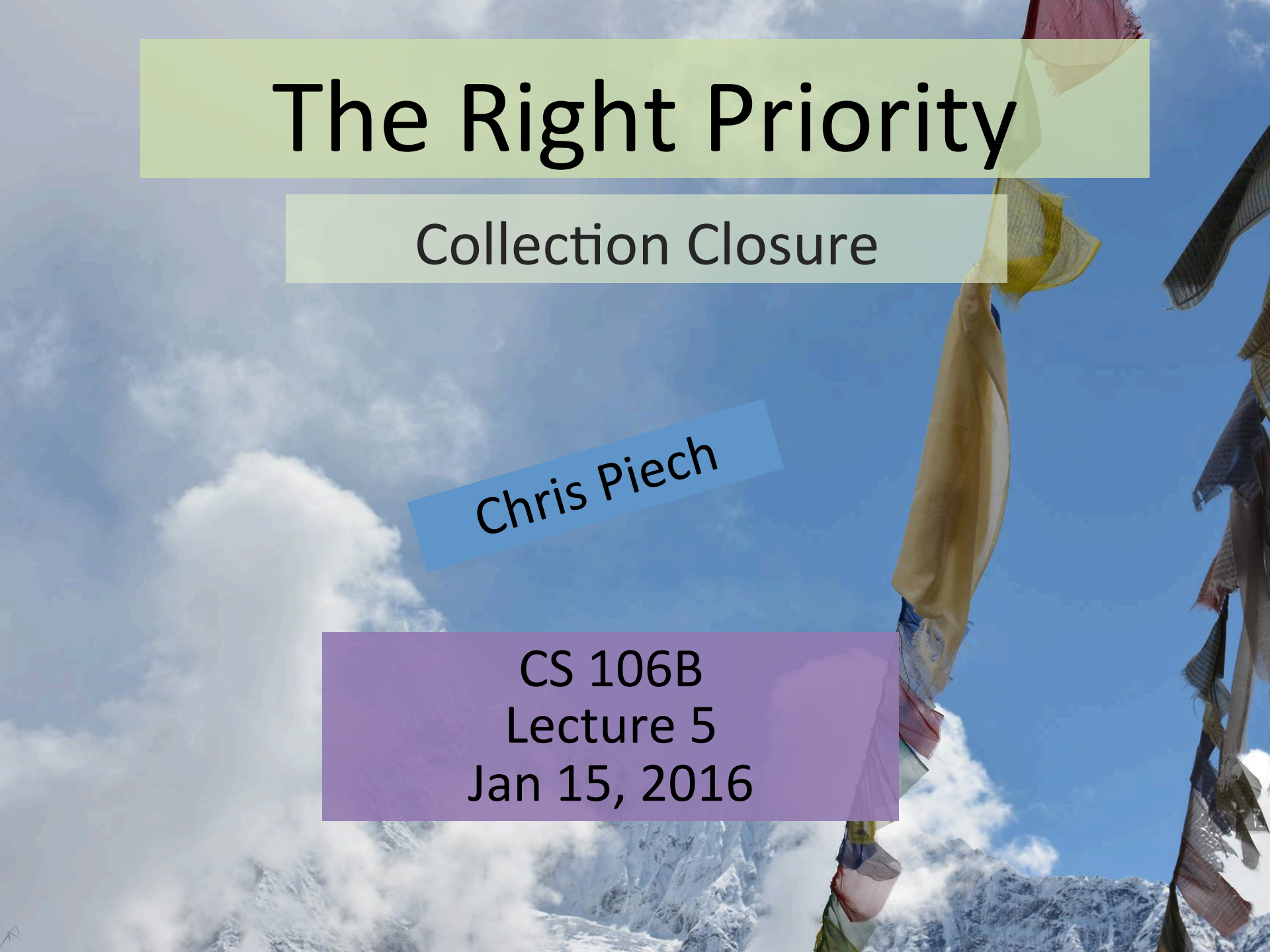


The Right Priority

Collection Closure

Chris Piech

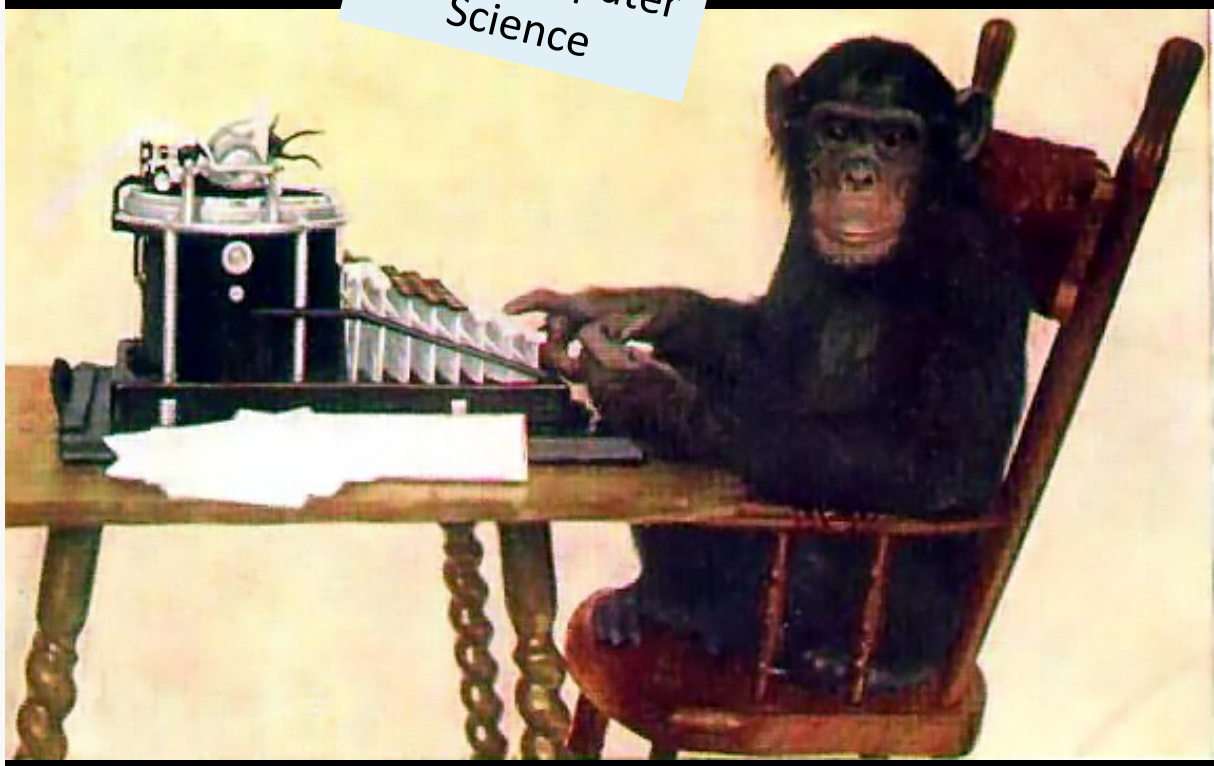
CS 106B
Lecture 5
Jan 15, 2016

