```
import pandas as pd
           import matplotlib.pyplot as plt
          import numpy as np
           import seaborn as sns
           data = pd.read_excel(r'D:\food_prices_dza.xlsx')
          data.head()
             date country admin1 admin2 admin3
                                                            latitude longitude category commodity unit price
Out[1]:
                                                                                    cereals
             2015-
          0
                                                   Hydra 36.752887
                     Algeria
                                 Alger
                                           NaN
                                                                       3.042048
                                                                                       and
                                                                                                   Bread
                                                                                                          Unit
             04-15
                                                                                     tubers
                                                                                     cereals
                                                                                                          500
             2015-
          1
                     Algeria
                                           NaN
                                                   Hydra 36.752887
                                                                       3.042048
                                                                                                   Pasta
                                 Alger
                                                                                       and
             04-15
                                                                                     tubers
                                                                                    cereals
             2015-
                                                   Hydra 36.752887
                                                                                                Potatoes
                                                                                                           KG
          2
                     Algeria
                                 Alger
                                           NaN
                                                                       3.042048
                                                                                       and
             04-15
                                                                                     tubers
                                                                                     cereals
             2015-
          3
                                           NaN
                                                   Hydra 36.752887
                                                                       3.042048
                                                                                                    Rice
                                                                                                           KG
                     Algeria
                                 Alger
                                                                                       and
             04-15
                                                                                     tubers
                                                                                      meat.
                                                                                                            30
             2015-
                     Algeria
                                 Alger
                                           NaN
                                                   Hydra 36.752887
                                                                       3.042048
                                                                                                    Eggs
                                                                                    fish and
                                                                                                                    ć
             04-15
                                                                                                           pcs
                                                                                      eggs
In [2]:
          #print the dataframe
          df = pd.DataFrame(data)
                 date country admin1 admin2 admin3
                                                                latitude longitude
                                                                                          category commodity
Out[2]:
                 2015-
                                                                                        cereals and
                         Algeria
                                    Alger
                                               NaN
                                                       Hydra 36.752887
                                                                           3.042048
                                                                                                          Bread
                 04-15
                                                                                             tubers
                 2015-
                                                                                        cereals and
                                                                           3.042048
                                                                                                                  50
             1
                                    Alger
                                               NaN
                                                             36.752887
                                                                                                           Pasta
                         Algeria
                                                       Hydra
                 04-15
                                                                                             tubers
                 2015-
                                                                                        cereals and
                                                              36.752887
                         Algeria
                                    Alger
                                               NaN
                                                       Hydra
                                                                           3.042048
                                                                                                        Potatoes
                 04-15
                                                                                             tubers
                 2015-
                                                                                        cereals and
             3
                         Algeria
                                    Alger
                                               NaN
                                                       Hydra 36.752887
                                                                           3.042048
                                                                                                            Rice
                 04-15
                                                                                             tubers
                 2015-
                                                                                          meat, fish
                         Algeria
                                                       Hydra 36.752887
                                                                                                                 30
                                    Alger
                                               NaN
                                                                           3.042048
                                                                                                           Eggs
                 04-15
                                                                                          and eggs
                 2021-
                                                                                      miscellaneous
          1488
                                                             27.676101
                                                                          -8.127653
                                                                                                                  Pac
                         Algeria
                                  Tindouf
                                               NaN
                                                      Tindouf
                                                                                                      Tea (sahm)
                 05-15
                                                                                              food
                                                                                         pulses and
                 2021-
                                                                                                          Beans
          1489
                                  Tindouf
                                                     Tindouf 27.676101
                                                                          -8.127653
                         Algeria
                                               NaN
                 05-15
                                                                                               nuts
                                                                                                         (white)
                 2021-
                                                                                         pulses and
          1490
                         Algeria
                                  Tindouf
                                               NaN
                                                      Tindouf 27.676101
                                                                          -8.127653
                                                                                                          Lentils
                 05-15
                                                                                               nuts
                 2021-
                                                                                         vegetables
          1491
                                  Tindouf
                                                     Tindouf 27.676101
                         Algeria
                                               NaN
                                                                          -8.127653
                                                                                                          Apples
                 05-15
                                                                                          and fruits
                                                                                         vegetables
                 2021-
          1492
                                                     Tindouf 27.676101
                                                                          -8.127653
                         Algeria
                                  Tindouf
                                               NaN
                                                                                                       Tomatoes
                 05-15
                                                                                          and fruits
```

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1493 rows  $\times$  16 columns

In [1]:

#Reading the Dataset
#import libraries

```
df.shape
          (1493, 16)
Out[3]:
In [4]:
           #Data type of each column
           df.dtypes
          date
                            object
Out[4]:
          country
                            object
          admin1
                            object
          admin2
                           float64
          admin3
                            object
                           float64
          latitude
          longitude
                           float64
          category
                            object
          commodity
                            object
          unit
                            object
                            object
          pricetype
                            object
          currency
                           float64
          price
          usdprice
                           float64
          Year
                             int64
          Month
                           float64
          dtype: object
In [5]:
           #data exploration and preparation
           #Question1
           sns.heatmap(df.isna())
Out[5]: <AxesSubplot:>
                                                                - 1.0
            72
144
           216
288
360
432
                                                                - 0.8
           504
576
                                                                - 0.6
            648
720
           792
864
                                                                - 0.4
          936
1008
          1080
1152
                                                                - 0.2
          1224
1296
          1368
1440
                                                                 0.0
                     admin1
                        admin2
                           admin3
                                              arrency
                                ongitude
                                      commodity
                                        шij
                                   category
                                           pricetype
           dataframe = df.drop(['admin2'],axis=1)
In [6]:
           dataframe
                                                                                     category commodity
                  date country admin1 admin3
                                                          latitude longitude
Out[6]:
                                                                                                                 unit price
                  2015-
                                                                                    cereals and
                                                Hydra 36.752887
                                                                      3.042048
                           Algeria
                                       Alger
                                                                                                       Bread
                                                                                                                 Unit
                  04-15
                                                                                        tubers
                  2015-
                                                                                    cereals and
                           Algeria
                                                Hydra 36.752887
                                                                      3.042048
                                                                                                                500 G
                                       Alger
                                                                                                        Pasta
                  04-15
                                                                                        tubers
```

36.752887

Hydra 36.752887

Hydra

3.042048

3.042048

cereals and

cereals and

tubers

tubers

KG

KG

**Potatoes** 

Rice

#Dimensionality

2015-

04-15

2015-

Algeria

<u>Alge</u>ria

Alger

Alger

2

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In [3]:

	date	country	admin1	admin3	latitude	longitude	category	commodity	unit	price
4	2015- 04-15	Algeria	Alger	Hydra	36.752887	3.042048	meat, fish and eggs	Eggs	30 pcs	i
1488	2021- 05-15	Algeria	Tindouf	Tindouf	27.676101	-8.127653	miscellaneous food	Tea (sahm)	Packet	i
1489	2021- 05-15	Algeria	Tindouf	Tindouf	27.676101	-8.127653	pulses and nuts	Beans (white)	KG	i
1490	2021- 05-15	Algeria	Tindouf	Tindouf	27.676101	-8.127653	pulses and nuts	Lentils	KG	i
1491	2021- 05-15	Algeria	Tindouf	Tindouf	27.676101	-8.127653	vegetables and fruits	Apples	KG	i
1492	2021- 05-15	Algeria	Tindouf	Tindouf	27.676101	-8.127653	vegetables and fruits	Tomatoes	KG	i

1493 rows  $\times$  15 columns

<pre>In [7]: dataframe = dataframe.drop(['country dataframe</pre>	y', 'pricetype', 'currency'],axis=1)
---	--------------------------------------

Out[7]:		date	admin1	admin3	latitude	longitude	category	commodity	unit	price	usdpric
	0	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Bread	Unit	10.0	0.0
	1	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Pasta	500 G	60.0	0.4
	2	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Potatoes	KG	80.0	0.5
	3	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Rice	KG	90.0	0.6
	4	2015- 04-15	Alger	Hydra	36.752887	3.042048	meat, fish and eggs	Eggs	30 pcs	300.0	2.1
	1488	2021- 05-15	Tindouf	Tindouf	27.676101	-8.127653	miscellaneous food	Tea (sahm)	Packet	200.0	1.4
	1489	2021- 05-15	Tindouf	Tindouf	27.676101	-8.127653	pulses and nuts	Beans (white)	KG	270.0	1.9
	1490	2021- 05-15	Tindouf	Tindouf	27.676101	-8.127653	pulses and nuts	Lentils	KG	185.0	1.3
	1491	2021- 05-15	Tindouf	Tindouf	27.676101	-8.127653	vegetables and fruits	Apples	KG	450.0	3.2
	1492	2021- 05-15	Tindouf	Tindouf	27.676101	-8.127653	vegetables and fruits	Tomatoes	KG	120.0	3.0

1493 rows × 12 columns

Tn [0].	#true for nan values
TII [O]:	#true for man vacues
	dataframe.isnull()

	Out[8]:		date	admin1	admin3	latitude	longitude	category	commodity	unit	price	usdprice	Yea
		0	False	False	False	False	False	False	False	False	False	False	False
		1	False	False	False	False	False	False	False	False	False	False	False
1 -	CAA Ll.	1 1 /	! 1	C - E - ! -									

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	•	date	admin1	admin3	latitude	longitude	category	commodity	unit	price	usdprice	Yea
	2	False	False	False	False	False	False	False	False	False	False	False
	3	False	False	False	False	False	False	False	False	False	False	False
	4	False	False	False	False	False	False	False	False	False	False	Fals€
14	88	False	False	False	False	False	False	False	False	False	False	Fals€
14	<b>89</b>	False	False	False	False	False	False	False	False	False	False	False
14	<b>90</b>	False	False	False	False	False	False	False	False	False	False	Fals€
14	<b>91</b>	False	False	False	False	False	False	False	False	False	False	False
14	<b>92</b>	False	False	False	False	False	False	False	False	False	False	False

1493 rows × 12 columns

```
In [9]: dataframe['Month'].fillna(dataframe['date'], inplace=True)
    dataframe
```

ommodity unit price usdpric	category	longitude	latitude	admin3	admin1	date	
Bread Unit 10.0 0.0	cereals and tubers	3.042048	36.752887	Hydra	Alger	2015- 04-15	0
Pasta 500 G 60.0 0.4	cereals and tubers	3.042048	36.752887	Hydra	Alger	2015- 04-15	1
Potatoes KG 80.0 0.5	cereals and tubers	3.042048	36.752887	Hydra	Alger	2015- 04-15	2
Rice KG 90.0 0.6	cereals and tubers	3.042048	36.752887	Hydra	Alger	2015- 04-15	3
Eggs 30 pcs 300.0 2.1	meat, fish and eggs	3.042048	36.752887	Hydra	Alger	2015- 04-15	4
Fea (sahm) Packet 200.0 1.4	miscellaneous food	-8.127653	27.676101	Tindouf	Tindouf	2021- 05-15	1488
Beans KG 270.0 1.9 (white)	pulses and nuts	-8.127653	27.676101	Tindouf	Tindouf	2021- 05-15	1489
Lentils KG 185.0 1.3	pulses and nuts	-8.127653	27.676101	Tindouf	Tindouf	2021- 05-15	1490
Apples KG 450.0 3.2	vegetables and fruits	-8.127653	27.676101	Tindouf	Tindouf	2021- 05-15	1491
Tomatoes KG 120.0 0.8	vegetables and fruits	-8.127653	27.676101	Tindouf	Tindouf	2021- 05-15	1492

1493 rows × 12 columns

```
In [10]: dataframe.at[635,'date'] = '2015-12-15'
    print(dataframe.at[635,'date'])

    dataframe.at[636,'date'] = '2016-1-15'
    print(dataframe.at[636,'date'])

    dataframe.at[637,'date'] = '2016-1-15'
    print(dataframe.at[637,'date'])
```

