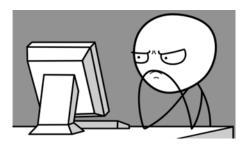
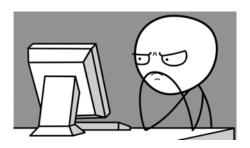
12_Ejercicios_Series

November 28, 2023





0.1 EJERCICIOS: Exploración

Para ejercitarte y afianzar lo aprendido sobre Exploración de DataFrames, completa los siguiente ejercicios. Recuerda que puedes necesitar de algunos datos que están en el directorio data que acompaña al notebook (búscalo en el repositorio de ejercicios)

La solución a los mismos se publicarán en el repo de ejercicios a lo largo del curso.

0.1.1 Ejercicio 0:

Importa pandas "como debe ser" y cualquier otra librería que emplees en el notebook (también "como debe ser" si es necesario)

```
[103]: import numpy as np import pandas as pd
```

Ahora ejecuta la celda para crear un DataFrame con los datos de la Eurocopa de 2012

 ${\bf 0.1.2}~{\bf Ejercicio}~{\bf 1}$ Muestra las primeras 7 filas de df_euro
12. Luego las 12 últimas.

d:	f_euro12.hea	d(7)											
	_euroiz.nea	u(1)											
		Team	Goals	Shots	on ta	rget S	hots	off	target	Shootin	ng Ac	curac	у
0		atia	4			13			12			51.9	%
1	Czech Repu	blic	4			13			18			41.9	%
2	Den	mark	4			10			10			50.0	%
3	Eng	land	5			11			18			50.0	%
4	Fr	ance	3			22			24			37.9	%
5	Ger	many	10			32			32			47.8	3%
6	Gr	eece	5			8			18			30.7	%
	% Goals-to-	shots	Total	shots	(inc.	Blocke	d) H	Hit W	loodwork	r Penal	lty g	oals	,
0		16.0%					32		()		0	
1		12.9%					39		()		0	
2		20.0%					27		1	L		0	
3		17.2%					40		()		0	
4		6.5%					65		1	L		0	
5		15.6%					80		2	2		1	
6		19.2%					32		1	L		1	
	Penalties	not so	ored H	eaded	goals	Passe	s Pa	asses	comple	eted \			
0			0		2	107	6			828			
1			0		0	156	5		1	1223			
			0 0		0 3					1223 1082			
1						129	8		1				
1 2			0		3	129 148	8 8		1 1	1082			
1 2 3			0		3 3	129 148 206	8 8 6		1 1 1	1082 1200			
1 2 3 4			0 0 0		3 3 0	129 148 206	8 8 6 4		1 1 1	1082 1200 1803			
1 2 3 4 5	Passing Acc	uracy	0 0 0 0 1	s Cro	3 3 0 2 0	129 148 206 277 118	8 8 6 4 7	Corne	1 1 1	1082 1200 1803 2427 911	αles	\	
1 2 3 4 5	_	uracy 76.9%	0 0 0 0 1		3 3 0 2 0	129 148 206 277 118 Dribbl	8 8 6 4 7	Corne	1 1 2 ers Take	1082 1200 1803 2427 911	∝les 49	\	
1 2 3 4 5 6		•	0 0 0 0 1 Touche	6	3 3 0 2 0	129 148 206 277 118 Dribbl	8 8 6 4 7	Corne	1 1 2 ers Take	.082 .200 .803 .2427 911 en Tack		\	
1 2 3 4 5 6	-	76.9%	0 0 0 0 1 Touche	6 8	3 3 0 2 0 osses 60	129 148 206 277 118 Dribbl	8 8 6 4 7 es (Corne	1 1 2 ers Take 1	.082 .200 .803 .427 911 en Tack	49	\	
1 2 3 4 5 6		76.9% 78.1%	0 0 0 0 1 Touche 170 235	6 8 3	3 0 2 0 osses 60 46	129 148 206 277 118 Dribbl	8 8 6 4 7 es 0 42	Corne	1 1 2 ers Take 1 2	.082 .200 .803 .427 .911 .en Tack	49 62	\	
1 2 3 4 5 6	-	76.9% 78.1% 83.3%	0 0 0 0 1 Touche 170 235 187	6 8 3 0	3 0 2 0 0 0 0 0 46 43	129 148 206 277 118 Dribbl	8 8 6 4 7 es C 42 68 32	Corne	1 1 2 ers Take 1 2	.082 .200 .803 .2427 911 en Tack .4	49 62 40	\	
1 2 3 4 5 6		76.9% 78.1% 83.3% 80.6%	0 0 0 0 1 Touche 170 235 187 244	6 8 3 0 9	3 3 0 2 0 0 0 0 0 46 43 58	129 148 206 277 118 Dribbl	8 8 6 4 7 es 0 42 68 32 60	Corne	1 1 2 ers Take 1 2 1	.082 .200 .803 .2427 911 en Tack .4 .21	49 62 40 86	\	
1 2 3 4 5 6 0 1 2 3 4		76.9% 78.1% 83.3% 80.6% 87.2%	0 0 0 0 1 Touche 170 235 187 244 290	6 8 3 0 9	3 3 0 2 0 0 0 0 0 58 60 46 43 58 55	129 148 206 277 118 Dribbl	8 8 6 4 7 es C 42 68 32 60 76	Corne	1 1 2 ers Take 1 1 1 2 3	.082 .200 .803 .427 .911 .en Tack .4 .21 .6 .6	49 62 40 86 71	\	
1 2 3 4 5 6 0 1 2 3 4 5		76.9% 78.1% 83.3% 80.6% 87.2% 87.4% 76.7%	0 0 0 1 Touche 170 235 187 244 290 376	6 8 3 0 9 1 6	3 3 0 2 0 0 0 0 0 0 5 8 46 43 58 55 101 52	129 148 206 277 118 Dribbl	8 8 6 4 7 es 0 42 68 32 60 76 60 53		1 1 2 ers Take 1 1 1 2 3	.082 .200 .803 .2427 .911 .en Tack .4 .16 .6 .88 .85	49 62 40 86 71 91	\	
1 2 3 4 5 6 0 1 2 3 4 5		76.9% 78.1% 83.3% 80.6% 87.2% 87.4% 76.7%	0 0 0 1 Touche 170 235 187 244 290 376 201	6 8 3 0 9 1 6	3 3 0 2 0 0 0 0 0 0 5 8 46 43 58 55 101 52	129 148 206 277 118 Dribbl	8 8 6 4 7 es 0 42 68 32 60 76 60 53	e Cl	1 1 2 ers Take 1 2 1 1 3	.082 .200 .803 .2427 .911 .en Tack .4 .16 .6 .88 .85	49 62 40 86 71 91 65		
1 2 3 4 5 6 0 1 2 3 4 5 6	Clearances	76.9% 78.1% 83.3% 80.6% 87.2% 87.4% 76.7%	0 0 0 1 Touche 170 235 187 244 290 376 201	6 8 3 0 9 1 6	3 3 0 2 0 0 0 0 0 0 5 8 46 43 58 55 101 52	129 148 206 277 118 Dribbl	8 8 6 4 7 es C 42 68 32 60 76 60 53	∍ Cl	1 1 2 ers Take 1 2 1 1 3	2000 2000 2427 911 en Tack 24 21 26 28 35 20	49 62 40 86 71 91 65		
1 2 3 4 5 6 0 1 2 3 4 5 6	Clearances 83	76.9% 78.1% 83.3% 80.6% 87.2% 87.4% 76.7%	0 0 0 1 Touche 170 235 187 244 290 376 201	6 8 3 0 9 1 6 ns C:	3 3 0 2 0 0 0 0 0 0 5 8 46 43 58 55 101 52	129 148 206 277 118 Dribbl	8 8 6 4 7 es 0 42 68 32 60 76 60 53	e Cl N	1 1 2 ers Take 1 2 1 1 3	082 200 803 2427 911 en Tack 4 21 6 6 6 85 10	49 62 40 86 71 91 65		
1 2 3 4 5 6 0 1 2 3 4 5 6	Clearances 83 98	76.9% 78.1% 83.3% 80.6% 87.2% 87.4% 76.7%	0 0 0 1 Touche 170 235 187 244 290 376 201	6 8 3 0 9 1 6 ms C: 56 37	3 3 0 2 0 0 0 0 0 0 5 8 46 43 58 55 101 52	129 148 206 277 118 Dribbl	8 8 6 4 7 es 0 42 68 32 60 76 60 53	è C1 √)	1 1 2 ers Take 1 2 1 1 3	2000 2000 2427 911 en Tack 24 21 26 28 35 20 eets Bi	49 62 40 86 71 91 65 locks 10		

```
6
                   123
                                     87
                                                            0.0
                                                                              1
                                                                                      23
                             Saves made Saves-to-shots ratio
                                                                  Fouls Won Fouls Conceded
           Goals conceded
        0
                                      13
                                                           81.3%
                                                                           41
                                                                                             62
                          6
                                                           60.1%
                                       9
                                                                           53
                                                                                             73
        1
        2
                          5
                                      10
                                                           66.7%
                                                                           25
                                                                                             38
        3
                          3
                                      22
                                                           88.1%
                                                                           43
                                                                                             45
        4
                          5
                                       6
                                                           54.6%
                                                                           36
                                                                                             51
        5
                          6
                                      10
                                                           62.6%
                                                                           63
                                                                                             49
                          7
        6
                                                           65.1%
