In [145…

```
import sqlite3
import pandas as pd
import sqlalchemy
import numpy as np
import scipy
from scipy import stats
from scipy.stats import norm
import matplotlib.pyplot as plt
```

In [ ]:

S8. Normailización y estandarización.

Coge un conjunto de datos de tema deportivo que te guste y **normaliza** los atributos categóricos en dummy.
Estandariza

los atributos numéricos con StandardScaler.

In [147…

```
con= sqlite3.connect("database.sqlite")# importamos la base de datos.


df = pd.read_sql_query( "SELECT * from Player_Attributes", con)
#Coge un conjunto de datos de tema deportivo que te guste y normaliza los atributos catego
df.head()
```

Out[147…

	id	player_fifa_api_id	player_api_id	date	overall_rating	potential	preferred_foot	attacking_work_rate	defens
0	1	218353	505942	2016-02-18 00:00:00	67.0	71.0	right	medium	
1	2	218353	505942	2015-11-19 00:00:00	67.0	71.0	right	medium	
2	3	218353	505942	2015-09-21 00:00:00	62.0	66.0	right	medium	
3	4	218353	505942	2015-03-20 00:00:00	61.0	65.0	right	medium	
4	5	218353	505942	2007-02-22 00:00:00	61.0	65.0	right	medium	

5 rows × 42 columns

In [148…

```
df.columns
```

Out[148…

```
Index(['id', 'player_fifa_api_id', 'player_api_id', 'date', 'overall_rating',
       'potential', 'preferred_foot', 'attacking_work_rate',
       'defensive_work_rate', 'crossing', 'finishing', 'heading_accuracy',
       'short_passing', 'volleys', 'dribbling', 'curve', 'free_kick_accuracy',
       'long_passing', 'ball_control', 'acceleration', 'sprint_speed',
       'agility', 'reactions', 'balance', 'shot_power', 'jumping', 'stamina',
```

```
       'strength', 'long_shots', 'aggression', 'interceptions', 'positioning',
       'vision', 'penalties', 'marking', 'standing_tackle', 'sliding_tackle',
       'gk_diving', 'gk_handling', 'gk_kicking', 'gk_positioning',
       'gk_reflexes'],
      dtype='object')
```

In [155…

```
#  Buscaremos la capacidad de hacer gol en funcion de la pierna preferente, la curva,
#finalización, precisión de tiro libre, potencia de disparo, penalti,

dff= df [[ 'finishing', 'curve', 'free_kick_accuracy',
        'shot_power',  'long_shots',
        'penalties', "preferred_foot"]]
# Eliminamos los valores NaN o NUll
dff2 = dff.dropna()
dfnum=dff2[['finishing', 'curve', 'free_kick_accuracy',
        'shot_power',  'long_shots',
        'penalties']]


dff.shape
```

