Soccer Quality of Countries

Measured by average goals per game and goals per country

Import the useful packages, and make sure that matplot lib can show in the notebook

In [18]:
```
import sqlite3
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```

Create connections to the database, and use SQL to retrieve the desired data.

In [19]:
```
cnx = sqlite3.connect('database.sqlite')
#player_at = pd.read_sql_query("SELECT * FROM Player_Attributes", cnx)
#player = pd.read_sql_query("SELECT * FROM Player", cnx)
#league = pd.read_sql_query("SELECT * FROM League", cnx)
team = pd.read_sql_query("SELECT * FROM Team", cnx)
country= pd.read_sql_query("SELECT * FROM Country", cnx)
match= pd.read_sql_query("SELECT * FROM Match", cnx)
```

rename the columns to be the merge columns, for simplicity

In [20]:
```
country['country_id'] = country['id']
country['country_name'] = country['name']
country = country.drop(columns=['name','id'])
```

Filter the datasets to only the desired data

In [21]:
```
match_filtered = match[['country_id', 'league_id','home_team_api_id', 'away_te
am_api_id', 'home_team_goal', 'away_team_goal']]
team_filtered = team[['team_api_id', 'team_long_name']]
```

Show the table

In [22]:
```
match_filtered.head()
```

Out[22]:

	country_id	league_id	home_team_api_id	away_team_api_id	home_team_goal	away_team_goa
0	1	1	9987	9993	1	
1	1	1	10000	9994	0	
2	1	1	9984	8635	0	
3	1	1	9991	9998	5	
4	1	1	7947	9985	1	

Get country and league information, place them into the desired dataframe (soccer_data)

In [23]:
```
soccer_data = match_filtered.merge(country, on='country_id', how='inner')
soccer_data = soccer_data.merge(league, left_on='league_id', right_on='id', ho
w='inner')
soccer_data = soccer_data.merge(team_filtered, left_on='home_team_api_id', rig
ht_on='team_api_id', how='inner')
soccer_data = soccer_data.rename(columns={"team_long_name": "home_team"})
soccer_data = soccer_data.merge(team_filtered, left_on='away_team_api_id', rig
ht_on='team_api_id', how='inner')
soccer_data = soccer_data.rename(columns={"team_long_name": "away_team", "nam
e":"league_name"})
soccer_data = soccer_data[['country_name', 'league_name', 'home_team', 'home_t
eam_goal', 'away_team', 'away_team_goal']]
```

Fill in the 'Total Goals' per game by adding the home and away goals

In [24]:
```
soccer_data['total_goals'] = soccer_data['home_team_goal'] + soccer_data['away
_team_goal']
soccer_data.head()
```

Out[24]:

	country_name	league_name	home_team	home_team_goal	away_team	away_team_goal	tota
0	Belgium	Belgium Jupiler League	KRC Genk	1	Beerschot AC	1	
1	Belgium	Belgium Jupiler League	KRC Genk	1	Beerschot AC	1	
2	Belgium	Belgium Jupiler League	KRC Genk	2	Beerschot AC	1	
3	Belgium	Belgium Jupiler League	KRC Genk	3	Beerschot AC	1	
4	Belgium	Belgium Jupiler League	KRC Genk	3	Beerschot AC	0	

Time to plot!

First, group the data by country_name

Next, show the description of the data, sorted by highest mean first

In [25]:

```
country_data = soccer_data.groupby('country_name')
country_total_goals = country_data['total_goals'].describe(percentiles=[.95,.75])
country_total_goals.sort_values(by=['mean'], ascending=False)
```

Out[25]:

country_name	count	mean	std	min	50%	75%	95%	max
Netherlands	2448.0	3.080882	1.740640	0.0	3.0	4.0	6.0	10.0
Switzerland	1422.0	2.929677	1.717765	0.0	3.0	4.0	6.0	9.0
Germany	2448.0	2.901552	1.704974	0.0	3.0	4.0	6.0	11.0
Belgium	1728.0	2.801505	1.656507	0.0	3.0	4.0	6.0	9.0
Spain	3040.0	2.767105	1.731111	0.0	3.0	4.0	6.0	12.0
England	3040.0	2.710526	1.691127	0.0	3.0	4.0	6.0	10.0
Scotland	1824.0	2.633772	1.644379	0.0	2.0	4.0	6.0	12.0
Italy	3017.0	2.616838	1.640327	0.0	2.0	4.0	6.0	9.0
Portugal	2052.0	2.534600	1.637348	0.0	2.0	4.0	5.0	9.0
France	3040.0	2.443092	1.551799	0.0	2.0	3.0	5.0	10.0
Poland	1920.0	2.425000	1.540355	0.0	2.0	3.0	5.0	8.0

Show the table, this time being sorted by highest count first

In [26]:

```
country_total_goals.sort_values(by=['count'], ascending=False)
```

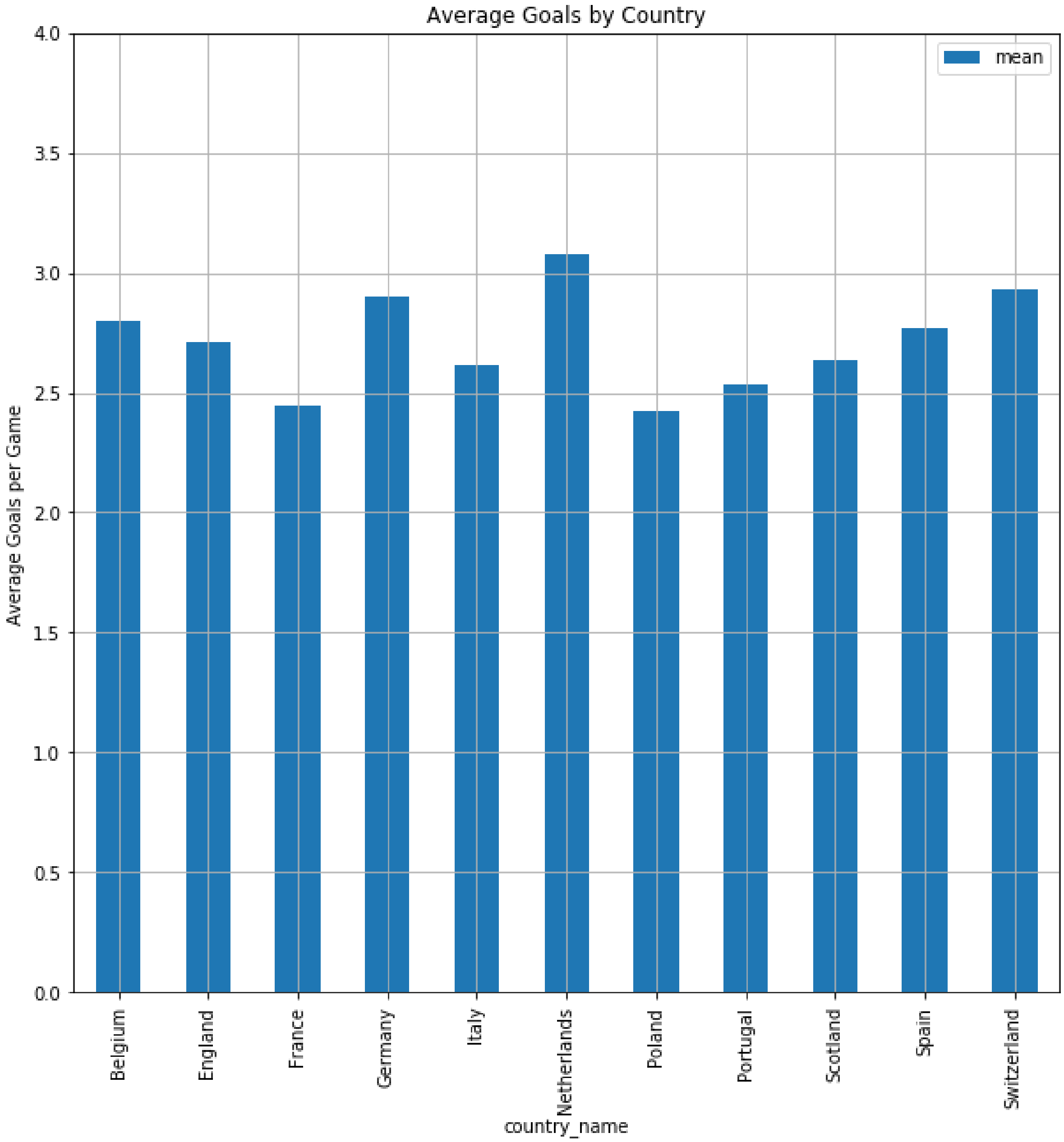
Out[26]:

country_name	count	mean	std	min	50%	75%	95%	max
England	3040.0	2.710526	1.691127	0.0	3.0	4.0	6.0	10.0
France	3040.0	2.443092	1.551799	0.0	2.0	3.0	5.0	10.0
Spain	3040.0	2.767105	1.731111	0.0	3.0	4.0	6.0	12.0
Italy	3017.0	2.616838	1.640327	0.0	2.0	4.0	6.0	9.0
Germany	2448.0	2.901552	1.704974	0.0	3.0	4.0	6.0	11.0
Netherlands	2448.0	3.080882	1.740640	0.0	3.0	4.0	6.0	10.0
Portugal	2052.0	2.534600	1.637348	0.0	2.0	4.0	5.0	9.0
Poland	1920.0	2.425000	1.540355	0.0	2.0	3.0	5.0	8.0
Scotland	1824.0	2.633772	1.644379	0.0	2.0	4.0	6.0	12.0
Belgium	1728.0	2.801505	1.656507	0.0	3.0	4.0	6.0	9.0
Switzerland	1422.0	2.929677	1.717765	0.0	3.0	4.0	6.0	9.0

Plot the Average Goals by Country

In [27]:
```
ax = country_total_goals.plot.bar(y='mean', figsize=(10,10))
ax.grid()
ax.set_ylabel('Average Goals per Game')
ax.set_title('Average Goals by Country')
ax.set_ylim(0,4)
```

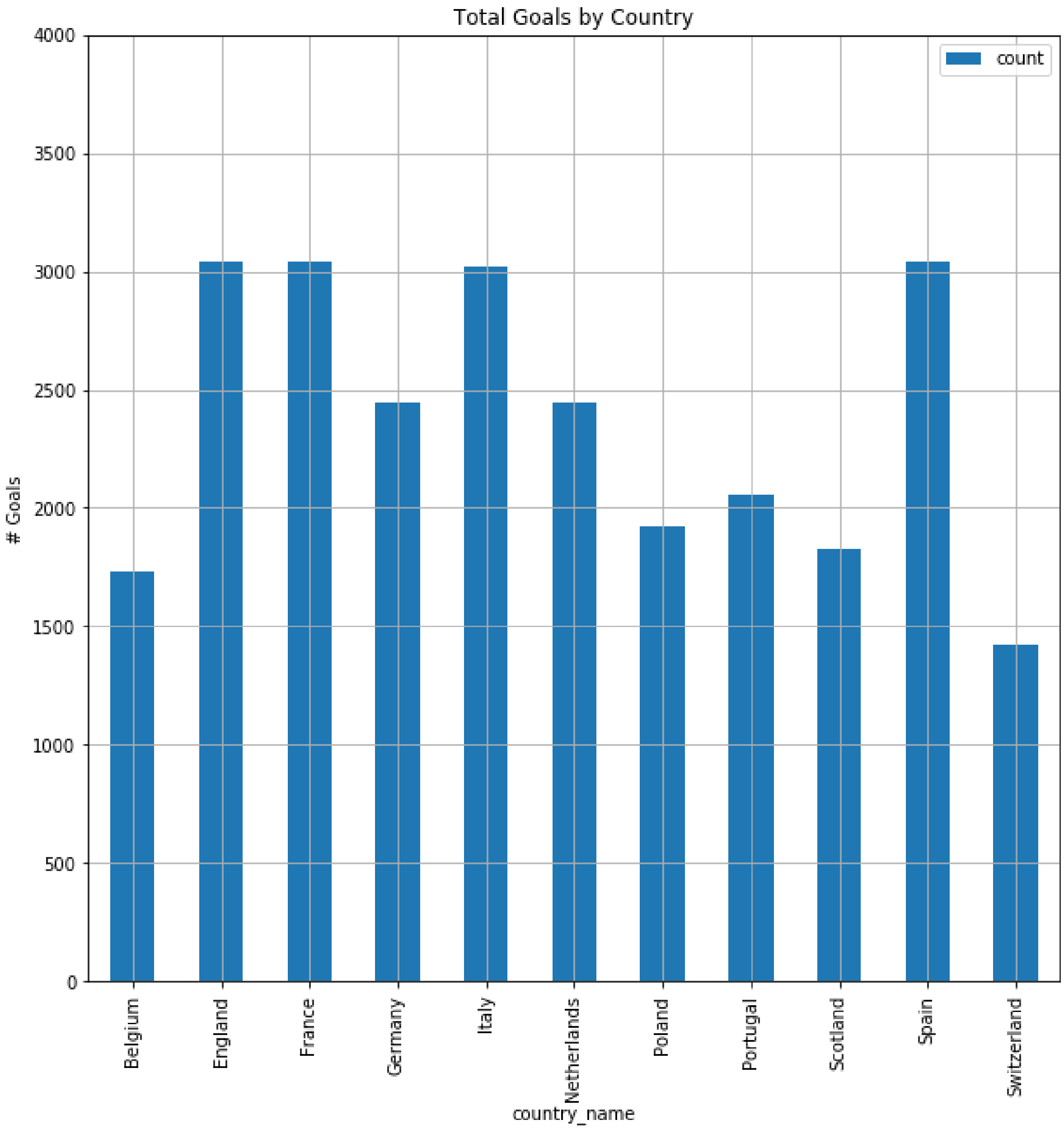
Out[27]:
```
(0, 4)
```



Plot the Total Goals by Country

In [28]:
```
ax = country_total_goals.plot.bar(y='count', figsize=(10,10))
ax.grid()
ax.set_ylabel('# Goals')
ax.set_title('Total Goals by Country')
ax.set_ylim(0,4000)
```

Out[28]:
```
(0, 4000)
```


Total Goals by Country
count
# Goals
Belgium
England
France
Germany
Italy
Netherlands
Poland
Portugal
Scotland
Spain
Switzerland
country_name