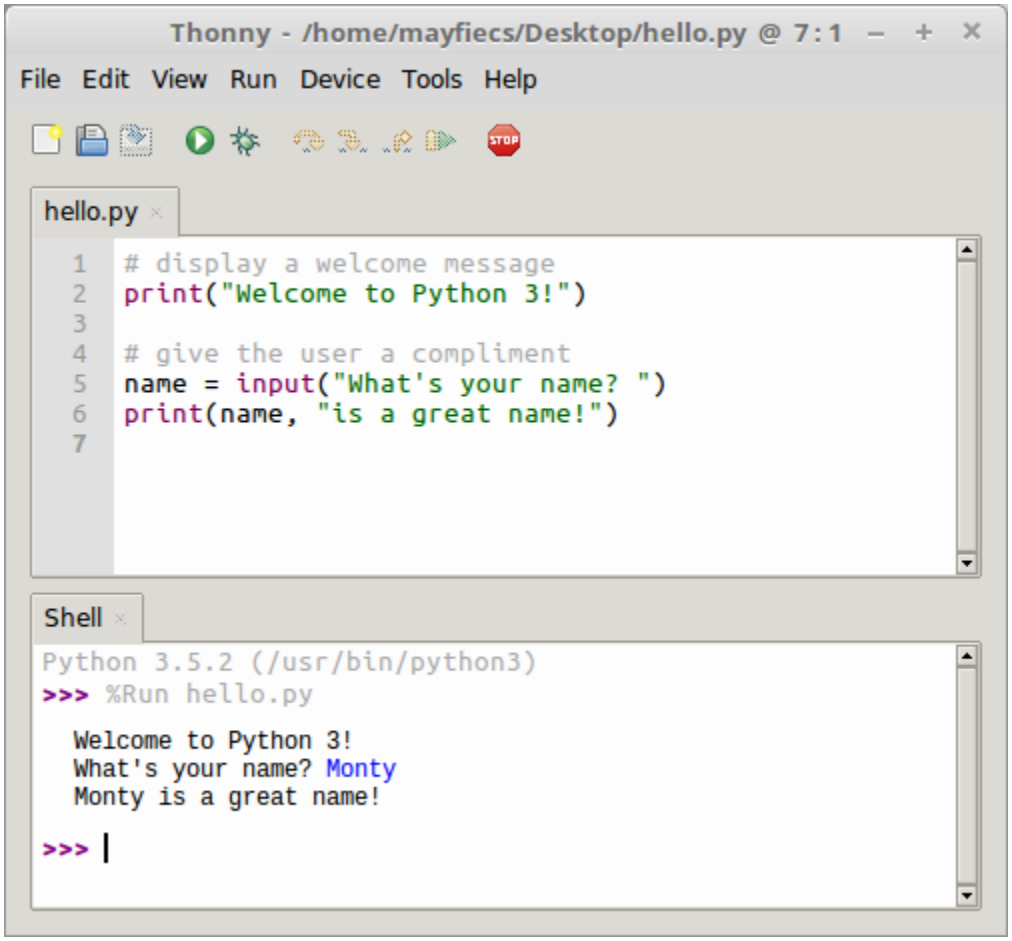
Introduction to Python

In this course, you will work in teams of 3–4 students to learn new concepts. This activity will introduce you to working collaborating in a team. We'll take a first look at variables, assignment, and input/output.

Model 1 Editor and Shell

Thonny is an ***integrated development environment*** (IDE) for Python designed for learning and teaching programming. Thonny is freely available at https://thonny.org/.

Do not run Thonny yet! Answer the questions first!



1. Based on the screenshot in Model 1:

a) where is the ***Shell*** window?

b) where is the ***Editor*** window?

c) what is the name of the file in the Editor?

d) what is the directory where this file is located?

2. Identify the number of lines corresponding to:

a) the program (in the Editor)

b) the output of the program

3. What is the symbol at the start of a line of program text not displayed as output?

4. Consider the three program lines (in the Editor) that do not include text displayed as output. Describe what might be the purpose of:

a) a ***comment*** line (starts with a pound sign: #)

b) a blank line

Now open Thonny on your computer, type the code shown in Model 1, save the file as hello.py, and run the program. Ask for help if you get stuck!

5. What was required before the third line of the program output was displayed?

6. In the Shell window, what is the color of:

a) the program's output?

b) the user's input?

7. Based on your experience so far, what is the difference between the text in the Editor window and the text in the Shell window?

8. Describe what appears to be the purpose of each line of Python code in the Editor window.

a) line 1:

b) line 2:

c) line 3:

d) line 4:

e) line 5:

f) line 6:

Model 2 Python Built-In Functions

You can use ***functions*** to perform specific operations. Some functions require values, known as ***arguments***, to perform their operation. Functions may also ***return*** a value. For example:

```
name = input("What's your name? ")
```

`input` is a function, `"What's your name? "` is an argument, and the return value (typed by the user) is stored in `name`.

The following table shows additional examples of functions. They were written by a scientist to set up an experiment.

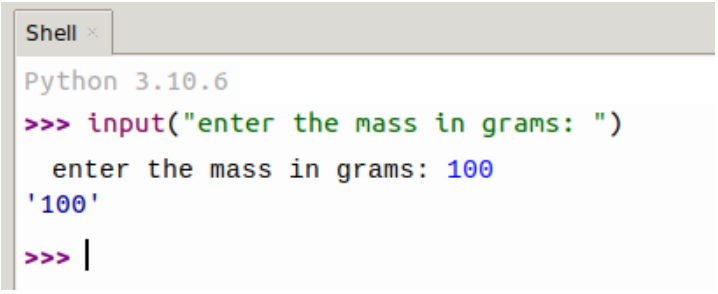
Do not type anything yet! Read the questions first!

9. List the names of the three functions used in Model 2.

10. What are the arguments of the first use of the `print` function?

11. Type the first three lines of code in a Python **Shell**, one line at a time, and write the resulting output in the right column of the table. When prompted, enter a number of your choice:

Python code	Shell output
`input("enter the mass in grams:  ")`	
`mass = input("enter another mass in grams:  ")`	
`mass`	
`unit = input("enter the units for mass:  ")`	
`print(mass, unit)`	
`print(mass / 2)`	
`ten = 10`	
`print(ten / 2)`	
`abs(-1)`	
`abs(-1 * ten)`	



12. Type the remaining lines of code in a Python **Shell**, one line at a time, and write the resulting output (if observed) in the right column of the table. If an error occurs, write what type of error it was (i.e., the first word of the last line of the error message).

13. Which function delayed execution until additional input was entered?

14. Which term, ***user*** or ***programmer***, best defines the role of the person who entered the additional input? Explain.

15. Based on the Shell output, what does the word `mass` represent, and how did it get its value?

16. What does the word `ten` represent, and how did it get its value?

17. Do the values of `mass` and `ten` both represent a number? Explain why or why not.