In [213]:
```
#import visulization library
import pandas as pd
import seaborn as sns
sns.set(color_codes = True) #for presenting data in attractive way
```

In [214]:
```
#read the first dataset-weather
weather = pd.read_csv('C:\\Users\\layal\\OneDrive\المستندات\\IR\\Test.csv
```

In [215]:
```
weather.head() #view the dataset column
```

Out[215]:

	date_time	is_holiday	air_pollution_index	humidity	wind_speed	wind_direction	visibility_in_
0	18-05-2017 00:00	None	73	63	1	27	
1	18-05-2017 00:00	None	251	63	1	27	
2	18-05-2017 00:00	None	75	56	1	0	
3	18-05-2017 01:00	None	98	56	1	351	
4	18-05-2017 01:00	None	283	56	1	351	

In [216]:
```
weather.info() # to check data type and values for each columns
```

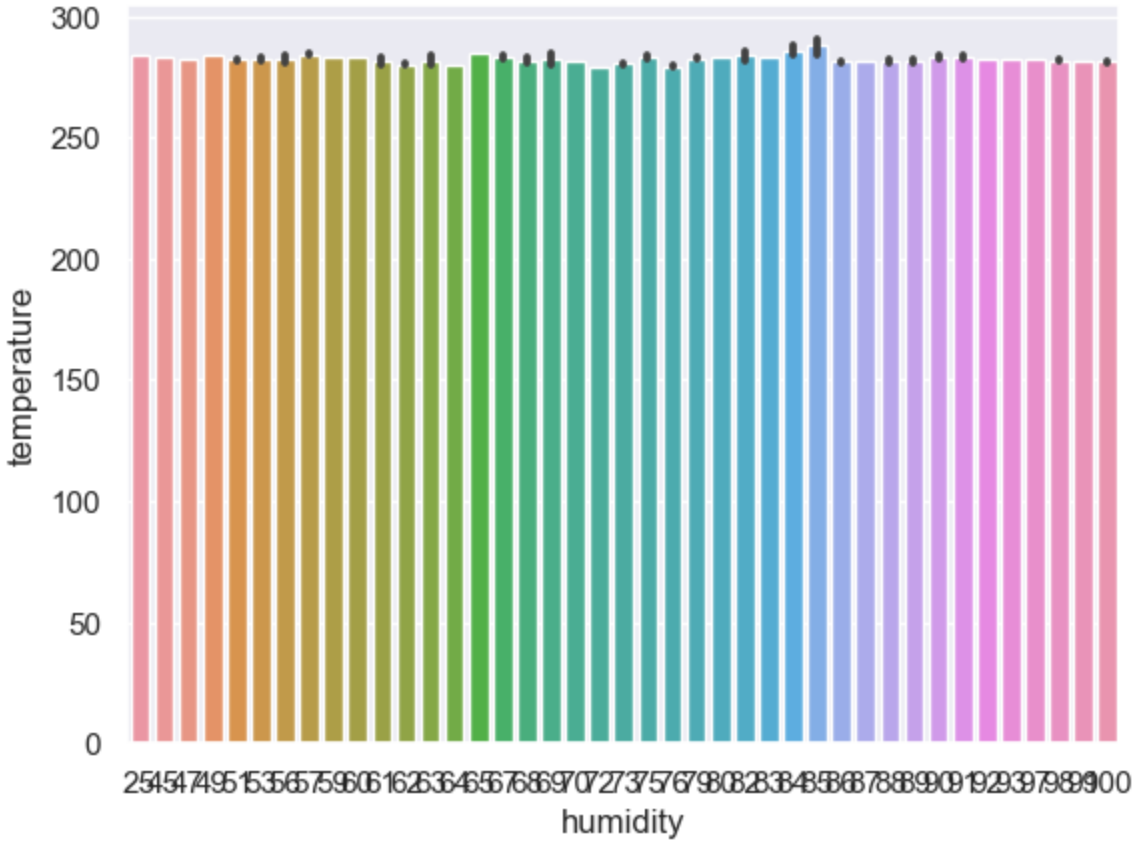
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 199 entries, 0 to 198
Data columns (total 14 columns):
 #   Column               Non-Null Count  Dtype  
---  ------               --------------  -----  
 0   date_time            199 non-null    object 
 1   is_holiday           199 non-null    object 
 2   air_pollution_index  199 non-null    int64  
 3   humidity             199 non-null    int64  
 4   wind_speed           199 non-null    int64  
 5   wind_direction       199 non-null    int64  
 6   visibility_in_miles  199 non-null    int64  
 7   dew_point            199 non-null    int64  
 8   temperature          199 non-null    float64
 9   rain_p_h             199 non-null    int64  
 10  snow_p_h             199 non-null    int64  
 11  clouds_all           199 non-null    int64  
 12  weather_type         199 non-null    object 
 13  weather_description  199 non-null    object 
dtypes: float64(1), int64(9), object(4)
memory usage: 21.9+ KB
```

barplot

In [217]:
```
sns.barplot(weather['humidity'], weather['temperature'])
```

