

Introduction to Spyder

The IDE

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SPYDER

- **Spyder** (formerly known as **Pydee**) is an open source cross-platform integrated development environment (or IDE) for scientific programming in the Python language.
- Get it through Anaconda for this class.
- Features include:
 - editor with syntax highlighting and introspection for code completion.
 - support for multiple Python consoles (including IPython).
 - the ability to explore and edit variables from a GUI.



How does it look like?

Exercise08.py

57

58 # In[1]:

59

60 import pandas as pd

61

62 #get_ipython().magic('pinfo pd.read_excel')

63 #get_ipython().system('pwd')

64

65 # In[2]:

66

67 def part_one():

68 energy = pd.read_excel('../user_adax/Documents/EnterpriseDataScience/Data/Energy Indicators.xlsx',

69 skiprows=17, skip_footer=38, na_values="...", usecols=[1,3,4,5])

70 # print(energy.head(5));

71 energy.columns = ['Country', 'Energy Supply', 'Energy Supply per Capita', '% Renewable']

72 # print(energy.head(5));

73 energy['Energy Supply']=energy['Energy Supply']*1000000;

74 # print(energy.head(5));

75

76 # print(energy.head(5));

77 energy['Country'] = energy['Country'].replace(r"[0-9]+\$", "");

78 # energy['Country'] = energy['Country'].replace(r" (\.*\)", ""); doesn't work cause M

79 energy['Country'] = energy['Country'].replace(r" \(.*\)", "");

80 energy['Country']= energy['Country'].replace('Korea, Rep.': "South Korea",\

81 'United States': 'United States',\

82 'United Kingdom of Great Britain and Northern Ireland': 'United Kingdom',\

83 'China, Hong Kong Special Administrative Region': 'Hong Kong',\

84 'Bolivia (Plurinational State of)': 'Bolivia ', 'Switzerland17': 'Switzerland').

85 # print(energy["Country"])

86

87 return energy

88

89 def part_two():

90 GDP = pd.read_csv('Documents/EDS/EnterpriseDataScience/Data/world_bank.csv', skiprows=1

91 GDP['Country Name'] = GDP['Country Name'].replace({'Republic of Korea': 'South Korea',

92 'Iran, Islamic Rep.': "Iran",\

93 'Hong Kong SAR, China': "Hong Kong"});

94 GDP = GDP[['Country Name', '2006', '2007', '2008', '2009', '2010', '2011',\

95 '2012', '2013', '2014', '2015']]

96 return GDP

97

Variable explorer

am ▲

Type

Size

Value

Explorer

Variable explorer

File explorer

Help

IPython console

Console 1/A

Python 3.6.1 |Anaconda 4.4.0 (x86_64)| (default, May 11 2017, 13:04:09)
Type "copyright", "credits" or "license" for more information.

IPython 5.3.0 -- An enhanced Interactive Python.
? -> Introduction and overview of IPython's features.
%quickref -> Quick reference.
help -> Python's own help system.
object? -> Details about 'object', use 'object??' for extra details.

In [1]:

