

# Fifa

April 1, 2024

```
[1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
[15]: fifa=pd.read_csv("players_20.csv")
```

```
[17]: #show data
fifa.head()
```

```
[17]:  sofifa_id                                player_url \
0      158023  https://sofifa.com/player/158023/lionel-messi/...
1       20801  https://sofifa.com/player/20801/c-ronaldo-dos-...
2      190871  https://sofifa.com/player/190871/neymar-da-sil...
3      200389  https://sofifa.com/player/200389/jan-oblak/20/...
4      183277  https://sofifa.com/player/183277/eden-hazard/2...

      short_name                                long_name  age  dob \
0          L. Messi          Lionel Andrés Messi Cuccittini   32  1987-06-24
1  Cristiano Ronaldo  Cristiano Ronaldo dos Santos Aveiro   34  1985-02-05
2         Neymar Jr          Neymar da Silva Santos Junior   27  1992-02-05
3           J. Oblak                   Jan Oblak           26  1993-01-07
4           E. Hazard                   Eden Hazard           28  1991-01-07

      height_cm  weight_kg  nationality  club  ...  lwb  ldm \
0          170         72   Argentina  FC Barcelona  ...  68+2  66+2
1          187         83   Portugal    Juventus  ...  65+3  61+3
2          175         68    Brazil  Paris Saint-Germain  ...  66+3  61+3
3          188         87   Slovenia  Atlético Madrid  ...   NaN   NaN
4          175         74   Belgium    Real Madrid  ...  66+3  63+3

      cdm  rdm  rwb  lb  lcb  cb  rcb  rb
0  66+2  66+2  68+2  63+2  52+2  52+2  52+2  63+2
1  61+3  61+3  65+3  61+3  53+3  53+3  53+3  61+3
2  61+3  61+3  66+3  61+3  46+3  46+3  46+3  61+3
3   NaN   NaN   NaN   NaN   NaN   NaN   NaN   NaN
4  63+3  63+3  66+3  61+3  49+3  49+3  49+3  61+3
```

[5 rows x 104 columns]

```
[19]: #shape of data  
fifa.shape
```

[19]: (18278, 104)

```
[21]: #how many columns  
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

