Feedback — Quiz 6b

Help

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You submitted this quiz on **Sun 26 Oct 2014 7:05 PM WET**. You got a score of **80.00** out of **100.00**. You can attempt again, if you'd like.

Question 1

What is the position of the center of the top-left card (Ace of Clubs, A♣) in the tiled image provided for Blackjack?

Your Answer		Score	Explanation
`(0, 0)`			
`(73, 98)`			
`(5 * 73 + 36.5, 1 * 98 + 49)`			
`(36.5, 49)`	✔	10.00	
Total		10.00 / 10.00	

Question 2

What is the position of the center of the bottom-right card (King of Diamonds, K♦) in the tiled image provided for Blackjack? Enter two numbers, separated only by spaces.

You entered:

912.5 343

Your Answer		Score	Explanation
912.5	✔	5.00	

343	✔	5.00
Total		10.00 / 10.00

Question 3

When using Dropbox to store images for use with CodeSkulptor, what should the `www` portion of the DropBox URL be replaced by?

Refer to the video on tiled images.

Your Answer		Score	Explanation
◉ `dl`	✔	10.00	Yes. `dl` specifies that the file is for download.
○ `www`			
○ `gif`			
○ `html`			
○ `jpg`			
Total		10.00 / 10.00	

Question 4

Within the `__init__` method, the new object should be returned with what code?

Your Answer		Score	Explanation
○ `return`			
○ `return whatever_the_object_is_named` (Use the appropriate variable name.)			
◉ No `return` statement is needed in `__init__`.	✔	10.00	
○ `return self`			

Total	10.00 / 10.00

Question Explanation

Here are some hidden details to explain this potentially confusing behavior. Each Python class has a hidden *constructor* method that

- constructs (makes) the object,
- calls `__init__` to initialize the object,
- then returns this object.

So, while there is a `return` statement somewhere, it is in this hidden constructor method that you don't have to define.

Question 5

One way of understanding code is to think about other code that accomplishes the same thing — i.e., given the same starting values, it returns and/or mutates the same values.

This following defines one way to concatenate multiple lists. For example, `list_extend_many([[1,2], [3], [4, 5, 6], [7]])` returns `[1, 2, 3, 4, 5, 6, 7]` and doesn't mutate anything.

```
def list_extend_many(lists):
    """Returns a list that is the concatenation of all the lists in the giv
en list-of-lists."""
    result = []
    for l in lists:
        result.extend(l)
    return result
```

Which of the following definitions are equivalent? I.e., which always produce the same output for the same input, and never mutate the input or any global variable?

Your Answer		Score	Explanation
☑	✔	4.00	

```
def list_extend_ma
ny(lists):
    result = []
    i = 0
    while i < len(lists
):
        result.extend(l
```

ists[i]) i += 1 return result			

☐
def list_extend_many(lists):
result = []
for i in range(len(lists) - 1, -1, -1):
result.extend(lists[i])
return result
	✔	1.00	This loops over all the items in the list, but in the reverse order. Sometimes that is fine, but here it the result is in reversed.

☐
def list_extend_many(lists):
result = []
i = 0
while i < len(lists):
i += 1
result.extend(lists[i])
return result
	✔	1.00	The indices are off by one.

☑
def list_extend_many(lists):
result = []
i = 0
while i < len(lists):
result += lists[i]
i += 1
return result
	✔	4.00	

Total		10.00 / 10.00	

Question 6

Which of the following programs would never end if it weren't for CodeSkulptor's timeout? Assume no `break` or `return` statement is used in the elided loop bodies.

You might want to add a `print` statement to each loop to better understand the behavior.

Your Answer		Score	Explanation
☐ n = 1000 while n > 0: … # Assume this doesn't modify n. n -= 1	✔	1.00	
☑ while True: …	✔	4.00	
☐ my_list = … for x in my_list: … # Assume this doesn't mutate my_list.	✔	1.00	
☑ n = 127834876 while n >= 0: … # Assume this doesn't modify n. n //= 2	✔	4.00	
Total		10.00 / 10.00	

Question 7

Convert the following English description into code.

1. Initialize `n` to be 1000. Initialize `numbers` to be a list of numbers from 2 to n, but not including `n`.
2. With `results` starting as the empty list, repeat the following as long as `numbers` contains any numbers.
   - Add the first number in `numbers` to the end of `results`.
   - Remove every number in `numbers` that is evenly divisible by (has no remainder when divided by) the number that you had just added to `results`.

How long is `results`?

To test your code, when `n` is instead 100, the length of `results` is 25.

You entered:

168

Your Answer		Score	Explanation

168	✔	20.00	Correct. This computes the primes less than `n` by a process known as the Sieve of Eratosthenes.
			
			By the way, here's one way to write this:
			
			`n = 1000`
			`numbers = range(2, n)`
			`results = []`
			
			`while numbers != []:`
			`  results.append(numbers[0])`
			`  numbers = [n for n in numbers if n % numbers[0] != 0]`
			
			`print len(results)`

Total		20.00 / 20.00	

Question 8

We can use loops to simulate natural processes over time. Write a program that calculates the populations of two kinds of “wumpuses” over time. At the beginning of year 1, there are 1000 slow wumpuses and 1 fast wumpus. This one fast wumpus is a new mutation. Not surprisingly, being fast gives it an advantage, as it can better escape from predators. Each year, each wumpus has one offspring. (We'll ignore the more realistic niceties of sexual reproduction, like distinguishing males and females.). There are no further mutations, so slow wumpuses beget slow wumpuses, and fast wumpuses beget fast wumpuses. Also, each year 40% of all slow wumpuses die each year, while only 30% of the fast wumpuses do.

So, at the beginning of year one there are 1000 slow wumpuses. Another 1000 slow wumpuses are born. But, 40% of these 2000 slow wumpuses die, leaving a total of 1200 at the end of year one. Meanwhile, in the same year, we begin with 1 fast wumpus, 1 more is born, and 30% of these die, leaving 1.4. (We'll also allow fractional populations, for simplicity.)

Beginning of Year	Slow Wumpuses	Fast Wumpuses

1	1000	1
2	1200	1.4
3	1440	1.96
...	...	...

Enter the first year in which the fast wumpuses outnumber the slow wumpuses. Remember that the table above shows the populations at the start of the year.

You entered:

Your Answer		Score	Explanation
	✖	0.00	
Total		0.00 / 20.00	