Pandas Exercises

- The goal of the exercises
  - Get comfortable with Pandas DataFrames
  - Establish workflows with Pandas
  - Deal with missing data
  - Make calculations on data
  - Export to Excel
- At each step, there are cells after the instructions where you should write your code. Just below that, there is a cell showing the output you should get.

Step 1

- import the Pandas library
- read the **gdp-00s.csv** file into a DataFrame **gdp00**
- ensure to set the **index_col** to 0
- Call **gdp00.head()**

```
import pandas as pd

gdp00 = pd.read_csv("C:/Users/vadre/Downloads/ML-1/Assn-1/01 -
Pandas/gdp-00s.csv", index_col=0)



gdp00.head()
```

```
                                     2000      2001      2002
2003  \
Country (or dependent territory)

Afghanistan                           NaN       NaN   18768.0
20806.0
Albania                           12857.0   14241.0   15116.0
16269.0
Algeria                          251580.0  265033.0  284171.0
310706.0
Angola                            37442.0   39906.0   46056.0
49439.0
Antigua and Barbuda                1305.0    1247.0    1271.0
1374.0

                                     2004      2005      2006
2007  \
Country (or dependent territory)

Afghanistan                       21522.0   24842.0   26978.0
31390.0
```

```
Albania                                17639.0   19212.0   20971.0
22818.0
Algeria                               332978.0  363968.0  381471.0
404831.0
Angola                                 56326.0   68755.0   85562.0
107684.0
Antigua and Barbuda                     1463.0    1623.0    1875.0
2055.0

                                          2008      2009
Country (or dependent territory)
Afghanistan                            33242.0   40390.0
Albania                                25010.0   26045.0
Algeria                               422514.0  432672.0
Angola                                124967.0  128954.0
Antigua and Barbuda                     2128.0    1914.0



                                          2000      2001      2002
2003  \
Country (or dependent territory)

Afghanistan                                NaN       NaN   18768.0
20806.0
Albania                                12857.0   14241.0   15116.0
16269.0
Algeria                               251580.0  265033.0  284171.0
310706.0
Angola                                 37442.0   39906.0   46056.0
49439.0
Antigua and Barbuda                     1305.0    1247.0    1271.0
1374.0

                                          2004      2005      2006
2007  \
Country (or dependent territory)

Afghanistan                            21522.0   24842.0   26978.0
31390.0
Albania                                17639.0   19212.0   20971.0
22818.0
Algeria                               332978.0  363968.0  381471.0
404831.0
Angola                                 56326.0   68755.0   85562.0
107684.0
Antigua and Barbuda                     1463.0    1623.0    1875.0
2055.0

                                          2008      2009
```

```
Country (or dependent territory)
Afghanistan                          33242.0   40390.0
Albania                              25010.0   26045.0
Algeria                             422514.0  432672.0
Angola                              124967.0  128954.0
Antigua and Barbuda                   2128.0    1914.0
```

Step 2

- read the **gdp-10s.csv** file into a DataFrame **gdp10**
- ensure to set the **index_col** to 0
- Call **gdp10.head()**

```
gdp10 = pd.read_csv("C:/Users/vadre/Downloads/ML-1/Assn-1/01 -
Pandas/gdp-00s.csv", index_col=0)

gdp10.head()
```

```
                                        2000      2001      2002
2003  \
Country (or dependent territory)

Afghanistan                              NaN       NaN   18768.0
20806.0
Albania                              12857.0   14241.0   15116.0
16269.0
Algeria                             251580.0  265033.0  284171.0
310706.0
Angola                               37442.0   39906.0   46056.0
49439.0
Antigua and Barbuda                   1305.0    1247.0    1271.0
1374.0

                                        2004      2005      2006
2007  \
Country (or dependent territory)

Afghanistan                          21522.0   24842.0   26978.0
31390.0
Albania                              17639.0   19212.0   20971.0
22818.0
Algeria                             332978.0  363968.0  381471.0
404831.0
Angola                               56326.0   68755.0   85562.0
107684.0
Antigua and Barbuda                   1463.0    1623.0    1875.0
2055.0

                                        2008      2009
Country (or dependent territory)
```

```
Afghanistan                          33242.0   40390.0
Albania                              25010.0   26045.0
Algeria                             422514.0  432672.0
Angola                              124967.0  128954.0
Antigua and Barbuda                   2128.0    1914.0



                                         2010      2011      2012
2013  \
Country (or dependent territory)

Afghanistan                          46304.0   50334.0   59945.0
63784.0
Albania                              28328.0   29655.0   30530.0
30604.0
Algeria                             471508.0  494947.0  497330.0
497988.0
Angola                              153871.0  162539.0  186124.0
199866.0
Antigua and Barbuda                   1814.0    1816.0    1772.0
1720.0

                                         2014      2015      2016
2017  \
Country (or dependent territory)

Afghanistan                          69444.0   72056.0   70098.0
74712.0
Albania                              32529.0   33595.0   34736.0
37609.0
Algeria                             506135.0  477358.0  471382.0
478071.0
Angola                              220365.0  204604.0  204875.0
217987.0
Antigua and Barbuda                   1762.0    1770.0    1883.0
1893.0

                                         2018      2019
Country (or dependent territory)
Afghanistan                          77416.0   81880.0
Albania                              40080.0   41709.0
Algeria                             496403.0  509307.0
Angola                              220542.0  222459.0
Antigua and Barbuda                   2073.0    2181.0
```

Step 3

- concatenate the DataFrames **gdp00** and **gdp10** into **gdp**
- HINT: concatenate() exists in the pandas library.

- HINT: **axis=1** parameter
- Call **gdp.head()**

```
gdp = pd.concat([gdp00, gdp10], axis=1)

gdp.head()
```

```
                                      2000      2001      2002
2003  \
Country (or dependent territory)

Afghanistan                            NaN       NaN   18768.0
20806.0
Albania                            12857.0   14241.0   15116.0
16269.0
Algeria                           251580.0  265033.0  284171.0
310706.0
Angola                             37442.0   39906.0   46056.0
49439.0
Antigua and Barbuda                 1305.0    1247.0    1271.0
1374.0

                                      2004      2005      2006
2007  \
Country (or dependent territory)

Afghanistan                        21522.0   24842.0   26978.0
31390.0
Albania                            17639.0   19212.0   20971.0
22818.0
Algeria                           332978.0  363968.0  381471.0
404831.0
Angola                             56326.0   68755.0   85562.0
107684.0
Antigua and Barbuda                 1463.0    1623.0    1875.0
2055.0

                                      2008      2009      2000
2001  \
Country (or dependent territory)

Afghanistan                        33242.0   40390.0       NaN
NaN
Albania                            25010.0   26045.0   12857.0
14241.0
Algeria                           422514.0  432672.0  251580.0
265033.0
Angola                            124967.0  128954.0   37442.0
39906.0
Antigua and Barbuda                 2128.0    1914.0    1305.0
1247.0
```

```
                                        2002      2003      2004
2005  \
Country (or dependent territory)

Afghanistan                           18768.0   20806.0   21522.0
24842.0
Albania                               15116.0   16269.0   17639.0
19212.0
Algeria                              284171.0  310706.0  332978.0
363968.0
Angola                                46056.0   49439.0   56326.0
68755.0
Antigua and Barbuda                    1271.0    1374.0    1463.0
1623.0

                                        2006      2007      2008
2009
Country (or dependent territory)

Afghanistan                           26978.0   31390.0   33242.0
40390.0
Albania                               20971.0   22818.0   25010.0
26045.0
Algeria                              381471.0  404831.0  422514.0
432672.0
Angola                                85562.0  107684.0  124967.0
128954.0
Antigua and Barbuda                    1875.0    2055.0    2128.0
1914.0



                          2000      2001      2002      2003      2004
\
Afghanistan                NaN       NaN   18768.0   20806.0   21522.0

Albania                12857.0   14241.0   15116.0   16269.0   17639.0

Algeria               251580.0  265033.0  284171.0  310706.0  332978.0

Angola                 37442.0   39906.0   46056.0   49439.0   56326.0

Antigua and Barbuda     1305.0    1247.0    1271.0    1374.0    1463.0


                          2005      2006      2007      2008      2009
\
Afghanistan            24842.0   26978.0   31390.0   33242.0   40390.0

Albania                19212.0   20971.0   22818.0   25010.0   26045.0
```

```
Algeria               363968.0  381471.0  404831.0  422514.0  432672.0
Angola                 68755.0   85562.0  107684.0  124967.0  128954.0
Antigua and Barbuda     1623.0    1875.0    2055.0    2128.0    1914.0

                           2010      2011      2012      2013      2014
\
Afghanistan             46304.0   50334.0   59945.0   63784.0   69444.0
Albania                 28328.0   29655.0   30530.0   30604.0   32529.0
Algeria                471508.0  494947.0  497330.0  497988.0  506135.0
Angola                 153871.0  162539.0  186124.0  199866.0  220365.0
Antigua and Barbuda      1814.0    1816.0    1772.0    1720.0    1762.0

                           2015      2016      2017      2018      2019
Afghanistan             72056.0   70098.0   74712.0   77416.0   81880.0
Albania                 33595.0   34736.0   37609.0   40080.0   41709.0
Algeria                477358.0  471382.0  478071.0  496403.0  509307.0
Angola                 204604.0  204875.0  217987.0  220542.0  222459.0
Antigua and Barbuda      1770.0    1883.0    1893.0    2073.0    2181.0
```

Step 4

- Drop all rows with **NaN**
- use argument **inplace=True**
- Call **gdp.head()**
- HINT: dropna() method on the DataFrame object

```
gdp.dropna(inplace=True)

gdp.head()

                                      2000      2001      2002
2003  \
Country (or dependent territory)

Albania                              12857.0   14241.0   15116.0
16269.0
Algeria                             251580.0  265033.0  284171.0
```

```
310706.0
Angola                              37442.0   39906.0   46056.0
49439.0
Antigua and Barbuda                  1305.0    1247.0    1271.0
1374.0
Argentina                          437650.0  427890.0  387126.0
429738.0

                                       2004      2005      2006
2007  \
Country (or dependent territory)

Albania                             17639.0   19212.0   20971.0
22818.0
Algeria                            332978.0  363968.0  381471.0
404831.0
Angola                              56326.0   68755.0   85562.0
107684.0
Antigua and Barbuda                  1463.0    1623.0    1875.0
2055.0
Argentina                          481426.0  540900.0  602385.0
674119.0

                                       2008      2009      2000
2001  \
Country (or dependent territory)

Albania                             25010.0   26045.0   12857.0
14241.0
Algeria                            422514.0  432672.0  251580.0
265033.0
Angola                             124967.0  128954.0   37442.0
39906.0
Antigua and Barbuda                  2128.0    1914.0    1305.0
1247.0
Argentina                          715230.0  678009.0  437650.0
427890.0

                                       2002      2003      2004
2005  \
Country (or dependent territory)

Albania                             15116.0   16269.0   17639.0
19212.0
Algeria                            284171.0  310706.0  332978.0
363968.0
Angola                              46056.0   49439.0   56326.0
68755.0
Antigua and Barbuda                  1271.0    1374.0    1463.0
1623.0
```

```
Argentina                           387126.0  429738.0  481426.0
540900.0

                                        2006      2007      2008
2009
Country (or dependent territory)

Albania                              20971.0   22818.0   25010.0
26045.0
Algeria                             381471.0  404831.0  422514.0
432672.0
Angola                               85562.0  107684.0  124967.0
128954.0
Antigua and Barbuda                   1875.0    2055.0    2128.0
1914.0
Argentina                           602385.0  674119.0  715230.0
678009.0



                           2000      2001      2002      2003      2004
\
Albania                 12857.0   14241.0   15116.0   16269.0   17639.0

Algeria                251580.0  265033.0  284171.0  310706.0  332978.0

Angola                  37442.0   39906.0   46056.0   49439.0   56326.0

Antigua and Barbuda     1305.0    1247.0    1271.0    1374.0    1463.0

Argentina              437650.0  427890.0  387126.0  429738.0  481426.0


                           2005      2006      2007      2008      2009
\
Albania                 19212.0   20971.0   22818.0   25010.0   26045.0

Algeria                363968.0  381471.0  404831.0  422514.0  432672.0

Angola                  68755.0   85562.0  107684.0  124967.0  128954.0

Antigua and Barbuda     1623.0    1875.0    2055.0    2128.0    1914.0

Argentina              540900.0  602385.0  674119.0  715230.0  678009.0


                           2010      2011      2012      2013      2014
\
Albania                 28328.0   29655.0   30530.0   30604.0   32529.0

Algeria                471508.0  494947.0  497330.0  497988.0  506135.0
```

```
Angola                153871.0  162539.0  186124.0  199866.0  220365.0

Antigua and Barbuda     1814.0    1816.0    1772.0    1720.0    1762.0

Argentina             736718.0  797264.0  819698.0  849616.0  839897.0


                          2015      2016       2017       2018
2019
Albania                33595.0   34736.0    37609.0    40080.0
41709.0
Algeria               477358.0  471382.0   478071.0   496403.0
509307.0
Angola                204604.0  204875.0   217987.0   220542.0
222459.0
Antigua and Barbuda     1770.0    1883.0     1893.0     2073.0
2181.0
Argentina             867177.0  885228.0  1039331.0  1036982.0
1033456.0
```

