CSCi 1012 [Section 10]

Introduction to Programming with Python

Prof. Kartik Bulusu, CS Dept.

Course start date January 17, 2024
Lecture location 1957 E street Room 213
Lecture times Monday, 3:45 PM to 5:00 PM

Wednesday-lab
3:45 PM to 5:00 PM
Section-30: 1957 E 310
Section-31: SEH 4040
Section-34: TOMP 310
Section-35: 204

Friday-lab
3:45 PM to 5:00 PM
Section-32: SEH 4040
Section-33: 1957 E 315
Section-36: PHIL 348
Section-37: TOMP 107

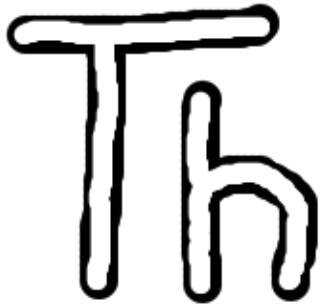
GW School of Engineering & Applied Science
THE GEORGE WASHINGTON UNIVERSITY

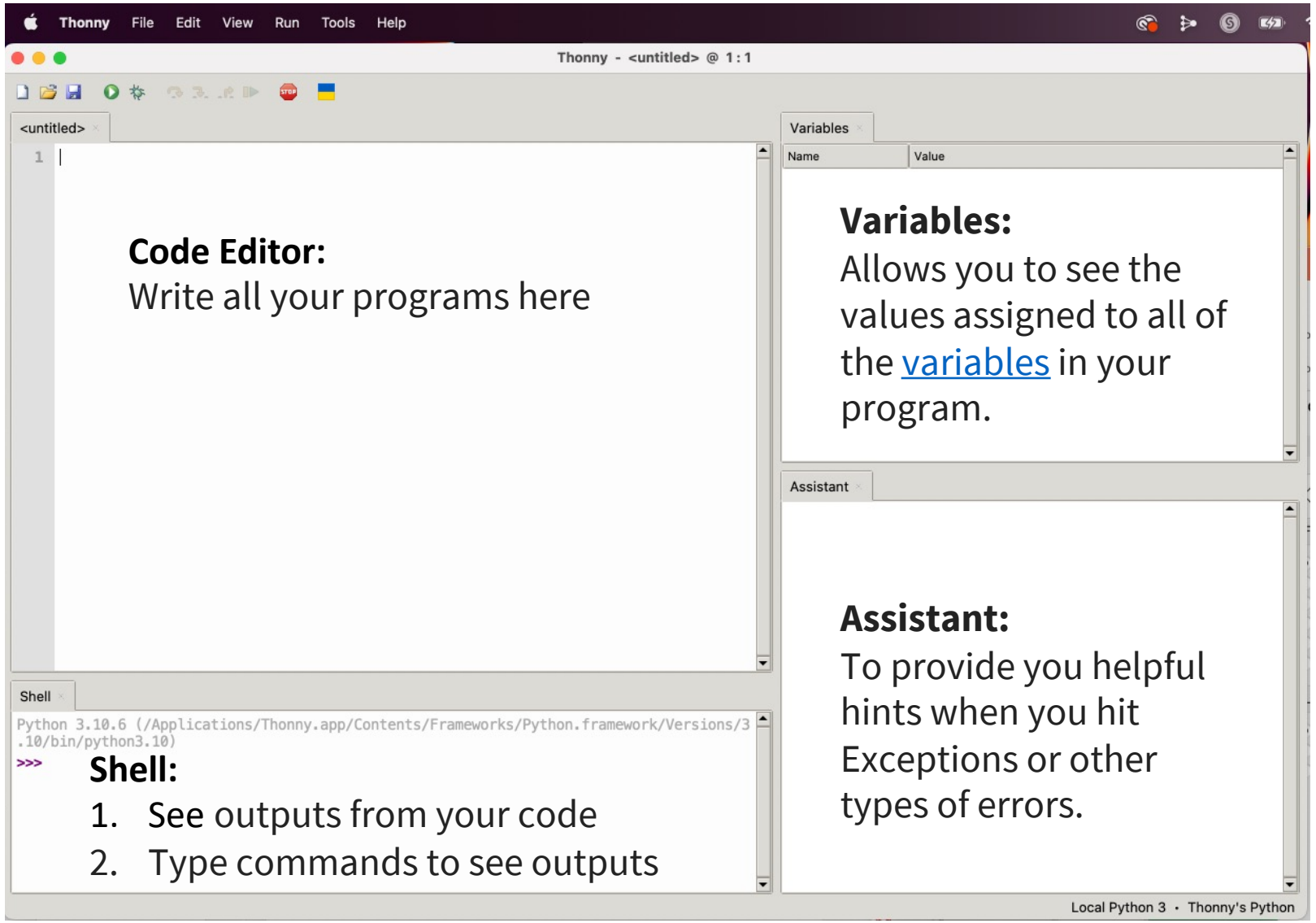
Spring 2024

Photo: Kartik Bulusu

Sources:
Thonny (IDE): https://en.wikipedia.org/wiki/Thonny
Thonny: The Beginner-Friendly Python Editor: https://realpython.com/python-thonny/

Quick peek at the Thonny-editor or integrated development environment (IDE)





More about Thonny-editor or integrated development environment (IDE)

Create a new file

Allows you to open a file that already exists on your computer

Save your code. Press this early and often.

Allows you to run the code, i.e., “Do what I told you do do!”.

Allows you to debug your code.

A bug is another name for a problem.

The arrow icons allow you to run your programs step by step.

These icons are used after you press the bug icon

The resume icon allows you to return to play mode from debug mode.

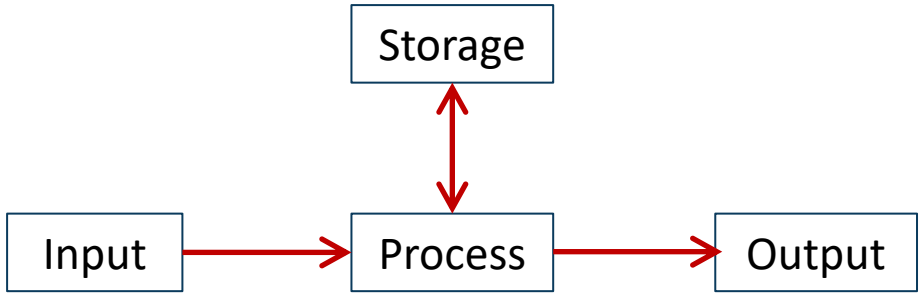
The stop icon allows you to stop running your code

The Recipe Analogy

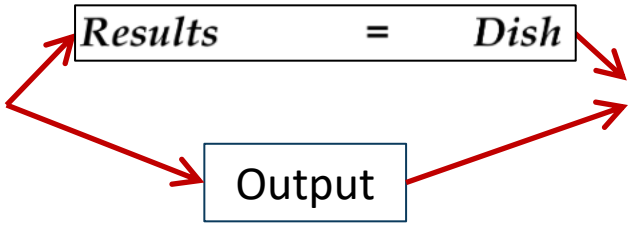
Program = *Recipe*

Laptop = *Cook*

Results = *Dish*
(the program's output)



Counter-intuitively, we start looking at



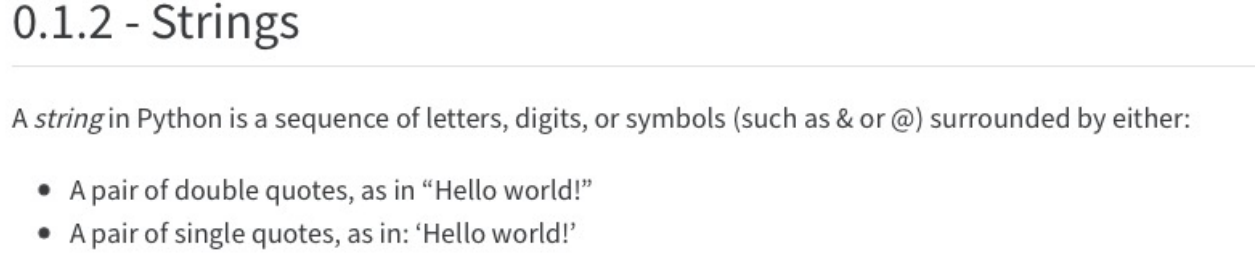
print()

```
>>> print("Hello World!")
>>> print('Hello World!')
>>> print('''George\nWashington was
 an amazing person. A university was
 named after him.''')
```

print()

