

PYTHON

PYTHON FUNCTION

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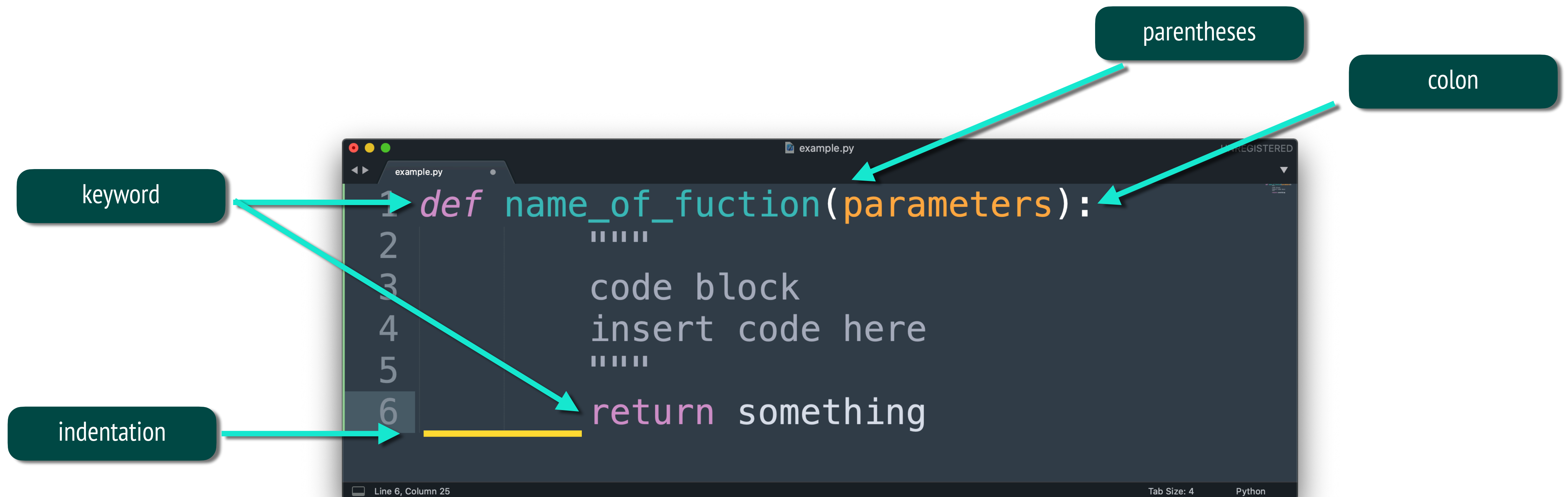
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OUTLINE

- Definition
- Function construction
- Function parameter
- Assignment

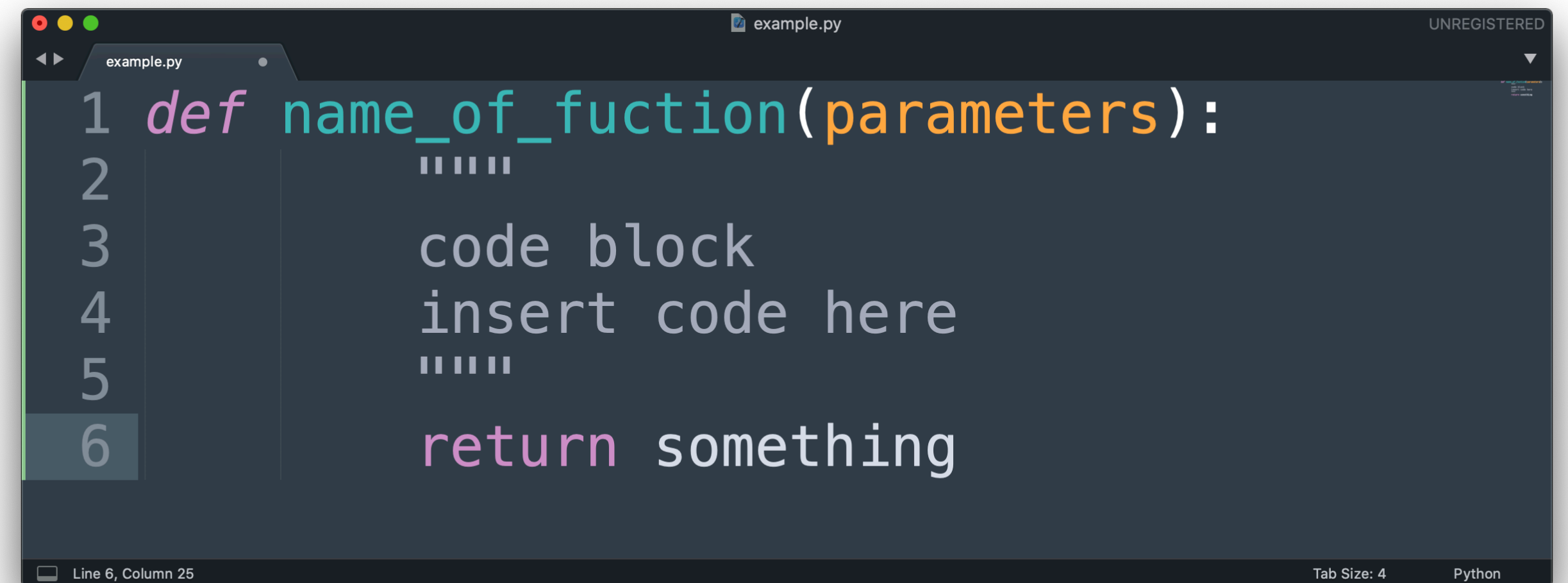
DEFINITION

- A function is a block of code which only runs when it is called
- You can pass data, known as parameters, into a function
- A function can return data as a result.

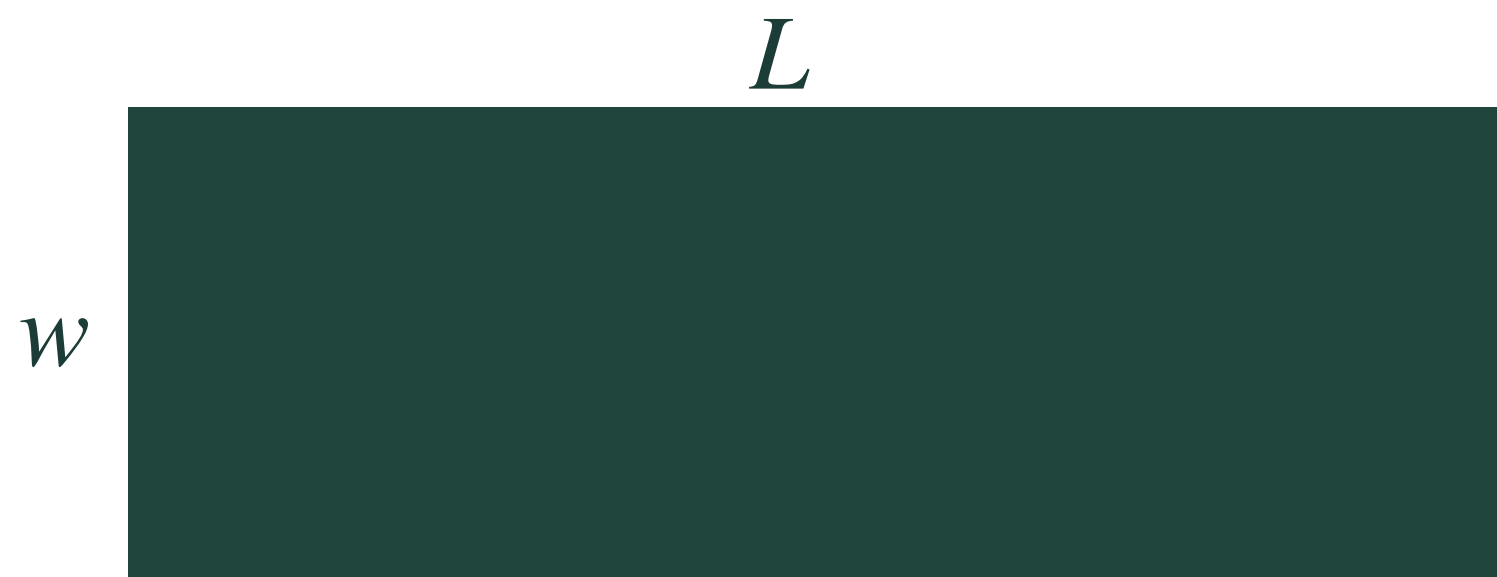


NOTES FOR FUNCTION CONSTRUCTION

- Define function name
 - ➡ Lowercase with underscores and begin with a verb
- Indentation
 - ➡ Use 4 spaces or 1 tab for indentation
- Determine function parameters
 - ➡ Input data help the function done
- Do docstring
 - ➡ Explain and describe the function
- Output of the function

A screenshot of a code editor window titled 'example.py'. The editor shows a Python function definition. Line 1: 'def name_of_fuction(parameters):'. Line 2: ' ""'. Line 3: ' code block'. Line 4: ' insert code here'. Line 5: ' ""'. Line 6: ' return something'. The code is color-coded: 'def' is pink, 'name_of_fuction' is teal, 'parameters' is orange, and 'return' is pink. The status bar at the bottom shows 'Line 6, Column 25', 'Tab Size: 4', and 'Python'. The top right corner says 'UNREGISTERED'.

EXAMPLE



- Area of this rectangle?

$\Rightarrow S = L \times w$

```
localhost
Python - Jupyter Notebook
jupyter Python (unsaved changes)
File Edit View Insert Cell Kernel Widgets Help
In [6]: def compute_rectangle_area(height, width):
        """
        This function aims to compute area for a rectangle
        height : the height of the rectangle
        width : the width if the rectangle
        This function return the area
        """
        area = height * width
        return area

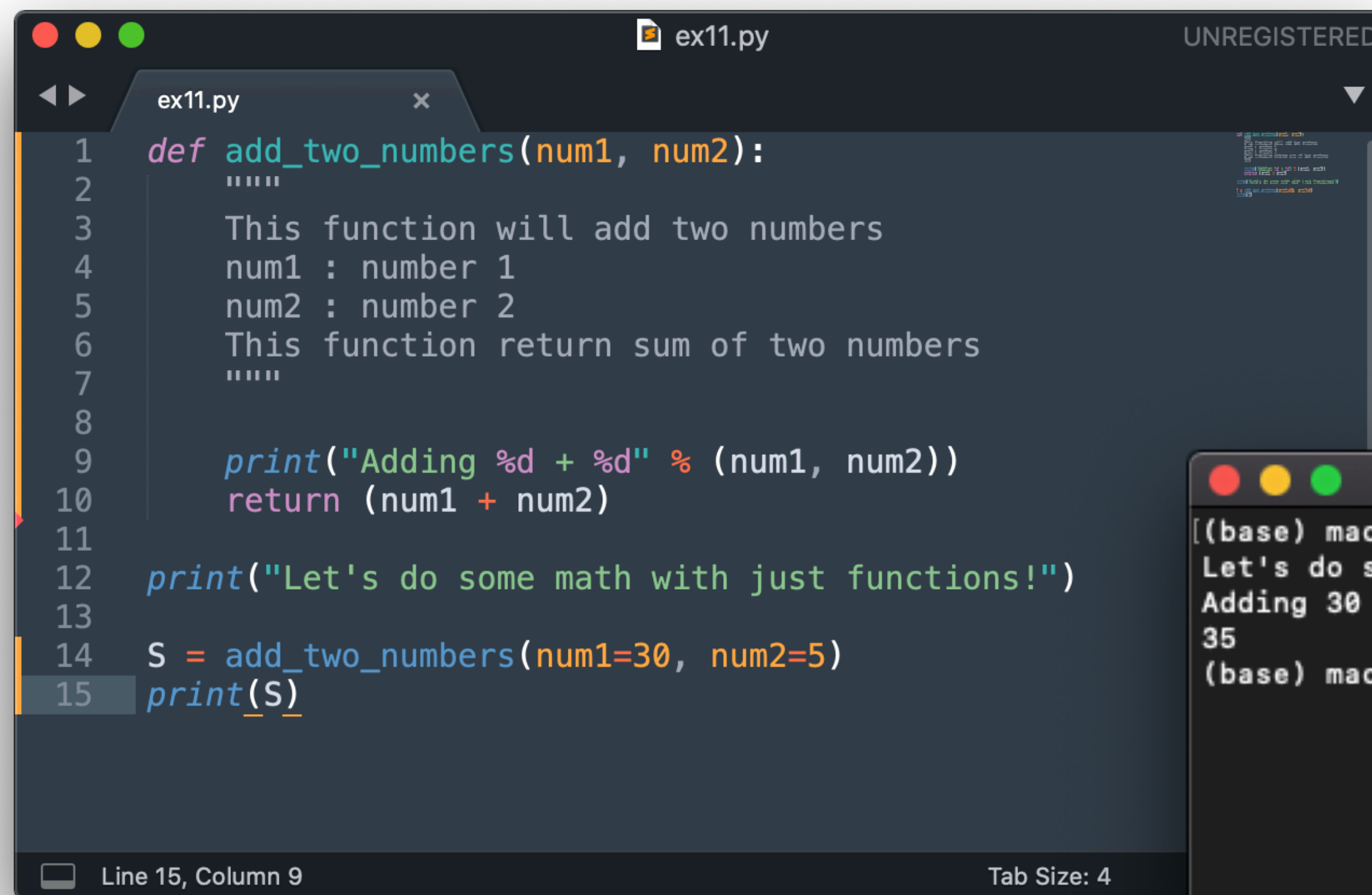
In [7]: S = compute_rectangle_area(height=5, width=6)
        print("the area of the rectangle is: ", S)

        the area of the rectangle is: 30
```

Name	compute_rectangle_area
Parameters	height, width
Output	area

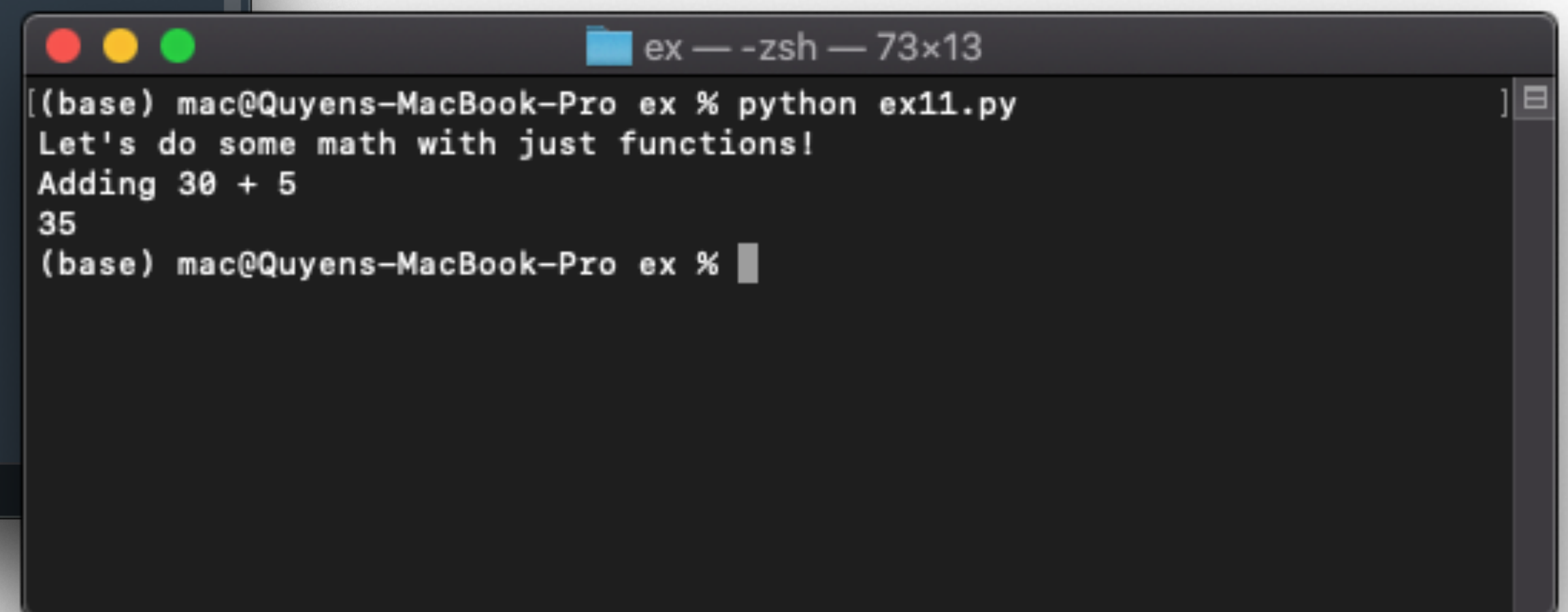
FUNCTION CREAT/CALL

- You can **create** a function by using the word `def` in Python
- To **call** a function, use the function name followed by parenthesis



```
1 def add_two_numbers(num1, num2):
2     """
3     This function will add two numbers
4     num1 : number 1
5     num2 : number 2
6     This function return sum of two numbers
7     """
8
9     print("Adding %d + %d" % (num1, num2))
10    return (num1 + num2)
11
12    print("Let's do some math with just functions!")
13
14    S = add_two_numbers(num1=30, num2=5)
15    print(S)
```

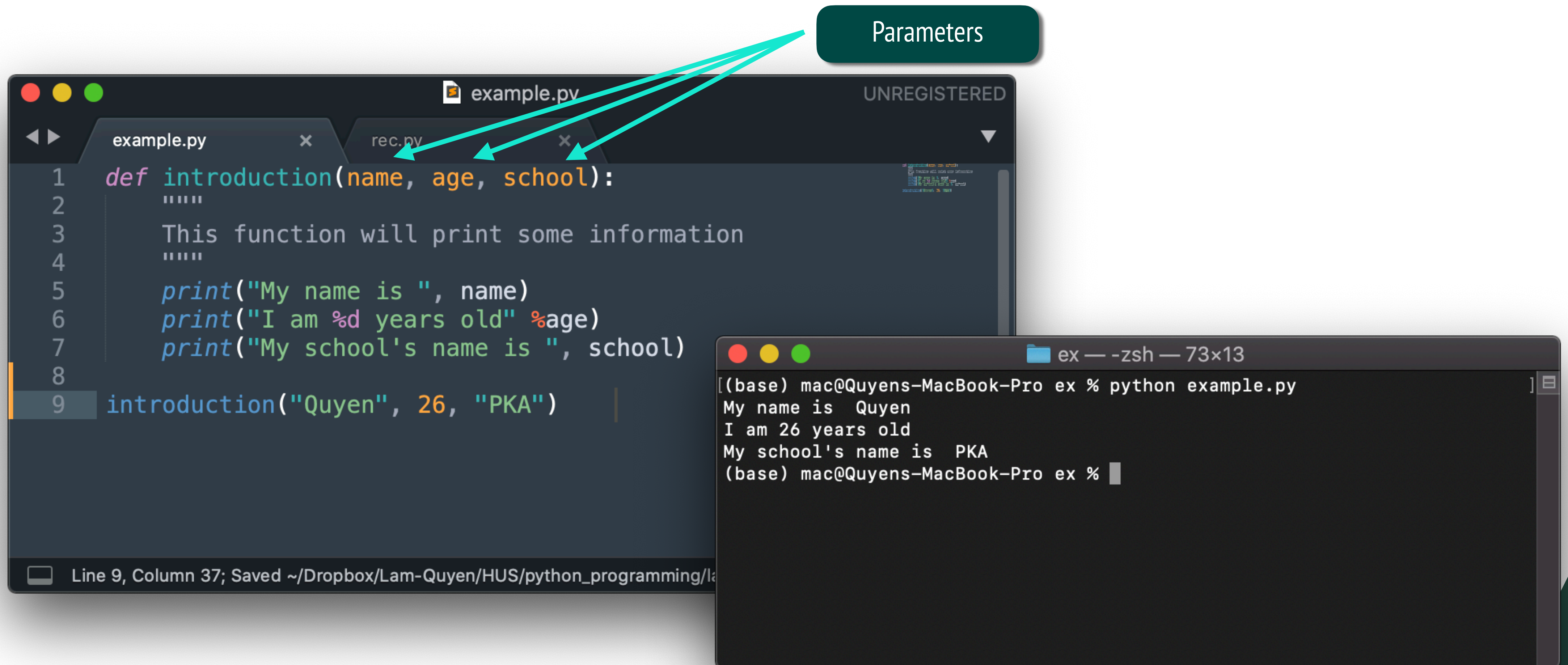
Line 15, Column 9 Tab Size: 4



```
ex — -zsh — 73x13
[(base) mac@Quyens-MacBook-Pro ex % python ex11.py
Let's do some math with just functions!
Adding 30 + 5
35
(base) mac@Quyens-MacBook-Pro ex %
```