                                      13
                                                                           67
                                                                                             48
           Offsides
                      Yellow Cards
                                      Red Cards
                                                   Subs on
                                                            Subs off
                                                                       Players Used
        0
                                               0
                                                          9
                   2
                                   9
                                                                     9
                                                                                    16
        1
                   8
                                   7
                                               0
                                                        11
                                                                    11
                                                                                    19
        2
                   8
                                   4
                                               0
                                                         7
                                                                     7
                                                                                    15
        3
                   6
                                   5
                                               0
                                                        11
                                                                    11
                                                                                    16
        4
                   5
                                   6
                                               0
                                                         11
                                                                    11
                                                                                    19
        5
                  12
                                   4
                                               0
                                                         15
                                                                    15
                                                                                    17
                  12
                                   9
                                                                    12
                                                                                    20
                                               1
                                                        12
[106]: df_euro12.tail(12)
                                    Goals
[106]:
                             Team
                                            Shots on target
                                                               Shots off target
                           France
                                         3
                                                           22
                                                                               24
        4
        5
                          Germany
                                       10
                                                           32
                                                                               32
                                        5
                                                            8
        6
                           Greece
                                                                               18
        7
                            Italy
                                         6
                                                           34
                                                                               45
        8
                     Netherlands
                                         2
                                                           12
                                                                               36
        9
                           Poland
                                         2
                                                           15
                                                                               23
                                         6
                                                           22
                                                                               42
        10
                         Portugal
                                                            7
        11
            Republic of Ireland
                                         1
                                                                               12
        12
                                        5
                                                            9
                                                                               31
                           Russia
        13
                                                           42
                                                                               33
                            Spain
                                       12
                                         5
        14
                           Sweden
                                                           17
                                                                               19
        15
                          Ukraine
                                         2
                                                            7
                                                                               26
           Shooting Accuracy % Goals-to-shots Total shots (inc. Blocked)
        4
                         37.9%
                                             6.5%
                                                                               65
                         47.8%
                                            15.6%
        5
                                                                               80
        6
                         30.7%
                                            19.2%
                                                                               32
        7
                         43.0%
                                             7.5%
                                                                              110
        8
                         25.0%
                                             4.1%
                                                                               60
        9
                         39.4%
                                             5.2%
                                                                               48
        10
                         34.3%
                                             9.3%
                                                                               82
                         36.8%
                                             5.2%
                                                                               28
        11
        12
                         22.5%
                                            12.5%
                                                                               59
```

