# CSSE1001: Sem. 2 2011 exam answers

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1. What does the expression 2.0 + 3/2 evaluate to?

(a) 2.5

(b) 3

(c) 3.0

(d) 3.5

(e) 4

Answer: c

2. What does the expression (4.0+3)/2 evaluate to?

(a) 2.5

(b) 3

(c) 3.0

(d) 3.5

(e) 4

Answer: d

3. What does the expression 2 \* [‘3’, ‘5’] evaluate to?

(a) [‘33’, ‘55’]

(b) [6, 10]

(c) [‘6’, ‘10’]

(d) [‘3’, ‘5’, ‘3’, ‘5’]

(e) Error

Answer: d

4. What does the expression '2' + ['3', '5'] evaluate to?

(a) ['23', '25']

(b) [5, 7]

(c) ['5', '7']

(d) ['2', '3', '5']

(e) Error

Answer is ‘e’ (Can’t add a string to a list)

(on a side note: I never thought I’d be the person to provide answers to people...)

5. What does the expression list ( '2') + [' 3' , '5'] evaluate to?

(a) ['23', '25']

(b) [‘2’, ’3’, ’5 ‘]

(c) [5, 7]

(d) ['5', '7']

(e) Error

Answer is ‘b’

6. After the assignment x = [ 1, 2, 3, 4, 5, 6, 7] , which of the following assigns

4 to the variable y? .

(a) y = x[4]

(b) y = x[-4]

(c) y = x[-3]

(d) None of the above

Answer is ‘b’

7. After the assignment x = [1, 2, 3, 4, 5, 6, 7] , which of the following assigns

[ 4, 5, 6] to the variable y?

(a) y = x[3:6]

(b) y = x[3:5]

(c) y = x[4:7]

(d) y = x[4:6]

(e) None of the above

Answer is ‘a’

8. After the assignment x = [ 1, 2, 3, 4, 5, 6, 7] , which of the following assigns

[6, 7] to the variable y?

(a) y = x[-2 : -1]

(b) y = X [ -3 : -1]

(c) y = x[-2:]

(d) y = x[-3:]

(e) None of the above

Answer is ‘c’

9. After the assignment x = [1, 2, 3, 4, 5, 6, 7] , which of the following assigns

' [6, 4, 2] ' to the variable y?

(a) y = x [ -1 : : - 2]

(b) y = X [- 2 : : - 2]

(C) y = X [6 : 1 : -2]

(d) y = X [5: 1 : -2]

(e) None of the above

Answer is ‘b’ (would it be e as it asks for ‘[6, 4, 2]’ (a string)) - Agreeing with e, seeing as previous questions did not have the quotes.

10. What is the value of z after the following is evaluated?

x = ' John Smith , 72\n'

y = x.split(',')

z = (y[0].strip(), int(y[1].strip()))

(a) ('JohnSmith', 72)

(b) ('JohnSmith', '72))

(c) (' John Smith ', 72)

(d) ('John Smith', 72)

(e) Error

Answer is ‘d’

11. What is the value of x after the following is evaluated?

def f(x, y):

x.append(y)

return x

X = [1,2]

X = f(X, 3) + X

(a) [ 1 , 2 , 1 , 2]

(b) [ 1' 2' 1' 2' 3]

(c) [1, 2, 3, 1, 2]

(d) [1, 2, 3, 1, 2, 3]

(e) Error

Answer is ‘d’

12. Which of the following statements about dictionaries is true?

(a) Dictionary keys can be any type.

(b) Only numbers or strings can be dictionary keys.

(c) Dictionary keys must be immutable types.

(d) Both dictionary keys and values must be immutable types.

(e) If the dictionary keys are mutable then the corresponding values must

be immutable.

Answer is ‘c’ (Changed from: “ b I’m pretty sure, I looked it up, but I couldn’t be bothered checking it through python” - tuples, frozensets etc. are also mutable)

13. What is the value of y after the following is evaluated?

d = {'red': '#ffOOOO', 'green': '#00ff00', 'blue': '#OOOOff'}

y = d .get('yellow')

(a) 'yellow'

(b) ' #000000 '

(c) '#ffffOO'

(d) None

(e) Error

Answer is ‘d’

14. What is the value of y after the following is evaluated?

d ={'red': '#ff0000', ‘green': '#00ff00', 'blue' : '#0000ff'}

y = d.get('yellow', '#000000')

(a) 'yellow'

(b) ‘ #000000’

(c) '#ffffOO'

(d) None

(e) Error

Answer is ‘b’

The next 3 questions refer to the following definition. Recall that y. remove (z)

removes the element z from list y if it is in y, otherwise an exception is produced.

def f(x, y, z):

w = y

y.remove(z)

return x + y + w

The following questions are explained in how the object is ‘passed’ in the function. Since lists are mutable, w basically receives a reference to y’s location in the memory (pass by reference) rather than creating a new variable with the current value of y (which would be pass by value). Therefore z will be removed from y and w (since they’re two names for the same list).

