

3 Interpreter

Key terms: `python3 >>> # import`

Reading: Severance 1

Exercise: Write a program that greets the user with a hearty salutation.

The reference implementation of the Python language is written in the C language and called CPython. On `hills` it can be invoked as `python3`. (The plain name `python` is no longer present because that referred to the long-deprecated version 2.) CPython has both an interactive and a batch mode and you should expect to use both. The former, whose prompt is `>>>`, allows iteratively composing and assembling expressions:

```
[yourname@hills ~]$ python3
Python 3.10.5 (main, Aug 24 2022, 09:30:13) [GCC 10.4.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> 9/16
0.5625
```

Batch mode runs whole programs, like those you peer review. To run a program, we pass its pathname as a command line argument to Python. It may produce some explanatory response:

```
[yourname@hills ~]$ python3 capitalize.py
This program capitalizes text, but you didn't pass any.
```

Useful programs do usually respond to some input or prompt. We indicate what data to use by passing more arguments after the program name:

```
[yourname@hills ~]$ python3 capitalize.py hello
HELLO
```

(You can safely ignore this optional technique, but it is possible to avoid specifying the interpreter every time. When the hashbang line⁸, `#!/usr/local/bin/python3`, is atop the file, and the executable permission is set, and the program path unambiguous, the shell will launch Python on your behalf:)

```
[yourname@hills ~]$ ./capitalize.py helloagain
HELLOAGAIN
```

A vanilla installation of Python is composed of a base language and standard packages that are always available but not loaded by default. To access those packages we `import` them. A great variety of useful packages is available and accessible.⁹ Don't clobber the names of existing packages. Inside each package are topical resources such as functions:

```
>>> import time
>>> time.localtime().tm_year
2024
```

From this point on, Python code samples will be shown without the `>>>` prompt used here. They can be saved to a file or run interactively.

Next, we will address the language's built-in object types.

⁸[https://en.wikipedia.org/wiki/Shebang_\(Unix\)](https://en.wikipedia.org/wiki/Shebang_(Unix))

⁹<https://docs.python.org/3/library/index.html>