```
[26]: #nationality  
fifa["nationality"].value_counts()
```

```
[26]: 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
```

```
[30]: fifa["nationality"].value_counts()[0:10]
```

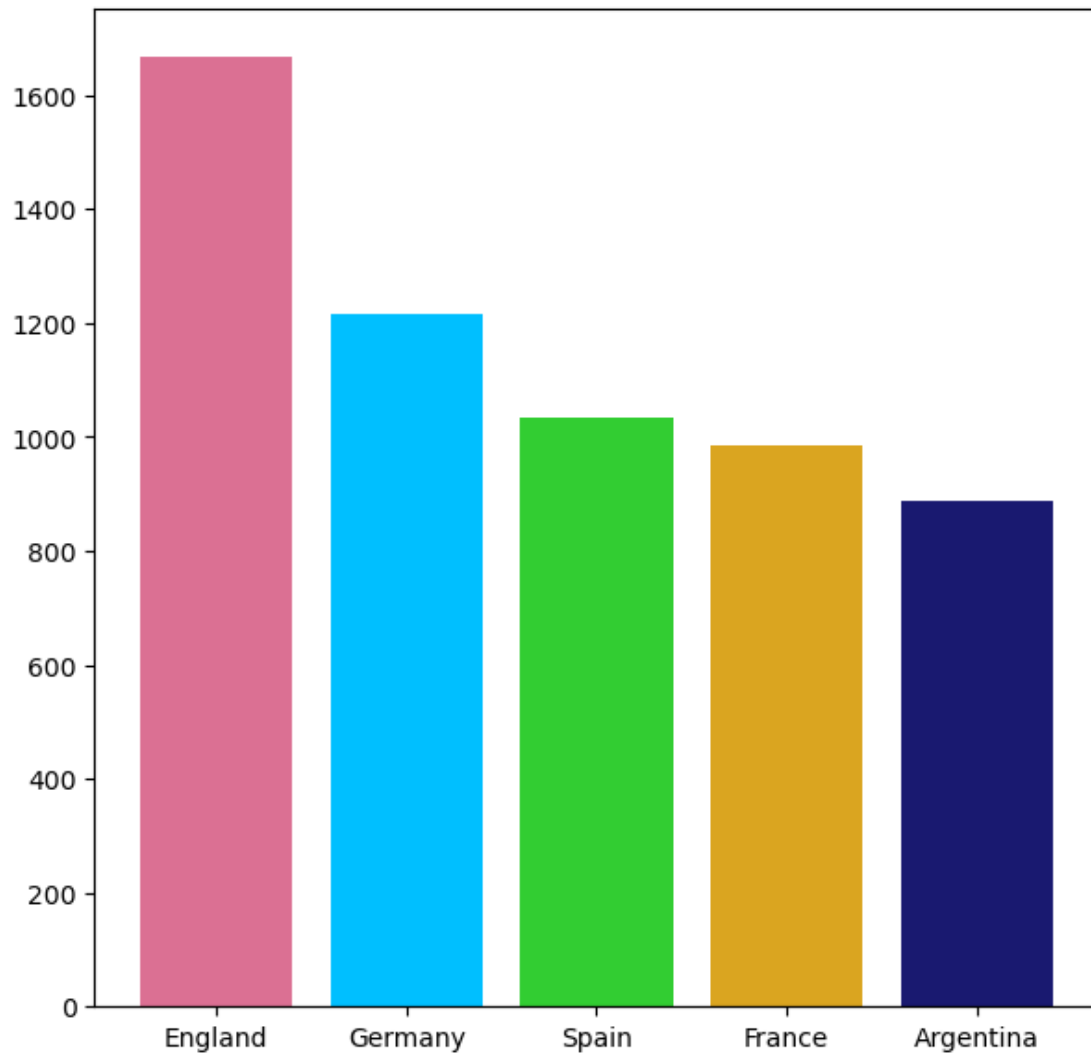
```
[30]: nationality  
England          1667  
Germany          1216  
Spain            1035  
France           984  
Argentina        886
```

```
Brazil      824
Italy       732
Colombia    591
Japan       453
Netherlands 416
Name: count, dtype: int64
```

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

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

```
[116]: # bar plot
plt.figure(figsize=(7, 7))
plt.bar(list(fifa["nationality"].value_counts()[0:5].keys()),
        ↪list(fifa["nationality"].value_counts()[0:
        ↪5]),color=["PaleVioletRed","DeepSkyBlue","LimeGreen","GoldenRod","MidnightBlue"])
plt.show()
```



