In [1]:

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

In [2]:

```
fifa =pd.read_csv("data.csv")
```

informations of data frame "fifa"

In [3]:

```
fifa.head()
```

Out[3]:

	Unnamed: 0	ID	Name	Age	Photo	Nationality	Flag	Overall	Potential	Club	...	Composure	Marking	StandingTackle	SlidingTackle	GKDiving	GKHandling	GKKicking	GKPositioning	GKReflexes	Release Clause
0	0	158023	L. Messi	31	https://cdn.sofifa.org/players/4/19/158023.png	Argentina	https://cdn.sofifa.org/flags/52.png	94	94	FC Barcelona	...	96.0	33.0	28.0	26.0	6.0	11.0	15.0	14.0	8.0	€226.5M
1	1	20801	Cristiano Ronaldo	33	https://cdn.sofifa.org/players/4/19/20801.png	Portugal	https://cdn.sofifa.org/flags/38.png	94	94	Juventus	...	95.0	28.0	31.0	23.0	7.0	11.0	15.0	14.0	11.0	€127.1M
2	2	190871	Neymar Jr	26	https://cdn.sofifa.org/players/4/19/190871.png	Brazil	https://cdn.sofifa.org/flags/54.png	92	93	Paris Saint-Germain	...	94.0	27.0	24.0	33.0	9.0	9.0	15.0	15.0	11.0	€228.1M
3	3	193080	De Gea	27	https://cdn.sofifa.org/players/4/19/193080.png	Spain	https://cdn.sofifa.org/flags/45.png	91	93	Manchester United	...	68.0	15.0	21.0	13.0	90.0	85.0	87.0	88.0	94.0	€138.6M
4	4	192985	K. De Bruyne	27	https://cdn.sofifa.org/players/4/19/192985.png	Belgium	https://cdn.sofifa.org/flags/7.png	91	92	Manchester City	...	88.0	68.0	58.0	51.0	15.0	13.0	5.0	10.0	13.0	€196.4M

5 rows × 89 columns

In [4]:

```
fifa.tail()
```

Out[4]:

	Unnamed: 0	ID	Name	Age	Photo	Nationality	Flag	Overall	Potential	Club	...	Composure	Marking	StandingTackle	SlidingTackle	GKDiving	GKHandling	GKKicking	GKPositioning	GKReflexes	Release Clause
18202	18202	238813	J. Lundstram	19	https://cdn.sofifa.org/players/4/19/238813.png	England	https://cdn.sofifa.org/flags/14.png	47	65	Crewe Alexandra	...	45.0	40.0	48.0	47.0	10.0	13.0	7.0	8.0	9.0	€143K
18203	18203	243165	N. Christoffersson	19	https://cdn.sofifa.org/players/4/19/243165.png	Sweden	https://cdn.sofifa.org/flags/46.png	47	63	Trelleborgs FF	...	42.0	22.0	15.0	19.0	10.0	9.0	9.0	5.0	12.0	€113K
18204	18204	241638	B. Worman	16	https://cdn.sofifa.org/players/4/19/241638.png	England	https://cdn.sofifa.org/flags/14.png	47	67	Cambridge United	...	41.0	32.0	13.0	11.0	6.0	5.0	10.0	6.0	13.0	€165K
18205	18205	246268	D. Walker-Rice	17	https://cdn.sofifa.org/players/4/19/246268.png	England	https://cdn.sofifa.org/flags/14.png	47	66	Tranmere Rovers	...	46.0	20.0	25.0	27.0	14.0	6.0	14.0	8.0	9.0	€143K
18206	18206	246269	G. Nugent	16	https://cdn.sofifa.org/players/4/19/246269.png	England	https://cdn.sofifa.org/flags/14.png	46	66	Tranmere Rovers	...	43.0	40.0	43.0	50.0	10.0	15.0	9.0	12.0	9.0	€165K

5 rows × 89 columns

# the above two data frames fifa.head() & fifa.tail() represents the first 5 rows of main data frame FIFA

In [30]:

```
fifa.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 18207 entries, 0 to 18206
Data columns (total 89 columns):
 #   Column                    Non-Null Count  Dtype  
---  ------                    --------------  -----  
 0   Unnamed: 0                18207 non-null  int64  
 1   ID                        18207 non-null  int64  
 2   Name                      18207 non-null  object 
 3   Age                       18207 non-null  int64  
 4   Photo                     18207 non-null  object 
 5   Nationality               18207 non-null  object 
 6   Flag                      18207 non-null  object 
 7   Overall                   18207 non-null  int64  
 8   Potential                 18207 non-null  int64  
 9   Club                      17966 non-null  object 
 10  Club Logo                 18207 non-null  object 
 11  Value                     18207 non-null  object 
 12  Wage                      18207 non-null  object 
 13  Special                   18207 non-null  int64  
 14  Preferred Foot            18159 non-null  object 
 15  International Reputation  18159 non-null  float64
 16  Weak Foot                 18159 non-null  float64
 17  Skill Moves               18159 non-null  float64
 18  Work Rate                 18159 non-null  object 
 19  Body Type                 18159 non-null  object 
 20  Real Face                 18159 non-null  object 
 21  Position                  18147 non-null  object 
 22  Jersey Number             18147 non-null  float64
 23  Joined                    16654 non-null  object 
 24  Loaned From               1264 non-null   object 
 25  Contract Valid Until      17918 non-null  object 
 26  Height                    18159 non-null  object 
 27  Weight                    18159 non-null  object 
 28  LS                        16122 non-null  object 
 29  ST                        16122 non-null  object 
 30  RS                        16122 non-null  object 
 31  LW                        16122 non-null  object 
 32  LF                        16122 non-null  object 
 33  CF                        16122 non-null  object 
 34  RF                        16122 non-null  object 
 35  RW                        16122 non-null  object 
 36  LAM                       16122 non-null  object 
 37  CAM                       16122 non-null  object 
 38  RAM                       16122 non-null  object 
 39  LM                        16122 non-null  object 
 40  LCM                       16122 non-null  object 
 41  CM                        16122 non-null  object 
 42  RCM                       16122 non-null  object 
 43  RM                        16122 non-null  object 
 44  LWB                       16122 non-null  object 
 45  LDM                       16122 non-null  object 
 46  CDM                       16122 non-null  object 
 47  RDM                       16122 non-null  object 
 48  RWB                       16122 non-null  object 
 49  LB                        16122 non-null  object 
 50  LCB                       16122 non-null  object 
 51  CB                        16122 non-null  object 
 52  RCB                       16122 non-null  object 
 53  RB                        16122 non-null  object 
 54  Crossing                  18159 non-null  float64
 55  Finishing                 18159 non-null  float64
 56  HeadingAccuracy           18159 non-null  float64
 57  ShortPassing              18159 non-null  float64
 58  Volleys                   18159 non-null  float64
 59  Dribbling                 18159 non-null  float64
 60  Curve                     18159 non-null  float64
 61  FKAccuracy                18159 non-null  float64
 62  LongPassing               18159 non-null  float64
 63  BallControl               18159 non-null  float64
 64  Acceleration              18159 non-null  float64
 65  SprintSpeed               18159 non-null  float64
 66  Agility                   18159 non-null  float64
 67  Reactions                 18159 non-null  float64
 68  Balance                   18159 non-null  float64
 69  ShotPower                 18159 non-null  float64
 70  Jumping                   18159 non-null  float64
 71  Stamina                   18159 non-null  float64
 72  Strength                  18159 non-null  float64
 73  LongShots                 18159 non-null  float64
 74  Aggression                18159 non-null  float64
 75  Interceptions             18159 non-null  float64
 76  Positioning               18159 non-null  float64
 77  Vision                    18159 non-null  float64
 78  Penalties                 18159 non-null  float64
 79  Composure                 18159 non-null  float64
 80  Marking                   18159 non-null  float64
 81  StandingTackle            18159 non-null  float64
 82  SlidingTackle             18159 non-null  float64
 83  GKDiving                  18159 non-null  float64
 84  GKHandling                18159 non-null  float64
 85  GKKicking                 18159 non-null  float64
 86  GKPositioning             18159 non-null  float64
 87  GKReflexes                18159 non-null  float64
 88  Release Clause            16643 non-null  object 
dtypes: float64(38), int64(6), object(45)
memory usage: 12.4+ MB
```

#fifa.info() gives data types which are there in the dataset "fifa" #we have float64(38), int64(6), object(45)

In [11]:

```
fifa.describe()
```

Out[11]:

