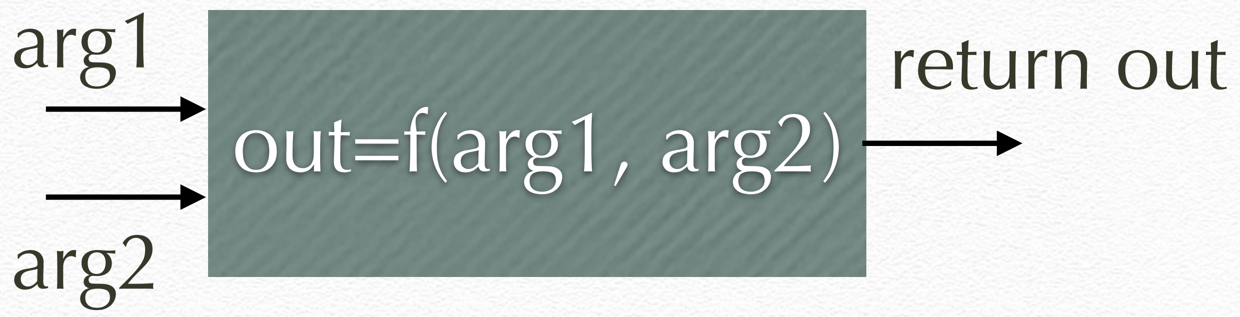
Week 5

Functions & More

Defining a function

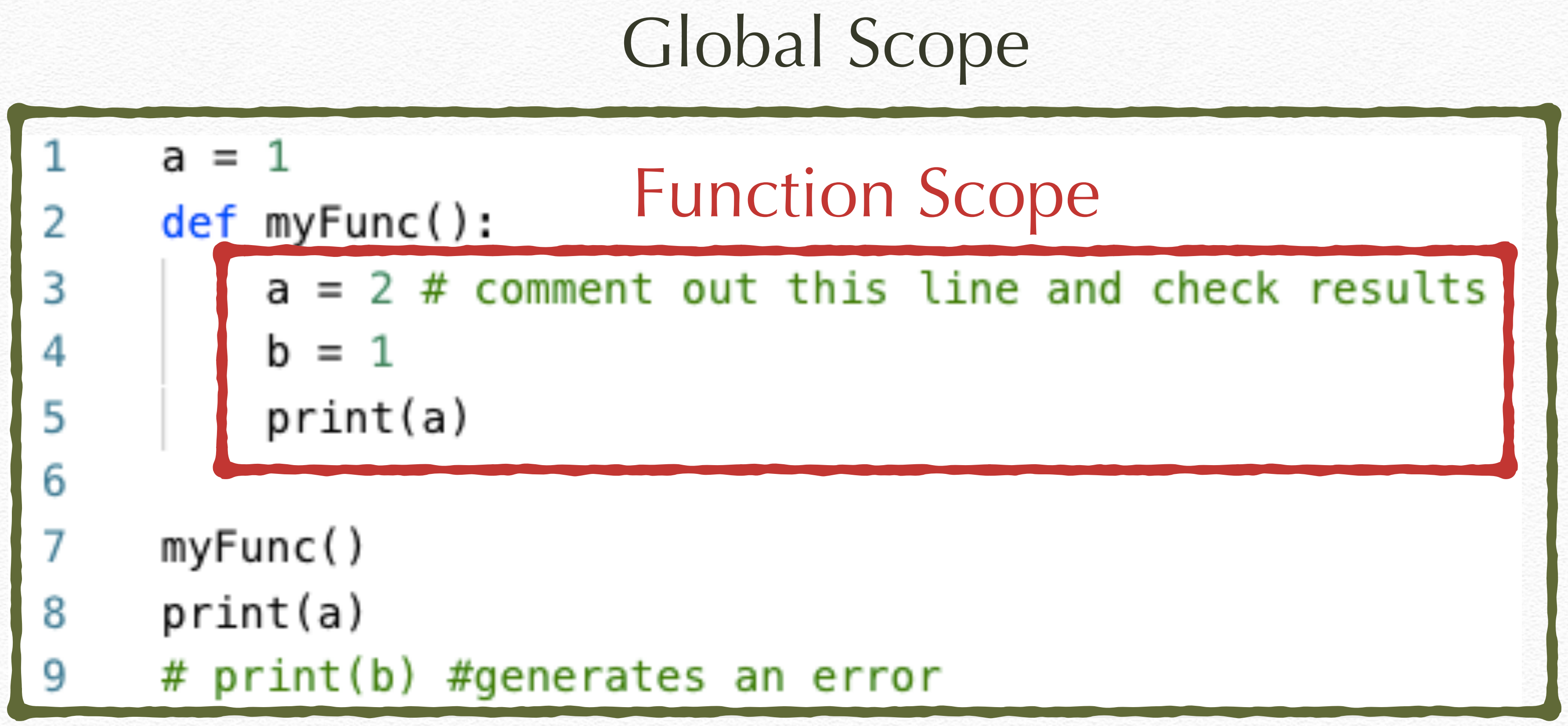
- def funName(arg1, arg2):
    - arg: function input
- function body
- return statement
- call function by using its name and passing arguments