Step 5

- Calculate the GDP growth from 2000-2019 as a percentage in a column named **19y-pct**
- Call **gdp.head()**

```
gdp['19y-pct'] = (gdp['2019'] - gdp['2000'])/gdp['2000']*100

gdp.head()


                          2000      2001      2002      2003      2004
\
Albania                12857.0   14241.0   15116.0   16269.0   17639.0

Algeria               251580.0  265033.0  284171.0  310706.0  332978.0

Angola                 37442.0   39906.0   46056.0   49439.0   56326.0

Antigua and Barbuda     1305.0    1247.0    1271.0    1374.0    1463.0

Argentina             437650.0  427890.0  387126.0  429738.0  481426.0


                          2005      2006      2007      2008      2009
...  \
Albania                19212.0   20971.0   22818.0   25010.0   26045.0
...
Algeria               363968.0  381471.0  404831.0  422514.0  432672.0
...
Angola                 68755.0   85562.0  107684.0  124967.0  128954.0
```

```
...
Antigua and Barbuda    1623.0    1875.0    2055.0    2128.0    1914.0
...
Argentina            540900.0  602385.0  674119.0  715230.0  678009.0
...

                          2011      2012      2013      2014      2015
\
Albania                  29655.0   30530.0   30604.0   32529.0   33595.0

Algeria                 494947.0  497330.0  497988.0  506135.0  477358.0

Angola                  162539.0  186124.0  199866.0  220365.0  204604.0

Antigua and Barbuda      1816.0    1772.0    1720.0    1762.0    1770.0

Argentina               797264.0  819698.0  849616.0  839897.0  867177.0


                          2016       2017       2018       2019
19y-pct
Albania                  34736.0    37609.0    40080.0    41709.0
224.406938
Algeria                 471382.0   478071.0   496403.0   509307.0
102.443358
Angola                  204875.0   217987.0   220542.0   222459.0
494.142941
Antigua and Barbuda      1883.0     1893.0     2073.0     2181.0
67.126437
Argentina               885228.0  1039331.0  1036982.0  1033456.0
136.137553

[5 rows x 21 columns]
```

Step 6

- Calculate 10y-pct from 2009-2019
- Head

```
gdp['10y-pct'] = (gdp['2019'] - gdp['2009'])/gdp['2009']*100

gdp.head()

                                       2000      2001      2002
2003  \
Country (or dependent territory)

Albania                                12857.0   14241.0   15116.0
16269.0
Algeria                               251580.0  265033.0  284171.0
310706.0
```

```
Angola                                37442.0   39906.0   46056.0
49439.0
Antigua and Barbuda                    1305.0    1247.0    1271.0
1374.0
Argentina                            437650.0  427890.0  387126.0
429738.0

                                         2004      2005      2006
2007  \
Country (or dependent territory)

Albania                               17639.0   19212.0   20971.0
22818.0
Algeria                              332978.0  363968.0  381471.0
404831.0
Angola                                56326.0   68755.0   85562.0
107684.0
Antigua and Barbuda                    1463.0    1623.0    1875.0
2055.0
Argentina                            481426.0  540900.0  602385.0
674119.0

                                         2008      2009      2000
2001  \
Country (or dependent territory)

Albania                               25010.0   26045.0   12857.0
14241.0
Algeria                              422514.0  432672.0  251580.0
265033.0
Angola                               124967.0  128954.0   37442.0
39906.0
Antigua and Barbuda                    2128.0    1914.0    1305.0
1247.0
Argentina                            715230.0  678009.0  437650.0
427890.0

                                         2002      2003      2004
2005  \
Country (or dependent territory)

Albania                               15116.0   16269.0   17639.0
19212.0
Algeria                              284171.0  310706.0  332978.0
363968.0
Angola                                46056.0   49439.0   56326.0
68755.0
Antigua and Barbuda                    1271.0    1374.0    1463.0
1623.0
Argentina                            387126.0  429738.0  481426.0
```

```
540900.0

                                        2006      2007      2008
2009
Country (or dependent territory)

Albania                                 20971.0   22818.0   25010.0
26045.0
Algeria                                381471.0  404831.0  422514.0
432672.0
Angola                                  85562.0  107684.0  124967.0
128954.0
Antigua and Barbuda                      1875.0    2055.0    2128.0
1914.0
Argentina                              602385.0  674119.0  715230.0
678009.0



                             2000      2001      2002      2003      2004
\
Albania                     12857.0   14241.0   15116.0   16269.0   17639.0

Algeria                    251580.0  265033.0  284171.0  310706.0  332978.0

Angola                      37442.0   39906.0   46056.0   49439.0   56326.0

Antigua and Barbuda          1305.0    1247.0    1271.0    1374.0    1463.0

Argentina                  437650.0  427890.0  387126.0  429738.0  481426.0


                             2005      2006      2007      2008      2009
...  \
Albania                     19212.0   20971.0   22818.0   25010.0   26045.0
...
Algeria                    363968.0  381471.0  404831.0  422514.0  432672.0
...
Angola                      68755.0   85562.0  107684.0  124967.0  128954.0
...
Antigua and Barbuda          1623.0    1875.0    2055.0    2128.0    1914.0
...
Argentina                  540900.0  602385.0  674119.0  715230.0  678009.0
...

                             2012      2013      2014      2015      2016
\
Albania                     30530.0   30604.0   32529.0   33595.0   34736.0

Algeria                    497330.0  497988.0  506135.0  477358.0  471382.0
```

```
Angola                186124.0  199866.0  220365.0  204604.0  204875.0

Antigua and Barbuda     1772.0    1720.0    1762.0    1770.0    1883.0

Argentina             819698.0  849616.0  839897.0  867177.0  885228.0


                           2017       2018       2019     19y-pct
10y-pct
Albania                 37609.0    40080.0    41709.0  224.406938
60.142062
Algeria                478071.0   496403.0   509307.0  102.443358
17.712031
Angola                 217987.0   220542.0   222459.0  494.142941
72.510353
Antigua and Barbuda      1893.0     2073.0     2181.0   67.126437
13.949843
Argentina              1039331.0  1036982.0  1033456.0  136.137553
52.425115

[5 rows x 22 columns]
```

