More Functions

CS 1111
Introduction to Programming
Spring 2019

[The Coder’s Apprentice, §5, §8-8.3]
Local and Global Variables

- **Local variables**
  - Arguments and any variables declared in the function
  - Cannot be seen by other functions or code
  - Even if they have the same name as variables outside the function, the computer treats them as different (think of two people both named Tom; they are different people though they happen to be named the same)

  - Each function call has its own memory space and variables
  - These local data disappear when the function finishes
  - Arguments are assigned from the function call

- **Global variables**
  - Is accessible to all the functions in a program file
Local Variables

```python
number = 0

def main():
    number = int(input('Enter a number: '))
    show_number()

def show_number():
    print('The number you entered is ', number)

main()
```

Enter a number: 7
The number you entered is 0
Global Variables

number = 0

def main():
    global number
    number = int(input('Enter a number: '))
    show_number()

def show_number():
    print('The number you entered is ', number)

main()

Enter a number: 7
The number you entered is 7
Calling Functions with Named/Optional Parameters

```python
def my_function(name="Mary", school="UVa"):
    print(name + " goes to " + school)

# call a function without param passing
my_function()

# call a function with some params (ordering)
my_function("Tom")

# call a function with a named param
my_function(school="GMU")

# call a function with param passing (match number of params and ordering)
my_function("Ann", "VT")

# call a function with named params in any order
my_function(school="GMU", name="Ann")
```

Default values

Mary goes to UVa
Tom goes to UVa
Mary goes to GMU
Ann goes to VT
Ann goes to GMU