**Chapter 7 test problems**

1. Consider the following code fragments. What is the value of the global variable a after each block of code completes?

def funct(a):

a = 1

# Main program

a = 4

funct(a)

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def funct():

global a

a = 1

# Main program

a = 4

funct()

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def funct(a):

a.append(5)

# Main program

a = [2, 3, 4]

funct(a)

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def funct():

a.append(5)

# Main program

a = [2, 3, 4]

funct()

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2. Briefly (in several sentences) explain what a *stack frame* is and how it is used when a function call is made.

3. Functions f(), g(), and h() are defined as follows:

def f(x):

return 2\*g(x)

def g(x):

return h(x)\*\*2

def h(x):

return x//2

Consider the execution of function call f(2). Show the state of the program stack just prior to executing statement return x//2.

4. Consider the following Python module:

a = 0

def b():

global a

a = c(a)

def c(a):

return a + 2

After importing the module into the interpreter, you execute:

>>> b()

>>> b()

>>> b()

>>> a

?

What value is displayed when the last expression (a) is evaluated? Explain your answer by indicating what happens in every executed statement.

5. Suppose we have variables x and y already assigned data with values we have read from a file. We need to pass them to a function func(x, y), but are concerned that an exception may be raised by the function. Write code that prints the value returned by func(x, y) if no exception occurs or prints “An exception occurred” if there was an exception.

6. Write code to add the directory '/users/common/programs/' to the system search path.

7. Function fileLength(), given to you, takes the name of a file as input and returns the length of the file:  
  
>>> fileLength('midterm.py')  
284  
>>> fileLength('idterm.py')  
Traceback (most recent call last):  
  File "<pyshell#34>", line 1, in <module>  
    fileLength('idterm.py')  
  File "/Users/me/midterm.py", line 3, in fileLength  
    infile = open(filename)  
FileNotFoundError: [Errno 2] No such file or directory: 'idterm.py'

As shown above, if the file cannot be found by the interpreter or if it cannot be read as a text file, an exception will be raised. Modify function fileLength() so that a friendly message is printed instead:  
  
>>> fileLength('midterm.py')  
358  
>>> fileLength('idterm.py')  
File idterm.py not found.