CIS 122 Spring 2015
Example Midterm Exam

DISCLAIMER: These are EXAMPLE midterm questions from prior year exams to give an IDEA of the TYPES OF PROBLEMS that will be on midterm one. It is NOT a comprehensive practice test and does not cover all midterm topics.

(0) Computational problem solving starts with a problem and ends with a computer program that solves the problem. In between is a computational process, a sequence of well-defined operations, that specifies how to move from the input task or problem to a computational solution.

\[ \text{TASK/PROBLEM} \rightarrow \text{COMPUTATIONAL PROCESS}/\text{________} \rightarrow \text{PROGRAM/SOLUTION} \]

Another name for a computational process, a sequence of well-defined operations, is

(a) algorithm  (b) Python  (c) object  (d) none of these.

(1) What is the result of entering each of the following expressions into the Python shell?

a) >>> 9 % 3

b) >>> 2.5 * 2

c) >>> 10 % 3

d) >>> 4 // 5

e) >>> int('97403')
(2) After the following Python statement is executed:

```python
>>> greeting = 'hello'
```

Show the result of entering the following into the Python Shell:

```python
>>> 'greeting'
```

```python
>>> greeting
```

(3) Given the following Python code:

```python
def skittles():
    
    print the number of skittles of each color
    no return value
    
    ttl = input('how many skittles are there altogether? ')
    ttl = int(ttl)
    
    o = 5
    g = o ** 2
    y = ttl - (o + g)
    
    print('skittles' + 'skittles')          # checkpoint 1
    print(o, g, y, ttl)                   # final checkpoint
    return #None
```

When skittles is called – skittles() – and the user indicates there are 50 skittles total when asked, what will be printed at each checkpoint?

checkpoint 1:

final checkpoint:
(4) Given the following Python code:

```python
def sort3(x, y, z):
    '''
    sorts x, y, and z into ascending order and prints the sorted list
    '''
    tmp = max(x, y)
x = min(x, y)
y = tmp
    print(x, y, z)  # checkpoint 1

    tmp = max(y, z)
y = min(y, z)
z = tmp
    print(x, y, z)  # checkpoint 2

    tmp = max(x, y)
x = min(x, y)
y = tmp
    print(x, y, z)  # final checkpoint
    return #None
```

After entering the following into the Python Shell:

```python
>>> result = sort3(101, 1, 99)
```

a) What is printed at checkpoint 1?

b) What is printed at checkpoint 2?

c) What is printed at the final checkpoint?

d) What is the value of result?

(1) None  (2) 1  (3) 99  (4) 'result'
(5) Given the following Python code:

```python
def greeting(name):
    '''
    returns a string - Hello, <name> - for input name
    '''
    return('Hello, ' + name)
```

(a) Write the type contract for `greeting`:

(b) Edit `greeting` to take a second parameter, `which_greet`, that contains a particular greeting (3 edits). For example,

```python
>>> greeting('Good morning', 'CIS 122')
'Good morning, CIS122'

>>> greeting('Hello', 'World')
'Hello, World'
```

(1)

(2)

(3)

(c) What is the value of `result` after the following code is executed?

```python
>>> result = greeting('Ciao', 'Ducks')
```

(1) None  (2) 'Ciao'  (3) 'Ciao, Ducks'  (4) 'result'
(6) An example of a Python built in function is
(a) abs  (b) max  (c) float  (d) all of these

(9) What is the value of x after the following code is executed?

```python
>>> x = 10
>>> x = x + 20
>>> x = x + x
>>> x
```

(7) Write the letter next to the correct word below in the blank space.

A(n) ________ is a variable created inside a function.
A(n)__________ is a set of values along with a set of operations that can be performed on those values.
A(n) ________ is a type-specific function.
A(n) ________ associates a name/label with a value.
A(n) ________ is a program that manages your computer’s hardware on behalf of other programs.
A(n) ________ is a set of instructions or statements written in a language a computer can understand.
A(n) ________ is evaluated and returns a value

a) method
b) variable
c) operating system
d) expression
e) type
f) module
g) local variable
h) program