2015 - 12 - 15 Loading [MathJax]/extensions/Safe.js

```
In [11]:
            #Question2
            dataframe = dataframe.rename(columns = {'admin1': 'State','admin3': 'City','price': 'DzdP
            dataframe
Out[11]:
                  date
                          State
                                    City
                                            latitude
                                                     longitude
                                                                                commodity
                                                                                               unit DzdPrice
                                                                                                                usdp
                                                                     category
                  2015-
                                                                    cereals and
               0
                           Alger
                                   Hydra 36.752887
                                                       3.042048
                                                                                       Bread
                                                                                                Unit
                                                                                                           10.0
                  04 - 15
                                                                         tubers
                  2015-
                                                                    cereals and
                                   Hydra 36.752887
                                                       3.042048
                                                                                       Pasta
                                                                                              500 G
                                                                                                           60.0
                           Alger
                  04-15
                                                                         tubers
                  2015-
                                                                    cereals and
               2
                           Alger
                                   Hydra 36.752887
                                                       3.042048
                                                                                    Potatoes
                                                                                                 KG
                                                                                                          80.0
                  04-15
                                                                         tubers
                  2015-
                                                                    cereals and
               3
                                   Hydra 36.752887
                                                       3.042048
                                                                                        Rice
                                                                                                 KG
                                                                                                           90.0
                           Alger
                  04-15
                                                                         tubers
                                                                     meat, fish
                  2015-
                                   Hydra 36.752887
                                                       3.042048
                                                                                       Eggs 30 pcs
                                                                                                         300.0
                           Alger
                  04 - 15
                                                                      and eggs
                  2021-
                                                                  miscellaneous
                         Tindouf
                                                      -8.127653
           1488
                                 Tindouf 27.676101
                                                                                                         200.0
                                                                                  Tea (sahm)
                                                                                             Packet
                                                                          food
                  2021-
                                                                     pulses and
                                                                                      Beans
           1489
                         Tindouf Tindouf 27.676101
                                                      -8.127653
                                                                                                 KG
                                                                                                         270.0
                  05-15
                                                                                     (white)
                                                                           nuts
                  2021-
                                                                     pulses and
                                                      -8.127653
           1490
                         Tindouf Tindouf 27.676101
                                                                                      Lentils
                                                                                                 KG
                                                                                                         185.0
                  05-15
                                                                           nuts
                                                                     vegetables
                  2021-
           1491
                         Tindouf Tindouf 27.676101
                                                      -8.127653
                                                                                      Apples
                                                                                                 KG
                                                                                                         450.0
                  05-15
                                                                      and fruits
                                                                     vegetables
           1492
                         Tindouf Tindouf 27.676101
                                                      -8.127653
                                                                                   Tomatoes
                                                                                                 KG
                                                                                                         120.0
                                                                      and fruits
          1493 rows × 12 columns
            #Question3
            dataframe.describe()
```

```
In [12]:
```

Out[12]:

latitude

1493.000000 1493.000000 count 1493.000000 1493.000000 1493.000000 29.049174 -5.813241 167.447354 1.203295 2015.741460 mean std 3.569110 4.110959 151.740076 1.090434 1.094161 min 4.000000 0.030000 2015.000000 26.827448 -8.127653 25% -8.014000 60.000000 0.430000 2015.000000 27.492310

longitude

**50%** 27.631001 -7.828405 110.000000 0.790000 2016.000000 **75%** 27.740000 230.000000 1.650000 2016.000000 -6.869948

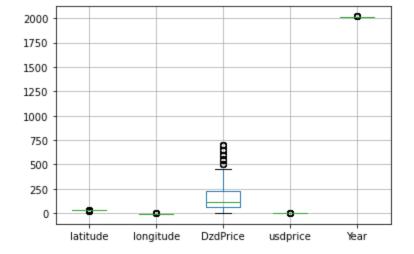
**DzdPrice** 

usdprice

Year

36.752887 3.042048 700.000000 5.030000 2021.000000 max

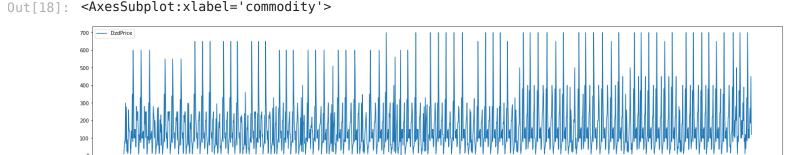
```
#Question4
In [13]:
          #boxplot
          , bp = dataframe.boxplot( return type='both')
```



Movemonf of each commodity prices

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```
#Question5
In [15]:
          dataframe.to excel("output.xlsx")
          #Data Visualisation
In [16]:
          #Ouestion1
          print('Unique categories:\n',dataframe['category'].unique())
          print('\n\nFrequent categories:\n',dataframe['category'].value_counts())
         Unique categories:
          ['cereals and tubers' 'meat, fish and eggs' 'milk and dairy'
           'miscellaneous food' 'non-food' 'pulses and nuts' 'vegetables and fruits'
           'oil and fats']
         Frequent categories:
                                    328
          cereals and tubers
         meat, fish and eggs
                                   316
         vegetables and fruits
                                   212
         pulses and nuts
                                   166
         miscellaneous food
                                   154
         milk and dairy
                                   150
         non-food
                                   145
         oil and fats
                                    22
         Name: category, dtype: int64
          #Ouestion2
In [17]:
          print('Unique cities:\n',dataframe['City'].unique())
          print('\n\nFrequent of cities:\n',dataframe['City'].value counts())
         Unique cities:
          ['Hydra' 'Dakhla' 'Samara' 'Tindouf' 'Auserd' 'Layoun' 'Boujdour']
         Frequent of cities:
          Tindouf
                      318
         Samara
                      312
         Dakhla
                      308
                     262
         Hydra
         Layoun
                      115
         Auserd
                      106
         Boujdour
                      72
         Name: City, dtype: int64
         #Question3
In [18]:
          plt.rcParams["figure.figsize"] = (25, 5)
          print("Movemonf of each commodity prices\n")
          dataframe.plot(x='commodity', y='DzdPrice')
```



```
In [19]: df_commodity = dataframe.set_index("commodity", drop = False)
    df_commodity
```

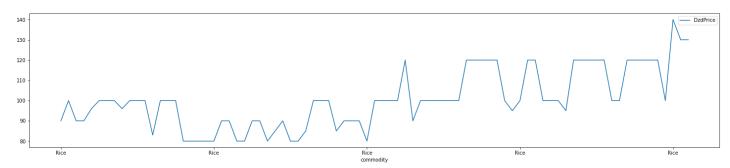
Out[19]:		date	State	City	latitude	longitude	category	commodity	unit	DzdPrice
	commodity									
	Bread	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Bread	Unit	10.0
	Pasta	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Pasta	500 G	60.0
	Potatoes	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Potatoes	KG	80.0
	Rice	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Rice	KG	90.0
	Eggs	2015- 04-15	Alger	Hydra	36.752887	3.042048	meat, fish and eggs	Eggs	30 pcs	300.0
	Tea (sahm)	2021- 05-15	Tindouf	Tindouf	27.676101	-8.127653	miscellaneous food	Tea (sahm)	Packet	200.0
	Beans (white)		Tindouf	Tindouf	27.676101	-8.127653	pulses and nuts	Beans (white)	KG	270.0
	Lentils	2021- 05-15	Tindouf	Tindouf	27.676101	-8.127653	pulses and nuts	Lentils	KG	185.0
	Apples	2021- 05-15	Tindouf	Tindouf	27.676101	-8.127653	vegetables and fruits	Apples	KG	450.0
	Tomatoes	2021- 05-15	Tindouf	Tindouf	27.676101	-8.127653	vegetables and fruits	Tomatoes	KG	120.0

1493 rows × 12 columns

```
In [20]: print("Movement of Rice prices")
    df_commodity.loc["Rice",:].plot(x='commodity', y='DzdPrice')
```

Movement of Rice prices

Out[20]: <AxesSubplot:xlabel='commodity'>



```
print("Movement of Bread prices")
In [21]:
            df commodity.loc["Bread",:].plot(x='commodity', y='DzdPrice')
          Movement of Bread prices
Out[21]: <AxesSubplot:xlabel='commodity'>