FUNCTION PARAMETERS

- Information that are passed into a function
- You can add as many arguments/parameters as you want, just separate them with a comma



The image shows a code editor window with two tabs: 'example.py' and 'rec.py'. The 'example.py' tab is active and contains the following Python code:

```
1 def introduction(name, age, school):
2     """
3     This function will print some information
4     """
5     print("My name is ", name)
6     print("I am %d years old" %age)
7     print("My school's name is ", school)
8
9 introduction("Quyen", 26, "PKA")
```

Three red arrows point from a red box labeled 'Parameters' to the parameters 'name', 'age', and 'school' in the function definition on line 1.

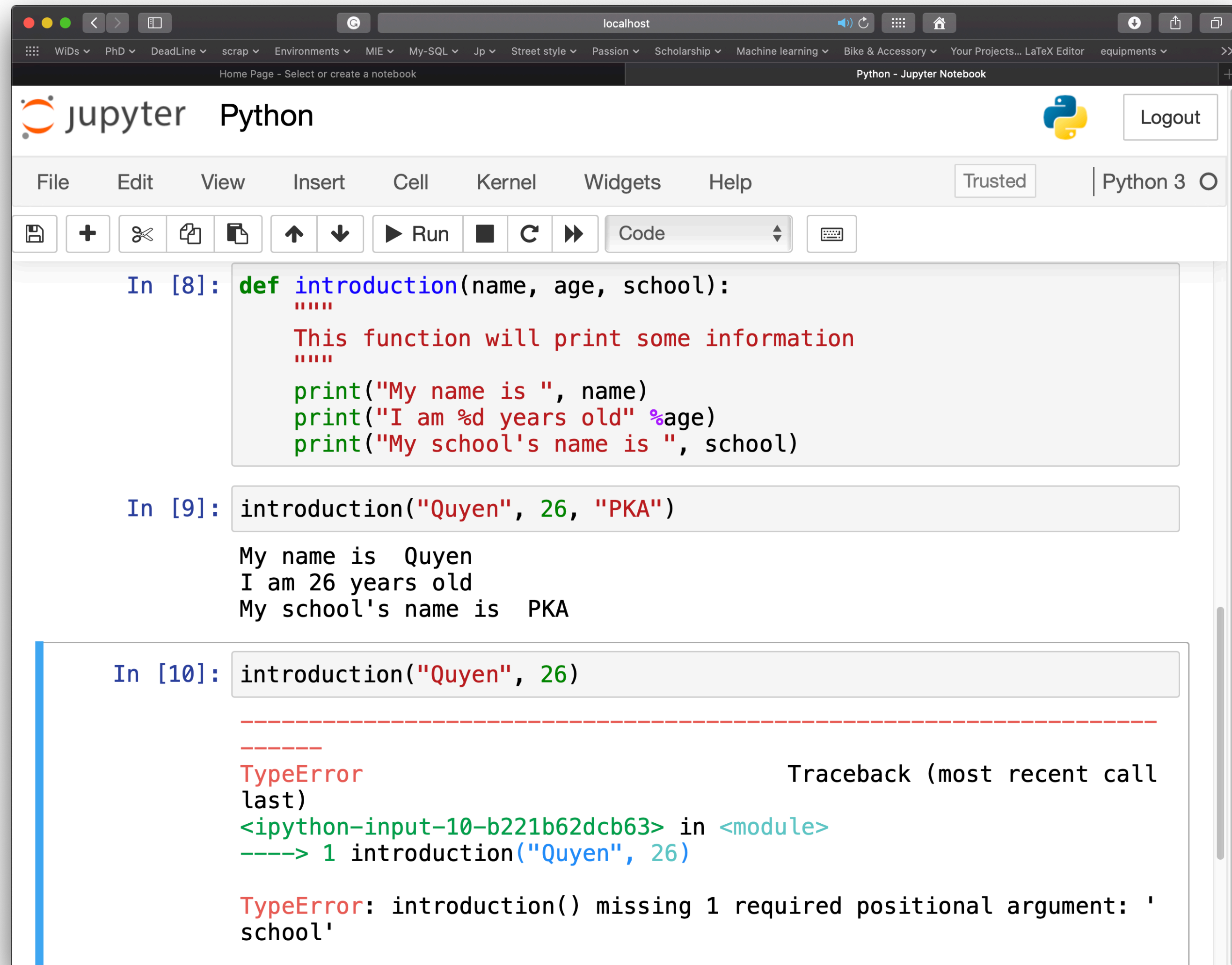
Below the code editor is a terminal window titled 'ex — -zsh — 73x13'. It shows the output of running the Python script:

```
[(base) mac@Quyens-MacBook-Pro ex % python example.py
My name is  Quyen
I am 26 years old
My school's name is  PKA
(base) mac@Quyens-MacBook-Pro ex %
```

The status bar at the bottom of the code editor indicates 'Line 9, Column 37; Saved ~/Dropbox/Lam-Quyen/HUS/python_programming/la'.

FUNCTION PARAMETERS

- By default, a function must be called with the correct number of arguments.



```
In [8]: def introduction(name, age, school):
        """
        This function will print some information
        """
        print("My name is ", name)
        print("I am %d years old" %age)
        print("My school's name is ", school)

In [9]: introduction("Quyen", 26, "PKA")

My name is Quyen
I am 26 years old
My school's name is PKA

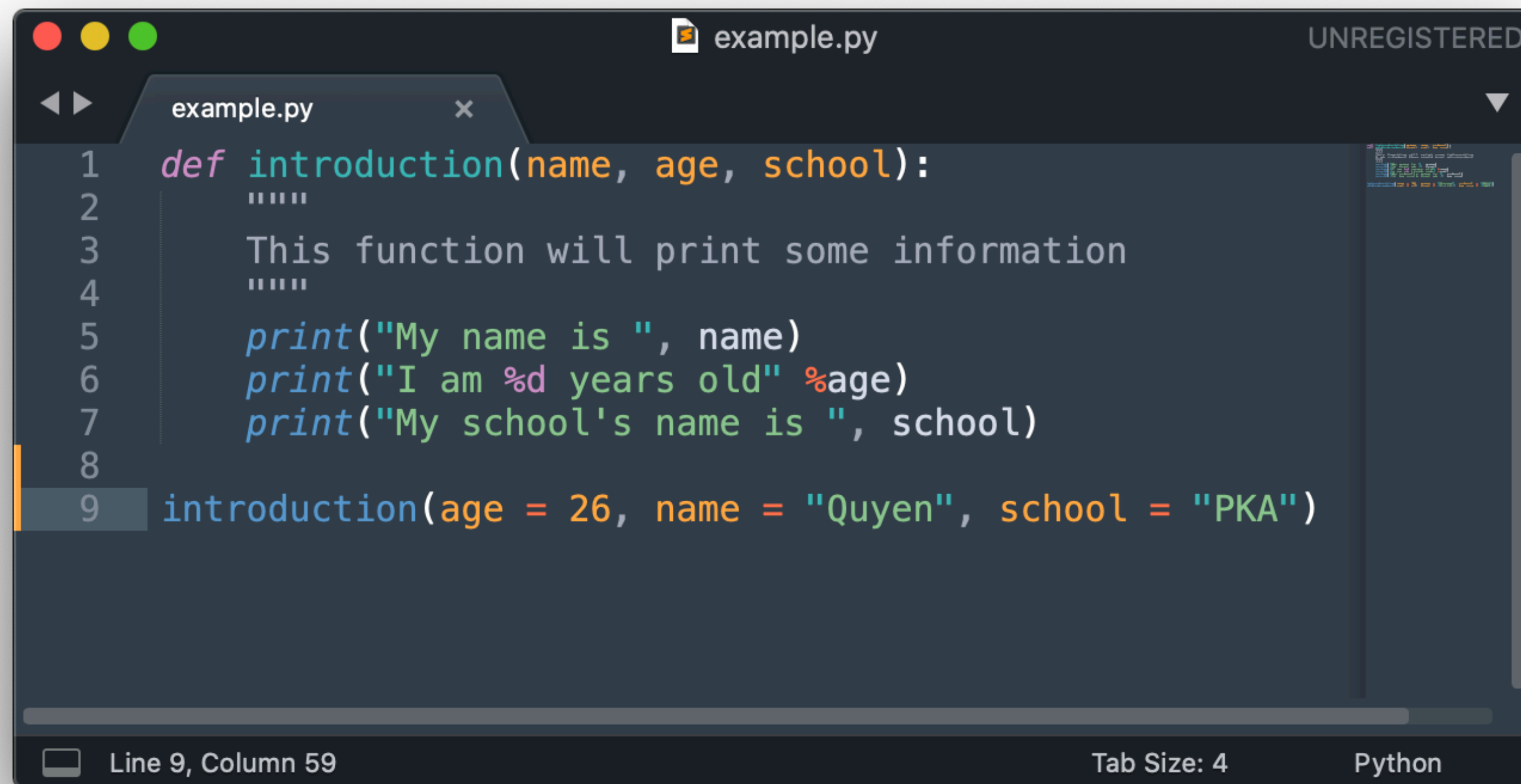
In [10]: introduction("Quyen", 26)

-----
TypeError                                 Traceback (most recent call
last)
<ipython-input-10-b221b62dcb63> in <module>
----> 1 introduction("Quyen", 26)

TypeError: introduction() missing 1 required positional argument: '
school'
```


FUNCTION PARAMETERS

- You can also send arguments with the `key = value` syntax
- This way **the order** of the arguments **does not matter**

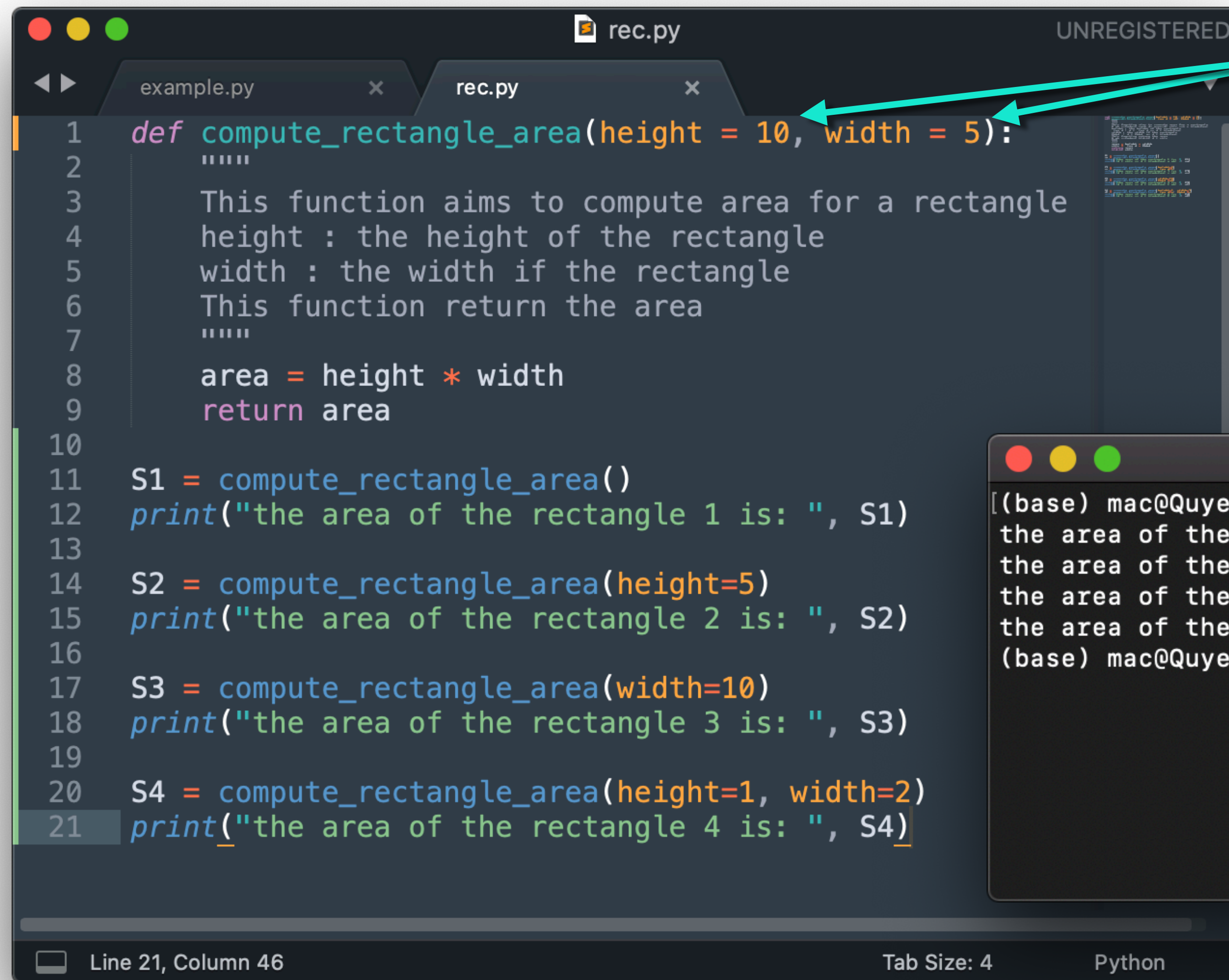


```
example.py UNREGISTERED
1 def introduction(name, age, school):
2     """
3     This function will print some information
4     """
5     print("My name is ", name)
6     print("I am %d years old" %age)
7     print("My school's name is ", school)
8
9 introduction(age = 26, name = "Quyen", school = "PKA")
```

Line 9, Column 59 Tab Size: 4 Python

FUNCTION PARAMETERS

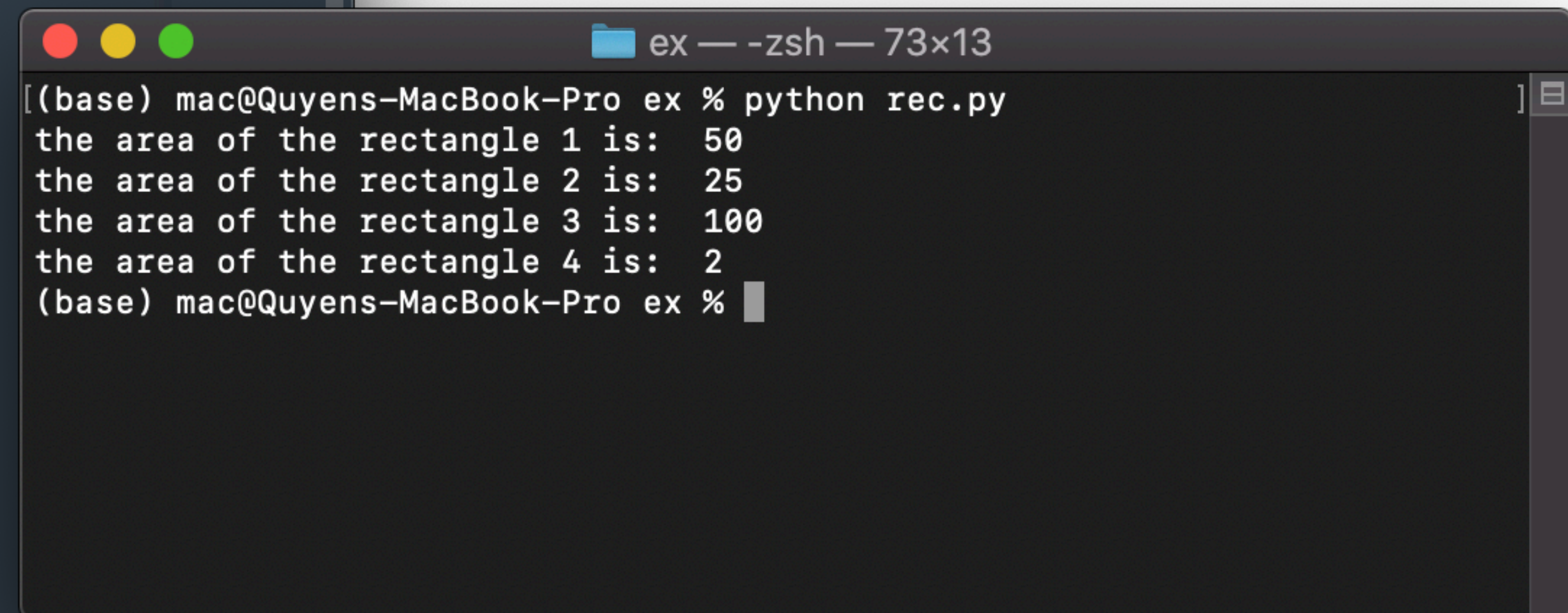
- If we call the function **without** argument, it will use the **default values**



```
1 def compute_rectangle_area(height = 10, width = 5):
2     """
3     This function aims to compute area for a rectangle
4     height : the height of the rectangle
5     width : the width if the rectangle
6     This function return the area
7     """
8     area = height * width
9     return area
10
11 S1 = compute_rectangle_area()
12 print("the area of the rectangle 1 is: ", S1)
13
14 S2 = compute_rectangle_area(height=5)
15 print("the area of the rectangle 2 is: ", S2)
16
17 S3 = compute_rectangle_area(width=10)
18 print("the area of the rectangle 3 is: ", S3)
19
20 S4 = compute_rectangle_area(height=1, width=2)
21 print("the area of the rectangle 4 is: ", S4)
```

Line 21, Column 46 Tab Size: 4 Python

default values



```
(base) mac@Quyens-MacBook-Pro ex % python rec.py
the area of the rectangle 1 is: 50
the area of the rectangle 2 is: 25
the area of the rectangle 3 is: 100
the area of the rectangle 4 is: 2
(base) mac@Quyens-MacBook-Pro ex %
```


ASSIGNMENT
