

In []:

1. Import the modules

In [1]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

Explanation: numpy for checking unique data in a specific column,
pandas to clean the given dataset,
matplotlib to represent 2-D graph,
seaborn to represent n-D graph

2. Read the data set

In [2]:

```
data = pd.read_csv('Fifa.csv',index_col=0)
```

Explanation:

pd is used to read the data in pandas,
read_csv is used to read a .csv(comma separated value) file,
index_col=0 is used not to print the in-built id given by python compiler

3. Print the data set

In [3]: data

Out[3]:

	ID	Name	Age		Photo	Nationality	
0	158023	L. Messi	31	https://cdn.sofifa.org/players/4/19/158023.png	Argentina	https://cd	
1	20801	Cristiano Ronaldo	33	https://cdn.sofifa.org/players/4/19/20801.png	Portugal	https://cd	
2	190871	Neymar Jr	26	https://cdn.sofifa.org/players/4/19/190871.png	Brazil	https://cd	
3	193080	De Gea	27	https://cdn.sofifa.org/players/4/19/193080.png	Spain	https://cd	
4	192985	K. De Bruyne	27	https://cdn.sofifa.org/players/4/19/192985.png	Belgium	https://cd	
5	183277	E. Hazard	27	https://cdn.sofifa.org/players/4/19/183277.png	Belgium	https://cd	
6	177003	L. Modrić	32	https://cdn.sofifa.org/players/4/19/177003.png	Croatia	https://cd	
7	176580	L. Suárez	31	https://cdn.sofifa.org/players/4/19/176580.png	Uruguay	https://cd	
8	155862	Sergio Ramos	32	https://cdn.sofifa.org/players/4/19/155862.png	Spain	https://cd	
9	200389	J. Oblak	25	https://cdn.sofifa.org/players/4/19/200389.png	Slovenia	https://cd	
10	188545	R. Lewandowski	29	https://cdn.sofifa.org/players/4/19/188545.png	Poland	https://cd	
11	182521	T. Kroos	28	https://cdn.sofifa.org/players/4/19/182521.png	Germany	https://cd	
12	182493	D. Godín	32	https://cdn.sofifa.org/players/4/19/182493.png	Uruguay	https://cd	
13	168542	David Silva	32	https://cdn.sofifa.org/players/4/19/168542.png	Spain	https://cd	
14	215914	N. Kanté	27	https://cdn.sofifa.org/players/4/19/215914.png	France	https://cd	
15	211110	P. Dybala	24	https://cdn.sofifa.org/players/4/19/211110.png	Argentina	https://cd	
16	202126	H. Kane	24	https://cdn.sofifa.org/players/4/19/202126.png	England	https://cd	
17	194765	A. Griezmann	27	https://cdn.sofifa.org/players/4/19/194765.png	France	https://cd	
18	192448	M. ter Stegen	26	https://cdn.sofifa.org/players/4/19/192448.png	Germany	https://cd	
19	192119	T. Courtois	26	https://cdn.sofifa.org/players/4/19/192119.png	Belgium	https://cd	
20	189511	Sergio Busquets	29	https://cdn.sofifa.org/players/4/19/189511.png	Spain	https://cd	
21	179813	E. Cavani	31	https://cdn.sofifa.org/players/4/19/179813.png	Uruguay	https://cd	
22	167495	M. Neuer	32	https://cdn.sofifa.org/players/4/19/167495.png	Germany	https://cd	
23	153079	S. Agüero	30	https://cdn.sofifa.org/players/4/19/153079.png	Argentina	https://cd	

	ID	Name	Age	Photo	Nationality
24	138956	G. Chiellini	33	https://cdn.sofifa.org/players/4/19/138956.png	Italy https://cdn.sofifa.org/nationalities/italy.png
25	231747	K. Mbappé	19	https://cdn.sofifa.org/players/4/19/231747.png	France https://cdn.sofifa.org/nationalities/france.png
26	209331	M. Salah	26	https://cdn.sofifa.org/players/4/19/209331.png	Egypt https://cdn.sofifa.org/nationalities/egypt.png
27	200145	Casemiro	26	https://cdn.sofifa.org/players/4/19/200145.png	Brazil https://cdn.sofifa.org/nationalities/brazil.png
28	198710	J. Rodríguez	26	https://cdn.sofifa.org/players/4/19/198710.png	Colombia https://cdn.sofifa.org/nationalities/colombia.png
29	198219	L. Insigne	27	https://cdn.sofifa.org/players/4/19/198219.png	Italy https://cdn.sofifa.org/nationalities/italy.png
...
18177	238550	R. Roache	18	https://cdn.sofifa.org/players/4/19/238550.png	Republic of Ireland https://cdn.sofifa.org/nationalities/republic-of-ireland.png
18178	243158	L. Wahlstedt	18	https://cdn.sofifa.org/players/4/19/243158.png	Sweden https://cdn.sofifa.org/nationalities/sweden.png
18179	246243	J. Williams	17	https://cdn.sofifa.org/players/4/19/246243.png	England https://cdn.sofifa.org/nationalities/england.png
18180	221669	M. Hurst	22	https://cdn.sofifa.org/players/4/19/221669.png	Scotland https://cdn.sofifa.org/nationalities/scotland.png
18181	245734	C. Maher	17	https://cdn.sofifa.org/players/4/19/245734.png	Republic of Ireland https://cdn.sofifa.org/nationalities/republic-of-ireland.png
18182	246001	Y. Góez	18	https://cdn.sofifa.org/players/4/19/246001.png	Colombia https://cdn.sofifa.org/nationalities/colombia.png
18183	53748	K. Pilkington	44	https://cdn.sofifa.org/players/4/19/53748.png	England https://cdn.sofifa.org/nationalities/england.png
18184	241657	D. Horton	18	https://cdn.sofifa.org/players/4/19/241657.png	England https://cdn.sofifa.org/nationalities/england.png
18185	243961	E. Tweed	19	https://cdn.sofifa.org/players/4/19/243961.png	Republic of Ireland https://cdn.sofifa.org/nationalities/republic-of-ireland.png
18186	240917	Zhang Yufeng	20	https://cdn.sofifa.org/players/4/19/240917.png	China PR https://cdn.sofifa.org/nationalities/china-pr.png
18187	240158	C. Ehlich	19	https://cdn.sofifa.org/players/4/19/240158.png	Germany https://cdn.sofifa.org/nationalities/germany.png
18188	240927	L. Collins	17	https://cdn.sofifa.org/players/4/19/240927.png	Wales https://cdn.sofifa.org/nationalities/wales.png
18189	240160	A. Kaltner	18	https://cdn.sofifa.org/players/4/19/240160.png	Germany https://cdn.sofifa.org/nationalities/germany.png
18190	245569	L. Watkins	18	https://cdn.sofifa.org/players/4/19/245569.png	England https://cdn.sofifa.org/nationalities/england.png
18191	245570	J. Norville-Williams	18	https://cdn.sofifa.org/players/4/19/245570.png	England https://cdn.sofifa.org/nationalities/england.png
18192	245571	S. Squire	18	https://cdn.sofifa.org/players/4/19/245571.png	England https://cdn.sofifa.org/nationalities/england.png
18193	244823	N. Fuentes	18	https://cdn.sofifa.org/players/4/19/244823.png	Chile https://cdn.sofifa.org/nationalities/chile.png
18194	245862	J. Milli	18	https://cdn.sofifa.org/players/4/19/245862.png	Italy https://cdn.sofifa.org/nationalities/italy.png

ID		Name	Age		Photo	Nationality	
18195	243582	S. Griffin	18	https://cdn.sofifa.org/players/4/19/243582.png	Republic of Ireland	https://cdn.sofifa.org/players/4/19/243582.png	
18196	238477	K. Fujikawa	19	https://cdn.sofifa.org/players/4/19/238477.png	Japan	https://cdn.sofifa.org/players/4/19/238477.png	
18197	246167	D. Holland	18	https://cdn.sofifa.org/players/4/19/246167.png	Republic of Ireland	https://cdn.sofifa.org/players/4/19/246167.png	
18198	242844	J. Livesey	18	https://cdn.sofifa.org/players/4/19/242844.png	England	https://cdn.sofifa.org/players/4/19/242844.png	
18199	244677	M. Baldisimo	18	https://cdn.sofifa.org/players/4/19/244677.png	Canada	https://cdn.sofifa.org/players/4/19/244677.png	
18200	231381	J. Young	18	https://cdn.sofifa.org/players/4/19/231381.png	Scotland	https://cdn.sofifa.org/players/4/19/231381.png	
18201	243413	D. Walsh	18	https://cdn.sofifa.org/players/4/19/243413.png	Republic of Ireland	https://cdn.sofifa.org/players/4/19/243413.png	
18202	238813	J. Lundstram	19	https://cdn.sofifa.org/players/4/19/238813.png	England	https://cdn.sofifa.org/players/4/19/238813.png	
18203	243165	N. Christoffersson	19	https://cdn.sofifa.org/players/4/19/243165.png	Sweden	https://cdn.sofifa.org/players/4/19/243165.png	
18204	241638	B. Worman	16	https://cdn.sofifa.org/players/4/19/241638.png	England	https://cdn.sofifa.org/players/4/19/241638.png	
18205	246268	D. Walker-Rice	17	https://cdn.sofifa.org/players/4/19/246268.png	England	https://cdn.sofifa.org/players/4/19/246268.png	
18206	246269	G. Nugent	16	https://cdn.sofifa.org/players/4/19/246269.png	England	https://cdn.sofifa.org/players/4/19/246269.png	

18207 rows × 88 columns

Explanation:
to print the data set we only need to write the variable name

4. Show the Index of the data set

In [4]: `data.index`

```
Out[4]: Int64Index([ 0, 1, 2, 3, 4, 5, 6, 7, 8,
...
18197, 18198, 18199, 18200, 18201, 18202, 18203, 18204, 18205,
18206],
dtype='int64', length=18207)
```

Explanation:
the .index command is used to know how many rows or data entries are there in the dataset

5. Show the size of the dataset

In [5]: `data.size`

Out[5]: 1602216

Explanation:

the `.size` command is used to know how many cells or (rows * columns) are present in the dataset

6. Show all the row no and the column no.

In [6]: `data.shape`

Out[6]: (18207, 88)

Explanation:

the `.shape` command is used to know the number of rows and columns present in the dataset

7. Show all the columns name.

In [7]: `data.columns`

Out[7]: Index(['ID', 'Name', 'Age', 'Photo', 'Nationality', 'Flag', 'Overall',
 'Potential', 'Club', 'Club Logo', 'Value', 'Wage', 'Special',
 'Preferred Foot', 'International Reputation', 'Weak Foot',
 'Skill Moves', 'Work Rate', 'Body Type', 'Real Face', 'Position',
 'Jersey Number', 'Joined', 'Loaned From', 'Contract Valid Until',
 'Height', 'Weight', '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', 'Crossing',
 'Finishing', 'HeadingAccuracy', 'ShortPassing', 'Volleys', 'Dribbling',
 'Curve', 'FKAccuracy', 'LongPassing', 'BallControl', 'Acceleration',
 'SprintSpeed', 'Agility', 'Reactions', 'Balance', 'ShotPower',
 'Jumping', 'Stamina', 'Strength', 'LongShots', 'Aggression',
 'Interceptions', 'Positioning', 'Vision', 'Penalties', 'Composure',
 'Marking', 'StandingTackle', 'SlidingTackle', 'GKDiving', 'GKHandling',
 'GKKicking', 'GKPositioning', 'GKReflexes', 'Release Clause'],
 dtype='object')

Explanation:

the `.columns` command is used to know all the column names in the data

8. Show the total no of columns.

In [8]: `len(data.columns)`

Out[8]: 88

Explanation:

the `len(variable_name)` command is used to count the number of entries in the specified `variable_name`

9. Show the memory consumptions for all the columns

In [9]: `data.memory_usage()`

Out[9]:

Index	145656
ID	145656
Name	145656
Age	145656
Photo	145656
Nationality	145656
Flag	145656
Overall	145656
Potential	145656
Club	145656
Club Logo	145656
Value	145656
Wage	145656
Special	145656
Preferred Foot	145656
International Reputation	145656
Weak Foot	145656
Skill Moves	145656
Work Rate	145656
Body Type	145656
Real Face	145656
Position	145656
Jersey Number	145656
Joined	145656
Loaned From	145656
Contract Valid Until	145656
Height	145656
Weight	145656
LS	145656
ST	145656
	...
Dribbling	145656
Curve	145656
FKAccuracy	145656
LongPassing	145656
BallControl	145656
Acceleration	145656
SprintSpeed	145656
Agility	145656
Reactions	145656
Balance	145656
ShotPower	145656
Jumping	145656
Stamina	145656
Strength	145656
LongShots	145656
Aggression	145656
Interceptions	145656
Positioning	145656
Vision	145656
Penalties	145656
Composure	145656
Marking	145656
StandingTackle	145656
SlidingTackle	145656

```
GKDiving          145656
GKHandling        145656
GKKicking          145656
GKPositioning      145656
GKReflexes         145656
Release Clause    145656
Length: 89, dtype: int64
```

Explanation:

the .memory_usage() command is used to calculate the memory used by all the columns in the given dataset

10. Show the dimension of the data set.

In [10]: `data.ndim`

Out[10]: 2

Explanation:

the .ndim command shows the dimension of the dataset

11. Show the information of the data set

In [11]: `data.info()`

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 18207 entries, 0 to 18206
Data columns (total 88 columns):
ID                  18207 non-null int64
Name                18207 non-null object
Age                 18207 non-null int64
Photo               18207 non-null object
Nationality         18207 non-null object
Flag                18207 non-null object
Overall              18207 non-null int64
Potential            18207 non-null int64
Club                17966 non-null object
Club Logo            18207 non-null object
Value               18207 non-null object
Wage                18207 non-null object
Special              18207 non-null int64
Preferred Foot      18159 non-null object
International Reputation 18159 non-null float64
Weak Foot            18159 non-null float64
Skill Moves          18159 non-null float64
Work Rate             18159 non-null object
Body Type             18159 non-null object
Real Face             18159 non-null object
Position              18147 non-null object
Jersey Number         18147 non-null float64
Joined               16654 non-null object
Loaned From           1264 non-null object
Contract Valid Until 17918 non-null object
Height               18159 non-null object
Weight               18159 non-null object
LS                  16122 non-null object
ST                  16122 non-null object
RS                  16122 non-null object
LW                  16122 non-null object
LF                  16122 non-null object
CF                  16122 non-null object
RF                  16122 non-null object
RW                  16122 non-null object
LAM                 16122 non-null object
CAM                 16122 non-null object
RAM                 16122 non-null object
LM                  16122 non-null object
LCM                 16122 non-null object
CM                  16122 non-null object
RCM                 16122 non-null object
RM                  16122 non-null object
LWB                 16122 non-null object
LDM                 16122 non-null object
CDM                 16122 non-null object
RDM                 16122 non-null object
RWB                 16122 non-null object
LB                  16122 non-null object
LCB                 16122 non-null object
CB                  16122 non-null object
RCB                 16122 non-null object
```

```

RB                         16122 non-null object
Crossing                   18159 non-null float64
Finishing                  18159 non-null float64
HeadingAccuracy            18159 non-null float64
ShortPassing               18159 non-null float64
Volleys                    18159 non-null float64
Dribbling                  18159 non-null float64
Curve                      18159 non-null float64
FKAccuracy                 18159 non-null float64
LongPassing                18159 non-null float64
BallControl                18159 non-null float64
Acceleration               18159 non-null float64
SprintSpeed                18159 non-null float64
Agility                     18159 non-null float64
Reactions                   18159 non-null float64
Balance                     18159 non-null float64
ShotPower                   18159 non-null float64
Jumping                     18159 non-null float64
Stamina                     18159 non-null float64
Strength                    18159 non-null float64
LongShots                   18159 non-null float64
Aggression                  18159 non-null float64
Interceptions              18159 non-null float64
Positioning                 18159 non-null float64
Vision                      18159 non-null float64
Penalties                   18159 non-null float64
Composure                   18159 non-null float64
Marking                     18159 non-null float64
StandingTackle              18159 non-null float64
SlidingTackle               18159 non-null float64
GKDiving                    18159 non-null float64
GKHandling                  18159 non-null float64
GKKicking                   18159 non-null float64
GKPositioning               18159 non-null float64
GKReflexes                  18159 non-null float64
Release Clause               16643 non-null object
dtypes: float64(38), int64(5), object(45)
memory usage: 12.4+ MB

```

Explnation:

the `.info()` command shows the full inforamtion of the dataset includig column_names, number of non-null entries, whethwr the data

12. Show the first 15 rows of the dataset.

In [12]: `data.head(15)`

Out[12]:

	ID	Name	Age		Photo	Nationality	
0	158023	L. Messi	31	https://cdn.sofifa.org/players/4/19/158023.png	Argentina	https://cdn.sofifa.org/players/4/19/158023.png	
1	20801	Cristiano Ronaldo	33	https://cdn.sofifa.org/players/4/19/20801.png	Portugal	https://cdn.sofifa.org/players/4/19/20801.png	
2	190871	Neymar Jr	26	https://cdn.sofifa.org/players/4/19/190871.png	Brazil	https://cdn.sofifa.org/players/4/19/190871.png	
3	193080	De Gea	27	https://cdn.sofifa.org/players/4/19/193080.png	Spain	https://cdn.sofifa.org/players/4/19/193080.png	
4	192985	K. De Bruyne	27	https://cdn.sofifa.org/players/4/19/192985.png	Belgium	https://cdn.sofifa.org/players/4/19/192985.png	
5	183277	E. Hazard	27	https://cdn.sofifa.org/players/4/19/183277.png	Belgium	https://cdn.sofifa.org/players/4/19/183277.png	
6	177003	L. Modrić	32	https://cdn.sofifa.org/players/4/19/177003.png	Croatia	https://cdn.sofifa.org/players/4/19/177003.png	
7	176580	L. Suárez	31	https://cdn.sofifa.org/players/4/19/176580.png	Uruguay	https://cdn.sofifa.org/players/4/19/176580.png	
8	155862	Sergio Ramos	32	https://cdn.sofifa.org/players/4/19/155862.png	Spain	https://cdn.sofifa.org/players/4/19/155862.png	
9	200389	J. Oblak	25	https://cdn.sofifa.org/players/4/19/200389.png	Slovenia	https://cdn.sofifa.org/players/4/19/200389.png	
10	188545	R. Lewandowski	29	https://cdn.sofifa.org/players/4/19/188545.png	Poland	https://cdn.sofifa.org/players/4/19/188545.png	
11	182521	T. Kroos	28	https://cdn.sofifa.org/players/4/19/182521.png	Germany	https://cdn.sofifa.org/players/4/19/182521.png	
12	182493	D. Godín	32	https://cdn.sofifa.org/players/4/19/182493.png	Uruguay	https://cdn.sofifa.org/players/4/19/182493.png	
13	168542	David Silva	32	https://cdn.sofifa.org/players/4/19/168542.png	Spain	https://cdn.sofifa.org/players/4/19/168542.png	
14	215914	N. Kanté	27	https://cdn.sofifa.org/players/4/19/215914.png	France	https://cdn.sofifa.org/players/4/19/215914.png	

15 rows × 88 columns

Explanation:

`.head(number)` command shows the first specified number of data from dataset

13. Show the last 15 rows of the dataset

In [13]: `data.tail(15)`

Out[13]:

ID	Name	Age	Photo	Nationality
18192	245571	S. Squire	18 https://cdn.sofifa.org/players/4/19/245571.png	England https://cd
18193	244823	N. Fuentes	18 https://cdn.sofifa.org/players/4/19/244823.png	Chile https://cd
18194	245862	J. Milli	18 https://cdn.sofifa.org/players/4/19/245862.png	Italy https://cd
18195	243582	S. Griffin	18 https://cdn.sofifa.org/players/4/19/243582.png	Republic of Ireland https://cd
18196	238477	K. Fujikawa	19 https://cdn.sofifa.org/players/4/19/238477.png	Japan https://cdn
18197	246167	D. Holland	18 https://cdn.sofifa.org/players/4/19/246167.png	Republic of Ireland https://cd
18198	242844	J. Livesey	18 https://cdn.sofifa.org/players/4/19/242844.png	England https://cd
18199	244677	M. Baldisimo	18 https://cdn.sofifa.org/players/4/19/244677.png	Canada https://cd
18200	231381	J. Young	18 https://cdn.sofifa.org/players/4/19/231381.png	Scotland https://cd
18201	243413	D. Walsh	18 https://cdn.sofifa.org/players/4/19/243413.png	Republic of Ireland https://cd
18202	238813	J. Lundstram	19 https://cdn.sofifa.org/players/4/19/238813.png	England https://cd
18203	243165	N. Christoffersson	19 https://cdn.sofifa.org/players/4/19/243165.png	Sweden https://cd
18204	241638	B. Worman	16 https://cdn.sofifa.org/players/4/19/241638.png	England https://cd
18205	246268	D. Walker-Rice	17 https://cdn.sofifa.org/players/4/19/246268.png	England https://cd
18206	246269	G. Nugent	16 https://cdn.sofifa.org/players/4/19/246269.png	England https://cd

15 rows × 88 columns

Explanation:

`.tail(number)` command shows the last specified number of data from dataset

14. Show the rows between 1780 to 1880 rows.

In [14]: `data.head(1880).tail(100)`

Out[14]:

	ID	Name	Age		Photo	Nationality	
1780	170084	W. Hennessey	31	https://cdn.sofifa.org/players/4/19/170084.png		Wales	https://cdn.sofifa.org/players/4/19/170084.png
1781	221797	E. Thommy	23	https://cdn.sofifa.org/players/4/19/221797.png		Germany	https://cdn.sofifa.org/players/4/19/221797.png
1782	224869	Bustinza	26	https://cdn.sofifa.org/players/4/19/224869.png		Spain	https://cdn.sofifa.org/players/4/19/224869.png
1783	232805	Bernardo	23	https://cdn.sofifa.org/players/4/19/232805.png		Brazil	https://cdn.sofifa.org/players/4/19/232805.png
1784	177765	P. Cissé	33	https://cdn.sofifa.org/players/4/19/177765.png		Senegal	https://cdn.sofifa.org/players/4/19/177765.png
1785	183141	Oier	28	https://cdn.sofifa.org/players/4/19/183141.png		Spain	https://cdn.sofifa.org/players/4/19/183141.png
1786	205670	D. Gayle	27	https://cdn.sofifa.org/players/4/19/205670.png		England	https://cdn.sofifa.org/players/4/19/205670.png
1787	223334	Joelinton	21	https://cdn.sofifa.org/players/4/19/223334.png		Brazil	https://cdn.sofifa.org/players/4/19/223334.png
1788	159591	A. Pérez	37	https://cdn.sofifa.org/players/4/19/159591.png		Colombia	https://cdn.sofifa.org/players/4/19/159591.png
1789	165735	B. Jones	36	https://cdn.sofifa.org/players/4/19/165735.png		Australia	https://cdn.sofifa.org/players/4/19/165735.png
1790	198504	J. Drmić	25	https://cdn.sofifa.org/players/4/19/198504.png		Switzerland	https://cdn.sofifa.org/players/4/19/198504.png
1791	233064	M. Mount	19	https://cdn.sofifa.org/players/4/19/233064.png		England	https://cdn.sofifa.org/players/4/19/233064.png
1792	49000	A. McGregor	36	https://cdn.sofifa.org/players/4/19/49000.png		Scotland	https://cdn.sofifa.org/players/4/19/49000.png
1793	190824	O. Elabdellaoui	26	https://cdn.sofifa.org/players/4/19/190824.png		Norway	https://cdn.sofifa.org/players/4/19/190824.png
1794	210537	R. Steffen	26	https://cdn.sofifa.org/players/4/19/210537.png		Switzerland	https://cdn.sofifa.org/players/4/19/210537.png
1795	213353	K. Kanga	27	https://cdn.sofifa.org/players/4/19/213353.png		Gabon	https://cdn.sofifa.org/players/4/19/213353.png
1796	193897	J. Ananidze	25	https://cdn.sofifa.org/players/4/19/193897.png		Georgia	https://cdn.sofifa.org/players/4/19/193897.png
1797	194665	S. Ilsanker	29	https://cdn.sofifa.org/players/4/19/194665.png		Austria	https://cdn.sofifa.org/players/4/19/194665.png
1798	216939	A. Blake	27	https://cdn.sofifa.org/players/4/19/216939.png		Jamaica	https://cdn.sofifa.org/players/4/19/216939.png
1799	230507	Nicholas Aldair	26	https://cdn.sofifa.org/players/4/19/230507.png		Brazil	https://cdn.sofifa.org/players/4/19/230507.png
1800	235883	R. Sessegnon	18	https://cdn.sofifa.org/players/4/19/235883.png		England	https://cdn.sofifa.org/players/4/19/235883.png
1801	230252	Jorginho	26	https://cdn.sofifa.org/players/4/19/230252.png		Brazil	https://cdn.sofifa.org/players/4/19/230252.png
1802	239212	Carlitos	28	https://cdn.sofifa.org/players/4/19/239212.png		Spain	https://cdn.sofifa.org/players/4/19/239212.png
1803	178284	L. Nguyen	31	https://cdn.sofifa.org/players/4/19/178284.png		United States	https://cdn.sofifa.org/players/4/19/178284.png
1804	240493	A. Paschalakis	28	https://cdn.sofifa.org/players/4/19/240493.png		Greece	https://cdn.sofifa.org/players/4/19/240493.png
1805	202350	Fabrício	28	https://cdn.sofifa.org/players/4/19/202350.png		Brazil	https://cdn.sofifa.org/players/4/19/202350.png
1806	226414	M. Coco	22	https://cdn.sofifa.org/players/4/19/226414.png		France	https://cdn.sofifa.org/players/4/19/226414.png

	ID	Name	Age		Photo	Nationality	
1807	197231	K. Babacar	25	https://cdn.sofifa.org/players/4/19/197231.png		Senegal	https://cdn.sofifa.org/players/4/19/197231.png
1808	214639	Postigo	29	https://cdn.sofifa.org/players/4/19/214639.png		Spain	https://cdn.sofifa.org/players/4/19/214639.png
1809	230767	Renato Sanches	20	https://cdn.sofifa.org/players/4/19/230767.png		Portugal	https://cdn.sofifa.org/players/4/19/230767.png
...
1850	176009	S. Kums	30	https://cdn.sofifa.org/players/4/19/176009.png		Belgium	https://cdn.sofifa.org/players/4/19/176009.png
1851	224394	Fábio Martins	24	https://cdn.sofifa.org/players/4/19/224394.png		Portugal	https://cdn.sofifa.org/players/4/19/224394.png
1852	188042	M. Suárez	30	https://cdn.sofifa.org/players/4/19/188042.png		Argentina	https://cdn.sofifa.org/players/4/19/188042.png
1853	209547	S. Mitrović	28	https://cdn.sofifa.org/players/4/19/209547.png		Serbia	https://cdn.sofifa.org/players/4/19/209547.png
1854	164491	D. Aogo	31	https://cdn.sofifa.org/players/4/19/164491.png		Germany	https://cdn.sofifa.org/players/4/19/164491.png
1855	210828	B. Engels	23	https://cdn.sofifa.org/players/4/19/210828.png		Belgium	https://cdn.sofifa.org/players/4/19/210828.png
1856	213388	F. Tait	25	https://cdn.sofifa.org/players/4/19/213388.png		France	https://cdn.sofifa.org/players/4/19/213388.png
1857	238476	D. Zagadou	19	https://cdn.sofifa.org/players/4/19/238476.png		France	https://cdn.sofifa.org/players/4/19/238476.png
1858	188556	M. Diamé	31	https://cdn.sofifa.org/players/4/19/188556.png		Senegal	https://cdn.sofifa.org/players/4/19/188556.png
1859	205966	A. Younes	24	https://cdn.sofifa.org/players/4/19/205966.png		Germany	https://cdn.sofifa.org/players/4/19/205966.png
1860	210831	B. Verstraete	24	https://cdn.sofifa.org/players/4/19/210831.png		Belgium	https://cdn.sofifa.org/players/4/19/210831.png
1861	211856	K. Akpoguma	23	https://cdn.sofifa.org/players/4/19/211856.png		Germany	https://cdn.sofifa.org/players/4/19/211856.png
1862	219792	B. Santamaría	23	https://cdn.sofifa.org/players/4/19/219792.png		France	https://cdn.sofifa.org/players/4/19/219792.png
1863	46736	E. Moretti	37	https://cdn.sofifa.org/players/4/19/46736.png		Italy	https://cdn.sofifa.org/players/4/19/46736.png
1864	193425	H. Behrens	28	https://cdn.sofifa.org/players/4/19/193425.png		Germany	https://cdn.sofifa.org/players/4/19/193425.png
1865	215698	M. Maignan	22	https://cdn.sofifa.org/players/4/19/215698.png		France	https://cdn.sofifa.org/players/4/19/215698.png
1866	231826	Y. Karamoh	19	https://cdn.sofifa.org/players/4/19/231826.png		France	https://cdn.sofifa.org/players/4/19/231826.png
1867	192146	V. Ignatiev	31	https://cdn.sofifa.org/players/4/19/192146.png		Russia	https://cdn.sofifa.org/players/4/19/192146.png
1868	208787	A. Thomasson	24	https://cdn.sofifa.org/players/4/19/208787.png		France	https://cdn.sofifa.org/players/4/19/208787.png
1869	212883	D. Amartey	23	https://cdn.sofifa.org/players/4/19/212883.png		Ghana	https://cdn.sofifa.org/players/4/19/212883.png
1870	152211	R. Özcan	34	https://cdn.sofifa.org/players/4/19/152211.png		Austria	https://cdn.sofifa.org/players/4/19/152211.png
1871	203668	A. Donnarumma	27	https://cdn.sofifa.org/players/4/19/203668.png		Italy	https://cdn.sofifa.org/players/4/19/203668.png
1872	199829	Timor	28	https://cdn.sofifa.org/players/4/19/199829.png		Spain	https://cdn.sofifa.org/players/4/19/199829.png
1873	211093	C. McGregor	25	https://cdn.sofifa.org/players/4/19/211093.png		Scotland	https://cdn.sofifa.org/players/4/19/211093.png
1874	219797	R. Martínez	24	https://cdn.sofifa.org/players/4/19/219797.png		Colombia	https://cdn.sofifa.org/players/4/19/219797.png
1875	244373	V. Buyalskyi	25	https://cdn.sofifa.org/players/4/19/244373.png		Ukraine	https://cdn.sofifa.org/players/4/19/244373.png

ID	Name	Age	Photo	Nationality
1876	184469	H. Arter	28 https://cdn.sofifa.org/players/4/19/184469.png	Republic of Ireland https://cdn.sofifa.org/nationalities/Ireland.png
1877	208534	A. Mawson	24 https://cdn.sofifa.org/players/4/19/208534.png	England https://cdn.sofifa.org/nationalities/England.png
1878	227222	F. Guilbert	23 https://cdn.sofifa.org/players/4/19/227222.png	France https://cdn.sofifa.org/nationalities/France.png
1879	229270	M. Lemos	22 https://cdn.sofifa.org/players/4/19/229270.png	Uruguay https://cdn.sofifa.org/nationalities/Uruguay.png

100 rows × 88 columns



Explanation:

the `.head(number1).tail(number2)` command shows the data's between the specified values ends to the specified number in head and starts from the values before which is specified in tail

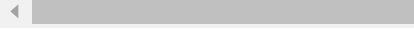
15. Show the details of Messi and Ronaldo

In [15]: `data.loc[0:1,:]`

Out[15]:

ID	Name	Age	Photo	Nationality
0	158023	L. Messi	31 https://cdn.sofifa.org/players/4/19/158023.png	Argentina https://cdn.sofifa.org/nationalities/Argentina.png
1	20801	Cristiano Ronaldo	33 https://cdn.sofifa.org/players/4/19/20801.png	Portugal https://cdn.sofifa.org/nationalities/Portugal.png

2 rows × 88 columns



Explanation:

with the help of `.loc[starting_row_index:ending_row_index , starting_column_index:ending_column_index]` command we can show the specified value of a certain player and also some certain columns, but the contradiction is we have to choose values ranging or gapping properly, unorderd gapping cannot be shown

16. Show all the player names and their nationality

In [16]: `data.loc[:, 'Name':'Nationality':3]`

Out[16]:

	Name	Nationality
0	L. Messi	Argentina
1	Cristiano Ronaldo	Portugal
2	Neymar Jr	Brazil
3	De Gea	Spain
4	K. De Bruyne	Belgium
5	E. Hazard	Belgium
6	L. Modrić	Croatia
7	L. Suárez	Uruguay
8	Sergio Ramos	Spain
9	J. Oblak	Slovenia
10	R. Lewandowski	Poland
11	T. Kroos	Germany
12	D. Godín	Uruguay
13	David Silva	Spain
14	N. Kanté	France
15	P. Dybala	Argentina
16	H. Kane	England
17	A. Griezmann	France
18	M. ter Stegen	Germany
19	T. Courtois	Belgium
20	Sergio Busquets	Spain
21	E. Cavani	Uruguay
22	M. Neuer	Germany
23	S. Agüero	Argentina
24	G. Chiellini	Italy
25	K. Mbappé	France
26	M. Salah	Egypt
27	Casemiro	Brazil
28	J. Rodríguez	Colombia
29	L. Insigne	Italy
...
18177	R. Roache	Republic of Ireland
18178	L. Wahlstedt	Sweden
18179	J. Williams	England

	Name	Nationality
18180	M. Hurst	Scotland
18181	C. Maher	Republic of Ireland
18182	Y. Gómez	Colombia
18183	K. Pilkington	England
18184	D. Horton	England
18185	E. Tweed	Republic of Ireland
18186	Zhang Yufeng	China PR
18187	C. Ehlich	Germany
18188	L. Collins	Wales
18189	A. Kaltner	Germany
18190	L. Watkins	England
18191	J. Norville-Williams	England
18192	S. Squire	England
18193	N. Fuentes	Chile
18194	J. Milli	Italy
18195	S. Griffin	Republic of Ireland
18196	K. Fujikawa	Japan
18197	D. Holland	Republic of Ireland
18198	J. Livesey	England
18199	M. Baldisimo	Canada
18200	J. Young	Scotland
18201	D. Walsh	Republic of Ireland
18202	J. Lundstram	England
18203	N. Christoffersson	Sweden
18204	B. Worman	England
18205	D. Walker-Rice	England
18206	G. Nugent	England

18207 rows × 2 columns

Explanation:

as discussed in the earlier one .loc[] should have an ordered gaping

17. Show all the player names and their nationality along with potential

In [17]: `data.loc[:, 'Name':'Potential':3]`

Out[17]:

	Name	Nationality	Potential
0	L. Messi	Argentina	94
1	Cristiano Ronaldo	Portugal	94
2	Neymar Jr	Brazil	93
3	De Gea	Spain	93
4	K. De Bruyne	Belgium	92
5	E. Hazard	Belgium	91
6	L. Modrić	Croatia	91
7	L. Suárez	Uruguay	91
8	Sergio Ramos	Spain	91
9	J. Oblak	Slovenia	93
10	R. Lewandowski	Poland	90
11	T. Kroos	Germany	90
12	D. Godín	Uruguay	90
13	David Silva	Spain	90
14	N. Kanté	France	90
15	P. Dybala	Argentina	94
16	H. Kane	England	91
17	A. Griezmann	France	90
18	M. ter Stegen	Germany	92
19	T. Courtois	Belgium	90
20	Sergio Busquets	Spain	89
21	E. Cavani	Uruguay	89
22	M. Neuer	Germany	89
23	S. Agüero	Argentina	89
24	G. Chiellini	Italy	89
25	K. Mbappé	France	95
26	M. Salah	Egypt	89
27	Casemiro	Brazil	90
28	J. Rodríguez	Colombia	89
29	L. Insigne	Italy	88
...
18177	R. Roache	Republic of Ireland	69
18178	L. Wahlstedt	Sweden	65
18179	J. Williams	England	64

	Name	Nationality	Potential
18180	M. Hurst	Scotland	58
18181	C. Maher	Republic of Ireland	66
18182	Y. Gómez	Colombia	65
18183	K. Pilkington	England	48
18184	D. Horton	England	55
18185	E. Tweed	Republic of Ireland	59
18186	Zhang Yufeng	China PR	64
18187	C. Ehlich	Germany	59
18188	L. Collins	Wales	62
18189	A. Kaltner	Germany	61
18190	L. Watkins	England	67
18191	J. Norville-Williams	England	65
18192	S. Squire	England	64
18193	N. Fuentes	Chile	64
18194	J. Milli	Italy	65
18195	S. Griffin	Republic of Ireland	67
18196	K. Fujikawa	Japan	61
18197	D. Holland	Republic of Ireland	61
18198	J. Livesey	England	70
18199	M. Baldisimo	Canada	69
18200	J. Young	Scotland	62
18201	D. Walsh	Republic of Ireland	68
18202	J. Lundstram	England	65
18203	N. Christoffersson	Sweden	63
18204	B. Worman	England	67
18205	D. Walker-Rice	England	66
18206	G. Nugent	England	66

18207 rows × 3 columns

Explanation:

as discussed in the earlier one .loc[] should have an ordered gaping

18. Show all the id of the players in sorted order

