jupyter Project 14 Euro 2020 Last Checkpoint: 9 minutes ago (autosaved)

File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3 (ipykernel)

In [1]:
```
import pandas as pd
import numpy as np
```

In [2]:
```
er = pd.read_csv("D:/Courses/Projects/eurocup_2020_results.csv")
er
```

4	Quarter-finals	03.07.2021	False	False	Czech Republic	Denmark	1	2
5	Quarter-finals	02.07.2021	False	False	Belgium	Italy	1	2
6	Quarter-finals	02.07.2021	True	1	3	Switzerland	Spain	1	1
7	Round of 16	29.06.2021	False	False	False	Sweden	Ukraine	1	2
8	Round of								

In [4]:
```
er.describe()
```

Out[4]:

	home_score_score	team_away_score	total_shots_home	total_shots_away	shots_on_target_home	shots_on_target_away
count	51.000000	51.000000	51.000000	51.000000	51.000000	51.000000
mean	1.196078	1.568235	12.137255	12.235294	3.933922	4.152941
std	1.077567	1.344259	6.195376	5.768223	2.545738	2.561966
min	0.000000	0.000000	1.000000	1.000000	0.000000	0.000000
25%	0.000000	0.000000	7.000000	8.500000	2.000000	2.000000
50%	1.000000	1.000000	11.000000	11.000000	4.000000	4.000000
75%	2.000000	2.000000	17.000000	16.000000	6.000000	6.500000
max	3.000000	5.000000	27.000000	26.000000	10.000000	10.000000

In [7]:
```
er["stage", "date"]
```

Out[7]:

	stage	date
0	Final	11.07.2021
1	Semi-finals	07.07.2021
2	Semi-finals	06.07.2021
3	Quarter-finals	03.07.2021
4	Quarter-finals	03.07.2021
5	Quarter-finals	02.07.2021
6	Quarter-finals	02.07.2021
7	Round of 16	29.06.2021
8	Round of 16	28.06.2021
9	Round of 16	28.06.2021
10	Round of 16	28.06.2021
11	Round of 16	27.06.2021
12	Round of 16	27.06.2021
13	Round of 16	26.06.2021
14	Round of 16	26.06.2021
15	Group stage: Matchday 3	23.06.2021
16	Group stage: Matchday 3	23.06.2021
17	Group stage: Matchday 3	23.06.2021
18	Group stage: Matchday 3	23.06.2021
19	Group stage: Matchday 3	22.06.2021
20	Group stage: Matchday 3	22.06.2021
21	Group stage: Matchday 3	21.06.2021
22	Group stage: Matchday 3	21.06.2021
23	Group stage: Matchday 3	21.06.2021
24	Group stage: Matchday 3	21.06.2021
25	Group stage: Matchday 3	20.06.2021
26	Group stage: Matchday 3	20.06.2021
27	Group stage: Matchday 2	16.06.2021
28	Group stage: Matchday 2	16.06.2021
29	Group stage: Matchday 2	16.06.2021
30	Group stage: Matchday 2	16.06.2021
31	Group stage: Matchday 2	16.06.2021
32	Group stage: Matchday 2	16.06.2021
33	Group stage: Matchday 2	16.06.2021
34	Group stage: Matchday 2	16.06.2021
35	Group stage: Matchday 2	17.06.2021
36	Group stage: Matchday 2	17.06.2021
37	Group stage: Matchday 2	16.06.2021
38	Group stage: Matchday 2	16.06.2021
39	Group stage: Matchday 1	15.06.2021
40	Group stage: Matchday 1	15.06.2021
41	Group stage: Matchday 1	14.06.2021
42	Group stage: Matchday 1	14.06.2021
43	Group stage: Matchday 1	14.06.2021
44	Group stage: Matchday 1	13.06.2021
45	Group stage: Matchday 1	13.06.2021
46	Group stage: Matchday 1	13.06.2021
47	Group stage: Matchday 1	12.06.2021
48	Group stage: Matchday 1	12.06.2021
49	Group stage: Matchday 1	12.06.2021
50	Group stage: Matchday 1	11.06.2021

In [9]:
```
print(len(er.stage))
```

```
51
```

In [10]:
```
print(len(er.columns))
```

```
20
```

In [11]:
```
er.dtypes
```

Out[11]:

```
stage                object
date                 object
pens                   bool
pens_home_score       int64
pens_away_score       int64
team_name_home       object
team_name_away       object
home_score           int64
team_away_score      int64
possession_home      object
possession_away      object
total_shots_home     int64
total_shots_away     int64
shots_on_target_home int64
shots_on_target_away int64
duels_won_home       object
duels_won_away       object
lineup_home          object
lineup_away          object
dtype: object
```

In [16]:
```
er.columns
```

Out[16]:

```
Index(['stage', 'date', 'pens', 'pens_home_score', 'pens_away_score',
       'team_name_home', 'team_name_away', 'team_home_score',
       'team_away_score', 'possession_home', 'possession_away',
       'total_shots_home', 'total_shots_away', 'shots_on_target_home',
       'shots_on_target_away', 'duels_won_home', 'duels_won_away',
       'events_list', '[group_home', ' lineup_away'],
      dtype='object')
```

