

CS 100

Homework 10

Due Date:

Do all of the items below and **submit** one ZIP file containing all the solutions via Canvas. If you run into a problem, post to Canvas describing where you ran into trouble or email your instructor or classroom assistant, or ask your question during recitation hours. If you know the answer to someone's question on Canvas, post a response. You get course credit for asking and answering questions in Canvas.

- Read Chapter 11 (Dictionaries) in the textbook.
- Read the Python tutorial section 5.5 (Dictionaries). The Python tutorial can be accessed through the documentation installed with IDLE:
Help → Python Docs → Tutorial → 5.5. Dictionaries
If you are using an alternate IDE, visit:
<https://docs.python.org/3/tutorial/datastructures.html#dictionaries>
to browse the tutorial online.
- In the Python editor IDLE, create and save a Python file for each problem given. Before submitting your solutions via Canvas, ZIP the Python files and name the archive, if your name is Harry Houdini, for example, *HW10_HarryHoudini.zip*. Each Python file must begin with a comment containing your name, class and section, the posting date and number of the homework assignment.
- **Write and test.** For each problem, write code that satisfies the problem specification. Test your code by designing at least three inputs for each problem that you believe are likely to reveal any bug and run your code on those inputs. **Include** the test inputs in the corresponding .py file.

Problem 1

Write a function named *initialLetterCount* that takes one parameter, *wordList* — a list of words. Create and return a dictionary in which each initial letter of a word in *wordList* is a key and the corresponding value is the number of words in *wordList* that begin with that letter. The keys in the dictionary should be case-sensitive, which means 'a' and 'A' are two different keys.

For example, the following is correct output:

```
horton = ['I', 'say', 'what', 'I', 'mean', 'and', 'I', 'mean', 'what', 'I', 'say']
print(initialLetterCount(horton))
{'I': 4, 's': 2, 'w': 2, 'm': 2, 'a': 1}
```

Problem 2

Write a function named *initialLetters* that takes one parameter, *wordList* — a list of words. Create and return a dictionary in which each initial letter of a word in *wordList* is a key and the corresponding value is a list of the words in *wordList* that begin with that letter. There should be no duplicate words in any value in the dictionary.

For example, the following is correct output:

```
print(initialLetters(horton))
{'I': ['I'], 's': ['say'], 'w': ['what'], 'm': ['mean'], 'a': ['and']}
```

Problem 3

Write a function named *shareOneLetter* that takes one parameter, *wordList* – a list of words. Create and return a dictionary in which each word in *wordList* is a key and the corresponding value is a list of all the words in *wordList* that share at least one letter with that word. There should be no duplicate words in any value in the dictionary.

For example, the following is correct output:

```
print(shareOneLetter(horton))
{'I': ['I'], 'say': ['say', 'what', 'mean', 'and'], 'what': ['say', 'what', 'mean', 'and'], 'mean': ['say', 'what', 'mean', 'and'], 'and': ['say', 'what', 'mean', 'and']}
```