

Feedback — Quiz 4b

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You submitted this quiz on **Mon 13 Oct 2014 5:36 PM WEST**. You got a score of **100.00** out of **100.00**.

Question 1

In Python, `[1, 2, 3]` is of type list. What is the name of the type of `(1, 2, 3)`?

Your Answer	Score	Explanation
<input type="radio"/> Array		
<input type="radio"/> Set		
<input checked="" type="radio"/> Tuple	✓ 10.00	
<input type="radio"/> Triple		
<input type="radio"/> Pair		
Total	10.00 / 10.00	

Question 2

Which of the following types of data are immutable in Python?

Your Answer	Score	Explanation
<input checked="" type="checkbox"/> Strings	✓ 2.00	
<input checked="" type="checkbox"/> Tuples	✓ 2.00	

<input type="checkbox"/> Lists	✓	2.00
<input checked="" type="checkbox"/> Numbers	✓	2.00
<input checked="" type="checkbox"/> Booleans	✓	2.00
Total		10.00 / 10.00

Question 3

Which of the following functions must include a `global point` declaration in order to change the global variable `point`?

```
point = [0, 0]

def function1():
    point[0] += 1
    point[1] += 2

def function2():
    point = [50, 50]
```

Your Answer	Score	Explanation
<input type="checkbox"/> <code>function1</code>	✓ 5.00	
<input checked="" type="checkbox"/> <code>function2</code>	✓ 5.00	
Total	10.00 / 10.00	

Question 4

Consider the following three similar programs. Read them carefully to observe their differences.

- `a = range(5)`

```
def mutate(a):
    a[3] = 100

mutate(a)
print a[3]
```

- `a = range(5)`

```
def mutate(b):
    a[3] = 100

mutate(a)
print a[3]
```

- `a = range(5)`

```
def mutate(b):
    b[3] = 100

mutate(a)
print a[3]
```

We would like to know whether these all accomplish the same thing. What are the three values, respectively, printed by these three pieces of code? Separate the values only with spaces.

You entered:

100 100 100

Your Answer		Score	Explanation
100	✓	3.33	
100	✓	3.33	
100	✓	3.33	
Total		10.00 / 10.00	

Question 5

In our program, the variable `position` represents a 2D position on the canvas. We want to be able to change the position by some amount in variable `delta`. Why is the following code snippet incorrect?

```
position = [50, 50]
delta = [1, -2]
...
position = position + delta
```

Note that the ellipses represent that we might have code in between what is shown, but such code is irrelevant and omitted.

Your Answer	Score	Explanation
<input type="radio"/> One of the elements of <code>delta</code> is negative.		
<input checked="" type="radio"/> The <code>+</code> operator on lists does not mean addition of the numbers in a list.	✓ 10.00	
<input type="radio"/> Lists do not support the <code>+</code> operator.		
<input type="radio"/> The numbers in <code>position</code> cannot be changed.		
Total	10.00 / 10.00	

Question 6

Consider the following program.

```

a = ["green", "blue", "white", "black"]
b = a
c = list(a)
d = c
a[3] = "red"
c[2] = a[1]
b = a[1 : 3]
b[1] = c[2]

```

At the end of this code, to how many list objects do the variables refer?

If you run the code and print the variables' values, you can begin to answer this question. After all, if two variables print differently, they certainly can't refer to the same object. However, if two variables print the same, you still need to determine whether they refer to the same object. One way is to step through the code while drawing reference diagrams. Another is to mutate one and see if others also mutate.

Your Answer	Score	Explanation
<input checked="" type="radio"/> 3	✓ 10.00	
<input type="radio"/> 1 — The four variables each refer to the same list.		
<input type="radio"/> 2		
<input type="radio"/> 4 — The four variables each refer to different lists.		
Total	10.00 / 10.00	

Question 7

Convert the following specification into code. Do the point and rectangle ever overlap?

A point starts at `[10, 20]`. It repeatedly changes position by `[3, 0.7]` — e.g., under button or timer control. Meanwhile, a rectangle stays in place. Its corners are at `[50, 50]` (upper left), `[180, 50]` (upper right), `[180, 140]` (lower right), and `[50, 140]` (lower left).

To check for overlap, i.e., collision, just run your code and check visually. You do *not* need to implement a point-rectangle collision test. However, we encourage you to think about

how you would implement such a test.

Your Answer	Score	Explanation
<input checked="" type="radio"/> Yes	✓ 10.00	
<input type="radio"/> No		
Total	10.00 / 10.00	

Question 8

Assume we are using acceleration control for a spaceship in a game. That is, we regularly have the following updates:

- The position is incremented by the time interval multiplied by the velocity. This happens on each draw event.
- The velocity is incremented by the time interval multiplied by the acceleration. This happens on each draw event.
- The acceleration is periodically incremented by some fixed vector (the same vector for each step). This could happen on keyboard or timer events.

Assume that, initially, the ship is stationary and subject to no acceleration. What sort of trajectory will the spaceship fly in?

Either figure this out mathematically, or implement it in [CodeSkulptor](#) and see what happens.

Your Answer	Score	Explanation
<input type="radio"/> A smooth curve		
<input type="radio"/> Unpredictable		
<input type="radio"/> Spiral		
<input checked="" type="radio"/> Straight line	✓ 10.00	Since the change to acceleration is a fixed constant, the velocity will always be in the direction indicated by this constant.

Total	10.00
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	10.00

Question 9

Write a Python program that initializes a global variable to 5. The keydown event handler updates this global variable by doubling it, while the keyup event handler updates it by decrementing it by 3.

What is the value of the global variable after 12 separate key presses, i.e., pressing and releasing one key at a time, and repeating this 12 times in total?

To test your code, the global variable's value should be 35 after 4 key presses.

You entered:

Your Answer		Score	Explanation
8195	✓	20.00	
Total		20.00 / 20.00	