In [17]:
```
er.index
```

Out[17]:

```
RangeIndex(start=0, stop=51, step=1)
```

In [18]:
```
er.ahs
```

Out[18]:

```
<bound method NDFrame.ahs of                 stage       date  pens pens_home_score  \
0                Final 11.07.2021  True                 3
1            Semi-finals 07.07.2021  False                 2
2            Semi-finals 06.07.2021  True                 4
3       Quarter-finals 03.07.2021  False                 1
4       Quarter-finals 03.07.2021  False                 1
5       Quarter-finals 02.07.2021  False                 1
6       Quarter-finals 02.07.2021  True                 1
7             Round of 16 29.06.2021  False                 1
8             Round of 16 28.06.2021  False                 2
9             Round of 16 28.06.2021  False                 0
10            Round of 16 28.06.2021  False                 0
11            Round of 16 27.06.2021  False                 1
12            Round of 16 27.06.2021  False                 0
13            Round of 16 26.06.2021  False                 1
14            Round of 16 26.06.2021  False                 4
15  Group stage: Matchday 3 23.06.2021  False                 0
16  Group stage: Matchday 3 23.06.2021  False                 0
17  Group stage: Matchday 3 23.06.2021  False                 0
18  Group stage: Matchday 3 23.06.2021  False                 1
19  Group stage: Matchday 3 22.06.2021  False                 0
20  Group stage: Matchday 3 22.06.2021  False                 0
21  Group stage: Matchday 3 21.06.2021  False                 0
22  Group stage: Matchday 3 21.06.2021  False                 0
23  Group stage: Matchday 3 21.06.2021  False                 0
24  Group stage: Matchday 3 21.06.2021  False                 0
25  Group stage: Matchday 3 20.06.2021  False                 0
26  Group stage: Matchday 3 20.06.2021  False                 0
27  Group stage: Matchday 2 16.06.2021  False                 0
28  Group stage: Matchday 2 16.06.2021  False                 0
29  Group stage: Matchday 2 16.06.2021  False                 0
30  Group stage: Matchday 2 16.06.2021  False                 0
31  Group stage: Matchday 2 16.06.2021  False                 0
32  Group stage: Matchday 2 16.06.2021  False                 0
33  Group stage: Matchday 2 17.06.2021  False                 0
34  Group stage: Matchday 2 17.06.2021  False                 0
35  Group stage: Matchday 2 17.06.2021  False                 0
36  Group stage: Matchday 2 16.06.2021  False                 0
37  Group stage: Matchday 2 16.06.2021  False                 0
38  Group stage: Matchday 2 16.06.2021  False                 0
39  Group stage: Matchday 1 15.06.2021  False                 0
40  Group stage: Matchday 1 15.06.2021  False                 0
41  Group stage: Matchday 1 14.06.2021  False                 0
42  Group stage: Matchday 1 14.06.2021  False                 0
43  Group stage: Matchday 1 14.06.2021  False                 0
44  Group stage: Matchday 1 13.06.2021  False                 0
45  Group stage: Matchday 1 13.06.2021  False                 0
46  Group stage: Matchday 1 13.06.2021  False                 0
47  Group stage: Matchday 1 12.06.2021  False                 0
48  Group stage: Matchday 1 12.06.2021  False                 0
49  Group stage: Matchday 1 12.06.2021  False                 0
50  Group stage: Matchday 1 11.06.2021  False                 0
```

In [20]:
```
er["team_away_score"]>3
```

Out[20]:

```
0    False
1    False
2    False
3     True
4    False
5    False
6    False
7    False
8    False
9    False
10   False
11   False
12   False
13   False
14    True
15   False
16   False
17   False
18   False
19   False
20   False
21   False
22    True
23   False
24   False
25   False
26   False
27   False
28    True
29   False
30   False
31   False
32   False
33   False
34   False
35   False
36   False
37   False
38   False
39   False
40   False
41   False
42   False
43   False
44   False
45   False
46   False
47   False
48   False
49   False
50   False
Name: team_away_score, dtype: bool
```

In [26]:
```
er.head()
```

Out[26]:

	stage	date	pens	pens_home_score	pens_away_score	team_name_home	team_name_away	team_home_score	team_away_score	possession_home
0	Final	11.07.2021	True	3	2	Italy	England	1	1	68%
1	Semi-finals	07.07.2021	False	False	False	England	Denmark	2	1	59%
2	Semi-finals	06.07.2021	True	4	2	Italy	Spain	1	1	29%
3	Quarter-finals	03.07.2021	False	False	False	Ukraine	England	0	4	48%
4	Quarter-finals	03.07.2021	False	False	False	Czech Republic	Denmark	1	2	56%

In [30]:
```
er.count()
```

Out[30]:

```
stage                 51
date                  51
pens                  51
pens_home_score       51
pens_away_score       51
team_name_home        51
team_name_away        51
team_home_score       51
team_away_score       51
possession_home       51
possession_away       51
total_shots_home      51
total_shots_away      51
shots_on_target_home  51
shots_on_target_away  51
duels_won_away        51
events_list           51
[group_home           51
 lineup_away          51
dtype: int64
```

In [39]:
```
er.groupby('possession_home').shots_on_target_home.mean()
```

Out[39]:

```
possession_home
27%    2.000000
28%    1.000000
30%    1.000000
32%    7.000000
33%    2.000000
34%    4.000000
35%    2.000000
36%    1.000000
38%    1.000000
39%    1.000000
42%    2.500000
43%    1.000000
44%    4.000000
45%    2.000000
46%    2.500000
47%    1.000000
48%    3.000000
51%    6.000000
52%    1.000000
53%    5.000000
54%    3.500000
55%    4.000000
57%    7.000000
62%    7.000000
63%    6.000000
64%    6.000000
65%    5.000000
67%    5.000000
70%    6.000000
71%    5.000000
77%    1.000000
80%    5.000000
Name: shots_on_target_home, dtype: float64
```

In [8]:
```
er[["stage","team_home_score","team_away_score","shots_on_target_home","shots_on_target_away"]]
```

Out[8]:

	stage	team_home_score	team_away_score	shots_on_target_home	shots_on_target_away
0	Final	1	1	4	2
1	Semi-finals	2	1	10	3
2	Semi-finals	1	1	4	5
3	Quarter-finals	0	4	2	5
4	Quarter-finals	1	2	5	7
5	Quarter-finals	1	2	4	3
6	Quarter-finals	1	1	2	10
7	Round of 16	1	2	3	4
8	Round of 16	2	0	4	3
9	Round of 16	3	3	6	5
10	Round of 16	3	5	7	10
11	Round of 16	1	0	1	4
12	Round of 16	0	2	0	5
13	Round of 16	2	1	6	3
14	Round of 16	0	4	1	8
15	Group stage: Matchday 3	2	2	5	5
16	Group stage: Matchday 3	2	2	7	4
17	Group stage: Matchday 3	3	2	4	6
18	Group stage: Matchday 3	0	3	5	3
19	Group stage: Matchday 3	3	1	6	3
20	Group stage: Matchday 3	0	1	1	3
21	Group stage: Matchday 3	1	2	1	7
22	Group stage: Matchday 3	1	4	2	10
23	Group stage: Matchday 3	0	1	1	4
24	Group stage: Matchday 3	0	3	1	7
25	Group stage: Matchday 3	1	0	6	1
26	Group stage: Matchday 3	3	1	10	6
27	Group stage: Matchday 2	1	1	5	2
28	Group stage: Matchday 2	2	4	2	7
29	Group stage: Matchday 2	1	1	3	4
30	Group stage: Matchday 2	0	0	1	2
31	Group stage: Matchday 2	1	1	2	2
32	Group stage: Matchday 2	1	0	4	0
33	Group stage: Matchday 2	2	0	4	1
34	Group stage: Matchday 2	1	2	5	5
35	Group stage: Matchday 2	2	0	3	0
36	Group stage: Matchday 2	3	0	3	1
37	Group stage: Matchday 2	0	2	6	7
38	Group stage: Matchday 2	0	1	1	3
39	Group stage: Matchday 1	1	0	1	1
40	Group stage: Matchday 1	0	3	3	1
41	Group stage: Matchday 1	1	0	5	1
42	Group stage: Matchday 1	1	2	3	2
43	Group stage: Matchday 1	0	2	4	7
44	Group stage: Matchday 1	3	2	7	3
45	Group stage: Matchday 1	3	1	6	2
46	Group stage: Matchday 1	1	0	2	2
47	Group stage: Matchday 1	3	0	4	1
48	Group stage: Matchday 1	0	1	6	1
49	Group stage: Matchday 1	1	1	2	4
50	Group stage: Matchday 1	0	3	0	8

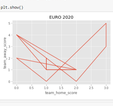
In [37]:
```
print(er.groupby('possession_home').possession_away.min())
```

```
possession_home
27%    71%
28%    72%
30%    76%
32%    68%
33%    67%
34%    63%
35%    63%
36%    64%
38%    62%
39%    61%
42%    53%
43%    53%
44%    56%
45%    53%
46%    54%
47%    53%
48%    49%
51%    47%
52%    45%
53%    44%
54%    43%
55%    43%
57%    39%
62%    37%
63%    37%
64%    34%
65%    34%
67%    33%
70%    34%
71%    31%
77%    24%
80%    24%
Name: possession_away, dtype: object
```

In [9]:
```
from matplotlib import pyplot as plt
from matplotlib import style
import numpy as np

style.use('ggplot')
x,y,z=np.loadtxt('D:/Courses/Projects/possession_home.txt', unpack=True, delimiter=',')
plt.clf()
plt.title('EURO 2020')
plt.xlabel('team_home_score')
plt.ylabel('team_away_score')

plt.show()
```



In [ ]: