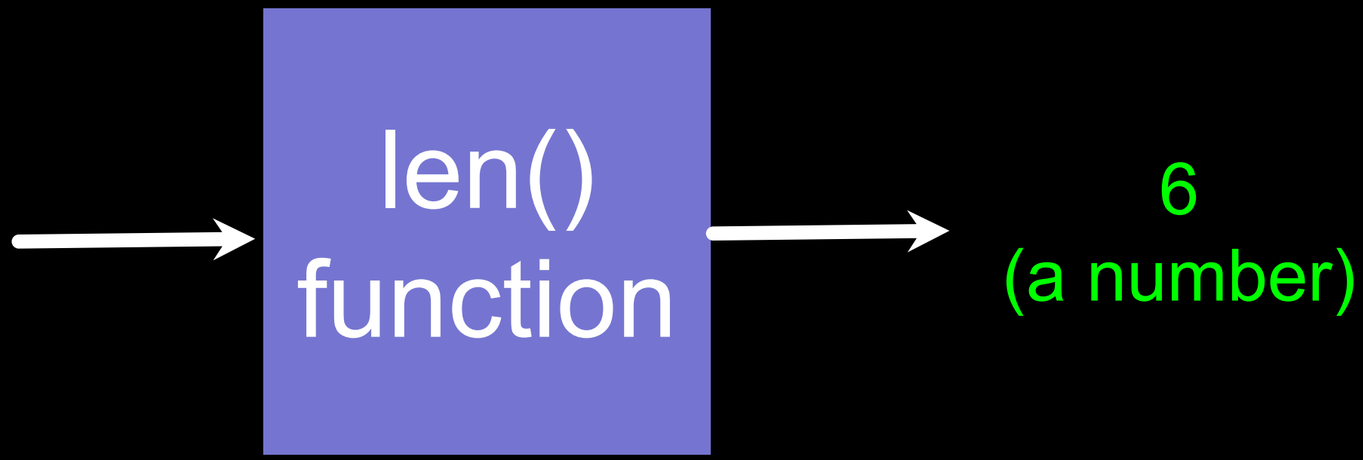
Functions

Lecture 5

len Function

```
>>> fruit = 'banana'
>>> x = len(fruit)
>>> print(x)
6
```

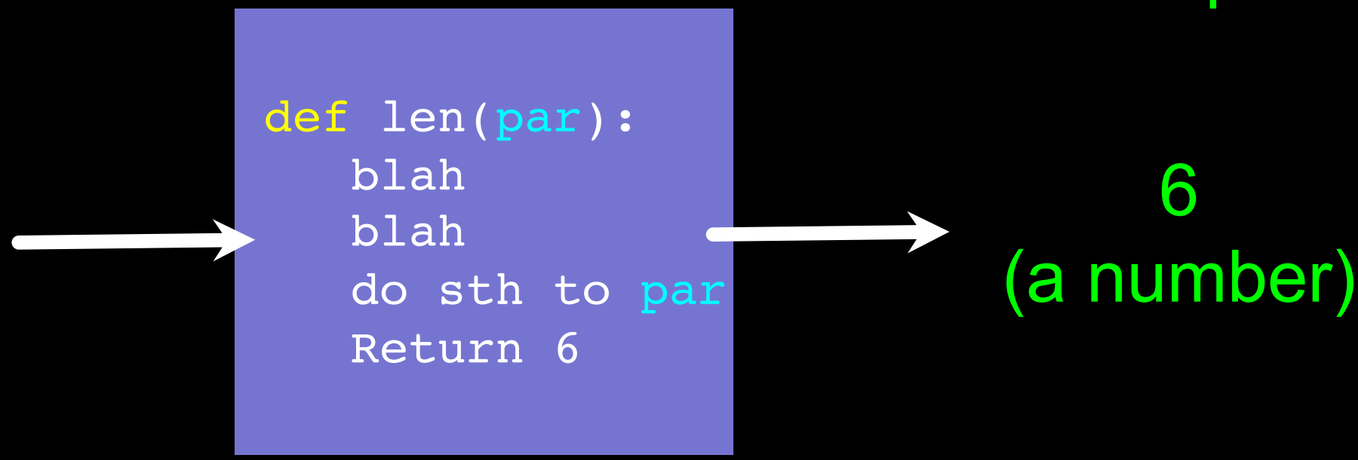
Function:
some stored code



len Function

```
>>> fruit = 'banana'
>>> x = len(fruit)
>>> print(x)
6
```

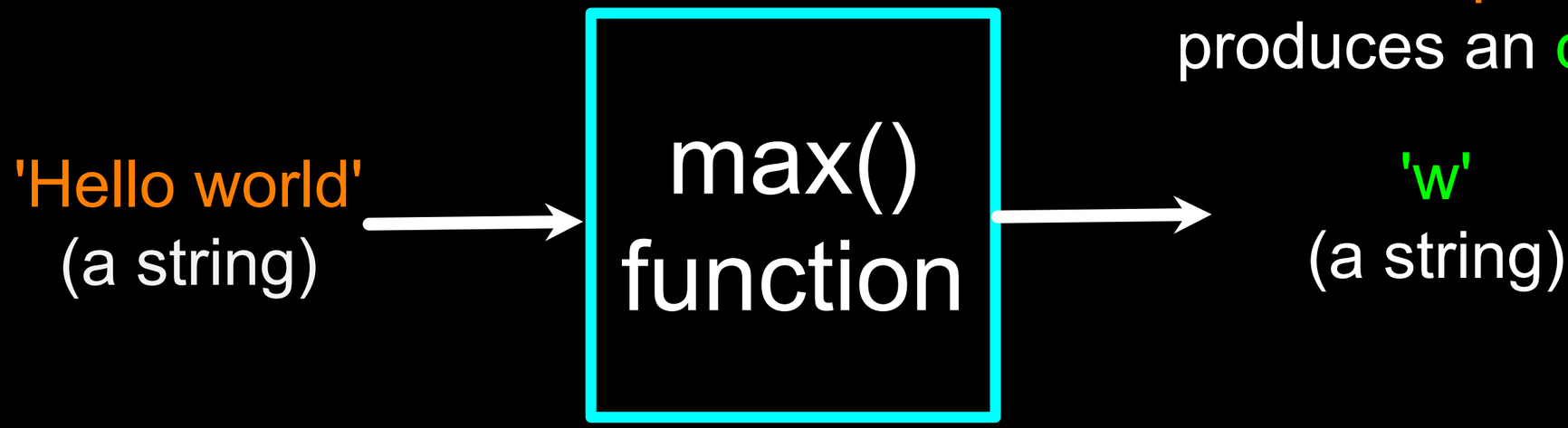
A function is some stored code that we use. A function takes some input and produces an output.

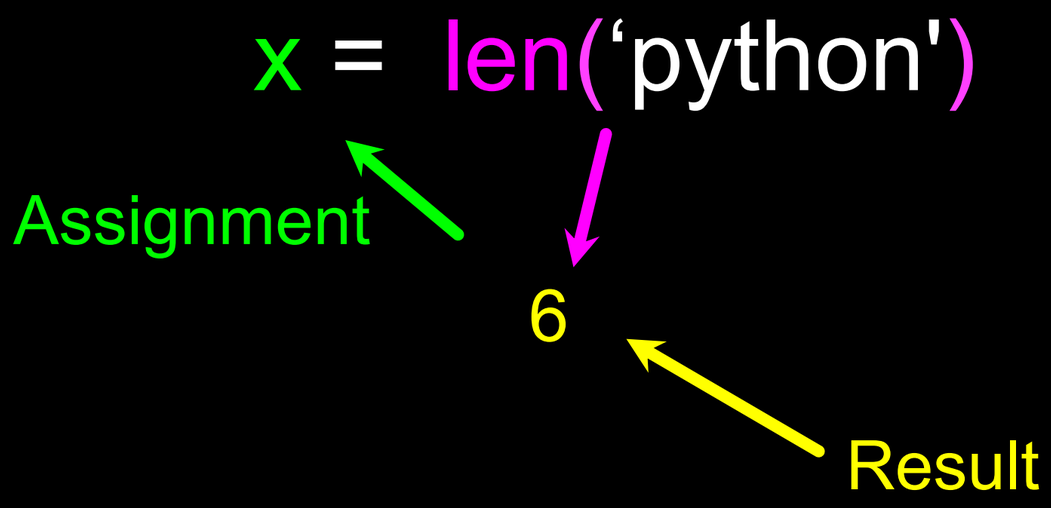


Max Function

```
>>> big = max('Hello world')
>>> print(big)
w
```

A function is some stored code that we use. A function takes some input and produces an output.






```
>>> x = len(‘python')
>>> print(x)
6
```

Python Functions

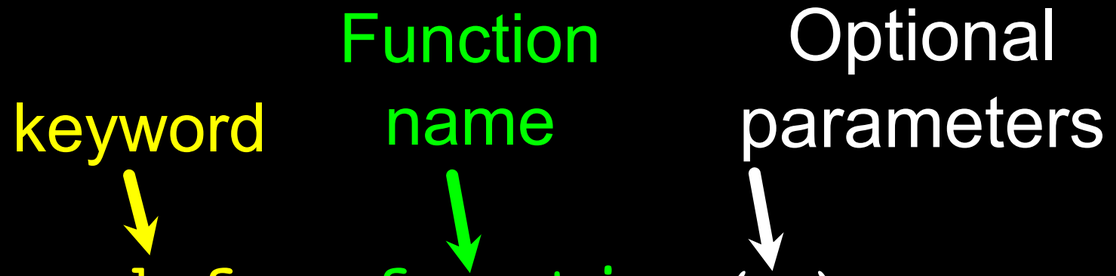
- There are two kinds of functions in Python.

  - Built-in functions that are provided as part of Python - print(), input(), type(), float(), int() ...

  - Functions that we define ourselves and then use

Functions of Our Own…

Building our Own Functions




```
def myfunction( ):
    print(”This is my first function.")
    print(‘A test to see if it works.')
```

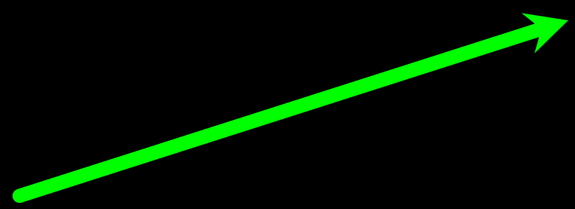
myfunction():

```
print(”This is my first function.")
print(‘A test to see if it works.')
```

```
x = 5
print('Hello')

def myfunction():
    print(”This is my first function.")
    print(‘A test to see if it works.')

print(‘Bye')
x = x + 2
print(x)
```



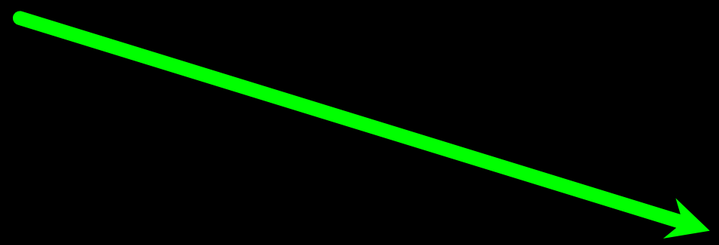
Define the function
but **does not execute** the
body of the function

Output:
Hello
Bye
7

```
x = 5
print('Hello')

def myfunction():
    print(”This is my first function.")
    print(‘A test to see if it works.')

print(‘Bye’)
myfunction()
x = x + 2
print(x)
```



```
Hello
Bye
This is my first function.
A test to see if it works.
7
```

Functions That Return Values

keyword

Function name

Optional parameters

returns values and exits

```
def test_return():
    print(”This is my first function.")
    print(‘A test to see if it works.’)
    Return 6

x = test_return()
print(x)
```

```
This is my first function.
A test to see if it works.
6
```

Functions That Return Values

```
def short_word():
    wd = input('Type a word: ‘)
    if len(wd) > 4:
        return len(wd)
    else:
        print('The word is too short!’)

res = short_word()
print('The result: ',res)
```

```
Type a word: python
6
```

Arguments

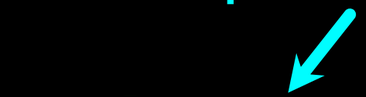
- Where? in parentheses after the name
- What? a value we pass into the function as its input

- Why? do different work when we call it at different times

```
l = len('Hello world')
```

