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

sofifa_id			player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm	rdm
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	79+3	79+3	
6	192448	https://sofifa.com/player/192448/marc-andre-ter-stegen/...	M. ter Stegen	Marc-André ter Stegen	27	1992-04-30	187	85	Germany	FC Barcelona	...	NaN	NaN	NaN	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	59+2	59+2	59+2	
146	186942	https://sofifa.com/player/186942/ilkay-gundogan/...	I. Gündoğan	İlkay Gündoğan	28	1990-10-24	180	80	Germany	Manchester City	...	76+3	79+3	79+3	79+3	
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	68+3	68+3	68+3	

5 rows × 104 columns

20.

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


	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

21.

```
player_shooting= fifa[['short_name','shooting']]
player_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. Agüero	90.0
205	F. Quagliarella	89.0

22.

```
player_defending= fifa[['short_name','defending','nationality','club']]
player_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. Godín	89.0	Uruguay	Inter
49	M. Hummels	89.0	Germany	Borussia Dortmund

23.

```
real_madrid=fifa[fifa['club']=='Real Madrid']
real_madrid.sort_values(by=['wage_eur'],ascending=False).head()
```

sofifa_id		player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm	rdm	rwb
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	63+3	63+3	66+3
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	81+3	81+3	81+3
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	79+3	79+3	75+3
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	84+3	84+3	80+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	62+3	62+3	62+3

24.

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

sofifa_id		player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm	rdm	rw
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	69+3	69+3	72+
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	67+3	67+3	67+
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	63+3	63+3	66+
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	62+3	62+3	62+
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	53+2	53+2	55+

25.

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

sofifa_id		player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm	rdm	rv
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	84+3	84+3	80+
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	84+3	84+3	78+
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	79+3	79+3	74+
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	82+3	82+3	83+
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	76+2	76+2	78+

26.

```
real_madrid['nationality'].value_counts()
```

nationality	
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: count, dtype: int64