0.0

13	55	. 9%		16.0%					100			
14		. 2%		13.8%					39			
15		. 2%		6.0%					38			
	Hit Woodwork	Penalty	goals	Penal ⁻	ties	${\tt not}$	scored	Headed	goal	ls 1	Passes	\
4	1		0				0			0	2066	
5	2		1				0			2	2774	
6	1		1				1			0	1187	
7	2		0				0			2	3016	
8	2		0				0			0	1556	
9	0		0				0			1	1059	
10	6		0				0			2	1891	
11	0		0				0			1	851	
12	2		0				0			1	1602	
13	0		1				0			2	4317	
14	3		0				0			1	1192	
15	0		0				0			2	1276	
	Passes complet	ted Passi	ng Ac	curacy	Tou	ches	Crosse	s Dribl	oles	\		
4	18	303		87.2%	4	2909	5	5	76			
5	24	127		87.4%	3	3761	10	1	60			
6	Ç	911		76.7%	2	2016	5	2	53			
7	25	531		83.9%	4	4363	7	5	75			
8	13	381		88.7%	4	2163	5	0	49			
9	8	352		80.4%	:	1724	5	5	39			
10	14	161		77.2%		2958	9	1	64			
11		606		71.2%		1433	4	3	18			
12		345		83.9%		2278	4		40			
13		320		88.4%		5585	6		106			
14		965		80.9%		1806		4	29			
15		043		81.7%		1894	3		26			
							_					
	Corners Taken	Tackles	Clea	arances	Int	terce	eptions	Cleara	nces	off	line	\
4	28	71	<u> </u>	76			58				0.0	
5	35	91	L	73			69				0.0	
6	10	65		123			87				0.0	
7	30	98		137			136				1.0	
8	22	34		41			41				0.0	
9	14	67		87			62				0.0	
10	41	78		92			86				0.0	
11	8	45		78			43				1.0	
12	21	65		74			58				0.0	
13	44	122		102			79				0.0	
14	7	56		54			45				0.0	
15	18	65		97			29				0.0	
10	10	05	,	91			29				0.0	

Clean Sheets Blocks Goals conceded Saves made Saves-to-shots ratio \

```
54.6%
4
                           7
                                              5
                                                             6
                  1
5
                  1
                                               6
                                                            10
                                                                                  62.6%
                          11
                                               7
                                                                                  65.1%
6
                  1
                          23
                                                            13
7
                                               7
                                                                                  74.1%
                  2
                          18
                                                            20
8
                  0
                           9
                                               5
                                                            12
                                                                                  70.6%
9
                  0
                           8
                                               3
                                                             6
                                                                                  66.7%
                  2
                                                            10
                                                                                  71.5%
10
                          11
                                               4
                  0
                          23
                                               9
                                                            17
                                                                                  65.4%
11
                  0
                           8
                                               3
                                                                                  77.0%
12
                                                            10
13
                  5
                           8
                                               1
                                                            15
                                                                                  93.8%
                          12
                                               5
                                                             8
                                                                                  61.6%
14
                  1
15
                  0
                           4
                                               4
                                                            13
                                                                                  76.5%
                 Fouls Conceded
                                     Offsides
                                                 Yellow Cards
                                                                  Red Cards
    Fouls Won
                                                                               Subs on
4
             36
                                51
                                             5
                                                              6
                                                                            0
                                                                                     11
5
             63
                                49
                                            12
                                                              4
                                                                            0
                                                                                     15
             67
                                                              9
                                                                            1
6
                                48
                                            12
                                                                                     12
7
            101
                                89
                                            16
                                                             16
                                                                            0
                                                                                     18
                                                                            0
8
             35
                                30
                                             3
                                                              5
                                                                                       7
             48
                                             3
                                                              7
                                                                                       7
9
                                56
                                                                            1
10
             73
                                90
                                            10
                                                             12
                                                                            0
                                                                                     14
11
             43
                                51
                                            11
                                                              6
                                                                            1
                                                                                     10
12
             34
                                43
                                             4
                                                              6
                                                                            0
                                                                                       7
13
                                            19
                                                                            0
            102
                                83
                                                             11
                                                                                     17
14
             35
                                51
                                             7
                                                              7
                                                                            0
                                                                                       9
             48
                                                              5
                                                                            0
                                                                                       9
15
                                31
                                             4
    Subs off
                Players Used
4
            11
                             19
5
            15
                             17
6
            12
                            20
7
            18
                             19
8
             7
                             15
             7
9
                             17
10
            14
                             16
11
            10
                             17
             7
12
                             16
13
            17
                             18
14
             9
                             18
             9
15
                             18
```

0.1.3 Ejercicio 2

[]:

Écha un primer vistazo, mostrando las columnas, cuantos valores no nulos tienen y su tipo. Utiliza un sólo comando para todo.

