

# Contents at a Glance

---

<b><i>Introduction</i></b> .....	<b>1</b>
<b><i>Part I: Getting Started with Python</i></b> .....	<b>5</b>
Chapter 1: Talking to Your Computer .....	7
Chapter 2: Getting Your Own Copy of Python .....	21
Chapter 3: Interacting with Python .....	39
Chapter 4: Writing Your First Application .....	57
<b><i>Part II: Talking the Talk</i></b> .....	<b>81</b>
Chapter 5: Storing and Modifying Information .....	83
Chapter 6: Managing Information .....	93
Chapter 7: Making Decisions .....	117
Chapter 8: Performing Repetitive Tasks .....	133
Chapter 9: Dealing with Errors .....	149
<b><i>Part III: Performing Common Tasks</i></b> .....	<b>181</b>
Chapter 10: Interacting with Modules .....	183
Chapter 11: Working with Strings .....	205
Chapter 12: Managing Lists .....	223
Chapter 13: Collecting All Sorts of Data .....	243
Chapter 14: Creating and Using Classes .....	267
<b><i>Part IV: Performing Advanced Tasks</i></b> .....	<b>291</b>
Chapter 15: Storing Data in Files .....	293
Chapter 16: Sending an E-Mail .....	309
<b><i>Part V: The Part of Tens</i></b> .....	<b>327</b>
Chapter 17: Ten Amazing Programming Resources .....	329
Chapter 18: Ten Ways to Make a Living with Python .....	339
Chapter 19: Ten Interesting Tools .....	347
Chapter 20: Ten Libraries You Need to Know About .....	357
<b><i>Index</i></b> .....	<b>365</b>

# Table of Contents

---

<b><i>Introduction</i></b> .....	<b>1</b>
About This Book .....	1
Foolish Assumptions .....	2
Icons Used in This Book .....	3
Beyond the Book .....	3
Where to Go from Here .....	4
<b><i>Part 1: Getting Started with Python</i></b> .....	<b>5</b>
<b>Chapter 1: Talking to Your Computer</b> .....	<b>7</b>
Understanding Why You Want to Talk to Your Computer .....	7
Knowing that an Application is a Form of Communication .....	9
Thinking about procedures you use daily .....	9
Writing procedures down .....	10
Seeing applications as being like any other procedure .....	11
Understanding that computers take things literally .....	11
Defining What an Application Is .....	12
Understanding that computers use a special language .....	12
Helping humans speak to the computer .....	13
Understanding Why Python is So Cool .....	14
Unearthing the reasons for using Python .....	15
Deciding how you can personally benefit from Python .....	16
Discovering which organizations use Python .....	17
Finding useful Python applications .....	18
Comparing Python to other languages .....	18
<b>Chapter 2: Getting Your Own Copy of Python</b> .....	<b>21</b>
Downloading the Version You Need .....	21
Installing Python .....	24
Working with Windows .....	25
Working with the Mac .....	27
Working with Linux .....	29
Accessing Python on Your Machine .....	32
Using Windows .....	32
Using the Mac .....	35
Using Linux .....	36
Testing Your Installation .....	36

**Chapter 3: Interacting with Python . . . . . 39**

Opening the Command Line.....	40
Starting Python .....	41
Using the command line to your advantage.....	42
Using Python environment variables to your advantage .....	44
Typing a Command .....	45
Telling the computer what to do .....	46
Telling the computer you're done .....	46
Seeing the result.....	46
Using Help.....	48
Getting into help mode.....	48
Asking for help .....	49
Leaving help mode.....	52
Obtaining help directly .....	52
Closing the Command Line .....	54

**Chapter 4: Writing Your First Application. . . . . 57**

Understanding the Integrated DeveLopment Environment (IDLE).....	58
Starting IDLE.....	59
Using standard commands .....	60
Understanding color coding.....	61
Getting GUI help.....	62
Configuring IDLE .....	63
Creating the Application.....	67
Opening a new window .....	67
Typing the command .....	68
Saving the file .....	69
Running the Application .....	71
Understanding the Use of Indentation .....	72
Adding Comments .....	74
Understanding comments.....	74
Using comments to leave yourself reminders.....	75
Using comments to keep code from executing.....	75
Loading and Running Existing Applications .....	78
Using the command line or terminal window .....	78
Using the Edit window.....	79
Using the Python Shell window or Python command line .....	79
Closing IDLE .....	80

**Part II: Talking the Talk..... 81****Chapter 5: Storing and Modifying Information. . . . . 83**

Storing Information .....	83
Seeing variables as storage boxes .....	84
Using the right box to store the data .....	84

---

Defining the Essential Python Data Types .....	85
Putting information into variables.....	85
Understanding the numeric types .....	85
Understanding Boolean values .....	89
Understanding strings.....	90
Working with Dates and Times .....	91
<b>Chapter 6: Managing Information .....</b>	<b>93</b>
Controlling How Python Views Data.....	94
Making comparisons .....	94
Understanding how computers make comparisons .....	95
Working with Operators .....	95
Defining the operators .....	96
Understanding operator precedence.....	103
Creating and Using Functions .....	104
Viewing functions as code packages.....	104
Understanding code reusability.....	104
Defining a function.....	105
Accessing functions.....	107
Sending information to functions .....	108
Returning information from functions .....	112
Comparing function output .....	114
Getting User Input .....	114
<b>Chapter 7: Making Decisions .....</b>	<b>117</b>
Making Simple Decisions Using the if Statement.....	118
Understanding the if statement .....	118
Using the if statement in an application .....	119
Choosing Alternatives Using the if...else Statement .....	124
Understanding the if...else statement .....	124
Using the if...else statement in an application .....	124
Using the if...elif statement in an application.....	125
Using Nested Decision Statements.....	129
Using multiple if or if...else statements.....	129
Combining other types of decisions.....	130
<b>Chapter 8: Performing Repetitive Tasks .....</b>	<b>133</b>
Processing Data Using the for Statement.....	134
Understanding the for statement.....	134
Creating a basic for loop.....	135
Controlling execution with the break statement .....	136
Controlling execution with the continue statement.....	138
Controlling execution with the pass clause .....	140
Controlling execution with the else statement .....	141



- Processing Data Using the while Statement..... 143
  - Understanding the while statement ..... 143
  - Using the while statement in an application ..... 144
- Nesting Loop Statements..... 145

**Chapter 9: Dealing with Errors . . . . . 149**

- Knowing Why Python Doesn't Understand You..... 150
- Considering the Sources of Errors ..... 151
  - Classifying when errors occur ..... 152
  - Distinguishing error types ..... 153
- Catching Exceptions..... 155
  - Basic exception handling..... 156
  - Handling more specific to less specific exceptions..... 167
  - Nested exception handling..... 170
- Raising Exceptions ..... 174
  - Raising exceptions during exceptional conditions..... 174
  - Passing error information to the caller..... 175
- Creating and Using Custom Exceptions..... 176
- Using the finally Clause..... 178

***Part III: Performing Common Tasks*..... 181**

**Chapter 10: Interacting with Modules . . . . . 183**

- Creating Code Groupings ..... 184
- Importing Modules ..... 185
  - Using the import statement..... 187
  - Using the from...import statement ..... 188
- Finding Modules on Disk ..... 191
- Viewing the Module Content..... 193
- Using the Python Module Documentation ..... 198
  - Opening the pydoc application..... 198
  - Using the quick-access links..... 200
  - Typing a search term ..... 202
  - Viewing the results ..... 203

**Chapter 11: Working with Strings . . . . . 205**

- Understanding That Strings Are Different..... 206
  - Defining a character using numbers ..... 206
  - Using characters to create strings..... 207
- Creating Stings with Special Characters..... 208
- Selecting Individual Characters ..... 211
- Slicing and Dicing Strings ..... 213
- Locating a Value in a String..... 217
- Formatting Strings ..... 219

<b>Chapter 12: Managing Lists</b> .....	<b>223</b>
Organizing Information in an Application .....	224
Defining organization using lists .....	224
Understanding how computers view lists .....	225
Creating Lists .....	226
Accessing Lists .....	228
Looping Through Lists .....	231
Modifying Lists .....	232
Searching Lists .....	236
Sorting Lists .....	238
Working with the Counter Object .....	240
<b>Chapter 13: Collecting All Sorts of Data</b> .....	<b>243</b>
Understanding Collections .....	243
Working with Tuples .....	245
Working with Dictionaries .....	248
Creating and using a dictionary .....	249
Replacing the switch statement with a dictionary .....	253
Creating Stacks Using Lists .....	256
Working with queues .....	260
Working with deques .....	263
<b>Chapter 14: Creating and Using Classes</b> .....	<b>267</b>
Understanding the Class as a Packaging Method .....	268
Considering the Parts of a Class .....	269
Creating the class definition .....	269
Considering the built-in class attributes .....	271
Working with methods .....	273
Working with constructors .....	275
Working with variables .....	277
Using methods with variable argument lists .....	281
Overloading operators .....	282
Creating a Class .....	284
Using the Class in an Application .....	285
Extending Classes to Make New Classes .....	287
Building the child class .....	287
Testing the class in an application .....	289
<b><i>Part IV: Performing Advanced Tasks</i></b> .....	<b>291</b>
<b>Chapter 15: Storing Data in Files</b> .....	<b>293</b>
Understanding How Permanent Storage Works .....	294
Creating Content for Permanent Storage .....	295
Creating a File .....	298

Reading File Content .....	301
Updating File Content .....	303
Deleting a File .....	308

**Chapter 16: Sending an E-Mail . . . . . 309**

Understanding What Happens When You Send E-Mail.....	310
Viewing e-mail as you do a letter .....	311
Defining the parts of the envelope .....	312
Defining the parts of the letter.....	318
Creating the E-mail Message .....	322
Working with a text message.....	323
Working with an HTML message .....	324
Seeing the E-mail Output .....	325

***Part V: The Part of Tens* .....** **327****Chapter 17: Ten Amazing Programming Resources . . . . . 329**

Working with the Python Documentation Online .....	330
Using the LearnPython.org Tutorial .....	331
Performing Web Programming Using Python .....	332
Getting Additional Libraries.....	332
Creating Applications Faster Using an IDE.....	334
Checking Your Syntax with Greater Ease.....	334
Using XML to Your Advantage.....	335
Getting Past the Common Python Newbie Errors .....	336
Understanding Unicode .....	337
Making Your Python Application Fast .....	338

**Chapter 18: Ten Ways to Make a Living with Python. . . . . 339**

Working in QA.....	340
Becoming the IT Staff for a Smaller Organization.....	341
Performing Specialty Scripting for Applications .....	342
Administering a Network.....	343
Teaching Programming Skills.....	343
Helping People Decide on Location .....	344
Performing Data Mining.....	344
Interacting with Embedded Systems .....	345
Carrying Out Scientific Tasks.....	345
Performing Real-Time Analysis of Data .....	346

---

<b>Chapter 19: Ten Interesting Tools. . . . .</b>	<b>347</b>
Tracking Bugs with Roundup Issue Tracker .....	348
Creating a Virtual Environment Using VirtualEnv .....	349
Installing Your Application Using PyInstaller .....	350
Building Developer Documentation Using pdoc .....	351
Developing Application Code Using Komodo Edit .....	352
Debugging Your Application Using pydbgr .....	353
Entering an Interactive Environment using IPython .....	354
Testing Python Applications using PyUnit .....	354
Tidying Your Code Using Isort .....	355
Providing Version Control Using Mercurial .....	355
<b>Chapter 20: Ten Libraries You Need to Know About. . . . .</b>	<b>357</b>
Developing a Secure Environment Using PyCrypto .....	358
Interacting with Databases Using SQLAlchemy .....	358
Seeing the World Using Google Maps .....	359
Adding a Graphical User Interface Using TkInter .....	359
Providing a Nice Tabular Data Presentation Using PrettyTable .....	360
Enhancing Your Application with Sound Using PyAudio .....	360
Manipulating Images using PyQtGraph .....	361
Locating Your Information Using IRLib .....	362
Creating an Interoperable Java Environment Using JPytype .....	363
Accessing Local Network Resources Using Twisted Matrix .....	364
Accessing Internet Resources Using Libraries .....	364
<b><i>Index</i> .....</b>	<b>365</b>