```
C:\Users\layal\anaconda3\lib\site-packages\seaborn\_decorators.py:36:
FutureWarning:

Pass the following variables as keyword args: x, y. From version 0.12,
the only valid positional argument will be `data`, and passing other a
rguments without an explicit keyword will result in an error or misint
erpretation.
```

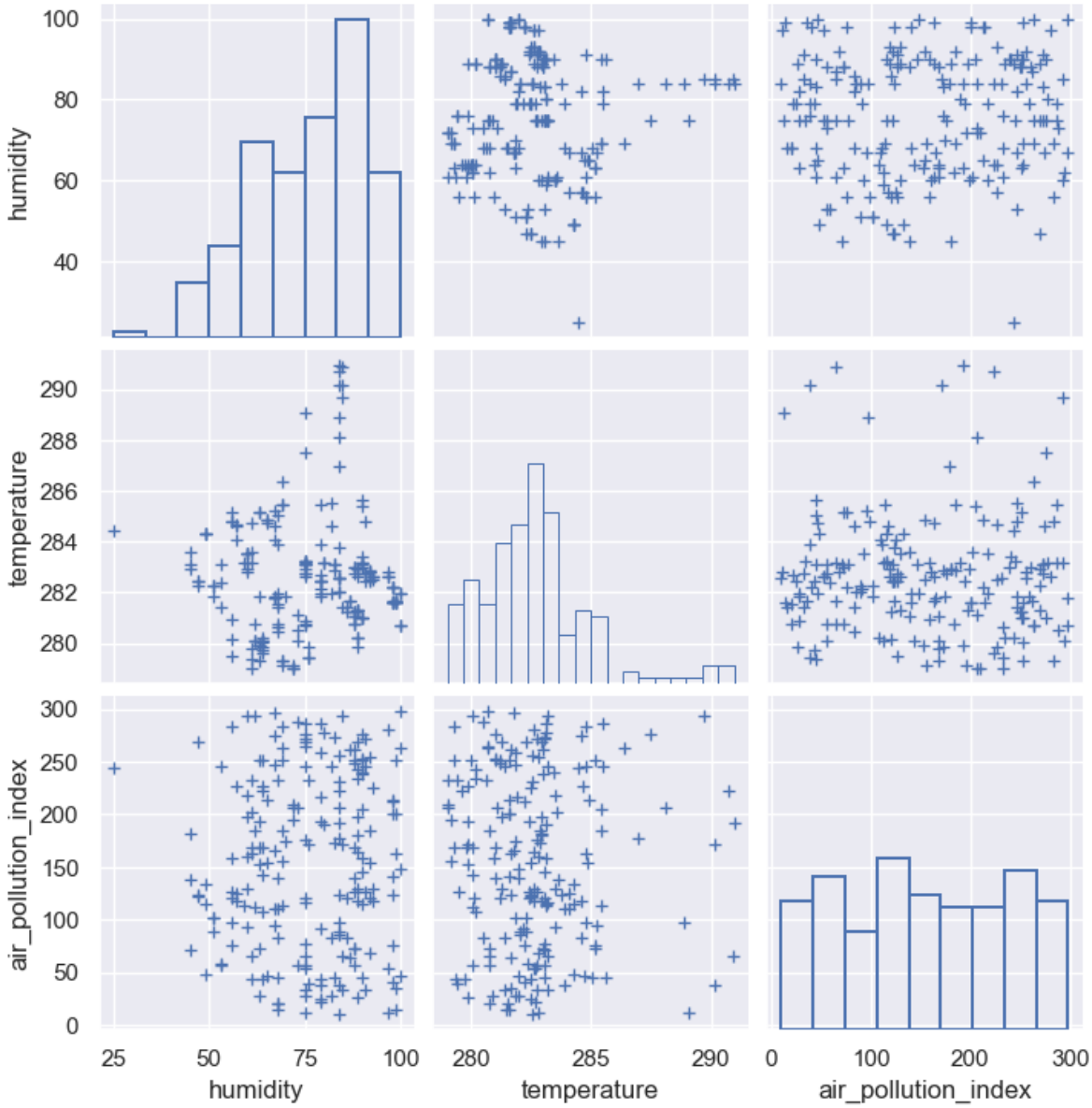
Out[217]:
```
<AxesSubplot:xlabel='humidity', ylabel='temperature'>
```



pairplot

In [222]:
```
sns.pairplot(weather[['humidity','temperature','air_pollution_index']],pl
    diag_kws=dict(fill=False),)
```

Out[222]: <seaborn.axisgrid.PairGrid at 0x296d7623d00>

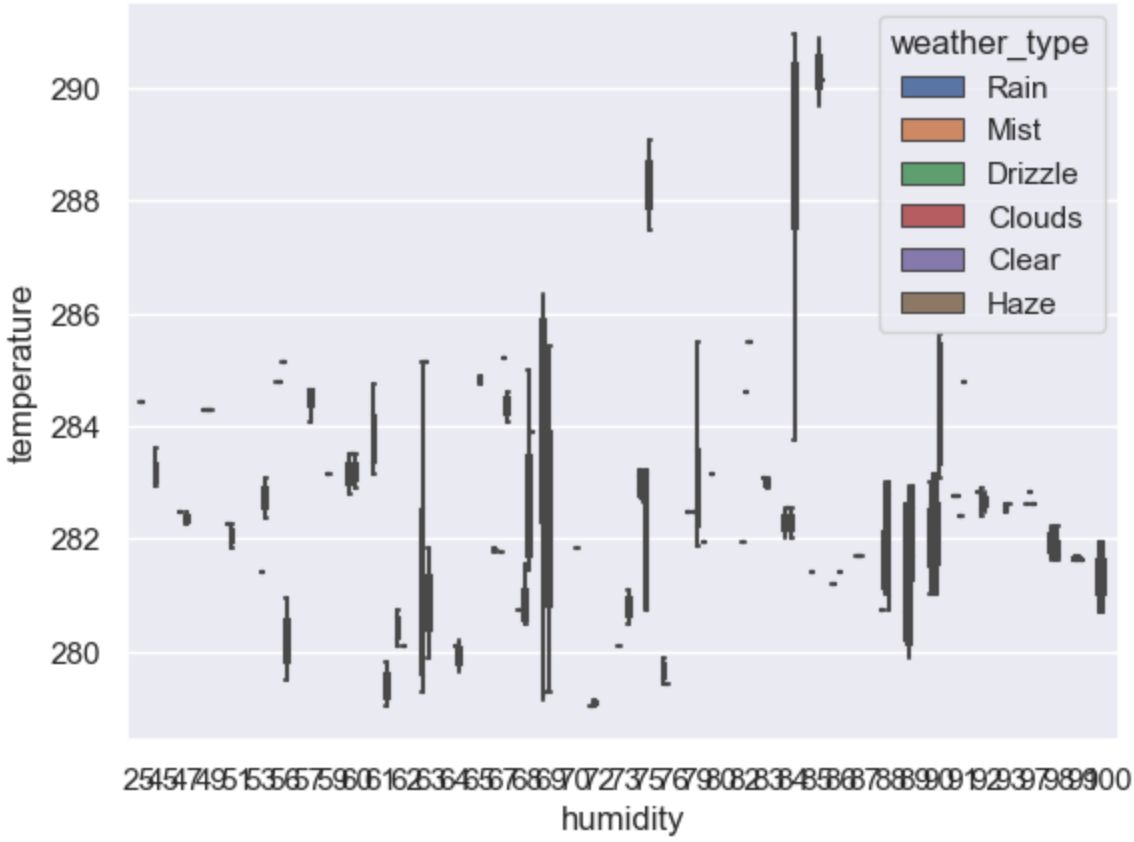


boxplot

In [15]:
```
sns.boxplot(weather['humidity'], weather['temperature'], hue=weather['wea
```

```
C:\Users\layal\anaconda3\lib\site-packages\seaborn\_decorators.py:36:
FutureWarning: Pass the following variables as keyword args: x, y. Fro
m version 0.12, the only valid positional argument will be `data`, and
passing other arguments without an explicit keyword will result in an
error or misinterpretation.
  warnings.warn(
```

Out[15]: <AxesSubplot:xlabel='humidity', ylabel='temperature'>



In [16]:
```
# library for creating interactive plot visulization
import plotly.express as px
import plotly
```

animatation bar chart

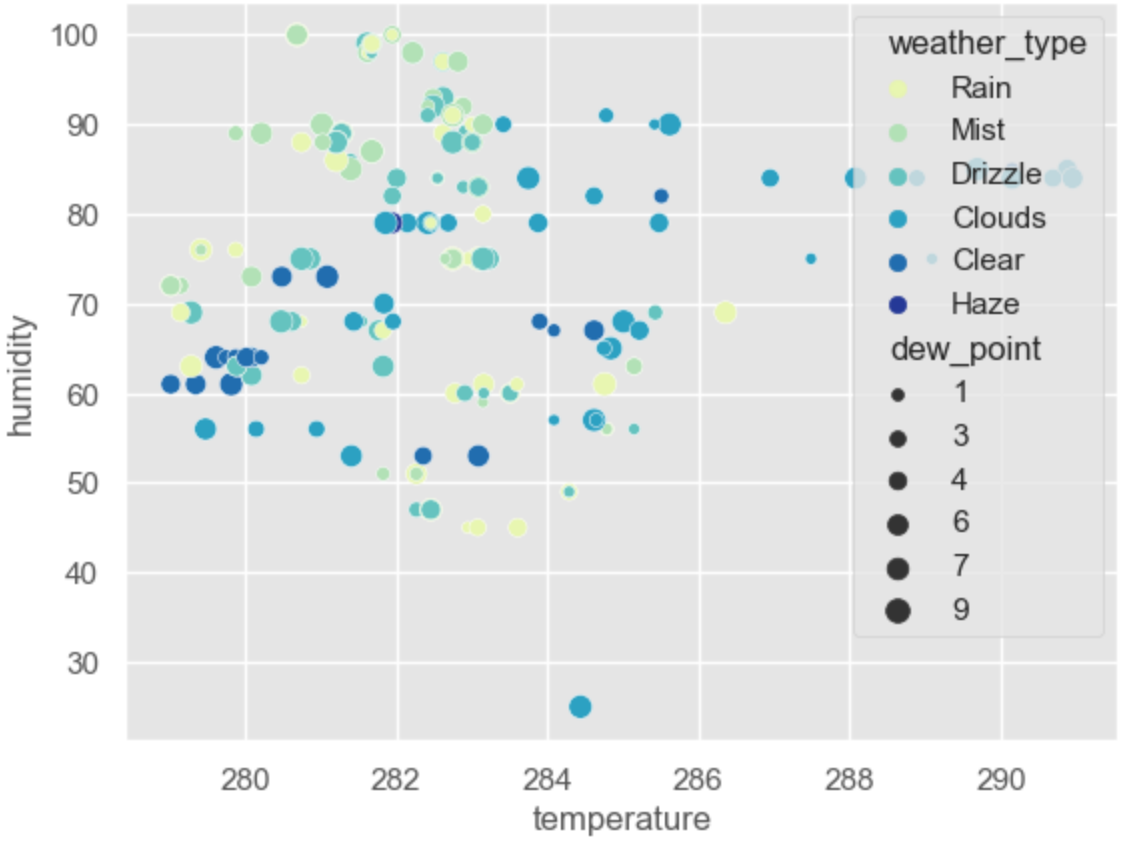
In [223]:
```
weather['date_time'] = pd.to_datetime(weather['date_time'])

WType = weather['weather_type']
WDirec = weather['wind_direction']
Wdate = weather['date_time'].dt.strftime('%Y-%m-%d')

fig = px.bar(
         weather,
        x = WType,
        y = WDirec,
        color = WType,
        animation_frame = Wdate,
        animation_group = WType,
        range_y = [0,600]
)

plotly.offline.plot(fig, filename='animatedBar.html') #new html page
```

Out[223]: 'animatedBar.html'

scatterplot

In [186]:
```
weather = pd.read_csv('C:\\Users\\layal\\OneDrive\المستندات\\IR\\Test.csv
sns.scatterplot(x='temperature', y='humidity',data=weather, hue='weather_
                ,palette='YlGnBu')
```

Out[186]:
```
<AxesSubplot:xlabel='temperature', ylabel='humidity'>
```



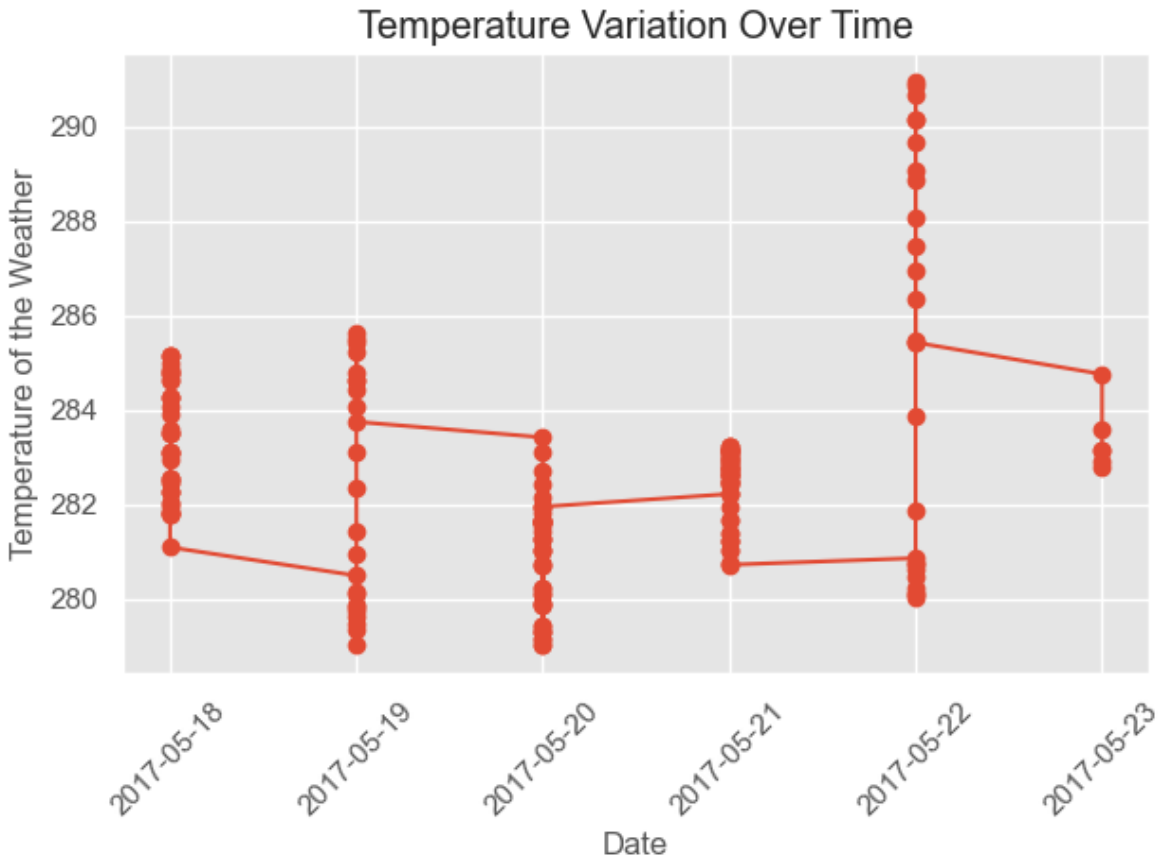
animation scatter

In [289]:
```
#air pollution vs weather description based on date and time
weather = pd.read_csv('C:\\Users\\layal\\OneDrive\المستندات\\IR\\Test.csv
px.scatter(weather,
           x='weather_description',
           y='air_pollution_index',
           animation_frame='date_time',
           animation_group='weather_description',
           size='air_pollution_index',
           color='weather_description',
           hover_name='weather_description',
           size_max=100,
           range_x=[-100, 600],
           range_y=[0, 600]
          )
```

In [75]:
```
# import static, animated python library
import matplotlib.pyplot as plt
%matplotlib inline
from matplotlib import style
```

plt.plot

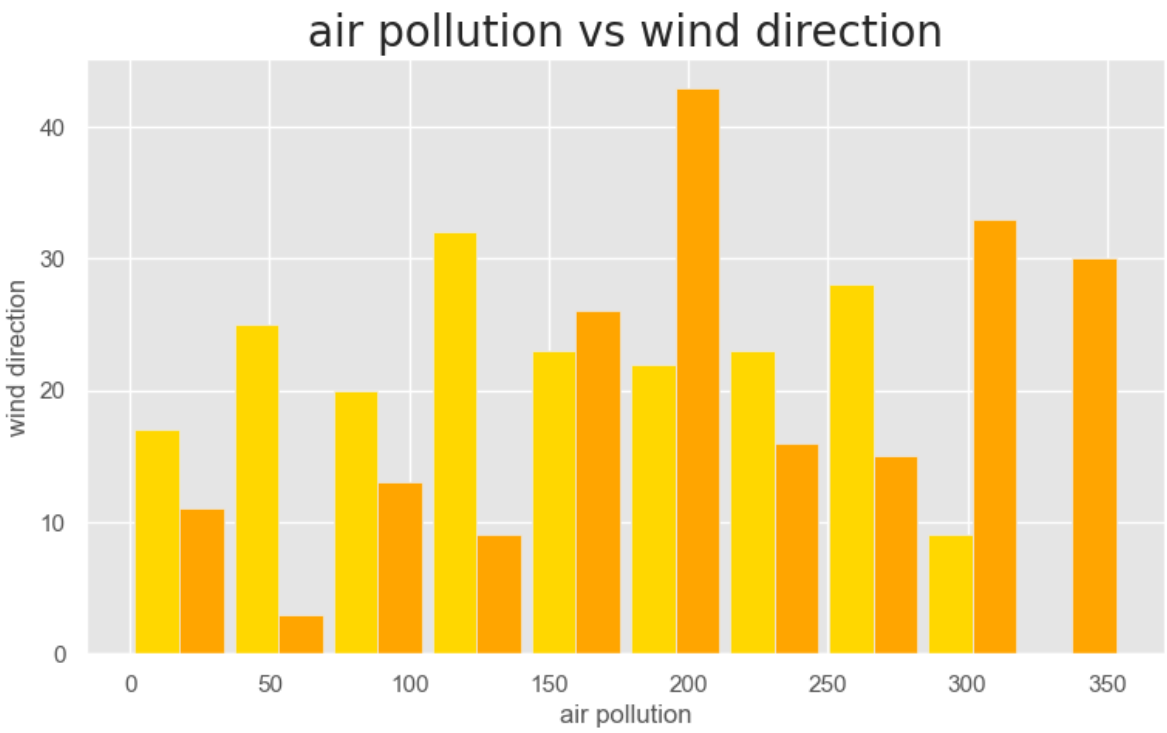
In [117]:
```
style.use('ggplot')
# Read the CSV file
weather = pd.read_csv('C:\\Users\\layal\\OneDrive\المستندات\\IR\\Test.csv

# Convert 'date_time' to datetime
weather['date_time'] = pd.to_datetime(weather['date_time'])

# Extract necessary columns
WTempt = weather['temperature']
Wdate2 = weather['date_time'].dt.strftime('%Y-%m-%d')

# Plot the histogram
plt.plot(Wdate2, WTempt, marker='o', linestyle='-')
plt.xlabel('Date')
plt.ylabel('Temperature of the Weather')
plt.title('Temperature Variation Over Time')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



plt.histogram

In [297]:
```
#air pollution vs wind direction
plt.figure(figsize=(9,5))
plt.style.use('ggplot')
weather = pd.read_csv('C:\\Users\\layal\\OneDrive\المستندات\\IR\\Test.csv

# Extract necessary columns
WAirP = weather['air_pollution_index']
WWind = weather['wind_direction']

plt.hist([WAirP,WWind],color=['gold','orange'], rwidth=0.9)
plt.xlabel('air pollution')
plt.ylabel('wind direction')
plt.title('air pollution vs wind direction',fontsize=20,fontfamily='DejaV
```

Out[297]:
```
Text(0.5, 1.0, 'air pollution vs wind direction')
```



In [161]:
```
#downloading wordcloud
pip install wordcloud
```

```
Collecting wordcloud
  Downloading wordcloud-1.9.2-cp39-cp39-win_amd64.whl (153 kB)
     ------------------------------------ 153.3/153.3 kB 1.5 MB/s et
a 0:00:00
Requirement already satisfied: pillow in c:\users\layal\anaconda3\lib
\site-packages (from wordcloud) (9.2.0)
Requirement already satisfied: matplotlib in c:\users\layal\anaconda3
\lib\site-packages (from wordcloud) (3.5.2)
Requirement already satisfied: numpy>=1.6.1 in c:\users\layal\anaconda
3\lib\site-packages (from wordcloud) (1.21.5)
Requirement already satisfied: pyparsing>=2.2.1 in c:\users\layal\anac
onda3\lib\site-packages (from matplotlib->wordcloud) (3.0.9)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\layal
\anaconda3\lib\site-packages (from matplotlib->wordcloud) (2.8.2)
Requirement already satisfied: cycler>=0.10 in c:\users\layal\anaconda
3\lib\site-packages (from matplotlib->wordcloud) (0.11.0)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\layal\ana
conda3\lib\site-packages (from matplotlib->wordcloud) (4.25.0)
Requirement already satisfied: packaging>=20.0 in c:\users\layal\anaco
nda3\lib\site-packages (from matplotlib->wordcloud) (21.3)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\users\layal\ana
conda3\lib\site-packages (from matplotlib->wordcloud) (1.4.2)
Requirement already satisfied: six>=1.5 in c:\users\layal\anaconda3\li
b\site-packages (from python-dateutil>=2.7->matplotlib->wordcloud) (1.
16.0)
Installing collected packages: wordcloud
Successfully installed wordcloud-1.9.2
Note: you may need to restart the kernel to use updated packages.
```

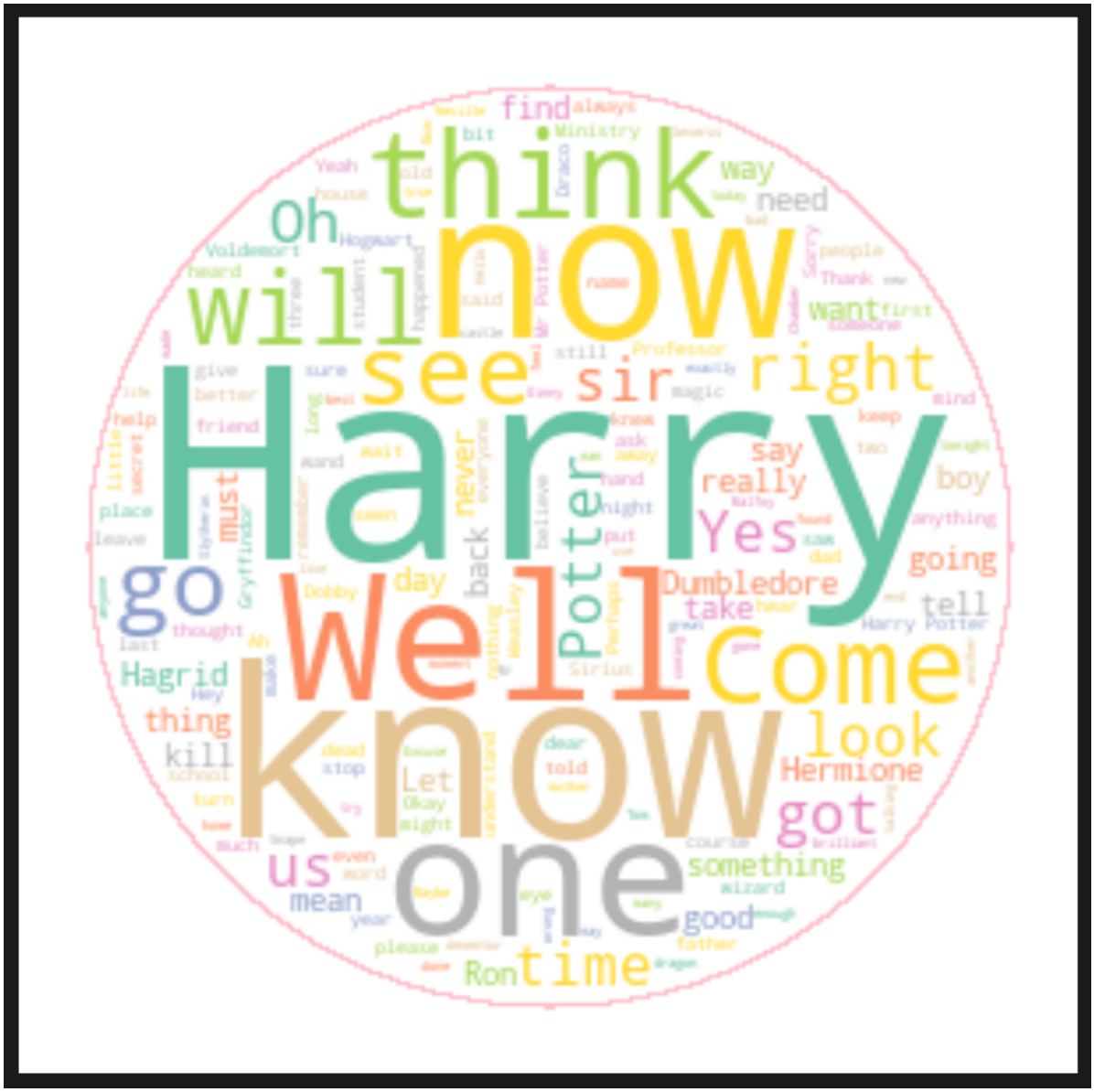
In [212]:
```
# read Dialog file
data_file = pd.read_csv('C:\\Users\\layal\\OneDrive\المستندات\\IR\\Dialog
data_file.head()
```

Out[212]:

	Dialogue ID	Chapter ID	Place ID	Character ID	Dialogue
0	1	1	8	4	I should have known that you would be here...P...
1	2	1	8	7	Good evening, Professor Dumbledore. Are the ru...
2	3	1	8	4	I'm afraid so, Professor. The good, and the bad.
3	4	1	8	7	And the boy?
4	5	1	8	4	Hagrid is bringing him.

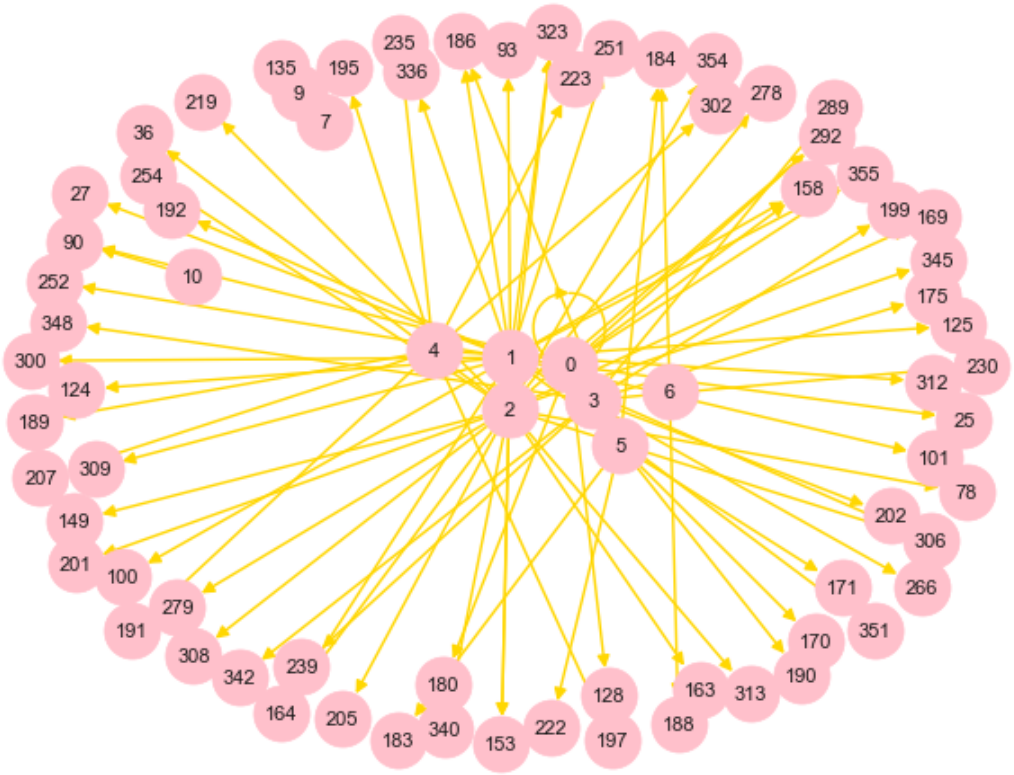
wordcloud

In [316]:
```
from wordcloud import WordCloud, STOPWORDS , ImageColorGenerator
import pandas as pd
import matplotlib.pylab as plt
from PIL import Image
import numpy as np

# stopword analysis
stopwords = set(STOPWORDS)

# circle mask shape
x, y = np.ogrid[:300, :300]
mask = (x - 150) ** 2 + (y - 150) ** 2 > 130 ** 2
mask = 255 * mask.astype(int)

#read only the dialog column in wordcloud
data_file = pd.read_csv('C:\\Users\\layal\\OneDrive\المستندات\\IR\\Dialog
#wordcloud
wordcloud = WordCloud( stopwords = stopwords ,width=600 , height=800,cont
                      contour_color = "pink",background_color="White",
                      colormap="Set2").generate(''.join(data_file['Dialog
# edit figsize
plt.figure(figsize=(20,7),facecolor='k')

# Remove the axis and display the data as image
plt.imshow(wordcloud,interpolation='bilinear')
plt.axis('off')
plt.tight_layout (pad=0)

plt.show()
```



network graph

In [211]:
```
# import naetwork library
import networkx as nx

weather = pd.read_csv('C:\\Users\\layal\\OneDrive\المستندات\\IR\\Test.csv
# Create a directed graph from the weather dataset
G = nx.from_pandas_edgelist(weather, 'wind_speed', 'wind_direction', crea

# draw the graph
pos = nx.fruchterman_reingold_layout(G)
nx.draw(G, pos,  with_labels=True,font_weight='normal', node_size=500, nc
        font_size=8, edge_color='gold')

plt.show()
```



In [ ]:
```

```