Console

IPython console

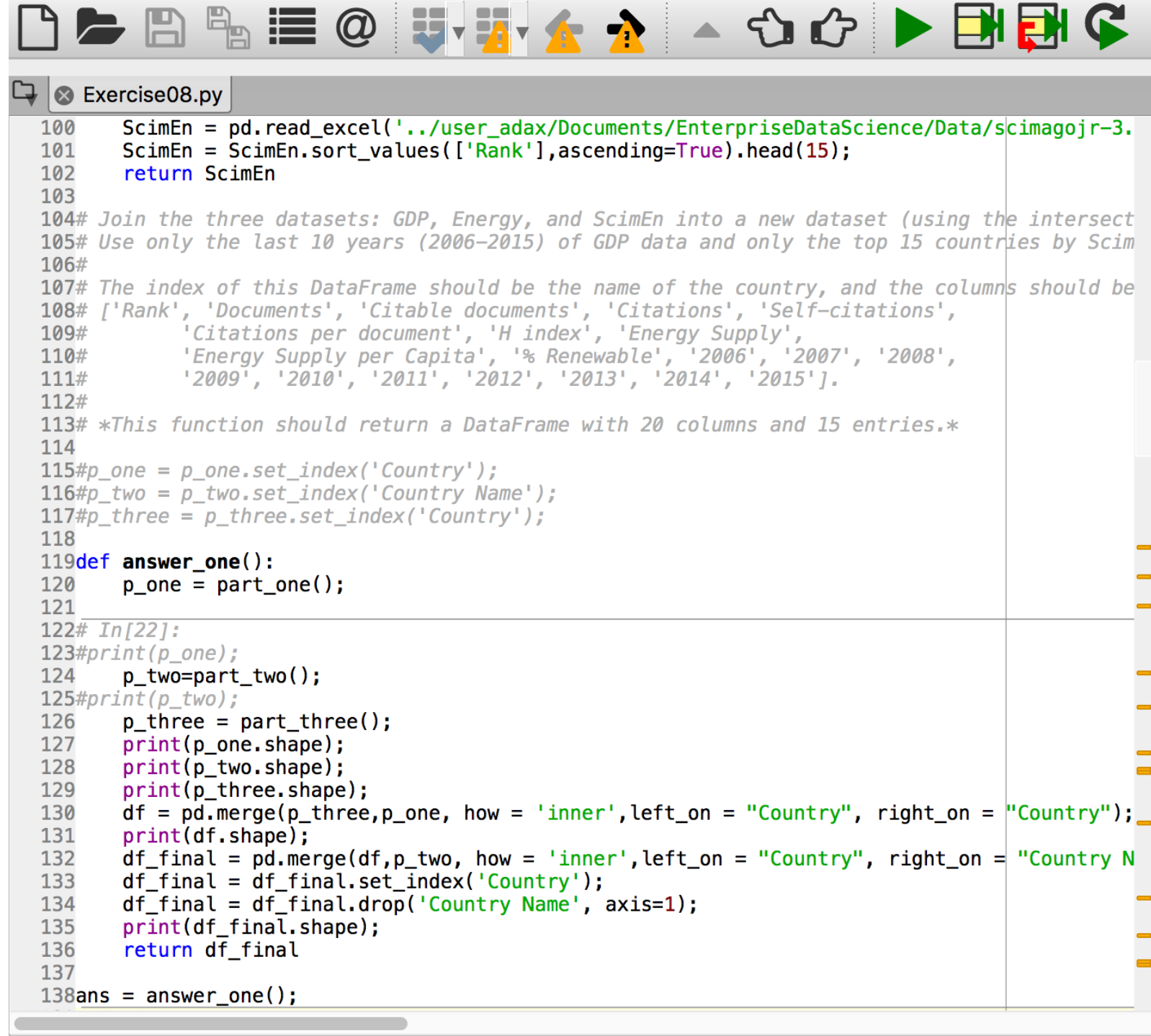
Python console

History log

Permissions: RW End-of-lines: LF Encoding: UTF-8 Line: 77 Column: 1 Memory: 76 %

The Script Editor

- All the codes to be saved are written here.
- Standard form in .py
- Most python compilers read .py files and execute the commands within.
- Colour coded for easier tracking.
- The ONLY place where your codes are SAVED.



```
100 ScimEn = pd.read_excel('../user_adax/Documents/EnterpriseDataScience/Data/scimagojr-3.
101 ScimEn = ScimEn.sort_values(['Rank'],ascending=True).head(15);
102 return ScimEn
103
104# Join the three datasets: GDP, Energy, and ScimEn into a new dataset (using the intersect
105# Use only the last 10 years (2006-2015) of GDP data and only the top 15 countries by Scim
106#
107# The index of this DataFrame should be the name of the country, and the columns should be
108# ['Rank', 'Documents', 'Citable documents', 'Citations', 'Self-citations',
109#     'Citations per document', 'H index', 'Energy Supply',
110#     'Energy Supply per Capita', '% Renewable', '2006', '2007', '2008',
111#     '2009', '2010', '2011', '2012', '2013', '2014', '2015'].
112#
113# *This function should return a DataFrame with 20 columns and 15 entries.*
114
115#p_one = p_one.set_index('Country');
116#p_two = p_two.set_index('Country Name');
117#p_three = p_three.set_index('Country');
118
119def answer_one():
120     p_one = part_one();
121
122# In[22]:
123#print(p_one);
124     p_two=part_two();
125#print(p_two);
126     p_three = part_three();
127     print(p_one.shape);
128     print(p_two.shape);
129     print(p_three.shape);
130     df = pd.merge(p_three,p_one, how = 'inner',left_on = "Country", right_on = "Country");
131     print(df.shape);
132     df_final = pd.merge(df,p_two, how = 'inner',left_on = "Country", right_on = "Country N
133     df_final = df_final.set_index('Country');
134     df_final = df_final.drop('Country Name', axis=1);
135     print(df_final.shape);
136     return df_final
137
138ans = answer_one();
```

The Explorer

- The data used is saved in the explorer.
- Can double click to see how the data looks like.
- Good idea to check after doing some key operation to check if you are on the right track.

