



# Chapter 1

## INSTALLING PYTHON

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### Topics Covered In This Chapter:

- Downloading and installing the Python interpreter
- IDLE's interactive shell
- How to use this book
- The book's website at <http://inventwithpython.com>

Hello! This book teaches you how to program by making video games. Once you learn how the games in this book work, you'll be able to create your own games. All you'll need is a computer, some software called the Python interpreter, and this book. The Python interpreter is free to download from the Internet.

When I was a kid, a book like this one taught me how to write my first programs and games. It was fun and easy. Now as an adult, I still have fun programming and I get paid for it. But even if you don't become a computer programmer when you grow up, programming is a useful and fun skill to have.

Computers are incredible machines, and learning to program them is easy. If you can read this book, you can program a computer. A computer **program** is a bunch of instructions that the computer can understand, just like a storybook is a bunch of sentences understood by the reader. Video games are nothing but computer programs, so they are also made up of instructions.

To instruct a computer, you write a program in a language the computer understands. This book teaches a programming language named Python. There are many different programming languages including BASIC, Java, JavaScript, PHP, and C++.

When I was a kid, BASIC was a common first language to learn. However, new programming languages such as Python have been invented since then. Python is even easier to learn than BASIC! But it's still a serious programming language used by professional programmers. Many adults use Python in their work and when programming for fun.

The games you'll create from this book seem simple compared to the games for the Xbox, Playstation, or Wii. These games don't have fancy graphics because they're meant to teach coding basics. They're purposely simple so you can focus on learning to program. And games don't have to be complicated to be fun.

## Downloading and Installing Python

You'll need to install software called the Python interpreter. The **interpreter** program understands the instructions you'll write in the Python language. I'll just refer to "the Python interpreter software" as "Python" from now on.

Download Python 3.4 or a later version from the official Python website, <http://www.python.org>. Download the 32-bit version of Python for your operating system, even if you have a 64-bit computer. The Pygame module used later in this book currently runs only on 32-bit Python.

**Important Note!** Be sure to install Python 3, and not Python 2. The programs in this book use Python 3, and you'll get errors if you try to run them with Python 2. It is so important, I've added a cartoon penguin in Figure 1-1 to tell you to install Python 3 so you do not miss this message.



Figure 1-1: An incongruous penguin tells you to install Python 3.

## Starting IDLE

IDLE stands for **I**nteractive **D**eve**L**opment **E**nvironment. The development environment is like word processing software for writing Python programs. Starting IDLE is different on each operating system.

On Windows, click the Start button in the lower left corner, type "IDLE" and select **IDLE (Python GUI)**.

On Mac OS X, open the Finder window and click on **Applications**. Then click **Python 3.4**. Then click the IDLE icon.

On Ubuntu or Linux, open a terminal window and then type “idle3”. You may also be able to click on **Applications** at the top of the screen. Then click **Programming** and **IDLE 3**.



Figure 1-2: The IDLE program’s interactive shell on Windows, OS X, and Ubuntu Linux.

The window that appears when you first run IDLE is the **interactive shell**. You can enter Python instructions into the interactive shell and Python will perform them. Python will display instruction results back in the interactive shell.

## How to Use this Book

Most chapters in this book will begin with a sample run of the featured program. This sample run shows you what the program looks like when you run it. The user types in shown as **bold** print.

Type the code for the program into IDLE’s file editor yourself, rather than download it. You’ll remember programming better if you type in the code.

### *Line Numbers and Spaces*

When typing the source code, do **not** type the line numbers appear at the beginning of each line. For example, if you see this in the book:

```
9. number = random.randint(1, 20)
```

You do not need to type the “9.” on the left side, or the one space immediately following it. Just type it like this:

```
number = random.randint(1, 20)
```

Those numbers are only so this book can refer to specific lines in the programs. They are not a part of the actual program.

For example, the indented spaces here are marked with a ■ black square:

## Text Wrapping in This Book

The first line wraps around and makes it look like three lines in total. That is only because this book's pages aren't wide enough to fit the first line on one line.

## Finding Help Online

The subreddit web site at <http://reddit.com/r/inventwithpython> is a great place to ask programming questions related to this book. Post general Python questions to the LearnProgramming and LearnPython subreddits at <http://reddit.com/r/learnprogramming> and <http://reddit.com/r/learnpython>, respectively.

Keep in mind there are smart ways to ask programming questions that help others help you. Be sure to read the Frequently Asked Questions sections these websites have about the proper way to post questions. When asking programming questions, do the following:

- If you are typing out the programs in this book but getting an error, first check for typos with the online diff tool at <http://invpy.com/diff>. Copy and paste your code into the diff tool to find any differences from the book's code in your program.
- Explain what you are trying to do when you explain the error. This will let your helper know if you are on the wrong path entirely.
- Copy and paste the entire error message and your code.
- Search the Web to see whether someone else has already asked (and answered) your question.
- Explain what you've already tried to do to solve your problem. This tells people you've already put in some work to try to figure things out on your own.
- Be polite. Don't demand help or pressure your helpers to respond quickly.

### ***Tracing the Programs Online***

Tracing a program means to step through the code one line at a time, in the same way a computer would execute it. Visit <http://invpy.com/traces> to see a trace through of each program in this book. The web page has notes and helpful reminders at each step of the trace to explain what the program is doing, so it can help you better understand why these programs work the way they do.

### **Summary**

This chapter has helped you get started with the Python software by showing you the <http://python.org> website where you can download it free. After installing and starting the Python IDLE software, you'll be ready to learn programming starting in the next chapter.

This book's website at <http://inventwithpython.com> has more information on each of the chapters, including an online tracing website and diff tool can help you understand the programs in this book.