

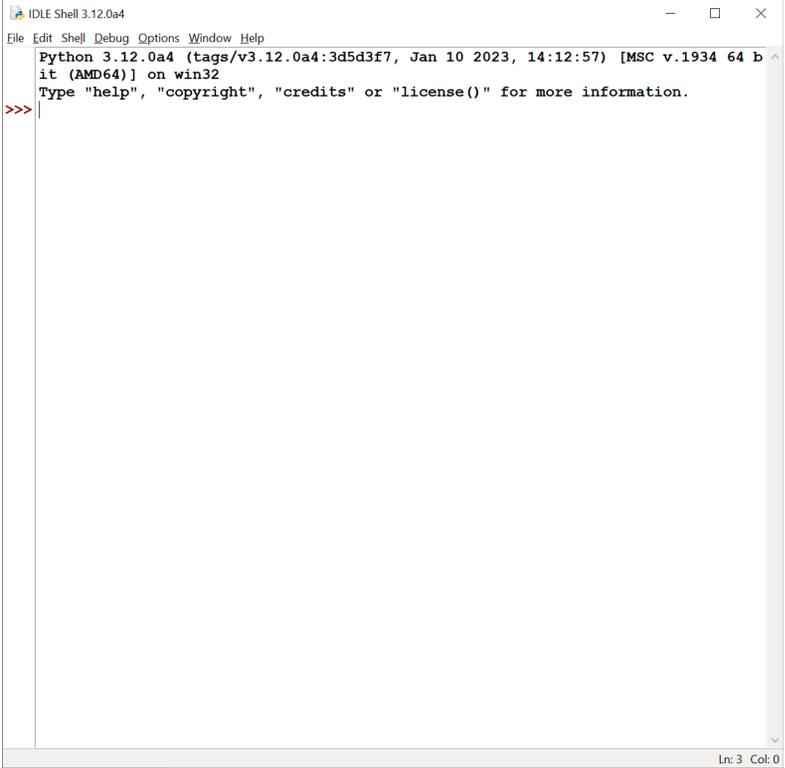
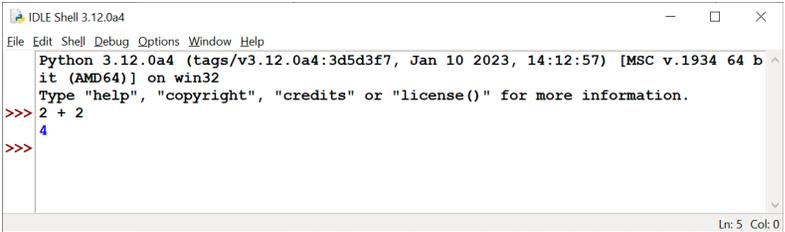
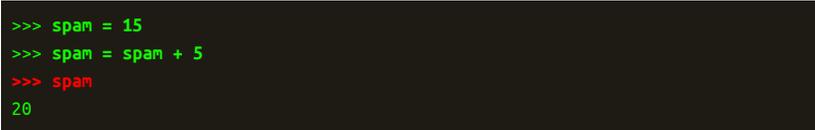
Invent Your Own Computer Games with Python, 4th edition