```
In [18]: np.unique(data['ID'])
```

```
Out[18]: array([ 16, 41, 80, ..., 246616, 246617, 246620], dtype=int64)
```

Explanation:

the.unique() command shows the unique values in sorted order

19. Show the lowing overall in the data set

```
In [19]: np.unique(data['Overall'])[0]
```

```
Out[19]: 46
```

Explanation:

the function of .unique() is discussed above and [0] shows the first value stored in the array given from the .unique() command

20. Show the highest overall in the data set

```
In [20]: np.unique(data['Overall'])[-1]
```

```
Out[20]: 94
```

Explanation:

the function of .unique() is discussed above and [-1] shows the last value stored in the array given from the .unique() command

21. Show the number of players player from all the respective clubs

```
In [21]: pd.crosstab(index=data['Club'],columns='Count',dropna=True)
```

Out[21]:

Club	Count
SSV Jahn Regensburg	29
1. FC Heidenheim 1846	28
1. FC Kaiserslautern	26
1. FC Köln	28
1. FC Magdeburg	26
1. FC Nürnberg	29
1. FC Union Berlin	28
1. FSV Mainz 05	32
AC Ajaccio	23
AC Horsens	25
AD Alcorcón	29
ADO Den Haag	28
AEK Athens	28
AFC Wimbledon	26
AIK	27
AJ Auxerre	27
AS Béziers	26
AS Monaco	33
AS Nancy Lorraine	30
AS Saint-Étienne	24
AZ Alkmaar	30
Aalborg BK	27
Aarhus GF	27
Aberdeen	27
Accrington Stanley	28
Adelaide United	25
Ajax	30
Akhisar Belediyespor	26
Al Ahli	30
Al Batin	30
...	...
Vitesse	28
Vitória	20

	col_0 Count
	Club
	Vitória Guimarães 30
	Vitória de Setúbal 28
	Vålerenga Fotball 26
	Vélez Sarsfield 28
	Waasland-Beveren 28
	Walsall 27
	Waterford FC 25
	Watford 29
	Wellington Phoenix 21
	West Bromwich Albion 30
	West Ham United 32
	Western Sydney Wanderers 25
	Wigan Athletic 30
	Willem II 28
	Wisła Kraków 26
	Wisła Płock 26
	Wolfsberger AC 26
	Wolverhampton Wanderers 33
	Wycombe Wanderers 25
	Yeni Malatyaspor 30
	Yeovil Town 28
	Yokohama F. Marinos 30
	Zagłębie Lubin 27
	Zagłębie Sosnowiec 25
	Çaykur Rizespor 30
	Örebro SK 27
	Östersunds FK 22
	Śląsk Wrocław 25

651 rows × 1 columns

Explanation:

the `pd.crosstab(index,columns,dropna)` command shows the number of players playing for the respective clubs given in the data set

22. Show the number player player for all the respective nation