```
[44]: player_salary=fifa[["short_name","wage_eur"]]
```

```
[46]: player_salary.head()
```

```
[46]:
```

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

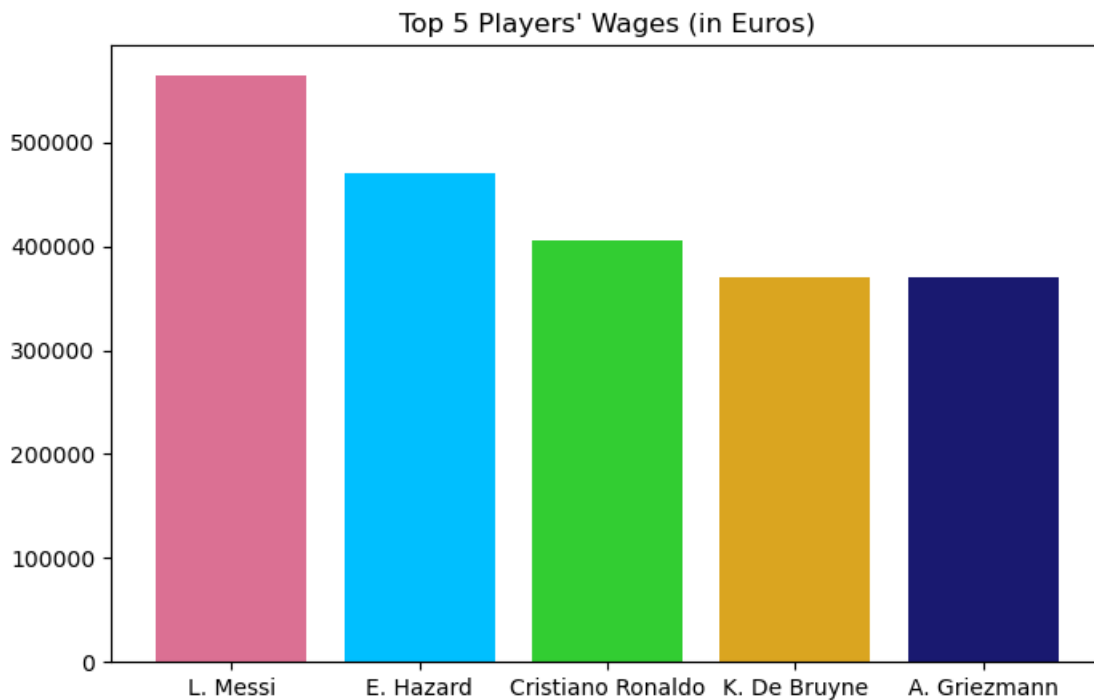
```
[48]: player_salary=player_salary.sort_values(by=["wage_eur"],ascending=False)
```

```
[50]: player_salary.head()
```

```
[50]:      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
```

```
[62]: import matplotlib.pyplot as plt

plt.figure(figsize=(8, 5))
plt.bar(list(player_salary["short_name"])[0:5],
        ↪list(player_salary["wage_eur"])[0:5],
        ↪color=["PaleVioletRed", "DeepSkyBlue", "LimeGreen", "GoldenRod", "MidnightBlue"])
plt.title("Top 5 Players' Wages (in Euros)")
plt.show()
```



```
[66]: Germany=fifa[fifa["nationality"]=="Germany"]
Germany.head(10)
```

```
[66]:      sofifa_id      player_url \
6      192448  https://sofifa.com/player/192448/marc-andre-te...
31     167495  https://sofifa.com/player/167495/manuel-neuer/...
36     182521  https://sofifa.com/player/182521/toni-kroos/20...
37     188350  https://sofifa.com/player/188350/marco-reus/20...
```

```

49      178603  https://sofifa.com/player/178603/mats-hummels/...
55      222492  https://sofifa.com/player/222492/leroy-sane/20...
61      212622  https://sofifa.com/player/212622/joshua-kimmic...
70      189596  https://sofifa.com/player/189596/thomas-muller...
77      212190  https://sofifa.com/player/212190/niklas-sule/2...
109     235790  https://sofifa.com/player/235790/kai-havertz/2...

```

	short_name	long_name	age	dob	height_cm	\
6	M. ter Stegen	Marc-André ter Stegen	27	1992-04-30	187	
31	M. Neuer	Manuel Neuer	33	1986-03-27	193	
36	T. Kroos	Toni Kroos	29	1990-01-04	183	
37	M. Reus	Marco Reus	30	1989-05-31	180	
49	M. Hummels	Mats Hummels	30	1988-12-16	191	
55	L. Sané	Leroy Sané	23	1996-01-11	183	
61	J. Kimmich	Joshua Kimmich	24	1995-02-08	176	
70	T. Müller	Thomas Müller	29	1989-09-13	186	
77	N. Süle	Niklas Süle	23	1995-09-03	195	
109	K. Havertz	Kai Havertz	20	1999-06-11	188	

	weight_kg	nationality	club	...	lwb	ldm	cdm	rdm	\
6	85	Germany	FC Barcelona	...	NaN	NaN	NaN	NaN	
31	92	Germany	FC Bayern München	...	NaN	NaN	NaN	NaN	
36	76	Germany	Real Madrid	...	75+3	79+3	79+3	79+3	
37	71	Germany	Borussia Dortmund	...	69+3	65+3	65+3	65+3	
49	94	Germany	Borussia Dortmund	...	77+3	83+3	83+3	83+3	
55	75	Germany	Manchester City	...	65+2	59+2	59+2	59+2	
61	73	Germany	FC Bayern München	...	83+3	82+3	82+3	82+3	
70	75	Germany	FC Bayern München	...	69+3	68+3	68+3	68+3	
77	97	Germany	FC Bayern München	...	71+2	77+2	77+2	77+2	
109	83	Germany	Bayer 04 Leverkusen	...	65+2	63+2	63+2	63+2	

	rwb	lb	lcb	cb	rcb	rb
6	NaN	NaN	NaN	NaN	NaN	NaN
31	NaN	NaN	NaN	NaN	NaN	NaN
36	75+3	72+3	69+3	69+3	69+3	72+3
37	69+3	64+3	55+3	55+3	55+3	64+3
49	77+3	78+3	84+3	84+3	84+3	78+3
55	65+2	61+2	52+2	52+2	52+2	61+2
61	83+3	81+3	78+3	78+3	78+3	81+3
70	69+3	67+3	62+3	62+3	62+3	67+3
77	71+2	75+2	83+2	83+2	83+2	75+2
109	65+2	62+2	54+2	54+2	54+2	62+2

[10 rows x 104 columns]