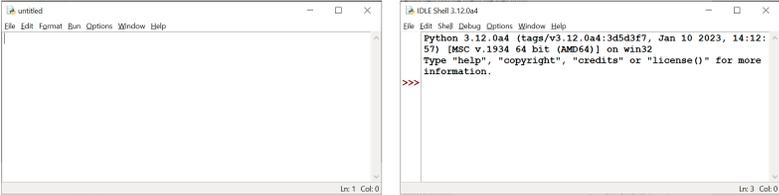
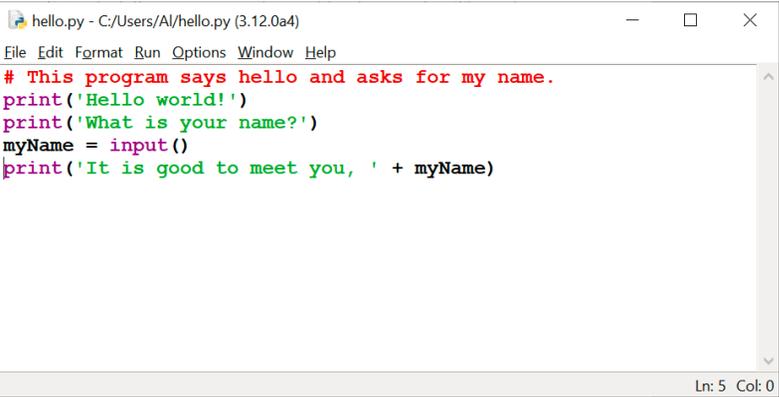
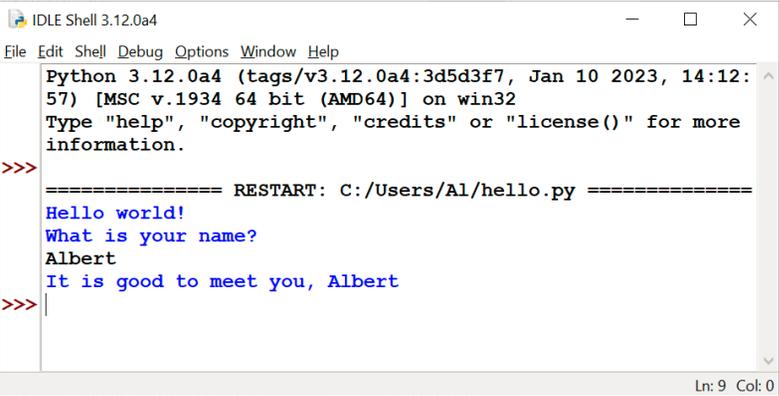
by Al Sweigart

errata updated to print 9

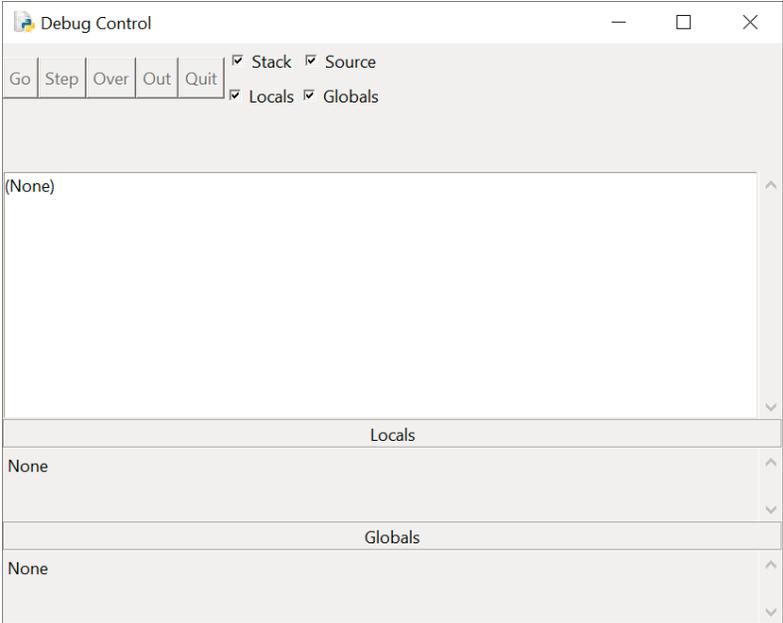
Page	Error	Correction	Print corrected
xxv– xvi	<p>In this section, I'll show you how to download and install Python 3—specifically, Python 3.4—for Windows, OS X, or Ubuntu. There are newer versions of Python than 3.4, but the pygame module, which is used in Chapters 17 to 21, currently only supports up to 3.4.</p> <p>It's important to know that there are some significant differences between Python 2 and Python 3. The programs in this book use Python 3, and you'll get errors if you try to run them with Python 2. This is so important, in fact, that I've added a cartoon penguin to remind you about it.</p> <p>On Windows, download the Windows x86-64 MSI installer from https://www.python.org/downloads/release/python-344 and then double-click it. You may have to enter the administrator password for your computer.</p> <p>Follow the instructions the installer displays on the screen to install Python, as listed here:</p> <ol style="list-style-type: none">1. Select Install for All Users and then click Next.2. Install to the <code>C:\Python34</code> folder by clicking Next.3. Click Next to skip the Customize Python section. <p>On OS X, download the Mac OS X 64-bit/32-bit installer from https://www.python.org/downloads/release/python-344/ and then double-click it. Follow the instructions the installer displays on the screen to install Python, as listed here:</p> <ol style="list-style-type: none">1. If you get the warning “Python.mpkg’ can’t be opened because it is from an unidentified developer,” hold down CONTROL while right-clicking the <code>Python.mpkg</code> file and then select Open from the menu that appears. You may have to enter the administrator password for your computer.2. Click Continue through the Welcome section and click Agree to accept the license.3. Select <i>Macintosh HD</i> (or whatever your hard drive is named) and click Install. <p>If you're running Ubuntu, you can install Python from the Ubuntu Software Center by following these steps:</p> <ol style="list-style-type: none">1. Open the Ubuntu Software Center.	<p>In this section, I'll show you how to download and install Python 3—specifically, Python 3.4—for Windows, OS X, or Ubuntu. There are newer versions of Python than 3.4, but the pygame module, which is used in Chapters 17 to 21, currently only supports up to 3.4.</p> <p>It's important to know that there are some significant differences between Python 2 and Python 3. The programs in this book use Python 3, and you'll get errors if you try to run them with Python 2. This is so important, in fact, that I've added a cartoon penguin to remind you about it.</p> <p>On Windows, download the Windows installer (64-bit) from https://www.python.org/downloads/windows/ and then double-click it. You may have to enter the administrator password for your computer.</p> <p>Follow the instructions the installer displays on the screen to install Python, as listed here:</p> <ol style="list-style-type: none">1. Select Install for All Users and then click Next.2. Install to the <code>C:\Python34</code> folder by clicking Next.3. Click Next to skip the Customize Python section. <p>On macOS, download the macOS 64-bit universal2 from https://www.python.org/downloads/macos and then double-click it. Follow the instructions the installer displays on the screen to install Python, as listed here:</p> <ol style="list-style-type: none">1. If you get the warning “Python.mpkg’ can’t be opened because it is from an unidentified developer,” hold down CONTROL while right-clicking the <code>Python.mpkg</code> file and then select Open from the menu that appears. You may have to enter the administrator password for your computer.2. Click Continue through the Welcome section and click Agree to accept the license.3. Select <i>Macintosh HD</i> (or whatever your hard drive is named) and click Install. <p>If you're running Ubuntu, Python is already installed. However, you'll have to install IDLE separately. Press Ctrl-Alt-T to open a new Terminal window. Enter the command <code>sudo apt install idle</code>. The administrator password is needed to run this command.</p>	Print 9

Page	Error	Correction	Print corrected
	<p>2. Enter Python in the search box in the top-right corner of the window.</p> <p>3. Select IDLE (Python 3.4 GUI 64 bit).</p> <p>4. Click Install. You may have to enter the administrator password to complete the installation.</p> <p>If the above steps do not work, you can find alternative Python 3.4 install instructions at https://www.nostarch.com/inventwithpython/.</p> <p>Starting IDLE</p> <p>IDLE stands for Interactive Development Environment. IDLE is like a word processor for writing Python programs. Starting IDLE is different on each operating system:</p> <ul style="list-style-type: none"> • On Windows, click the Start menu in the lower-left corner of the screen, type IDLE, and select IDLE (Python GUI). • On OS X, open Finder and click Applications. Double-click Python 3.x and then double-click the IDLE icon. • On Ubuntu or other Linux distros, open a terminal window and enter <code>idle3</code>. You may also be able to click Applications at the top of the screen. Then click Programming and IDLE 3. 	<p>1. Open the Ubuntu Software Center.</p> <p>2. Enter Python in the search box in the top-right corner of the window.</p> <p>3. Select IDLE (Python 3.4 GUI 64 bit).</p> <p>4. Click Install. You may have to enter the administrator password to complete the installation.</p> <p>If the above steps do not work, you can find alternative Python 3.4 install instructions at https://www.nostarch.com/inventwithpython/.</p> <p>Starting IDLE</p> <p>IDLE stands for Interactive Development Environment. IDLE is like a word processor for writing Python programs. Starting IDLE is different on each operating system:</p> <ul style="list-style-type: none"> • On Windows, click the Start menu in the lower-left corner of the screen, type IDLE, and select IDLE (Python GUI). • On macOS, open Finder and click Applications. Double-click Python 3.x and then double-click the IDLE icon. • On Ubuntu or other Linux distros, open a Terminal window by pressing <code>Ctrl-Alt-T</code> and enter <code>idle3</code>. You may also be able to click Applications at the top of the screen. Then click Programming and IDLE 3. 	