	Unnamed: 0	ID	Age	Overall	Potential	Special	International Reputation	Weak Foot	Skill Moves	Jersey Number	...	Penalties	Composure	Marking	StandingTackle	SlidingTackle	GKDiving	GKHandling	GKKicking	GKPositioning	GKReflexes
count	18207.000000	18207.000000	18207.000000	18207.000000	18207.000000	18207.000000	18159.000000	18159.000000	18159.000000	18147.000000	...	18159.000000	18159.000000	18159.000000	18159.000000	18159.000000	18159.000000	18159.000000	18159.000000	18159.000000	18159.000000
mean	9103.000000	214298.338606	25.122206	66.238699	71.307299	1597.809908	1.113222	2.947299	2.361308	19.546096	...	48.548598	58.648274	47.281623	47.697836	45.661435	16.616223	16.391596	16.232061	16.388898	16.710887
std	5256.052511	29965.244204	4.669943	6.908930	6.136496	272.586016	0.394031	0.660456	0.756164	15.947765	...	15.704053	11.436133	19.904397	21.664004	21.289135	17.695349	16.906900	16.502864	17.034669	17.955119
min	0.000000	16.000000	16.000000	46.000000	48.000000	731.000000	1.000000	1.000000	1.000000	1.000000	...	5.000000	3.000000	3.000000	2.000000	3.000000	1.000000	1.000000	1.000000	1.000000	1.000000
25%	4551.500000	200315.500000	21.000000	62.000000	67.000000	1457.000000	1.000000	3.000000	2.000000	8.000000	...	39.000000	51.000000	30.000000	27.000000	24.000000	8.000000	8.000000	8.000000	8.000000	8.000000
50%	9103.000000	221759.000000	25.000000	66.000000	71.000000	1635.000000	1.000000	3.000000	2.000000	17.000000	...	49.000000	60.000000	53.000000	55.000000	52.000000	11.000000	11.000000	11.000000	11.000000	11.000000
75%	13654.500000	236529.500000	28.000000	71.000000	75.000000	1787.000000	1.000000	3.000000	3.000000	26.000000	...	60.000000	67.000000	64.000000	66.000000	64.000000	14.000000	14.000000	14.000000	14.000000	14.000000
max	18206.000000	246620.000000	45.000000	94.000000	95.000000	2346.000000	5.000000	5.000000	5.000000	99.000000	...	92.000000	96.000000	94.000000	93.000000	91.000000	90.000000	92.000000	91.000000	90.000000	94.000000

8 rows × 44 columns

#fifa.describe() shares information regarding quartiles , mean , count , standard deviation , min & max value #it helps us to quickly find the above statistical inference regarding the dataset # from above information we can infer that # no of players "18205" # minumum age of players "16" # maximum age of players "45"

In [33]:

```
for col in fifa:
    print(col)
```

```
Unnamed: 0
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
```

#this for loop generates all the names of columns of the dataset #we have 89 columns and thier names were displayed above

In [34]:

```
fifa.shape
```

Out[34]:

```
(18207, 89)
```

#fifa.shape give no of rows & columns we have in the data set #we have 18207 rows #we have 89 columns

In [8]:

```
fifa.notnull()
```

Out[8]:

	Unnamed: 0	ID	Name	Age	Photo	Nationality	Flag	Overall	Potential	Club	...	Composure	Marking	StandingTackle	SlidingTackle	GKDiving	GKHandling	GKKicking	GKPositioning	GKReflexes	Release Clause
0	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True
1	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True
2	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True
3	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True
4	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18202	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True
18203	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True
18204	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True
18205	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True
18206	True	True	True	True	True	True	True	True	True	True	...	True	True	True	True	True	True	True	True	True	True

18207 rows × 89 columns

In [6]:

```
fifa.drop(0)
```

Out[6]:

	Unnamed: 0	ID	Name	Age	Photo	Nationality	Flag	Overall	Potential	Club	...	Composure	Marking	StandingTackle	SlidingTackle	GKDiving	GKHandling	GKKicking	GKPositioning	GKReflexes	Release Clause
1	1	20801	Cristiano Ronaldo	33	https://cdn.sofifa.org/players/4/19/20801.png	Portugal	https://cdn.sofifa.org/flags/38.png	94	94	Juventus	...	95.0	28.0	31.0	23.0	7.0	11.0	15.0	14.0	11.0	€127.1M
2	2	190871	Neymar Jr	26	https://cdn.sofifa.org/players/4/19/190871.png	Brazil	https://cdn.sofifa.org/flags/54.png	92	93	Paris Saint-Germain	...	94.0	27.0	24.0	33.0	9.0	9.0	15.0	15.0	11.0	€228.1M
3	3	193080	De Gea	27	https://cdn.sofifa.org/players/4/19/193080.png	Spain	https://cdn.sofifa.org/flags/45.png	91	93	Manchester United	...	68.0	15.0	21.0	13.0	90.0	85.0	87.0	88.0	94.0	€138.6M
4	4	192985	K. De Bruyne	27	https://cdn.sofifa.org/players/4/19/192985.png	Belgium	https://cdn.sofifa.org/flags/7.png	91	92	Manchester City	...	88.0	68.0	58.0	51.0	15.0	13.0	5.0	10.0	13.0	€196.4M
5	5	183277	E. Hazard	27	https://cdn.sofifa.org/players/4/19/183277.png	Belgium	https://cdn.sofifa.org/flags/7.png	91	91	Chelsea	...	91.0	34.0	27.0	22.0	11.0	12.0	6.0	8.0	8.0	€172.1M
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18202	18202	238813	J. Lundstram	19	https://cdn.sofifa.org/players/4/19/238813.png	England	https://cdn.sofifa.org/flags/14.png	47	65	Crewe Alexandra	...	45.0	40.0	48.0	47.0	10.0	13.0	7.0	8.0	9.0	€143K
18203	18203	243165	N. Christoffersson	19	https://cdn.sofifa.org/players/4/19/243165.png	Sweden	https://cdn.sofifa.org/flags/46.png	47	63	Trelleborgs FF	...	42.0	22.0	15.0	19.0	10.0	9.0	9.0	5.0	12.0	€113K
18204	18204	241638	B. Worman	16	https://cdn.sofifa.org/players/4/19/241638.png	England	https://cdn.sofifa.org/flags/14.png	47	67	Cambridge United	...	41.0	32.0	13.0	11.0	6.0	5.0	10.0	6.0	13.0	€165K
18205	18205	246268	D. Walker-Rice	17	https://cdn.sofifa.org/players/4/19/246268.png	England	https://cdn.sofifa.org/flags/14.png	47	66	Tranmere Rovers	...	46.0	20.0	25.0	27.0	14.0	6.0	14.0	8.0	9.0	€143K
18206	18206	246269	G. Nugent	16	https://cdn.sofifa.org/players/4/19/246269.png	England	https://cdn.sofifa.org/flags/14.png	46	66	Tranmere Rovers	...	43.0	40.0	43.0	50.0	10.0	15.0	9.0	12.0	9.0	€165K

18206 rows × 89 columns

#fifa.notnull() enables to check whether there is NA values in the dataset #fifa.dropna(0) drops the rows which contain NA values #so from above observation we dropped a row #now our dataset contains 18206 rows & 89 columns

Analysis of Teams W.R.T Participants,Release Clause,Age

In [35]:

```
fifa['Nationality'].value_counts()
```

Out[35]:

```
England                 1662
Germany                 1198
Spain                   1072
Argentina                937
France                   914
                        ... 
New Caledonia              1
Fiji                       1
São Tomé & Príncipe        1
United Arab Emirates       1
Botswana                   1
Name: Nationality, Length: 164, dtype: int64
```

In [15]:

```
countries = fifa['Nationality'].value_counts()[0:10]
```

In [17]:

```
countries.head()
```

Out[17]:

```
England      1662
Germany      1198
Spain        1072
Argentina     937
France        914
Name: Nationality, dtype: int64
```

In [16]:

```
countries.tail()
```

Out[16]:

