CS 100A Week 3

Functions, parameters, and doctests

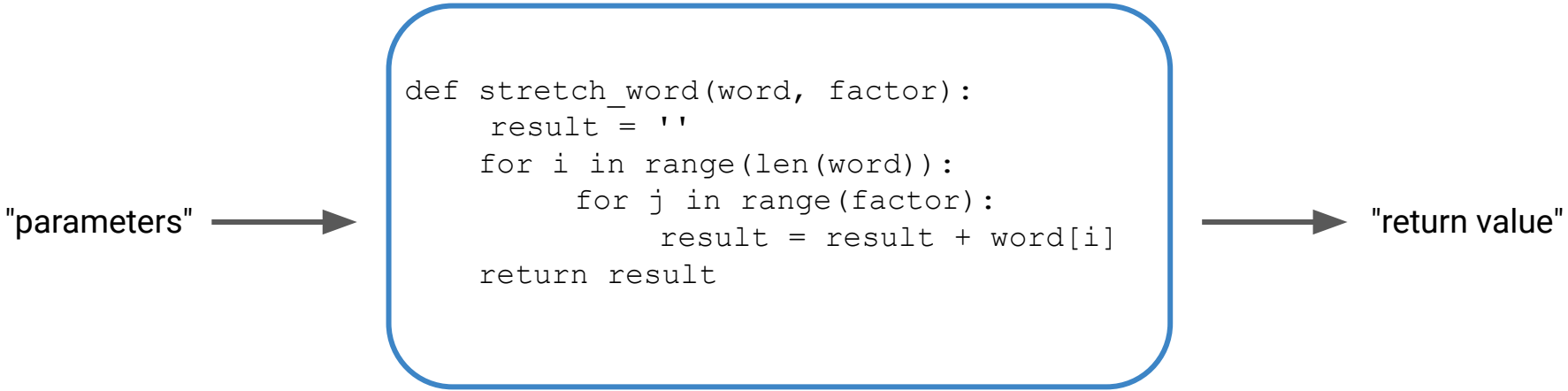
Safety message follow-up  

 Rose, bud, thorn!

Functions


input(s)
function
output

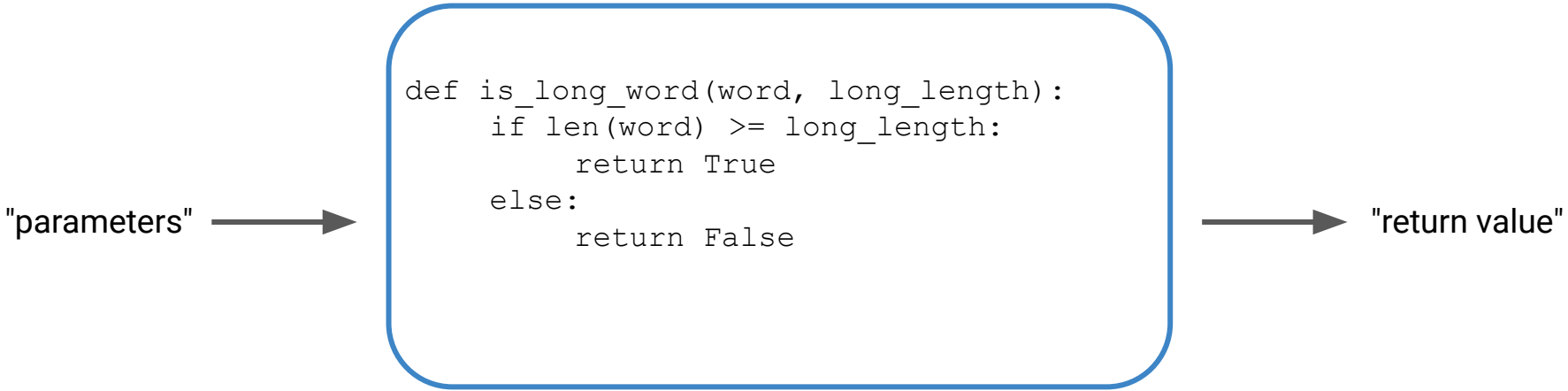

"parameters"
function
"return value"

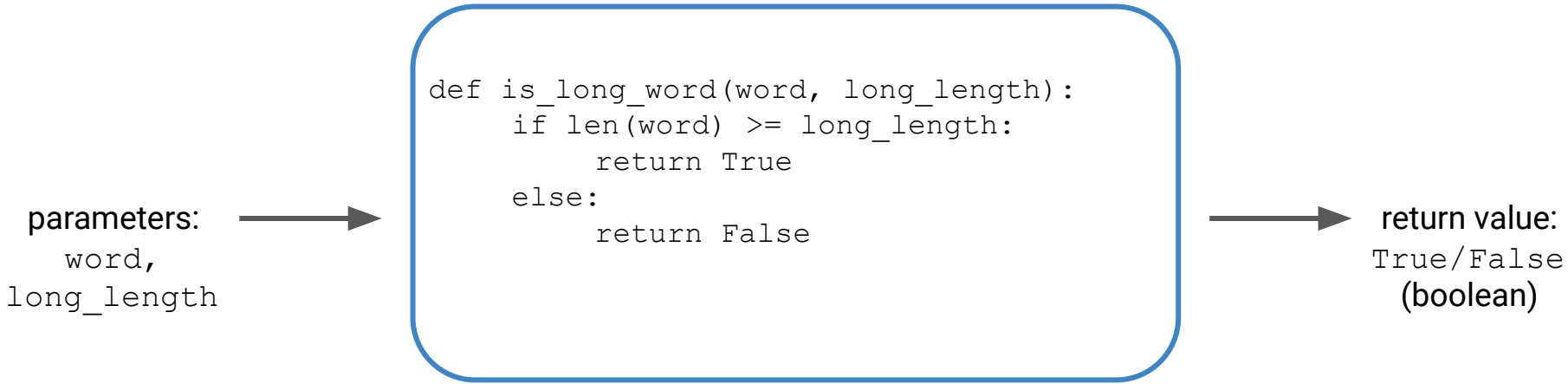

"parameters"
def stretch_word(word, factor):
result = ''
for i in range(len(word)):
for j in range(factor):
result = result + word[i]
return result
"return value"

parameters:
`word, factor`

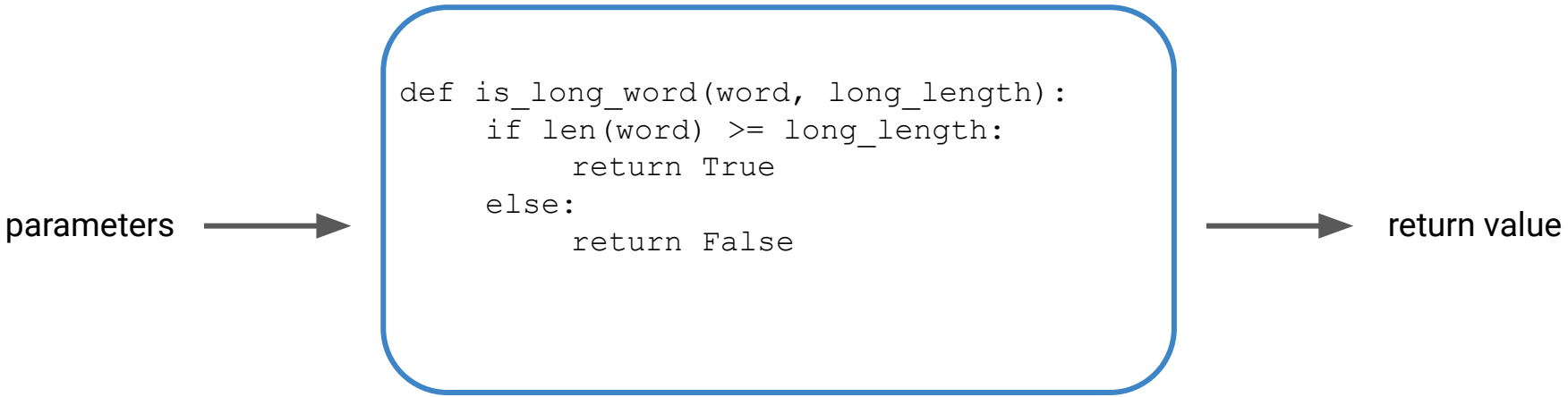
```
def stretch_word(word, factor):
    result = ''
    for i in range(len(word)):
        for j in range(factor):
            result = result + word[i]
    return result
```

return value:
`result`


"parameters"
def is_long_word(word, long_length):
if len(word) >= long_length:
return True
else:
return False
"return value"


parameters:
word,
long_length
def is_long_word(word, long_length):
if len(word) >= long_length:
return True
else:
return False
return value:
True/False
(boolean)

You can use the return value of a function inside other code!




```
if is_long_word(word, long_length):
    …code here…
```

Strings 📖

A **string** is composed of **characters**.

String = sequence of characters, each with its own **index**

'Andrea'

	'A'	**'n'**	**'d'**	**'r'**	**'e'**	**'a'**
indices:	0	1	2	3	4	5

Some cool things we can do with strings

Loop over all characters in a string

```
word = 'Andrea'

for i in range(len(word)):

    print(word[i])
```

Loop over all characters in a string

```
word = 'Andrea'

for i in range(len(word)):

    print(word[i])
```

This is how we access the character at position i.

word[i] = "The character of the string `word` at position i"

What will `word[3]` be?

"Concatenate" two strings together

```
word = 'I am always hungry before ACE section'

word = word + '!!!'
```

`word` will now equal `'I am always hungry before ACE section!!!'`

Check if a character is a letter, number, or space

```
word = 'A string with letters, 1 number, and some spaces.'

for i in range(len(word)):

    character = word[i]

    is_letter = character.isalpha()

    is_number = character.isdigit()

    is_space = character.isspace()
```

Doctests

aka how do I know if my code is correct?

Doctest example

```
def echo(s, n):
    """
    >>> echo('ace', 3)
    'aaaccceee'
    """
    # TODO: YOUR CODE HERE!
```

Doctest example

```
def echo(s, n):
    """
    >>> echo('ace', 3)
    'aaaccceee'
    """
    # TODO: YOUR CODE HERE!
```

test case: How would you potentially call this function in other code? What parameters could someone possibly pass into this function?

expected output from that test case

Doctest tips

- Write multiple test cases

- MAKE SURE YOUR TEST CASES COVER ALL POSSIBLE INPUTS TO YOUR FUNCTION! or at least most of them

Let's do some problems as a class!

Under the hood: doctests vs. running a program on the command line

Running a file on the command line…

- will run all the code in your file, starting from the "main" function
- actually *runs* the code

Doctests…

- will only run the test cases you specify
- "mocks" running it on the command line