

# **CSI 102: Lab 05**

## Dictionaries

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I certify that this lab report is entirely my own work.

# Introduction

This lab focused on using dictionaries in Python to not just store data, but also use that data to have the end user receive outputs from it, such as correct answers in quizzes or word counts (foreshadowing). The primary goals were to: use both empty and filled in dictionaries, find out the code necessary to run both scenarios and be able to get a very good grasp on dictionaries as a whole.

# Methods

## Task 1: Word Counter

This program counts how many times each word appears in a block of text. It first cleans up the text by making everything lowercase and removing punctuation, then splits the text into individual words, counts how often each one appears using a dictionary, and finally displays the results in alphabetical order.

Here's a snippet of what the code looks like:

### **Step 1: Get and clean the text**

Ask the user to type some text, then convert it all to lowercase and remove punctuation so words like "Word" and "word." are treated the same.

### **Step 2: Split the text**

Use `.split()` to separate the cleaned text into a list of individual words.

### **Step 3: Count each word**

Use a dictionary (`word_count`) to store how many times each word appears. Loop through the words. If a word already exists in the dictionary, add 1; otherwise, start it at 1.

### **Step 4: Display the results**

Sort the words alphabetically and print each word with its count, then show a closing message.

```
text = input("Enter a series of text or paragraphs: ")

text = text.lower()

text = text.replace(".", "")
text = text.replace(",", "")
text = text.replace("!", "")
text = text.replace "?", "")
text = text.replace ";", "")
text = text.replace ":", "")
text = text.replace "'", "")
text = text.replace '!', "")

words = text.split()

word_count = {}

for word in words:
    if word in word_count:
        word_count[word] += 1
    else:
        word_count[word] = 1

for word in sorted(word_count.keys()):
    print(word, ":", word_count[word])

print("Thank you for using the word count program!")
```

### Task 2: Quiz

This program is a short quiz game that tests the user's knowledge with four questions. It uses a dictionary to store each question and its correct answer, asks the user to respond to each one, and keeps track of how many answers are correct. At the end, it shows the player's total score and a message based on their performance.

### **Step 1: Create the quiz data**

Make a dictionary called quiz where each question is a *key* and its correct answer is the *value*. This acts as the quiz's database of questions and answers.

### **Step 2: Set up the score system**

Start a variable score at 0 to keep track of how many questions the user answers correctly.

### **Step 3: Ask the questions**

Use a for loop to go through each question in the dictionary.

Display the question, take the user's input, and compare it to the correct answer (ignoring capitalization). If the answer is correct, add 1 to the score. If not, show the correct answer.

### **Step 4: Display the results**

After all the questions are answered, show the user their total score and a message, either congratulating them for getting all correct or encouraging them to try again.

## **Results**

Word Counter:

```
• sabre@fedora:~/Documents/CSI 102$ /usr/bin/python "/home/sabre/Documents/CSI 102/Lab05/wordCounter.py"
Enter a series of text or paragraphs: the quick man man man
man : 3
quick : 1
the : 1
Thank you for using the word count program!
```

Quiz:

```
• sabre@fedora:~/Documents/CSI 102$ /usr/bin/python "/home/sabre/Documents/CSI 102/Lab05/quiz.py"
What is the capital of France?
Enter your answer: paris
That's the correct answer!
What is 2 + 2?
Enter your answer: 4
That's the correct answer!
What is the largest planet in our solar system?
Enter your answer: jupiter
That's the correct answer!
```

```
Enter your answer: jupiter
That's the correct answer!
Who wrote 'Romeo and Juliet'?
Enter your answer: shakespeare
That's the correct answer!
Congratulations! You got all questions correctly!
You got 4 /4 correct.
Thank you for playing the game!
sabre@fedora:~/Documents/CSI 102$
```

## Discussion

This lab made me recall the notes that I've taken on Python dictionaries, and allowed me to use the skills that I've learned into potential real world scenarios where dictionaries may prove useful. In fact, they're really useful with the way that they're more advanced than lists in a way, where they can hold a key and a value instead of just a key or just a value.

## Challenges

One challenge was simply figuring out which commands to use for which scenario. I find myself struggling with whether to use a command and what parameters to set. The details are what screw me up, but I get the overall concept.

## Conclusion

The lab successfully showed the power of dictionaries and its utility for quite a few scenarios and has enhanced my capabilities of using dictionaries in situations that call for them.

## Appendix

Files included: quiz.py, wordCounter.py