Exam Version: c96f5e7d342ab810

Color in first initial:	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	section (9,10,11, 12,1,2)	first name initial	last name initial
Color in first initial:	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z			

CS8—Midterm Exam

E01, F13, Phill Conrad, UC Santa Barbara

Thursday, 10/22/2013

Name: _____

Umail Address: _____@ umail.ucsb.edu

Please write your name **only** on this page.
That allows me to grade your exams without knowing whose exam I am grading.

This exam is **closed book, closed notes**, **closed mouth, cell phone off**,
except for:

- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

There are 100 points worth of questions on the exam, and you have 180 minutes to complete the exam.

A hint for allocating your time—on your first pass through the exam:

- if a question is worth 10 points, spend no more than 5 minutes on it
- if a question is worth 20 points, spend no more than 10 minutes on it
- if a question is worth 40 points, spend no more than 20 minutes on it
- etc.
- Then you'll finish your first pass in 50 minutes, and have 25 minutes to proofread, or circle back to questions you didn't finish in your first pass.

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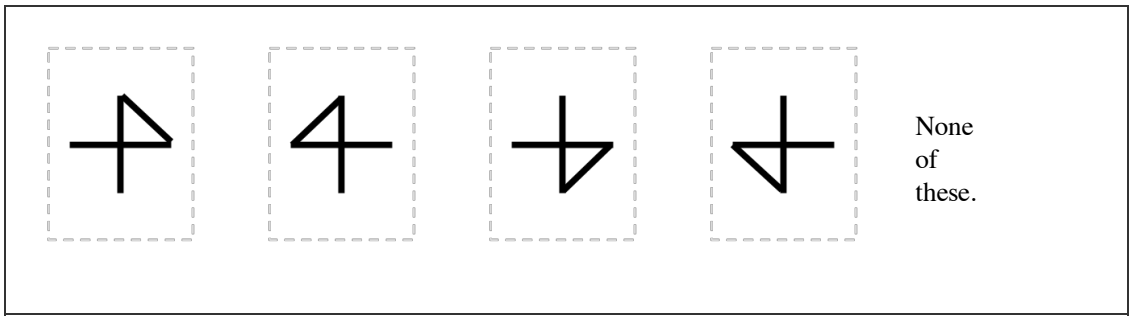
1. **Please refer to the handout for more information on this problem.** The handout describes functions for drawOne, drawPlus, and drawOnePlusOne, and you need that information to be able to continue with the problem.

    a. (16 pts) Here is some code for the drawOne() function. There are four lines with incomplete assignment statements. Fill in the correct code. For full credit:
        - Pay attention to the exact spelling of the parameters to the function, and express your answer in terms of those.
        - Be careful about how math operations are expressed in Python.

```
def drawOne(t, wd, ht):
    """
    draw a number 1 with height ht, centered in box of width wd
    """

    # get Turtle's starting point for x and y

    sx = t.xcor()
    sy = t.ycor()

    # Compute where the turtle should end up

    ex = sx + wd
    ey = sy

    # Compute top and bottom

    topX =

    topY =



    bottomX =

    bottomY =

    # draw the line

    t.up()
    t.goto(topX, topY)
    t.down()
    t.goto(bottomX, bottomY)
    t.up()

    # go to end point and put down pen

    t.goto(ex,ey)
    t.down()
```

This problem continues on the next page...

b. (10 pts) The definition of drawPlus below has a problem, and will not draw the plus correctly. You need to do two things. First, figure out what the code actually draws (instead of a correct +) and circle the diagram below that corresponds to that. If none of the diagrams is correct, circle "none of these", and draw your own picture.



c. (10 pts) Now, the broken code below can be fixed by inserting exactly two short lines of code in the correct spots.
Write those two lines of code EXACTLY WHERE THEY SHOULD APPEAR directly in the code listing below.
If there isn't room, write whereever there is space, use an arrow to show where the code should go.

```
def drawPlus(t, w, h):
    """
    draw a plus sign with width and height w, h
    """

    # get Turtle's starting point for x and y

    sx = t.xcor()
    sy = t.ycor()

    # Compute where the turtle should end up

    ex = sx + w
    ey = sy

    # compute four points of plus sign

    topX = sx + w/2
    topY = sy + h/2 + 0.3*w

    bottomX = sx + w/2
    bottomY = sy + h/2 - 0.3*w

    leftX = sx + 0.2*w
    leftY = sy + h/2

    rightX = sx + 0.8*w
    rightY = sy + h/2

    # draw the plus

    t.up()

    t.goto(topX,topY)

    t.down()

    t.goto(bottomX, bottomY)

    t.goto(leftX, leftY)

    t.goto(rightX, rightY)

    # Move turtle to ending position

    t.up()

    t.goto(ex, ey)

    t.down()
```

2. (20 pts) Please write a complete Python function definition for a function named avgOfTwo. It should take exactly two parameters, add them together, divide by two, and return the result.

   IMPORTANT: For full credit, include a docstring with exactly one test, using the doctest technique that we used in lab02 (and also lab03, as it turns out.)The test should check that the function computes the average of 3 and 5 to be 4.

Now, for a break, a few easy questions to end the exam that are just like the homework questions.

3. (2 pts) Please write a forward slash (not a backslash).

4. (2 pts) Please write the slash that is used in Python strings to indicate special characters such as newlines, quotes and tabs.

5. (10 pts) two points each
   In Python, if we assign: `city="Fresno"` then what is the value of each of these?
   a. `city[2:4]`

   b. `city[1]`

   c. `city[2]`

   d. `city[-1]`

   e. `city[1:]`

6. Fill in the values printed by the code. If there will be no output, write "no output".

   NO PARTIAL CREDIT: 4 pts for each exactly correct answer, 0 pts for any deviation, per part below.

   Spacing and punctuation count: don't put commas if none would be printed, and if answer is on multiple lines, write your answer on multiple lines. Don't indent unless the answer would be indented.

(3 pts)

```
for i in range(5):
   print (i)
```

(3 pts)

```
for i in range(7,3):
   print (i)
```

(3 pts)

```
for i in range(3,8,2):
   print (i)
```

(3 pts)

```
for i in range(3,7,-1):
   print (i)
```

(3 pts)

```
for i in range(11,8,-1):
   print (i)
```

7. The next few questions are all "**What is the output**" questions.

   They work just like the ones we did in lecture.

   You probably know what to do, but just to be sure,
   the handout explains what I'm looking for.

READ IT NOW

Then proceed...

a. (5 pts) What is the output when this is run in the IDLE editor?

   Be sure to end your answer with >>>.

```
# What is the output

def foo(x):
    return x+1

def bar(x):
    return 2*x


print(foo(bar(3)))
```

```
>>> ======== RESET ========
>>>
```

b. (5 pts) What is the output when this is run in the IDLE editor?

Be sure to end your answer with >>>.

```
# What is the output

def fiddle(x):
    return x-1

def faddle(y):
    print(y-1)

fiddle(3)
faddle(5)
```

```
>>> ======== RESET ========
>>>
```

c. (5 pts) What is the output when this is run in the IDLE editor?

Be sure to end your answer with >>>.

```
# What is the output

def bim(x,y):
    if (x>y):
        return x
    else:
        return y

def bam(z):
        return z*2

a = bim(3,11)
print(bam(a))
```

```
>>> ======== RESET ========
>>>
```

End of Exam

Total Points: 100