# Boggle

**Background**

Boggle is a word game played on a 4x4 grid of letters in which the aim is to create words from the 16 letters. The letters are arranged in a random order, and players must form as many words as possible. Restrictions on the words are that character length must be greater than, or equal to, 3 and each letter can be used only once.

**Problem Description**

Your task is to write a program that produces an output of all possible words when given a dictionary and a set of Boggle boards. You will need to identify all the words that can be constructed from the available letters. If a letter occurs twice in the board, you can use that letter twice in a word. If a word contains more than one ‘e’ (for example ‘meet’), you’ll need one ‘m’, one ‘e’, another ‘e’ and a ‘t’ in your input string – therefore the input string of ‘atamabebcdrremjh’ would satisfy this match.

**Note, it is not required that the letters be sequential on the board. You can also assume that matches are not sensitive to case.**

Please use the Python (see constraints below)

You will be provided with a dictionary file, and 100 Boggle boards, also in a file.

(Note that all files have UNIX line endings)

* The dictionary file is one word per line -- **word\_dictionary**
* The Boggle boards are in the file -- **input.txt**
* An example output file is supplied -- **output.txt**
* Each Boggle board will be a random string of 16 characters, e.g. ‘abcdefghwxyzijkl’.
* The distribution of characters in this string will be in line with the distribution of characters in the dictionary.

**Constraints**

Your program must accept 2 positional arguments:

1. The path to an input file -- use the supplied **input.txt** as an example.
2. The path to the word dictionary – use the supplied **word\_dictionary** for testing.

Your program must output a file in the exact format specified in **output.txt**.

**Language specific constraints**

**Python** Python 2.7.3 or later, 3.x is acceptable

If using 2.7, print statements should be in python 3 style:

print (a). **NOT** print a

Nothing is available to you except the python standard library

**Submission**

Your submission must include:

* Source code
* Exact compiler arguments used to compile
* An output file showing a word count for each of the supplied Boggle boards, see ‘output.txt’ for an example
* Any other information relevant to your solution

\***All source code and output should be zipped before submission \***

**The subject line of your submission e-mail should say “Boggle Complete,” include your first and last name and the title of the position you applied for in i.e., “Boggle Complete: Elizabeth Gilbert- Quantitative Analysis Internship.”**

**P**lease send your submission to[**Elizabeth.Gilbert@akunacapital.com**](mailto:Elizabeth.Gilbert@akunacapital.com)

\*Should you have any questions about the assignment, please email [**boggle@akunacapital.com**](mailto:boggle@akunacapital.com) **\***