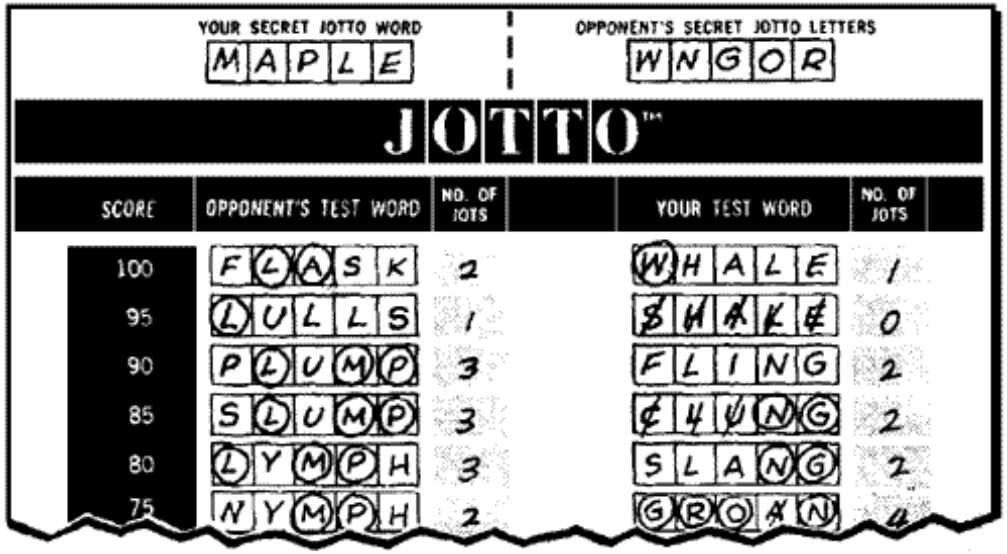
Compsci 101
Dictionaries, Jotto
Live Lecture



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Announcements

- APT-5 due tonight! March 21
- Nothing due on Thursday this week, consulting hours shorter, get ahead on Assign 4!

- Assignment 4 Hangman due Tues. March 30
  - ASGN4 Sakai quiz – do early! Tests understanding
- APT-6 is now out, due Thurs. Apr 1

- Assign 5 is out Thursday, it builds on Assgn 4

- Lab 8 Friday, there is no prelab

Exam 2….

- Exam 2 – not back yet, do not discuss with anyone til we hand it back.

PFTD

- Dictionaries cont.
  - Functions
- A little on sorting
- Jotto!
  - How to approach a large project
  - Splitting functionality
  - Putting it all together

Short Code and Long Time

- See module WordFrequencies.py
  - Find # times each word in a list of words occurs
  - We have tuple/pair: word and word-frequency

```
37  def slowcount(words):
38      pairs = [(w,words.count(w)) for w in set(words)]
39      return sorted(pairs)
```

- Think: How many times is **`words.count(w)`** called?
  - Why is **`set(words)`** used in list comprehension?

WordFrequencies with Dictionary

- If start with a million words, then…
  - We look at a million words to count # "cats"
  - Then a million words to count # "dogs"
  - Could update with parallel lists, but still slow!
- Look at each word once: dictionary!

- Key idea: use word as the "key" to find occurrences, update as needed
  - Syntax similar to **`counter[k] += 1`**

Using fastcount

- Update count if we've seen word before
  - Otherwise it's the first time, occurs once

```
28  def fastcount(words):
29      d = {}
30      for w in words:
31          if w in d:
32              d[w] += 1
33          else:
34              d[w] = 1
35      return sorted(d.items())
```

WOTO-1 Counting Dictionaries
http://bit.ly/101s21-0323-1

- In your groups:
  - Come to a consensus

Dictionary Syntax and Semantics

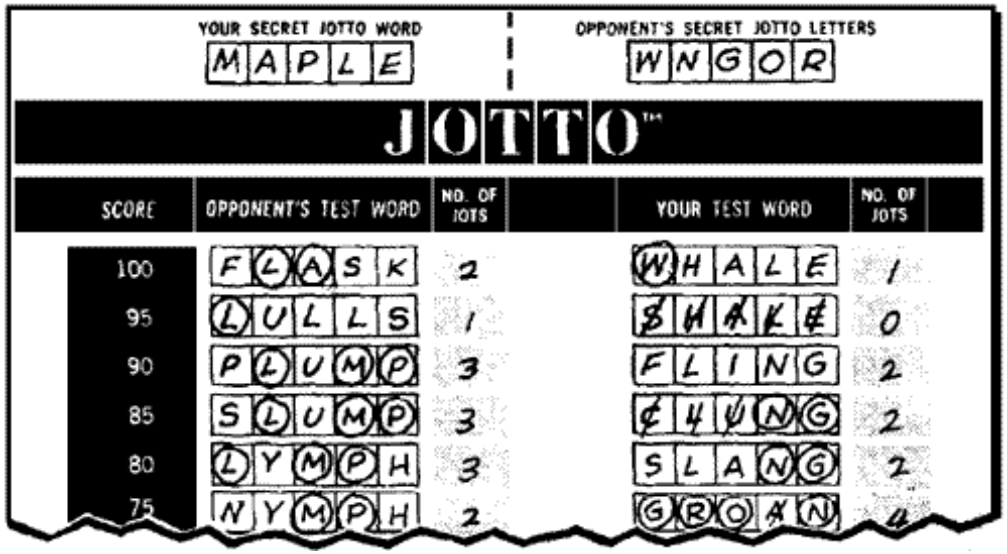
Syntax/Function	Meaning
`d = {}`	Initialize empty dictionary d
`d.keys()`	Collection of keys in dictionary
`d.values()`	Collection of values
`d[key]`	Value associated with key (error if key not in d)
`d.get(key,dv)`	Value associated with key (dv if key not in d, dv is optional)
`d.items()`	Collection of (key,value) tuples in d

WOTO-2 Dictionary Functions
http://bit.ly/101s21-0323-2

- In your groups:
  - Come to a consensus

How to approach Hangman: Jotto

- https://en.wikipedia.org/wiki/Jotto
- http://jotto.augiehill.com/single.jsp
- No letters repeat – have to agree on this
- Shall we play a game?



Write program where Computer Guesses Your Word

- **Brute force, no thinking or eliminating letters**
  - Pick a word at random, guess it
  - If x letters in common? Only keep words with x letters in common
  - Repeat until guessed

WOTO-3 Approaching Implementation
http://bit.ly/101s21-0323-3

- In your groups:
  - Come to a consensus

- What is needed?
- What order should the code do things?

WOTO-4 More on Jotto http://bit.ly/101s21-0323-4

- In your groups:
  - Come to a consensus

- What is needed?
- What order should the code do things?