Quiz

- write a function that gets two numbers and returns its sum
- write a function that get a list containing some numbers and returns its sum

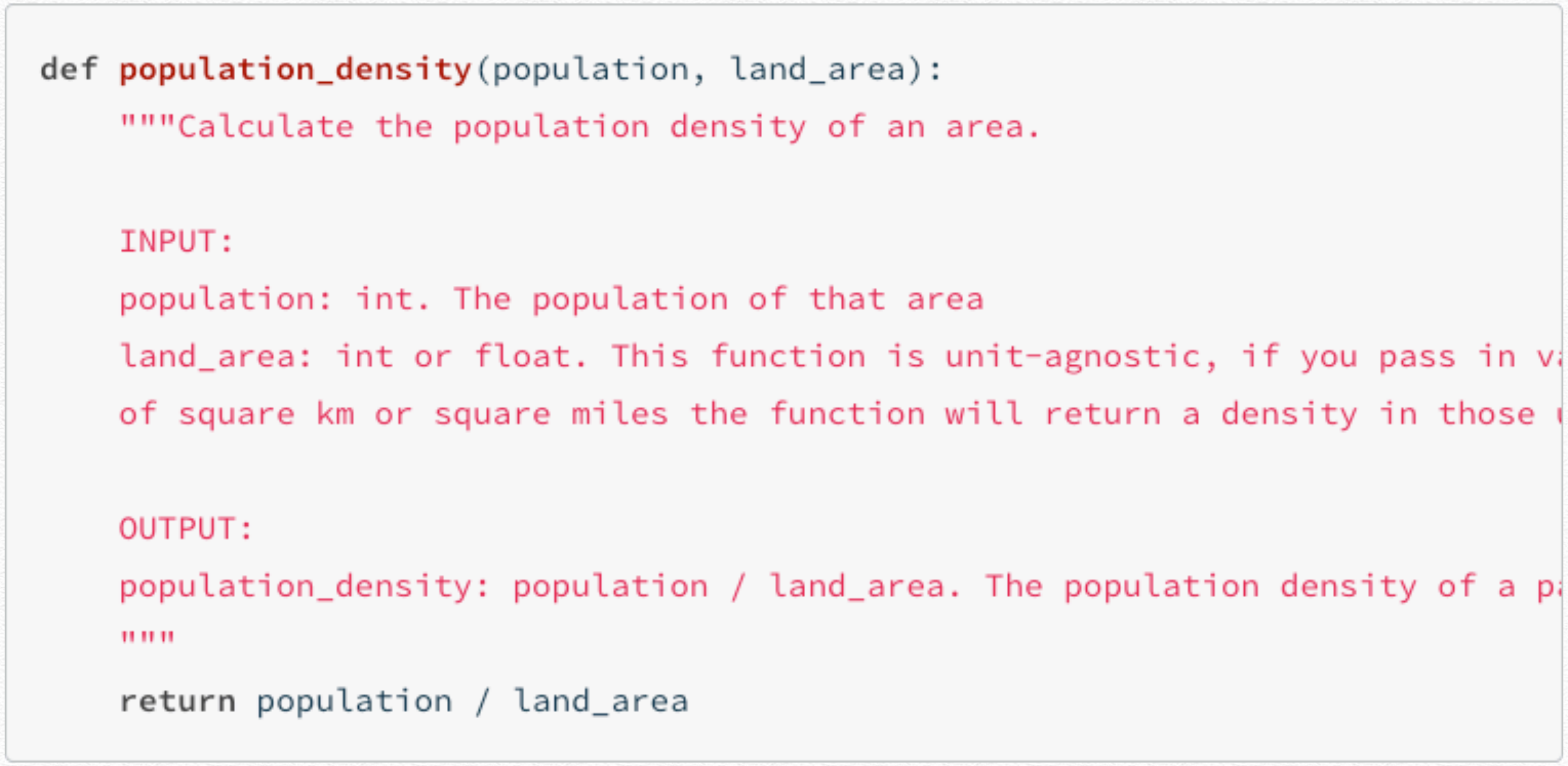
Variable Scope



```python
a = 1
def myFunc():
    a = 2 # comment out this line and check results
    b = 1
    print(a)

myFunc()
print(a)
# print(b) #generates an error
```

