

## Feedback — Quiz 4b

[Help Center](#)

Thank you. Your submission for this quiz was received.

You submitted this quiz on Thu 11 Feb 2016 4:59 AM PST. 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 checked="" type="radio"/> Tuple	✓	10.00	
<input type="radio"/> Array			
<input type="radio"/> Triple			
<input type="radio"/> Set			
<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 type="checkbox"/> Lists	✓	2.00	
<input checked="" type="checkbox"/> Numbers	✓	2.00	
<input checked="" type="checkbox"/> Tuples	✓	2.00	
<input checked="" type="checkbox"/> Strings	✓	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 checked="" type="checkbox"/> <code>function2</code>	✓	5.00	
<input type="checkbox"/> <code>function1</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:

| 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 checked="" type="radio"/> The <code>+</code> operator on lists does not mean addition of the numbers in a list. | <div>✓</div> 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.                                          |                    |             |
| <input type="radio"/> One of the elements of <code>delta</code> is negative.                                           |                    |             |
| 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 |
|-------------|-------|-------------|
|-------------|-------|-------------|

☐ 1 — The four variables each refer to the same list.

☐ 2

☒ 3 ✓ 10.00

☐ 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

☒ Yes



10.00

☐ 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 checked="" type="radio"/> A straight line | ✓ 10.00       | Since the change to acceleration is a fixed vector, both the acceleration and velocity will always be a multiple of this fixed vector. Therefore, the trajectory of the ship will follow a straight line in the direction of the fixed vector. |
| <input type="radio"/> Spiral                     |               |                                                                                                                                                                                                                                                |
| <input type="radio"/> Unpredictable              |               |                                                                                                                                                                                                                                                |
| <input type="radio"/> A non-linear, smooth curve |               |                                                                                                                                                                                                                                                |
| Total                                            | 10.00 / 10.00 |                                                                                                                                                                                                                                                |

#### Question Explanation

Remember that the ship starts at rest with no initial acceleration. If the ship can accelerate in only one direction, what is its trajectory?

## 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:

8195

| Your Answer |   | Score         | Explanation |
|-------------|---|---------------|-------------|
| 8195        | ✓ | 20.00         |             |
| Total       |   | 20.00 / 20.00 |             |