CS112 Spring 2016
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Exam 2

Do not open this exam until you are told. Read these instructions:

1. This is a closed book exam. No calculators, notes, or other aids are allowed. If you have a question during the exam, please come to the front of the class.
2. You must turn in your exam immediately when time is called at the end.
3. Three problems, which add up to 38 points total. 60 minutes.
4. In order to be eligible for as much partial credit as possible, show all of your work for each problem, write legibly, and clearly indicate your answers. Credit cannot be given for illegible answers.

Fill in the following:

NAME:

G#:

Lab section number: ____________________
scratch
A. Trace through the following code using the scratch space below, and then write your answer in the box on the right-hand side. Then, TRANSFER YOUR ANSWER to the scantron sheet line-by-line. (13 points)

| def yellow(x, a):
| a = a + 1
| x.append(a)
| return x
| def green(x, y):
| x[1] = 11
| y[0] = x[0]
| x = [8, 8]
| return x
| def blue(a,b):
| b[0] = b[1]
| a = b
| print b
| x = [6, 7]
| y = [7, 8]
| z = 2
| q = [x, [8,9], z]
| print yellow(y, z)
| z = z + 1
| print x
| print y
| print z
| print q
| y = [7,8]
| green(x,y)
| print x
| print y
| print z
| x = blue(x,y)
| print x
| print y
| print z

WILL NOT BE GRADED! COPY TO SCANTRON!

| A1_________________________ |
| A2_________________________ |
| A3_________________________ |
| A4_________________________ |
| A5_________________________ |
| A6_________________________ |
| A7_________________________ |
| A8_________________________ |
| A9_________________________ |
| A10________________________ |
| A11________________________|
| A12________________________|
1. Output for line A1:
   a. [6,7]    b. [7,8]    c. [6,7,3]    d. [7,8,3]    e. 3

2. Output for line A2:
   a. [6,7]    b. [7,8]    c. [6,7,3]    d. [7,8,3]    e. 3

3. Output for line A3:
   a. [6,7]    b. [7,8]    c. [6,7,3]    d. [7,8,3]    e. 3

4. Output for line A4:
   a. 2        b. [7,8]    c. 4        d. [7,8,3]    e. 3

5. Output for line A5:
   a. [[6, 7], [8, 9], 2]
   b. [[7, 8, 3], [8, 9], 2]
   c. [[6, 7], [8, 9], 3]
   d. [[7, 8, 3], [8, 9], 3]
   e. [[7, 8], [8, 9], 2]

6. Output for line A6:

7. Output for line A7:

8. Output for line A8:
   a. 2        b. [7,8]    c. 4        d. [7,8,3]    e. 3

9. Output for line A9:

10. Output for line A10:

11. Output for line A11:

12. Output for line A12:
    a. 2        b. [7,8]    c. 4        d. [7,8,3]    e. 3
class Translator:
    def __init__(self, n):
        self.name = n
        self.translations = {}

    def addWord(self, language1, language2):
        self.translations[language1] = language2
        x = language1

    def translate(self, word):
        if word in self.translations.keys():
            print self.translations[word]
            return self.translations[word]
        else:
            print "no translation for " + word

    def __str__(self):
        return self.name + " " + str(sorted(self.translations.values()))

x = "blue"
french2english = Translator("French to English")
german2french = Translator("German to French")
print french2english
french2english.addWord("bleu","blue")
french2english.addWord("maison","house")
french2english.addWord("pomme","apple")
print french2english
print french2english.translate("maison")
print french2english.translate("house")

german2french.addWord("Hause","maison")
print german2french
print french2english.translate(german2french.translate("Hause"))

french2english.addWord("bleu","---")
print french2english
scratch

WILL NOT BE GRADED! COPY TO SCANTRON!

B1_________________________
B2_________________________
B3_________________________
B4_________________________
B5_________________________
B6_________________________
B7_________________________
B8_________________________
B9_________________________
B10________________________
B11________________________
13. Output for line B1:
   a. French to English
   b. French to English []
   c. French to English {}
   d. french2english
   e. ERROR

14. Output for line B2:
   a. French to English ['blue', 'house', 'apple']
   b. French to English ['apple', 'blue', 'house']
   c. French to English []
   d. french2english
   e. ERROR

15. Output for line B3:
   a. maison  b. house  c. Hause
   d. no translation for house  e. None

16. Output for line B4:
   a. maison  b. house  c. Hause
   d. no translation for house  e. None

17. Output for line B5:
   a. maison  b. house  c. Hause
   d. no translation for house  e. ERROR

18. Output for line B6:
   a. maison  b. house  c. Hause
   d. no translation for house  e. None

19. Output for line B7:
   a. German to French []
   b. German to French ['maison']
   c. German to French ['Hause']
   d. German to French {'maison'}
   e. German to French {'Hause'}

20. Output for line B8:
   a. maison  b. house  c. Hause
   d. no translation for house  e. ERROR

21. Output for line B9:
   a. maison  b. house  c. Hause
   d. no translation for house  e. ERROR

22. Output for line B10:
   a. maison  b. house  c. Hause
   d. no translation for house  e. ERROR

   (next page)
23. Output for line B11:

a. French to English ['---', 'apple', 'house']
b. French to English ['apple', 'blue', 'house']
c. French to English ['---', 'apple', 'blue', 'house']
d. French to English {'apple', 'blue', 'house'}
e. French to English {'---', 'apple', 'house'}

24. Write a function called **calculate** that takes as arguments a string, and replaces every instance of the substring `ab` with the string `HH`. For example, if the input is `abhelloabcatttbqabe` the function will return the string `HHhelloHHcatttbqHHe`.

Remember that strings are immutable. You may not use any built-in functions/methods besides `len()` and `.append()` – you may NOT use `.replace()`. (15 points)

Extra credit (1 point): Show how you would extend the **Translator** class below in one line: