⌄ REAL LIFE EXAMPLES USING MATPLOTLIB

```
import matplotlib.pyplot as plt
import pandas as pd
```

⌄ GAS Price Dataset

```
# reading the gas price data set
gas=pd.read_csv(r'C:\Users\user\Downloads\gas_prices.csv')
gas
```

	Year	Australia	Canada	France	Germany	Italy	Japan	Mexico	South Korea	UK	USA
0	1990	NaN	1.87	3.63	2.65	4.59	3.16	1.00	2.05	2.82	1.16
1	1991	1.96	1.92	3.45	2.90	4.50	3.46	1.30	2.49	3.01	1.14
2	1992	1.89	1.73	3.56	3.27	4.53	3.58	1.50	2.65	3.06	1.13
3	1993	1.73	1.57	3.41	3.07	3.68	4.16	1.56	2.88	2.84	1.11
4	1994	1.84	1.45	3.59	3.52	3.70	4.36	1.48	2.87	2.99	1.11
5	1995	1.95	1.53	4.26	3.96	4.00	4.43	1.11	2.94	3.21	1.15
6	1996	2.12	1.61	4.41	3.94	4.39	3.64	1.25	3.18	3.34	1.23
7	1997	2.05	1.62	4.00	3.53	4.07	3.26	1.47	3.34	3.83	1.23
8	1998	1.63	1.38	3.87	3.34	3.84	2.82	1.49	3.04	4.06	1.06
9	1999	1.72	1.52	3.85	3.42	3.87	3.27	1.79	3.80	4.29	1.17
10	2000	1.94	1.86	3.80	3.45	3.77	3.65	2.01	4.18	4.58	1.51
11	2001	1.71	1.72	3.51	3.40	3.57	3.27	2.20	3.76	4.13	1.46
12	2002	1.76	1.69	3.62	3.67	3.74	3.15	2.24	3.84	4.16	1.36
13	2003	2.19	1.99	4.35	4.59	4.53	3.47	2.04	4.11	4.70	1.59
14	2004	2.72	2.37	4.99	5.24	5.29	3.93	2.03	4.51	5.56	1.88
15	2005	3.23	2.89	5.46	5.66	5.74	4.28	2.22	5.28	5.97	2.30
16	2006	3.54	3.26	5.88	6.03	6.10	4.47	2.31	5.92	6.36	2.59
17	2007	3.85	3.59	6.60	6.88	6.73	4.49	2.40	6.21	7.13	2.80
18	2008	4.45	4.08	7.51	7.75	7.63	5.74	2.45	5.83	7.42	3.27

⌄ Line Graph

```
# plotting a Line Graph
plt.figure(figsize=(8,5), dpi=150)# resize of the image
plt.plot(gas.Year,gas.USA,label='USA',marker='.') #plotting the gas price in different years
plt.plot(gas.Year,gas.Canada, label='Canada',marker='.') #plotting the gas price in differer
plt.plot(gas.Year,gas.Japan, label='Japan',marker='.') #plotting the gas price in different
plt.plot(gas.Year,gas ['South Korea'], label='South Korea',marker='.') #plotting the gas pri
plt.title('Gas price overtime in USD', fontdict={'fontweight':'bold','fontsize':15})
plt.xlabel ('Year',fontdict={'fontweight':'bold'}) # labeling the X-axis ad making it bold
plt.ylabel ('Gas Price',fontdict={'fontweight':'bold'}) # Labeling the Y-axis and making it
plt.xticks(gas.Year[::2])# to change the ticks of years displayed
plt.grid(color='green', linestyle='--', linewidth=1)
plt.savefig('Gas Price overtime',dpi=300)# to save this graph
plt.legend() # it shows the labels on the graph
plt.show()
```
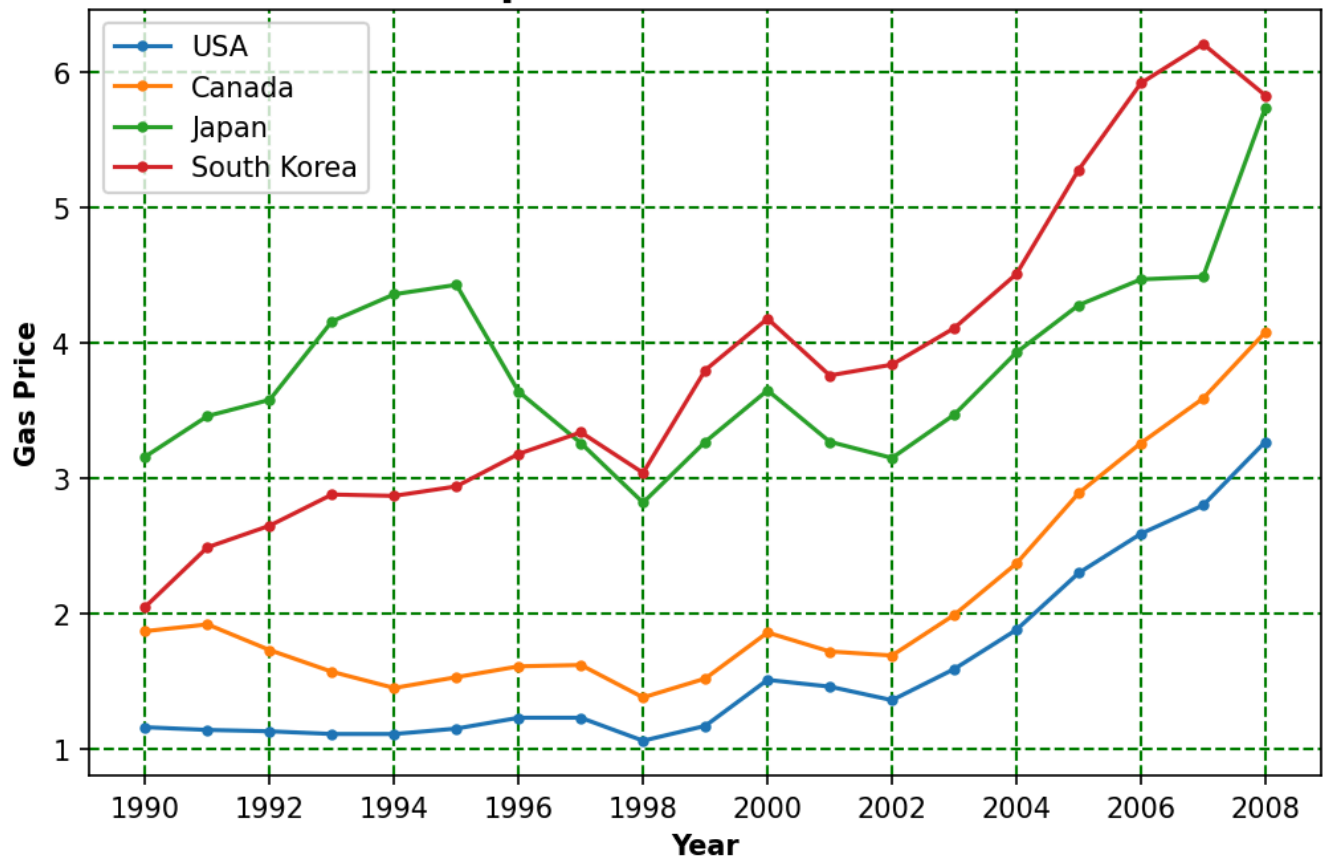
FIFA DATA SET

```
fifa= pd.read_csv(r'C:\Users\user\Downloads\fifa_data.csv')
fifa
```

|	Unnamed: 0	ID	Name	Age	Photo	Natic
0	0	158023	L. Messi	31	https://cdn.sofifa.org/players/4/19/158023.png	A
1	1	20801	Cristiano Ronaldo	33	https://cdn.sofifa.org/players/4/19/20801.png	
2	2	190871	Neymar Jr	26	https://cdn.sofifa.org/players/4/19/190871.png	
3	3	193080	De Gea	27	https://cdn.sofifa.org/players/4/19/193080.png	
4	4	192985	K. De Bruyne	27	https://cdn.sofifa.org/players/4/19/192985.png	
...	...	...	...	...	...	
18202	18202	238813	J. Lundstram	19	https://cdn.sofifa.org/players/4/19/238813.png	
18203	18203	243165	N. Christoffersson	19	https://cdn.sofifa.org/players/4/19/243165.png	
18204	18204	241638	B. Worman	16	https://cdn.sofifa.org/players/4/19/241638.png	
18205	18205	246268	D. Walker-Rice	17	https://cdn.sofifa.org/players/4/19/246268.png	
18206	18206	246269	G. Nugent	16	https://cdn.sofifa.org/players/4/19/246269.png	

18207 rows × 89 columns

Histogram

```
#plotting a histogram
bins=[30,40,50,60,70,80,90,100]
plt.figure(figsize=(8,5), dpi=150)# resize of the image
plt.hist(fifa.Overall, color='blue', bins=bins) # using the overall column for the histigram
plt.title('Fifa 2018 Players Skills Performance', fontdict={'fontsize':20, 'fontweight': 'bc
plt.xlabel("Skill Level", fontdict={'fontweight': 'bold'}) #labeling the X-axis and making t
plt.ylabel('Numbers of Players', fontdict={'fontweight': 'bold'}) #labeling the Y-axis and m
plt.savefig('Fifa 2018 Players Skills Performance',dpi=300)# to save this graph
plt.show()
```

Fifa 2018 Players Skills Performance
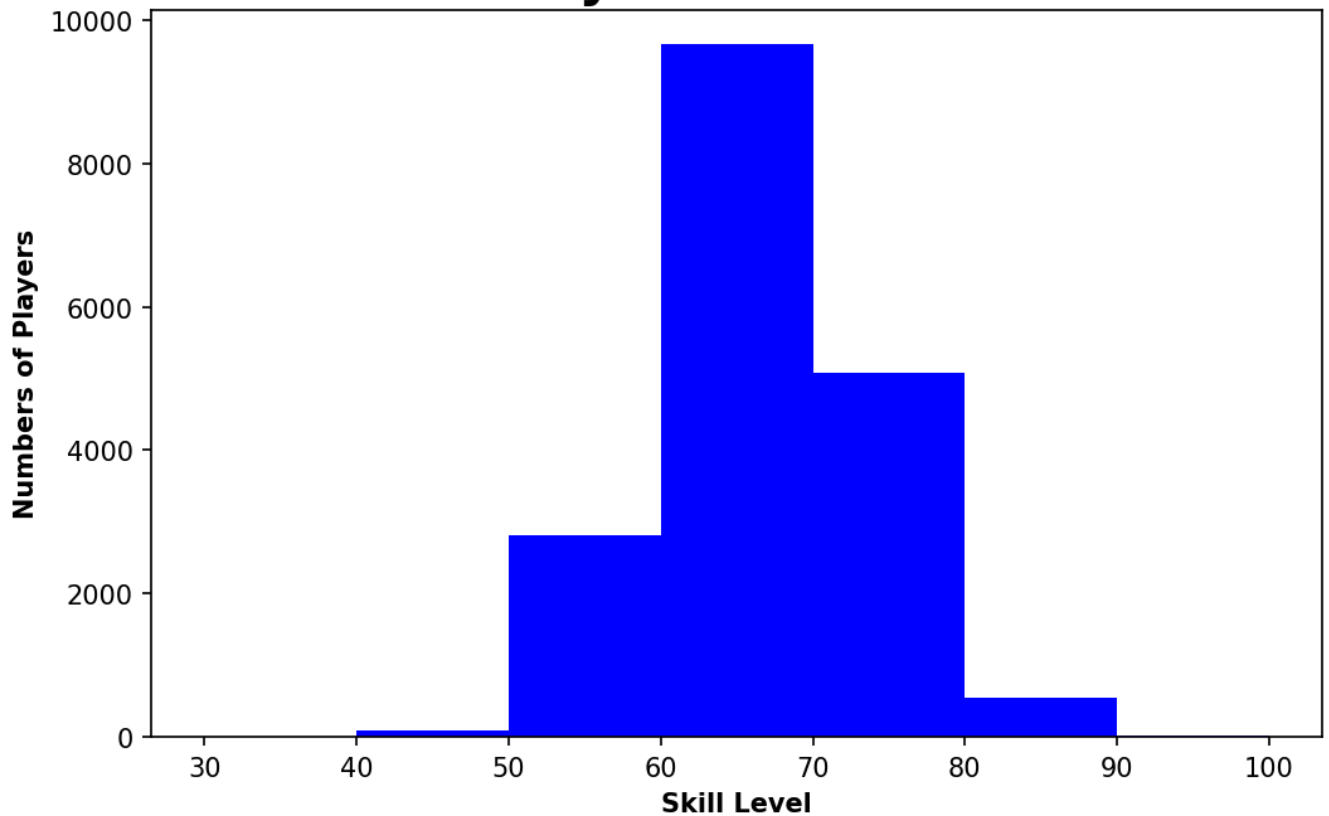
Pie Chart 1

```
# Players that their preferred foot is left foot
leftfoot = (fifa['Preferred Foot'] == 'Left').sum()
# Another method to solve this
# leftfoot= fifa.loc[fifa['Preferred Foot']=='Left'].count().iloc[0]
leftfoot
```

4211

```
# Players that their preferred foot is right foot
rightfoot = (fifa['Preferred Foot'] == 'Right').sum()
# Another method to solve this
# rightfoot= fifa.loc[fifa['Preferred Foot']=='Right'].count().iloc[0]
rightfoot
```

13948

```
labels= ['Left Foot', 'Right Foot'] #labels
colors =['green','yellow'] # colors
plt.figure(figsize=(8,5), dpi=150)# resize of the image
plt.pie([leftfoot, rightfoot], labels=labels, colors=colors, autopct="%.1f%%") #plotting the
plt.title('Preferred Foot of Fifa Players', fontdict={'fontsize':20,'fontweight': 'bold'})#L
plt.show()
```

Preferred Foot of Fifa Players
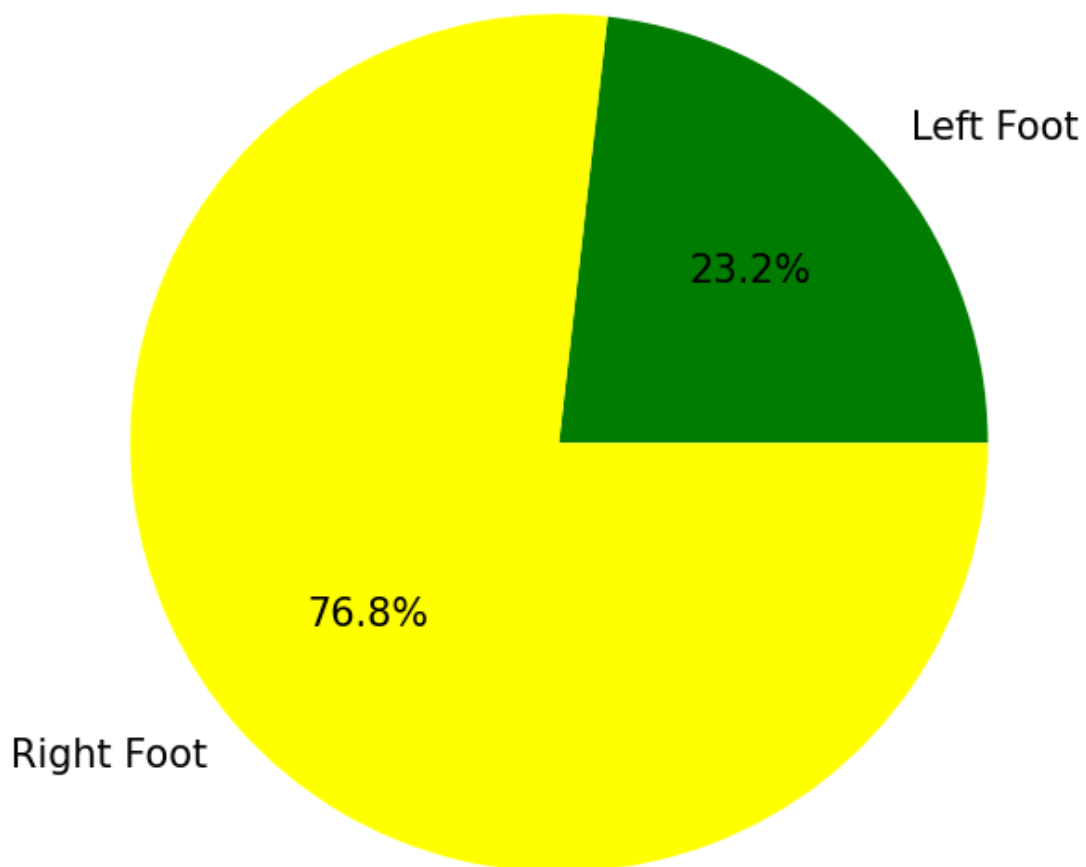
⌄ Pie Chart 2

```python
# i want to strip the Fifa weight column of the ibs,the weight is still in pound tho
fifa.Weight = [
    int(''.join(filter(str.isdigit, x.strip('Ibs').strip()))) if isinstance(x, str) else x
    for x in fifa.Weight
]

# Display the cleaned Weight column
print(fifa.Weight[0])
```

⤵ 159.0

```python
# Grouping the players by their weight
light_weight = fifa.loc[fifa.Weight < 125].count().iloc[0]
light_medium_weight = fifa.loc[(fifa.Weight >= 125) & (fifa.Weight < 150)].count().iloc[0]
medium_weight = fifa.loc[(fifa.Weight >= 150) & (fifa.Weight < 175)].count().iloc[0]
medium_heavy_weight = fifa.loc[(fifa.Weight >= 175) & (fifa.Weight < 200)].count().iloc[0]
heavy_weight = fifa.loc[fifa.Weight >= 200].count().iloc[0]

# Display the counts for each category
print("Light Weight:", light_weight)
print("Light Medium Weight:", light_medium_weight)
print("Medium Weight:", medium_weight)
print("Medium Heavy Weight:", medium_heavy_weight)
print("Heavy Weight:", heavy_weight)
```

⤵ Light Weight: 41
    Light Medium Weight: 2290
    Medium Weight: 10876
    Medium Heavy Weight: 4583
    Heavy Weight: 369

```python
weight=[light_weight, light_medium_weight, medium_weight, medium_heavy_weight,heavy_weight]
labels=['Under 125',' 125- 149.9','150-174.9','175-199.9','Over 200']# to label the pie char
explode =[.5,0,0,0,.5] #since some of categories in the pie chart are close to each other, w
plt.style.use('ggplot')# changing the colour of the pie
plt.figure(figsize=(8,5), dpi=150)# resizing  the image
plt.pie(weight,labels=labels,  autopct="%.1f%%", pctdistance=0.7, explode=explode )
plt.title('Weight Distribution of Fifa Players (Ibs)', fontdict={'fontsize':20,'fontweight':
plt.show()
```

Weight Distribution of Fifa Players (lbs)
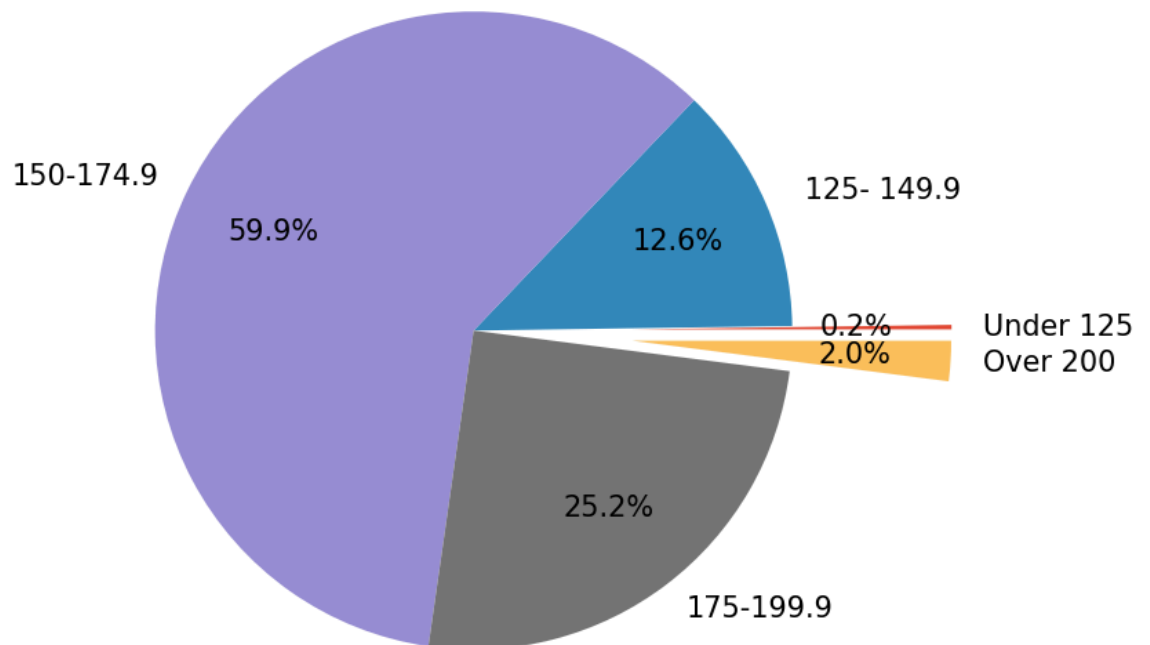
Box Plot

```
# comparring three football teams
Barcelona=fifa.loc[fifa.Club=='FC Barcelona']['Overall']# getting the overall performance
Real_Madrid=fifa.loc[fifa.Club=='Real Madrid']['Overall'] # getting the overall performance
Cambridge_United=fifa.loc[fifa.Club=='Cambridge United']['Overall'] # getting the overall
labels= ['FC Barcelona','Cambridge United', 'Real Madrid']
plt.figure(figsize=(5,8), dpi=120)# resizing  the image
box = plt.boxplot([Barcelona,Cambridge_United, Real_Madrid],labels= labels, patch_artist=

for b in box['boxes']:
    b.set(color='blue', linewidth=2) # changng the edge color
    b.set(facecolor= 'yellow')# changing the facecolor
```

```
plt.title('Football Team Comparision of Overall Performance', fontdict={'fontsize':20,'fon
plt.ylabel('FIFA Overall Rating') #labeling the Y- Axis
```


Football Team Comparision of Overall Performance