Docstrings



```
def population_density(population, land_area):
    """Calculate the population density of an area.

    INPUT:
    population: int. The population of that area
    land_area: int or float. This function is unit-agnostic, if you pass in v
    of square km or square miles the function will return a density in those

    OUTPUT:
    population_density: population / land_area. The population density of a p
    """
    return population / land_area
```

Lambda Expression

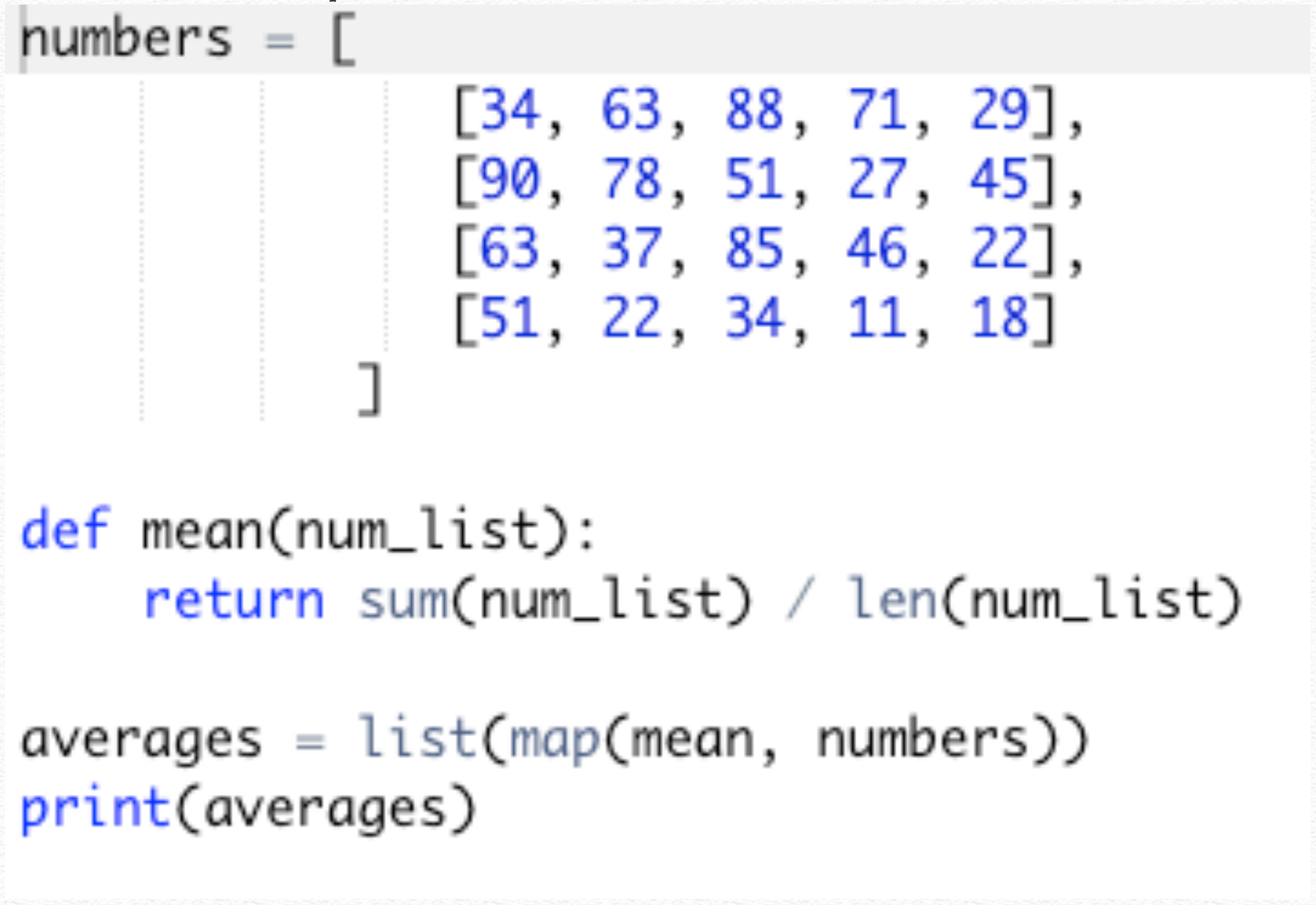
```
def multiply(x, y):
    return x * y
```

```
multiply = lambda x, y: x * y
```

```
multiply(4, 7)
```