```
In [22]: data['Nationality'].value_counts()
```

```
Out[22]: England           1662
Germany            1198
Spain              1072
Argentina          937
France             914
Brazil             827
Italy               702
Colombia           618
Japan               478
Netherlands         453
Sweden              397
China PR            392
Chile               391
Republic of Ireland 368
Mexico              366
United States       353
Poland              350
Norway              341
Saudi Arabia        340
Denmark              336
Korea Republic      335
Portugal             322
Turkey              303
Austria              298
Scotland             286
Belgium              260
Australia            236
Switzerland          220
Uruguay              149
Senegal              130
...
Uzbekistan           2
Chad                  2
Dominican Republic    2
Philippines            2
Nicaragua              2
Bermuda                2
New Caledonia          1
Liberia                1
Puerto Rico             1
São Tomé & Príncipe     1
Oman                  1
Qatar                  1
Mauritius              1
Fiji                  1
Malta                  1
Andorra                1
Rwanda                 1
St Lucia              1
Belize                 1
Jordan                 1
Guam                  1
United Arab Emirates    1
Palestine              1
Ethiopia                1
```

```
Botswana          1
South Sudan       1
Indonesia         1
Kuwait            1
Grenada           1
Lebanon           1
Name: Nationality, Length: 164, dtype: int64
```

Explanation:

the .value_counts() command counts the number of occurrence of a name for the whole data set and returns its count alongside

23. Show the data types of all the columns

In [23]: `data.dtypes`

Out[23]:

ID	int64
Name	object
Age	int64
Photo	object
Nationality	object
Flag	object
Overall	int64
Potential	int64
Club	object
Club Logo	object
Value	object
Wage	object
Special	int64
Preferred Foot	object
International Reputation	float64
Weak Foot	float64
Skill Moves	float64
Work Rate	object
Body Type	object
Real Face	object
Position	object
Jersey Number	float64
Joined	object
Loaned From	object
Contract Valid Until	object
Height	object
Weight	object
LS	object
ST	object
RS	object
	...
Dribbling	float64
Curve	float64
FKAccuracy	float64
LongPassing	float64
BallControl	float64
Acceleration	float64
SprintSpeed	float64
Agility	float64
Reactions	float64
Balance	float64
ShotPower	float64
Jumping	float64
Stamina	float64
Strength	float64
LongShots	float64
Aggression	float64
Interceptions	float64
Positioning	float64
Vision	float64
Penalties	float64
Composure	float64
Marking	float64
StandingTackle	float64
SlidingTackle	float64

```
GKDiving           float64
GKHandling         float64
GKKicking          float64
GKPositioning      float64
GKReflexes         float64
Release Clause    object
Length: 88, dtype: object
```

Explanation:

the .dtypes command shows the data types of all the columns

24. Show the bytes consumed by the Name column.

In [24]: `data['Name']. nbytes`

Out[24]: 145656

Explanation:

. nbytes shows the amount of memory consumed in bytes

25. Show the bytes consumed by the Name column.

In [25]: `data['Aggression']. nbytes`

Out[25]: 145656

Explanation:

as discussed in the above one

26. Show the data types of Name column.

In [26]: `data['Name']. dtypes`

Out[26]: `dtype('O')`

Explanation:

. dtypes command shows the data type of the column

27. Show the data types of Age column.

In [27]: `data['Age']. dtypes`

Out[27]: `dtype('int64')`

Explanation:

As discussed in the above one

28. Show the data types of Photo column.

```
In [28]: data[ 'Photo' ].dtypes
```

```
Out[28]: dtype('O')
```

Explanation:
As discussed above

29. Show the total nos of every category.