- By default, Python's `print()` function ends with a newline
- Commas between each entry outputs a space between each entry
- The entry of arguments of `print()` can be strings

More ways to use the `print()` function



Demos

sep

```
print("Hello", "World!" ,"I", "love", Python", sep=",")
```

end

```
print("Hello", "World!" ,"I love Python", end=' ')
```

An escape character is a backslash \ followed by the character you want to insert.

`\'`	Single Quote
`\\`	Backslash
`\n`	New Line
`\r`	Carriage Return
`\t`	Tab
`\b`	Backspace
`\f`	Form Feed
`\ooo`	Octal value
`\xhh`	Hex value

Functions: A first look

A `function` is group of related statements that performs a specific task.

`functions`

- Break your program into smaller and modular chunks.
- Make a program more manageable and modular as a program grows larger and larger
- Avoid repetition and makes the code reusable

`print()`

- Example of a function you just learned
- Built-in function in Python

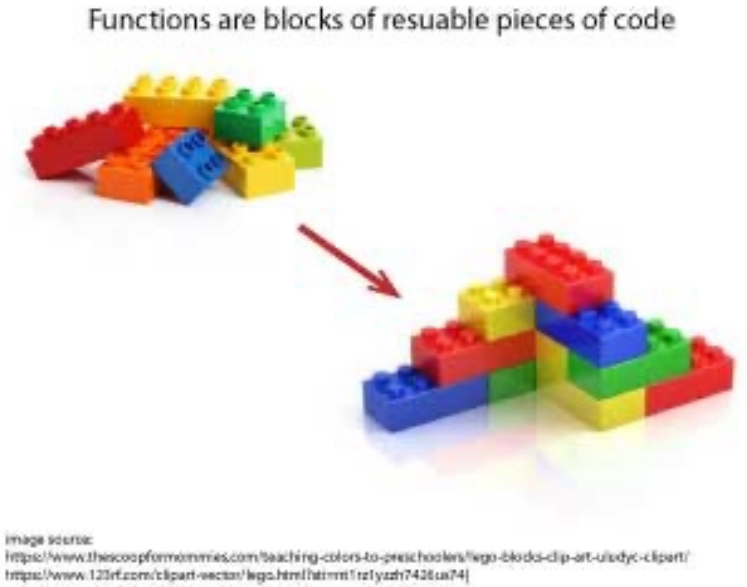
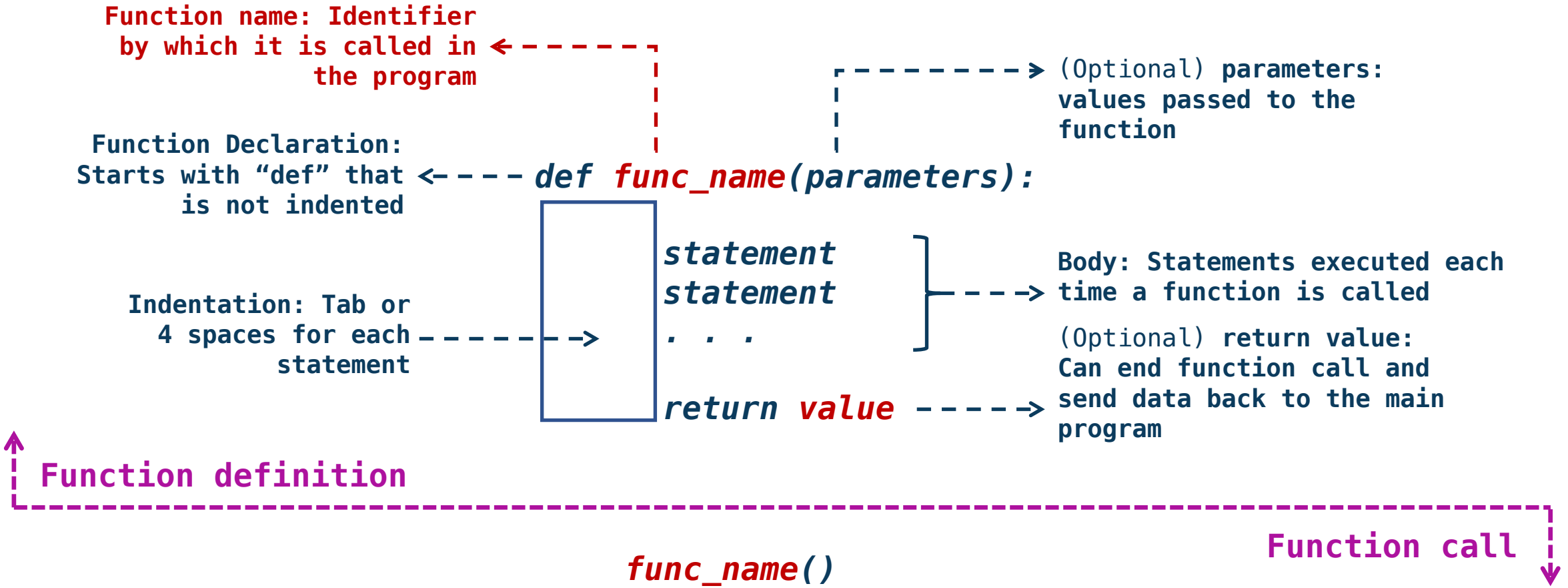
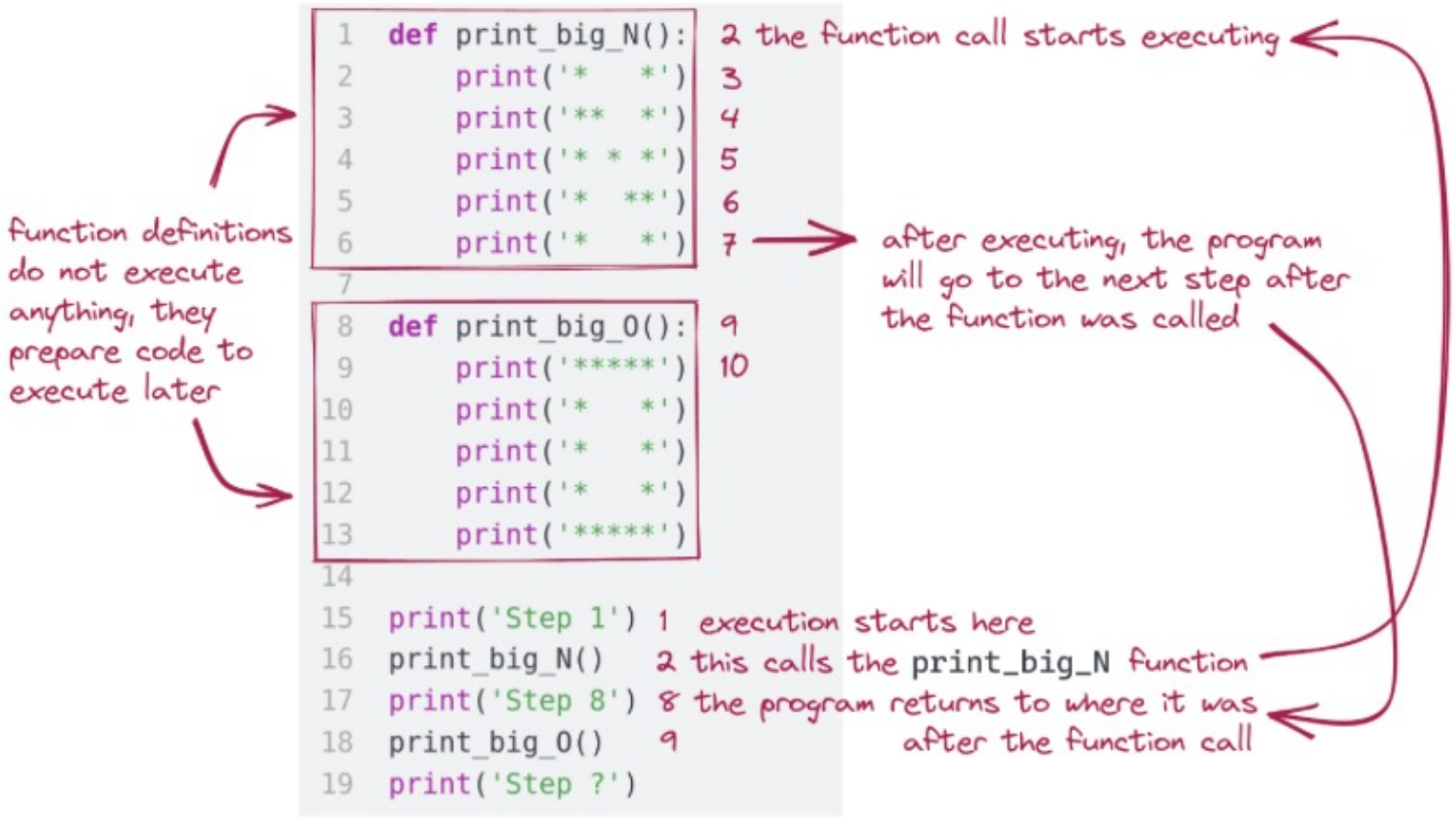


Image source:
https://www.thescoopformommies.com/teaching-colors-to-preschoolers/lego-blocks-clip-art-ulxdyc-clipart/
https://www.123rf.com/clipart-vector/lego.html?sti=mt1rz1yuzh7428ua74|

Syntax and Skeleton of a user-defined `function`



Tracing a `function` in a Python program

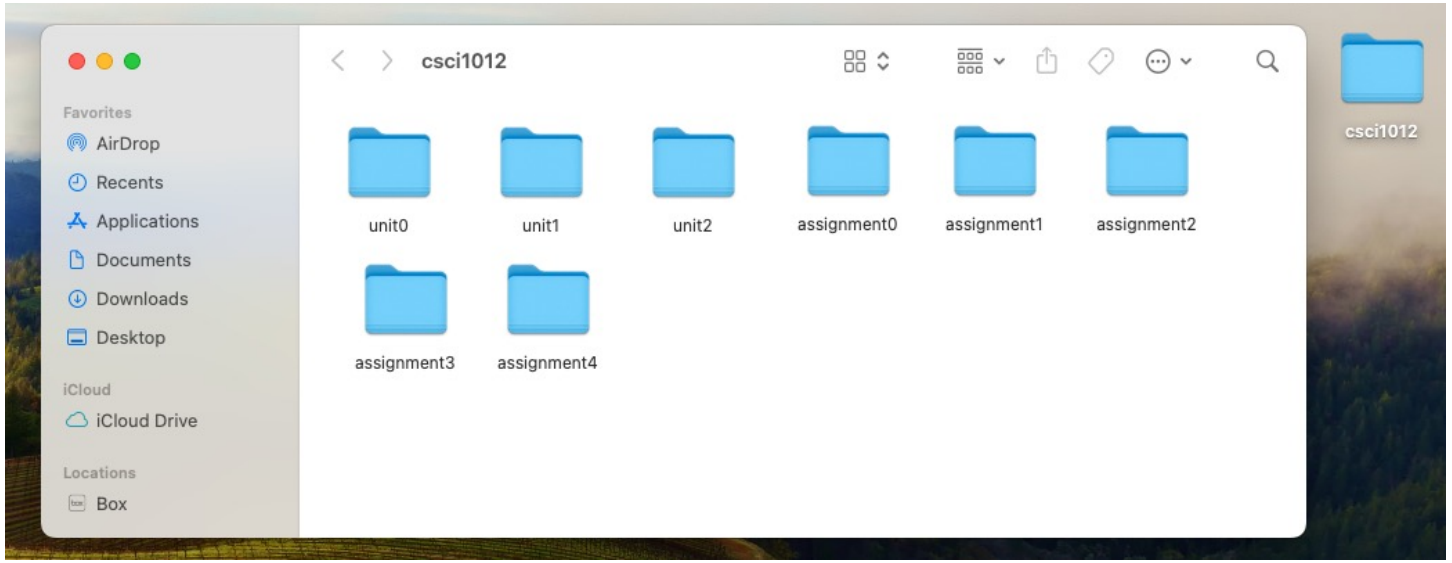


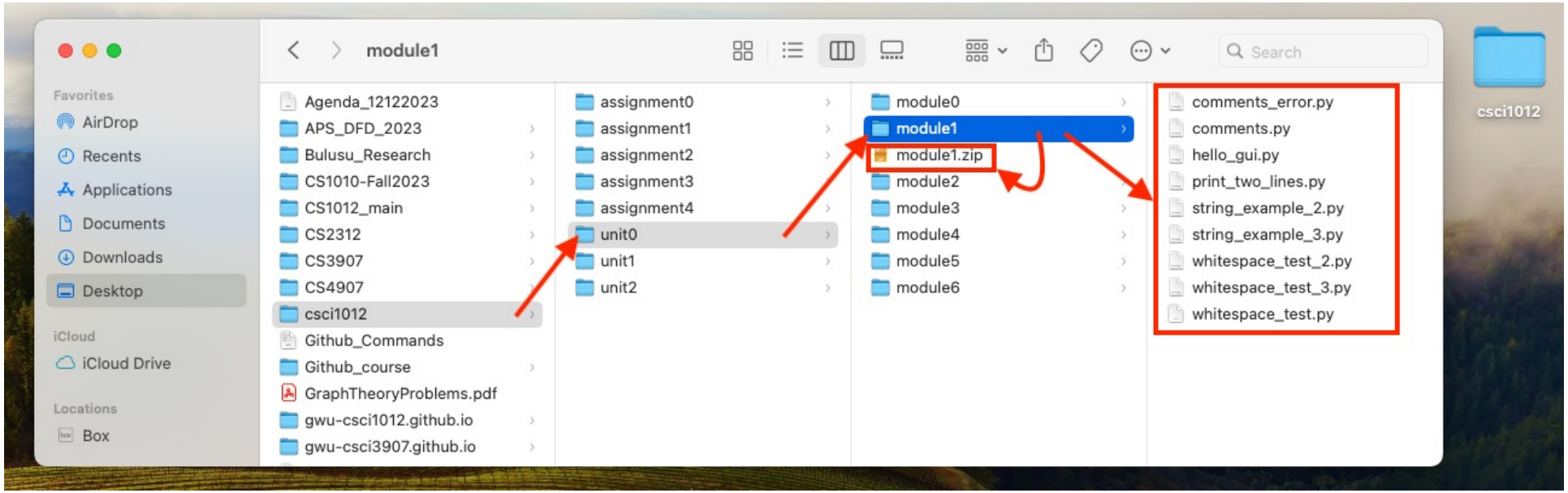

```
1  def print_big_N():
2      print('*   *')
3      print('**  *')
4      print('* * *')
5      print('*  **')
6      print('*   *')
7
8  def print_big_O():
9      print('*****')
10     print('*   *')
11     print('*   *')
12     print('*   *')
13     print('*****')
14
15 print('Step 1')
16 print_big_N()
17 print('Step 8')
18 print_big_O()
19 print('Step ?')
```

Demos

Source: https://www2.seas.gwu.edu/~cs4all/1012/unit0/module0.2.html

File-folder-structure





HWs
- Due dates
- Late work
- Extensions

Date	Topic(s)	Wednesday Lab Date	Friday Lab Date	Assignment(s)
Week 0	Your First Program, `print`	01/17/2024	01/19/2024	Unit 0 » Module 0 (Due **January 24, 2024** by **11:59 PM**)
Week 1 [01/22/2024]	Introduction to Functions	01/24/2024	01/26/2024	Unit 0 » Module 1 & Module 2 (Due **January 31, 2024** by **11:59 PM**)

Late Work

- **Late work is not accepted, with the following exceptions:**
  - Every student many turn in **as many as four (in total, not each) assignments or modules 48 hours after the deadline with no penalty**. Requesting an extension is not necessary.

- **Extensions** will be **granted should there arise circumstances beyond your control** that impede your ability to complete coursework.
  - Notify your professor as soon as feasible in these cases.
    - Examples of such circumstances include (but are not limited to) illness, death in the family, and loss of housing. To ensure fairness toward all students, we will request documentation of such circumstances.