Step 7

- List the 10 countries with highest GDP growth rate in the 19 years 2000-2019.
- HINT:
  - sort_value
  - ascending=False
  - head(10)

```
gdp.sort_values('19y-pct', ascending=False).head(10)
```

```
                    2000       2001       2002       2003       2004  \
Turkmenistan     11563.0    14238.0    16737.0    19989.0    23556.0
Ethiopia         32835.0    36075.0    37227.0    37172.0    42675.0
Maldives          1416.0     1498.0     1614.0     2064.0     2399.0
Vietnam         159786.0   174695.0   189936.0   207945.0   230306.0
China          3698622.0  4096897.0  4538333.0  5091708.0  5760129.0
Armenia           7002.0     7840.0     9139.0    10630.0    12067.0
Angola           37442.0    39906.0    46056.0    49439.0    56326.0
Bhutan            1505.0     1647.0     1832.0     2039.0     2236.0
Rwanda            4997.0     5546.0     6373.0     6644.0     7335.0
Cambodia         13254.0    14660.0    15865.0    17557.0    19906.0

                    2005       2006       2007        2008        2009
...  \
Turkmenistan     27484.0    31435.0    35840.0     41932.0     44842.0
```

```
...
Ethiopia         49617.0    57043.0    65468.0     74220.0     82293.0
...
Maldives          2275.0     2812.0     3180.0      3654.0      3485.0
...
Vietnam         255657.0   281900.0   310034.0    334014.0    354717.0
...
China          6617286.0  7686835.0  9011953.0  10070854.0  11080887.0
...
Armenia          14213.0    16583.0    19365.0     21117.0     18266.0
...
Angola           68755.0    85562.0   107684.0    124967.0    128954.0
...
Bhutan            2459.0     2711.0     3133.0      3538.0      3769.0
...
Rwanda            8282.0     9323.0    10301.0     11675.0     12500.0
...
Cambodia         23268.0    26567.0    30059.0     32700.0     33644.0
...

                     2012        2013        2014        2015
2016  \
Turkmenistan     63516.0     68363.0     73746.0     76192.0
78516.0
Ethiopia        112533.0    122434.0    148487.0    167119.0
191322.0
Maldives          5438.0      6140.0      6957.0      7628.0
8279.0
Vietnam         568401.0    607018.0    660612.0    700257.0
770872.0
China         15137455.0  16277355.0  17200686.0  17880337.0
18701703.0
Armenia          27009.0     28500.0     29231.0     29167.0
31429.0
Angola          186124.0    199866.0    220365.0    204604.0
204875.0
Bhutan            5194.0      5462.0      5871.0      6591.0
7270.0
Rwanda           15780.0     16762.0     19002.0     20620.0
22076.0
Cambodia         42401.0     45764.0     48654.0     52598.0
57942.0

                     2017        2018        2019     19y-pct     10y-
pct
Turkmenistan     81788.0     88905.0     96231.0  732.232120
114.600152
Ethiopia        215094.0    237224.0    263111.0  701.312624
219.724642
```

```
Maldives           8930.0      9774.0     10511.0  642.302260
201.606887
Vietnam          851064.0    933163.0   1016475.0  536.147723
186.559426
China          19814058.0  21659302.0  23393004.0  532.478907
111.111295
Armenia           35677.0     38442.0     42095.0  501.185376
130.455491
Angola           217987.0    220542.0    222459.0  494.142941
72.510353
Bhutan             7934.0      8434.0      8912.0  492.159468
136.455293
Rwanda            23665.0     26312.0     29298.0  486.311787
134.384000
Cambodia          62838.0     69193.0     75390.0  468.809416
124.081560

[10 rows x 22 columns]
```