Page	Error	Correction	Print corrected
xxvii	Figure 1 replacement	 <pre> IDLE Shell 3.12.0a4 File Edit Shell Debug Options Window Help Python 3.12.0a4 (tags/v3.12.0a4:3d5d3f7, Jan 10 2023, 14:12:57) [MSC v.1934 64 b it (AMD64)] on win32 Type "help", "copyright", "credits" or "license()" for more information. >>> </pre>	Print 9
2	Figure 1-1 replacement	 <pre> IDLE Shell 3.12.0a4 File Edit Shell Debug Options Window Help Python 3.12.0a4 (tags/v3.12.0a4:3d5d3f7, Jan 10 2023, 14:12:57) [MSC v.1934 64 b it (AMD64)] on win32 Type "help", "copyright", "credits" or "license()" for more information. >>> 2 + 2 4 >>> </pre>	Print 9
7	 <pre> >>> spam = 15 >>> spam = spam + 5 20 </pre>	 <pre> >>> spam = 15 >>> spam = spam + 5 >>> spam 20 </pre>	Print 3

Page	Error	Correction	Print corrected
13	Then select New Window if you are using Windows or New File if you are using OS X .	Then select New File .	Print 2
13	Figure 2-1 replacement		Print 9
15	Figure 2-3 replacement		Print 9
16	Click File ► Run Module	Click Run ► Run Module	Print 2
16	install Python 3.4	install Python	Print 9
16	Figure 2-5 replacement		Print 9

Page	Error	Correction	Print corrected
23	<pre>12. for i in range(6): --snip-- 27. guessesTaken = str(guessesTaken)</pre>	<pre>12. for guessesTaken in range(6): --snip-- 27. guessesTaken = str(guessesTaken + 1)</pre>	Print 2
26–29	<pre>12. for i in range(6):</pre>	<pre>12. for guessesTaken in range(6):</pre>	Print 2
30	<pre>TypeError: unorderable types: int() < str()</pre>	<pre>TypeError: '<' not supported between instances of 'int' and 'str'</pre>	Print 9
35	<pre>27. guessesTaken = str(guessesTaken)</pre>	<pre>27. guessesTaken = str(guessesTaken + 1)</pre>	Print 2
35	<p>Line 27 calls the <code>str()</code> function, which returns the string form of <code>guessesTaken</code>. Line 28 concatenates strings to tell the player they have won and how many guesses it took. Only string values can concatenate to other strings. This is why line 27 had to change <code>guessesTaken</code> to the string form.</p>	<p>Line 27 calls the <code>str()</code> function, which returns the string form of <code>guessesTaken</code> plus 1 (since the range function goes from 0 to 5 instead of 1 to 6). Line 28 concatenates strings to tell the player they have won and how many guesses it took. Only string values can concatenate to other strings. This is why line 27 had to change <code>guessesTaken + 1</code> to the string form.</p>	Print 2
36	<pre>12. for i in range(4):</pre>	<pre>12. for guessesTaken in range(4):</pre>	Print 2