[111]: df_euro12.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 16 entries, 0 to 15
Data columns (total 35 columns):

#	Column	Non-Null Count	Dtype
0	Team	16 non-null	object
1	Goals	16 non-null	int64
2	Shots on target	16 non-null	int64
3	Shots off target	16 non-null	int64
4	Shooting Accuracy	16 non-null	object
5	% Goals-to-shots	16 non-null	object
6	Total shots (inc. Blocked)	16 non-null	int64
7	Hit Woodwork	16 non-null	int64
8	Penalty goals	16 non-null	int64
9	Penalties not scored	16 non-null	int64
10	Headed goals	16 non-null	int64
11	Passes	16 non-null	int64
12	Passes completed	16 non-null	int64
13	Passing Accuracy	16 non-null	object
14	Touches	16 non-null	int64
15	Crosses	16 non-null	int64
16	Dribbles	16 non-null	int64
17	Corners Taken	16 non-null	int64
18	Tackles	16 non-null	int64
19	Clearances	16 non-null	int64
20	Interceptions	16 non-null	int64
21	Clearances off line	15 non-null	float64
22	Clean Sheets	16 non-null	int64
23	Blocks	16 non-null	int64
24	Goals conceded	16 non-null	int64
25	Saves made	16 non-null	int64
26	Saves-to-shots ratio	16 non-null	object
27	Fouls Won	16 non-null	int64
28	Fouls Conceded	16 non-null	int64
29	Offsides	16 non-null	int64
30	Yellow Cards	16 non-null	int64
31		16 non-null	int64
32		16 non-null	int64
33	Subs off	16 non-null	int64
34	Players Used	16 non-null	int64
dtvp	es: float64(1), int64(29),	object(5)	

dtypes: float64(1), int64(29), object(5)

memory usage: 4.5+ KB

0.1.4 Ejercicio 3

 Haz un primer análisis de las columnas numéricas, mostrando al menos la media el máximo y el mínimo.