    DzdPrice

          14
          13
          12
          11
          10
                                                              Bread
           print("Movement of Sugar prices")
In [22]:
           df_commodity.loc["Sugar",:].plot(x='commodity', y='DzdPrice')
          Movement of Sugar prices
          <AxesSubplot:xlabel='commodity'>
Out[22]:
                                       Sugar
In [23]:
            #Question4
            df category = dataframe.set index("category", drop = False)
In [24]:
           print('Movemment of fish and eggs Category')
            df_category.loc["meat, fish and eggs",:].plot(x='category', y='DzdPrice')
           Movemment of fish and eggs Category
          <AxesSubplot:xlabel='category'>
Out[24]:
          600
           400
          200
          100
                                                          meat, fish and eggs
category
                                                                                                       meat, fish and eggs
             meat, fish and eggs
                            meat, fish and eggs
                                           meat, fish and eggs
                                                                         meat, fish and eggs
                                                                                        meat, fish and eggs
            print('Movemment of cereals and tubers Category')
In [25]:
           df category.loc["cereals and tubers",:].plot(x='category', y='DzdPrice')
           Movemment of cereals and tubers Category
          <AxesSubplot:xlabel='category'>
```

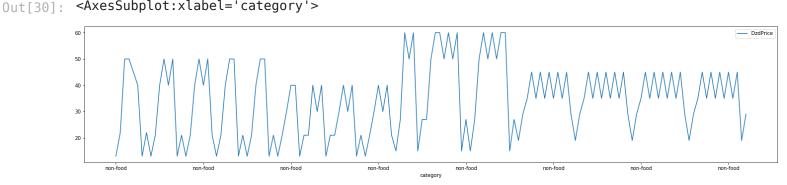
```
120
          100
          60
           print('Movemment of vegetables and fruits Category')
In [26]:
           df category.loc["vegetables and fruits",:].plot(x='category', y='DzdPrice')
          Movemment of vegetables and fruits Category
          <AxesSubplot:xlabel='category'>
Out[26]:
          400
          200
In [27]:
          print('Movemment of pulses and nuts Category')
           df_category.loc["pulses and nuts",:].plot(x='category', y='DzdPrice')
          Movemment of pulses and nuts Category
          <AxesSubplot:xlabel='category'>
Out[27]:
          275
          200
          175
          150
             pulses and nuts
                                                     pulses and nuts
                                                          category
In [28]:
          print('Movemment of miscellaneous food Category')
           df_category.loc["miscellaneous food",:].plot(x='category', y='DzdPrice')
          Movemment of miscellaneous food Category
          <AxesSubplot:xlabel='category'>
Out[28]:
          400
          300
          200
In [29]:
           print('Movemment of milk and dairy Category')
           df_category.loc["milk and dairy",:].plot(x='category', y='DzdPrice')
          Movemment of milk and dairy Category
```

Loading [MathJax]/extensions/Safe.js bel='category'>

```
225
200
175
150
125
100
 75
 50
                                          milk and dairy
                                                                                                                                                                           milk and dairy
                                                                                                                                                                                                           milk and dairy
                                                                                                                                                                                                                                           milk and dairy
         milk and dairy
                                                                          milk and dairy
                                                                                                          milk and dairy
                                                                                                                                          milk and dairy
```

```
print('Movemment of non-food Category')
In [30]:
          df category.loc["non-food",:].plot(x='category', y='DzdPrice')
```

Movemment of non-food Category <AxesSubplot:xlabel='category'>

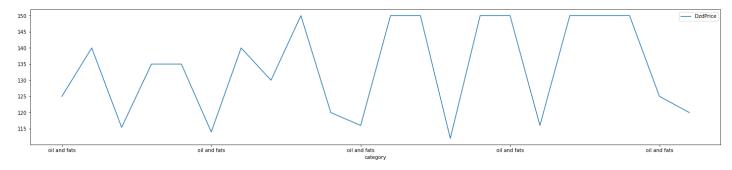


```
In [31]:
          print('Movemment of oil anf fats Category')
          df_category.loc["oil and fats",:].plot(x='category', y='DzdPrice')
```

Movemment of oil anf fats Category

Alger Hydra 36.752887

<AxesSubplot:xlabel='category'> Out[31]:



```
#Quetion5
In [32]:
          df_city = dataframe.set_index("City", drop = False)
          df city hydra = df city.loc["Hydra", : ]
          df city hydra
```

	41_61	- yy a .	· <b>u</b>									
Out[32]:		date	State	City	latitude	longitude	category	commodity	unit	DzdPrice	usdprice	•
	City											
	Hydra	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Bread	Unit	10.0	0.07	2
	Hydra	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Pasta	500 G	60.0	0.43	2
	Hydra	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Potatoes	KG	80.0	0.57	2
	Hydra	2015- 04-15	Alger	Hydra	36.752887	3.042048	cereals and tubers	Rice	KG	90.0	0.65	2

3.042048

meat, fish

and eggs

30

pcs

Eggs

300.0

2.16 2

Hydra Loading [MathJax]/extensions/Safe.js

04-15

	date	State	City	latitude	longitude	category	commodity	unit	DzdPrice	usdprice	•
City											
Hydra	2016- 10-15	Alger	Hydra	36.752887	3.042048	non-food	Fuel (petrol- gasoline)	L	29.0	0.21	2
Hydra	2016- 10-15	Alger	Hydra	36.752887	3.042048	pulses and nuts	Beans (white)	KG	180.0	1.29	2
Hydra	2016- 10-15	Alger	Hydra	36.752887	3.042048	pulses and nuts	Lentils	KG	180.0	1.29	2
Hydra	2016- 10-15	Alger	Hydra	36.752887	3.042048	vegetables and fruits	Apples	KG	400.0	2.87	2
Hydra	2016- 10-15	Alger	Hydra	36.752887	3.042048	vegetables and fruits	Tomatoes	KG	40.0	0.29	2

262 rows × 12 columns

```
In [33]: df_city_hydra = df_city_hydra.filter(["commodity", "DzdPrice", "Month"])
    df_city_hydra = df_city_hydra.loc[df_city_hydra["commodity"] == "Eggs"]
    df_city_hydra
```

## Out[33]: commodity DzdPrice Month

City			
Hydra	Eggs	300.0	4
Hydra	Eggs	270.0	5
Hydra	Eggs	298.5	6
Hydra	Eggs	210.0	7
Hydra	Eggs	240.0	8
Hydra	Eggs	270.0	9
Hydra	Eggs	215.0	10
Hydra	Eggs	241.0	11
Hydra	Eggs	300.0	12
Hydra	Eggs	300.0	1
Hydra	Eggs	240.0	2
Hydra	Eggs	265.0	3
Hydra	Eggs	330.0	7
Hydra	Eggs	390.0	8
Hydra	Eggs	350.0	9
Hydra	Eggs	280.0	10

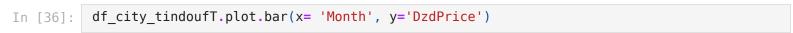
```
In [34]: df_city_hydra.plot.bar(x= 'Month', y='DzdPrice')
```

Out[34]: <AxesSubplot:xlabel='Month'>

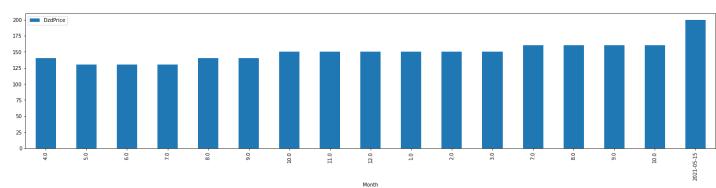
```
In [35]: #Question6
    df_city_tindouf = df_city.loc["Tindouf", : ]
    df_city_tindoufT = df_city_tindouf.filter(["commodity", "DzdPrice", "Month"])
    df_city_tindoufT = df_city_tindoufT.loc[df_city_tindoufT["commodity"] == "Tea (sahm)"]
    df_city_tindoufT
```

Month
ľ

City			
Tindouf	Tea (sahm)	140.0	4
Tindouf	Tea (sahm)	130.0	5
Tindouf	Tea (sahm)	130.0	6
Tindouf	Tea (sahm)	130.0	7
Tindouf	Tea (sahm)	140.0	8
Tindouf	Tea (sahm)	140.0	9
Tindouf	Tea (sahm)	150.0	10
Tindouf	Tea (sahm)	150.0	11
Tindouf	Tea (sahm)	150.0	12
Tindouf	Tea (sahm)	150.0	1
Tindouf	Tea (sahm)	150.0	2
Tindouf	Tea (sahm)	150.0	3
Tindouf	Tea (sahm)	160.0	7
Tindouf	Tea (sahm)	160.0	8
Tindouf	Tea (sahm)	160.0	9
Tindouf	Tea (sahm)	160.0	10
Tindouf	Tea (sahm)	200.0	2021-05-15



Out[36]: <AxesSubplot:xlabel='Month'>



```
df date= df date["2015-04-15":"2015-12-15"]
           df date
                  date
                          State
                                   City
                                           latitude longitude category commodity unit DzdPrice usdprice
Out[37]:
           date
           2015-
                 2015-
                                                                   cereals
                                  Hydra 36.752887
                                                     3.042048
                                                                                 Bread
                                                                                        Unit
                                                                                                  10.0
                                                                                                            0.07
                          Alger
           04-15 04-15
                                                                and tubers
          2015- 2015-
                                                                                        500
                                                                   cereals
                                  Hydra 36.752887
                                                                                 Pasta
                                                                                                            0.43
                          Alger
                                                     3.042048
                                                                                                  60.0
           04-15 04-15
                                                                and tubers
                                                                                          G
          2015- 2015-
                                                                   cereals
                          Alger
                                  Hydra 36.752887
                                                     3.042048
                                                                              Potatoes
                                                                                         KG
                                                                                                  80.0
                                                                                                            0.57
          04-15 04-15
                                                                and tubers
           2015- 2015-
                                                                   cereals
                                  Hydra 36.752887
                                                                                                  90.0
                                                                                                            0.65
                          Alger
                                                     3.042048
                                                                                  Rice
                                                                                         KG
          04-15 04-15
                                                                and tubers
          2015- 2015-
                                                                meat, fish
                                                                                         30
                                                                                                 300.0
                                  Hydra 36.752887
                                                     3.042048
                                                                                                            2.16
                          Alger
                                                                                  Eggs
          04-15 04-15
                                                                                         pcs
                                                                 and eggs
          2015- 2015-
                                                                pulses and
                                                                                Beans
                        Tindouf Tindouf 27.676101
                                                    -8.127653
                                                                                         KG
                                                                                                 240.0
                                                                                                            1.72
           12-15 12-15
                                                                                (white)
                                                                     nuts
          2015- 2015-
                                                                pulses and
                        Tindouf Tindouf 27.676101 -8.127653
                                                                                Lentils
                                                                                         KG
                                                                                                 220.0
                                                                                                            1.58
           12-15 12-15
                                                                     nuts
          2015- 2015-
                                                                vegetables
                        Tindouf Tindouf 27.676101
                                                    -8.127653
                                                                                Apples
                                                                                         KG
                                                                                                 300.0
                                                                                                            2.16
           12-15 12-15
                                                                 and fruits
          2015- 2015-
                                                                vegetables
                        Tindouf Tindouf 27.676101 -8.127653
                                                                                Carrots
                                                                                         KG
                                                                                                  60.0
                                                                                                            0.43
          12-15 12-15
                                                                 and fruits
          2015- 2015-
                                                                vegetables
                        Tindouf Tindouf 27.676101 -8.127653
                                                                             Tomatoes
                                                                                         KG
                                                                                                  65.0
                                                                                                            0.47
          12-15 12-15
                                                                 and fruits
          636 rows × 12 columns
           v = df date['DzdPrice'].max()
In [38]:
           max food = df date.loc[df date['DzdPrice'] == v]
           max food['commodity']
          date
Out[38]:
          2015 - 12 - 15
                          Meat (camel)
          Name: commodity, dtype: object
           #Ouestion8
In [39]:
           dataframe.plot(x = "DzdPrice" , y = "usdprice")
Out[39]: <AxesSubplot:xlabel='DzdPrice'>
          5 - usdprice
                            100
                                         200
                                                                                                           700
```

#Question7

df date = dataframe.set index("date", drop = False)

In [37]: