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Lecture 5 Quiz

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1. A student writes several functions to swap the values of the two variables x and y, i.e. if x=1 and y=2, after calling the swap function x=2 and y=1. The different functions that the student writes are given below: **1 / 1 point**

```
def swap1(x,y) :
    x=y
    y=x
    return(x,y)

def swap2(x,y) :
    return(y,x)

def swap3(x,y) :
    z=x
    x=y
    y=z
    return(x,y)

def swap4(x,y) :
    x,y=y,x
    return(x,y)
```

Which of the functions swap1, swap2, swap3, and swap4 is correct?

- ○ Function swap1 only
- ◉ Functions swap2, swap3, and swap4 only
- ○ Functions swap3, and swap4 only
- ○ Functions swap1, swap2, and swap3 only

✓ **Correct**

2. Consider the following two functions: **1 / 1 point**

```
def f1(x):
    if (x > 0):
        x = 3*x
        x = x / 2
    return x

def f2(x):
    if (x > 0):
        x = 3*x
    x = x / 2
    return x
```

For what values of x will f1 and f2 return the same value?

- ○ For negative values of x only
- ○ For x< 3/2
- ◉ When x is zero or positive
- ○ Any value of x

✓ **Correct**

3. A recursive function in programming is a function that calls itself during its execution. The following two functions are examples of recursive functions: **1 / 1 point**

```
def function1(length):
    if length > 0:
        print(length)
        function1(length - 1)
def function2(length):
    while length > 0:
        print(length)
        function2(length - 1)
```

What can you say about the output of function1(3) and function2(3)?

- The two programs produce the same output:

  1

  2

  3

- function1 produces the output:

  3

  2

  1

  and function2 runs infinitely.

- function1 produces the output: 3 2 1 and function2 runs infinitely.
- The two functions produce the same output 3 2 1.

✓ **Correct**

4. The following recursive function takes three positive integer arguments: **1 / 1 point**

```
def compute(n,x,y) :
    if n==0 : return x
    return compute(n-1,x+y,y)
```

What is the value returned by the compute function?

- x+n*y
- x
- n*x+y
- x+y

✓ **Correct**

5. What will the returned value be for the compute function defined in Question 4 if the argument n is negative? **1 / 1 point**

- x+y
- The function will never return a value.
- x
- x+n*y

✓ **Correct**

6. The following functions are all intended to check whether a string representing a dna sequence contains any characters that are not 'a','c','g','t', 'A', 'C', 'G', or 'T'. At least some of these functions are wrong. Which ones are correct? **1 / 1 point**

```
def valid_dna1(dna):
    for c in dna:
        if c in 'acgtACGT':
            return True
        else:
            return False
```

```
def valid_dna2(dna):
    for c in dna:
       if 'c' in 'acgtACGT':
            return 'True'
        else:
            return 'False'
```

```
def valid_dna3(dna):
    for c in dna:
        flag = c in 'acgtACGT'
    return flag
```

```
def valid_dna4(dna):
    for c in dna:
        if not c in 'acgtACGT':
            return False
    return True
```

- ○ valid_dna2 only
- ◉ valid_dna4 only
- ○ valid_dna1, and valid_dna3 only
- ○ valid_dna1, valid_dna2, and valid_dna4 only

✓ **Correct**

7. What is the type of variable L3 and what is its value if L1 and L2 are lists? **1 / 1 point**

L3 = [i for i in set(L1) if i in L2]

- ○ L3 is a tuple with elements that are both in L1 and L2
- ○ L3 is a list with all the elements in L1 and L2
- ◉ L3 is a list that contains only the elements that are common between the lists (without duplicates).
- ○ L3 is a set with elements common between the lists L2 and L3.

✓ **Correct**

8. What will be printed after executing the following code? **1 / 1 point**

```
>>>def f(mystring):
        print(message)
        print(mystring)
        message="Inside function now!"
        print(message)
>>>message="Outside function!"
>>>f("Test function:")
```

- ○ Outside function!

  Test function:

  Inside function now!
- ○ Test function:

  then an error message
- ◉ An error message.
- ○ Outside function!

✓ **Correct**

9. Which statement below is true about a function: **1 / 1 point**

- ○ must always have a return statement
- ○ must have at least one parameter
- ○ must always have a fixed number of arguments
- ◉ may have no parameters

✓ **Correct**

10. Which of the following function headers is correct? **1 / 1 point**

A. def afunction(a1 = 1, a2):

B. def afunction(a1 = 1, a2, a3 = 3):

C. def afunction(a1 = 1, a2 = 2, a3 = 3):

- ○ A,B
- ○ A
- ◉ C
- ○ None is correct.

✓ **Correct**