[112]: primerA=round(df_euro12.describe(),2) primerA

P											
	Goals	Shots	on targe	et Sho	ots off	target	Total	shots	(inc. H	Blocked)	\
count	16.00		16.0	00		16.00				16.00	
mean	4.75		17.	12		24.94				54.94	
std	2.89		10.	58		10.68				26.07	
min	1.00		7.0	00		10.00				27.00	
25%	2.75		9.	75		18.00				36.50	
50%	4.50		13.0	00		23.50				44.00	
75%	5.25		22.0	00		32.25				68.75	
max	12.00		42.0	00		45.00				110.00	
	Hit Woo	odwork	Penalty	y goal:	s Penal	lties no	t scor	ed Hea	aded goa	als \	
count		16.00		16.00)		16.	00	16	.00	
mean		1.25		0.19	9		0.0	06	1	.38	
std		1.61		0.40)		0.3	25	1	.02	
min		0.00		0.00)		0.0	00	0	.00	
25%		0.00		0.00)		0.0	00	0	.75	
50%		1.00		0.00)		0.0	00	1	.50	
75%		2.00		0.00)		0.0	00	2	.00	
max		6.00		1.00)		1.	00	3	.00	
	D	D	-		m 1	a	ъ		a	 1	,
			_						Corne		\
max	4317.00	J	30.	20.00	5565.00) 101.	00	106.00		44.00	
	Tackles	s Clea		Inter	ceptions	s Clear	ances	off lir	ne Clea	an Sheets	\
count	16.00)	16.00		16.00)		15.0	00	16.00	
mean	68.38	3	86.38		63.5	5		0.3	33	1.06	
std	22.82	2	24.61		25.7	7		0.6	52	1.29	
min	34.00)	41.00		29.00)		0.0	00	0.00	
25%	54.25	5	73.75		44.50)		0.0	00	0.00	
50%	65.00)	85.00		58.50)		0.0	00	1.00	
75%	80.00)	99.00		73.7	5		0.5	50	1.25	
max	122.00)	137.00		136.00)		2.0	00	5.00	
	mean std min 25% 50% 75% max count mean std min 25% 50% 75% max count mean std min 25% 50% 75% max count mean std min 25% 50% 75% 50% 75% 50% 75%	count 16.00 mean 4.75 std 2.89 min 1.00 25% 2.75 50% 4.50 75% 5.25 max 12.00 Hit Wood count mean std min 25% 50% 75% max Passes count 16.00 mean 1763.38 std 906.18 min 851.00 25% 1190.78 50% 1522.00 75% 1934.78 max 4317.00 Tackles count 16.00 mean 68.38 std 22.83 min 34.00 25% 54.28 50% 65.00 75% 80.00	count 16.00 mean 4.75 std 2.89 min 1.00 25% 2.75 50% 4.50 75% 5.25 max 12.00 Hit Woodwork count 16.00 mean 1.25 std 1.61 min 0.00 50% 1.00 75% 2.00 max 6.00 Passes count 16.00 mean 1763.38 std 906.18 min 851.00 25% 1190.75 50% 1522.00 75% 1934.75 max 4317.00 Tackles Clea count 16.00 mean 68.38 std 22.82 min 34.00 25% 54.25 50% 65.00 75% 80.00 max 16.00 </th <th>count 16.00 16.00 mean 4.75 17.3 std 2.89 10.8 min 1.00 7.0 25% 2.75 9.3 50% 4.50 13.0 75% 5.25 22.0 max 12.00 42.0 Hit Woodwork Penalty Count 16.00 mean 1.25 std 1.61 min 0.00 50% 1.00 75% 2.00 max 6.00 Passes comp count 16.00 mean 1763.38 14 std 906.18 85 min 851.00 60 25% 1190.75 98 50% 1522.00 12 75% 1934.75 15 max 4317.00 38 Tackles Clearances count 16.00 16.00 mean 68.38 86.38</th> <th>count 16.00 16.00 mean 4.75 17.12 std 2.89 10.58 min 1.00 7.00 25% 2.75 9.75 50% 4.50 13.00 75% 5.25 22.00 max 12.00 42.00 Hit Woodwork Penalty goals count 16.00 16.00 16.00 16.00 16.00 16.00 16.00 25% 1.00 75% 2.00 0.00 75% 2.00 0.00 75% 2.00 0.00 75% 2.00 0.00 16.00 16.00 16.00 16.00 16.00 25% 1190.75 951.50 1546.50 3820.00 Tackles Clearances Interces count 16.00</th> <th>count 16.00 16.00 mean 4.75 17.12 std 2.89 10.58 min 1.00 7.00 25% 2.75 9.75 50% 4.50 13.00 75% 5.25 22.00 max 12.00 42.00 Hit Woodwork Penalty goals Penalty State One of the penalty goals Penalty State One of the penalty S</th> <th>count 16.00 16.00 16.00 mean 4.75 17.12 24.94 std 2.89 10.58 10.68 min 1.00 7.00 10.00 25% 2.75 9.75 18.00 50% 4.50 13.00 23.50 75% 5.25 22.00 32.25 max 12.00 42.00 45.00 Hit Woodwork Penalty goals Penalties no Count 16.00 16.00 45.00 Mean 1.25 0.19 54 1.61 0.40 1.00 Ed 1.61 0.40 1.00 0.00 25% 0.00 0.00 0.00 1.00</th> <th>count 16.00 16.00 16.00 mean 4.75 17.12 24.94 std 2.89 10.58 10.68 min 1.00 7.00 10.00 25% 2.75 9.75 18.00 50% 4.50 13.00 23.50 75% 5.25 22.00 32.25 max 12.00 42.00 45.00 Hit Woodwork Penalty goals Penalties not score count 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 25% 9.00 9.00 std 1.61 0.40 0.00 0.00 25% 0.00 0.00 0.00 0.00 25% 0.00 0.00 0.00 0.00 75% 2.00 0.00 0.00 0.00 75% 2.00 0.00 0.00 0.00 75% 2.00 0.00 0.00 0.00 75% 2.00 0.00 1.00 16.00 16.00 mean 176.33</th> <th>count 16.00 16.00 16.00 meam 4.75 17.12 24.94 std 2.89 10.58 10.68 min 1.00 7.00 10.00 25% 2.75 9.75 18.00 50% 4.50 13.00 23.50 75% 5.25 22.00 32.25 max 12.00 42.00 45.00 Hit Woodwork Penalty goals Penalties not scored Head Penalty goals goal</th> <th>count 16.00 16.00 16.00 mean 4.75 17.12 24.94 std 2.89 10.58 10.68 min 1.00 7.00 10.00 25% 2.75 9.75 18.00 50% 4.50 13.00 23.50 75% 5.25 22.00 32.25 max 12.00 42.00 45.00 Hit Woodwork Penalty goals Penalties not scored Headed good count 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 1</th> <th>count 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 54.94 54.90 54.00 <th< th=""></th<></th>	count 16.00 16.00 mean 4.75 17.3 std 2.89 10.8 min 1.00 7.0 25% 2.75 9.3 50% 4.50 13.0 75% 5.25 22.0 max 12.00 42.0 Hit Woodwork Penalty Count 16.00 mean 1.25 std 1.61 min 0.00 50% 1.00 75% 2.00 max 6.00 Passes comp count 16.00 mean 1763.38 14 std 906.18 85 min 851.00 60 25% 1190.75 98 50% 1522.00 12 75% 1934.75 15 max 4317.00 38 Tackles Clearances count 16.00 16.00 mean 68.38 86.38	count 16.00 16.00 mean 4.75 17.12 std 2.89 10.58 min 1.00 7.00 25% 2.75 9.75 50% 4.50 13.00 75% 5.25 22.00 max 12.00 42.00 Hit Woodwork Penalty goals count 16.00 16.00 16.00 16.00 16.00 16.00 16.00 25% 1.00 75% 2.00 0.00 75% 2.00 0.00 75% 2.00 0.00 75% 2.00 0.00 16.00 16.00 16.00 16.00 16.00 25% 1190.75 951.50 1546.50 3820.00 Tackles Clearances Interces count 16.00	count 16.00 16.00 mean 4.75 17.12 std 2.89 10.58 min 1.00 7.00 25% 2.75 9.75 50% 4.50 13.00 75% 5.25 22.00 max 12.00 42.00 Hit Woodwork Penalty goals Penalty State One of the penalty goals Penalty State One of the penalty S	count 16.00 16.00 16.00 mean 4.75 17.12 24.94 std 2.89 10.58 10.68 min 1.00 7.00 10.00 25% 2.75 9.75 18.00 50% 4.50 13.00 23.50 75% 5.25 22.00 32.25 max 12.00 42.00 45.00 Hit Woodwork Penalty goals Penalties no Count 16.00 16.00 45.00 Mean 1.25 0.19 54 1.61 0.40 1.00 Ed 1.61 0.40 1.00 0.00 25% 0.00 0.00 0.00 1.00	count 16.00 16.00 16.00 mean 4.75 17.12 24.94 std 2.89 10.58 10.68 min 1.00 7.00 10.00 25% 2.75 9.75 18.00 50% 4.50 13.00 23.50 75% 5.25 22.00 32.25 max 12.00 42.00 45.00 Hit Woodwork Penalty goals Penalties not score count 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 25% 9.00 9.00 std 1.61 0.40 0.00 0.00 25% 0.00 0.00 0.00 0.00 25% 0.00 0.00 0.00 0.00 75% 2.00 0.00 0.00 0.00 75% 2.00 0.00 0.00 0.00 75% 2.00 0.00 0.00 0.00 75% 2.00 0.00 1.00 16.00 16.00 mean 176.33	count 16.00 16.00 16.00 meam 4.75 17.12 24.94 std 2.89 10.58 10.68 min 1.00 7.00 10.00 25% 2.75 9.75 18.00 50% 4.50 13.00 23.50 75% 5.25 22.00 32.25 max 12.00 42.00 45.00 Hit Woodwork Penalty goals Penalties not scored Head Penalty goals goal	count 16.00 16.00 16.00 mean 4.75 17.12 24.94 std 2.89 10.58 10.68 min 1.00 7.00 10.00 25% 2.75 9.75 18.00 50% 4.50 13.00 23.50 75% 5.25 22.00 32.25 max 12.00 42.00 45.00 Hit Woodwork Penalty goals Penalties not scored Headed good count 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 1	count 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00 54.94 54.90 54.00 <th< th=""></th<>