```
In [29]: data.get_dtype_counts()
```

```
Out[29]: float64    38
          int64      5
          object    45
          dtype: int64
```

Explanation:
the .get_dtype_counts() command shows the number of float64 value, int64 values and object values present in the data set

30. Show the columns which do not consist of object type

In [30]: `data.select_dtypes(exclude=[object])`

Out[30]:

	ID	Age	Overall	Potential	Special	International Reputation	Weak Foot	Skill Moves	Jersey Number	Crossing	..
0	158023	31	94	94	2202	5.0	4.0	4.0	10.0	84.0	..
1	20801	33	94	94	2228	5.0	4.0	5.0	7.0	84.0	..
2	190871	26	92	93	2143	5.0	5.0	5.0	10.0	79.0	..
3	193080	27	91	93	1471	4.0	3.0	1.0	1.0	17.0	..
4	192985	27	91	92	2281	4.0	5.0	4.0	7.0	93.0	..
5	183277	27	91	91	2142	4.0	4.0	4.0	10.0	81.0	..
6	177003	32	91	91	2280	4.0	4.0	4.0	10.0	86.0	..
7	176580	31	91	91	2346	5.0	4.0	3.0	9.0	77.0	..
8	155862	32	91	91	2201	4.0	3.0	3.0	15.0	66.0	..
9	200389	25	90	93	1331	3.0	3.0	1.0	1.0	13.0	..
10	188545	29	90	90	2152	4.0	4.0	4.0	9.0	62.0	..
11	182521	28	90	90	2190	4.0	5.0	3.0	8.0	88.0	..
12	182493	32	90	90	1946	3.0	3.0	2.0	10.0	55.0	..
13	168542	32	90	90	2115	4.0	2.0	4.0	21.0	84.0	..
14	215914	27	89	90	2189	3.0	3.0	2.0	13.0	68.0	..
15	211110	24	89	94	2092	3.0	3.0	4.0	21.0	82.0	..
16	202126	24	89	91	2165	3.0	4.0	3.0	9.0	75.0	..
17	194765	27	89	90	2246	4.0	3.0	4.0	7.0	82.0	..
18	192448	26	89	92	1328	3.0	4.0	1.0	22.0	15.0	..
19	192119	26	89	90	1311	4.0	2.0	1.0	1.0	14.0	..
20	189511	29	89	89	2065	4.0	3.0	3.0	5.0	62.0	..
21	179813	31	89	89	2161	4.0	4.0	3.0	21.0	70.0	..
22	167495	32	89	89	1473	5.0	4.0	1.0	1.0	15.0	..
23	153079	30	89	89	2107	4.0	4.0	4.0	10.0	70.0	..
24	138956	33	89	89	1841	4.0	3.0	2.0	3.0	58.0	..
25	231747	19	88	95	2118	3.0	4.0	5.0	10.0	77.0	..
26	209331	26	88	89	2146	3.0	3.0	4.0	10.0	78.0	..
27	200145	26	88	90	2170	3.0	3.0	2.0	14.0	52.0	..
28	198710	26	88	89	2171	4.0	3.0	4.0	10.0	90.0	..
29	198219	27	88	88	2017	3.0	3.0	4.0	10.0	86.0	..
...
18177	238550	18	48	69	1178	1.0	3.0	2.0	32.0	32.0	..
18178	243158	18	48	65	738	1.0	2.0	1.0	30.0	10.0	..
18179	246243	17	48	64	1166	1.0	3.0	2.0	31.0	25.0	..

	ID	Age	Overall	Potential	Special	International Reputation	Weak Foot	Skill Moves	Jersey Number	Crossing	..
18180	221669	22	48	58	987	1.0	2.0	1.0	30.0	19.0	..
18181	245734	17	48	66	1296	1.0	2.0	2.0	32.0	45.0	..
18182	246001	18	48	65	1311	1.0	3.0	2.0	28.0	35.0	..
18183	53748	44	48	48	774	1.0	2.0	1.0	44.0	11.0	..
18184	241657	18	48	55	1368	1.0	3.0	2.0	33.0	33.0	..
18185	243961	19	48	59	1315	1.0	3.0	2.0	19.0	37.0	..
18186	240917	20	47	64	1389	1.0	3.0	2.0	26.0	35.0	..
18187	240158	19	47	59	1366	1.0	3.0	2.0	33.0	39.0	..
18188	240927	17	47	62	1297	1.0	3.0	2.0	38.0	41.0	..
18189	240160	18	47	61	1290	1.0	3.0	2.0	24.0	37.0	..
18190	245569	18	47	67	1285	1.0	3.0	2.0	32.0	32.0	..
18191	245570	18	47	65	1250	1.0	3.0	2.0	24.0	47.0	..
18192	245571	18	47	64	1325	1.0	3.0	2.0	31.0	39.0	..
18193	244823	18	47	64	1191	1.0	2.0	2.0	4.0	36.0	..
18194	245862	18	47	65	731	1.0	3.0	1.0	32.0	10.0	..
18195	243582	18	47	67	1325	1.0	3.0	2.0	23.0	35.0	..
18196	238477	19	47	61	1333	1.0	3.0	2.0	26.0	31.0	..
18197	246167	18	47	61	1362	1.0	3.0	2.0	14.0	44.0	..
18198	242844	18	47	70	792	1.0	2.0	1.0	22.0	14.0	..
18199	244677	18	47	69	1303	1.0	3.0	2.0	65.0	31.0	..
18200	231381	18	47	62	1203	1.0	2.0	2.0	21.0	28.0	..
18201	243413	18	47	68	1098	1.0	3.0	2.0	29.0	22.0	..
18202	238813	19	47	65	1307	1.0	2.0	2.0	22.0	34.0	..
18203	243165	19	47	63	1098	1.0	2.0	2.0	21.0	23.0	..
18204	241638	16	47	67	1189	1.0	3.0	2.0	33.0	25.0	..
18205	246268	17	47	66	1228	1.0	3.0	2.0	34.0	44.0	..
18206	246269	16	46	66	1321	1.0	3.0	2.0	33.0	41.0	..

18207 rows × 43 columns

Explanation:

the `.select_dtypes(exclude=[object])` command excludes all the columns which have data type object

31. Show the columns which consist of object type only

In [31]: `data.select_dtypes(include=[object])`

Out[31]:

	Name	Photo	Nationality	
0	L. Messi	https://cdn.sofifa.org/players/4/19/158023.png	Argentina	https://cdn.sofifa.org/flags/argentina_flag.png
1	Cristiano Ronaldo	https://cdn.sofifa.org/players/4/19/20801.png	Portugal	https://cdn.sofifa.org/flags/portugal_flag.png
2	Neymar Jr	https://cdn.sofifa.org/players/4/19/190871.png	Brazil	https://cdn.sofifa.org/flags/brazil_flag.png
3	De Gea	https://cdn.sofifa.org/players/4/19/193080.png	Spain	https://cdn.sofifa.org/flags/spain_flag.png
4	K. De Bruyne	https://cdn.sofifa.org/players/4/19/192985.png	Belgium	https://cdn.sofifa.org/flags/belgium_flag.png
5	E. Hazard	https://cdn.sofifa.org/players/4/19/183277.png	Belgium	https://cdn.sofifa.org/flags/belgium_flag.png
6	L. Modrić	https://cdn.sofifa.org/players/4/19/177003.png	Croatia	https://cdn.sofifa.org/flags/croatia_flag.png
7	L. Suárez	https://cdn.sofifa.org/players/4/19/176580.png	Uruguay	https://cdn.sofifa.org/flags/uruguay_flag.png
8	Sergio Ramos	https://cdn.sofifa.org/players/4/19/155862.png	Spain	https://cdn.sofifa.org/flags/spain_flag.png
9	J. Oblak	https://cdn.sofifa.org/players/4/19/200389.png	Slovenia	https://cdn.sofifa.org/flags/slovenia_flag.png
10	R. Lewandowski	https://cdn.sofifa.org/players/4/19/188545.png	Poland	https://cdn.sofifa.org/flags/poland_flag.png
11	T. Kroos	https://cdn.sofifa.org/players/4/19/182521.png	Germany	https://cdn.sofifa.org/flags/germany_flag.png
12	D. Godín	https://cdn.sofifa.org/players/4/19/182493.png	Uruguay	https://cdn.sofifa.org/flags/uruguay_flag.png
13	David Silva	https://cdn.sofifa.org/players/4/19/168542.png	Spain	https://cdn.sofifa.org/flags/spain_flag.png
14	N. Kanté	https://cdn.sofifa.org/players/4/19/215914.png	France	https://cdn.sofifa.org/flags/france_flag.png
15	P. Dybala	https://cdn.sofifa.org/players/4/19/211110.png	Argentina	https://cdn.sofifa.org/flags/argentina_flag.png
16	H. Kane	https://cdn.sofifa.org/players/4/19/202126.png	England	https://cdn.sofifa.org/flags/england_flag.png
17	A. Griezmann	https://cdn.sofifa.org/players/4/19/194765.png	France	https://cdn.sofifa.org/flags/france_flag.png
18	M. ter Stegen	https://cdn.sofifa.org/players/4/19/192448.png	Germany	https://cdn.sofifa.org/flags/germany_flag.png
19	T. Courtois	https://cdn.sofifa.org/players/4/19/192119.png	Belgium	https://cdn.sofifa.org/flags/belgium_flag.png
20	Sergio Busquets	https://cdn.sofifa.org/players/4/19/189511.png	Spain	https://cdn.sofifa.org/flags/spain_flag.png
21	E. Cavani	https://cdn.sofifa.org/players/4/19/179813.png	Uruguay	https://cdn.sofifa.org/flags/uruguay_flag.png

		Name	Photo	Nationality	
22	M. Neuer	https://cdn.sofifa.org/players/4/19/167495.png		Germany	https://cdn.sofifa.org/flags/DE_16x11px.png
23	S. Agüero	https://cdn.sofifa.org/players/4/19/153079.png		Argentina	https://cdn.sofifa.org/flags/AR_16x11px.png
24	G. Chiellini	https://cdn.sofifa.org/players/4/19/138956.png		Italy	https://cdn.sofifa.org/flags/IT_16x11px.png
25	K. Mbappé	https://cdn.sofifa.org/players/4/19/231747.png		France	https://cdn.sofifa.org/flags/FR_16x11px.png
26	M. Salah	https://cdn.sofifa.org/players/4/19/209331.png		Egypt	https://cdn.sofifa.org/flags/EG_16x11px.png
27	Casemiro	https://cdn.sofifa.org/players/4/19/200145.png		Brazil	https://cdn.sofifa.org/flags/BR_16x11px.png
28	J. Rodríguez	https://cdn.sofifa.org/players/4/19/198710.png		Colombia	https://cdn.sofifa.org/flags/CO_16x11px.png
29	L. Insigne	https://cdn.sofifa.org/players/4/19/198219.png		Italy	https://cdn.sofifa.org/flags/IT_16x11px.png
...
18177	R. Roache	https://cdn.sofifa.org/players/4/19/238550.png		Republic of Ireland	https://cdn.sofifa.org/flags/IE_16x11px.png
18178	L. Wahlstedt	https://cdn.sofifa.org/players/4/19/243158.png		Sweden	https://cdn.sofifa.org/flags/SW_16x11px.png
18179	J. Williams	https://cdn.sofifa.org/players/4/19/246243.png		England	https://cdn.sofifa.org/flags/EN_16x11px.png
18180	M. Hurst	https://cdn.sofifa.org/players/4/19/221669.png		Scotland	https://cdn.sofifa.org/flags/SC_16x11px.png
18181	C. Maher	https://cdn.sofifa.org/players/4/19/245734.png		Republic of Ireland	https://cdn.sofifa.org/flags/IE_16x11px.png
18182	Y. Gómez	https://cdn.sofifa.org/players/4/19/246001.png		Colombia	https://cdn.sofifa.org/flags/CO_16x11px.png
18183	K. Pilkington	https://cdn.sofifa.org/players/4/19/53748.png		England	https://cdn.sofifa.org/flags/EN_16x11px.png
18184	D. Horton	https://cdn.sofifa.org/players/4/19/241657.png		England	https://cdn.sofifa.org/flags/EN_16x11px.png
18185	E. Tweed	https://cdn.sofifa.org/players/4/19/243961.png		Republic of Ireland	https://cdn.sofifa.org/flags/IE_16x11px.png
18186	Zhang Yufeng	https://cdn.sofifa.org/players/4/19/240917.png		China PR	https://cdn.sofifa.org/flags/CN_16x11px.png
18187	C. Ehlich	https://cdn.sofifa.org/players/4/19/240158.png		Germany	https://cdn.sofifa.org/flags/DE_16x11px.png
18188	L. Collins	https://cdn.sofifa.org/players/4/19/240927.png		Wales	https://cdn.sofifa.org/flags/WL_16x11px.png
18189	A. Kaltner	https://cdn.sofifa.org/players/4/19/240160.png		Germany	https://cdn.sofifa.org/flags/DE_16x11px.png
18190	L. Watkins	https://cdn.sofifa.org/players/4/19/245569.png		England	https://cdn.sofifa.org/flags/EN_16x11px.png

		Name	Photo	Nationality
18191	J. Norville-Williams	https://cdn.sofifa.org/players/4/19/245570.png	England	https://cdn.sofifa.org/flags/GBR.png
18192	S. Squire	https://cdn.sofifa.org/players/4/19/245571.png	England	https://cdn.sofifa.org/flags/GBR.png
18193	N. Fuentes	https://cdn.sofifa.org/players/4/19/244823.png	Chile	https://cdn.sofifa.org/flags/CHL.png
18194	J. Milli	https://cdn.sofifa.org/players/4/19/245862.png	Italy	https://cdn.sofifa.org/flags/ITA.png
18195	S. Griffin	https://cdn.sofifa.org/players/4/19/243582.png	Republic of Ireland	https://cdn.sofifa.org/flags/IRL.png
18196	K. Fujikawa	https://cdn.sofifa.org/players/4/19/238477.png	Japan	https://cdn.sofifa.org/flags/JPN.png
18197	D. Holland	https://cdn.sofifa.org/players/4/19/246167.png	Republic of Ireland	https://cdn.sofifa.org/flags/IRL.png
18198	J. Livesey	https://cdn.sofifa.org/players/4/19/242844.png	England	https://cdn.sofifa.org/flags/GBR.png
18199	M. Baldisimo	https://cdn.sofifa.org/players/4/19/244677.png	Canada	https://cdn.sofifa.org/flags/CAN.png
18200	J. Young	https://cdn.sofifa.org/players/4/19/231381.png	Scotland	https://cdn.sofifa.org/flags/GBR.png
18201	D. Walsh	https://cdn.sofifa.org/players/4/19/243413.png	Republic of Ireland	https://cdn.sofifa.org/flags/IRL.png
18202	J. Lundstram	https://cdn.sofifa.org/players/4/19/238813.png	England	https://cdn.sofifa.org/flags/GBR.png
18203	N. Christoffersson	https://cdn.sofifa.org/players/4/19/243165.png	Sweden	https://cdn.sofifa.org/flags/SWE.png
18204	B. Worman	https://cdn.sofifa.org/players/4/19/241638.png	England	https://cdn.sofifa.org/flags/GBR.png
18205	D. Walker-Rice	https://cdn.sofifa.org/players/4/19/246268.png	England	https://cdn.sofifa.org/flags/GBR.png
18206	G. Nugent	https://cdn.sofifa.org/players/4/19/246269.png	England	https://cdn.sofifa.org/flags/GBR.png

18207 rows × 45 columns

Explanation:

.select_dtypes(include=[object]) command shows only those columns whose data type is object

32. Print all the names of the players.

In [32]: `np.unique(data['Name'])`Out[32]: `array(['A. Abang', 'A. Abdellaoui', 'A. Abdennour', ..., 'Óscar Plano', 'Óscar Valentín', 'Óscar Whalley'], dtype=object)`

Explanation:

Name of all the players are printed

33. Check every cell is Null or not.

In [33]: `data.isna()`

Out[33]:

	ID	Name	Age	Photo	Nationality	Flag	Overall	Potential	Club	Club Logo	...	Composu
0	False	False	False	False	False	False	False	False	False	False	...	Fal
1	False	False	False	False	False	False	False	False	False	False	...	Fal
2	False	False	False	False	False	False	False	False	False	False	...	Fal
3	False	False	False	False	False	False	False	False	False	False	...	Fal
4	False	False	False	False	False	False	False	False	False	False	...	Fal
5	False	False	False	False	False	False	False	False	False	False	...	Fal
6	False	False	False	False	False	False	False	False	False	False	...	Fal
7	False	False	False	False	False	False	False	False	False	False	...	Fal
8	False	False	False	False	False	False	False	False	False	False	...	Fal
9	False	False	False	False	False	False	False	False	False	False	...	Fal
10	False	False	False	False	False	False	False	False	False	False	...	Fal
11	False	False	False	False	False	False	False	False	False	False	...	Fal
12	False	False	False	False	False	False	False	False	False	False	...	Fal
13	False	False	False	False	False	False	False	False	False	False	...	Fal
14	False	False	False	False	False	False	False	False	False	False	...	Fal
15	False	False	False	False	False	False	False	False	False	False	...	Fal
16	False	False	False	False	False	False	False	False	False	False	...	Fal
17	False	False	False	False	False	False	False	False	False	False	...	Fal
18	False	False	False	False	False	False	False	False	False	False	...	Fal
19	False	False	False	False	False	False	False	False	False	False	...	Fal
20	False	False	False	False	False	False	False	False	False	False	...	Fal
21	False	False	False	False	False	False	False	False	False	False	...	Fal
22	False	False	False	False	False	False	False	False	False	False	...	Fal
23	False	False	False	False	False	False	False	False	False	False	...	Fal
24	False	False	False	False	False	False	False	False	False	False	...	Fal
25	False	False	False	False	False	False	False	False	False	False	...	Fal
26	False	False	False	False	False	False	False	False	False	False	...	Fal
27	False	False	False	False	False	False	False	False	False	False	...	Fal
28	False	False	False	False	False	False	False	False	False	False	...	Fal
29	False	False	False	False	False	False	False	False	False	False	...	Fal
...
18177	False	False	False	False	False	False	False	False	False	False	...	Fal
18178	False	False	False	False	False	False	False	False	False	False	...	Fal
18179	False	False	False	False	False	False	False	False	False	False	...	Fal

	ID	Name	Age	Photo	Nationality	Flag	Overall	Potential	Club	Club Logo	...	Composu	
18180	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18181	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18182	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18183	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18184	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18185	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18186	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18187	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18188	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18189	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18190	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18191	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18192	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18193	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18194	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18195	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18196	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18197	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18198	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18199	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18200	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18201	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18202	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18203	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18204	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18205	False	False	False	False	False	False	False	False	False	False	False	...	Fal
18206	False	False	False	False	False	False	False	False	False	False	False	...	Fal

18207 rows × 88 columns

Explanation:

the `.isna()` command checks whether every cell is null or not and returns true or false

34. Count the sum of all the columns.

In [34]: `data.isna().sum()`

Out[34]:

ID	0
Name	0
Age	0
Photo	0
Nationality	0
Flag	0
Overall	0
Potential	0
Club	241
Club Logo	0
Value	0
Wage	0
Special	0
Preferred Foot	48
International Reputation	48
Weak Foot	48
Skill Moves	48
Work Rate	48
Body Type	48
Real Face	48
Position	60
Jersey Number	60
Joined	1553
Loaned From	16943
Contract Valid Until	289
Height	48
Weight	48
LS	2085
ST	2085
RS	2085
	...
Dribbling	48
Curve	48
FKAccuracy	48
LongPassing	48
BallControl	48
Acceleration	48
SprintSpeed	48
Agility	48
Reactions	48
Balance	48
ShotPower	48
Jumping	48
Stamina	48
Strength	48
LongShots	48
Aggression	48
Interceptions	48
Positioning	48
Vision	48
Penalties	48
Composure	48
Marking	48
StandingTackle	48

