

CSC108H Winter 2023 Worksheet: Dictionaries

1. Consider this code:

```
name_to_binomial = {'human': 'Homo sapiens',  
                    'dog': 'Canis familiaris',  
                    'narwhal': 'Monodon monoceros'}
```

Circle the expressions that evaluate to True.

(a) `'dog' in name_to_binomial` (b) `'Canis familiaris' in name_to_binomial`

(c) `name_to_binomial[0] == 'human'` (d) `len(name_to_binomial) == 3`

(e) `name_to_binomial == {'dog': 'Canis familiaris',
 'narwhal': 'Monodon monoceros',
 'human': 'Homo sapiens'}`

2. Consider this code:

```
animal_to_locomotion = {'fish': ['swim'],  
                        'kangaroo': ['hop'],  
                        'frog': ['swim', 'hop']}
```

Indicate whether each statement will cause an error and, if not, whether the statement will increase the number of key/value pairs in the dictionary:

Statement	Error? (yes or no)	Increases length of dictionary? (yes or no)
<code>animal_to_locomotion['human'] = ['swim', 'run', 'walk', 'airplane']</code>		
<code>animal_to_locomotion['orangutan'].append('brachiate')</code>		
<code>animal_to_locomotion['kangaroo'].append('airplane')</code>		
<code>animal_to_locomotion['frog'] = ['tapdance']</code>		
<code>animal_to_locomotion['dolphin'] = animal_to_locomotion['fish']</code>		

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3. The express checkout is for grocery orders with 8 or fewer items. Complete the examples in the docstring and then complete the function body.

```
def express_checkout(product_to_quantity: dict[str, int]) -> bool:
    """Return True if and only if the grocery order in product_to_quantity
    qualifies for the express checkout. product_to_quantity maps products
    to the numbers of those items in the grocery order.

    >>> express_checkout({'banana': 3, 'soy milk': 1, 'peanut butter': 1})
    

    >>> express_checkout({'banana': 3, 'soy milk': 1, 'twinkie': 5})
    

    """
```

4. As part of a study funded by a major shoe company, we crouched at the finish line of the Boston marathon and kept an ordered list of the shoes that we saw as they passed the finish line. Write a function that, given such a list, will return a dictionary mapping shoe companies to a list of the placements achieved by runners wearing shoes made by those companies.

```
def build_placements(shoes: list[str]) -> dict[str, list[int]]:
    """Return a dictionary where each key is a company and each value is a
    list of placements by people wearing shoes made by that company.

    >>> result = build_placements(['Saucony', 'Asics', 'Asics', 'NB', 'Saucony', \
    'Nike', 'Asics', 'Adidas', 'Saucony', 'Asics'])
    >>> result == {'Saucony': [1, 5, 9], 'Asics': [2, 3, 7, 10], 'NB': [4], \
    'Nike': [6], 'Adidas': [8]}
    True
    """
```