

Natural Language Processing:

Assignment 1: There once was a Python warmup from ...

Jordan Boyd-Graber

Out: **25. August 2014**
Due: **12. September 2014**

Introduction

First, check out the Github repository with the course homework templates:

[git://github.com/ezubarc/cl1-hw.git](https://github.com/ezubarc/cl1-hw.git)

The goal of this assignment is to create a piece of code that will determine whether a poem is a **limerick** or not. To do this, we will be using the **CMU pronunciation dictionary** (which is covered in the **second chapter of the NLTK book**).

A limerick is defined as a poem with the form AABBA, where the A lines rhyme with each other, the B lines rhyme with each other (and not the A lines). (English professors may disagree with this definition, but that's what we're using here to keep it simple. There are also constraints on how many syllables can be in a line.)

Programming Section (40 points)

Look at the file `limerick.py` in the `hw1` folder. Your job is to fill in the missing functions in that file so that it does what its supposed to do.

- **rhyme**: detect whether two words rhyme or not
- **limerick**: given a candidate limerick, return whether it meets the constraint or not.

More requirements / information appear in the source files.

Notes:

- **How do I separate words from a string of text?**

Use the `word_tokenize` function.

- **What if a word isnt in the pronouncing dictionary?**

Assume it doesnt rhyme with anything and only has one syllable.

- **How “hardened” should the code be?**

It should handle ASCII text with punctuation and whitespace in upper or lower case.

- **What if a word has multiple pronunciations?**

If a word like fire has multiple pronunciations, then you should say that it rhymes with another word if any of the pronunciations rhymes.

- **What if a word starts with a vowel?**

Then it has no initial consonant, and then the entire word should be a suffix of the other word.

- **What about end rhymes?**

End rhymes are indeed a rhyme, but they make for less interesting limericks. So “conspire” and “fire” do rhyme.

- **What about stress?**

The stresses of rhymes should be consistent.

Extra Credit

Extra Credit (create new functions for these features; dont put them in the required functions that will be run by the autograder):

- (up to 2 points) Create a new function called `apostrophe_tokenize` that handles apostrophes in words correctly so that “cant” would rhyme with “pant” if the `is_limerick` function used `apostrophe_tokenize` instead of `word_tokenize`.
- (up to 5 points) Make reasonable guesses about the number of syllables in unknown words in a function called `guess_syllables`.

(up to 5 points) Compose a funny original limerick about computational linguistics, natural language processing, or machine learning (add it to your submission as `limerick.txt`).

Add extra credit code as functions to the `LimerickDetector` class, but don't interfere with required functionality.