```
SlidingTackle      48
GKDiving          48
GKHandling        48
GKKicking          48
GKPositioning     48
GKReflexes         48
Release Clause    1564
Length: 88, dtype: int64
```

Explanation:

the `.isna().sum()` command counts all the null values and returns the sum of all the null values columnwise

35. Create a copy of the above dataset.

In [35]: `copy=data.copy()`

Explanation:

the `.copy()` command makes a soft copy of the original dataset

36. Print the data set of the copied data set.

In [36]: copy

Out[36]:

	ID	Name	Age	Photo	Nationality	
0	158023	L. Messi	31	https://cdn.sofifa.org/players/4/19/158023.png	Argentina	https://cdn.sofifa.org/players/4/19/158023.png
1	20801	Cristiano Ronaldo	33	https://cdn.sofifa.org/players/4/19/20801.png	Portugal	https://cdn.sofifa.org/players/4/19/20801.png
2	190871	Neymar Jr	26	https://cdn.sofifa.org/players/4/19/190871.png	Brazil	https://cdn.sofifa.org/players/4/19/190871.png
3	193080	De Gea	27	https://cdn.sofifa.org/players/4/19/193080.png	Spain	https://cdn.sofifa.org/players/4/19/193080.png
4	192985	K. De Bruyne	27	https://cdn.sofifa.org/players/4/19/192985.png	Belgium	https://cdn.sofifa.org/players/4/19/192985.png
5	183277	E. Hazard	27	https://cdn.sofifa.org/players/4/19/183277.png	Belgium	https://cdn.sofifa.org/players/4/19/183277.png
6	177003	L. Modrić	32	https://cdn.sofifa.org/players/4/19/177003.png	Croatia	https://cdn.sofifa.org/players/4/19/177003.png
7	176580	L. Suárez	31	https://cdn.sofifa.org/players/4/19/176580.png	Uruguay	https://cdn.sofifa.org/players/4/19/176580.png
8	155862	Sergio Ramos	32	https://cdn.sofifa.org/players/4/19/155862.png	Spain	https://cdn.sofifa.org/players/4/19/155862.png
9	200389	J. Oblak	25	https://cdn.sofifa.org/players/4/19/200389.png	Slovenia	https://cdn.sofifa.org/players/4/19/200389.png
10	188545	R. Lewandowski	29	https://cdn.sofifa.org/players/4/19/188545.png	Poland	https://cdn.sofifa.org/players/4/19/188545.png
11	182521	T. Kroos	28	https://cdn.sofifa.org/players/4/19/182521.png	Germany	https://cdn.sofifa.org/players/4/19/182521.png
12	182493	D. Godín	32	https://cdn.sofifa.org/players/4/19/182493.png	Uruguay	https://cdn.sofifa.org/players/4/19/182493.png
13	168542	David Silva	32	https://cdn.sofifa.org/players/4/19/168542.png	Spain	https://cdn.sofifa.org/players/4/19/168542.png
14	215914	N. Kanté	27	https://cdn.sofifa.org/players/4/19/215914.png	France	https://cdn.sofifa.org/players/4/19/215914.png
15	211110	P. Dybala	24	https://cdn.sofifa.org/players/4/19/211110.png	Argentina	https://cdn.sofifa.org/players/4/19/211110.png
16	202126	H. Kane	24	https://cdn.sofifa.org/players/4/19/202126.png	England	https://cdn.sofifa.org/players/4/19/202126.png
17	194765	A. Griezmann	27	https://cdn.sofifa.org/players/4/19/194765.png	France	https://cdn.sofifa.org/players/4/19/194765.png
18	192448	M. ter Stegen	26	https://cdn.sofifa.org/players/4/19/192448.png	Germany	https://cdn.sofifa.org/players/4/19/192448.png
19	192119	T. Courtois	26	https://cdn.sofifa.org/players/4/19/192119.png	Belgium	https://cdn.sofifa.org/players/4/19/192119.png
20	189511	Sergio Busquets	29	https://cdn.sofifa.org/players/4/19/189511.png	Spain	https://cdn.sofifa.org/players/4/19/189511.png
21	179813	E. Cavani	31	https://cdn.sofifa.org/players/4/19/179813.png	Uruguay	https://cdn.sofifa.org/players/4/19/179813.png
22	167495	M. Neuer	32	https://cdn.sofifa.org/players/4/19/167495.png	Germany	https://cdn.sofifa.org/players/4/19/167495.png
23	153079	S. Agüero	30	https://cdn.sofifa.org/players/4/19/153079.png	Argentina	https://cdn.sofifa.org/players/4/19/153079.png

	ID	Name	Age		Photo	Nationality	
24	138956	G. Chiellini	33	https://cdn.sofifa.org/players/4/19/138956.png		Italy	https:/
25	231747	K. Mbappé	19	https://cdn.sofifa.org/players/4/19/231747.png		France	https:/
26	209331	M. Salah	26	https://cdn.sofifa.org/players/4/19/209331.png		Egypt	https:/
27	200145	Casemiro	26	https://cdn.sofifa.org/players/4/19/200145.png		Brazil	https:/
28	198710	J. Rodríguez	26	https://cdn.sofifa.org/players/4/19/198710.png		Colombia	https:/
29	198219	L. Insigne	27	https://cdn.sofifa.org/players/4/19/198219.png		Italy	https:/
...
18177	238550	R. Roache	18	https://cdn.sofifa.org/players/4/19/238550.png	Republic of Ireland	https:/	
18178	243158	L. Wahlstedt	18	https://cdn.sofifa.org/players/4/19/243158.png	Sweden	https:/	
18179	246243	J. Williams	17	https://cdn.sofifa.org/players/4/19/246243.png	England	https:/	
18180	221669	M. Hurst	22	https://cdn.sofifa.org/players/4/19/221669.png	Scotland	https:/	
18181	245734	C. Maher	17	https://cdn.sofifa.org/players/4/19/245734.png	Republic of Ireland	https:/	
18182	246001	Y. Góez	18	https://cdn.sofifa.org/players/4/19/246001.png	Colombia	https:/	
18183	53748	K. Pilkington	44	https://cdn.sofifa.org/players/4/19/53748.png	England	https:/	
18184	241657	D. Horton	18	https://cdn.sofifa.org/players/4/19/241657.png	England	https:/	
18185	243961	E. Tweed	19	https://cdn.sofifa.org/players/4/19/243961.png	Republic of Ireland	https:/	
18186	240917	Zhang Yufeng	20	https://cdn.sofifa.org/players/4/19/240917.png	China PR	https:/	
18187	240158	C. Ehlich	19	https://cdn.sofifa.org/players/4/19/240158.png	Germany	https:/	
18188	240927	L. Collins	17	https://cdn.sofifa.org/players/4/19/240927.png	Wales	https:/	
18189	240160	A. Kaltner	18	https://cdn.sofifa.org/players/4/19/240160.png	Germany	https:/	
18190	245569	L. Watkins	18	https://cdn.sofifa.org/players/4/19/245569.png	England	https:/	
18191	245570	J. Norville-Williams	18	https://cdn.sofifa.org/players/4/19/245570.png	England	https:/	
18192	245571	S. Squire	18	https://cdn.sofifa.org/players/4/19/245571.png	England	https:/	
18193	244823	N. Fuentes	18	https://cdn.sofifa.org/players/4/19/244823.png	Chile	https:/	
18194	245862	J. Milli	18	https://cdn.sofifa.org/players/4/19/245862.png	Italy	https:/	

ID		Name	Age		Photo	Nationality	
18195	243582	S. Griffin	18	https://cdn.sofifa.org/players/4/19/243582.png	Republic of Ireland	https://cdn.sofifa.org/players/4/19/243582.png	
18196	238477	K. Fujikawa	19	https://cdn.sofifa.org/players/4/19/238477.png	Japan	https://cdn.sofifa.org/players/4/19/238477.png	
18197	246167	D. Holland	18	https://cdn.sofifa.org/players/4/19/246167.png	Republic of Ireland	https://cdn.sofifa.org/players/4/19/246167.png	
18198	242844	J. Livesey	18	https://cdn.sofifa.org/players/4/19/242844.png	England	https://cdn.sofifa.org/players/4/19/242844.png	
18199	244677	M. Baldisimo	18	https://cdn.sofifa.org/players/4/19/244677.png	Canada	https://cdn.sofifa.org/players/4/19/244677.png	
18200	231381	J. Young	18	https://cdn.sofifa.org/players/4/19/231381.png	Scotland	https://cdn.sofifa.org/players/4/19/231381.png	
18201	243413	D. Walsh	18	https://cdn.sofifa.org/players/4/19/243413.png	Republic of Ireland	https://cdn.sofifa.org/players/4/19/243413.png	
18202	238813	J. Lundstram	19	https://cdn.sofifa.org/players/4/19/238813.png	England	https://cdn.sofifa.org/players/4/19/238813.png	
18203	243165	N. Christoffersson	19	https://cdn.sofifa.org/players/4/19/243165.png	Sweden	https://cdn.sofifa.org/players/4/19/243165.png	
18204	241638	B. Worman	16	https://cdn.sofifa.org/players/4/19/241638.png	England	https://cdn.sofifa.org/players/4/19/241638.png	
18205	246268	D. Walker-Rice	17	https://cdn.sofifa.org/players/4/19/246268.png	England	https://cdn.sofifa.org/players/4/19/246268.png	
18206	246269	G. Nugent	16	https://cdn.sofifa.org/players/4/19/246269.png	England	https://cdn.sofifa.org/players/4/19/246269.png	

18207 rows × 88 columns

Explanation:

the variable name itself prints the data set

37. Create a two way table of Preferred Foot and International Goals dropping the nan values.

In [37]: `pd.crosstab(index=data['Preferred Foot'],columns=data['International Reputation'])`

Out[37]:

International Reputation	1.0	2.0	3.0	4.0	5.0
Preferred Foot					
Left	3839	290	66	15	1
Right	12693	971	243	36	5

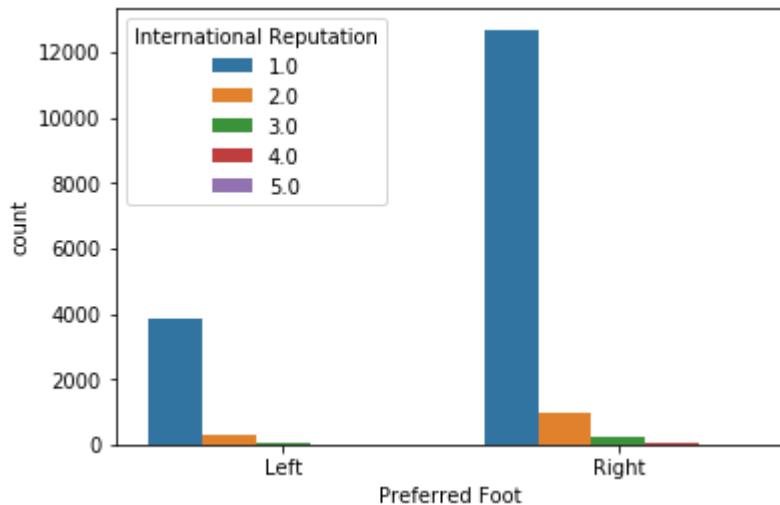
Explanation:this `pd.crosstab(index,columns,dropna)` command gives a two way table in the index and column form

38. Create a bar plot of Preferred Foot and International Goals using seaborn module dropping

the nan values.

```
In [38]: sns.countplot(x='Preferred Foot', data=copy, hue='International Reputation')
```

```
Out[38]: <matplotlib.axes._subplots.AxesSubplot at 0x14739f005c0>
```



Explanation:

the .countplot(x,data,y) command shows a countplot of the x over y from the referred data data set

39. Filling up all the nan values with mode if they are float type or with highest occurrence if object

```
In [39]: copy = copy.apply(lambda x:x.fillna(x.mode().index[0]) if x.dtype=='float' else :
```

Explanation:

the .apply(lambda x:x.fillna(value_to_be_filled_with)) command applies to the nan value data sets where the nan values are replaced by mode value if the data type is float or by the highest value present in that column if type is object

40. Checking after filling up whether there exist any null values or not

In [40]: `copy.isna().sum()`

Out[40]:

ID	0
Name	0
Age	0
Photo	0
Nationality	0
Flag	0
Overall	0
Potential	0
Club	0
Club Logo	0
Value	0
Wage	0
Special	0
Preferred Foot	0
International Reputation	0
Weak Foot	0
Skill Moves	0
Work Rate	0
Body Type	0
Real Face	0
Position	0
Jersey Number	0
Joined	0
Loaned From	0
Contract Valid Until	0
Height	0
Weight	0
LS	0
ST	0
RS	0
..	
Dribbling	0
Curve	0
FKAccuracy	0
LongPassing	0
BallControl	0
Acceleration	0
SprintSpeed	0
Agility	0
Reactions	0
Balance	0
ShotPower	0
Jumping	0
Stamina	0
Strength	0
LongShots	0
Aggression	0
Interceptions	0
Positioning	0
Vision	0
Penalties	0
Composure	0
Marking	0
StandingTackle	0
SlidingTackle	0

```
GKDiving          0  
GKHandling        0  
GKKicking          0  
GKPositioning      0  
GKReflexes         0  
Release Clause     0  
Length: 88, dtype: int64
```

Explanation:

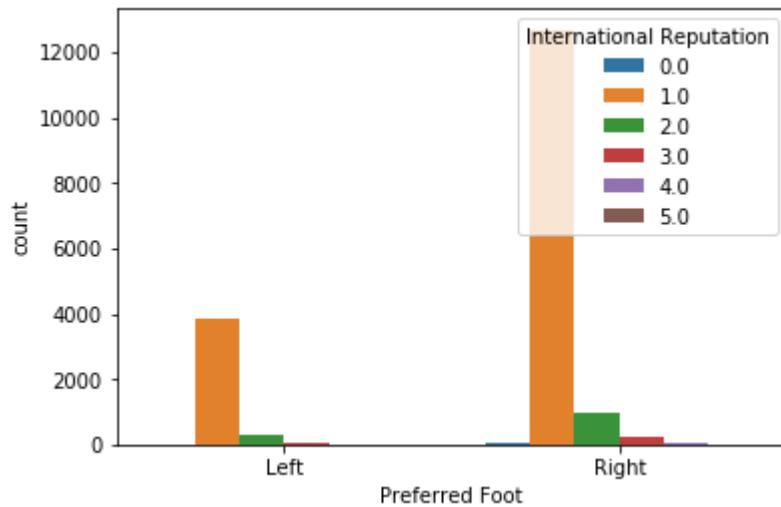
the `.isna().sum()` has been discussed earlier.

Here all the columns shows 0 means no nan values exist in the data set

41. Create a bar plot of Preferred Foot and International Goals using seaborn module after all the nan values are filled.