```
[68]: Germany.sort_values(by=["height_cm"],ascending=False).head()
```



```
[68]:      sofifa_id      player_url \
8016      236831  https://sofifa.com/player/236831/aaron-seydel/...
1217      200212  https://sofifa.com/player/200212/michael-esser...
1389      199833  https://sofifa.com/player/199833/lars-unnersta...
11859     167437  https://sofifa.com/player/167437/dominik-stroh...
13576     239746  https://sofifa.com/player/239746/lukas-watkowi...

      short_name      long_name  age      dob  height_cm \
8016      A. Seydel      Aaron Seydel  23  1996-02-07      199
1217      M. Esser      Michael Esser  31  1987-11-22      198
1389      L. Unnerstall      Lars Unnerstall  28  1990-07-20      198
11859      D. Stroh-Engel      Dominik Stroh-Engel  33  1985-11-27      197
13576      L. Watkowiak      Lukas Watkowiak  23  1996-03-06      197

      weight_kg nationality      club  ...  lwb  ldm  cdm  rdm \
8016      90      Germany      1. FSV Mainz 05  ...  46+2  43+2  43+2  43+2
1217      97      Germany      Hannover 96  ...  NaN  NaN  NaN  NaN
1389      103      Germany      PSV  ...  NaN  NaN  NaN  NaN
11859      94      Germany      SpVgg Unterhaching  ...  39+2  45+2  45+2  45+2
13576      103      Germany      SV Wehen Wiesbaden  ...  NaN  NaN  NaN  NaN

      rwb  lb  lcb  cb  rcb  rb
8016  46+2  44+2  43+2  43+2  43+2  44+2
1217  NaN  NaN  NaN  NaN  NaN  NaN
1389  NaN  NaN  NaN  NaN  NaN  NaN
11859  39+2  39+2  47+2  47+2  47+2  39+2
13576  NaN  NaN  NaN  NaN  NaN  NaN
```

[5 rows x 104 columns]

```
[70]: Germany.sort_values(by=["weight_kg"],ascending=False).head()
```

```
[70]:      sofifa_id      player_url \
13576     239746  https://sofifa.com/player/239746/lukas-watkowi...
1389      199833  https://sofifa.com/player/199833/lars-unnersta...
518      179783  https://sofifa.com/player/179783/ralf-fahrman...
1217      200212  https://sofifa.com/player/200212/michael-esser...
77      212190  https://sofifa.com/player/212190/niklas-sule/2...