Socrative.com

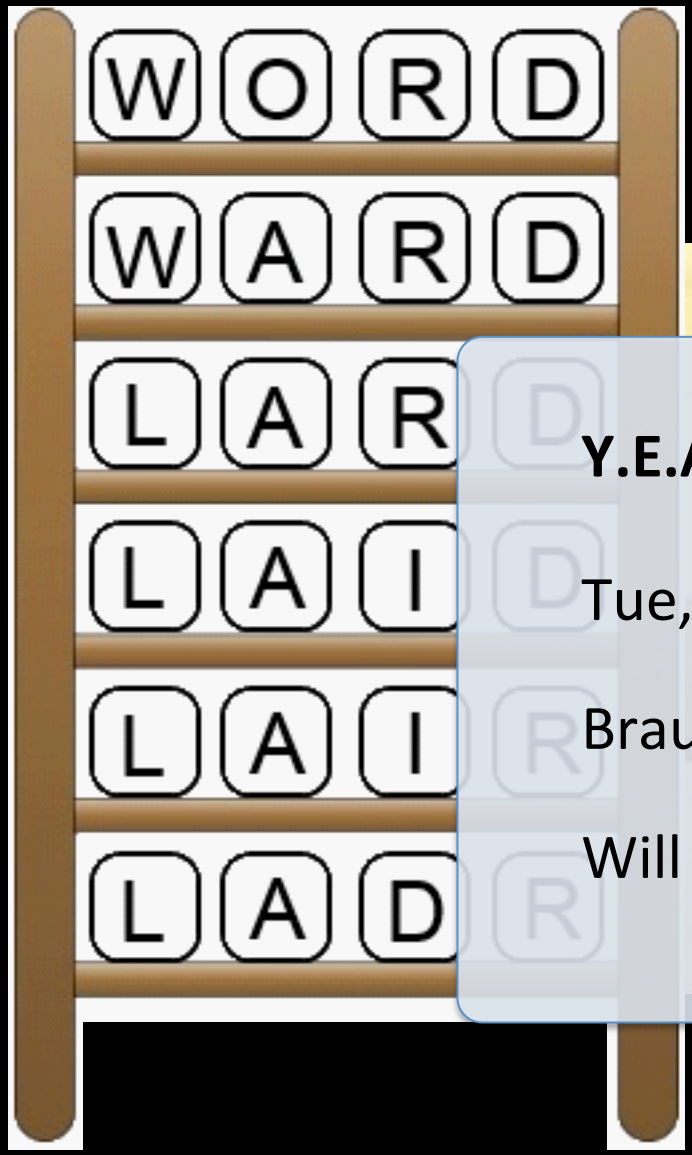
Room: ACRFU4PQ3

No Class Monday

Assignment 2 Serafini



Assignment 2 Serafini



