

# **Installing Python**

The games in this book use Python 3. It's free, and you can download it from the Python website. Follow the instructions that match your computer. Never install any program unless you have the computer owner's permission.

# Installing Python on Windows

First you need to find out if your computer uses the 32-bit or 64-bit version of Windows. Go to the **Start** menu, then **Computer**, **Properties**, and choose **System** if the option appears.



# **Download Python**

Go to www.python.org and click on **Downloads**. Click on the latest version of Python for Windows. It should start with the number 3. Select **executable installer** from the different installer options that appear.

The version number might not be exactly the same as this one—just \_ make sure it has 3 at the beginning.

- Python 3.6.2 2017-05-15
  - Windows x86 executable installer
  - Windows x86-64 executable installer

Use this installer if you have a 32-bit version of Windows.

Use this installer if you have a 64-bit version of Windows.



# **IDLE**

When you install Python 3, you will also get another free program called IDLE (short for Integrated Development Environment). Designed for beginners, IDLE includes a basic text editor that allows you to write and edit Python code.



# 7

# **Install Python**

Open the installer file, then click **Custom Installation**, then **Next** until you get to **Advanced Options**. Leave the checked boxes as they are, but make sure "Install for all users" and "Add Python to environment variables" are also checked. Then click **Install** and **Next** at each prompt.





# **Start IDLE**

Once the installation process is complete, open IDLE by searching for it or going to the **Start** menu, choosing **All Apps**, then selecting **IDLE**. A window like the one below should appear.



# **Installing Python on a Mac**

Before you install Python 3 on a Mac, you need to check which operating system your Mac uses. To do this, click the **Apple** icon in the top left of the screen and choose **About This Mac** from the drop-down menu.

# 1

# **Download Python**

Go to www.python.org and click on **Downloads**. Click on the version of Python 3 that matches your operating system. The "Python.pkg" file will download to your Mac automatically.

The version number might not be exactly the same as this one—just make sure it has a 3 at the beginning.

- Python 3.6.2 2017-08-15
  - Download macOS X 64-bit/32-bit installer

# 2

# **Install Python**

Double-click the ".pkg" file in the **Downloads** folder to start the installation. Select **Continue** and then **Install** to accept the default settings.





# Start IDLE

Once the installation is complete, check that it was successful by opening the IDLE program. Search for it in Spotlight or select the **Applications** folder, then the **Python** folder, and double-click **IDLE**. A window like this should appear.

# EXPERT TIPS

# **Raspberry Pi**

If you're using a Raspberry Pi computer, then you can skip the download step because Python 2 and Python 3 come preinstalled on the machine. Remember this book uses Python 3, so make sure you open the right version. You'll find Python 3 in the **Applications** menu on your Raspberry Pi. Open it now and check that it works.





# Python 3.6.2 Shell IDLE File Edit Shell Debug Window Help Python 3.6.2 (v3.6.2:5fd3365926, Aug 15 2017, 13:38:16) [GCC 4.2.1 (Apple Inc. build 5666) (dot 3)] on darwin Type "copyright", "credits" or "license()" for more information. >>>



# Installing Pygame Zero

Now it's time to add some extra tools to help you build great games. In this book, you'll need two additional modules—Pygame and Pygame Zero. These are not included with Python, so you need to install them separately.

# **Installing Pygame Zero on Windows**

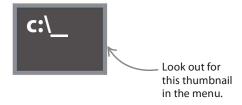
Follow these steps to install the latest versions of Pygame and Pygame Zero on your Windows computer. Your machine needs to be connected to the Internet to complete some of these steps.

# Admin access Make sure you're signed into your computer as an admin; otherwise, the system won't let you install things properly. Always ask permission before installing new software on someone's computer.

# 1

# **Open the Command Prompt**

Click **Start**. Scroll down and open the **Windows System** folder. Click **Command Prompt**. If you can't find it, try searching for it. You'll need to type in some commands and press **Enter** to run each one. Make sure you spell everything correctly and put spaces in the right places or it won't work.



Install Pygame

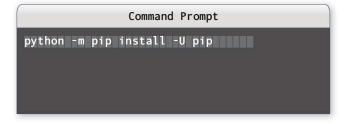
Once the package manager is installed, type the following command and press **Enter**. This uses pip to install Pygame.

pip install pygame

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# Install a package manager

A package manager called "pip" should come with Python when you install it. It's a tool that makes it easier to install Pygame Zero and other Python modules. Type this command into the Command Prompt and press **Enter**—it will check if pip is on your computer and install it if it is not.





# **Install Pygame Zero**

Finally, type this command. When you press **Enter**, this will install Pygame Zero, also known as pgzero for short.

pip install pgzero

# Installing Pygame Zero on a Mac

Follow these steps to install the latest versions of Pygame and Pygame Zero on your Mac. Your machine needs to be connected to the Internet to complete some of these steps.



# **Open Terminal**

You'll need to use the Terminal app to install the modules. You can find it in your **Applications** folder, or you can search for it with Spotlight. Follow the steps below, making sure all the spellings are correct and the spaces are in the right place.

Install a package manager

Homebrew is a package manager tool that makes it easier to install Pygame 2

that makes it easier to install Pygame Zero and other Python modules. Type in the command at right and press **Enter** to install Homebrew. It might ask you to enter your password again, and it will take a short while to install, so don't panic if nothing happens right away.

Check that Python 3 is installed
Homebrew will check if Python 3 is
already installed on your Mac and will
install it if it's not there. Even though
you've already installed Python, it's
worth checking just to be sure.

Install other tools

Type in this command next and press **Enter**. It uses Homebrew to install some tools that will be needed by Pygame Zero.

Install Pygame

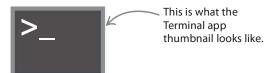
Now it's time to install Pygame. Type in this command and press Enter.

Install Pygame Zero
Finally, this last command will install
Pygame Zero.

EXPERT TIPS

# **Having trouble?**

Installing these modules might be a bit tricky at first. If you're having trouble, you can get the most up-to-date installation instructions on the Pygame Zero website: https://pygame-zero.readthedocs.io



Type this line carefully in the Terminal window and check for any spelling errors and extra spaces.





brew install sdl sdl\_mixer sdl\_sound sdl\_ttf

pip3 install pygame

pip3 install pgzero





# **Using IDLE**

In IDLE, you can work in two different windows. The editor window can be used to write and save programs, while the shell window runs Python instructions immediately.

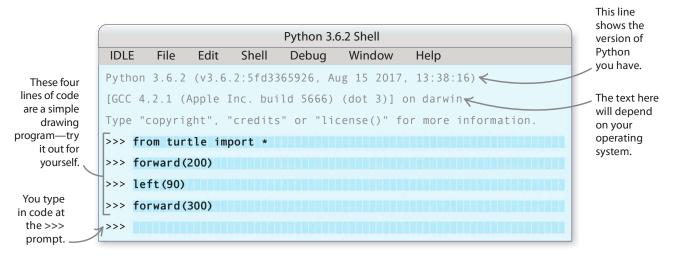


# The shell window

When you open IDLE, the shell window pops up. This is the best place to get started because you don't have to create a new file first. You just type the code directly into the shell window.

# abla Working in the shell

You can use the shell window to test out snippets of code before you add them into a bigger program. The code you type can be run right away, and any messages or "bugs" (errors) are displayed.





```
>>> print("You've unlocked a new level!")

>>> 123 + 456 * (7 / 8)

>>> ''.join(reversed("Time to play"))
```

#### $\triangle$ Give the shell a test run

Type each of these code snippets into the shell window and press **Enter** after each one. The first line displays a message and the second line does a calculation. Can you figure out what the third line does?

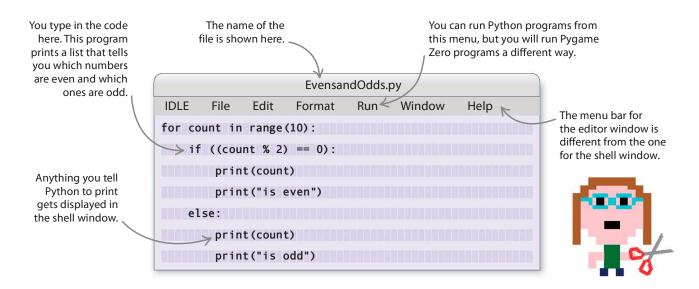


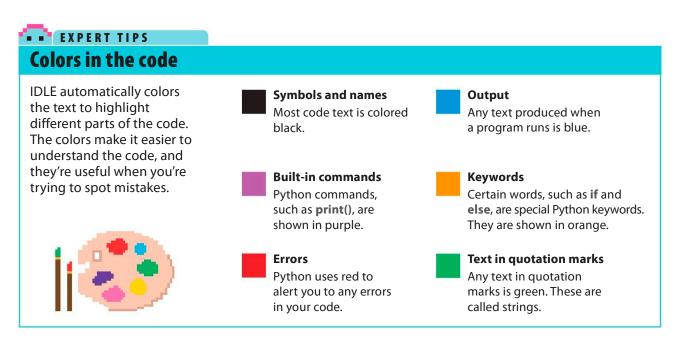
# The editor window

The shell window can't save your code, so when you close it, the code you typed is gone forever. When you are working on a game, you should use IDLE's editor window. This will let you save your code. It also has built-in tools to help you write your programs and troubleshoot any errors.

#### $\nabla$ The editor window

To open the editor window in IDLE, click on the **File** menu at the top and choose **New File**. An empty editor will then appear. You'll use the editor window to write the programs for the games in this book.







# Your first program

After you've installed Python, Pygame, and Pygame Zero, follow these steps to write your first Python program. This simple program will display a message on the screen.

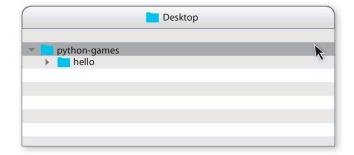
# How it works

This Python program will check if everything is set up properly so you can start building some games. It uses Pygame Zero to display the word "Hello" on the screen.

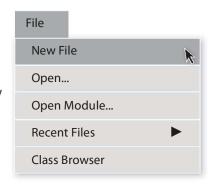
# 1

# Set up a folder

Before you start, create a folder called *python-games* somewhere easy to find, such as on your Desktop. Create another folder within your python-games folder and call it *hello*.



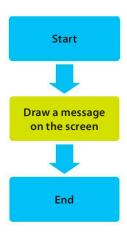
Open IDLE on your computer. From the File menu, choose New File to create an empty editor window where you can write your program.



# EXPERT TIPS

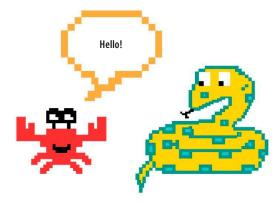
# Type carefully

Make sure you type all your code exactly as it's written in this book. The grid will help you get it all correct. A tiny typo in just one line of code can cause a whole program to crash.



# $\triangle$ Hello flowchart

When building a game, programmers use diagrams called flowcharts to plan their game and show how it works. Each step is shown in a box, with an arrow leading to the next step. More complicated games might have steps with questions and more than one arrow leading to different boxes, depending on the answer to the question.



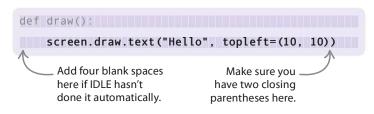
# Type the first line of code

Write this first line of code that tells Python to show, or "draw," something on the screen. Press Enter when you're done.

def draw(): This line of code is used to print something on the screen.

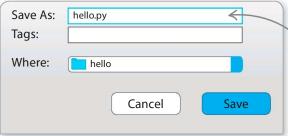
# Type the second line of code

Then type in this second line of code. Check that it starts with four spaces. This is called an "indent," and your code won't work without it!



# Save the file

Now let's save the file. Go to the File menu and choose Save As.... Name the file hello.py and save it in the folder you created earlier.





# **EXPERT TIPS**

# **Indents**

There should be four blank spaces at the start of the second line of your code. This is called an "indent." Python uses them to separate different blocks of code. Spaces and indents are very important—your code will not work if you miss them or put them in the wrong place. They're one of the most common bugs in Python programs!



When you save a program, IDLE adds ".py" to the end automatically, so you don't have to type it in.

# EXPERT TIPS

# Saving your code

Always save your code before you run it, especially after you make any changes. If you don't, Python will run an out-of-date version of your code.





# Running your program

Because your games use Pygame Zero, you usually have to run them in a different way from normal Python programs. It isn't difficult once you get used to it, however.



- Open Command Prompt or Terminal window
  To run the program, you can use the command line.
  If you're using a Windows computer, this is in the
  Command Prompt app. If you're on a Mac, open
  the Terminal app.
- This is what the icon for Command Prompt looks like.

  This is what the icon for the Terminal window looks like.
- Type in the Pygame Zero command
  To tell Pygame Zero to run the game, type
  pgzrun into the command line and leave
  a space, but don't press Enter yet!
- Sanjay bash 80x24

  Last login: Sun Sep 3 17:18:36 on ttys000

  LC-0797:~ sanjay\$ pgzrun

  Don't forget to leave a space after pgzrun.
- **B** Drag and drop the IDLE file
  Keep the app open, and using Explorer (Windows) or
  Finder (Mac), go to the folder where you saved your
  program. Once you find it, drag and drop the .py file
  into the command line.



9 Run the program Now that you've typed in the pgzrun command and your computer knows where to find the IDLE

file, press Enter. This will launch Pygame Zero.

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# Final screen

If your program is working correctly, you'll see a window with a "Hello" message written in the top-left corner of the screen. Good job! Now it's time to become a Python games coder!



# **Rerunning programs**

When you're building a program, you need to run the code frequently to check for bugs. To save time, you can press the **Up** arrow key in Command Prompt or Terminal to see your recent commands. You can then press **Enter** to run one of them again. If your game is still running, you need to close it before rerunning your code. If you don't, nothing will happen!



# Running your program using IDLE

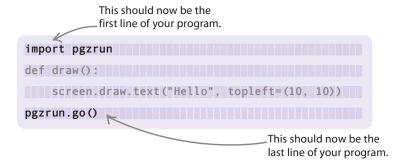
It's possible to run your Pygame Zero programs using IDLE. To do this you need to add two extra lines to your code. It's a good idea to wait until you have finish writing your program before doing this.

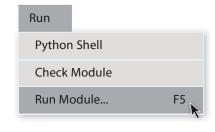


Type **import pgzrun** at the very top of your program and **pgzrun.go()** at the very end. The entire code for your game should now sit between these two lines.



To run the game in IDLE go to the **Run** menu and click **Run Module**, or just press the **F5** key.





# IMPORTANT!

# Fix mistakes

If nothing happens when you run one of your programs, or if you get an error message—don't panic! It's normal to experience errors (these are called "bugs") when coding a program. If an error message appears, ask yourself the following questions:

- Does the code match the given example exactly?
- Have I saved the program in the right folder?
- Have I typed pgzrun correctly?
- Are Pygame and Pygame Zero installed correctly?