      short_name      long_name  age      dob  height_cm  weight_kg \
13576      L. Watkowiak      Lukas Watkowiak  23  1996-03-06      197      103
1389      L. Unnerstall      Lars Unnerstall  28  1990-07-20      198      103
518      R. Fährmann      Ralf Fährmann  30  1988-09-27      197      98
1217      M. Esser      Michael Esser  31  1987-11-22      198      97
77      N. Süle      Niklas Süle  23  1995-09-03      195      97

      nationality      club  ...  lwb  ldm  cdm  rdm  rwb \
```

13576	Germany	SV Wehen Wiesbaden	...	NaN	NaN	NaN	NaN	NaN
1389	Germany	PSV	...	NaN	NaN	NaN	NaN	NaN
518	Germany	Norwich City	...	NaN	NaN	NaN	NaN	NaN
1217	Germany	Hannover 96	...	NaN	NaN	NaN	NaN	NaN
77	Germany	FC Bayern München	...	71+2	77+2	77+2	77+2	71+2

	lb	lcb	cb	rcb	rb
13576	NaN	NaN	NaN	NaN	NaN
1389	NaN	NaN	NaN	NaN	NaN
518	NaN	NaN	NaN	NaN	NaN
1217	NaN	NaN	NaN	NaN	NaN
77	75+2	83+2	83+2	83+2	75+2

[5 rows x 104 columns]

```
[72]: Germany.sort_values(by=["wage_eur"],ascending=False).head()
```

```
[72]:      sofifa_id      player_url \
36      182521  https://sofifa.com/player/182521/toni-kroos/20...
6       192448  https://sofifa.com/player/192448/marc-andre-te...
55      222492  https://sofifa.com/player/222492/leroy-sane/20...
146     186942  https://sofifa.com/player/186942/ilkay-gundoga...
70      189596  https://sofifa.com/player/189596/thomas-muller...
```

	short_name	long_name	age	dob	height_cm	\
36	T. Kroos	Toni Kroos	29	1990-01-04	183	
6	M. ter Stegen	Marc-André ter Stegen	27	1992-04-30	187	
55	L. Sané	Leroy Sané	23	1996-01-11	183	
146	I. Gündoğan	İlkay Gündoğan	28	1990-10-24	180	
70	T. Müller	Thomas Müller	29	1989-09-13	186	

	weight_kg	nationality	club	...	lwb	ldm	cdm	rdm	\
36	76	Germany	Real Madrid	...	75+3	79+3	79+3	79+3	
6	85	Germany	FC Barcelona	...	NaN	NaN	NaN	NaN	
55	75	Germany	Manchester City	...	65+2	59+2	59+2	59+2	
146	80	Germany	Manchester City	...	76+3	79+3	79+3	79+3	
70	75	Germany	FC Bayern München	...	69+3	68+3	68+3	68+3	

	rwb	lb	lcb	cb	rcb	rb
36	75+3	72+3	69+3	69+3	69+3	72+3
6	NaN	NaN	NaN	NaN	NaN	NaN
55	65+2	61+2	52+2	52+2	52+2	61+2
146	76+3	74+3	72+3	72+3	72+3	74+3
70	69+3	67+3	62+3	62+3	62+3	67+3

[5 rows x 104 columns]

```
[74]: Germany[["height_cm", "wage_eur"]].sort_values(by=["wage_eur"], ascending=False).
      ↪head()
```

```
[74]:      height_cm  wage_eur
      36         183    330000
      6         187    250000
      55         183    195000
      146        180    180000
      70         186    170000
```

```
[ ]: #player shootings
```

```
[76]: player_shooting=fifa[["short_name", "shooting"]]
```

```
[78]: player_shooting.head()
```

```
[78]:      short_name  shooting
      0      L. Messi      92.0
      1  Cristiano Ronaldo      93.0
      2      Neymar Jr      85.0
      3      J. Oblak      NaN
      4      E. Hazard      83.0
```

```
[84]: player_shooting.sort_values(by="shooting", ascending=False).head()
```

```
[84]:      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
```

```
[86]: player_defending=fifa[["short_name", "defending", "nationality", "club"]]
```

```
[88]: player_defending.head()
```

```
[88]:      short_name  defending nationality      club
      0      L. Messi      39.0  Argentina  FC Barcelona
      1  Cristiano Ronaldo      35.0  Portugal    Juventus
      2      Neymar Jr      32.0   Brazil  Paris Saint-Germain
      3      J. Oblak      NaN   Slovenia  Atlético Madrid
      4      E. Hazard      35.0   Belgium    Real Madrid
```