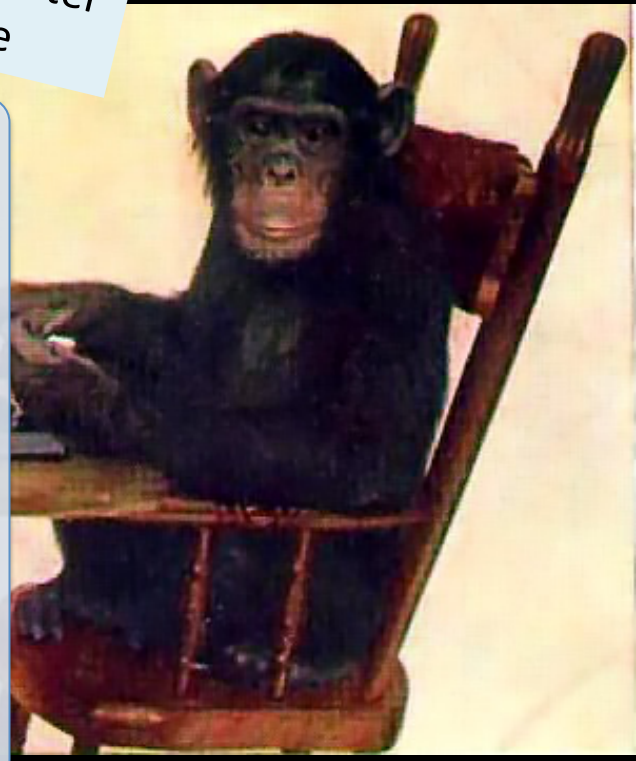
Two great ideas from Computer Science

Y.E.A.H. Hours

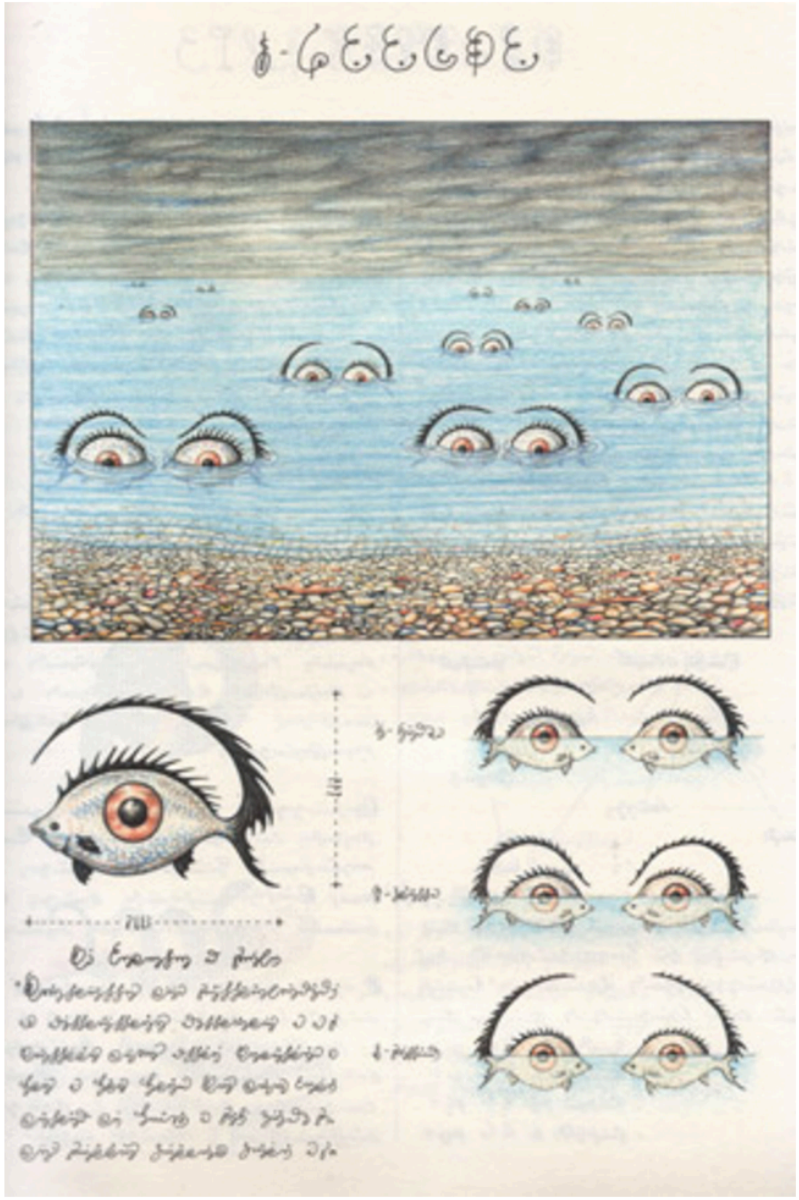
Tue, Jan 19th 5-6pm

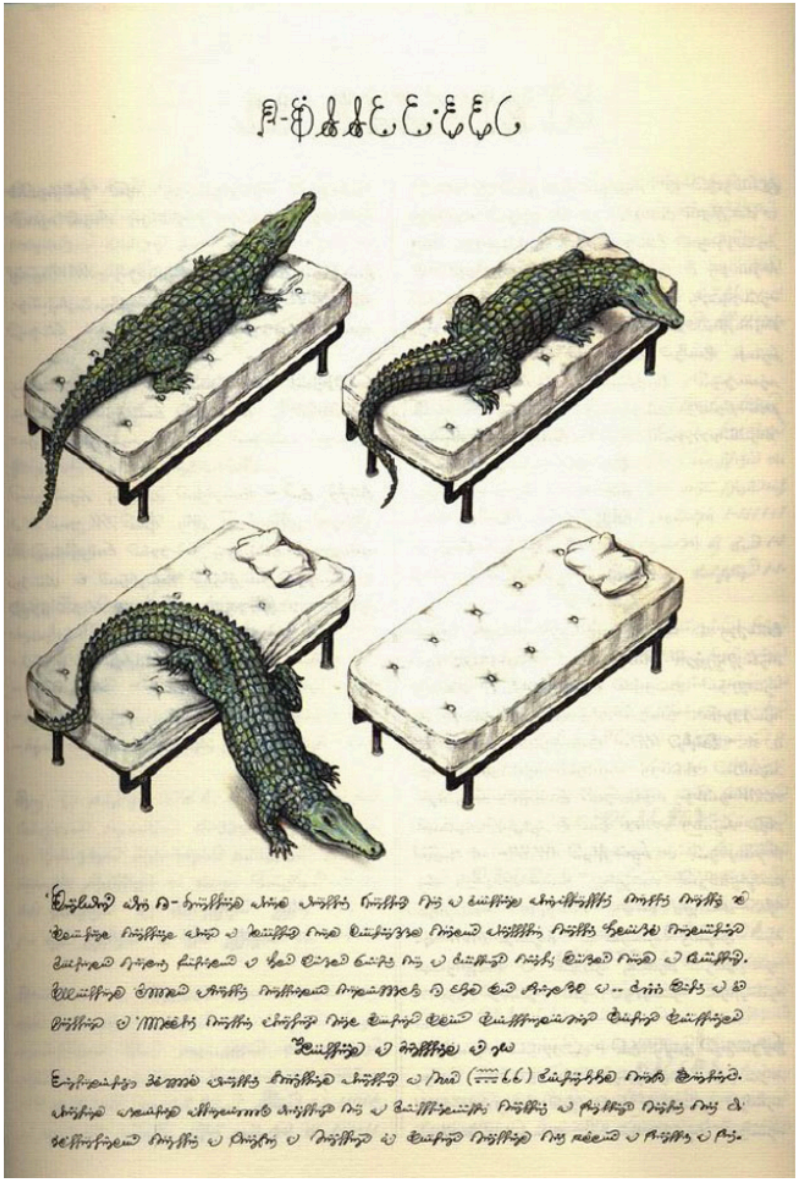
