

PYTHON CODING

*an quick
Introduction to Programming*

*Roberto Torres Saenz
ARC Data Scientist*

Useful Links

- Python compiler online:
<https://www.programiz.com/python-programming/online-compiler/>
 - Google Colab:
https://colab.research.google.com/drive/1btdDPqd_XInq49HR-O3okrl1DThj-7tE?usp=sharing
 - Download Anaconda:
<https://www.anaconda.com/products/individual>
 - D-Tale (Previous workshop):
<https://youtu.be/gFgKSlyfeRY>
 - This presentation (for updates):
https://docs.google.com/presentation/d/15NXObw_zJveCl9Xj2C6L9JoqyBiFSJO78HQdfZfYWBg/edit?usp=sharing
 - ARC youtube Channel:
<https://www.youtube.com/channel/UCodo7vFVIUwrwvT9lisZVjg/videos>
-

Python Language



– Integrated Development Environment (IDE)



• Spyder



• PyCharm



• Visual Studio



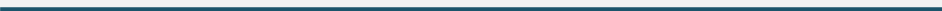
• Google Colab (notebook)

– Functions & Indentations

– Python Packages (PIP, CONDA)

– Import Libraries

– Debug



Spyder (IDE)

The screenshot displays the Spyder Python IDE interface. The main window shows a Python script with the following code:

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Wed Mar 23 09:26:18 2022
4
5  @author: Roberto.TorresSaenz
6  """
7
8  #Definitions before Main Code
9
10 def multiply(myInput1, myInput2):
11     myOutput = myInput1 * myInput2
12
13     return myOutput
14
15
16
17
18 def subtract(myInput1, myInput2):
19     myOutput = myInput1 - myInput2
20
21     return myOutput
22
23
24
25 #Main Code -----
26
27 thisVar = 50
28 thatVar = 100
29
30 outputVar = thisVar * thatVar
31
32
33 outputVar = multiply(thisVar,thatVar)
34
35
```

The 'Variable explorer' on the right shows the following variables:


Name	Type	Size	Value
outputVar	int	1	5000
thatVar	int	1	100
thisVar	int	1	50

The 'Console' at the bottom shows the execution of the script:


```
In [16]: runfile('C:/Users/roberto.torressaenz/untitled1.py', wdir='C:/Users/roberto.torressaenz')
In [17]:
```



The status bar at the bottom indicates: LSP Python: ready, conda: base (Python 3.8.5), Line 35, Col 1, UTF-8, CRLF, RW, Mem 61%.

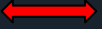

Function Definition & Indentations

Indentation is shown with 

This is how python interprets the order of your instructions.

The indentation is marking that those lines of code are part of the definition marked with 

```
22  def multiply(myInput1, myInput2):  
23  
24   myOutput = myInput1 * myInput2  
25  
26   return myOutput  
27
```

```
30  def subtract(myInput1, myInput2):  
31  
32   myOutput = myInput1 - myInput2  
33  
34   return myOutput
```

Identify a Function

A word followed by an input in parentheses:

`multiply(5, 7)`

If the function uses more than one input, they are separated by a comma “,”:

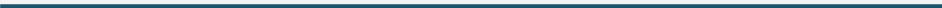
```
24
25 #Main Code -----
26
27 thisVar = 50
28 thatVar = 100
29
30 outputVar = thisVar * thatVar
31
32
33 outputVar = multiply(thisVar,thatVar)
34
35
36
37
```

Some functions does not require input parameters:

`import datetime`

`print_current_date()`

`datetime.datetime(2022, 3, 23, 10, 59, 30, 74249)`



Packages

Pandas is a fast, powerful, flexible and easy to use open-source data analysis and manipulation tool, built on top of the Python programming language.

anaconda / packages / pandas 1.4.1



High-performance, easy-to-use data structures and data analysis tools.

Conda	Files	Labels	Badges
-------	-------	--------	--------

License: [BSD-3-Clause](#)
 Home: <https://pandas.pydata.org>
 Development: <https://github.com/pandas-dev/pandas>
 Documentation: <https://pandas.pydata.org/pandas-docs/stable/>
 2400344 total downloads
 Last upload: 2 hours and 9 minutes ago

Installers

conda install

- linux-ppc64le v1.4.1
- linux-64 v1.4.1
- win-32 v1.4.1
- osx-64 v1.4.1
- linux-32 v0.23.4
- win-64 v1.4.1

To install this package with conda run:

```
conda install -c anaconda pandas
```

Description

Packages Cont

Anaconda Navigator

File Help

ANACONDA.NAVIGATOR Sign in

Home

Environments

Learning

Community

Premium packages and dedicated support.

Documentation

Anaconda Blog

Twitter YouTube GitHub

Create Clone Import Remove

Search Environments

base (root) tf tf-gpu tf-gpu-cuda8

Installed Channels Update index... Search Pack...

Name	T	Description	Version
✓ _ipyw_jlab_nb_ex...	○		0.1.0
✓ alabaster	○		0.7.12
✓ anaconda	○		2020.11
✓ anaconda-client	○		1.7.2
✓ anaconda-project	○		0.8.4
✓ argh	○		0.26.2
✓ argon2-cffi	○		20.1.0
✓ asn1crypto	○		1.4.0
✓ astroid	○		2.4.2
✓ astropy	○		4.0.2
✓ async-generator	📦		1.10
✓ async_generator	○		1.10
✓ atomicwrites	○		1.4.0
✓ attrs	○		20.3.0
✓ autopep8	○		1.5.4
✓ babel	○		2.8.1
✓ backcall	○		0.2.0

350 packages available

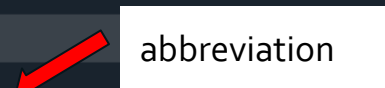
Import Libraries

Libraries are accessible once a package has been installed using PIP or CONDA.

To install this package with conda run:

```
conda install -c anaconda pandas
```

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Thu Apr 22 14:15:01 2021
4
5  @author: Roberto.TorresSaenz
6  """
7
8  import dtale
9  import pandas as pd
10
11  url = "https://data.nola.gov/api/view"
12  df = pd.read_csv(url)
13  # df = pandas.read_csv(url)
14
15
16  d = dtale.show(df)
17  d.open_browser()
18
```



Debugging

The screenshot shows the Spyder Python IDE interface. The main editor displays a Python script with the following code:

```
5 @author: Roberto.TorresSaenz
6 """
7
8 #Definitions before Main Code
9
10 def multiply(myInput1, myInput2):
11
12     myOutput = myInput1 * myInput2
13
14     return myOutput
15
16
17
18 def subtract(myInput1, myInput2):
19
20     myOutput = myInput1 - myInput2
21
22     return myOutput
23
24 #Main Code -----
25
26
27 thisVar = 50
28 thatVar = 100
29
30 outputVar = thisVar * thatVar
31
32
33 outputVar = multiply(thisVar, thatVar)
34
35
36
37
38
```

The variable explorer on the right shows the following table:

Name	Type	Size	Value
thisVar	int	1	50

The console output shows the following IPython sessions:

```
In [25]: datetime.datetime.now()
Out[25]: datetime.datetime(2022, 3, 23, 10, 59, 30, 74249)

In [26]: runfile('C:/Users/roberto.torressaenz/
test_exploratory_Data_Analysis.py', wdir='C:/Users/
roberto.torressaenz')
2022-03-23 11:08:24,332 - INFO      - NumExpr defaulting to
8 threads.

In [27]: debugfile('C:/Users/roberto.torressaenz/
untitled1.py', wdir='C:/Users/roberto.torressaenz')

ipdb> continue

ipdb> |
```

The status bar at the bottom indicates: LSP Python: ready, conda: base (Python 3.8.5), Line 28, Col 1, UTF-8, CRLF, RW, Mem 49%.

*Thank You!
Please
complete the
survey.*



- https://tamiu.sjc1.qualtrics.com/jfe/form/SV_6Edvk6dXq2IfJMG
-