	Blocks	Goals conceded	Saves made	Fouls Wo	on Fouls	Conceded	\
count	16.00	16.00	16.00	16.0	00	16.00	
mean	12.56	4.75	12.12	52.9	94	55.62	
std	6.94	1.98	4.57	22.9	92	18.97	
min	4.00	1.00	6.00	25.0	00	30.00	
25%	8.00	3.00	9.75	35.7	75	44.50	
50%	10.00	5.00	11.00	45.5	50	51.00	
75%	13.50	6.00	13.50	64.0	00	64.75	
max	29.00	9.00	22.00	102.0	00	90.00	
	Offsides	s Yellow Cards	Red Cards	Subs on	Subs off	Players	Used
count	16.00	16.00	16.00	16.00	16.00	1	16.00
mean	8.12	7.44	0.19	10.88	10.88	1	17.25
std	4.91	3.27	0.40	3.54	3.54		1.53
min	2.00	4.00	0.00	7.00	7.00	1	15.00
25%	4.00	5.00	0.00	8.50	8.50	1	16.00
50%	7.50	6.50	0.00	10.50	10.50	1	17.00
75%	11.25	9.00	0.00	12.50	12.50	1	18.25
max	19.00	16.00	1.00	18.00	18.00	2	20.00

0.1.5 Ejercicio 4

¿Cuántos equipos participaron en la Euro2012?

```
[113]: display(len(df_euro12["Team"]))
```

16

0.1.6 Ejercicio 5

Muestra por pantalla las selecciones y los goles que marcó cada una

```
[10]: df_euro12[["Team", "Goals"]]
```

[10]:	Team	Goals	
0	Croatia	4	
1	Czech Republic	4	
2	Denmark	4	
3	England	5	
4	France	3	
5	Germany	10	
6	Greece	5	
7	Italy	6	
8	Netherlands	2	
9	Poland	2	
10	Portugal	6	
11	Republic of Ireland	1	
12	Russia	5	

13	Spain	12
14	Sweden	5
15	Ukraine	2

0.1.7 Ejercicio 6

¿Cuál es el número de columnas del conjunto de datos?

```
[11]: print(len(df_euro12.columns))
```

35

0.1.8 Ejercicio 7

Quédate sólo las columnas Equipo, Tarjetas Amarillas y Tarjetas Rojas y asígnalas a un dataframe de datos llamado discipline

```
[115]: # Seleccionar las columnas de interés
columnas = df_euro12[['Team', "Yellow Cards", "Red Cards"]]
#print(columnas)
# crear el nuevo DF
df_discipline = pd.DataFrame(columnas)
df_discipline
```

[115]:		Team	Yellow Cards	Red Cards
	0	Croatia	9	0
	1	Czech Republic	7	0
	2	Denmark	4	0
	3	England	5	0
	4	France	6	0
	5	Germany	4	0
	6	Greece	9	1
	7	Italy	16	0
	8	Netherlands	5	0
	9	Poland	7	1
	10	Portugal	12	0
	11	Republic of Ireland	6	1
	12	Russia	6	0
	13	Spain	11	0
	14	Sweden	7	0
	15	Ukraine	5	0

0.1.9 Ejercicio 8

Ordena los equipos por tarjetas rojas y luego por tarjetas amarillas. Recuerda el método sort_values de la práctica final de la unidad anterior.

```
[116]:
```

```
# ordeno en orden ascedente ambas columnas(valor predeterminado de ascendingus=True)

x_rojas =df_discipline.sort_values("Red Cards")

display(x_rojas)

print("\n")

x_amarillas = df_discipline.sort_values("Yellow Cards")

display(x_amarillas)
```

	Team	Yellow Cards	Red Cards
0	Croatia	9	0
1	Czech Republic	7	0
2	Denmark	4	0
3	England	5	0
4	France	6	0
5	${\tt Germany}$	4	0
7	Italy	16	0
8	Netherlands	5	0
10	Portugal	12	0
12	Russia	6	0
13	Spain	11	0
14	Sweden	7	0
15	Ukraine	5	0
6	Greece	9	1
9	Poland	7	1
11	Republic of Ireland	6	1

	Team	Yellow Cards	Red Cards
2	Denmark	4	0
5	${\tt Germany}$	4	0
3	England	5	0
8	Netherlands	5	0
15	Ukraine	5	0
4	France	6	0
11	Republic of Ireland	6	1
12	Russia	6	0
1	Czech Republic	7	0
9	Poland	7	1
14	Sweden	7	0
0	Croatia	9	0
6	Greece	9	1
13	Spain	11	0
10	Portugal	12	0
7	Italy	16	0

0.1.10 Ejercicio 9

Investiga como podrías hacer para que ordenase por tarjetas rojas de forma decreciente y creciente por tajetas amarillas.

```
[118]: #orden decreciente cambiando valor predetermindo de ascending
x_rojas =df_discipline.sort_values(["Red Cards"], ascending = False)
print(x_rojas)
print("\n")
#crecientes que es lo mismo que poner ascending =True
x_amarillas = df_discipline.sort_values("Yellow Cards")
display(x_amarillas)
```

	Team	Yellow Cards	Red Cards
6	Greece	9	1
9	Poland	7	1
11	Republic of Ireland	6	1
0	Croatia	9	0
1	Czech Republic	7	0
2	Denmark	4	0
3	England	5	0
4	France	6	0
5	Germany	4	0
7	Italy	16	0
8	Netherlands	5	0
10	Portugal	12	0
12	Russia	6	0
13	Spain	11	0
14	Sweden	7	0
15	Ukraine	5	0

	Team	Yellow Cards	Red Cards
2	Denmark	4	0
5	Germany	4	0
3	England	5	0
8	Netherlands	5	0
15	Ukraine	5	0
4	France	6	0
11	Republic of Ireland	6	1
12	Russia	6	0
1	Czech Republic	7	0
9	Poland	7	1
14	Sweden	7	0
0	Croatia	9	0
6	Greece	9	1
13	Spain	11	0
10	Portugal	12	0