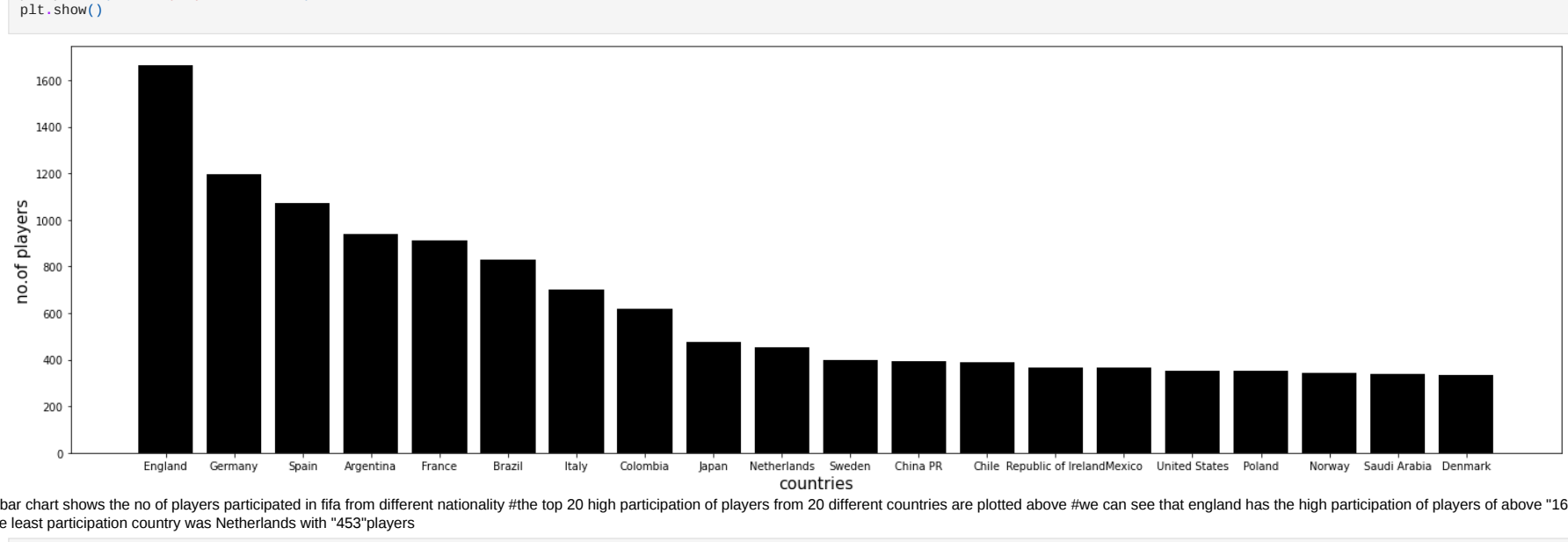
```
Brazil         827
Italy          702
Colombia       618
Japan          478
Netherlands    453
Name: Nationality, dtype: int64
```

In [37]:

```
values = fifa['Nationality'].value_counts()[0:10].keys
```

In [94]:

```
plt.figure(figsize=(25,7))
plt.bar(list(fifa['Nationality'].value_counts()[0:20].keys()),list(fifa['Nationality'].value_counts()[0:20]),color="black")
plt.xlabel("countries",size=15)
plt.ylabel("no.of players",size=15)
plt.show()
```



#the above bar chart shows the no of players participated in fifa from different nationality #the top 20 high participation of players from 20 different countries are plotted above #we can see that england has the high participation of players of above "1600" #we can see in In[16] the last 5 countries were participations of players are less #the least participation country was Netherlands with "453"players

In [19]:

```
sal_contries = fifa[['Name','Nationality','Release Clause']]
```

In [20]:

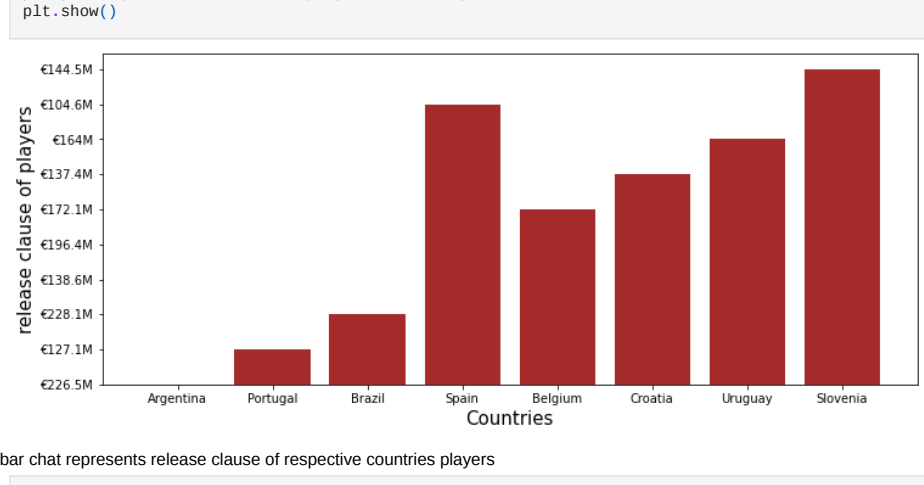
```
sal_contries.head()
```

Out[20]:

	Name	Nationality	Release Clause
0	L. Messi	Argentina	€226.5M
1	Cristiano Ronaldo	Portugal	€127.1M
2	Neymar Jr	Brazil	€228.1M
3	De Gea	Spain	€138.6M
4	K. De Bruyne	Belgium	€196.4M

In [30]:

```
plt.figure(figsize=(12,5))
plt.bar(list(sal_contries['Nationality'])[0:10],list(sal_contries['Release Clause'])[0:10],color="brown")
plt.xlabel("Countries",size=15)
plt.ylabel("release clause of players",size=15)
plt.show()
```



#the above bar chart represents release clause of respective countries players

In [48]:

```
players_age = fifa[['Nationality','Name','Age']]
players_age.sort_values(by=['Age'],ascending=False).head()
```

Out[48]:

	Nationality	Name	Age
4741	Mexico	O. Pérez	45
18183	England	K. Pilkington	44
17726	Trinidad & Tobago	T. Warner	44
10545	Japan	S. Narazaki	42
7225	Argentina	C. Muñoz	41

In [45]:

```
players_age
```

Out[45]:

	Nationality	Name	Age
4741	Mexico	O. Pérez	45
18183	England	K. Pilkington	44
17726	Trinidad & Tobago	T. Warner	44
10545	Japan	S. Narazaki	42
7225	Argentina	C. Muñoz	41

In [49]:

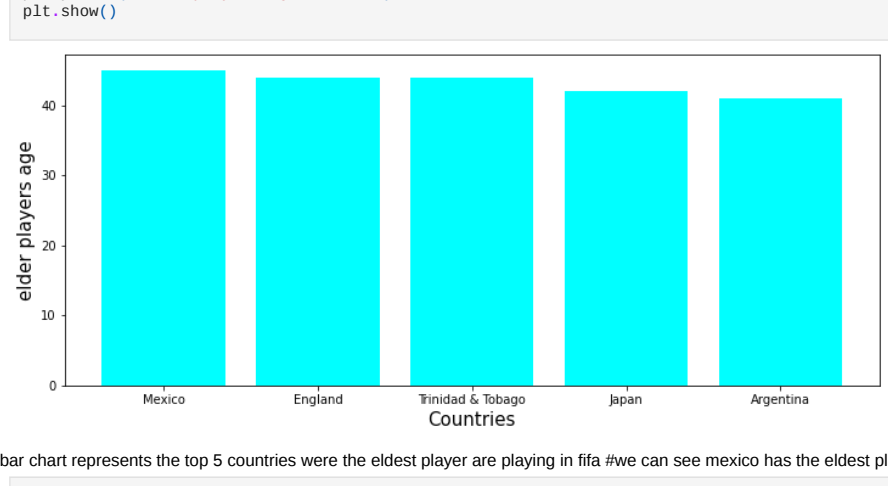
```
players_age.sort_values(by=['Age'],ascending=False).tail()
```

Out[49]:

	Nationality	Name	Age
17921	England	J. Rowland	16
17887	Australia	M. Tilio	16
15363	Netherlands	Y. Roemer	16
17881	Norway	R. Hauge	16
18206	England	G. Nugent	16

In [47]:

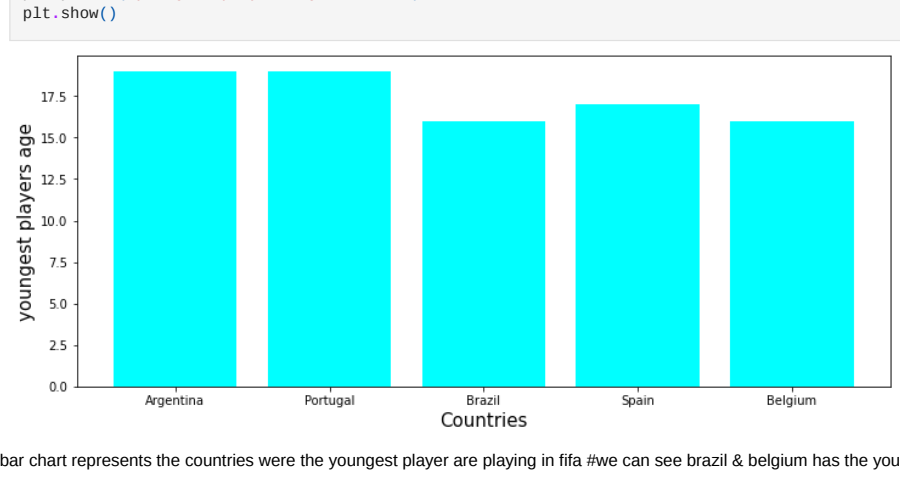
```
plt.figure(figsize=(12,5))
plt.bar(list(players_age['Nationality'].head()),list(players_age['Age'].head()),color="cyan")
plt.xlabel("Countries",size=15)
plt.ylabel("elder players age",size=15)
plt.show()
```



