



Python Guide



Python

- Python is an **interpreted language**, which can save you considerable time during program development because no compilation and linking is necessary. We will use **Anaconda** interpreter
- Python is simple to use, **available on Windows, Mac OS X, and Unix operating systems**, and will help you get the job done more quickly.
- Python is extensible: if you know how to program in C it is easy to add a new built-in function or module to the interpreter to perform critical operations at maximum speed
- All these features make Python an **excellent choice for a wide range of tools**, and **very appreciated on prototyping and testing tools of operational code**
- Important libraries (included in Anaconda): **numpy**, **matplotlib** and **pandas**





Python Basics

Python Official Documentation



<https://docs.python.org/3.7/tutorial/index.html>

- 1. Whetting Your Appetite
- 2. Using the Python Interpreter
 - 2.1. Invoking the Interpreter
 - 2.1.1. Argument Passing
 - 2.1.2. Interactive Mode
 - 2.2. The Interpreter and Its Environment
 - 2.2.1. Source Code Encoding
- 3. An Informal Introduction to Python
 - 3.1. Using Python as a Calculator
 - 3.1.1. Numbers
 - 3.1.2. Strings
 - 3.1.3. Lists
 - 3.2. First Steps Towards Programming
- 4. More Control Flow Tools
 - 4.1. if Statements
 - 4.2. for Statements
 - 4.3. The range() Function
 - 4.4. break and continue Statements, and else Clauses on Loops
 - 4.5. pass Statements
 - 4.6. Defining Functions
 - 4.7. More on Defining Functions
 - 4.7.1. Default Argument Values
 - 4.7.2. Keyword Arguments
 - 4.7.3. Arbitrary Argument Lists

Python Official Documentation



<https://docs.python.org/3.7/tutorial/index.html>

- 4.7.4. Unpacking Argument Lists
 - 4.7.5. Lambda Expressions
 - 4.7.6. Documentation Strings
 - 4.7.7. Function Annotations
- 4.8. Intermezzo: Coding Style
- 5. Data Structures
 - 5.1. More on Lists
 - 5.1.1. Using Lists as Stacks
 - 5.1.2. Using Lists as Queues
 - 5.1.3. List Comprehensions
 - 5.1.4. Nested List Comprehensions
 - 5.2. The `del` statement
 - 5.3. Tuples and Sequences
 - 5.4. Sets
 - 5.5. Dictionaries
 - 5.6. Looping Techniques
 - 5.7. More on Conditions
 - 5.8. Comparing Sequences and Other Types
- 6. Modules
 - 6.1. More on Modules
 - 6.1.1. Executing modules as scripts
 - 6.1.2. The Module Search Path
 - 6.1.3. Compiled Python files
 - 6.2. Standard Modules

Python Official Documentation



<https://docs.python.org/3.7/tutorial/index.html>

- 6.3. The `dir()` Function
- 6.4. Packages
 - 6.4.1. Importing * From a Package
 - 6.4.2. Intra-package References
 - 6.4.3. Packages in Multiple Directories
- 7. Input and Output
 - 7.1. Fancier Output Formatting
 - 7.1.1. Formatted String Literals
 - 7.1.2. The String `format()` Method
 - 7.1.3. Manual String Formatting
 - 7.1.4. Old string formatting
 - 7.2. Reading and Writing Files
 - 7.2.1. Methods of File Objects
 - 7.2.2. Saving structured data with `json`
- 8. Errors and Exceptions
 - 8.1. Syntax Errors
 - 8.2. Exceptions
 - 8.3. Handling Exceptions
 - 8.4. Raising Exceptions
 - 8.5. User-defined Exceptions
 - 8.6. Defining Clean-up Actions
 - 8.7. Predefined Clean-up Actions
- 9. Classes
 - 9.1. A Word About Names and Objects



numpy Basics

numpy Manual



<https://numpy.org/doc/1.18/index.html>

NumPy v1.18 Manual

Welcome! This is the documentation for NumPy 1.18

Parts of the documentation:

[NumPy User Guide](#)

start here

[NumPy Reference](#)

reference documentation

[Benchmarking](#)

benchmarking NumPy

[F2Py Guide](#)

f2py documentation

[NumPy Developer Guide](#)

contributing to NumPy

[Building and Extending the Documentation](#)

about this documentation

NumPy User Guide

This guide is intended as an introductory overview of NumPy and explains how to install and make use of the most important features of NumPy. For detailed reference documentation of the functions and classes contained in the package, see the [NumPy Reference](#).

- [Setting up](#)
- [Quickstart tutorial](#)
- [NumPy basics](#)
- [Miscellaneous](#)
- [NumPy for Matlab users](#)
- [Building from source](#)
- [Using NumPy C-API](#)