Step 8

- List the 10 countries with highest GDP growth rate between 2000-2019.
- HINT:
  - sort_value
  - ascending=False
  - head(10)

```
gdp.sort_values('10y-pct', ascending=False).head(10)
```

```
                                      2000      2001      2002
2003  \
Ethiopia                           32835.0   36075.0   37227.0
37172.0
Maldives                            1416.0    1498.0    1614.0
2064.0
Vietnam                           159786.0  174695.0  189936.0
207945.0
Moldova                             6691.0    7263.0    7951.0
8647.0
Comoros                              659.0     697.0     737.0
770.0
Djibouti                            1222.0    1272.0    1333.0
1403.0
Democratic Republic of the Congo   20342.0   20369.0   21291.0
22927.0
Panama                             25390.0   26116.0   27112.0
```

```
28820.0
Ivory Coast                          39351.0   40296.0   40233.0
40477.0
Guyana                                2727.0    2852.0    2930.0
2969.0

                                      2004      2005      2006
2007  \
Ethiopia                             42675.0   49617.0   57043.0
65468.0
Maldives                              2399.0    2275.0    2812.0
3180.0
Vietnam                             230306.0  255657.0  281900.0
310034.0
Moldova                               9539.0   10584.0   11431.0
12087.0
Comoros                                789.0     849.0     886.0
914.0
Djibouti                              1482.0    1577.0    1704.0
1837.0
Democratic Republic of the Congo     25145.0   27546.0   29903.0
32619.0
Panama                               31836.0   35220.0   39402.0
45349.0
Ivory Coast                          42102.0   44205.0   46254.0
48323.0
Guyana                                3098.0    3135.0    3398.0
3733.0

                                      2008      2009  ...      2012
2013  \
Ethiopia                             74220.0   82293.0  ...  112533.0
122434.0
Maldives                              3654.0    3485.0  ...    5438.0
6140.0
Vietnam                             334014.0  354717.0  ...  568401.0
607018.0
Moldova                              13290.0   12589.0  ...   21055.0
23961.0
Comoros                                941.0     966.0  ...    1818.0
1955.0
Djibouti                              1982.0    2029.0  ...    3436.0
3625.0
Democratic Republic of the Congo     35331.0   36616.0  ...   46214.0
53768.0
Panama                               50220.0   51410.0  ...   70434.0
79815.0
Ivory Coast                          50524.0   52562.0  ...   78215.0
86354.0
```

```
Guyana                                3881.0    4040.0  ...    7916.0
8370.0

                                        2014      2015      2016
2017  \
Ethiopia                              148487.0  167119.0  191322.0
215094.0
Maldives                                6957.0    7628.0    8279.0
8930.0
Vietnam                               660612.0  700257.0  770872.0
851064.0
Moldova                                25218.0   26233.0   29732.0
32101.0
Comoros                                 2063.0    2107.0    2278.0
2468.0
Djibouti                                3855.0    4181.0    4360.0
4612.0
Democratic Republic of the Congo       62685.0   69036.0   75927.0
86267.0
Panama                                 89330.0  100479.0  112346.0
125071.0
Ivory Coast                            97907.0  108069.0  112610.0
118051.0
Guyana                                  8360.0    8594.0    8714.0
9307.0

                                        2018       2019     19y-pct
10y-pct
Ethiopia                              237224.0   263111.0  701.312624
219.724642
Maldives                                9774.0    10511.0  642.302260
201.606887
Vietnam                               933163.0  1016475.0  536.147723
186.559426
Moldova                                34187.0    36044.0  438.693768
186.313448
Comoros                                 2619.0     2716.0  312.139605
181.159420
Djibouti                                5120.0     5602.0  358.428805
176.096599
Democratic Republic of the Congo       93476.0    99312.0  388.211582
171.225694
Panama                                132802.0   139237.0  448.393068
170.836413
Ivory Coast                           129098.0   139966.0  255.686005
166.287432
Guyana                                  9953.0    10673.0  291.382472
164.183168

[10 rows x 22 columns]
```

Step 9

- Export data to Excel
- Name the file **gdp.xlsx**

```
gdp.to_excel("gdp.xlsx")
```

Done