

Topic 4: Functions

David H Smith IV

University of Illinois Urbana-Champaign

Mon, June 28 2021

Announcements

Weekly Reminders

- Ⓐ Don't forget to register with the CBTF to take the quiz this week.
- Ⓑ Homework 3 is posted.
- Ⓒ Make sure you're doing the correct post-readings/participation activities.
- Ⓓ Slightly different schedule for 4th of July weekend.

Poll Questions

Poll Question: Calling Functions

What is the result of running the following code?

```
1 def test():  
2     print('first')  
3  
4 print('second')  
5 test()
```

A ☐ SyntaxError

B ☐ first

C ☐ first
second

D ☐ first
second

E ☐ second
first

- A In Python indentation is both **syntactic** and **semantic**.
- B These three programs are all different even though they have the same text

```
1 def test():  
2     print('first')  
3     print('second')  
4  
5 test()
```

```
1 def test():  
2     print('first')  
3     print('second')  
4  
5 test()
```

```
1 def test():  
2     print('first')  
3     print('second')  
4  
5 test()
```

Poll Question: Function Parameters

What value is printed?

```
1 def do_thing(v1, v2, v3):  
2     a = v2  
3     b = v1 + 1  
4     print(a * b)  
5  
6 do_thing(3, 2, 0)
```

- ☐ A 0
- ☐ B 6
- ☐ C 8
- ☐ D 9

Poll Question: Function Scope

What value is printed?

```
1 def do_thing(var1):  
2     var1 = 2  
3  
4 var1 = 1  
5 do_thing(var1)  
6 print(var1)
```

- ☐ A 0
- ☐ B 1
- ☐ C 2
- ☐ D SyntaxError

Poll Question: Function Scope

What value is printed?

```
1 def do_thing(var1):  
2     var1.append(4)  
3  
4 var1 = [1, 2, 3]  
5 do_thing(var1)  
6 print(len(var1))
```

- ☐ A 0
- ☐ B 3
- ☐ C 4
- ☐ D SyntaxError

Poll Questions: Function Scope

How many values does the following function return?

```
1 def do_thing(var1):  
2     var1 = [1, 2, 3, 4]  
3  
4 var1 = [1, 2, 3]  
5 do_thing(var1)  
6 print(len(var1))
```

- ☐ A 0
- ☐ B 3
- ☐ C 4
- ☐ D TypeError
- ☐ E SyntaxError

Poll Questions: Making Functions

```
1 def f1():  
2     return 5
```

```
1 def f2():  
2     print(5)
```

```
1 def f3():  
2     return print(5)
```

Considering the previous functions, which of the following assigns `x` to 5?

- ☐ A `x = f1()`
- ☐ B `x = f2()`
- ☐ C `x = f3()`
- ☐ D All of the above
- ☐ E None of the above

Poll Questions: Nesting Functions

Given the following function, what value is returned by $f(f(2))$?

```
1 def f(x):  
2     return 3 * x
```

- A 3
- B 6
- C 9
- D 12
- E 18

Poll Questions: Making Functions

What bugs are in the following code?

```
1 def add_one(x):  
2     return x + 1  
3  
4 x = 2  
5 x = x + add_one(x)
```

- ☐ A No bugs. The code is fine.
- ☐ B The function body is not indented.
- ☐ C We use `x` as both a parameter and a variable, but we are not allowed to do that.
- ☐ D B and C

Poll Question: Printing in Functions

What is the value of `z` after the following code has run?

```
1 def add_one():  
2     x = 5 * 7  
3     print(x)  
4  
5 z = add_one()
```

- ☐ A 35
- ☐ B "35"
- ☐ C None
- ☐ D SyntaxError

Poll Question: Return Count

How many values does the following function return?

```
1 def return_stuff():  
2     return "hello"  
3     return "world"  
4     return "foo"  
5     return "bar"
```

- ☐ A 1
- ☐ B 2
- ☐ C 3
- ☐ D 4

Key Takeaways

Most important takeaways from today's lecture:

- Ⓐ `print()` is not the same as `return`
 - Ⓐ `print()` → Prints to the monitor. It does not give you a value you can work with.
 - Ⓑ `return` → Isn't used to print things to the screen. It's used to give data back after a function has finished doing stuff.
- Ⓑ A function only returns **once**. No matter how many `return` statements you put in the program the only one that matters is the first one that's reached.

Reminders

Weekly Reminders

- Ⓐ Don't forget to register with the CBTF to take the quiz this week.
- Ⓑ Homework 3 is posted and due this Friday at 11PM (CST).
- Ⓒ Make sure you're doing the correct post-readings/participation activities.
- Ⓓ Slightly different schedule for 4th of July weekend.