# Guerrilla Section 1: Functions, Control, Environment Diagrams

Solutions

# **Instructions**

Form a group of 3-4. Start on Question 0. Check off with a staff member when everyone in your group understands how to solve the questions up to the first checkpoint. Repeat for the second checkpoint, the third checkpoint, and so on. **You're not allowed to move on after a checkpoint until you check off with a staff member.** You are allowed to use any and all resources at your disposal, including the interpreter, lecture notes and slides, discussion notes, and labs. You may consult the staff members, **but only after you have asked everyone else in your group.** **The purpose of this section is to have all the students working together to learn the material.**

## **Functions**

## **Question 0:**

What will Python output? s

>>> from operator import add, mul

>>> mul(add(5, 6), 8)

88

>>> print(‘x’)

x

>>> y = print(‘x’)

x

>>> print(y)

None

>>> print(add(4, 2), print(‘a’))  
a

6 None

### **Question 1: Raising the Bar**

What will Python output?

>>> def foo(x):

… print(x)

… return x + 1

>>> def bar(y, x):

… print(x - y)

>>> foo(3)

3

4

>>> bar(3)

Error

>>> bar(6, 1)

-5

>>> bar(foo(10), 11)

10

0

STOP!

Don’t proceed until everyone in your group has finished and understands all exercises in this section, and you have gotten checked off!

## **Control**

**Question 2: Control yourself**

1. Which numbers (1-4) will be printed after executing the following code?

n = 0

if n:

print(1)

elif n < 2

print(2)

else:

print(3)

print(4)

2 and 4

1. WWPD (What would Python Display) after evaluating each of the following expressions?

>>> 0 and 1 / 0

0

>>> 6 or 1 or “a” or 1 / 0

6

>>> 6 and 1 and “a” and 1 / 0

Error

>>> print(print(4) and 2)

4

None

>>> not True and print(“a”)

False

**Question 3: You have control**

1. Define a function, count\_digits, which takes in an integer, n, and counts the number of digits in that number.

def count\_digits(n):

“””

>>> count\_digits(4)

1

>>> count\_digits(12345678)

8

>>> count\_digits(0)

0

“””

count = 0

while n > 0:

count += 1

n = n // 10

return count

1. Define a function, count\_matches, which takes in two integers n and m, and counts the number of digits that match.

def count\_matches(n, m):

“””

>>> count\_matches(10, 30)

1

>>> count\_matches(12345, 23456)

0

>>> count\_matches(121212, 123123)

4

>>> count\_matches(111, 11) # only one’s place matches

2

>>> count\_matches(101, 10) # no place matches

0

“””

matches = 0

while n > 0 and m > 0:

if n % 10 == m % 10:

matches += 1

n, m = n // 10, m // 10

return matches

STOP!

Don’t proceed until everyone in your group has finished and understands all exercises in this section, and you have gotten checked off!

## **Environment Diagrams**

**Question 4: A New Environment**

1. Draw the environment diagram for evaluating the following code

def f(x):

return y + x

y = 10

f(8)

Solution: <https://goo.gl/rZnzaM>

1. Draw the environment diagram for evaluating the following code

def dessef(a, b):

c = a + b

b = b + 1

b = 6

dessef(b, 4)

Solution: <https://goo.gl/4m3NRD>

STOP!

Don’t proceed until everyone in your group has finished and understands all exercises in this section, and you have gotten checked off!

**Question 5:**

1. Draw an environment diagram for the following code

def foo(x, y):

foo = bar

return foo(bar(x, x), y)

def bar(z, x):

return z + y

y = 5

foo(1, 2)

<https://goo.gl/7Kcx6n>

1. Draw an environment diagram for the following code

def spain(japan, iran):

def world(cup, egypt):

return japan-poland

return iran(world(iran, poland))

def saudi(arabia):

return japan + 3

japan, poland = 3, 7

spain(poland+1, saudi)

<https://goo.gl/iddW49>

1. Draw an environment diagram for the following code

cap = 9

hulk = 3

def marvel(cap, thor, marvel):

iron = hulk + cap

if thor > cap:

def marvel(cap, thor, avengers):

return iron

else:

iron = hulk

return marvel(thor, cap, marvel)

def iron(man):

hulk = cap - 1

return hulk

marvel(cap, iron(3), marvel)

<https://goo.gl/sofcq2>

CONGRATULATIONS!

You made it to the end of the worksheet! Great work :)