Out[155…

```
(183978, 7)
```

In [157…

```
dff2.shape# miramos la reducción dimensional
```

Out[157…

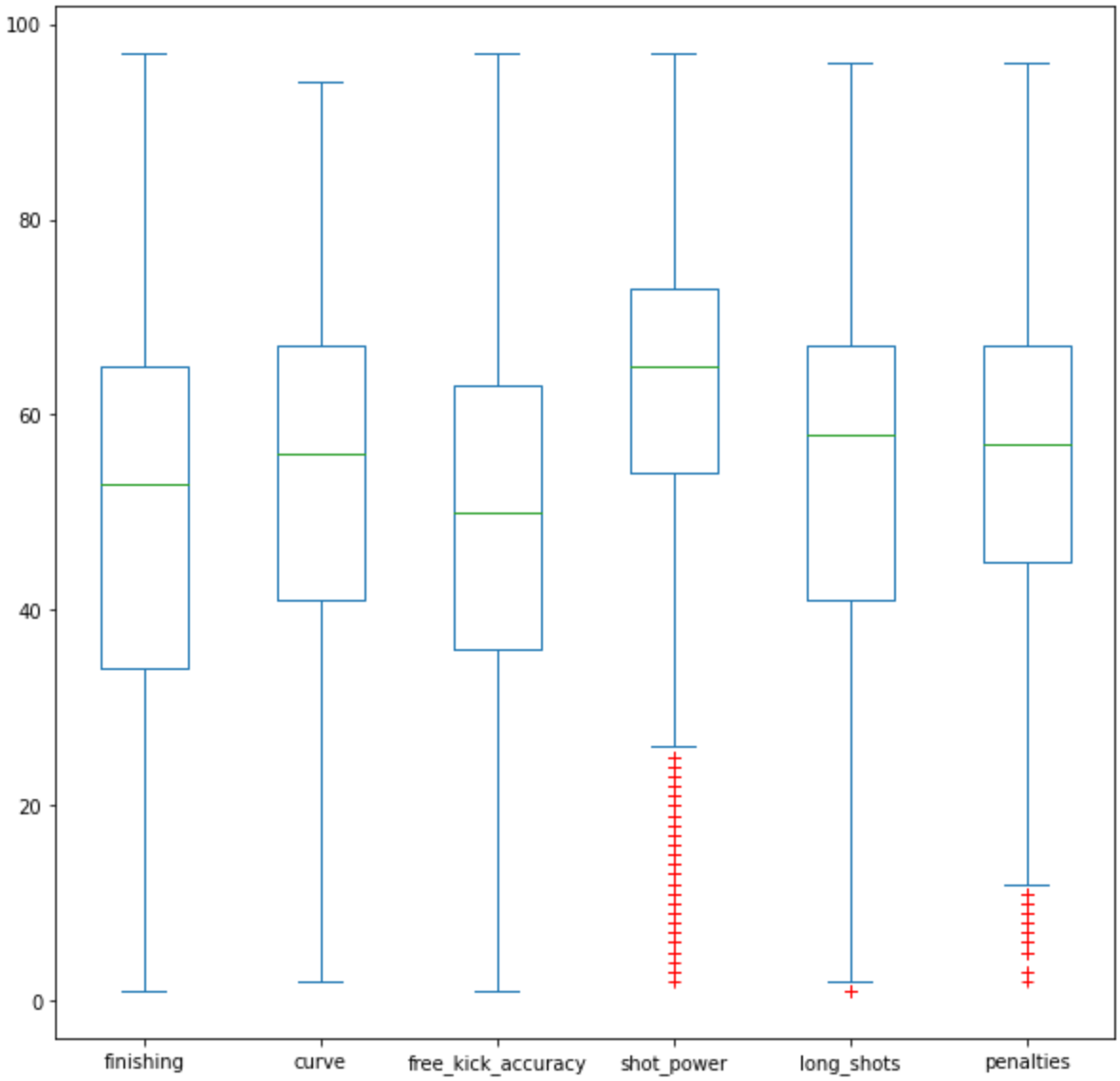
```
(181265, 7)
```

In [158…

```
dfnum.plot(kind= "box", figsize= (10,10), sym="r+")# Miramos los valores atípicos de las v
```

Out[158…

```
<AxesSubplot:>
```



In [159…

```
# eliminamos los valores atípicos.
#miramos en shot_power, long_shot i Penalties, los quartiles.

dfnum.describe()
```

Out[159…

	finishing	curve	free_kick_accuracy	shot_power	long_shots	penalties
count	181265.000000	181265.000000	181265.000000	181265.000000	181265.000000	181265.000000
mean	49.939095	52.965675	49.380327	61.842799	53.367048	54.935950
std	19.047599	18.255788	17.824868	16.133940	18.374873	15.558855
min	1.000000	2.000000	1.000000	2.000000	1.000000	2.000000
25%	34.000000	41.000000	36.000000	54.000000	41.000000	45.000000
50%	53.000000	56.000000	50.000000	65.000000	58.000000	57.000000
75%	65.000000	67.000000	63.000000	73.000000	67.000000	67.000000
max	97.000000	94.000000	97.000000	97.000000	96.000000	96.000000

In [161…

```
mean_power=dfnum.describe()["shot_power"][1]
std_power= dfnum.describe()["shot_power"][2]
mean_long=dfnum.describe()["long_shots"][1]
std_long= dfnum.describe()["long_shots"][2]
mean_pen=dfnum.describe()["penalties"][1]
```

```
std_pen= dfnum.describe()["penalties"][2]

# Sacamos los valores atípicos.
dff3= dff2[((dff2["shot_power"]>= (-3*std_power+ mean_power) ) & (dff2["shot_power"]<= (3*
               (dff2["long_shots"]>= (-3*std_long+ mean_long) ) & (dff2["long_shots"]<= (3
               (dff2["penalties"]>= (-3*std_pen+ mean_pen) ) & (dff2["penalties"]<= (3*std

dff3.shape
# y miramos de nuevo la reducción dimensional
```

Out[161…
```
(180442, 7)
```

In [166…
```
# redefinimos la variable numérica.
dfnum2=dff3[['finishing', 'curve', 'free_kick_accuracy',
        'shot_power',  'long_shots',
        'penalties']]
# importamos  Standar Scaler
from sklearn.preprocessing import StandardScaler

ss = StandardScaler()
arrayss = ss.fit_transform(dfnum2)
colnombres= [ 'finishing', 'curve', 'free_kick_accuracy',
        'shot_power',  'long_shots',
        'penalties']
dfss= pd.DataFrame(arrayss, columns= colnombres)
dfss.head()
# dejamos estandarizada la variable numérica
```

Out[166…

	finishing	curve	free_kick_accuracy	shot_power	long_shots	penalties
0	-0.323157	-0.448425	-0.593873	-0.446690	-1.018635	-0.460474
1	-0.323157	-0.448425	-0.593873	-0.446690	-1.018635	-0.460474
2	-0.323157	-0.448425	-0.593873	-0.446690	-1.018635	-0.460474
3	-0.376028	-0.503600	-0.650318	-0.509902	-1.073549	-0.525427
4	-0.376028	-0.503600	-0.650318	-0.509902	-1.073549	-0.525427

In [171…
```
dfcat2=dff3[["preferred_foot"]]
# normalizamos las variables categóricas con variables  ficticias, pero antes eliminamos
```

In [172…
```
# miramos los valores de cada variable.
dfcat2[["preferred_foot"]].value_counts()
```

Out[172…
```
preferred_foot
right            136211
left              44231
dtype: int64
```

In [173…
```
var_cat= pd.get_dummies(dfcat2)
var_cat
# dejamos normalizada la variable categórica.
```

Out[173…

	preferred_foot_left	preferred_foot_right
0	0	1
1	0	1

	preferred_foot_left	preferred_foot_right
2	0	1
3	0	1
4	0	1
...	...	...
183973	0	1
183974	0	1
183975	0	1
183976	0	1
183977	0	1

180442 rows × 2 columns

In [ ]:
```
# concatenamos var_cat y dfss y damos por cerrado el ejercicio 1.
```

In [174…
```
norm= pd.concat([dfss, var_cat],axis=1)
norm.head()
```

Out[174…

	finishing	curve	free_kick_accuracy	shot_power	long_shots	penalties	preferred_foot_left	preferred_foot_rig
0	-0.323157	-0.448425	-0.593873	-0.446690	-1.018635	-0.460474	0.0	1
1	-0.323157	-0.448425	-0.593873	-0.446690	-1.018635	-0.460474	0.0	1
2	-0.323157	-0.448425	-0.593873	-0.446690	-1.018635	-0.460474	0.0	1
3	-0.376028	-0.503600	-0.650318	-0.509902	-1.073549	-0.525427	0.0	1
4	-0.376028	-0.503600	-0.650318	-0.509902	-1.073549	-0.525427	0.0	1

In [ ]:

In [ ]: