Carnegie Mellon University in Qatar
Principles of Computing
15-110 - Fall 2018
Mock Quiz 1

Name: _____

Andrew ID: _____

Total time: 50 minutes

Instructions:

- Write your answers in the spaces provided below the problems. If you make a mess, clearly indicate your final answers.
- This Quiz has 4 problems over 7 pages, for a total of 30 points.
- Keep up with time. All the best!

Problem	Points	Score
True/False Questions	4	
Multiple Choice Questions	3	
Short Answer Questions	10	
Programming Questions	13	

Problem I: True/False Questions (4 Points)

1) RAM is a non-volatile memory (***True***/***False***)
2) Variables defined in a function are local to that function, unless bound by the global keyword (***True***/***False***)
3) There is usually only one correct solution to a problem involving decision structures (***True***/***False***)
4) The condition x <= y <= z is allowed in Python (***True***/***False***)
5) A Python *while* can implement a definite loop (***True***/***False***)
6) a and (b or c) == (a and b) or (a and c) (***True***/***False***)
7) An int can be converted to a string while a string cannot be converted to an int (***True***/***False***)
8) The if statement can only accept a Boolean expression as a condition (***True***/***False***)

Problem II: Multiple Choice Questions (3 Points)

1) Which of the following is/are NOT (a) legal identifier(s)?
   a) Spam
   b) spAm
   c) 2spam
   d) Spam!
   e) If
2) Which of the following is NOT a python data type?
   a) int
   b) float
   c) rational
   d) string
   e) bool
3) Which of the following is NOT a built-in operation in Python?
   a) +
   b) %
   c) abs()
   d) sqrt()
4) In a mixed-type expression involving ints and floats, Python will convert:
   a) floats to ints
   b) ints to strings
   c) floats and ints to strings
   d) ints to floats
5) The best structure for implementing a multi-way decision in Python is:
   a) if
   b) if-else
   c) if-elif-else
   d) try
6) What statement can be executed in the body of a loop to cause it to terminate?
   a) if
   b) exit
   c) continue
   d) break

Problem III: Short Answer Questions (10 Points)

1) (***1.5 Points***) List the five major components of a computer.

2) (***1.5 Point***) Show the result of evaluating each expression. Be sure that the value is in the proper form to indicate its type (int or float). If the expression is illegal, explain why.
   a) 4/10 + 3 * 2
   b) 4 % 10 + 6 // 5
   c) abs(4-20//3) ** 3
   d) sqrt(4.5 – 5.0) + 7 * 3

3) (***2 Points***) Consider this very simple function:

```
def cube(x):
        answer = x * x * x
        return answer
```

Here is a fragment of a program that uses this function:

```
answer = 4
result = cube(3)
print(answer, result)
```

The output from this fragment is 4 27. Explain why the output is NOT 27 27, even though the cube function seems to change the value of the variable *answer* to 27.

4) (***2 Points***) The following fragment of code is written using a for loop. Re-write it using a while loop.

```
sum = 0
for k in range(1, 22, 3):
        sum = sum + k
print(sum)
```

5) (***3 Points***) Show the output from the following fragments:

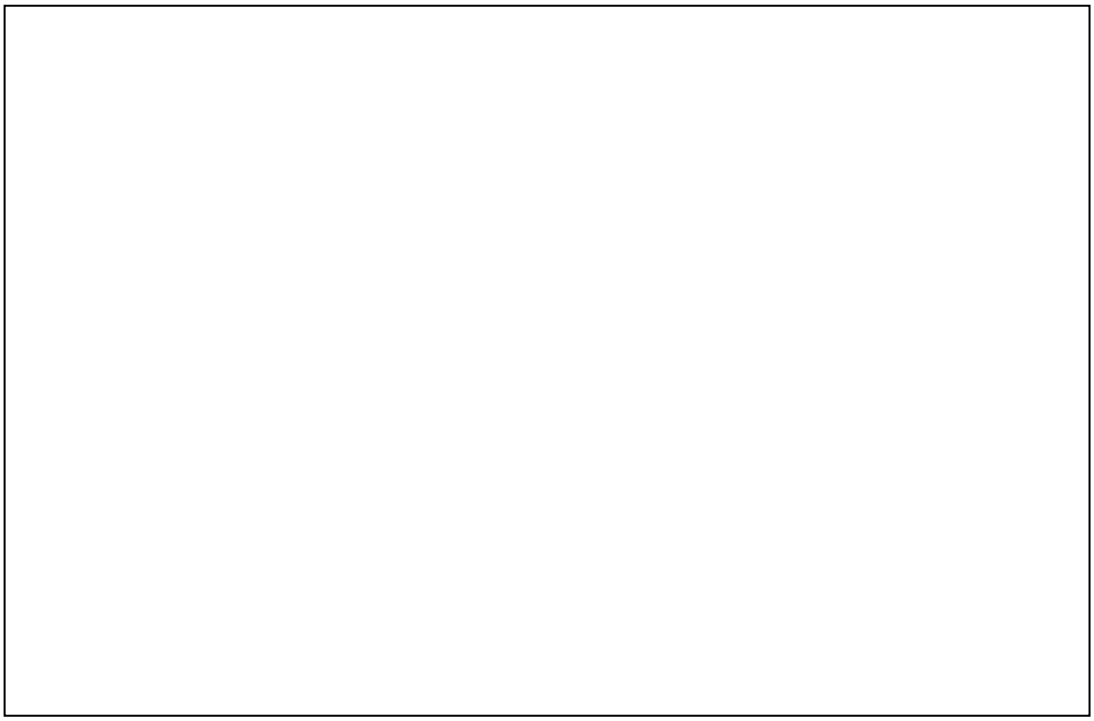
a)
```
for i in range(-10):
        print(i * i)
```

b)
```
for i in range(1, 11, 12):
    print(i*i)
```

c)
```
x = 2
y = 10
for j in range(0, y, x):
    if j % 2 == 0:
        continue
    print("iteration", j)
```

Problem IV: Programing Questions (13 Points)

1) (***4 Points***) Write a program that accepts integer inputs from a user as long as the word *stop* is not input. Compute and print the minimum of these integers.



2) (***9 Points***) Write a program that approximates the value of π by summing the terms of this series:

   4/1 – 4/3 + 4/5 – 4/7 + 4/9 – 4/11 + …

   The program should prompt the user for *n*, the number of terms to sum, and then output the sum of the first *n* terms of the above series.