Week 3 Exercise: Strings, Tuples, Lists and More

Name:

Instructions

This assignment has two sections. The first section includes 5 multiple choice questions. The second part of the assignment is a coding exercise.

If you have any questions on how to start or if you get stuck, refer to the discussion board and ask your questions there. You are allowed to use your notes, lectures and the internet. Students can work together on the question portion and discuss the coding exercise. For the coding exercise, you are allowed to talk to other classmates but you cannot have the same code.

Once complete, please save your assignment as a PDF and submit it both to the online course and tag your instructor on Github.

Multiple Choice (1 point each)
Please mark your response in bold.

1. An IF statement in Python can:

a. Only perform one conditional test
b. Returns the indented actions if the test is True, or None if it is not True
c. Can contain as many branches of logic as the programmer wants
d. Executes the next line of code only if the test is True, then moves to always execute the remaining code

2. What will this code execute?

```
age = 21

if age > 18:
    label = 'adult'
label = 'kid'

print(label)
```

a. kid
b. adult

c. adult (new line) kid
d. *nothing*

3. What will the following code print?

```
temp = 22
precipitation = 'wet'

if precipitation != 'wet':
    weather = 'dry'
else:
    if temp > 32:
            weather = 'rain'
    elif temp < 32:
            weather = 'sleet'
    elif temp < 28:
            weather = 'mix'
    else:
            weather = 'snow'

print(weather)
```

a. sleet
b. mix
c. now
d. `dry'

4. Which of these best describes how the range function works?
a. It generates a list of values that the for loop can then iterate over.
b. It pre-generates the code required to execute the for loop according to the range() parameters
c. If just runs the specified code as many times as necessary to create the right output.
d. It returns an iterable object that returns the next value for each time through the loop.

5. What is another name for the inline if statement?
a. Ternary operator
b. Conditional
c. Three-part if
d. None of these

Coding Exercise (5 points)

This week we went over tuples, strings and Booleans. Write a code that takes 2 boolean parameters and returns a variable. A k-map, Karanugh map which is a method of simplifying Boolean algebra expressions, is given below.

Code:

#Ideal stoplight observer logic

Evaluation of 2 boolean params (simple):

```
colorRed = True
inIntersection = False

if colorRed == True and inIntersection == False:
    action = 'stop'
else:
    action = 'continue designated direction at appropriate and safe speed'

print(action)
```

Evaluation of strings and Boolean params (more complex):

```
color = 'green'
symbol = 'arrow'
inIntersection = True

# Conditionals combined with logical operator in one line
if color == 'green' and symbol == 'arrow':
    action = 'turn in designated direction at appropriate speed'
elif color == 'green' and symbol == 'circle':
    action = 'continue straight at appropriate speed'
# Nesting conditionals
elif color == 'yellow':
    if inIntersection == True:
        action = 'continue through the intersection at current speed'
    else:
        action = 'slow down current action and prepare to stop'
elif color == 'red':
    if inIntersection == True:
        action = 'continue through the intersection at current speed'
    else:
```

```
        action = 'stop'
# Fallback if color or symbol is unclear
else:
    action = 'action unknown'

print(action)
```

Python_Fun

	True	False
True	False	True
False	True	True

Show the output of your test code.

Simple: The output of the evaluation of the colorRed and inIntersection variables defined above is: 'stop'

Complex: The output of the evaluation of the color and symbol defined above is: 'turn in designated direction at appropriate speed'