DS2000

10/15 - Tues.

Admin

- HW4 due 10/19 9pm
- HW5 at 10/18, due 10/25 9pm
- mini exam #2 (two weeks) ~in class 10/29

Agenda

1. Variable scope
2. 2D lists
3. Python

0. Review → 2 functions from Fri

(ex) what do func return?

```
def process_str(whole_str, long, lat):
    '''
        parameters: a string, two ints (positions)
        returns: a list of strings, except at the two given positions
        does: splits the given string into a list of strings, converts
              the two positions to floats
    '''
    lst = whole_str.split(",")
    lst[lat] = float(lst[lat])
    lst[long] = float(lst[long])
    return lst

def find_city(lst, city, city_pos):
    '''
        parameters: lst of floats/strings, string for city, int for city_pos
        returns: boolean
        does: finds if the given city exists in the list at the given position
    '''
    if city in lst[city_pos]:
        return True
    else:
        return False
```

res = process_str("2b,2.1,1.5", 1, 2)

res = find_city(["Boston"], "Bos", 0)

"2b,2.1,1.5", 1, 2 → process_str → ["2b", 2.1, 1.5]

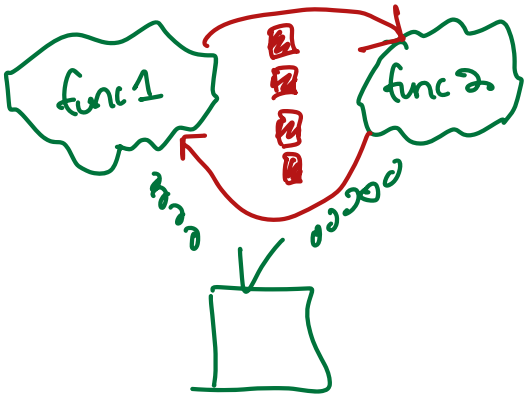
["Boston"], "Bos", 0 → find_city → True!

1. Variables/Scope

A function ...
- is standalone
- mini program
- has one job

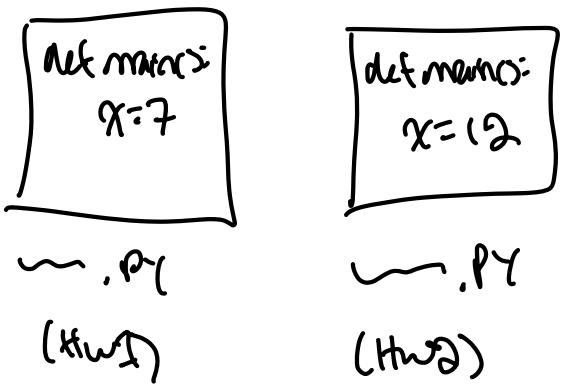
- gets into via params (0 or more!)
- gives into via return (0 or 1)

- print is for 🚶
- return is for 🏛



functions can't see each others variables/parameters!

variable/param names can be the same, or not!

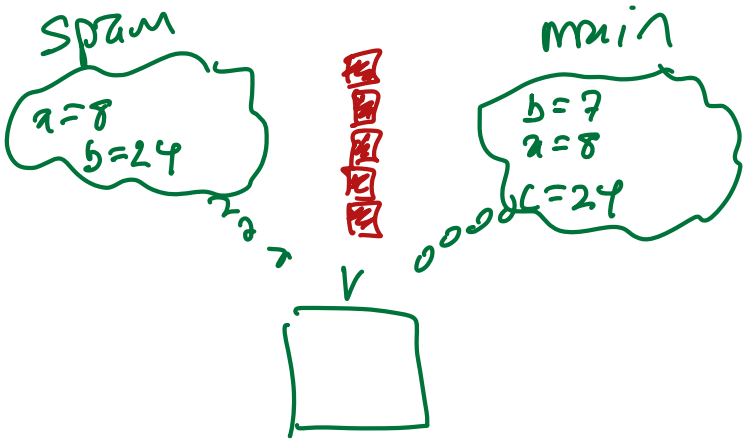


↙ Functions are like this!

```
def spam(a):
    b = a * 3
    return b

def main():
    b = 7
    a = 8
    c = spam(a)
    a = 12
main()
```

a is a parameter (float/int)
b is a local variable



Spam: b 24

main: b 7

sep. values!

spam: a

main: a

(ex)

```
def spam(a):        # a = 10
    b = a * 3       # b = 30
    return b        # 30
```

```
def eggs(a, b):     # a = 3, b = 30
    a = b * 2       # a = 60
    return a + 2
```

```
def main():
    a = 10
    a = spam(a)     # a = 30, a = 10
    b = 3
    a = eggs(b, a)  # a = 62, b = 3, a = 30
```

What are values of params/variables?

spam: a 10
b 30

eggs: a 3 60
b 30

main: a 10 30 62
b 3