7 Italy 16 0

0.1.11 Ejercicio 10

Calcular el número medio de tarjetas amarillas por equipo (pista método mean)

7.4375

	Team	Yellow Cards	Y_Cards Mean(%)
0	Croatia	9	121.01
1	Czech Republic	7	94.12
2	Denmark	4	53.78
3	England	5	67.23
4	France	6	80.67
5	Germany	4	53.78
6	Greece	9	121.01
7	Italy	16	215.13
8	Netherlands	5	67.23
9	Poland	7	94.12
10	Portugal	12	161.34
11	Republic of Ireland	6	80.67
12	Russia	6	80.67
13	Spain	11	147.90
14	Sweden	7	94.12
15	Ukraine	5	67.23

[]:

0.1.12 Ejercicio 11

Muestra el nombre, número de goles y la precisión en el tiro de los equipos que marcaron más de 6 goles

```
[142]: #precision de tiro en %

df_euro12["Shooting Accuracy(%)"]= round((df_euro12["Shots on target"]/

→df_euro12["Shots off target"])*100, 2)

#print(df_euro12["Shooting Accuracy(%)"])
```

```
#muestro resultado con las columna nueva d ela ppresion por equipo
res =df_euro12[["Team","Shots on target", "Shots off target", "Shoting_
Accuracy(%)"]]
display(res)
```

```
Team
                            Shots on target
                                               Shots off target
0
                  Croatia
                                          13
          Czech Republic
1
                                          13
                                                               18
2
                  Denmark
                                          10
                                                              10
3
                  England
                                          11
                                                              18
4
                   France
                                          22
                                                              24
5
                  Germany
                                          32
                                                              32
6
                   Greece
                                           8
                                                              18
7
                    Italy
                                          34
                                                              45
8
             Netherlands
                                          12
                                                              36
                   Poland
9
                                                              23
                                          15
10
                Portugal
                                          22
                                                              42
11
    Republic of Ireland
                                           7
                                                              12
12
                   Russia
                                           9
                                                              31
13
                                          42
                                                              33
                    Spain
14
                   Sweden
                                                              19
                                          17
                                           7
15
                  Ukraine
                                                              26
    Shooting Accuracy(%)
                    108.33
0
                     72.22
1
2
                    100.00
3
                     61.11
                     91.67
4
5
                    100.00
                     44.44
6
                     75.56
7
8
                     33.33
9
                     65.22
10
                     52.38
                     58.33
11
12
                     29.03
                    127.27
13
14
                     89.47
15
                     26.92
```

0.1.13 Ejercicio 12

Presenta sólo la Shooting Accuracy de Inglaterra, Italia y España

```
[82]: # saco el subconjunto total de las dos columnas
Total =df_euro12[["Team","Shooting Accuracy(%)"]]
#display(Total)
```

```
#hago varible con sus indices
indices = [3,7,13]
#hago una serie panda para que me extraiga los datos con los indices indcados⊔
⇔del subconjunto
Subtotal = Total.loc[indices]
display(Subtotal)
```

Shooting Accuracy(%) Team 3 England 61.11 7 Italy 75.56 13 Spain 127.27

0.1.14 Ejercicio 13

Cambia el nombre de las columnas Goal, Yellow Cards, Red Cards por su traducción al castellano.

```
[]:
[100]: df_euro12.rename(columns= {"Goals": "Goles", "Yellow Cards": "Tarjetas_
```

→Amarillas", "Red Cards": "Tarjetas Rojas"}, inplace =True) display(df_euro12)

	Team	Goles S	Shots o	n target	Shots o	ff target	\
0	Croatia	4		13		12	
1	Czech Republic	4		13		18	
2	Denmark	4		10		10	
3	England	5		11		18	
4	France	3		22		24	
5	Germany	10		32		32	
6	Greece	5		8		18	
7	Italy	6		34		45	
8	Netherlands	2		12		36	
9	Poland	2		15		23	
10	Portugal	6		22		42	
11	Republic of Ireland	1		7		12	
12	Russia	5		9		31	
13	Spain	12		42		33	
14	Sweden	5		17		19	
15	Ukraine	2		7		26	
	Shooting Accuracy % G	oals-to-s	shots	Total shot	ts (inc.	Blocked)	\
0	51.9%		16.0%			32	
1	41.9%	1	12.9%			39	
2	50.0%		20.0%			27	
3	50.0%	1	17.2%			40	
4	37.9%		6.5%			65	
5	47.8%	1	15.6%			80	

```
7
                 43.0%
                                     7.5%
                                                                      110
8
                 25.0%
                                     4.1%
                                                                       60
9
                 39.4%
                                     5.2%
                                                                       48
10
                 34.3%
                                     9.3%
                                                                       82
                                     5.2%
11
                 36.8%
                                                                       28
12
                 22.5%
                                    12.5%
                                                                       59
13
                 55.9%
                                    16.0%
                                                                      100
                 47.2%
                                    13.8%
                                                                       39
14
15
                 21.2%
                                     6.0%
                                                                       38
    Hit Woodwork Penalty goals
                                    Penalties not scored Headed goals
                                                                              Passes \
0
                                                                                1076
                 0
                                  0
                                                           0
                                                                          2
                 0
                                  0
                                                           0
                                                                          0
                                                                                1565
1
2
                                  0
                                                           0
                                                                           3
                 1
                                                                                1298
3
                 0
                                  0
                                                           0
                                                                           3
                                                                                1488
4
                                  0
                                                           0
                                                                          0
                 1
                                                                                2066
5
                 2
                                  1
                                                           0
                                                                           2
                                                                                2774
6
                                                                          0
                 1
                                  1
                                                           1
                                                                                1187
7
                 2
                                  0
                                                           0
                                                                          2
                                                                                3016
8
                 2
                                  0
                                                           0
                                                                          0
                                                                                1556
9
                                  0
                                                                           1
                 0
                                                           0
                                                                                1059
10
                 6
                                  0
                                                           0
                                                                          2
                                                                                1891
11
                 0
                                  0
                                                           0
                                                                          1
                                                                                 851
12
                 2
                                  0
                                                           0
                                                                          1
                                                                                1602
13
                 0
                                  1
                                                           0
                                                                          2
                                                                                4317
14
                 3
                                  0
                                                           0
                                                                           1
                                                                                1192
15
                 0
                                  0
                                                           0
                                                                                1276
    Passes completed Passing Accuracy
                                            Touches
                                                      Crosses
                                                                Dribbles \
0
                   828
                                    76.9%
                                               1706
                                                            60
                                                                       42
                  1223
                                    78.1%
                                               2358
                                                            46
                                                                       68
1
2
                                    83.3%
                  1082
                                               1873
                                                            43
                                                                       32
3
                  1200
                                    80.6%
                                               2440
                                                            58
                                                                       60
4
                  1803
                                    87.2%
                                               2909
                                                            55
                                                                       76
5
                  2427
                                    87.4%
                                               3761
                                                           101
                                                                       60
6
                                    76.7%
                                               2016
                                                            52
                   911
                                                                       53
7
                                    83.9%
                                                                       75
                  2531
                                               4363
                                                            75
8
                  1381
                                    88.7%
                                               2163
                                                            50
                                                                       49
9
                                    80.4%
                   852
                                               1724
                                                            55
                                                                       39
10
                  1461
                                    77.2%
                                               2958
                                                            91
                                                                       64
11
                                    71.2%
                   606
                                               1433
                                                            43
                                                                       18
                                    83.9%
                                               2278
12
                  1345
                                                            40
                                                                       40
13
                  3820
                                    88.4%
                                               5585
                                                            69
                                                                      106
                                    80.9%
                                                                       29
14
                   965
                                               1806
                                                            44
15
                  1043
                                    81.7%
                                               1894
                                                                       26
                                                            33
    Corners Taken Tackles Clearances
                                            Interceptions Clearances off line \
0
                 14
                           49
                                        83
                                                         56
                                                                                NaN
```