#the above bar chart represents the top 5 countries were the eldest player are playing in fifa #we can see mexico has the eldest player of age 45

In [50]:

```
plt.figure(figsize=(12,5))
plt.bar(list(players_age['Nationality'].head()),list(players_age['Age'].tail()),color="cyan")
plt.xlabel("Countries",size=15)
plt.ylabel("youngest players age",size=15)
plt.show()
```



#the above bar chart represents the countries were the youngest player are playing in fifa #we can see brazil & belgium has the youngest players of age 16

wages of players

In [156…

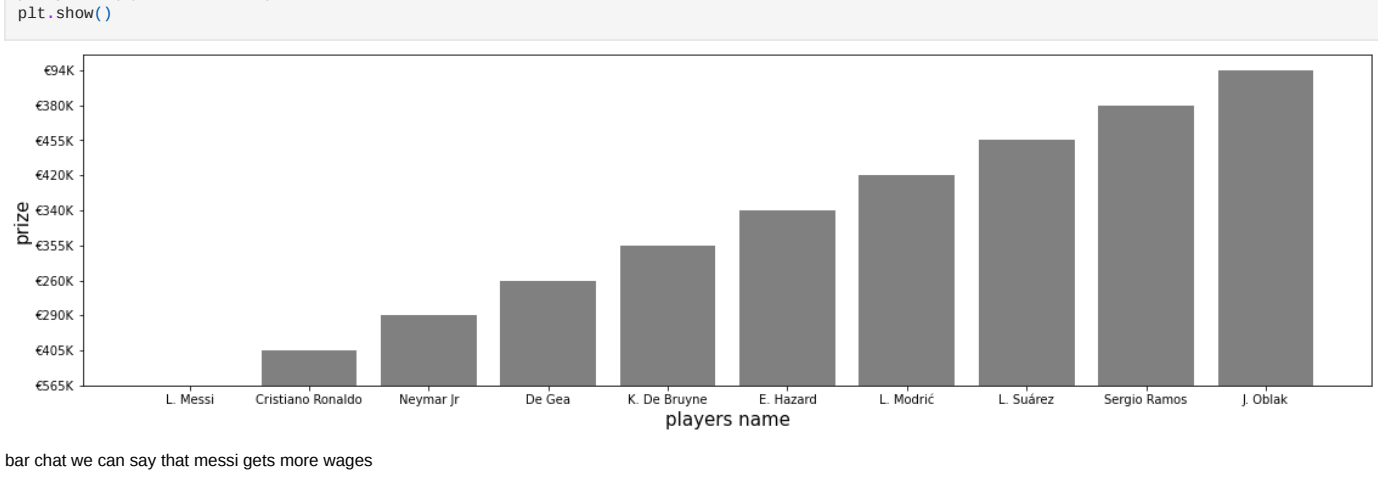
```
player_salary = fifa[['Name','Wage']]
player_salary[0:10]
```

Out[156…

	Name	Wage
0	L. Messi	€565K
1	Cristiano Ronaldo	€405K
2	Neymar Jr	€290K
3	De Gea	€260K
4	K. De Bruyne	€355K
5	E. Hazard	€340K
6	L. Modrić	€420K
7	L. Suárez	€455K
8	Sergio Ramos	€380K
9	J. Oblak	€94K

In [159…

```
plt.figure(figsize=(19,5))
plt.bar(list(player_salary['Name'])[0:10],list(player_salary['Wage'])[0:10],color="grey")
plt.xlabel("players name",size=15)
plt.ylabel("prize",size=15)
plt.show()
```



#from above bar chat we can say that messi gets more wages

players potentiality W.R.T Age,Teams,Individuals

In [65]:

```
age_potential = fifa[['Name','Age','Potential']]
```

In [66]:

```
age_potential.sort_values(by=['Age'],ascending=True).head()
```

Out[66]:

	Name	Age	Potential
18206	G. Nugent	16	66
17743	J. Olstad	16	69
13293	H. Massengo	16	75
16081	J. Italiano	16	79
18166	N. Ayéva	16	72

In [70]:

```
age_potential.sort_values(by=['Potential'],ascending=False).tail()
```

Out[70]:

	Name	Age	Potential
17988	Wang Xuanhong	28	51
18043	A. Suzuki	31	50
18025	J. Miszczuk	27	50
18183	K. Pilkington	44	48
18171	Y. Uchimura	33	48

In [68]:

```
age_potential.sort_values(by=['Potential'],ascending=False).head()
```

Out[68]:

	Name	Age	Potential
25	K. Mbappé	19	95
0	L. Messi	31	94
15	P. Dybala	24	94
1	Cristiano Ronaldo	33	94
2	Neymar Jr	26	93

In [235…

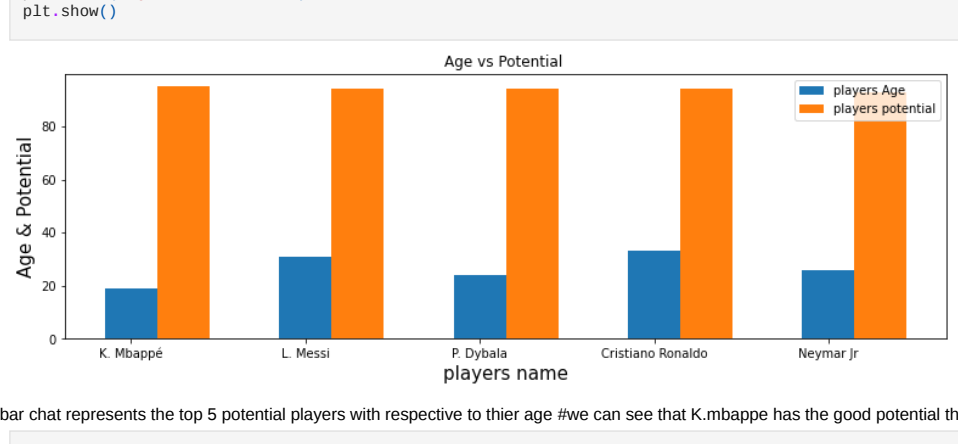
```
w=0.3
players = ["K. Mbappé","L. Messi","P. Dybala","Cristiano Ronaldo","Neymar Jr"]
age = [19,31,24,33,26]
potential = [95,94,94,94,93]
```

In [236…

```
bar1=np.arange(len(players))
bar2=[i+w for i in bar1]
```

In [239…

```
plt.figure(figsize=(13,4))
plt.bar(bar1,age,w,label="players Age")
plt.bar(bar2,potential,w,label="players potential")
plt.legend()
plt.xlabel("players name",size=15)
plt.xticks(bar1,players)
plt.ylabel("Age & Potential",size=15)
plt.title("Age vs Potential ")
plt.show()
```



#the above bar chat represents the top 5 potential players with respective to thier age #we can see that K.mbappe has the good potential than other players #also for reference we can see the less potential player in In[70] Y. Uchimura

In [187…

```
potential_age = fifa[['Age','Potential']]
```

In [188…

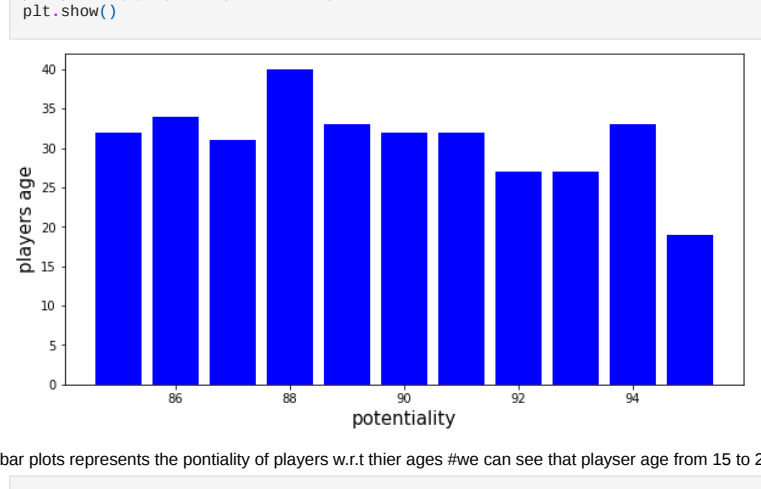
```
potential_age.sort_values(by=['Potential'],ascending=False).head()
```

Out[188…

	Age	Potential
25	19	95
0	31	94
15	24	94
1	33	94
2	26	93

In [189…

```
plt.figure(figsize=(10,5))
plt.bar(list(potential_age['Potential'])[0:100],list(potential_age['Age'])[0:100],color="b")
plt.xlabel("potentiality",size=15)
plt.ylabel("players age",size=15)
plt.show()
```



#the above bar plots represents the pontiality of players w.r.t thier ages #we can see that playser age from 15 to 20 has the good potential in very less age #and players from age 30 to 40 has weak potentiality

In [54]:

```
potential_country = fifa[['Nationality','Potential']]
```

In [61]:

```
potential_country= potential_country.sort_values(by=['Potential'],ascending=False).head()
```

In [63]:

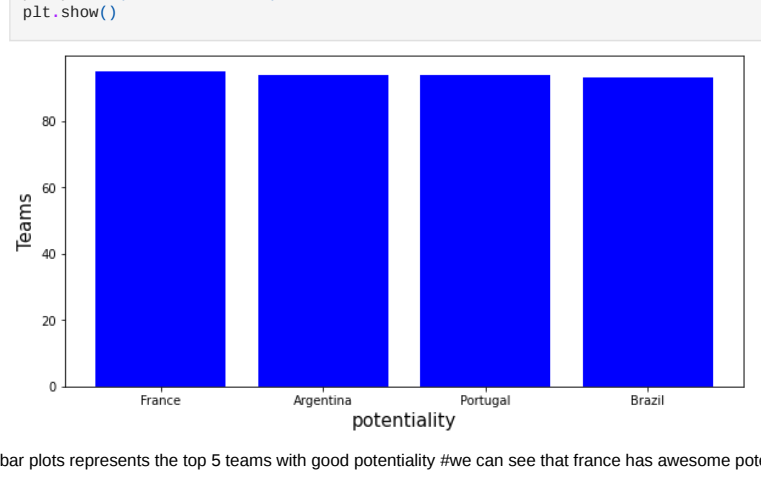
```
potential_country
```

Out[63]:

	Nationality	Potential
25	France	95
0	Argentina	94
15	Argentina	94
1	Portugal	94
2	Brazil	93

In [73]:

```
w=0.2
plt.figure(figsize=(10,5))
plt.bar(list(potential_country['Nationality'])[0:10],list(potential_country['Potential'])[0:10],color="b")
plt.xlabel("potentiality",size=15)
plt.ylabel("Teams",size=15)
plt.show()
```



#the above bar plots represents the top 5 teams with good potentiality #we can see that france has awesome potentiality

Tackling Accuracy Of Players

In [86]:

```
tackling = fifa[['Name','StandingTackle','SlidingTackle']]
tackling = tackling.sort_values(by=['StandingTackle','SlidingTackle'],ascending=False).head()
```

In [87]:

```
tackling
```

Out[87]:

	Name	StandingTackle	SlidingTackle
24	G. Chiellini	93.0	90.0
8	Sergio Ramos	92.0	91.0
71	T. Alderweireld	91.0	86.0
14	N. Kanté	91.0	85.0
34	M. Hummels	90.0	88.0

In [ ]:

In [88]:

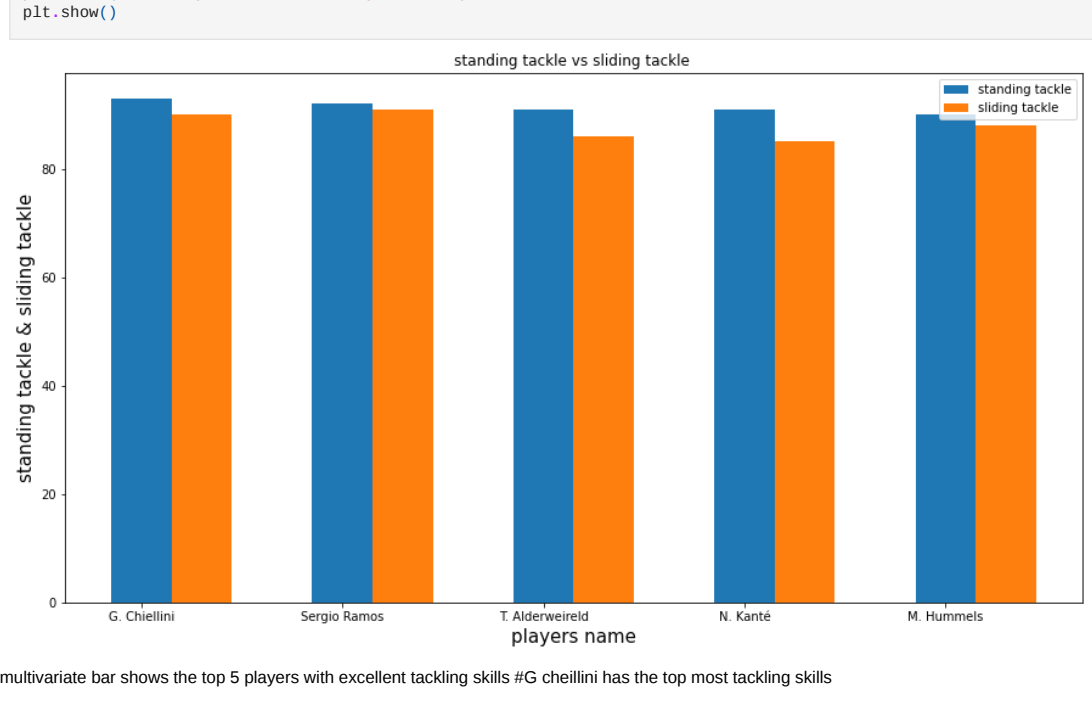
```
w=0.3
players = list(tackling['Name'])[0:10]
std_tack = list(tackling['StandingTackle'].head())
sld_tack = list(tackling['SlidingTackle'].head())
```

In [89]:

```
bar1=np.arange(len(players))
bar2=[i+w for i in bar1]
```

In [90]:

```
plt.figure(figsize=(15,8))
plt.bar(bar1,std_tack,w,label="standing tackle")
plt.bar(bar2,sld_tack,w,label="sliding tackle")
plt.legend()
plt.xlabel("players name",size=15)
plt.xticks(bar1,players)
plt.ylabel("standing tackle & sliding tackle",size=15)
plt.title("standing tackle vs sliding tackle ")
plt.show()
```



#the above multivariate bar shows the top 5 players with excellent tackling skills #G cheillini has the top most tackling skills

Goal keeper Accuracy In Skills

In [91]:

```
goal_keeper_skills= fifa[['Name','GKDiving','GKHandling','GKKicking','GKPositioning','GKReflexes']]
```

In [92]:

```
goal_keeper_skills =goal_keeper_skills.sort_values(by=['GKDiving','GKHandling','GKKicking','GKPositioning','GKReflexes'],ascending=False).head()
```

In [93]:

```
goal_keeper_skills
```

Out[93]:

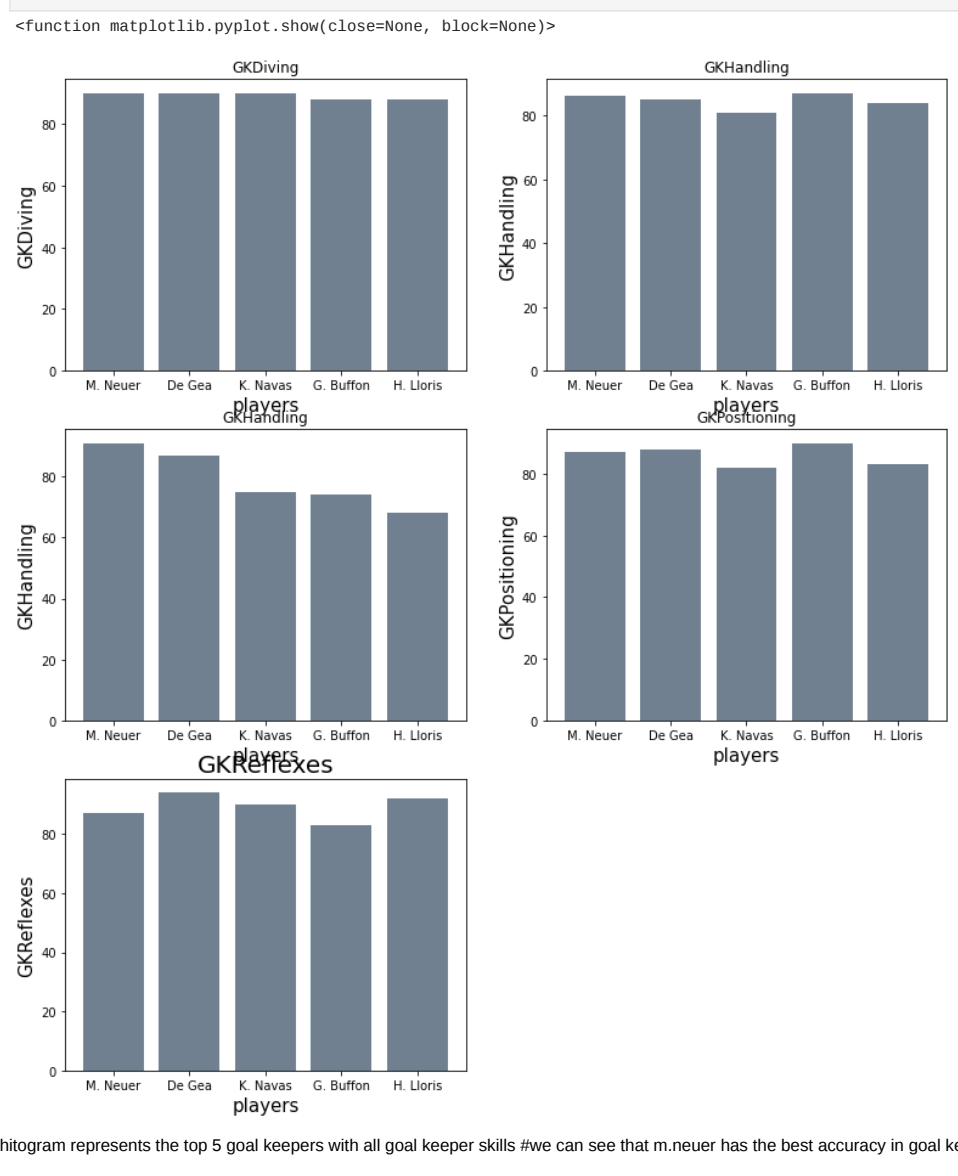
	Name	GKDiving	GKHandling	GKKicking	GKPositioning	GKReflexes
22	M. Neuer	90.0	86.0	91.0	87.0	87.0
3	De Gea	90.0	85.0	87.0	88.0	94.0
46	K. Navas	90.0	81.0	75.0	82.0	90.0
41	G. Buffon	88.0	87.0	74.0	90.0	83.0
37	H. Lloris	88.0	84.0	68.0	83.0	92.0