```
In [41]: sns.countplot(x='Preferred Foot', data=copy, hue='International Reputation')
```

```
Out[41]: <matplotlib.axes._subplots.AxesSubplot at 0x1473abc19b0>
```

**Explanation:**

Has been discussed earlier

42. Show the correlation matrix

In [42]: `copy.corr()`

Out[42]:

	ID	Age	Overall	Potential	Special	International Reputation	Weak Foot	
ID	1.000000	-0.739208	-0.417025	0.047074	-0.231352	-0.353821	-0.076499	-0
Age	-0.739208	1.000000	0.452350	-0.253312	0.236695	0.251032	0.058586	0
Overall	-0.417025	0.452350	1.000000	0.660939	0.606960	0.498599	0.213602	0
Potential	0.047074	-0.253312	0.660939	1.000000	0.383727	0.373899	0.166355	0
Special	-0.231352	0.236695	0.606960	0.383727	1.000000	0.290056	0.334616	0
International Reputation	-0.353821	0.251032	0.498599	0.373899	0.290056	1.000000	0.155844	0
Weak Foot	-0.076499	0.058586	0.213602	0.166355	0.334616	0.155844	1.000000	0
Skill Moves	-0.058055	0.027481	0.414026	0.355177	0.754615	0.226127	0.363285	1
Jersey Number	0.180602	-0.240440	-0.215479	-0.007087	-0.132449	-0.067067	-0.020666	-0
Crossing	-0.132253	0.129333	0.395358	0.248730	0.858820	0.207748	0.328047	0
Finishing	-0.083087	0.068252	0.333742	0.245686	0.719681	0.192347	0.372478	0
HeadingAccuracy	-0.107292	0.145490	0.341429	0.204026	0.637693	0.175946	0.210619	0
ShortPassing	-0.135785	0.130303	0.498401	0.368597	0.889332	0.264223	0.352452	0
Volleyes	-0.160000	0.141379	0.392044	0.257166	0.768637	0.256466	0.373241	0
Dribbling	-0.031776	0.010242	0.372793	0.316575	0.865290	0.196561	0.373135	0
Curve	-0.169446	0.142057	0.419812	0.281982	0.845227	0.248022	0.363016	0
FKAccuracy	-0.199266	0.191892	0.397528	0.233042	0.800689	0.237451	0.347504	0
LongPassing	-0.185812	0.178570	0.481785	0.322534	0.834320	0.258397	0.304894	0
BallControl	-0.100638	0.083770	0.458299	0.354863	0.898653	0.237670	0.381393	0
Acceleration	0.127264	-0.154412	0.198927	0.236773	0.640011	0.073962	0.297218	0
SprintSpeed	0.126306	-0.147450	0.212304	0.238815	0.631246	0.074295	0.285940	0
Agility	-0.022029	-0.018627	0.265392	0.224803	0.684450	0.128432	0.335665	0
Reactions	-0.388967	0.427307	0.811810	0.495896	0.565281	0.463643	0.259329	0
Balance	0.044394	-0.087136	0.107572	0.142705	0.572906	0.080762	0.291728	0
ShotPower	-0.165697	0.154884	0.440144	0.290101	0.824948	0.245798	0.356512	0
Jumping	-0.166093	0.170647	0.262914	0.115058	0.311434	0.154224	0.126195	0
Stamina	-0.055177	0.095971	0.364395	0.205638	0.777834	0.120628	0.266347	0
Strength	-0.253796	0.321495	0.345469	0.082754	0.188129	0.162564	0.049653	0
LongShots	-0.161612	0.153873	0.421238	0.268894	0.834081	0.227983	0.372102	0
Aggression	-0.226987	0.261554	0.395130	0.174715	0.658222	0.192634	0.162885	0
Interceptions	-0.160742	0.196452	0.322663	0.157938	0.558545	0.143913	0.077116	0
Positioning	-0.089056	0.081819	0.357389	0.248002	0.817910	0.198262	0.364341	0
Vision	-0.213299	0.184036	0.495537	0.348347	0.749117	0.303824	0.365842	0

	ID	Age	Overall	Potential	Special	International Reputation	Weak Foot	
Penalties	-0.140657	0.137857	0.341984	0.227017	0.726279	0.236187	0.352944	0
Composure	-0.374447	0.378028	0.711350	0.434343	0.729016	0.412461	0.319043	0
Marking	-0.110728	0.141761	0.288075	0.165874	0.558374	0.130557	0.090585	0
StandingTackle	-0.086649	0.118997	0.254448	0.146630	0.535982	0.107429	0.066396	0
SlidingTackle	-0.069247	0.102495	0.224815	0.132096	0.504501	0.093601	0.049742	0
GKDiving	-0.105930	0.101104	-0.024374	-0.051490	-0.673324	0.011388	-0.215029	-0
GKHandling	-0.111482	0.106229	-0.023450	-0.052650	-0.672251	0.011035	-0.215824	-0
GKKicking	-0.107001	0.104774	-0.027729	-0.056998	-0.668857	0.007885	-0.212050	-0
GKPositioning	-0.118564	0.116189	-0.016088	-0.050588	-0.666922	0.013907	-0.214161	-0
GKReflexes	-0.106111	0.103137	-0.021732	-0.051402	-0.671943	0.010257	-0.215779	-0

43 rows × 43 columns

Explanation:
the .corr() command shows a correlational matrix of the referred data set

43. Show the description of the data set.

In [43]: `copy.describe()`

Out[43]:

	ID	Age	Overall	Potential	Special	International Reputation	W
count	18207.000000	18207.000000	18207.000000	18207.000000	18207.000000	18207.000000	1820
mean	214298.338606	25.122206	66.238699	71.307299	1597.809908	1.110287	
std	29965.244204	4.669943	6.908930	6.136496	272.586016	0.397630	
min	16.000000	16.000000	46.000000	48.000000	731.000000	0.000000	
25%	200315.500000	21.000000	62.000000	67.000000	1457.000000	1.000000	
50%	221759.000000	25.000000	66.000000	71.000000	1635.000000	1.000000	
75%	236529.500000	28.000000	71.000000	75.000000	1787.000000	1.000000	
max	246620.000000	45.000000	94.000000	95.000000	2346.000000	5.000000	

8 rows × 43 columns

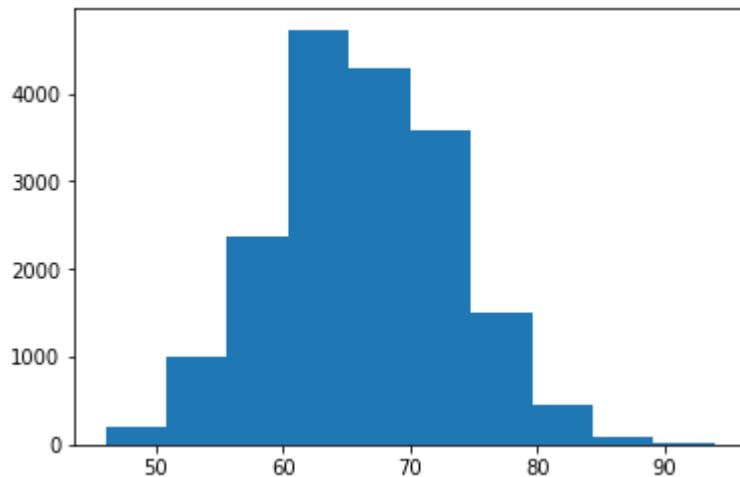
Explanation:

.describe() command describes the data set, it gives count, mean, standard deviation, minimum, 25% of sum, 50% of sum, 75% of sum, maximum from all the columns of the dataset

44. Show the histogram of Overall Rating with Matplotlib.

```
In [44]: plt.hist(copy['Overall'])
```

```
Out[44]: (array([ 192.,  998., 2363., 4727., 4289., 3570., 1513.,  445.,   96.,
       14.]),
 array([46. , 50.8, 55.6, 60.4, 65.2, 70. , 74.8, 79.6, 84.4, 89.2, 94. ]),
 <a list of 10 Patch objects>)
```



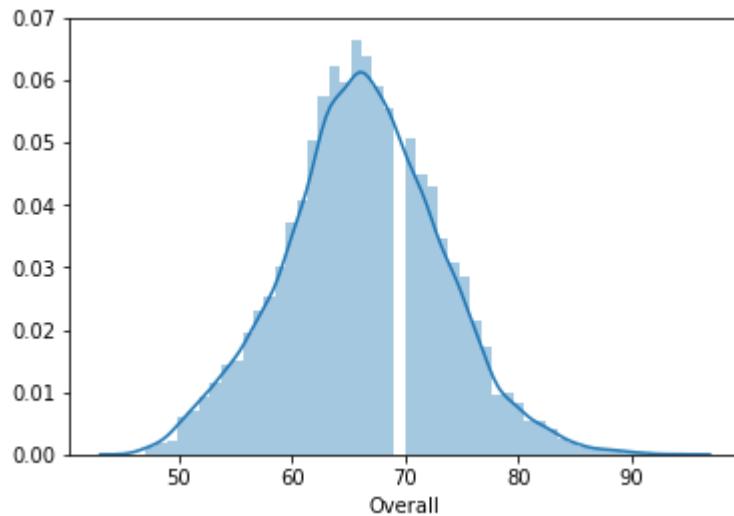
Explanation:

the .hist() command gives a histogram or bar plot of the Overall column from the data set

45. Show the histogram of Overall Rating with the kernel density estimate.

```
In [45]: sns.distplot(copy['Overall'])
```

```
Out[45]: <matplotlib.axes._subplots.AxesSubplot at 0x1473f864c50>
```



Explanation:

.distplot() shows the histplot with a kde in it

46. Show the mean, median, mode of the dataset

In [46]: `copy.mean()`

Out[46]:

ID	214298.338606
Age	25.122206
Overall	66.238699
Potential	71.307299
Special	1597.809908
International Reputation	1.110287
Weak Foot	2.939529
Skill Moves	2.355083
Jersey Number	19.481683
Crossing	49.603065
Finishing	45.430823
HeadingAccuracy	52.160268
ShortPassing	58.531993
Volleys	42.795903
Dribbling	55.225023
Curve	47.046466
FKAccuracy	42.750151
LongPassing	52.572966
BallControl	58.215576
Acceleration	64.443730
SprintSpeed	64.556324
Agility	63.336189
Reactions	61.673587
Balance	63.797935
ShotPower	55.313835
Jumping	64.917834
Stamina	63.053276
Strength	65.139781
LongShots	46.985775
Aggression	55.721700
Interceptions	46.575163
Positioning	49.826770
Vision	53.260120
Penalties	48.420607
Composure	58.493656
Marking	47.156973
StandingTackle	47.572088
SlidingTackle	45.541056
GKDiving	16.572417
GKHandling	16.348382
GKKicking	16.189268
GKPositioning	16.345691
GKReflexes	16.666831

dtype: float64