1		21	62	98	37		2.0
2		16	40	61	59		0.0
3		16	86	106	72		1.0
4		28	71	76	58		0.0
5		35	91	73	69		0.0
6		10	65	123	87		0.0
7		30	98	137	136		1.0
8		22	34	41	41		0.0
9		14	67	87	62		0.0
10		41	78	92	86		0.0
11		8	45	78	43		1.0
12		21	65	74	58		0.0
13		44	122	102	79		0.0
14		7	56	54	45		0.0
15		18	65	97	29		0.0
	Clean Shee	ts 1	Blocks Goal	ls conceded	Saves made S	laves-t	o-shots ratio \
0		0	10	3	13		81.3%
1		1	10	6	9		60.1%
2		1	10	5	10		66.7%
3		2	29	3	22		88.1%
4		1	7	5	6		54.6%
5		1	11	6	10		62.6%
6		1	23	7	13		65.1%
7		2	18	7	20		74.1%
8		0	9	5	12		70.6%
9		0	8	3	6		66.7%
10		2	11	4	10		71.5%
11		0	23	9	17		65.4%
12		0	8	3	10		77.0%
13		5	8	1	15		93.8%
14		1	12	5	8		61.6%
15		0	4	4	13		76.5%
	Fouls Won	Fou	ls Conceded	Offsides	Tarjetas Amar	illas	Tarjetas Rojas \
0	41		62	2	J	9	0
1	53		73	8		7	0
2	25		38	8		4	0
3	43		45	6		5	0
4	36		51	5		6	0
5	63		49	12		4	0
	67		48	12		9	
6							1
7	101		89	16		16	0
8	35		30	3		5	0
9	48		56	3		7	1
10	73		90	10		12	0
11	43		51	11		6	1
12	34		43	4		6	0

```
102
                              83
                                          19
                                                                                    0
13
                                                                 11
14
            35
                              51
                                           7
                                                                  7
                                                                                    0
15
            48
                              31
                                           4
                                                                  5
                                                                                    0
              Subs off Players Used Y_Cards Mean(%)
                                                             Total Accur. Target(%)
0
                      9
                                     16
                                                    121.01
                                                                                108.33
                                                                                 72.22
          11
                     11
                                     19
                                                     94.12
1
                                                                                100.00
2
           7
                      7
                                                     53.78
                                     15
3
          11
                     11
                                     16
                                                     67.23
                                                                                 61.11
4
          11
                     11
                                     19
                                                     80.67
                                                                                 91.67
5
          15
                     15
                                     17
                                                     53.78
                                                                                100.00
6
          12
                     12
                                     20
                                                    121.01
                                                                                 44.44
7
                                                                                 75.56
          18
                     18
                                     19
                                                    215.13
8
           7
                      7
                                                     67.23
                                                                                 33.33
                                     15
           7
                      7
9
                                     17
                                                     94.12
                                                                                 65.22
                                                                                 52.38
10
          14
                     14
                                     16
                                                    161.34
11
          10
                     10
                                     17
                                                     80.67
                                                                                 58.33
12
           7
                      7
                                                     80.67
                                                                                 29.03
                                     16
13
          17
                     17
                                     18
                                                    147.90
                                                                                127.27
           9
                      9
                                                                                 89.47
14
                                     18
                                                     94.12
           9
                      9
15
                                                                                 26.92
                                     18
                                                     67.23
    Shooting Accuracy(%)
                    108.33
0
1
                     72.22
```

100.00 61.11 91.67 100.00 44.44 75.56 33.33 65.22 52.38 58.33 29.03 127.27 89.47 26.92

0.1.15 Ejercicio 14

¿Cuántos goles se marcaron en la Euro12?

```
[102]: suma = df_euro12["Goles"].sum()
display(suma)
```

[]:[