I am Bilingual - Python and R

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Contents

Preface

WIP!!

This book is still in progress in various draft forms.

Chapter 1

Introduction to R and Python

WIP

1.1 About R and Python

1.1.1 R

R is an object oriented, open source programming **language** and **environment** for statistical computing and graphics. R is not a statistics system but an environment within which statistical techniques are implemented. Further, R gains more capabilities via packages, its fundamental shareable units that bundle together R functions, code, data, documentation, and tests etc. (R Core Team, 2020).

1.1.2 Python

Python is an object-oriented, interpreted, and interactive programming language. The motto of Python language is "Batteries included" as the functionality of the language can be performed via its comprehensive standard in built Libraries (Wikipedia contributors, 2020a).

1.2 History of R and Python

1.2.1 R

R is an implementation of the S programming language which was created by John Chambers in 1976. In 1991, an alternative implementation of the basic S language was developed by Ross Ihaka and Robert Gentleman, University of Auckland, New Zealand. It was published in 1993 (Wikipedia contributors, 2020b).

1.2.2 Python

In 1989, Guido van Rossum at Centrum Wiskunde & Informatica (CWI) in the Netherlands started the implementation of Python as a successor to ABC programming language. Python 2.0 was released in 2000. Python 3.0, a major revision of the language that is not completely backward-compatible was released in 2008 (Wikipedia contributors, 2020a) . Today many developers create libraries strictly for the use with Python 3.

1.3 Story behind their names

1.3.1 R

R was introduced by **R**oss Ihaka and **R**obert Gentleman and it was named after the first names of the two authors. The name of the "S" language also had some influence on the selection of its name and it was selected partly as a play on the name of S (Wikipedia contributors, 2020b).

1.3.2 Python

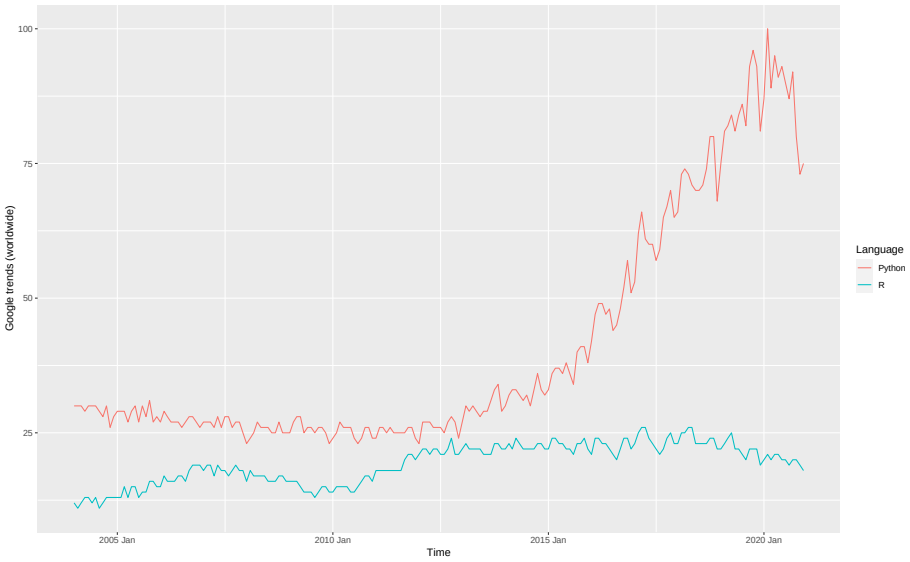
Python was named after a famous TV show 'Monty Python's Flying Circus'. Guido van Rossum, the creater of Python was a big fan of the TV show. He wanted to name his invention with a short, unique and slightly mysterious name and chose Python as a working title for his ongoing project.

1.4 Logo

Figure 1.1: Retrieved from: https://www.r-project.org/logo/

Figure 1.2: Retrieved from: https://www.python.org/community/logos/

1.5 Worldwide Google Trends



1.6 Installation

1.6.1 Python

Ref: https://www.w3schools.com/python/python_getstarted.asp

Many PCs and Macs will have python already installed.

To check if you have python installed on a Windows PC, search in the start bar for Python or run the following on the Command Line (cmd.exe):

```
C:\Users\Your Name>python --version
```

To check if you have python installed on a Linux or Mac, then on linux open the command line or on Mac open the Terminal and type:

```
python --version
```

If you find that you do not have python installed on your computer, then you can download it for free from the following website: https://www.python.org/

1.6.2 R

You can download it for free from the following websites:

- R (https://cran.r-project.org/)
- RStudio (https://www.rstudio.com/products/rstudio/download/#download).

1.7 Ranked:15Python packages

for Data Science

http://blog.thedataincubator.com/wp-content/uploads/2017/04/Ranked-15-Python-Packages-for-Data-Science.pdf

Chapter 2

Variables, expressions, and statements

2.1 Basic Exmaple

This is a test code

2.1.1 R code

```
# This is an R code
x <- 1
y <- 3
print(x+y)
```

```
## [1] 4
```

2.1.2 Python Code

The 'python' engine in knitr requires the `reticulate` package.

```
library(reticulate)
```

```
# This is a Python code
x = 1
y = 3
print(x+y)
```

```
## 4
```

Chapter 3

Conditional execution

WIP

Chapter 4

Functions

WIP

Chapter 5

Iteration

WIP

Chapter 6

Import

WIP

Chapter 7

Tidy

WIP

Chapter 8

Transform

WIP

Chapter 9

Visualize

WIP

Chapter 10

Model

WIP

Chapter 11

Communicate

WIP

Chapter 12

Advanced R and Python

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12.1 Time Series Forecasting

R	Python
fable-Forecasting Models for Tidy Time Series	statsmodels- Statistics based models
forecast- Forecasting Functions for Time Series and Linear Models	sktime- A unified framework for machine learning with time series GluonTS- Deep learning-based models.

Bibliography

R Core Team (2020). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.

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Wikipedia contributors (2020b). R (programming language) — Wikipedia, the free encyclopedia. [Online; accessed 25-December-2020].