CIS 210 Winter 2017 Example Midterm 2 Questions

Note: These questions are not a comprehensive study guide! They are given here to provide you with a sense of the types of questions that may be on the second midterm.

To prepare thoroughly for the second midterm you should review readings from the text, class notes, lab notes, projects and project solutions.

The format of W17 midterm2-part1 (in class) will be multiple choice questions (Scantron). The format of W17 midterm2-part2 (in all week 8 labs) will be similar to projects, with .py files developed according to a project specification and CIS 210 style guidelines, using the IDLE programming environment (only), and submitted via Canvas.

For numbers (1) through (5), replace ??s with the expected results.

(1) [4 pts.] Given:

```python
def q1(slist):
    '''(list of str) -> ?? '''
    slen = len(slist)
    sum = 0
    for s in slist:
        sum += s.count('x')
    avg = sum / slen
    return avg

li = ["CIS 2xx", "name", "xxxx", "CIS 3xx"]

>>> type(q1(li))
??
>>> q1(li)
??
```
(2) [4 pts.] Given:

```python
def q2(w):
    '''(str) -> Boolean'''
    if len(w) <= 1:
        return True
    elif w[0] != w[-1]:
        return False
    else:
        return q2(w[1:len(w)-1])

>>> q2('abcda')
??
>>> q2('reverseesrever')
??
```

(3) [4 pts.] Given:

```python
def q3(x, y):
    '''(int, int) -> None'''
    x = f(x, y)
    y = f(y, x)
    print(x, y)
    return None

def f(x, y):
    '''(int, int) -> int'''
    x = 2 * x
    y = 2 * y
    if y > x:
        return y - x
    else:
        return x - y

>>> q3(20, 5)
??
```
(4) [4 pts.] Given:

def q4(li, div):
    ''' (list of ints, int) -> list of two lists of ints'''
    lowtodiv = []
    higherdiv = []
    for item in li:
        if item <= div:
            lowtodiv.append(item)
        else:
            higherdiv.append(item)
    return [lowtodiv, higherdiv]

>>> q4([1, 3, 5, 7, 9, 11, 13, 15], 10)
??
>>> q4([97, 98, 99], 99)
??

(5) [4 pts.] Given:

def q5(ch):
    ''' (str) -> Boolean'''
    barD = {
        '0': '11000',
        '1': '00011',
        '2': '00101',
        '3': '00110',
        '4': '01001',
        '5': '01010',
        '6': '01100',
        '7': '10001',
        '8': '10010',
        '9': '10100'}
    bar = barD[ch]
    return bar[0] == '1'
(6a) [4 pts.] Replace ??s with the expected results. If the result is an error, write [ERROR].

```python
def mean(li):
    '''(list of ints) -> float
returns average of the integer
values in li.

>>> mean([1, 10, 4, 1])
4.0
'''
    sum = 0
    for item in li:
        sm = sum + item
    avg = sum / len(li)
    return avg

def q6(li):
    '''(list of ints) -> None
Reports average value of items in li.

>>> q6([1, 10, 4, 1])
Average is 4.0
>>> q6([])
Empty list
```

if len(li) >= 0:
    print('Average is', mean(li))
else:
    print('Empty list')

return None

>>> q6([1, 10, 4, 1]
??
>>> q6([])
??

(6b) [4 pts.] For each of the two bugs,
-- circle the bug
-- indicate whether it is a syntax, runtime, logic, or documentation error
-- fix the bug

(7) [8 pts.] Complete the docstring for function q7. Include three example function calls that are also test cases for three different equivalence classes for possible input or output values. Mention the specific equivalence class in comments next to the example function calls.
    def q7(tu, item):
        '''(tuple, object) ->

        ...'''
        for checkitem in tu:
            if checkitem == item:
                return True

        return False
Replace the ??s with the results of executing the following code in the Python Shell.

```python
>>> states = ['OR', 'WA', 2]
>>> state = 'ID'
>>> states.insert(0, state)
>>> states[-1] += 1
>>> states

>>> state = 'MT'
>>> states[-1] += 1
>>> states = states.insert(0, state)
>>> print(states)

>>> state = 'CA'
>>> state.upper()
>>> state

>>> state = state.upper()
>>> state
```