15. What is the value of w after the following is evaluated?

a = [1,2]

b = [3,4,5]

w = f(a,b,3)

(a) [1, 2, 3, 4, 5, 3, 4, 5]

(b) [1, 2, 4, 5, 3, 4, 5]

(c) [1, 2, 3, 4, 5, 4, 5]

(d) [1, 2, 4, 5, 4, 5]

(e) Error

Answer is ‘d’

16. What is the value of w after the following is evaluated?

a = [1,2,3]

w = f (a, a, 1)

(a) [2, 3, 2, 3, 2, 3]

(b) [1, 2, 3, 2, 3, 2, 3]

(c) [1, 2, 3, 2, 3, 1, 2, 3]

(d) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(e) Error

Answer is ‘a’

17. What is the value of w after the following is evaluated?

a = [1,2,3]

w = f(list(a), a, 1)

(a) [2, 3, 2, 3, 2, 3]

(b) [1, 2, 3, 2, 3, 2, 3]

(c) [1, 2, 3, 2, 3, 1, 2, 3]

(d) [1, 2, 3, 1, 2, 3, 1, 2, 3]

(e) Error

Answer is ‘b’

The next 3 questions refer to the following definition.

def s(xs,n,m):

t = []

while n < m:

t.append(xs[m])

m -= 2

return t

18. What is the value of x after the following is evaluated?

x = s([1,2,3,4,5], 0, 4)

(a) [ ]

(b) [5, 3]

(c) [5, 3, 1]

(d) [4, 2]

(e) Error

Answer is ‘b’

19. What is the value of x after the following is evaluated?

x = s([1,2,3,4,5], 4, 0)

(a) []

(b) [1, 3]

(c) [1, 3, 5]

(d) [2, 4]

(e) Error

Answer is ‘a’

20. What is the value of x after the following is evaluated?

x = s([1,2,3,4,5], 2, 4)

(a) []

(b) [4]

(c) [5]

(d) [5, 3]

(e) Error

Answer is ‘c’

The next 3 questions refer to the following definition. Recall that enurnerate(xs)(where xs is iterable) is an iterator that produces pairs of indices and elements of xs.

def z(xs, ys):

t = []

for i, x in enumerate(xs):

t.append((x, ys[:i+1]))

return t

21. What is the value of zs after the following is evaluated?

zs = z([1, 2, 3], "ab")

(a) [1, 'a', 2, 'b', 3]

(b) [(1, 'a'), (2, 'b')]

(c) [(1, 'a'), (2, 'ab'), (3, '')]

(d) [(1, 'a'), (2, 'ab'), (3, 'ab')]

(e) Error

Answer is ‘d’

22. What is the value of zs after the following is evaluated?

zs = z([1, 2, 3], "abc")

(a) [1, 'a', 2, 'b', 3, 'c']

(b) [(1, 'a'), (2, 'b'), (3, 'c')]

(c) [(1, 'a'), (2, 'ab'), (3, 'c')]

(d) [(1, 'a'), (2, 'ab'), (3, 'abc')]

(e) Error

Answer is ‘d’

23. What is the value of zs after the following is evaluated?

zs = z([1, 2], "abc")

(a) [1, 'a', 2, 'b', 'c']

(b) [(1, 'a'), (2, 'b'), (2, 'c')]

(c) [(1, 'a'), (2, 'ab')]

(d) [(1, 'a'), (2, 'ab'), (2, 'abc')]

(e) Error

Answer is ‘c’

The next 3 questions refer to the following definition that is missing three lines of code. This function reads data from a file and calculates averages. The following is an example of a data file (values.txt).

name1 :

1.2

2.3

name2 :

2.4

name3:

1.7

1.9

end:

The file is divided into sections with each section starting with the (non-empty) name followed by zero or more spaces followed by a colon. The name of a section is followed by one or more lines containing floating point numbers. Blank lines may appear anywhere in the file. The last line of the file is end:. The definition of the get\_averages function and the result of applying the function to the file is given below.

def get\_averages(filename):

fd = open(filename, 'U')

averages = {}

name = None

for line in fd:

line = line.strip()

if line == '':

## line 1 ##

if line.endswith(':'):

if name is not None:

## line 2 ##

name = line[:-1].strip()

num = 0

total = 0.0

else:

## line 3 ##

fd.close()

return averages

>>> get\_averages('values.txt')

{'name2': 2.4, 'name3': 1.8, 'name1': 1.75}

24. What is the required code for ## line 1 ##?

(a) break

(b) continue

(c) name = None

(d) averages[name] = 0

(e) More than one of the above is correct.

