```python
def function_a():
    print "Hello from A"
    function_c(5)


def function_b():
    print "Hello from B"
    function_a()


def function_c(m):
    if m < 2:
        print "We're at C now"
    else:
        print "C is " + str(m) + " times cooler than B"


def abc():
    function_b()
    print "Hello from xyz"
    function_c(1)

abc()
```

What is the return value of abc( )?

Today's lesson:

Variable scope!

(local + global)

Example #1

```python
def cat_twice(part1, part2):
    cat = part1 + part2
    print cat
    print cat

line1 = 'February 2 '
line2 = 'is Groundhog day.'

cat_twice(line1, line2)
```

What is the return value of cat_twice(line1, line 2)?

```python
def cat_twice(part1, part2):
    cat = part1 + part2
    print cat
    print cat


line1 = 'February 2 '
line2 = 'is Groundhog day.'

cat_twice(line1, line2)
```

```
February 2 is Groundhog day.
February 2 is Groundhog day.
```

```python
def cat_twice(part1, part2):
    cat = part1 + part2
    print cat        # ← Local
    print cat        #   variable

line1 = 'February 2 '
line2 = 'is Groundhog day.'

cat_twice(line1, line2)
```

When you create a variable inside a function, it is local.

Today's Lesson

```python
def cat_twice(part1, part2):
    cat = part1 + part2
    print cat
    print cat

line1 = 'February 2 '
line2 = 'is Groundhog day.'

cat_twice(line1, line2)
```

← Local variable

It does not exist outside of this function.

```python
def cat_twice(part1, part2):
    cat = part1 + part2
    print cat
    print cat

line1 = 'February 2 '
line2 = 'is Groundhog day.'

cat_twice(line1, line2)
print cat
```

```
    print cat
NameError: name 'cat' is not defined
```

We can't print it because it is a **local variable.** It only exists in **cat_twice( )**.

```python
def cat_twice(part1, part2):
    cat = part1 + part2
    print cat
    print cat

line1 = 'February 2 '
line2 = 'is Groundhog day.'

cat_twice(line1, line2)
```

← Global variable

We can print **line1** and **line2** because they are global variables. They live outside of cat_twice( ).

Example #2

```python
global_var = 'ground'
def example():
    local_var = 'hog'
    print global_var
    print local_var


example()
print global_var
print local_var  # this gives an error
```

```
ground
Traceback (most recent call last):
hog
  File "/Users/christinajenkins/PycharmProjects
ground
    print local_var  # this gives an error
NameError: name 'local_var' is not defined
```

Today's Lesson

Finished with Breakfast?

Variable scope exercises online.

Not finished with Breakfast?

Breakfast.

Quiz on functions on Friday, February 6.

- Functions without parameters
- Functions with parameters
- Local and Global scope