```
In [47]: copy.median()
```

```
Out[47]: ID                221759.0
Age               25.0
Overall            66.0
Potential          71.0
Special             1635.0
International Reputation   1.0
Weak Foot           3.0
Skill Moves          2.0
Jersey Number        17.0
Crossing             54.0
Finishing             49.0
HeadingAccuracy      56.0
ShortPassing         62.0
Volleys              44.0
Dribbling             61.0
Curve                 48.0
FKAccuracy            41.0
LongPassing           56.0
BallControl            63.0
Acceleration          67.0
SprintSpeed            67.0
Agility                66.0
Reactions              62.0
Balance                66.0
ShotPower              59.0
Jumping                 66.0
Stamina                 66.0
Strength                66.0
LongShots              51.0
Aggression              59.0
Interceptions           52.0
Positioning              55.0
Vision                  55.0
Penalties                49.0
Composure                59.0
Marking                  53.0
StandingTackle           55.0
SlidingTackle            52.0
GKDiving                 11.0
GKHandling                 11.0
GKKicking                 11.0
GKPositioning              11.0
GKReflexes                 11.0
dtype: float64
```

In [48]: `copy.mode()`

Out[48]:

	ID	Name	Age		Photo	Nationality	
0	16	J. Rodríguez	21.0	https://cdn.sofifa.org/players/4/19/100803.png	England	https://cdn.sofifa.org/players/4/19/100803.png	England
1	41	NaN	NaN	https://cdn.sofifa.org/players/4/19/100899.png	NaN	NaN	NaN
2	80	NaN	NaN	https://cdn.sofifa.org/players/4/19/101317.png	NaN	NaN	NaN
3	164	NaN	NaN	https://cdn.sofifa.org/players/4/19/101473.png	NaN	NaN	NaN
4	657	NaN	NaN	https://cdn.sofifa.org/players/4/19/101488.png	NaN	NaN	NaN
5	768	NaN	NaN	https://cdn.sofifa.org/players/4/19/101880.png	NaN	NaN	NaN
6	1179	NaN	NaN	https://cdn.sofifa.org/players/4/19/102056.png	NaN	NaN	NaN
7	2147	NaN	NaN	https://cdn.sofifa.org/players/4/19/102064.png	NaN	NaN	NaN
8	2335	NaN	NaN	https://cdn.sofifa.org/players/4/19/102084.png	NaN	NaN	NaN
9	2702	NaN	NaN	https://cdn.sofifa.org/players/4/19/102593.png	NaN	NaN	NaN
10	3281	NaN	NaN	https://cdn.sofifa.org/players/4/19/102881.png	NaN	NaN	NaN
11	3484	NaN	NaN	https://cdn.sofifa.org/players/4/19/104389.png	NaN	NaN	NaN
12	3665	NaN	NaN	https://cdn.sofifa.org/players/4/19/104442.png	NaN	NaN	NaN
13	5479	NaN	NaN	https://cdn.sofifa.org/players/4/19/104476.png	NaN	NaN	NaN
14	6826	NaN	NaN	https://cdn.sofifa.org/players/4/19/10466.png	NaN	NaN	NaN
15	7647	NaN	NaN	https://cdn.sofifa.org/players/4/19/104702.png	NaN	NaN	NaN
16	8205	NaN	NaN	https://cdn.sofifa.org/players/4/19/104737.png	NaN	NaN	NaN
17	9014	NaN	NaN	https://cdn.sofifa.org/players/4/19/104900.png	NaN	NaN	NaN
18	9833	NaN	NaN	https://cdn.sofifa.org/players/4/19/105308.png	NaN	NaN	NaN
19	10466	NaN	NaN	https://cdn.sofifa.org/players/4/19/105318.png	NaN	NaN	NaN
20	10884	NaN	NaN	https://cdn.sofifa.org/players/4/19/105533.png	NaN	NaN	NaN
21	10899	NaN	NaN	https://cdn.sofifa.org/players/4/19/105827.png	NaN	NaN	NaN
22	11381	NaN	NaN	https://cdn.sofifa.org/players/4/19/105846.png	NaN	NaN	NaN
23	11430	NaN	NaN	https://cdn.sofifa.org/players/4/19/105866.png	NaN	NaN	NaN
24	11800	NaN	NaN	https://cdn.sofifa.org/players/4/19/106231.png	NaN	NaN	NaN
25	11811	NaN	NaN	https://cdn.sofifa.org/players/4/19/106795.png	NaN	NaN	NaN
26	12940	NaN	NaN	https://cdn.sofifa.org/players/4/19/107084.png	NaN	NaN	NaN
27	13883	NaN	NaN	https://cdn.sofifa.org/players/4/19/107298.png	NaN	NaN	NaN
28	14907	NaN	NaN	https://cdn.sofifa.org/players/4/19/107305.png	NaN	NaN	NaN
29	16097	NaN	NaN	https://cdn.sofifa.org/players/4/19/108061.png	NaN	NaN	NaN
...
18177	246452	NaN	NaN	https://cdn.sofifa.org/players/4/19/53593.png	NaN	NaN	NaN
18178	246454	NaN	NaN	https://cdn.sofifa.org/players/4/19/53630.png	NaN	NaN	NaN

	ID	Name	Age		Photo	Nationality
18179	246455	NaN	NaN	https://cdn.sofifa.org/players/4/19/53655.png	NaN	
18180	246456	NaN	NaN	https://cdn.sofifa.org/players/4/19/53736.png	NaN	
18181	246457	NaN	NaN	https://cdn.sofifa.org/players/4/19/53739.png	NaN	
18182	246462	NaN	NaN	https://cdn.sofifa.org/players/4/19/53741.png	NaN	
18183	246464	NaN	NaN	https://cdn.sofifa.org/players/4/19/53748.png	NaN	
18184	246465	NaN	NaN	https://cdn.sofifa.org/players/4/19/53756.png	NaN	
18185	246466	NaN	NaN	https://cdn.sofifa.org/players/4/19/53778.png	NaN	
18186	246469	NaN	NaN	https://cdn.sofifa.org/players/4/19/53818.png	NaN	
18187	246548	NaN	NaN	https://cdn.sofifa.org/players/4/19/53827.png	NaN	
18188	246549	NaN	NaN	https://cdn.sofifa.org/players/4/19/53842.png	NaN	
18189	246550	NaN	NaN	https://cdn.sofifa.org/players/4/19/53855.png	NaN	
18190	246552	NaN	NaN	https://cdn.sofifa.org/players/4/19/53914.png	NaN	
18191	246565	NaN	NaN	https://cdn.sofifa.org/players/4/19/53960.png	NaN	
18192	246592	NaN	NaN	https://cdn.sofifa.org/players/4/19/54008.png	NaN	
18193	246593	NaN	NaN	https://cdn.sofifa.org/players/4/19/54013.png	NaN	
18194	246594	NaN	NaN	https://cdn.sofifa.org/players/4/19/54033.png	NaN	
18195	246599	NaN	NaN	https://cdn.sofifa.org/players/4/19/54037.png	NaN	
18196	246600	NaN	NaN	https://cdn.sofifa.org/players/4/19/54050.png	NaN	
18197	246601	NaN	NaN	https://cdn.sofifa.org/players/4/19/54051.png	NaN	
18198	246602	NaN	NaN	https://cdn.sofifa.org/players/4/19/5479.png	NaN	
18199	246603	NaN	NaN	https://cdn.sofifa.org/players/4/19/657.png	NaN	
18200	246606	NaN	NaN	https://cdn.sofifa.org/players/4/19/6826.png	NaN	
18201	246608	NaN	NaN	https://cdn.sofifa.org/players/4/19/7647.png	NaN	
18202	246609	NaN	NaN	https://cdn.sofifa.org/players/4/19/768.png	NaN	
18203	246613	NaN	NaN	https://cdn.sofifa.org/players/4/19/80.png	NaN	
18204	246616	NaN	NaN	https://cdn.sofifa.org/players/4/19/8205.png	NaN	
18205	246617	NaN	NaN	https://cdn.sofifa.org/players/4/19/9014.png	NaN	
18206	246620	NaN	NaN	https://cdn.sofifa.org/players/4/19/9833.png	NaN	

18207 rows × 88 columns

Explanation:

the `.mean()` command gives the mean of every column in the dataset
 the `.median()` command gives the median of every column in the dataset
 the `.mode()` command gives the mode of every column in the dataset

47. Show the value which has the highest counts in the column Nationality

In [49]: `copy['Nationality'].mode()`

Out[49]: 0 England
dtype: object

Explanation:

the maximum amount of player in the dat set are from the England

48. Show the Joint Probability between Preferred Foot and Nationality

In [50]: `pd.crosstab(index=copy['Preferred Foot'], columns=copy['Nationality'], normalize=True)`

Out[50]:

Nationality	Afghanistan	Albania	Algeria	Andorra	Angola	Antigua & Barbuda	Argentina	Armenia	Au
Preferred Foot	Left	Right	Left	Right	Left	Right	Left	Right	Left
	0.000055	0.000494	0.001098	0.000000	0.000165	0.000000	0.011754	0.000110	0.000000
	0.000165	0.001703	0.002197	0.000055	0.000659	0.00022	0.039710	0.000439	0.000000

2 rows × 164 columns

Explanation:

this shows the joint probability between Preferred Foot and Nationality

49. Show the Marginal Probability between Preferred Foot and Nationality

In [51]: `pd.crosstab(index=copy['Preferred Foot'], columns=copy['Nationality'], normalize=True)`

Out[51]:

Nationality	Afghanistan	Albania	Algeria	Andorra	Angola	Antigua & Barbuda	Argentina	Armenia	Au
Preferred Foot	Left	Right	All	Left	Right	All	Left	Right	All
	0.000055	0.000494	0.001098	0.000000	0.000165	0.000000	0.011754	0.000110	0.000000
	0.000165	0.001703	0.002197	0.000055	0.000659	0.00022	0.039710	0.000439	0.000000
	0.000220	0.002197	0.003295	0.000055	0.000824	0.00022	0.051464	0.000549	0.000000

3 rows × 165 columns

Explanation:

this shows the marginal probability between Preferred Foot and Nationality

50. Scatter Plot between Preferred Foot and Overall Ratings

```
In [52]: plt.scatter(copy['Preferred Foot'],copy['Overall'],c='red')
```

```
Out[52]: <matplotlib.collections.PathCollection at 0x1473e9eacc0>
```



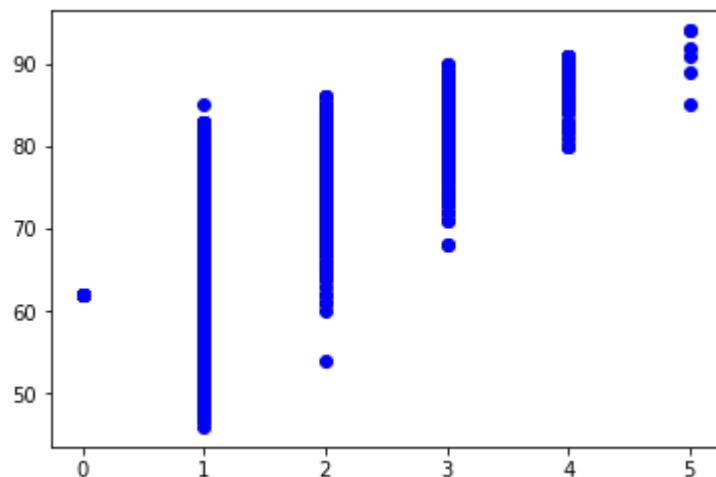
Explanation:

.scatter() Shows the scatter plot between Preferred Foot and Overall

51. Scatter Plot between International Goals and Overall Ratings

```
In [53]: plt.scatter(copy['International Reputation'],copy['Overall'],c='blue')
```

```
Out[53]: <matplotlib.collections.PathCollection at 0x1474161a470>
```

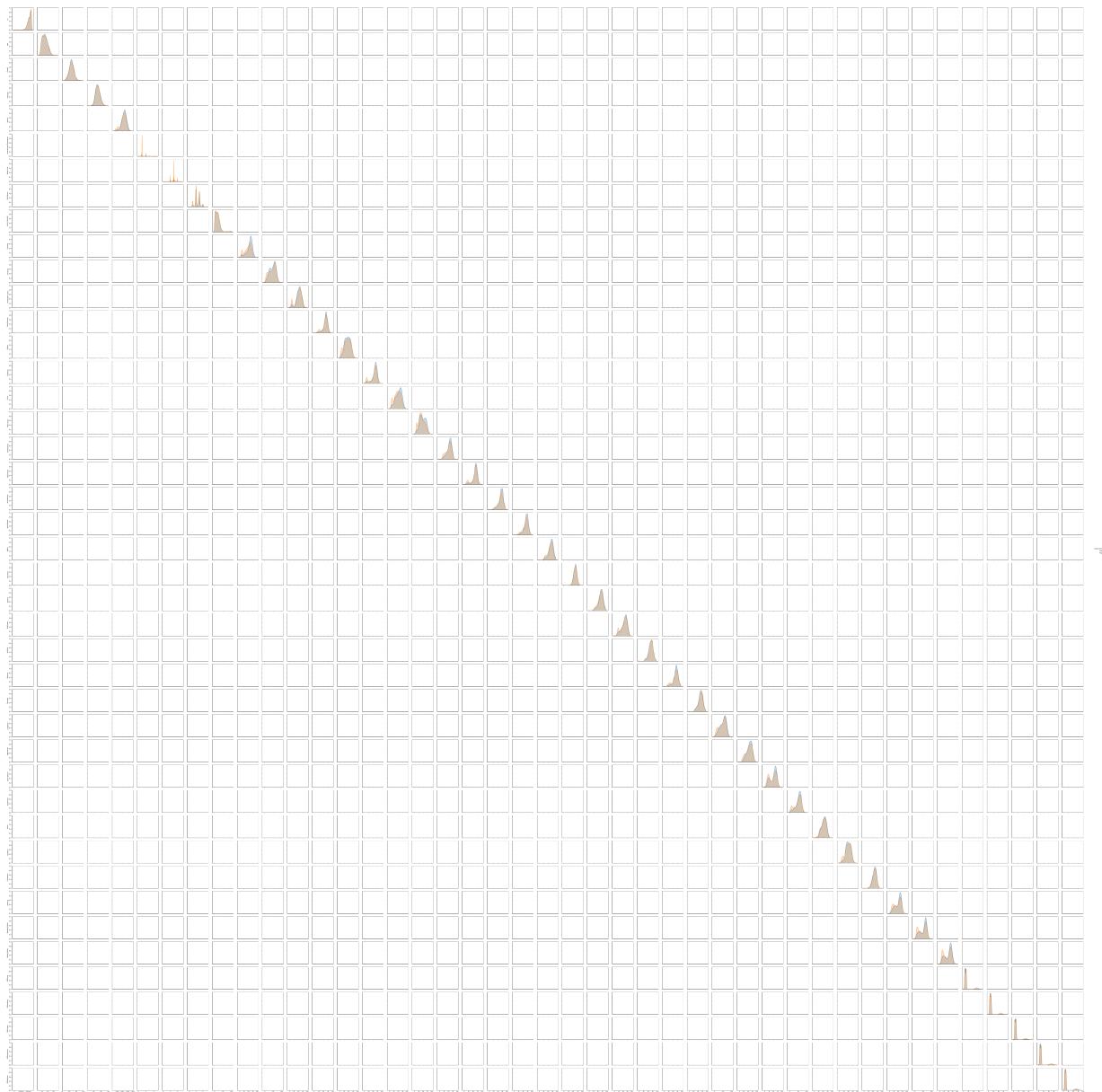


Explanation:

scatter plot between International Goals and Overall Ratings

52. Show the Graphical Relation Between all the columns

```
In [54]: sns.pairplot(copy,kind='Scatter',hue='Preferred Foot')
plt.show()
```



Explanation:

.pairplot() shows the graphical relation between al the columns

```
In [ ]:
```