# **Programming Assignment Unit 8**

Computer Science, University of the People

CS 1101-01 Programming Fundamentals - AY2024-T1

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## Files and Dictionaries

For this assignment, we were asked to write a program that takes an initial file containing a dictionary and then manipulates the dictionary. The manipulation will take the original dictionary and move the values to be the new dictionary keys and the keys of the old dictionary will become the dictionary values. This will produce an inverted dictionary. We will then output the inverted dictionary to a new file.



The first thing we do in the code above is set up the contents of the original dictionary file. We are using the standard JSON format for the file contents. In the next lines, we define and initialize two variables with the file names that we are going to use, one for the input file and the second for the output file. The final this we are going to do in this section is to write all the string content we created into a file that will be used as our original data source. We do this by opening a file for writing and then writing all content from the string into the file.



The next thing we have in our code is a function that does the following. First, we read the contents of the file whose path is passed into the function in the first parameter. We open the file for reading and using the Python JSON library we convert the string to a dictionary. After that, we use code like what we used in the previous assignment to iterate over the keys and values and invert them creating a new dictionary where the new dictionary keys are the values of the original dictionary and the new dictionary values are the keys from the original dictionary. This time however we are using the ‘setdefault’ function to add the value to the dictionary making it so that we don’t need the condition that checks if the key exists. The next action in the function is to write the resulting inverted dictionary out to a new file whose path is passed into the function as the second parameter. Finally, the function returns a tuple with the original and inverted dictionaries. We have also wrapped all the content of our function with a try...except block to catch any errors that might arise.



The final part of our program starts with calling the function we built and passing into it the two variables as parameters that contain the paths for the original and inverted dictionary content. The results of the function are stored in a tuple pair to be used for the output. Finally, we output the original and the inverted dictionaries to the console so that we can see the fruits of our labour.

## References

Python 3 Documentation

<https://docs.python.org/3/>

Python JSON library

<https://docs.python.org/3/library/json.html>

Think Python - How to Think Like a Computer Scientist (2nd Edition, Version 2.4.0)

Chapters 1-14

Source Scripts:

 