Answer is b

25. What is the required code for ## line 2 ##?

(a) averages[name] = 0

(b) name = None

(c) averages[name] = total/num

(d) averages[name] = str(total/num)

(e) More than one of the above is correct.

Answer is c

26. What is the required code for ## line 3 ##? Recall that a semi-colon allows you to write two or more statements on one line.

(a) averages[name] = 0; num = 0; total = 0

(b) averages[name] = total/num; num += 1

(c) num += 1; total += line

(d) num += 1; total += float(line)

(e) More than one of the above is correct.

Answer is d (wouldn’t it be e (c or d), as total is already created as a float)

then wouldn’t it just be c, if total is already a float -- no, because line is a string, not a float

The next three questions refer to the following partial definition of a GoCard class.

class GoCard:

def \_\_init\_\_(self, user):

"""user in the name of the GoCard user"""

self.\_user = user

# the balance on the card in dollars

self.\_balance = 10.00

def update\_balance(self, value):

"""Update the balance with value.

value > 0 - the card is topped up

value < 0 - the value of the trip

"""

## line 1 ##

def get\_balance(self):

"""Return the balance."""

## line 2 ##

Assume that the following has been evaluated.

fred = GoCard('Fred')

27. What is the required code for ## line 1 ##?

(a) balance += value

(b) \_balance += value

(c) self.balance += value

(d) self.\_balance += value

(e) More than one of the above is correct.

Answer is d

28. What is the required code for ## line 2 ##?

(a) print self.balance

(b) return self.balance

(c) print self.\_balance

(d) return self.\_balance

(e) More than one of the above is correct.

Answer is d

29. Which of the following correctly updates the balance by -$2.75 for the object fred?

(a) fred.update\_balance(-2.75)

(b) update\_balance(fred, -2.75)

(c) fred.update\_balance() - 2.75

(d) update\_balance(fred) - 2.75

(e) More than one of the above is correct.

Answer is a

The five questions on the following page refer to the class definitions and assignments given below. If you believe that an error occurs, choose 'None of the above'.

class A:

def \_\_init\_\_(self, x):

self.x = x

def f(self, x):

return self.g(x)+1

def g(self, x):

return x-1

class B(A):

def g(self, y):

return y + self.x

class C(B):

def \_\_init\_\_(self, x, y):

B.\_\_init\_\_(self, x)

self.y = y

def f(self, x):

return A.g(self, x) + self.y

class D(C):

def \_\_init\_\_(self, x, y):

C.\_\_init\_\_(self, x, y)

self.y = 2\*y

def g(self, x):

return x + self.x

a = A(2)

b = B(2)

c = C(3, 1)

d = D(1, 1)

Protip: every time (I think) these questions have appeared in the past, each of the four options is at least one of the answers (i.e. expect at least one of q30-34 to have answer 3, at least one of them to have answer 4, at least one of them is 5, at least one of them is 6)

30. What does the expression b.g(3) evaluate to?

(a) 3

(b) 4

(c) 5

(d) 6

(e) Error

Answer is c

31. What does the expression a.f(3) evaluate to?

(a) 3

(b) 4

(c) 5

(d) 6

(e) Error

Answer is a

32. What does the expression b.f(3) evaluate to?

(a) 3

(b) 4

(c) 5

(d) 6

(e) Error

Answer is d

33. What does the expression c.f(3) evaluate to?

(a) 3

(b) 4

(c) 5

(d) 6

(e) Error

Answer is a

34. What does the expression d.f(3) evaluate to?

(a) 3

(b) 4

(c) 5

(d) 6

(e) Error

Answer is b

The next two question relate to the following partial definition. In our GUI

application we decide we need a widget that contains a button and that this

widget is to appear within the main window of the application under the label and

that the background colour for this widget should be red. The button is labelled

OK and when the button is pressed, the method do\_ok of the main window is

called.

class OKFrame(Frame):

def \_\_init\_\_(self, parent):

## line 1 ##

## line 2 ##

b.pack()

class MainWindow(object):

def \_\_init\_\_(self, parent):

self.root = root

self.frame = Frame(root)

self.frame.pack()

Label(self.frame, text="Press the OK button").pack()

b = OKFrame(self)

b.pack(fill=X)

def do\_ok(self):

print "OK"

35. What is the required code for ## line 1 ##?

(a) Frame.\_\_init\_\_(self, self, bg='red')

(b) Frame.\_\_init\_\_(self, parent, bg='red')

(c) Frame.\_\_init\_\_(self, parent.root, bg='red')

(d) Frame.\_\_init\_\_(self, parent.frame, bg='red')

(e) More than one of the above is correct.

Answer is probably d (wouldn’t it just be a?) -- Also agreeing with d - a produces an error.

36. What is the required code for ## line 2 ##?

(a) b = Button(self, text='OK', command=parent.do\_ok)

(b) b = Button(self.parent, text='OK', command=parent.do\_ok)

(c) b = Button(self.parent.frame, text='OK', command=parent.do\_ok)

(d) b = Button(self.parent.root, text='OK', command=parent.do\_ok)

(e) More than one of the above is correct.

Answer is a

37. Below is a definition for print\_list\_to\_depth and an incomplete **recursive** definition of the auxiliary function print\_list\_to\_depth2. Below the definitions are some examples.

def print\_list\_to\_depth(xs, depth):

"""Return a string representation of the list xs.

If the list has more than depth elements then a

'...' is used instead of the string representing the

remaining elements.

"""

if xs == []:

return '[]'

else:

return '[' + print\_list\_to\_depth2(xs, depth)

def print\_list\_to\_depth2(xs, depth):

"""The same as print\_list\_to\_depth except the opening

'[' is not part of the return string.

"""

if depth == 0:

return '...]'

if len(xs) == 1:

return str(xs[0]) + ']'

else:

return ####

>>> print\_list\_to\_depth([1,2,3,4], 8)

'[1, 2, 3, 4]'

>>> print\_list\_to\_depth([1,2,3,4], 4)

'[1, 2, 3, 4]'

>>> print\_list\_to\_depth([1,2,3,4], 3)

'[1, 2, 3, ...]'

What expression needs to replace #### in order to complete the recursive definition of print\_list\_to\_depth2 above?

(a) str(xs[0]) + ', ' + print\_list\_to\_depth2(xs[1:], depth-1)

(b) str(xs[0]) + ', ' + print\_list\_to\_depth2(xs[:-1], depth-1)

(c) str(xs[-1]) + ', ' + print\_list\_to\_depth2(xs[1:], depth-1)

(d) str(xs[-1]) + ', ' + print\_list\_to\_depth2(xs[:-1], depth-1)

(e) More than one of the above is correct.

Answer is b?

i thought a) because we want the next element in xs, not it in reverse

definitely (a)

38. What is the time complexity, in terms of the length of the list, of the following function that searches an ordered list. You can assume the arithmetic operators used in the function and list indexing are constant time.

def binary\_search(xs, v, start, end):

"""Search the sorted list xs for v from the index start up

to but not including end. Return the index of v if it

is in xs, otherwise return -1"""

while start < end:

mid = (start + end)/2

if xs[mid] == v:

return mid

elif xs[mid] < v:

start = mid+1

else:

end = mid-1

return -1

(a) Constant

(b) Logarithmic

(c) Linear

(d) Quadratic

(e) Exponential

Answer is b

39. What is the time complexity, in terms of the length of the list, of the following function that checks if two elements are adjacent in a list. You can assume the arithmetic operators used in the function, list indexing and the len function are constant time, and that range is linear in its argument.

def adjacent(xs, x, y):

for i in range(len(xs)-1):

if xs[i] == x and xs[i+1] == y:

return True

return False

(a) Constant

(b) Logarithmic

(c) Linear

(d) Quadratic

(e) Exponential

Answer is c

40. What is the value of r after the following has been evaluated?

g = lambda x,y: (x, y)

f = lambda x,y: x < y

xs = [1,2]

ys = [3,2,1]

r = [g(x, y) for x in xs for y in ys if f(x, y)]

(a) []

(b) [(1, 3), (1, 2), (1, 1), (2, 3), (2, 2), (2, 1)]

(c) [(1, 3), (1, 2), (2, 3)]

(d) [(3, 1), (2, 1), (3, 2)]

(e) [(1, 2)]

Answer is c