

PRACTICAL-10

Aim : Mini Project related to Data Science Applications.

Project Title: Football Players Analysis

Program :

#import required libraries for analysis

```
import pandas as pd
```

```
from matplotlib import pyplot as plt
```

#read the csv file

```
fifa=pd.read_csv("players_20.csv")
```

#print the dataset

```
fifa
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm
0	158023	https://sofifa.com/player/158023/lionel-messi/...	L. Messi	Lionel Andrés Messi Cuccittini	32	1987-06-24	170	72	Argentina	FC Barcelona	...	68+2	66+2	66+2
1	20801	https://sofifa.com/player/20801/cristiano-dos-santos-avelro	Cristiano Ronaldo	Cristiano Ronaldo dos Santos Aveiro	34	1985-02-05	187	83	Portugal	Juventus	...	65+3	61+3	61+3
2	190871	https://sofifa.com/player/190871/neymar-da-silva-santos-junior	Neymar Jr	Neymar da Silva Santos Junior	27	1992-02-05	175	68	Brazil	Paris Saint-Germain	...	66+3	61+3	61+3
3	200389	https://sofifa.com/player/200389/jan-oblak/2019	J. Oblak	Jan Oblak	26	1993-01-07	188	87	Slovenia	Atlético Madrid	...	NaN	NaN	NaN
4	183277	https://sofifa.com/player/183277/eden-hazard/2019	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	...	66+3	63+3	63+3
...
18273	245006	https://sofifa.com/player/245006/shuai-shao/2019	Shao Shuai	邵帅	22	1997-03-10	186	79	China PR	Beijing Renhe FC	...	43+2	42+2	42+2
18274	250995	https://sofifa.com/player/250995/mingjie-xiao/2019	Xiao Mingjie	Mingjie Xiao	22	1997-01-01	177	66	China PR	Shanghai SIPG FC	...	44+2	43+2	43+2
18275	252332	https://sofifa.com/player/252332/wei-zhang/2019	Zhang Wei	张威	19	2000-05-16	186	75	China PR	Hebei China Fortune FC	...	47+2	49+2	49+2

18275	252332	https://sofifa.com/player/252332/wei-zhang/20/...	Zhang Wei	张威	19	2000-05-16	186	75	China PR	Hebei China Fortune FC	...	47+2	49+2	49+2
18276	251110	https://sofifa.com/player/251110/haijian-wang/...	Wang Haijian	汪海健	18	2000-08-02	185	74	China PR	Shanghai Greenland Shenhua FC	...	48+2	48+2	48+2
18277	233449	https://sofifa.com/player/233449/ximing-pan/20/...	Pan Ximing	潘喜明	26	1993-01-11	182	78	China PR	Hebei China Fortune FC	...	48+2	49+2	49+2

18278 rows x 104 columns

#print only first five rows from the dataset

fifa.head()

Out[4]:

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm	
0	158023	https://sofifa.com/player/158023/lionel-messi/...	L. Messi	Lionel Andrés Messi Cuccittini	32	1987-06-24	170	72	Argentina	FC Barcelona	...	68+2	66+2	66+2	6
1	20801	https://sofifa.com/player/20801/cristiano-dos-santos-aveiro/...	Cristiano Ronaldo	Cristiano Ronaldo dos Santos Aveiro	34	1985-02-05	187	83	Portugal	Juventus	...	65+3	61+3	61+3	6
2	190871	https://sofifa.com/player/190871/neymar-da-silva-junior/...	Neymar Jr	Neymar da Silva Santos Junior	27	1992-02-05	175	68	Brazil	Paris Saint-Germain	...	66+3	61+3	61+3	6
3	200389	https://sofifa.com/player/200389/jan-oblak/20/...	J. Oblak	Jan Oblak	26	1993-01-07	188	87	Slovenia	Atlético Madrid	...	NaN	NaN	NaN	1
4	183277	https://sofifa.com/player/183277/eden-hazard/20/...	E. Hazard	Eden Hazard	28	1991-01-07	175	74	Belgium	Real Madrid	...	66+3	63+3	63+3	6

5 rows x 104 columns

#check what are the columns

for col in fifa.columns:

print(col)

```
sofifa_id
player_url
short_name
long_name
age
dob
height_cm
weight_kg
nationality
club
overall
potential
value_eur
wage_eur
player_positions
preferred_foot
international_reputation
weak_foot
skill_moves
work_rate
body_type
real_face
release_clause_eur
player_tags
team_position
team_jersey_number
loaned_from
joined
contract_valid_until
nation_position
nation_jersey_number
pace
shooting
passing
dribbling
defending
physic
gk_diving
gk_handling
gk_kicking
gk_reflexes
gk_speed
gk_positioning
player_traits
attacking_crossing
attacking_finishing
attacking_heading_accuracy
attacking_short_passing
attacking_volleys
skill_dribbling
skill_curve
skill_fk_accuracy
skill_long_passing
skill_ball_control
movement_acceleration
movement_sprint_speed
movement_agility
```

```
movement_reactions
movement_balance
power_shot_power
power_jumping
power_stamina
power_strength
power_long_shots
mentality_aggression
mentality_interceptions
mentality_positioning
mentality_vision
mentality_penalties
mentality_composure
defending_marking
defending_standing_tackle
defending_sliding_tackle
goalkeeping_diving
goalkeeping_handling
goalkeeping_kicking
goalkeeping_positioning
goalkeeping_reflexes
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
```

#shape of the dataset

fifa.shape

```
Out[6]: (18278, 104)
```

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

```
Out[7]: England      1667
        Germany      1216
        Spain        1035
        France        984
        Argentina     886
        ...
        Gibraltar      1
        Guam            1
        Hong Kong       1
        South Sudan     1
        Jordan           1
        Name: nationality, Length: 162, dtype: int64
```

```
fifa['nationality'].value_counts()[0:10]
```

```
Out[8]: England      1667
        Germany      1216
        Spain        1035
        France        984
        Argentina     886
        Brazil        824
        Italy          732
        Colombia      591
        Japan          453
        Netherlands   416
        Name: nationality, dtype: int64
```

```
fifa['nationality'].value_counts()[0:5]
```

```
Out[9]: England      1667
        Germany      1216
        Spain        1035
        France        984
        Argentina     886
        Name: nationality, dtype: int64
```

#extract only key or index and print

```
fifa['nationality'].value_counts()[0:5].keys()
```

```
Out[10]: Index(['England', 'Germany', 'Spain', 'France', 'Argentina'], dtype='object')
```

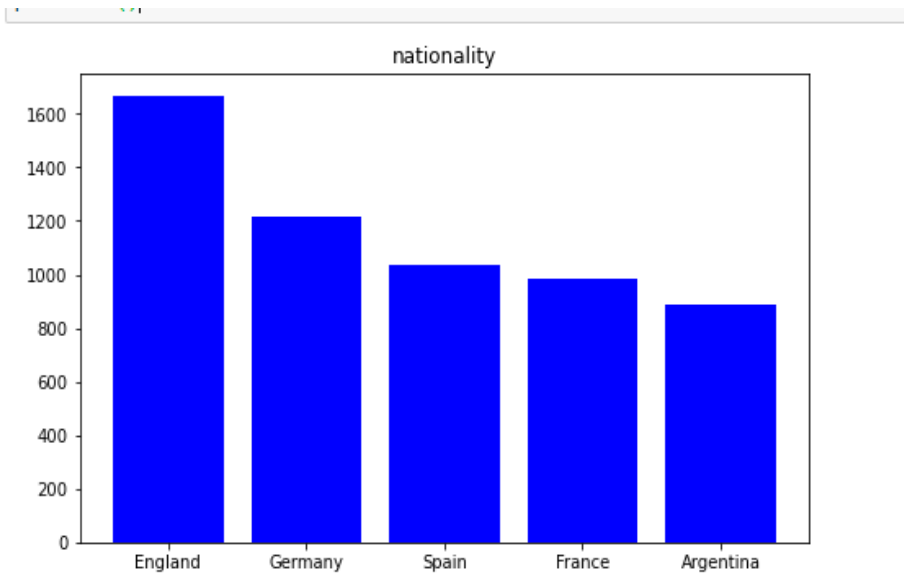
#visualize the graphical representation using 'bar' plot

```
plt.figure(figsize=(8,5))
```

```
plt.bar(list(fifa['nationality'].value_counts()[0:5].keys()),list(fifa['nationality'].value_counts()[0:5]),color='b')
```

```
plt.title('nationality')
```

```
plt.show()
```



#to extract some specified columns from the dataset for the analysis

```
player_salary = fifa[['short_name','wage_eur']]
player_salary.head()
```

Out[13]:

	short_name	wage_eur
0	L. Messi	565000
1	Cristiano Ronaldo	405000
2	Neymar Jr	290000
3	J. Oblak	125000
4	E. Hazard	470000

#to sort the salary using columns 'wage_eur'

```
player_salary=player_salary.sort_values(by=['wage_eur'],ascending=False)
player_salary.head()
```

Out[15]:

	short_name	wage_eur
0	L. Messi	565000
4	E. Hazard	470000
1	Cristiano Ronaldo	405000
5	K. De Bruyne	370000
22	A. Griezmann	370000

#visualize in-terms of graph for whose player salary is high

```
plt.figure(figsize=(8,5))

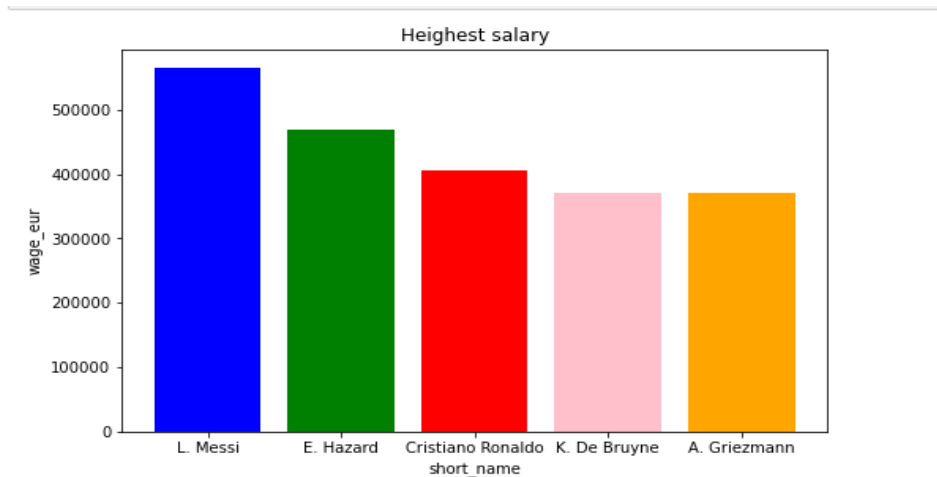
plt.bar(list(player_salary['short_name'])[0:5],list(player_salary['wage_eur'])[0:5],color=["blue","green","red","pink","orange"])

plt.xlabel('short_name')

plt.ylabel('wage_eur')
```

```
plt.title('Heighest salary')
```

```
plt.show()
```



#simple analysis: players for the Germany

```
fifa['nationality']=='Germany'
```

```
Out[17]: 0      False
         1      False
         2      False
         3      False
         4      False
         ...
        18273 False
        18274 False
        18275 False
        18276 False
        18277 False
        Name: nationality, Length: 18278, dtype: bool
```

#Germany

```
Germany=fifa[fifa['nationality']=='Germany']
```

```
Germany.head(10)
```


	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm
6	192448	https://sofifa.com/player/192448/marc-andre-te...	M. ter Stegen	Marc-André ter Stegen	27	1992-04-30	187	85	Germany	FC Barcelona	...	NaN	NaN	NaN
31	167495	https://sofifa.com/player/167495/manuel-neuer/...	M. Neuer	Manuel Neuer	33	1986-03-27	193	92	Germany	FC Bayern München	...	NaN	NaN	NaN
36	182521	https://sofifa.com/player/182521/toni-kroos/20...	T. Kroos	Toni Kroos	29	1990-01-04	183	76	Germany	Real Madrid	...	75+3	79+3	79+3
37	188350	https://sofifa.com/player/188350/marco-reus/20...	M. Reus	Marco Reus	30	1989-05-31	180	71	Germany	Borussia Dortmund	...	69+3	65+3	65+3
49	178603	https://sofifa.com/player/178603/mats-hummels/...	M. Hummels	Mats Hummels	30	1988-12-16	191	94	Germany	Borussia Dortmund	...	77+3	83+3	83+3
55	222492	https://sofifa.com/player/222492/leroy-sane/20...	L. Sané	Leroy Sané	23	1996-01-11	183	75	Germany	Manchester City	...	65+2	59+2	59+2
61	212622	https://sofifa.com/player/212622/joshua-kimmich...	J. Kimmich	Joshua Kimmich	24	1995-02-08	176	73	Germany	FC Bayern München	...	83+3	82+3	82+3
70	189596	https://sofifa.com/player/189596/thomas-muller...	T. Müller	Thomas Müller	29	1989-09-13	186	75	Germany	FC Bayern München	...	69+3	68+3	68+3
77	212190	https://sofifa.com/player/212190/niklas-sule/2...	N. Süle	Niklas Süle	23	1995-09-03	195	97	Germany	FC Bayern München	...	71+2	77+2	77+2
109	235790	https://sofifa.com/player/235790/kai-havertz/2...	K. Havertz	Kai Havertz	20	1999-06-11	188	83	Germany	Bayer 04 Leverkusen	...	65+2	63+2	63+2

10 rows x 104 columns

Activate Windows
Go to Settings to activate Windows.

#whose the tallest german player

```
Germany.sort_values(by=['height_cm'],ascending=False).head()
```

	sofifa_id	player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm
8016	236831	https://sofifa.com/player/236831/aaron-seydel/...	A. Seydel	Aaron Seydel	23	1996-02-07	199	90	Germany	1. FSV Mainz 05	...	46+2	43+2	43+
1217	200212	https://sofifa.com/player/200212/michael-esser...	M. Esser	Michael Esser	31	1987-11-22	198	97	Germany	Hannover 96	...	NaN	NaN	NaN
1389	199833	https://sofifa.com/player/199833/lars-unnersta...	L. Unnerstall	Lars Unnerstall	28	1990-07-20	198	103	Germany	PSV	...	NaN	NaN	NaN
11859	167437	https://sofifa.com/player/167437/dominik-stroh...	D. Stroh-Engel	Dominik Stroh-Engel	33	1985-11-27	197	94	Germany	SpVgg Unterhaching	...	39+2	45+2	45+
13576	239746	https://sofifa.com/player/239746/lukas-watkowiak...	L. Watkowiak	Lukas Watkowiak	23	1996-03-06	197	103	Germany	SV Wehen Wiesbaden	...	NaN	NaN	NaN

5 rows x 104 columns

```
Germany[['short_name','height_cm']].sort_values(by=['height_cm'],ascending=False).head()
```

Out[21]:

	short_name	height_cm
8016	A. Seydel	199
1217	M. Esser	198
1389	L. Unnerstall	198
11859	D. Stroh-Engel	197
13576	L. Watkowiak	197

#whose player is highest weight

```
Germany.sort_values(by=['weight_kg'],ascending=False).head()
```

sofifa_id		player_url	short_name	long_name	age	dob	height_cm	weight_kg	nationality	club	...	lwb	ldm	cdm
13576	239746	https://sofifa.com/player/239746/lukas-watkowiak	L. Watkowiak	Lukas Watkowiak	23	1996-03-06	197	103	Germany	SV Wehen Wiesbaden	...	NaN	NaN	NaN
1389	199833	https://sofifa.com/player/199833/lars-unnersta	L. Unnerstall	Lars Unnerstall	28	1990-07-20	198	103	Germany	PSV	...	NaN	NaN	NaN
518	179783	https://sofifa.com/player/179783/ralf-fahrman	R. Fährmann	Ralf Fährmann	30	1988-09-27	197	98	Germany	Norwich City	...	NaN	NaN	NaN
1217	200212	https://sofifa.com/player/200212/michael-esser	M. Esser	Michael Esser	31	1987-11-22	198	97	Germany	Hannover 96	...	NaN	NaN	NaN
77	212190	https://sofifa.com/player/212190/niklas-sule	N. Süle	Niklas Süle	23	1995-09-03	195	97	Germany	FC Bayern München	...	71+2	77+2	77+2

5 rows x 104 columns

```
Germany[['short_name','weight_kg']].sort_values(by=['weight_kg'],ascending=False).head()
```

Out[22]:

	short_name	weight_kg
13576	L. Watkowiak	103
1389	L. Unnerstall	103
518	R. Fährmann	98
1217	M. Esser	97
77	N. Süle	97

#high paid player with his name

```
Germany[['short_name','wage_eur']].sort_values(by=['wage_eur'],ascending=False).head()
```

Out[23]:

	short_name	wage_eur
36	T. Kroos	330000
6	M. ter Stegen	250000
55	L. Sané	195000
146	I. Gündoğan	180000
70	T. Müller	170000

#visualize the graphical representation

```
plt.figure(figsize=(8,5))
```

```
plt.bar(list(Germany['short_name'])[0:5],list(Germany['wage_eur'])[0:5],color=["blue","green","red","pink","orange"])
```

```
plt.xlabel('short_name')
```

```
plt.ylabel('wage_eur')
```

```
plt.title('Heighest Paid German Player')
```

```
plt.show()
```

