

An Introduction To Interactive Programing In Python (Part 2)

by Joe Warren, Scott Rixner, John Greiner, Stephen Wong

Quiz 5b – Dictionaries and images

Skanda S Bharadwaj

Question 1

Which of the following expressions corresponds to a dictionary with no elements?

Your Answer		Score	Explanation
<input type="text" value="None"/>	Correct	1.00	
<input type="text" value="[]"/>	Correct	1.00	
✓ <input type="text" value="dict()"/>	Correct	3.00	
✓ <input type="text" value='{}"/'/>	Correct	5.00	
Total		10.00 / 10.00	

Question 2

Given an existing dictionary `favorites`, what Python statement adds the key `"fruit"` to this dictionary with the corresponding value `"blackberry"` ?

Your Answer	Score	Explanation
<code>favorites{"fruit" : "blackberry"}</code>	Correct 1.00	
✓ <code>favorites["fruit"] = "blackberry"</code>	Correct 7.00	
<code>favorites["fruit" : "blackberry"]</code>	Correct 1.00	
<code>favorites = {"fruit" : "blackberry"}</code>	Correct 1.00	This statement creates a new dictionary instead of adding to an existing dictionary.
Total	10.00 / 10.00	

Question 3

Keys in a dictionary can have which of the following types?

Your Answer		Score	Explanation
Lists	Correct	1.25	
✓ Booleans	Correct	2.50	
Dictionaries	Correct	1.25	
✓ Strings	Correct	2.50	
✓ Tuples	Correct	2.50	
Total		10.00 / 10.00	

Question 4

Values in a dictionary can have which of the following types?

3

Your Answer		Score	Explanation
✓ Booleans	Correct	2.50	
✓ Strings	Correct	2.50	
✓ Lists	Correct	2.50	
✓ Tuples	Correct	2.50	
Total		10.00 / 10.00	

Question 5

We often want to loop over all the key/value pairs in a dictionary. Assume the variable `my_dict` stores a dictionary. One way of looping like this is as follows:

```
for key in my_dict:
    value = my_dict[key]
...
```

However, there is a better way. We can instead write the following:

```
for key, value in ???:
```

```
...
```

What code should replace the question marks so that the two forms are equivalent? Refer to the video on dictionaries or the CodeSkulptor [documentation](#).

Your Answer	Score	Explanation
<code>my_dict.values()</code>		
<code>list(my_dict)</code>		
<code>my_dict.keys()</code>		
<code>items(my_dict)</code>		
✓ <code>my_dict.items()</code>	Correct 10.00	
<code>my_dict.keys_values()</code>		



Total

10.00 / 10.00

Question 6

Conceptually, the purpose of a dictionary is to represent a relationship between two collections of data — each key in the dictionary is related to one value. Which of the following situations are instances of such a relationship?

Do not include situations where you have to introduce additional information in order to fit them into such a relationship.

Your Answer		Score	Explanation
Storing a sorted collection of strings	Correct	1.00	No, dictionaries are unordered. A list is a better option.
✓ Storing a sensor's data samples and the time of each sample	Correct	4.00	Yes, map each time (key) to the corresponding sample (value)
✓ Storing names and IDs (identification numbers)	Correct	4.00	Yes, map each ID (key) to the corresponding name (value). Each ID should be unique — otherwise it shouldn't be considered an ID.
Storing a sensor's data samples	Correct	1.00	No, there is no explicit relationship in this example. Conceptually, that would just be a list or, possibly, set of data

Total

10.00 /
10.00

Question Explanation

Note that it is possible to use dictionaries to represent sets and ordered collections. However, the focus of this question is on the relationship between data.

Question 7

In the previous quiz, you were asked to complete the following code:

```
import random

def random_point():
    """Returns a random point on a 100x100 grid."""
    return (random.randrange(100), random.randrange(100))

def starting_points(players):
    """Returns a list of random points, one for each player."""
    points = []
    for player in players:
        point = random_point()
```

```
    ???  
    return points
```

Now, we want to rewrite `starting_points` using a list comprehension. Which list comprehensions could replace the following question marks?

```
def starting_points(players):  
    """Returns a list of random points, one for each player."""  
    return ???
```

Refer to this week's "Visualizing iteration" video for examples of list comprehensions. Also, try each example in [CodeSkulptor](#) before answering the question.

Your Answer	Score	Explanation
<code>[for player in players: random_point()]</code>	Correct 0.50	Syntactically incorrect
✓ <code>[random_point() for player in players]</code>	Correct 4.00	
✓ <code>[random_point() for p in players]</code>	Correct 4.00	
<code>[random_point for player in players]</code>	Correct 0.50	Need to call the <code>random_point</code> function.


```
[random_point for players]
```

Correct 0.50

Syntactically incorrect and also need to call the `random_point` function.

```
[random_point(player) for player in  
players]
```

Correct 0.50

`random_point()` doesn't take an argument.

Total

10.00 /
10.00

Question 8

You have the following code. The goal is to display a portion of the image, rescaling it to fill the canvas.

```
import simplegui
```

```
frame_size = [200, 200]
```

```
image_size = [1521, 1818]
```

```
def draw(canvas):
```

```
    canvas.draw_image(image, image_size,  
                      [image_size[0] / 2, image_size[1] / 2],  
                      [frame_size[0] / 2, frame_size[1] / 2],  
                      frame_size)
```

```
frame = simplegui.create_frame("test", frame_size[0], frame_size[1])
frame.set_draw_handler(draw)
image = simplegui.load_image("http://commondatastorage.googleapis.com/codeskulptor-assets/gutenberg.jpg")

frame.start()
```

Run it, and observe that nothing is displayed in the frame. What is the problem?

Your Answer

Score

Explanati

- ✓ The source arguments in `draw_image` are incorrect. We are trying to load pixels that are not within the image, and thus the draw fails. Correct 10.00

The file is not an image.

The destination arguments in `draw_image` are incorrect. We aren't specifying values that would draw the image on this size canvas.

One or more of the `draw_image` arguments are of the wrong type.

The file doesn't exist.

Total

10.00 /
10.00

Question 9

Write a CodeSkulptor program that loads and draws the following image:

```
http://commondatastorage.googleapis.com/codeskulptor-assets/alphatest.png
```

with a source center of [220, 100] and a source size of [100, 100]. What one word appears in the canvas? If a letter is capitalized in the image, enter it as a capital.

Note that you do have to position the image as stated to see the correct word.

Answer for Question 9

You entered:

Your Answer

Score

Explanation

✓ tin

Correct

20.00

Total

20.00 / 20.00