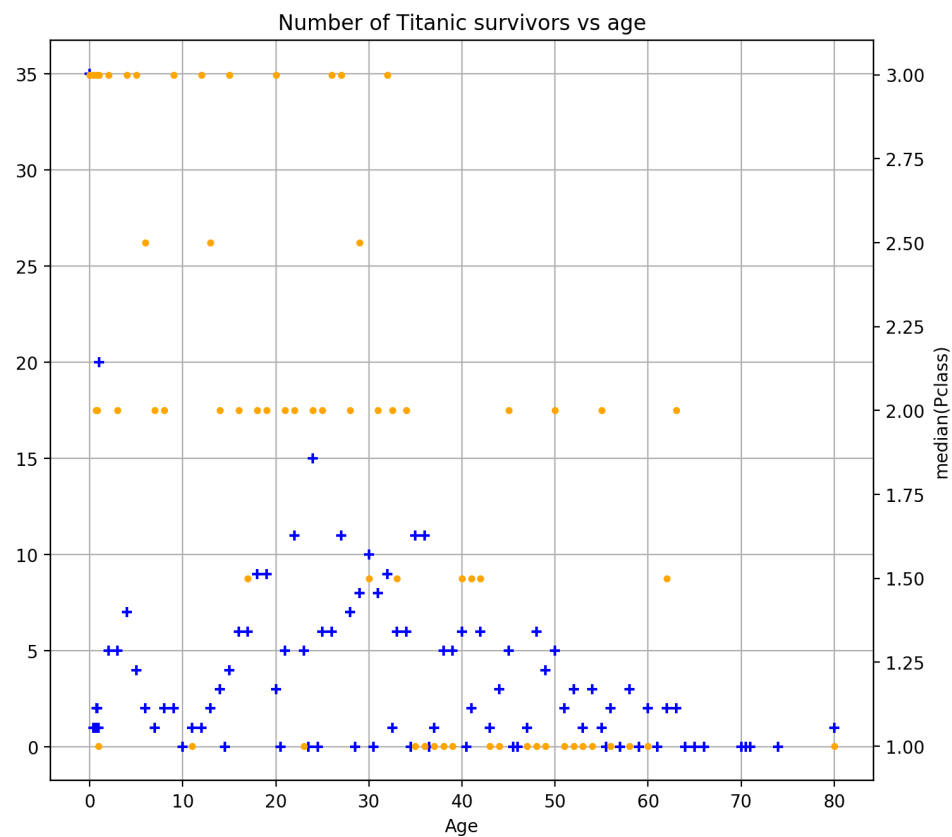
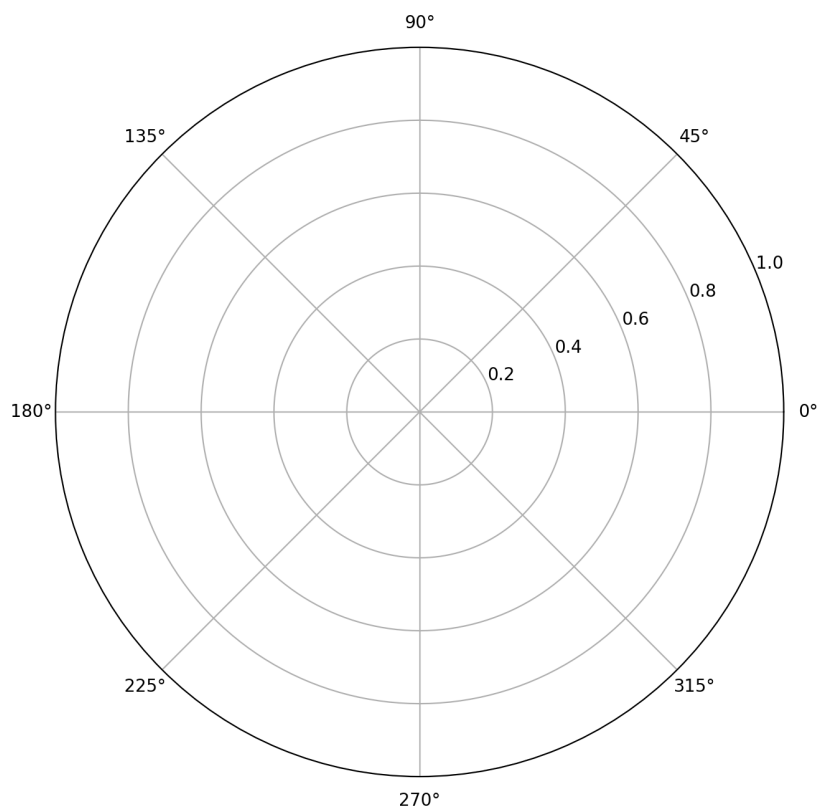
To learn the
basics

Detailed reference
documentation to
check while
programming



matplotlib Basics

matplotlib





matplotlib Reference

<https://matplotlib.org/stable/tutorials/index.html>



[Installation](#) [Documentation](#) [Examples](#) [Tutorials](#) [Contributing](#)

[home](#) | [contents](#) » [User's Guide](#) » [Tutorials](#)

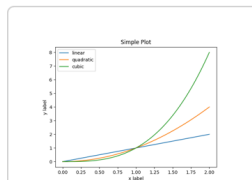
Tutorials

This page contains more in-depth guides for using Matplotlib. It is broken up into beginner, intermediate, and advanced sections, as well as sections covering specific topics.

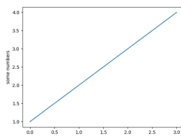
For shorter examples, see our [examples page](#). You can also find [external resources](#) and a [FAQ](#) in our [user guide](#).

Introductory

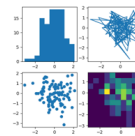
These tutorials cover the basics of creating visualizations with Matplotlib, as well as some best-practices in using the package effectively.



Usage Guide



Pyplot tutorial



Sample plots in

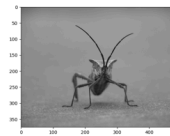


Image tutorial



End of Section

T. Tapias