



Week 4: Good Programming

[Course](#) > [Practices](#)

> [Problem Set 4](#) >

Problem 2 - Dealing with Hands

Problem 2 - Dealing with Hands

Problem 2 - Dealing with Hands

0.0/10.0 points (graded)

****Please read this problem entirely!**** The majority of this problem consists of learning how to read code, which is an incredibly useful and important skill. At the end, you will implement a short function. Be sure to take your time on this problem - it may seem easy, but reading someone else's code can be challenging and this is an important exercise.

Representing hands

A **hand** is the set of letters held by a player during the game. The player is initially dealt a set of random letters. For example, the player could start out with the following hand: `a, q, l, m, u, i, l`. In our program, a hand will be represented as a dictionary: the keys are (lowercase) letters and the values are the number of times the particular letter is repeated in that hand. For example, the above hand would be represented as:

```
hand = {'a':1, 'q':1, 'l':2, 'm':1, 'u':1, 'i':1}
```

Notice how the repeated letter `'l'` is represented. Remember that with a dictionary, the usual way to access a value is `hand['a']`, where `'a'` is the key we want to find. However, this only works if the key is in the dictionary; otherwise, we get a `KeyError`. To avoid this, we can use the call `hand.get('a',0)`. This is the "safe" way to access a value if we are not sure the key is in the dictionary.

`d.get(key,default)` returns the value for `key` if `key` is in the dictionary `d`, else `default`. If `default` is not given, it returns `None`, so that this method never raises a `KeyError`. For example:



```
>>> hand['e']
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
KeyError: 'e'
>>> hand.get('e', 0)
0
```

Converting words into dictionary representation

One useful function we've defined for you is `getFrequencyDict`, defined near the top of `ps4a.py`. When given a string of letters as an input, it returns a dictionary where the keys are letters and the values are the number of times that letter is represented in the input string. For example:

```
>>> getFrequencyDict("hello")
{'h': 1, 'e': 1, 'l': 2, 'o': 1}
```

As you can see, this is the same kind of dictionary we use to represent hands.

Displaying a hand

Given a hand represented as a dictionary, we want to display it in a user-friendly way. We have provided the implementation for this in the `displayHand` function. Take a few minutes right now to read through this function carefully and understand what it does and how it works.

Generating a random hand

The hand a player is dealt is a set of letters chosen at random. We provide you with the implementation of a function that generates this random hand, `dealHand`. The function takes as input a positive integer `n`, and returns a new object, a hand containing `n` lowercase letters. Again, take a few minutes (right now!) to read through this function carefully and understand what it does and how it works.

Removing letters from a hand (you implement this)

The player starts with a hand, a set of letters. As the player spells out words, letters from this set are used up. For example, the player could start out with the following hand: `a, q, l, m, u, i, l`. The player could choose to spell the word `quail`. This would leave the following letters in the player's hand: `l, m`. Your task is to



implement the function `updateHand`, which takes in two inputs - a `hand` and a `word` (string). `updateHand` uses letters from the hand to spell the word, and then returns a copy of the `hand`, containing only the letters remaining. For example:

```
>>> hand = {'a':1, 'q':1, 'l':2, 'm':1, 'u':1, 'i':1}
>>> displayHand(hand) # Implemented for you
a q l l m u i
>>> hand = updateHand(hand, 'quail') # You implement this function!
>>> hand
{'a':0, 'q':0, 'l':1, 'm':1, 'u':0, 'i':0}
>>> displayHand(hand)
l m
```

Implement the `updateHand` function. Make sure this function has no side effects: i.e., it must not mutate the hand passed in. Before pasting your function definition here, be sure you've passed the appropriate tests in `test_ps4a.py`.

Hints

Testing

Testing: Make sure the `test_updateHand()` tests pass. You will also want to test your implementation of `updateHand` with some reasonable inputs.

Copying Dictionaries

You may wish to review the `".copy"` method of Python dictionaries (review this and other Python dictionary methods [here](#)).

Your implementation of `updateHand` should be short (ours is 4 lines of code). It does not need to call any helper functions.

```
def updateHand(hand, word):
    """
    Assumes that 'hand' has all the letters in word.
    In other words, this assumes that however many times
    a letter appears in 'word', 'hand' has at least as
    many of that letter in it.

    Updates the hand: uses up the letters in the given word
    and returns the new hand, without those letters in it.
```



```
11     Has no side effects: does not modify hand.
12
13     word: string
14     hand: dictionary (string -> int)
15     returns: dictionary (string -> int)
```

Press ESC then TAB or click outside of the code editor to exit

Unanswered

Submit

You have used 0 of 30 attempts

Problem 2 - Dealing with Hands

Hide Discussion

Topic: Problem Set 4 / Problem 2

Add a Post

Show all posts

by recent activity

- ? How to code in only 4 lines? Mine is 5 lines of code 18
Although my 5-line code is right (passed the grader), i'm wondering how to code in only 4 line...
- ? What's does "shallow copy of dictionary" means? 2
I'm a bit confused about the use of copy and deep copy, when i used copy() it gave me the sa...
- 💬 updateHand function does not pass the test 5
My updateHand function returns the correct hand for all three test cases ('quail', 'evil', and 'h...
- 💬 Repeatable keys in dictionary 4
I remember it was said that repeatable keys in dictionary are not possible. However, in this e...
- ? dealHand(n) 2
Hi everyone, I wanted to explain this code cause was difficult for me understand it, so hope it...
- ? displayHand(hand) 2
hi all, in this function, how does end==" " work? its really confusing and not intuitive. second, ...
- 💬 if hand.copy() makes just a reference and not a copy like hand.deepcopy() why doesnt hand.copy() mutate original hand 2
same question for reference if hand.copy() makes just a reference and not a copy like hand.d...



| | |
|--|----|
| 💬 <u>getFrequencyDict had to be manually included</u> | 2 |
| I used the <code>getFrequencyDict()</code> function in my code but kept getting the error that it was not d... | |
| 💬 <u>not understanding the re-test of last test</u> | 2 |
| i understand how to copy the dictionary without it pointing to the same object. the problem t... | |
| ? <u>What is wrong?</u> | 5 |
| ? <u>hand copy</u> | 11 |
| can someone explain me why we want to mutate the copy of the hand dict. ? why can't we ju... | |
| ? <u>when generating random hand - it is n/3 vowels AT MOST, not at least</u> | 2 |
| in the definition of <code>dealHand(n)</code> the comment says: "At least n/3 the letters in the hand shoul... | |
| ? <u>Please help, I don't know how to fix this</u> | 2 |
| My output is not right whenever they do this:Re-testing last test to see if you mutate the origi... | |
| 💬 <u>Keep it simple.</u> | 1 |
| My only advice here is to NOT overthink things. Just read the description: What is it they want... | |
| 💬 <u>Hand Copy : Everyone should give this a read</u> | 1 |
| Sharing a stackoverflow link. I found it really useful and felt that I should share it with everyo... | |
| ✓ <u>Unclear wording of problem</u> | 2 |
| I implemented the function and passed the grader, but I'm unclear on part of the description... | |
| ? <u>order change in dictionary</u> | 2 |
| my results are correct but unordered hence my grade keeps falling...what should i do??? | |
| 💬 <u>Is the <code>d.get(key, default)</code> call necessary?</u> | 3 |
| Hi! I don't understand why we should use the <code>*d.get(key, default)*</code> call. The assumptions in th... | |
| 💬 <u>"<code>random.choice(VOWELS)</code>" instead of indexing by "<code>random.randrange</code>"</u> | 2 |
| in " <code>dealHand</code> " function, is there any specific purpose for using " <code>random.randrange(0,len(VO...</code> | |
| 💬 <u><code>getFrequencyDict()</code> not defined</u> | 5 |
| Even though the question states that is is defined, and in fact it works on the test <code>ps4a.py</code> , the... | |

© All Rights Reserved