In [97]:

```
plt.figure(figsize=(13,15))
w=0.4
plt.subplot(3,2,1)
plt.bar(list(goal_keeper_skills['Name'])[0:10],list(goal_keeper_skills['GKDiving'])[0:10],color="slategrey")
plt.xlabel("players",size=15)
plt.ylabel("GKDiving",size=15)
plt.title("GKDiving")

plt.subplot(3,2,2)
plt.bar(list(goal_keeper_skills['Name'])[0:10],list(goal_keeper_skills['GKHandling'])[0:10],color="slategrey")
plt.xlabel("players",size=15)
plt.ylabel("GKHandling",size=15)
plt.title("GKHandling")

plt.subplot(3,2,3)
plt.bar(list(goal_keeper_skills['Name'])[0:10],list(goal_keeper_skills['GKKicking'])[0:10],color="slategrey")
plt.xlabel("players",size=15)
plt.ylabel("GKHandling",size=15)
plt.title("GKHandling")

plt.subplot(3,2,4)
plt.bar(list(goal_keeper_skills['Name'])[0:10],list(goal_keeper_skills['GKPositioning'])[0:10],color="slategrey")
plt.xlabel("players",size=15)
plt.ylabel("GKPositioning",size=15)
plt.title("GKPositioning")

plt.subplot(3,2,5)
plt.bar(list(goal_keeper_skills['Name'])[0:10],list(goal_keeper_skills['GKReflexes'])[0:10],color="slategrey")
plt.xlabel("players",size=15)
plt.ylabel("GKReflexes",size=15)
plt.title("GKReflexes",size=20)

plt.show
```

Out[97]:

```
<function matplotlib.pyplot.show(close=None, block=None)>
```



#the above hitogram represents the top 5 goal keepers with all goal keeper skills #we can see that m.neuer has the best accuracy in goal keeping in seeing all his GKskills

Clubs Analysis

real_madrid=fifa[fifa['Club']=='Real Madrid']

In [29]:

```
real_madrid['Nationality'].value_counts()
```

Out[29]:

```
Spain                 19
Brazil                 3
France                 3
Croatia                1
Germany                1
Belgium                1
Wales                  1
Costa Rica             1
Dominican Republic     1
Uruguay                1
Argentina              1
Name: Nationality, dtype: int64
```

In [30]:

```
FC_Barcelona=fifa[fifa['Club']=='FC Barcelona']
```

In [31]:

```
FC_Barcelona['Nationality'].value_counts()
```

Out[31]:

```
Spain          17
Brazil          4
France          3
Argentina       1
Uruguay         1
Germany         1
Croatia         1
Chile           1
Netherlands     1
Portugal        1
Belgium         1
Senegal         1
Name: Nationality, dtype: int64
```

#from In[29] & In[30] we can see the data of no of players from each country belonging to REAL MADRID & FC_BARCELONA CLUB Srespectively

In [117…

```
highest_paying_club = fifa[['Club','Wage']]
```

In [161…

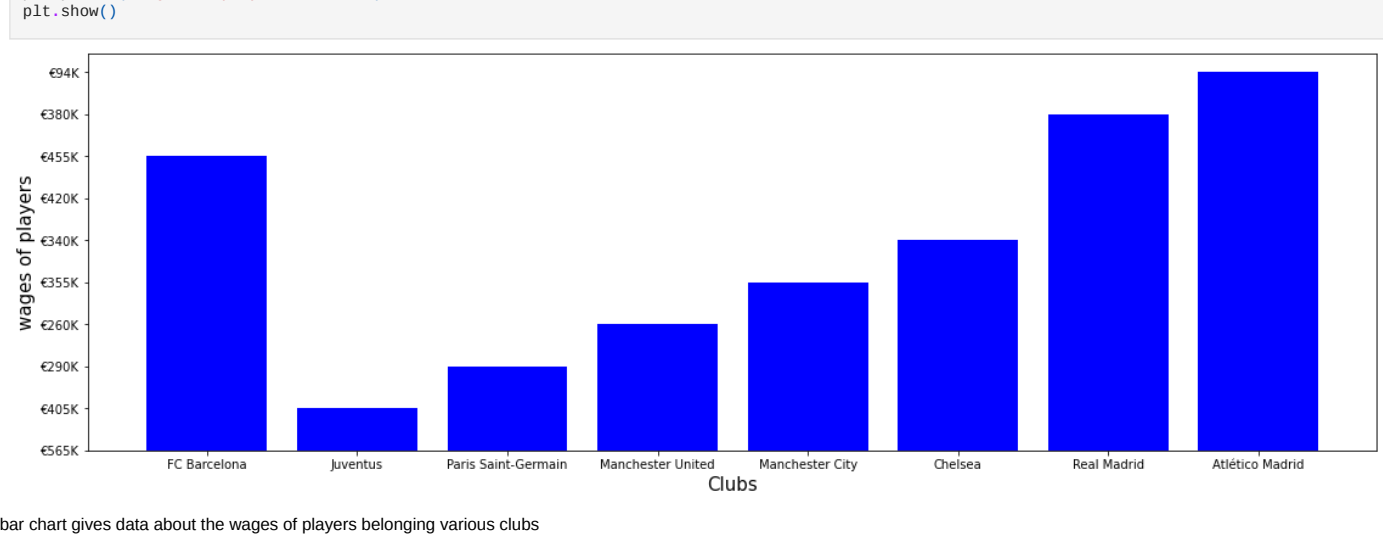
```
highest_paying_club[0:10]
```

Out[161…

	Club	Wage
0	FC Barcelona	€565K
1	Juventus	€405K
2	Paris Saint-Germain	€290K
3	Manchester United	€260K
4	Manchester City	€355K
5	Chelsea	€340K
6	Real Madrid	€420K
7	FC Barcelona	€455K
8	Real Madrid	€380K
9	Atlético Madrid	€94K

In [160…

```
plt.figure(figsize=(19,6))
plt.bar(list(highest_paying_club['Club'])[0:10],list(highest_paying_club['Wage'])[0:10],color="b")
plt.xlabel("Clubs",size=15)
plt.ylabel("wages of players",size=15)
plt.show()
```



#the above bar chart gives data about the wages of players belonging various clubs

Successfull penalty Shots

In [133…

```
penalty = fifa[['Name','Penalties']]
```

In [146…

```
penalty = penalty.sort_values(by=['Penalties'],ascending=False).head()
```

In [147…

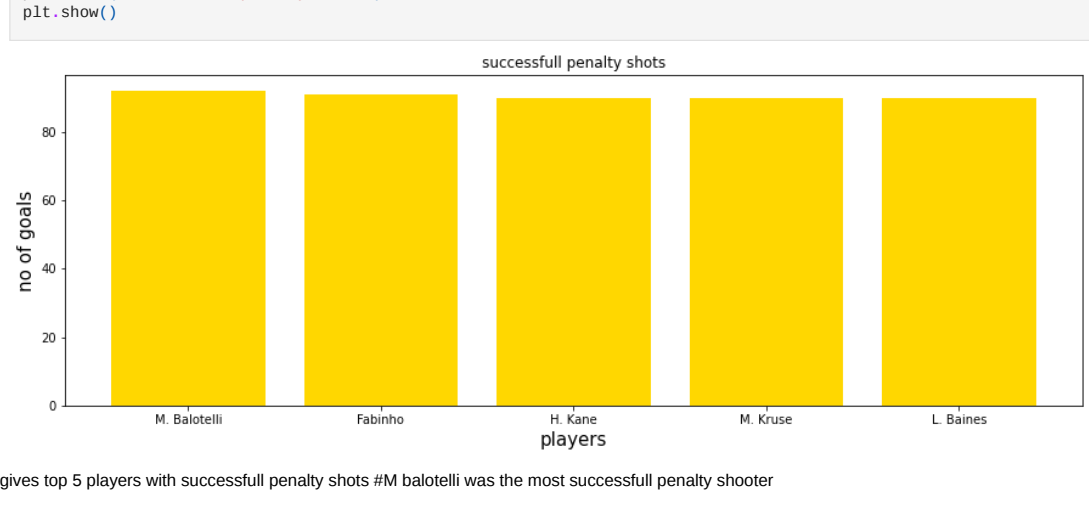
```
penalty
```

Out[147…

	Name	Penalties
206	M. Balotelli	92.0
118	Fabinho	91.0
16	H. Kane	90.0
297	M. Kruse	90.0
945	L. Baines	90.0

In [137…

```
plt.figure(figsize=(15,5))
plt.bar(list(penalty['Name'])[0:10],list(penalty['Penalties'])[0:10],color="gold")
plt.xlabel("players",size=15)
plt.ylabel("no of goals",size=15)
plt.title("successfull penalty shots")
plt.show()
```



#the above gives top 5 players with successfull penalty shots #M balotelli was the most successfull penalty shooter

Players Contracts

In [129…

```
expire_date = fifa[['Name', 'Contract Valid Until']]
```

In [131…

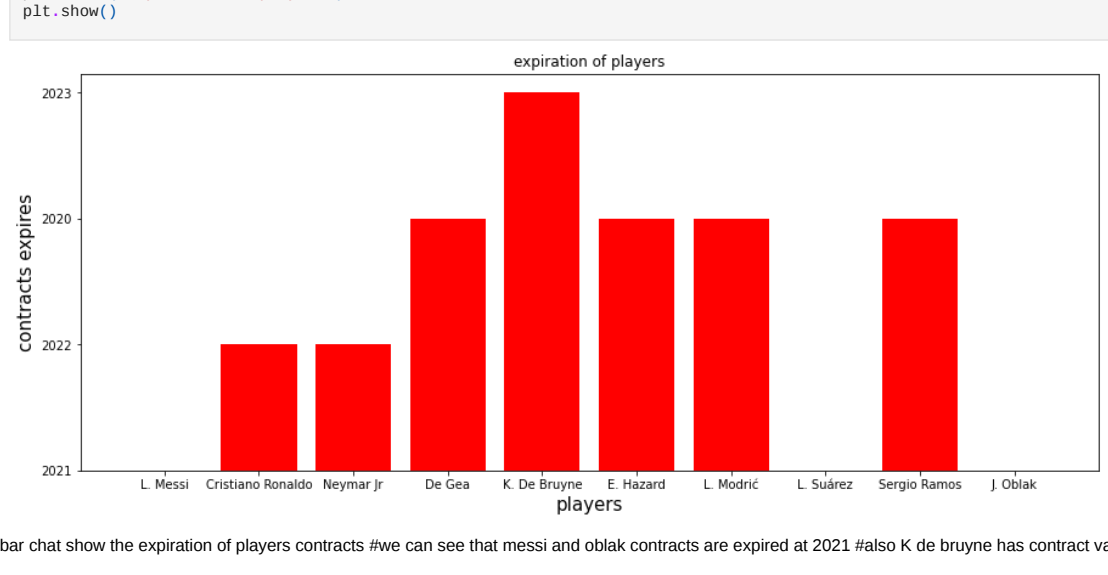
```
expire_date.sort_values(by=['Contract Valid Until'],ascending=False).head()
```

Out[131…

	Name	Contract Valid Until
10355	Kim Min Woo	Oct 14, 2019
12591	Shin Chang Moo	Oct 14, 2019
10674	Shim Dong Woon	Oct 14, 2019
15412	Lee Sang Hyeob	Oct 14, 2019
14619	Baek Dong Gyu	Oct 14, 2019

In [224…

```
plt.figure(figsize=(15,6))
plt.bar(list(expire_date['Name'])[0:10],list(expire_date['Contract Valid Until'])[0:10],color="red")
plt.xlabel("players",size=15)
plt.ylabel("contracts expires",size=15)
plt.title("expiration of players")
plt.show()
```



#the above bar chat show the expiration of players contracts #we can see that messi and oblak contracts are expired at 2021 #also K de bruyne has contract validity till 20223

Passing Skills

In [150…

```
passing = fifa[['Name','ShortPassing','LongPassing']]
```

In [151…

```
short = passing.sort_values(by=['ShortPassing','LongPassing'],ascending=False).head()
```

Out[151…

	Name	ShortPassing	LongPassing
6	L. Modrić	93.0	88.0
13	David Silva	93.0	87.0
11	T. Kroos	92.0	93.0
4	K. De Bruyne	92.0	91.0
31	C. Eriksen	91.0	88.0

#L modric has the best short passing accuracy

In [154…

```
long = passing.sort_values(by=['LongPassing'],ascending=False).head()
```

In [155…

```
long
```

Out[155…

	Name	ShortPassing	LongPassing
11	T. Kroos	92.0	93.0
4	K. De Bruyne	92.0	91.0
45	P. Pogba	86.0	90.0
53	I. Rakitić	87.0	90.0
219	Cesc Fàbregas	90.0	89.0

#T kros has the best longest passing accuracy

In [152…

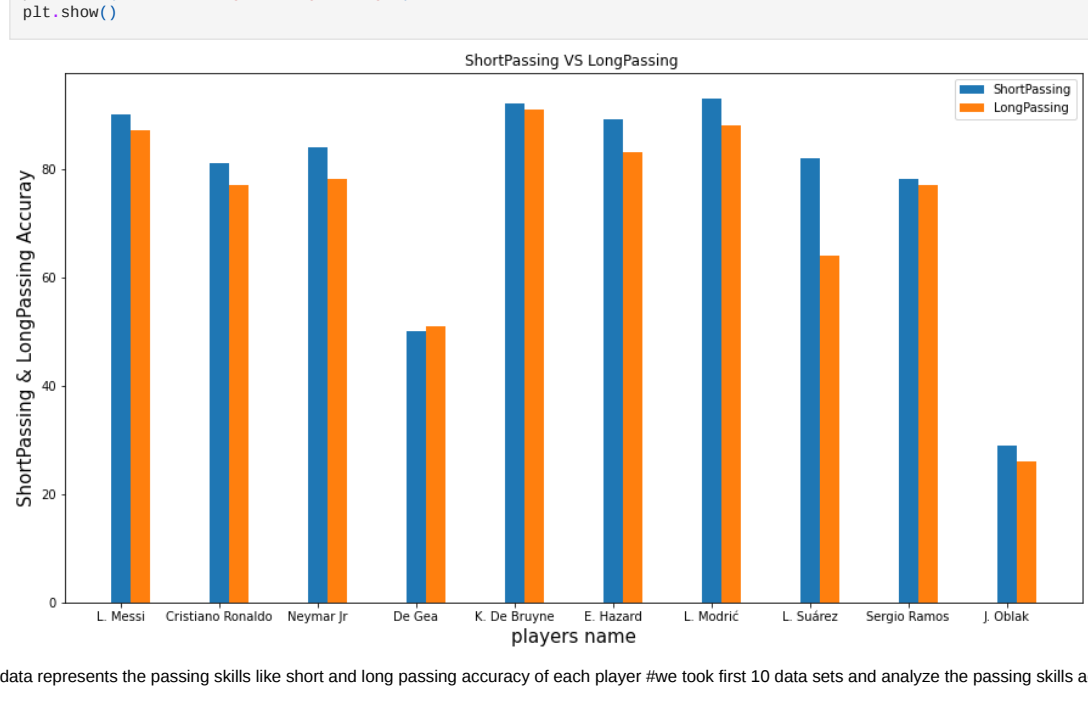
```
w=0.2
players = list(tackling['Name'])[0:10]
sp = list(passing['ShortPassing'])[0:10]
lp = list(passing['LongPassing'])[0:10]
```

In [248…

```
bar1=np.arange(len(players))
bar2=[i+w for i in bar1]
```

In [250…

```
plt.figure(figsize=(15,8))
plt.bar(bar1,sp,w,label="ShortPassing")
plt.bar(bar2,lp,w,label="LongPassing")
plt.legend()
plt.xlabel("players name",size=15)
plt.xticks(bar1,players)
plt.ylabel("ShortPassing & LongPassing Accuray",size=15)
plt.title("ShortPassing VS LongPassing ")
plt.show()
```



#the above data represents the passing skills like short and long passing accuracy of each player #we took first 10 data sets and analyze the passing skills accuracy of players #we can see that each player has only less devaition of accuracy between short and long passing #but we can notice that L saurez has more devaition

Fitness Level of Players

In [325…

```
fitness = fifa[['Name','Strength','Stamina','SprintSpeed','Height','Weight']]
```

In [331…

```
 fitness =fitness.sort_values(by=['Strength','Stamina','SprintSpeed','Height','Weight'],ascending=False).head()
```

In [332…

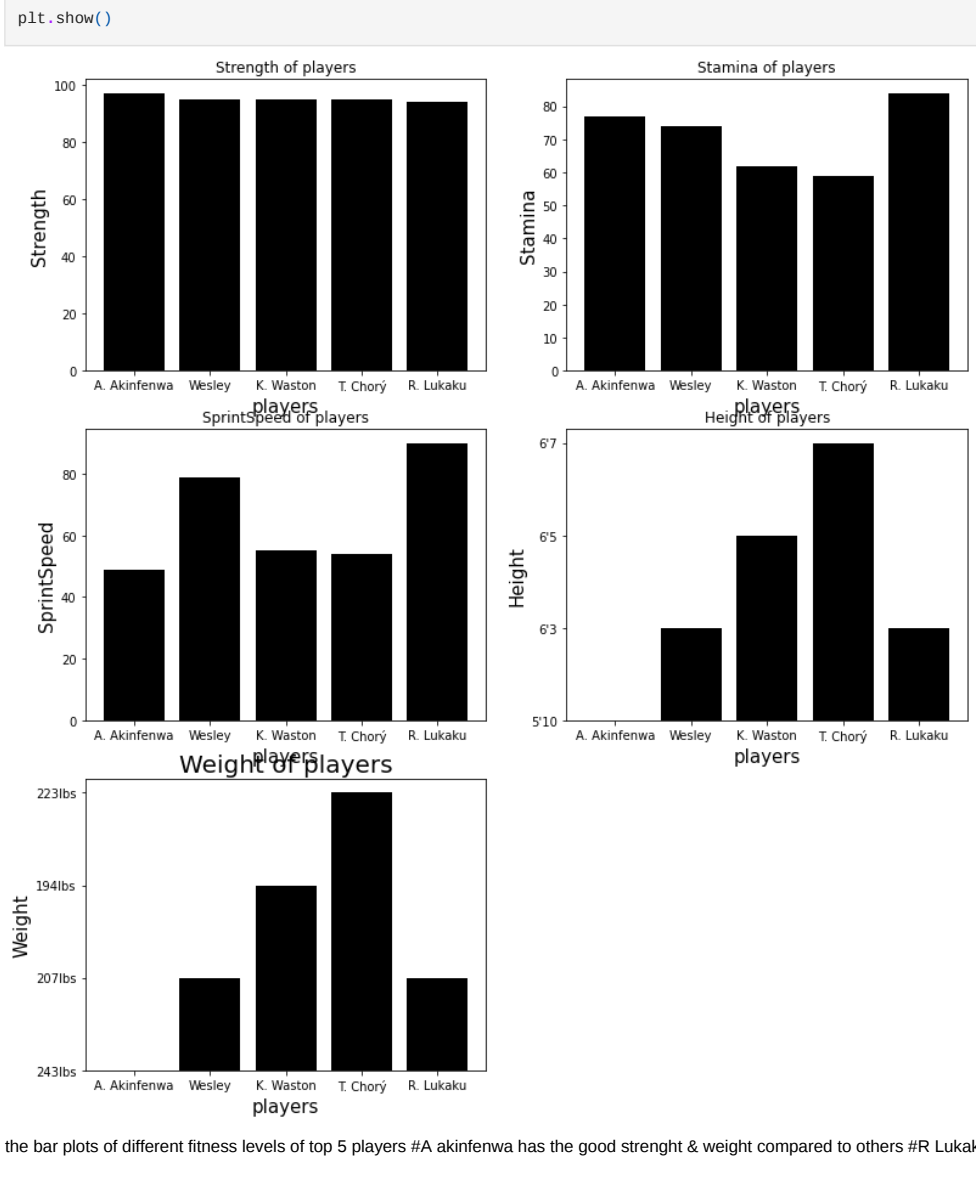
```
fitness
```

Out[332…

	Name	Strength	Stamina	SprintSpeed	Height	Weight
9501	A. Akinfenwa	97.0	77.0	49.0	5'10	243lbs
1124	Wesley	95.0	74.0	79.0	6'3	207lbs
2559	K. Waston	95.0	62.0	55.0	6'5	194lbs
14111	T. Chorý	95.0	59.0	54.0	6'7	223lbs
47	R. Lukaku	94.0	84.0	90.0	6'3	207lbs

In [341…

```
plt.figure(figsize=(13,15))
w=0.4
plt.subplot(3,2,1)
plt.bar(list(fitness['Name'])[0:10],list(fitness['Strength'])[0:10],color="black")
plt.xlabel("players",size=15)
plt.ylabel("Strength",size=15)
plt.title("Strength of players")

plt.subplot(3,2,2)
plt.bar(list(fitness['Name'])[0:10],list(fitness['Stamina'])[0:10],color="black")
plt.xlabel("players",size=15)
plt.ylabel("Stamina",size=15)
plt.title("Stamina of players")

plt.subplot(3,2,3)
plt.bar(list(fitness['Name'])[0:10],list(fitness['SprintSpeed'])[0:10],color="black")
plt.xlabel("players",size=15)
plt.ylabel("SprintSpeed",size=15)
plt.title("SprintSpeed of players")

plt.subplot(3,2,4)
plt.bar(list(fitness['Name'])[0:10],list(fitness['Height'])[0:10],color="black")
plt.xlabel("players",size=15)
plt.ylabel("Height",size=15)
plt.title("Height of players")

plt.subplot(3,2,5)
plt.bar(list(fitness['Name'])[0:10],list(fitness['Weight'])[0:10],color="black")
plt.xlabel("players",size=15)
plt.ylabel("Weight",size=15)
plt.title("Weight of players",size=20)




plt.show()
```



#from above the bar plots of different fitness levels of top 5 players #A akinfenwa has the good strenght & weight compared to others #R Lukaku has the best stamina & Sprint Speed with more devaition from others players #T chory is the tallest player

Overall Perfomance Of Teams

In [385…

```
overall = fifa[['Nationality','Overall']]
```

In [389…

```
overall[0:10]
```

Out[389…

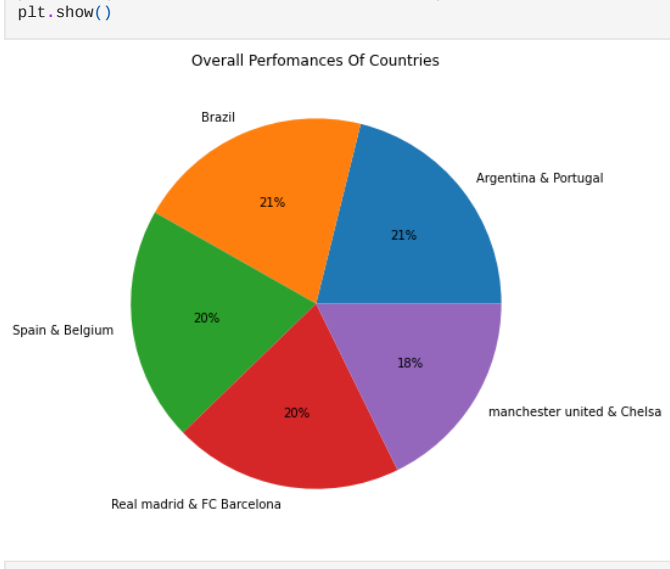
	Nationality	Overall
0	Argentina	94
1	Portugal	94
2	Brazil	92
3	Spain	91
4	Belgium	91
5	Belgium	91
6	Croatia	91
7	Uruguay	91
8	Spain	91
9	Slovenia	90

In [398…

```
perfomance = [94,92,91,89,79]
players = ["Argentina & Portugal","Brazil","Spain & Belgium" ,"Real madrid & FC Barcelona","manchester united & Chelsa"]
```

In [400…

```
plt.figure(figsize=(15,7))
plt.pie(perfomance,labels=players,autopct='%0.0f%%')
plt.title("Overall Perfomances Of Countries")
plt.show()
```



In [ ]: