In [61]:
```
#importing essential libraries
import pickle
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib as plt
```

Challenge:

Write a python program that does the following:

1. Reads the data from your local file directory
2. Adds a new column named [obsolete]. The column should flag TRUE, indicating an item is expired and FALSE, otherwise
3. Transform the output data to a JSON format
4. Store the data in your local directory

1. Reads the data from your local file directory

In [62]:
```
#Reads the data from your local file directory
x = pd.read_csv("python hands-on - dataset.csv")
x
```

Out[62]:

	date	sku	warehouse_location	quantity
0	2021-01-02	100940478	lagos	23
1	2020-11-09	100940479	lagos	84
2	2021-01-15	100940480	oyo	11
3	2016-11-09	100940481	ogun	98
4	2017-04-04	100940482	ogun	23
5	2018-01-13	100940483	abia	3
6	2021-03-15	100940484	kaduna	7
7	2021-01-11	100940485	abuja	4
8	2021-02-16	100940486	kano	9
9	2019-06-06	100940487	anambra	199

In [63]:
```
x.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 4 columns):
 #   Column              Non-Null Count  Dtype 
---  ------              --------------  ----- 
 0   date                10 non-null     object
 1   sku                 10 non-null     int64 
 2   warehouse_location  10 non-null     object
 3   quantity            10 non-null     int64 
dtypes: int64(2), object(2)
memory usage: 448.0+ bytes
```

In [64]:
```
# converting the date object to datetime data type
x['date'] = pd.to_datetime(x['date'])
x.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 4 columns):
 #   Column              Non-Null Count  Dtype         
---  ------              --------------  -----         
 0   date                10 non-null     datetime64[ns]
 1   sku                 10 non-null     int64         
 2   warehouse_location  10 non-null     object        
 3   quantity            10 non-null     int64         
dtypes: datetime64[ns](1), int64(2), object(1)
memory usage: 448.0+ bytes
```

In [65]:
```
x
```

Out[65]:

	date	sku	warehouse_location	quantity
0	2021-01-02	100940478	lagos	23
1	2020-11-09	100940479	lagos	84
2	2021-01-15	100940480	oyo	11
3	2016-11-09	100940481	ogun	98
4	2017-04-04	100940482	ogun	23
5	2018-01-13	100940483	abia	3
6	2021-03-15	100940484	kaduna	7
7	2021-01-11	100940485	abuja	4
8	2021-02-16	100940486	kano	9
9	2019-06-06	100940487	anambra	199

2. Adds a new column named [obsolete]. The column should flag TRUE, indicating an item is expired and FALSE, otherwise

In [66]:
```
# Adds a new column named [obsolete]. The column should flag TRUE, indicating an item is expired and FALSE, otherwise
x['obsolete'] = x['date'] < '2021-01-01'
x
```

Out[66]:

	date	sku	warehouse_location	quantity	obsolete
0	2021-01-02	100940478	lagos	23	False
1	2020-11-09	100940479	lagos	84	True
2	2021-01-15	100940480	oyo	11	False
3	2016-11-09	100940481	ogun	98	True
4	2017-04-04	100940482	ogun	23	True
5	2018-01-13	100940483	abia	3	True
6	2021-03-15	100940484	kaduna	7	False
7	2021-01-11	100940485	abuja	4	False
8	2021-02-16	100940486	kano	9	False
9	2019-06-06	100940487	anambra	199	True

3. Transform the output data to a JSON format

In [67]:
```
# Transform the output data to a JSON format
x_json = x.to_json()
x_json
```

Out[67]:

```
'{"date":{"0":1609545600000,"1":1604880000000,"2":1610668800000,"3":1478649600000,"4":1491264000000,"5":1515801600000,"6":1615766400000,"7":1610323200000,"8":1613433600000,"9":1559779200000},"sku":{"0":100940478,"1":100940479,"2":100940480,"3":100940481,"4":100940482,"5":100940483,"6":100940484,"7":100940485,"8":100940486,"9":100940487},"warehouse_location":{"0":"lagos","1":"lagos","2":"oyo","3":"ogun","4":"ogun","5":"abia","6":"kaduna","7":"abuja","8":"kano","9":"anambra"},"quantity":{"0":23,"1":84,"2":11,"3":98,"4":23,"5":3,"6":7,"7":4,"8":9,"9":199},"obsolete":{"0":false,"1":true,"2":false,"3":true,"4":true,"5":true,"6":false,"7":false,"8":false,"9":true}}'
```


4. Store the data in your local directory (disk)

In [68]:
```
# Store the data in your local directory (disk)
import pickle
filename = 'python hands-on - dataset.json'
pickle.dump(x_json, open(filename,'wb'))
```

some time later...

load the file from disk

In [69]:
```
loaded_x_json = pickle.load(open('python hands-on - dataset.json', 'rb'))
print(loaded_x_json)
```

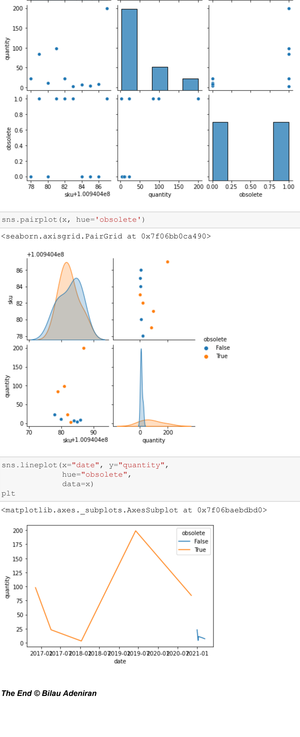

```
{"date":{"0":1609545600000,"1":1604880000000,"2":1610668800000,"3":1478649600000,"4":1491264000000,"5":1515801600000,"6":1615766400000,"7":1610323200000,"8":1613433600000,"9":1559779200000},"sku":{"0":100940478,"1":100940479,"2":100940480,"3":100940481,"4":100940482,"5":100940483,"6":100940484,"7":100940485,"8":100940486,"9":100940487},"warehouse_location":{"0":"lagos","1":"lagos","2":"oyo","3":"ogun","4":"ogun","5":"abia","6":"kaduna","7":"abuja","8":"kano","9":"anambra"},"quantity":{"0":23,"1":84,"2":11,"3":98,"4":23,"5":3,"6":7,"7":4,"8":9,"9":199},"obsolete":{"0":false,"1":true,"2":false,"3":true,"4":true,"5":true,"6":false,"7":false,"8":false,"9":true}}
```


5. Exploratory Data Analyst (EDA)

In [70]:
```
sns.pairplot(x)
```

```
<string>:6: RuntimeWarning: Converting input from bool to <class 'numpy.uint8'> for compatibility.
<string>:6: RuntimeWarning: Converting input from bool to <class 'numpy.uint8'> for compatibility.
```

Out[70]:
```
<seaborn.axisgrid.PairGrid at 0x7f06c8488cd0>
```



In [71]:
```
sns.pairplot(x, hue='obsolete')
```

Out[71]:
```
<seaborn.axisgrid.PairGrid at 0x7f06bb0ca490>
```


In [72]:
```
sns.lineplot(x="date", y="quantity",
             hue="obsolete",
             data=x)
plt
```

Out[72]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x7f06baebdbd0>
```