Index	Rank	Country	Documents	Citable documents	Cit
0	1	China	127050	126767	59723
1	2	United States	96661	94747	79227
2	3	Japan	30504	30287	22302
3	4	United Kingdom	20944	20357	20609
4	5	Russian Federation	18534	18301	34266
5	6	Canada	17899	17620	21500
6	7	Germany	17027	16831	14056
7	8	India	15005	14841	12876
8	9	France	13153	12973	13063
9	10	South Korea	11983	11923	11467
10	11	Italy	10964	10794	11185
11	12	Spain	9428	9330	12333

Format

Resize

☒ Background color

☒ Column min/max

Cancel

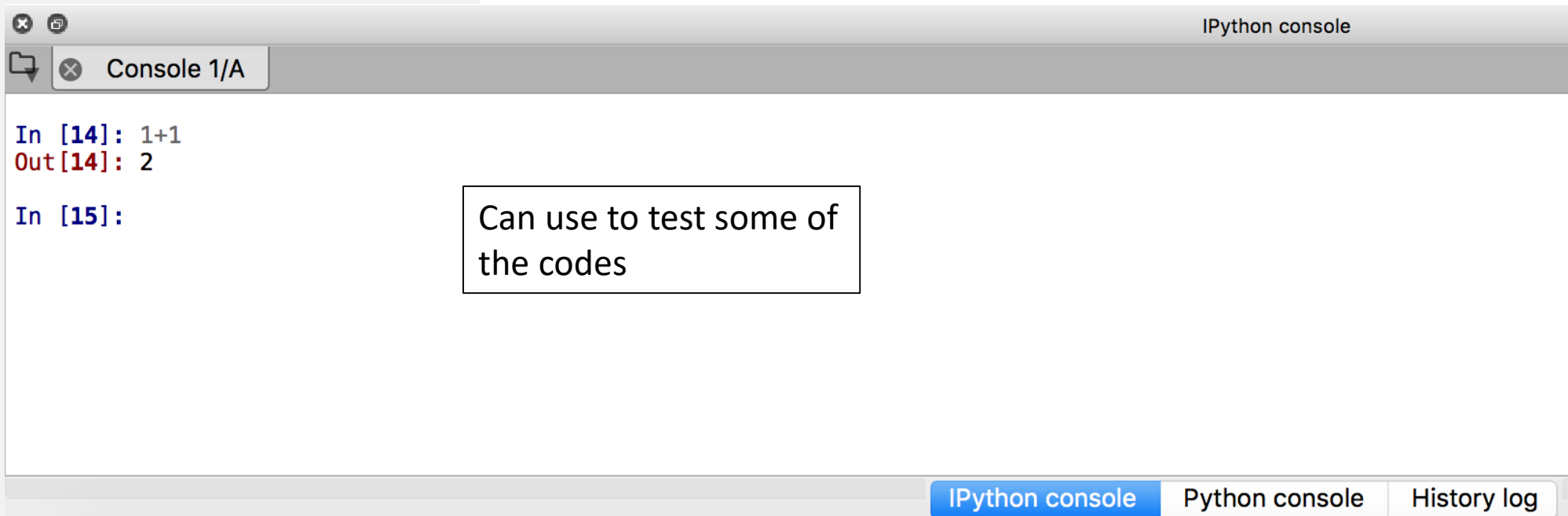
OK



Name ▲	Type	Size	Value
p_three	DataFrame	(15, 8)	Column names: Rank, Country, Documents,...
p_two	DataFrame	(264, 11)	Column names: Country Name, 2006, 2007,...

The Console

- Your new best friend, the ‘**TAB**’ button.
- Can be used to check simple lines of codes.
- Typically used to check possible output and error before using the codes in the script editor.
- Does NOT saves the codes.
- Can be used to check possible output functions before proceeding to keying in the .py script.



A screenshot of the top portion of a web browser window. The address bar at the top displays 'http://localhost:3000/'. Below the address bar, a single browser tab is visible with the title 'Console 1/A'. The tab has a close button (an 'X' icon) on its left side. The background of the browser window is a light gray.

Out[14]: 2

```
In [15]: Energy['Country'] = energy['Country']
```

```
staticmethod
StopAsyncIteration
StopIteration
%store
str
sum
super
%%svg
%%SVG
%SX
%%SX
SyntaxError
```

TAB option gives possible choices for the output

Why IDE?

- IDE is usefully when designing large project.
- Constantly need to view the variables.