Quiz

- Rewrite the code and replace mean function with a lambda expression



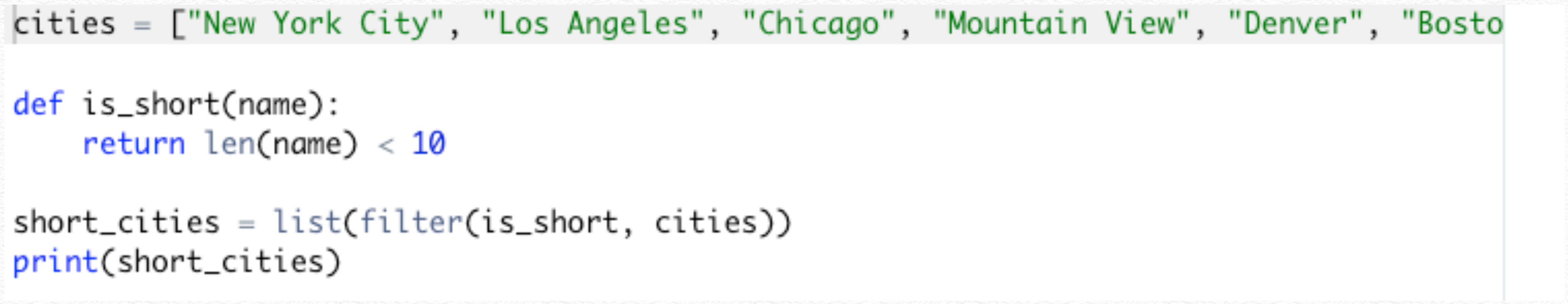
```
numbers = [
            [34, 63, 88, 71, 29],
            [90, 78, 51, 27, 45],
            [63, 37, 85, 46, 22],
            [51, 22, 34, 11, 18]
          ]

def mean(num_list):
    return sum(num_list) / len(num_list)

averages = list(map(mean, numbers))
print(averages)
```

Quiz

- Rewrite the code and replace is_short function with a lambda expression defined within filter function call



```
cities = ["New York City", "Los Angeles", "Chicago", "Mountain View", "Denver", "Bosto

def is_short(name):
    return len(name) < 10

short_cities = list(filter(is_short, cities))
print(short_cities)
```

Dooz v3

- Rewrite Dooz and use a function called checkWinner that gets the dooz table and returns:
  - 0 if there is not winner
  - 1 if user 1 won
  - 2 if user 2 won