Page	Error	Correction	Print corrected
66	Figure 6-1 replacement	 <p>The screenshot shows a window titled "Debug Control" with a toolbar containing buttons for "Go", "Step", "Over", "Out", and "Quit". To the right of the toolbar are checkboxes for "Stack", "Source", "Locals", and "Globals", all of which are checked. Below the toolbar is a large text area containing "(None)". At the bottom of the window, there are two sections: "Locals" and "Globals", each containing a list with a single entry "None".</p>	Print 9


```

dragon.py - C:\Users\A\dragon.py (3.12.0a4)
File Edit Format Run Options Debug Control
Go Step Over Out Quit Stack Source
Locals Globals
dragon.py:38: <module>()
  'bdb.run()', line 597: exec(cmd, globals, locals)
  > '_main_': <module>(), line 38: displayIntro()

Locals
None

Globals
_annotations_ {}
_builtins_ <module 'builtins' (built-in)>
_doc_ None
_file_ 'C:\\\\Users\\A\\\\dragon.py'
_loader_ <class '_froz...ItInImporter'>
_name_ '_main_'
_package_ None
_spec_ None
_checkCave <function che...0019445EB9620>
_displayIntro() chooseCave <function cho...0019445EB96C0>

def chooseCave():
    cave = ''
    while cave != '':
        print('Which cave do you want to enter?')
        cave = input()

    return cave

def checkCave(chosenCave):
    print('You approach the cave...')
    time.sleep(2)
    print('It is dark inside...')
    time.sleep(2)
    print('A large snake jumps out, eating you alive!')
    print()
    time.sleep(2)

friendlyCave = 'cave 1'

if chosenCave == '1':
    print('Give up the quest?')
else:
    print('Go back to the start?')

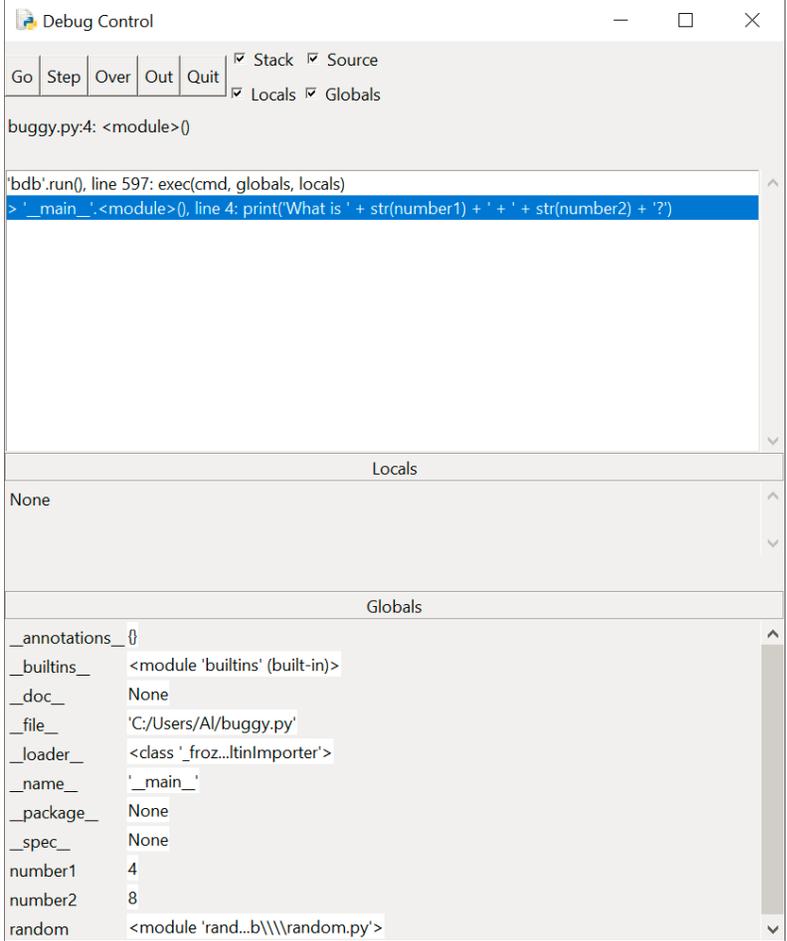
playAgain = 'yes'
while playAgain == 'yes':
    displayIntro()

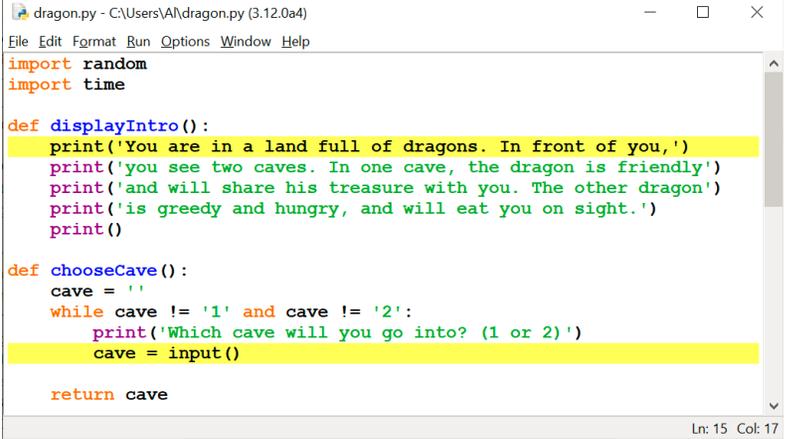
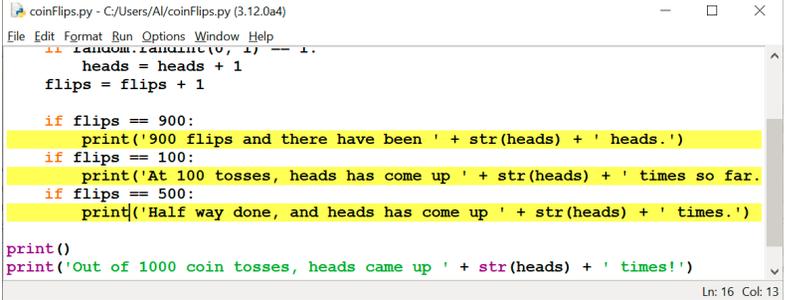
    caveNumber = chooseCave()

    checkCave(caveNumber)

    print('Do you want to play again? (yes or no)')
    playAgain = input()
  
```

Ln: 13 Col: 38

Page	Error	Correction	Print corrected
72	Figure 6-4 replacement	 <p>The screenshot shows the Python Debug Control window. At the top, there are buttons for 'Go', 'Step', 'Over', 'Out', and 'Quit'. To the right of these buttons are checkboxes for 'Stack', 'Source', 'Locals', and 'Globals', all of which are checked. Below the buttons, the text 'buggy.py:4: <module>()' is displayed. The main area of the window contains a code editor with the following text: <code>'bdb'.run(), line 597: exec(cmd, globals, locals)</code> and <code>> '_main_'.<module>(), line 4: print('What is ' + str(number1) + ' ' + str(number2) + '?')</code>. The second line is highlighted in blue. Below the code editor are two sections: 'Locals' and 'Globals'. The 'Locals' section is currently empty and shows 'None'. The 'Globals' section contains a list of variables and their values: <code>_annotations_ {}</code>, <code>_builtins_ <module 'builtins' (built-in)></code>, <code>_doc_ None</code>, <code>_file_ 'C:/Users/Al/buggy.py'</code>, <code>_loader_ <class 'froz...ItinImporter'></code>, <code>_name_ '_main_'</code>, <code>_package_ None</code>, <code>_spec_ None</code>, <code>number1 4</code>, <code>number2 8</code>, and <code>random <module 'rand...b\\random.py'></code>.</p>	Print 9

Page	Error	Correction	Print corrected
72	Figure 6-5 replacement	 <pre> dragon.py - C:\Users\AI\dragon.py (3.12.0a4) File Edit Format Run Options Window Help import random import time def displayIntro(): print('You are in a land full of dragons. In front of you,') print('you see two caves. In one cave, the dragon is friendly') print('and will share his treasure with you. The other dragon') print('is greedy and hungry, and will eat you on sight.') print() def chooseCave(): cave = '' while cave != '1' and cave != '2': print('Which cave will you go into? (1 or 2)') cave = input() return cave </pre>	Print 9
75	Figure 6-6 replacement	 <pre> coinFlips.py - C:\Users\AI\coinFlips.py (3.12.0a4) File Edit Format Run Options Window Help import random heads = 0 flips = 0 if flips == 900: print('900 flips and there have been ' + str(heads) + ' heads.') if flips == 100: print('At 100 tosses, heads has come up ' + str(heads) + ' times so far.') if flips == 500: print('Half way done, and heads has come up ' + str(heads) + ' times.') print() print('Out of 1000 coin tosses, heads came up ' + str(heads) + ' times!') </pre>	Print 9
117	<pre>105. difficulty = ''</pre>	<pre>105. difficulty = 'X'</pre>	Print 2
160	<pre>TypeError: Can't convert 'int' object to str implicitly</pre>	<pre>TypeError: Can only concatenate str (not "int") to str</pre>	Print 9
234	The <code>showPoints()</code> function calls the <code>getScoreOfBoard()</code> function and then prints the player's and computer's scores:	The <code>printScore()</code> function calls the <code>getScoreOfBoard()</code> function and then prints the player's and computer's scores:	Print 3
236	After printing the board with <code>drawBoard()</code> , the program also prints the current score with a call to <code>showPoints()</code> on line 230.	After printing the board with <code>drawBoard()</code> , the program also prints the current score with a call to <code>printScore()</code> on line 230.	Print 3

Page	Error	Correction	Print corrected
256	Download pygame at https://www.nostarch.com/inventwithpython/ , and follow the instructions for your operating system.	From the interactive shell, run <code>import subprocess, sys; subprocess.run([sys.executable, '-m', 'pip', 'install', 'pygame'])</code> . If this doesn't work, visit https://inventwithpython.com/installpygame/ for instructions on installing Pygame.	Print 9
263	We assign the Font object to the variable text.	We assign the Surface object to the variable text.	Print 5