```
[94]: player_defending.sort_values(by=["defending"], ascending=False).head()
```

```
[94]:      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
```

```
[114]: real_madrid=fifa[fifa["club"]=="Real Madrid"]
```

```
[100]: real_madrid.head()
```

```
[100]:      sofifa_id      player_url \
4      183277  https://sofifa.com/player/183277/eden-hazard/2...
8      177003  https://sofifa.com/player/177003/luka-modric/2...
18     155862  https://sofifa.com/player/155862/sergio-ramos-...
28     192119  https://sofifa.com/player/192119/thibaut-court...
36     182521  https://sofifa.com/player/182521/toni-kroos/20...

      short_name      long_name  age      dob  height_cm  weight_kg \
4      E. Hazard      Eden Hazard   28  1991-01-07      175      74
8      L. Modrić      Luka Modrić   33  1985-09-09      172      66
18  Sergio Ramos  Sergio Ramos García  33  1986-03-30      184      82
28  T. Courtois   Thibaut Courtois   27  1992-05-11      199      96
36   T. Kroos     Toni Kroos         29  1990-01-04      183      76

      nationality      club  ...  lwb  ldm  cdm  rdm  rwb  lb  lcb \
4      Belgium  Real Madrid  ...  66+3  63+3  63+3  63+3  66+3  61+3  49+3
8      Croatia  Real Madrid  ...  81+3  81+3  81+3  81+3  81+3  79+3  72+3
18      Spain  Real Madrid  ...  80+3  84+3  84+3  84+3  80+3  82+3  87+3
28      Belgium  Real Madrid  ...   NaN   NaN   NaN   NaN   NaN   NaN   NaN
36      Germany  Real Madrid  ...  75+3  79+3  79+3  79+3  75+3  72+3  69+3

      cb  rcb  rb
4  49+3  49+3  61+3
8  72+3  72+3  79+3
18 87+3  87+3  82+3
28  NaN   NaN   NaN
36 69+3  69+3  72+3

[5 rows x 104 columns]
```

```
[102]: real_madrid.sort_values(by=["wage_eur"],ascending=False).head()
```

```
[102]:      sofifa_id      player_url \
4      183277  https://sofifa.com/player/183277/eden-hazard/2...
8      177003  https://sofifa.com/player/177003/luka-modric/2...
36     182521  https://sofifa.com/player/182521/toni-kroos/20...
```

```

18      155862 https://sofifa.com/player/155862/sergio-ramos-...
46      165153 https://sofifa.com/player/165153/karim-benzema...

```

	short_name	long_name	age	dob	height_cm	weight_kg	\
4	E. Hazard	Eden Hazard	28	1991-01-07	175	74	
8	L. Modrić	Luka Modrić	33	1985-09-09	172	66	
36	T. Kroos	Toni Kroos	29	1990-01-04	183	76	
18	Sergio Ramos	Sergio Ramos García	33	1986-03-30	184	82	
46	K. Benzema	Karim Benzema	31	1987-12-19	185	81	

	nationality	club	...	lwb	ldm	cdm	rdm	rw	lb	lcb	\
4	Belgium	Real Madrid	...	66+3	63+3	63+3	63+3	66+3	61+3	49+3	
8	Croatia	Real Madrid	...	81+3	81+3	81+3	81+3	81+3	79+3	72+3	
36	Germany	Real Madrid	...	75+3	79+3	79+3	79+3	75+3	72+3	69+3	
18	Spain	Real Madrid	...	80+3	84+3	84+3	84+3	80+3	82+3	87+3	
46	France	Real Madrid	...	62+3	62+3	62+3	62+3	62+3	58+3	54+3	

	cb	rcb	rb
4	49+3	49+3	61+3
8	72+3	72+3	79+3
36	69+3	69+3	72+3
18	87+3	87+3	82+3
46	54+3	54+3	58+3

[5 rows x 104 columns]