Functions That Take Parameters

parameter : variable used in the function definition



```
def print_len(s):
    length = len(s)
    print('The word has', length , 'characters')
    return len(s)

res = print_len( "python" )
```

Argument

The word has 6 characters

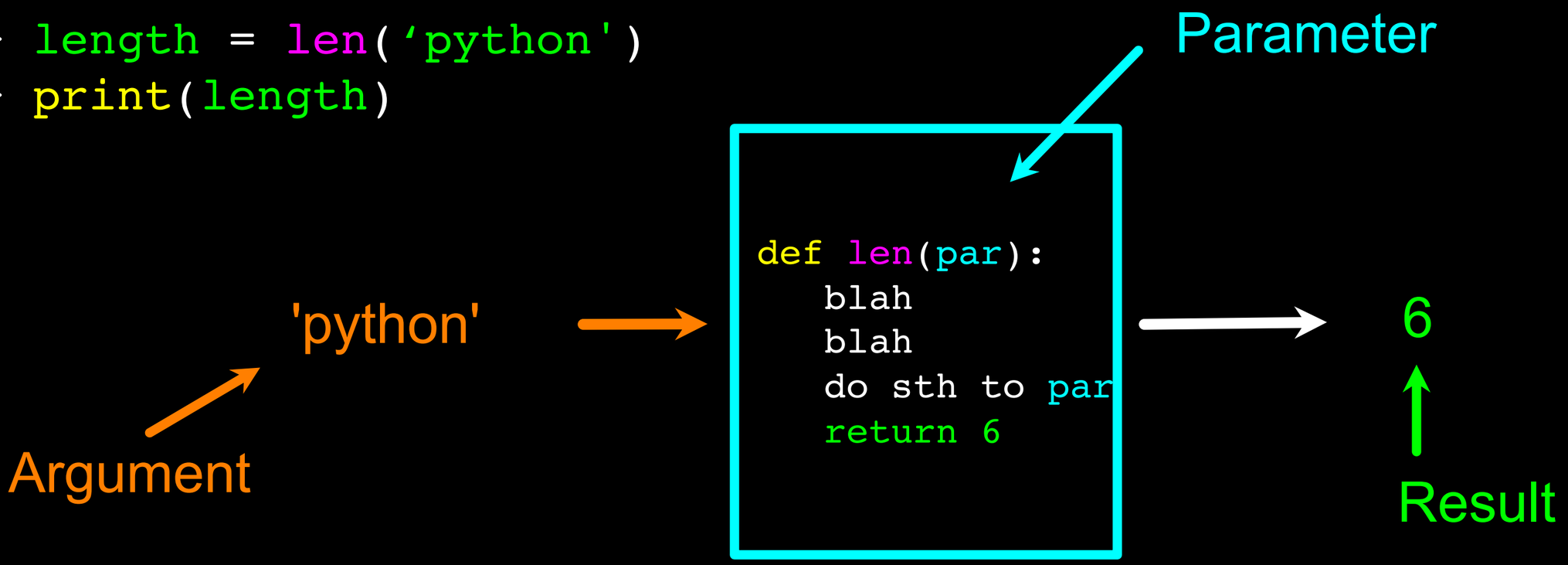
Parameters

A parameter: a variable which we use in the function definition.

```
>>> def greet(lang):
...     if lang == 'es':
...         print('Hola')
...     elif lang == 'fr':
...         print('Bonjour')
...     else:
...         print('Hello')
...
>>> greet('en')
Hello
>>> greet('es')
Hola
>>> greet('fr')
Bonjour
>>>
```

Arguments, Parameters, and Results

```
>>> length = len('python')
>>> print(length)
6
```



Multiple Parameters / Arguments

- We can define more than one parameter in the function definition
- We simply add more arguments when we call the function
- We match the number and order of arguments and parameters

```
def addtwo(a, b):
    added = a + b
    return added

x = addtwo(3, 5)
print(x)
```

```
8
```

To function or not to function...

- Organize your code into “paragraphs”
- Don’t repeat yourself
- If something gets too long or complex, break it up into logical chunks and put those chunks in functions

Acknowledgements / Contributions

Initial Development: Charles Severance, University of Michigan School of Information

… Insert new Contributors and Translators here

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