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# Intuitive Python

## Productive Development for Projects that Last

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David Muller

*edited by Adaobi Obi Tulton*

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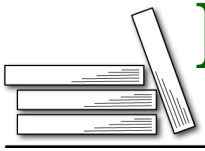

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# Preface

Developers build applications in Python because it emphasizes readability, low barrier to entry, and an expansive ecosystem of open source tooling. All kinds of developers—scientists, researchers, professional software engineers, and even beginners—embrace these benefits and choose Python to power their projects.

Python's long history and high level of adoption mean you have access to a large suite of third-party tools in addition to Python's expansive batteries-included standard library. Managing Python projects requires knowledge of the tools available to you and adopting patterns that will help your Python code stand the test of time.

In this book, you will learn about some of Python's greatest strengths, weaknesses, and tools to maximize the utility and resiliency of your Python projects.

## Who This Book Is For

This book contains content for programmers—especially programmers newer to Python—interested in leveling up the projects they maintain with Python.

Rather than spend time on Python syntax and control flow, we'll focus on tools, patterns, and knowledge to help you build an intuition for working with Python.

As you might expect, this book can't and won't cover everything you need to know about Python. Instead, it tries to give you access to high-impact tools and knowledge that can improve your skills and make you feel comfortable with some of Python's capabilities and boundaries. The contents of this book expose you to important parts of Python that will make the language more pleasant and useful to you.

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## What's Inside

The chapters in this book start with a broad focus that grows increasingly specific as you build a more nuanced understanding of Python:

- You'll start in Chapter 1, Diving into Life with Python, on page ? by running code in Python's interactive console, debugging it using Python's built-in debugger, and automatically eliminating classes of bugs before you run code with static analysis tools, including `mypy`.
- Next in Chapter 2, Shifting Up with the Standard Library, on page ?, you'll use some of the most powerful and practical parts of Python's standard library. Profile your procedures with Python's built-in profiler, execute external programs with Python's high-level `subprocess` harness, and write concise code using the `collections` module.
- With some of the best parts of the standard library under your belt, you'll experiment with Python's concurrency model in Chapter 3, Ramping Up with Concurrent Code, on page ?. You'll develop patterns for using Python's thread and process abstractions to their full potential, even under the constraints imposed by Python's infamous GIL (global interpreter lock).
- In Chapter 4, Avoiding Traps, on page ?, you build on your standard library knowledge and sharpen your Python instincts so you avoid all manner of potential pitfalls. Dodge the mutable default argument trap, keep track of time, and serialize your data reliably.
- As the book closes out in Chapter 5, Standing Guard When Python Breaks Free, on page ?, you'll train your eye to keep watch on emergent problems. Prevent unexpected variable clobbering and unintended access. Download and run third-party packages, and do so safely without compromising on security. Wrap up with newfound intuition for harnessing and hardening your code.

Whether you're a new or experienced programmer, this book gives you an understanding of Python that will help hone your Python instincts and make your projects more successful.

## Using the Code in This Book

To run the code in this book, you will need Python 3.7 or newer. The most convenient way to run this book's code is to use the companion Docker image which contains an appropriate Python version and all the source code

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pre-downloaded.[1] We'll cover options for running this book's code in more detail in the next section.

All of the source code in this book (and any errata) can also be downloaded from this book's web page.[2] Additionally, if you've purchased the ebook, clicking the little gray box above any code extract directly downloads the extract for you.

Let's get started!

1. https://github.com/DavidMuller/intuitive-python-book
2. https://pragprog.com/titles/dmpython