```
[104]: real_madrid.sort_values(by=["shooting"],ascending=False).head()
```

```
[104]:
   sofifa_id      player_url \
100    173731 https://sofifa.com/player/173731/gareth-bale/2...
106    198710 https://sofifa.com/player/198710/james-rodrigu...
4      183277 https://sofifa.com/player/183277/eden-hazard/2...
46     165153 https://sofifa.com/player/165153/karim-benzema...
161    232432 https://sofifa.com/player/232432/luca-jovic/20...
```

	short_name	long_name	age	dob	height_cm	\
100	G. Bale	Gareth Frank Bale	29	1989-07-16	185	
106	J. Rodríguez	James David Rodríguez Rubio	27	1991-07-12	180	
4	E. Hazard	Eden Hazard	28	1991-01-07	175	
46	K. Benzema	Karim Benzema	31	1987-12-19	185	
161	L. Jović	Luka Jović	21	1997-12-23	182	

	weight_kg	nationality	club	...	lwb	ldm	cdm	rdm	rw	\
100	82	Wales	Real Madrid	...	72+3	69+3	69+3	69+3	72+3	
106	75	Colombia	Real Madrid	...	67+3	67+3	67+3	67+3	67+3	
4	74	Belgium	Real Madrid	...	66+3	63+3	63+3	63+3	66+3	
46	81	France	Real Madrid	...	62+3	62+3	62+3	62+3	62+3	

161	85	Serbia	Real Madrid	...	55+2	53+2	53+2	53+2	55+2
-----	----	--------	-------------	-----	------	------	------	------	------

	lb	lcb	cb	rcb	rb
100	70+3	66+3	66+3	66+3	70+3
106	62+3	57+3	57+3	57+3	62+3
4	61+3	49+3	49+3	49+3	61+3
46	58+3	54+3	54+3	54+3	58+3
161	51+2	47+2	47+2	47+2	51+2

[5 rows x 104 columns]

```
[106]: real_madrid.sort_values(by=["defending"],ascending=False).head()
```

```
[106]:      sofifa_id      player_url \
18      155862  https://sofifa.com/player/155862/sergio-ramos-...
42      200145  https://sofifa.com/player/200145/carlos-henriq...
76      201535  https://sofifa.com/player/201535/raphael-varan...
94      204963  https://sofifa.com/player/204963/daniel-carvaj...
332     240130  https://sofifa.com/player/240130/eder-gabriel-...
```

	short_name	long_name	age	dob	\
18	Sergio Ramos	Sergio Ramos García	33	1986-03-30	
42	Casemiro	Carlos Henrique Venancio Casimiro	27	1992-02-23	
76	R. Varane	Raphaël Varane	26	1993-04-25	
94	Carvajal	Daniel Carvajal Ramos	27	1992-01-11	
332	Éder Militão	Éder Gabriel Militão	21	1998-01-18	

	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm	\
18	184	82	Spain	Real Madrid	...	80+3	84+3	84+3	
42	185	84	Brazil	Real Madrid	...	78+3	84+3	84+3	
76	191	81	France	Real Madrid	...	74+3	79+3	79+3	
94	173	73	Spain	Real Madrid	...	83+3	82+3	82+3	
332	186	78	Brazil	Real Madrid	...	78+2	76+2	76+2	

	rdm	rwb	lb	lcb	cb	rcb	rb
18	84+3	80+3	82+3	87+3	87+3	87+3	82+3
42	84+3	78+3	79+3	84+3	84+3	84+3	79+3
76	79+3	74+3	77+3	83+3	83+3	83+3	77+3
94	82+3	83+3	83+3	80+3	80+3	80+3	83+3
332	76+2	78+2	78+2	79+2	79+2	79+2	78+2

[5 rows x 104 columns]

```
[108]: real_madrid["nationality"].value_counts().head()
```

```
[108]: nationality
Spain      13
```

```
Brazil      6
France      3
Belgium     2
Croatia     1
Name: count, dtype: int64
```

```
[ ]:
```