LING 334
Text Processing for Linguists

Week 6

Assignment 4 Review, Decomposition Exercises

Notes on Assignment 4

- Using *flags* (like `remove_blank`):
  - "flags" are arguments that give options rather than data
  - Try to have core functionality only be written once; helpful if you ever need to change anything
- `letter_counts` - no need to tokenize, loop over words etc:
  - Can simply do `for character in s`
  - Remember strings are sequences

Notes on Assignment 4

- You can use random.random() in a conditional directly rather than saving it in a variable that you only use once

```
if random.random() > 0.5:
```

- Avoid **hardcoding**: e.g., in the dice sums problem:

```
sum_counts = {0: 0, 1: 0, 2: 0, 3: 0, 4: 0...
```

Notes on Assignment 4

- string.split() splits in a greedy way, e.g. maximum amount of whitespace

- What's the difference?

```
   s.split()   vs.   s.split(" ")
```

Notes on Assignment 4

- Variable naming:

  try to have names reflect the contents/purpose

- Which is better?

```
for word in line.split()
```

or

```
for words in line.split()
```

Notes on Assignment 4

- Related style point: make objects what we will use them for
  - e.g., `proportion_of_oneoff_types`

    Accumulate counts on an integer

    vs.

    Accumulate a list of oneoff types and get its length

Notes on Assignment 4

- Remember you can chain operations:

  -
    ```
    plain = s.strip()
    lower = plain.lower()
    list = lower.split()   # also list is not a
    for word in list:      # good var name
    ```

    vs.

  -
    ```
    for word in s.strip().lower().split():
    ```

Notes on Assignment 4

- Efficiency! Sometimes hard to spot. Where’s the problem?

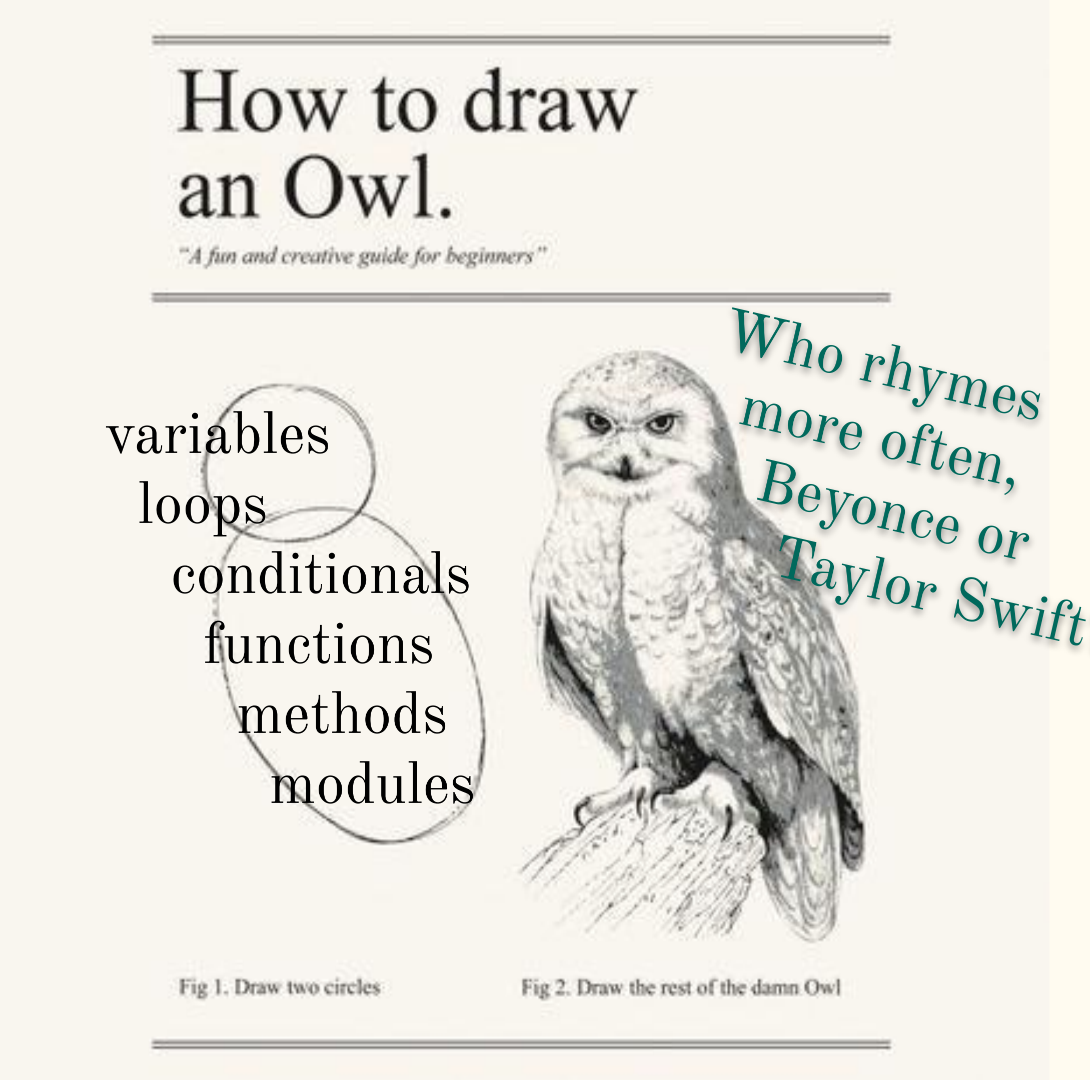
```
words = []
for line in open(f):
    tokens = tokenize(line)
    for token in tokens:
        if token in words:
            continue
        else:
            words.append(token)
return len(words)
```

Notes on Assignment 4

- `if token in words:`
    - If `words` is a list, this has to do a sequential check through the entire list every time this is called.
        - Number of operations = size of list
    - If `words` is a set, this is an instantaneous operation, due to a nice thing called hashing
        - Number of operations = 1 (roughly)

Decomposition

Breaking down
an abstract problem
into smaller parts
we can handle


How to draw an Owl.
"A fun and creative guide for beginners"
Fig 1. Draw two circles
Fig 2. Draw the rest of the damn Owl

variables
loops
conditionals
functions
methods
modules

Who rhymes more often, Beyonce or Taylor Swift?

Question-Answer pair worked example

If time:

Anagram Finder worked example

Jupyter! - Live Assignment 5 Demo

Basic steps:

- `wget` assignment link into a Quest `assignment5` directory
- Do `unzip assignment.zip`
- Go to https://jupyter.questanalytics.northwestern.edu (must be on NU VPN)
- Navigate to your `assignment5` dir and open ‘Assignment 5.ipynb’