

3 Interpreter

Key terms: python3 >>> .py # import

Reading: Severance 1

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

The more common implementation of the Python language is itself written in C and thus more specifically called CPython. On `hills` it is installed at `/usr/local/bin/python3` and can be invoked as `python3`. Plain `python` is no longer present because the name used to refer to version 2.

The interpreter can be invoked in 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. The latter runs whole programs that are stored on disk.

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.⁷ Give your program a name different from all the language keywords and modules you are using, or the interpreter may favor your definition over its own, breaking imports.

```
>>> import time
>>> time.localtime().tm_year
2020
>>> exit()
```

In this course we create useful programs based on randomness, user input, and resources on disk. To simply run a program, we can pass its pathname to the Python virtual machine:

```
[yourname@hills ~]$ python3 estimate_earth_mass.py
According to my calculations, earth mass is about 6 x 10^27 grams
```

Often, we have to tell a program what data we want it to use. Programs passed no arguments often have nothing to do. In this course our programs are not interactive, and don't prompt the user for input; they need to be easy to test in peer review, so parameters are passed as command line arguments.

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

(It is possible to avoid specifying the interpreter every time, but you can safely ignore this optional technique. 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
```

Next, we will address the basic object types.

⁷<https://docs.python.org/3/library/index.html>

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