3.1.2 Install Python

You will be using Python to write algorithms that will assist the confirmation and analysis of election results. Seth, Tom's manager, has informed you that you'll need to set up Python, and has given Tom the task of walking you through the installation process for both Windows and Mac computers.

Python is one of the most popular programming languages. You can think of Python as the newest power tool among programming languages. Although it is not new to the programming world, it is quickly becoming the "go-to" language for first-time programmers. The popularity of Python is due to the fact that it emulates the way a human thinks, which facilitates the process of writing code.

Once you download and install Python, Tom will guide you through writing a simple Python script or algorithm that can be executed, or run, to create a quick output to your computer screen. So, let's download and install Python—very soon you can start calling yourself a programmer!

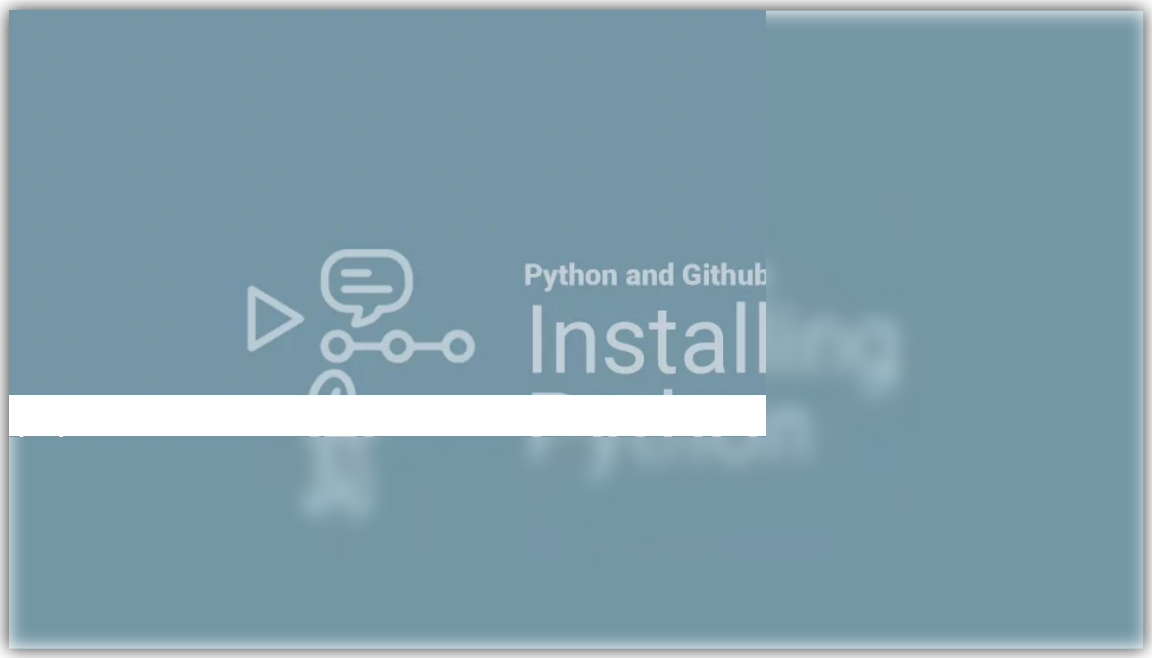
Check out the macOS Python instructions below, or jump to the **Windows Python instructions**.

Python for macOS

Install Python

Python 2.7 comes preinstalled on Mac computers. This version of Python does not work with some of the updated programming dependencies that we will use (more on these dependencies later).

Therefore, let's install a newer version of Python, specifically, Python 3.7.6 which you can **download from the Python homepage (https://www.python.org/downloads/)** . The following video will walk you through the installation process for macOS.



NOTE

> Using a slightly older version of a software is typical in the software development industry. You need to install Python 3.7.6 because the coding presented in this module works with this version.

Use the Python Interpreter

The Python interpreter is a program that reads and executes Python code. When we start Python in the command line, it creates the interactive Python interpreter.

To use the Python interpreter in the command line, type `python3` or `python3 -i` after the prompt, `$`, and then press Enter. The terminal window should now look something like this:

```
Python 3.7.6 (v3.7.6:43364a7ae0, Dec 18 2019, 14:18:50)
[Clang 6.0 (clang-600.0.57)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Let's break down what's happening here.

1. The first line provides the Python version that's running and the time and day of the creation of the version you are using.
2. There are tips you can use to get help and other information. All you have to do is type one of these words and press Enter.
3. The three chevrons, `>>>`, represent the Python prompt where you will type your code. Since Python is an interpretable programming language, all we need to do after the prompt is type any valid Python expression. Python will read the typed expression, evaluate it, and return the results in the line below the code you wrote.

Let's give it a try and write our first code or script that we can execute.

Write and Execute a Python Script

After the Python prompt, `>>>`, type `print("Hello World")`. Your Python terminal should look like this:

```
>>> print("Hello World")
```

Press Enter. You should see this output:

```
>>> print("Hello World")
Hello World
>>>
```

Notice `print` in the first line. The `print()` function is used to send whatever is between the parentheses of the `print()` function to screen. Inside the parentheses, we pass, or type, what we want to print. In this example, we typed `Hello World`. When we pressed Enter, `Hello World` was printed to the screen.

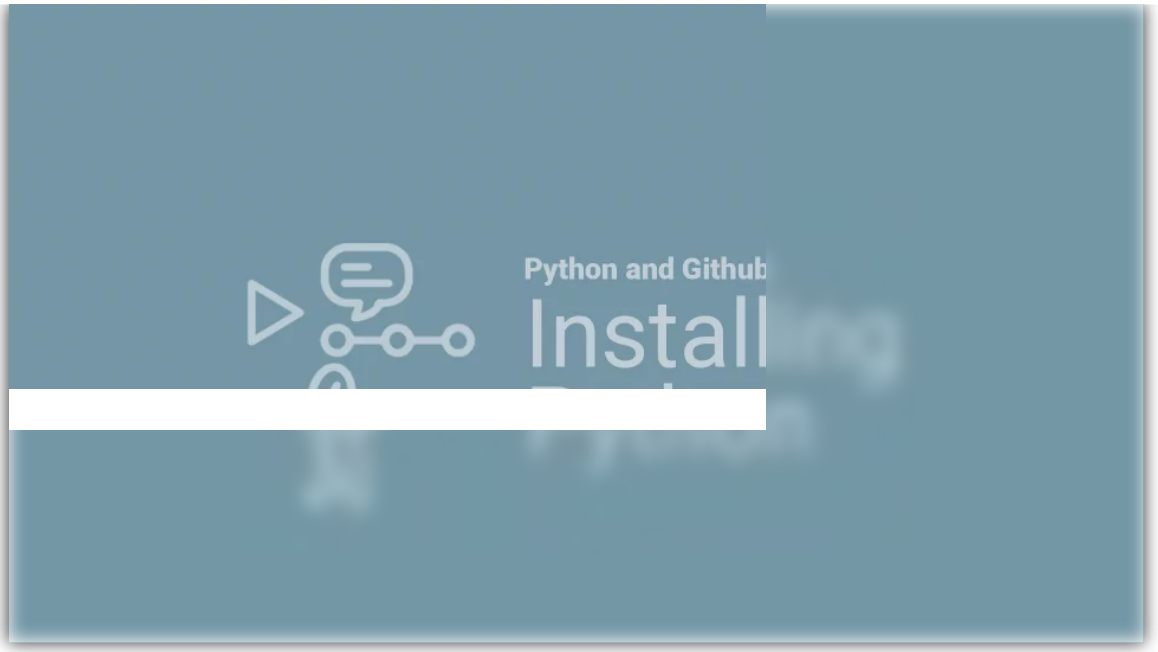
Let's pause to reflect what you just did: you wrote and executed your first Python script or algorithm. Congratulations!

For now, let's quit the Python interpreter. At the prompt, type `exit()` and press Enter. You will then see the terminal prompt.

Python for Windows

Install Python

Now that you're familiar with the command line, it's time to install Python. In this module, we'll use Python 3.7.6 which you can **download from the Python homepage (https://www.python.org/downloads/)**. The following video will walk you through the installation process for Windows.



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Note that you can customize the installation, but we don't recommend this option unless you already have some experience with custom installing software. Then, check the "Add Python 3.7.6 to PATH" box.

NOTE

> The "PATH" variable lists the directories that will be searched for executables when you type `python` in the command prompt.
>
> By adding the path to the Python executable, you will be able to access the `python.exe` program by typing `python`, and you won't need to specify the full path to the program.
>
> For Tom, the full path to the program would be `C:\Users\tom\AppData\Local\Programs\Python\Python36`.

> If you don't check the box, then you will have to copy your path to the `python.exe` program, under \"Install Now," and type that everytime you want to open Python from the command line.

Use the Python Interpreter

The Python interpreter is a program that reads and executes Python code. When we start Python in the command line, it creates the interactive Python interpreter.

There are three ways to use the Python interpreter on Windows.

1. Open the Python 3.7.6 (64-bit) Command Prompt.
2. Open Windows Command Prompt and type `python` or `python -i` after the prompt, `>`, and Press Enter.
3. Open Git Bash and type `python` or `python -i` after the prompt, `$`, and Press Enter.

The choice for you depends on how comfortable you are starting a program, but the first option is probably the most straightforward.

When you use any of the methods to start the Python interpreter, the application window should look like this.

```
Python 3.7.6 (tags/v3.7.6:43364a7ae0, Dec 19 2019, 00:42:30) [MSC v.1916 64
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Let's break down what's happening here.

1. The first line tells us the Python version that's running, the time and day of the creation of the version you are using, and the processor you are using on your computer.

2. There are tips you can use to get help and other information. All you have to do is type one of these words and press Enter.
3. The three chevrons, `>>>`, represent the Python prompt where you will type your code. Since Python is an interpretable programming language, all we need to do after the prompt is type any valid Python expression. Python will read the typed expression, evaluate it, and return the results in the line below the code you wrote.

Let's give it a try and write our first code or script that we can execute.

Write a Python Script

After the Python prompt, `>>>`, type `print("Hello World")`. Your Python terminal should look like this:

```
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Press Enter. You should see this output:

```
>>> print("Hello World")
Hello World
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```

Notice `print` in the first line. The `print()` function is used to send whatever is between the parentheses of the `print()` function to screen. Inside the parentheses, we pass, or type, what we want to print. In this example, we typed `Hello World`. When we pressed Enter, `Hello World` was printed to the screen.

Let's pause to reflect what you just did: you wrote and executed your first Python script or algorithm. Congratulations!