This is both a practice midterm and a homework assignment.
Due: Friday, November 16, 2012
Submit via Moodle

For problems 1-12:

I. Select the letter with the correct output. Write down the answer that you get without consulting a Python environment
II. Check your answer using a Python programming environment
III. Where I and II are different, explain what lead you to choose the wrong answer.

For problems 13a/b and 14 a/b:

Provide code that you have checked.

Problem 1

```python
i = 1
while i < 4:
    if i%2 == 0:
        i /= 2
    else:
        i *= 3
    i += 1
print(i)
```

a. 1  
b. 2  
c. 3  
d. 4  
e. none of the above

Problem 2

```python
frag = 'abc'
control = 'mno'
for i in control:
    if len(frag) < 4:
        frag += i
    elif len(frag) == 4:
        continue
    else:
        frag += frag[:len(frag)]
print(frag)
```

a. abc  
b. abcm  
c. abcmn  
d. abcmno  
e. None of the above
Problem 3

refrain = 'hallelujah'
print(refrain[:5] + refrain[5:])

a. halleelujah
b. hallellujah
c. hallelujah
d. hallelujah
e. None of the above

Problem 4

vowels = ['a', 'e', 'i', 'o', 'u']
word = 'banana'
vowelCount = 0
for letter in word:
    if letter in vowels:
        vowelCount += 1
print(vowelCount)

a. 0
b. 1
c. 5
d. 6
e. None of the above

Problem 5

def iShallReturn(aStr):
    if len(aStr) > 0:
        return "not empty"
    if len(aStr)%2 == 0:
        return "even"
    if len(aStr) <= 6:
        return "short"
    else:
        return "long"

s = 'evenlength'
print(iShallReturn(s))

a. not empty
b. not empty even
c. not empty even long
d. SyntaxError: hanging else
e. None of the above

Problem 6

mathStuff = [2.17, 'e', ['math', 'constant']]
print(mathStuff[1:3])

a. TypeError: incompatible types: 2.17, 'e'
b. SyntaxError: list nested within a list
c. ['e', 'math', 'constant']
d. ['e', ['math', 'constant']]
e. None of the above
Problem 7

scary = {'Halloween': 'pranks', 'Oct': 31, 'supers': ['Spidey', 'Batman']}
print(scary['supers'])

a. SyntaxError: invalid syntax
b. TypeError: incompatible types 'Oct', 31
c. TypeError: invalid value type ['Spidey', 'Batman']
d. ['Spidey', 'Batman']
e. None of the above

Problem 8

line = 'A hot dog at the ball park is better than steak at the Ritz'
bogartWords = line.split()
fiveLettersFirst = ""
for word in bogartWords:
    if len(word) < 5:
        continue
    elif len(word) > 5:
        break
    else:
        fiveLettersFirst += (word + ' ')
print(fiveLettersFirst)

print(fiveLettersFirst)

a. "" (the empty string)
b. steak
c. steak at the Ritz
d. ball park than
e. None of the above

Problem 9

bools = [True, False]
aStr = 'boo'
for aVal in bools:
    aStr *= 2
print(aStr)

a. True
b. False
c. boo
d. booboo
e. None of the above
Problem 10

def testReturn(aStr, subStr):
    if aStr.count(subStr) == 0:
        return(""")
    elif aStr.count(subStr) == 1:
        return(subStr)
    elif aStr.count(subStr) == 2:
        return(subStr + subStr)
    else:
        return(aStr)

s0 = 'abracadabra'
s1 = 'abra'
print(testReturn(s0, s1))

a. ""
b. abra
c. abraabra
d. abracadabra
e. Syntax error: multiple return statements

Problem 11

cartoons = {'Rocky':'good', 'Snidely':'bad', 'Boris': 'bad'}
print(cartoons['bad'])

a. KeyError: 'bad'
b. Snidely
c. Snidely, Boris
d. Snidely:bad, Boris:bad
e. None of the above

Problem 12

strings = ['Dead','men','tell','no','lies']
printStr = ""
for aStr in strings:
    if 'e' in aStr:
        continue
        printStr += aStr
        break
    else:
        printStr += aStr

print(printStr)

a. no
b. Dead
c. Deadmentelllies
d. Deadmentellnolies
e. None of the above
Problem 13
Part a (10 points)

The three words 'a', 'an' and 'the' are the only articles in the English language. Write a function named countArticles(). Hint: Count both capitalized and lower case instances of articles.

Input: a list of strings, each string being a single word.
(You may assume that the input is valid.)
Return: the number of articles in the list.

For example, the following would be correct output:

```python
>>> theFlea = ['The','flea','is','a','mighty','insect']
>>> print(articleCount(theFlea))
>>> 2
```

Problem 13
Part b (10 points)

Write a function named shortWordCount(). (Hint: use the split method.)

Input: a string.
(You may assume that the string contains only letters and spaces -- no punctuation.)
Return: the number of words in the string with 3 or fewer letters.

For example, the following would be correct output:

```python
>>> theFlea = 'The flea is a mighty insect'
>>> print(shortWordCount(theFlea))
>>> 3
```

Problem 20
Suppose that a dictionary of names and phone numbers is in the following format:
{"Abe': '212-123 4567', 'Kathy': '646-987 6543'}

Part a (10 points)

Write a function named phoneByInitial().

Input:
Parameter 1: a name(phone number dictionary, as above.
Parameter 2: an initial letter

Return:
 a dictionary of all name(phone number pairs in which the name begins with the given initial.

For example, the following would be correct output:

```python
>>> phones = {'Abe': '212-123 4567', 'Kathy': '646-987 6543'}
>>> print(phoneByInitial(phones, 'a'))
>>> {'Abe': '212-123 4567'}
```
Problem 20  
Part b (10 points)  

Write a function named phoneByAreaCode()  

Input:  
Parameter 1: a name/phone number dictionary, as above.  
Parameter 2: a three-letter string representing an area code  

Return:  
a dictionary of all name/phone number pairs in which the phone number begins with the given area code.  

For example, the following would be correct output:  

```python  
>>> phones = {'Abe':'212-123 4567', 'Kathy':'646-987 6543'}  
>>> print(phoneByAreaCode(phones, '646'))  
>>> {'Kathy':'646-987 6543'}  
```