Practice Exercises for Dictionaries

Solve each of the practice exercises below. Each problem includes two CodeSkulptor3 links: one for a template that you should use as a starting point for your solution and one to our solution to the exercise.

1. Write an expression that initializes the dictionary `my_dict` to be the empty dictionary. Empty dictionary template --- Empty dictionary solution
2. Write an expression that initializes the dictionary `my_dict` to contain two key/value pairs: `"Joe" : 1` and `"Scott" : 2` . Two key dictionary template --- Two key dictionary solution
3. Given the dictionary `my_dict` from the previous question, write a Python statement that adds the key/value pair `"John" : 3` to this dictionary. Add key/value template --- Add key/value solution
4. Given the dictionary `my_dict` from the previous question, write three expressions that return `True` if the dictionary `my_dict` whether the keys `"Joe"` , `"Scott"` , and `"John"`, respectively, and `False` otherwise . Contains key template --- Contains key solution
5. Write a function `is_empty(my_dict)` that takes a dictionary `my_dict` and returns `True` if `my_dict` is empty and `False` otherwise. Is empty template --- Is empty solution
6. Write a function `value_sum(my_dict)` that returns the sum of the values in the dictionary `my_dict`. (You may assume that the values in the dictionary are numbers). Value sum template --- Value sum solution
7. Write a function `make_dict(key_value_list)` that takes a list of tuples `key_value_list` where each tuple is of the form (key, value) and returns a dictionary with these keys and corresponding values. Make dictionary template --- Make dictionary solution
8. A simple substitution cipher is an encryption scheme where each letter in an alphabet to replaced by a different letter in the same alphabet with the restriction that each letter's replacement is unique. The template for this question contains an example of a substitution cipher represented a dictionary `CIPHER_DICTIONARY`. Your task is to write a function `encrypt(phrase, cipher_dict)` that takes a string `phrase` and a dictionary `cipher_dict` and returns the results of replacing each character in `phrase` by its corresponding value in `cipher_dict`. Encrypt template --- Encrypt solution
9. **Challenge:** Write a function `make_decipher_dict(cipher_dict)` that takes a cipher dictionary `cipher_dict` and returns a new dictionary `decipher_dict` with the property that applying `decipher_dict` to a phrase encrypted using `cipher_dict` returns the original phrase. Make decipher template --- Make decipher solution
10. **Challenge:** Write a function `make_cipher_dict(alphabet)` that takes a string of unique characters and returns a randomly-generated cipher dictionary for the characters in `alphabet` . You should use the `shuffle()` method in the `random` module to ensure that your returned cipher dictionary is random. Make cipher template --- Make cipher solution

Mark as completed