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.

TASK/PROBLEM $\rightarrow$ COMPUTATIONAL PROCESS/________ $\rightarrow$ 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
   0

b) >>> 2.5 * 2
   5.0

c) >>> 10 % 3
   1

d) >>> 4 // 5
   0

e) >>> int('97403')
   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'
'greeting'
```

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

(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:
**skittlesskittles**

final checkpoint:
**5 25 20 50**
Given the following Python code:

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:

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

a) What is printed at checkpoint 1?
   1 101 99

b) What is printed at checkpoint 2?
   1 99 101

c) What is printed at the final checkpoint?
   1 99 101

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`:

```
(str) -> str
```

(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. **add `which_greet` to parameter list**

2. **docstring**: returns str `<which_greet>`, `<name>` for input name, `which_greet`

3. **return**(which_greet +', '+name)

(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 60
```

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

A(n) ___g_____ is a variable created inside a function.

A(n)___e_____ is a set of values along with a set of operations that can be performed on those values.

A(n)___a____ is a type-specific function.

A(n)___b_____ associates a name/label with a value.

A(n)___c_____ is a program that manages your computer's hardware on behalf of other programs.

A(n)___h_____ is a set of instructions or statements written in a language a computer can understand.

A(n)___d_____ is evaluated and returns a value

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