Braun Auditorium

Will post slides

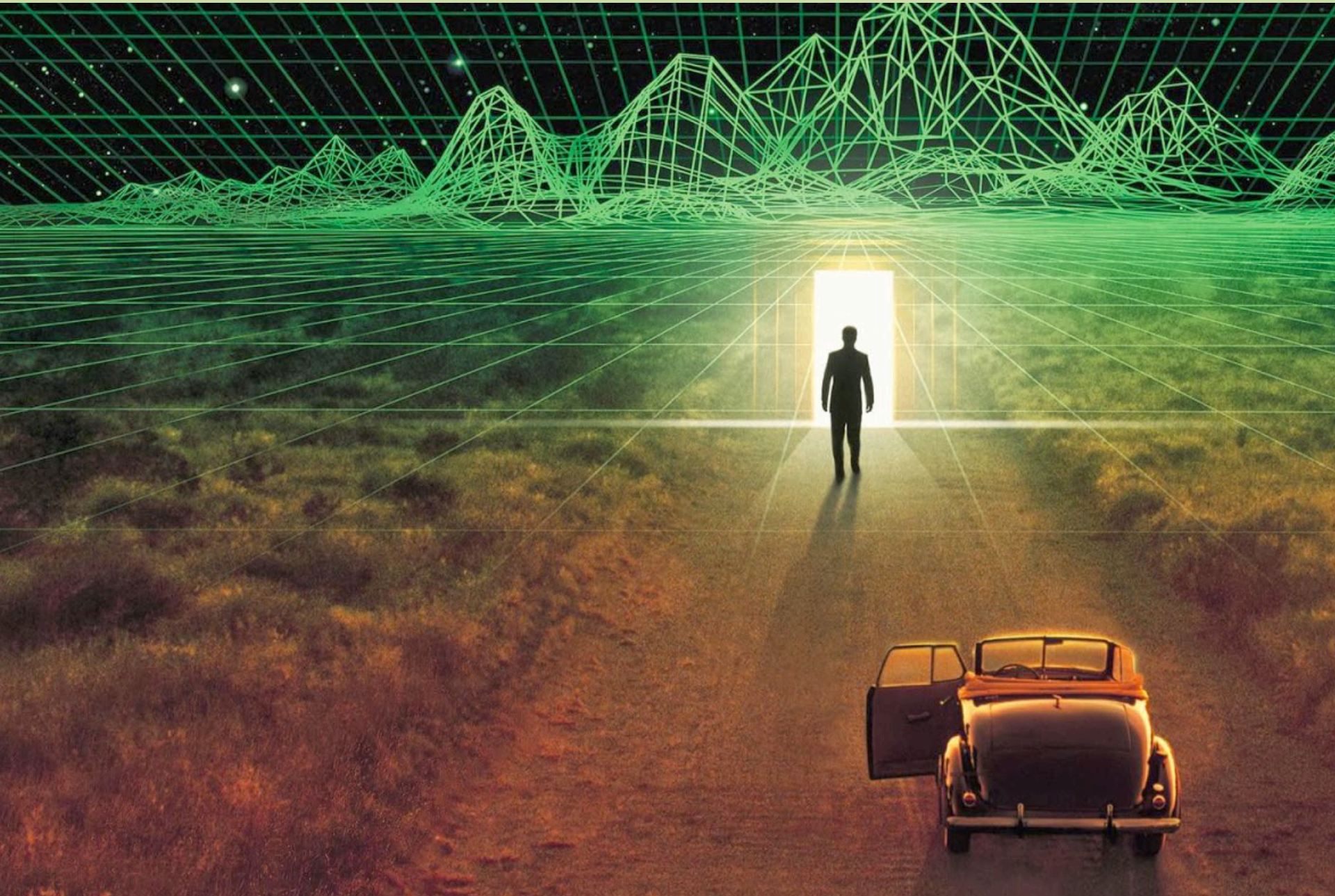


Assignment 2 Serafini





CS106B Contest



Prizes

[suspense]

100% on the Final

CS106B Contest

Two categories

- Algorithmic Complexity
- Creativity

CS106B Contest

Rules…

http://web.stanford.edu/class/cs106b/assn/contest.html

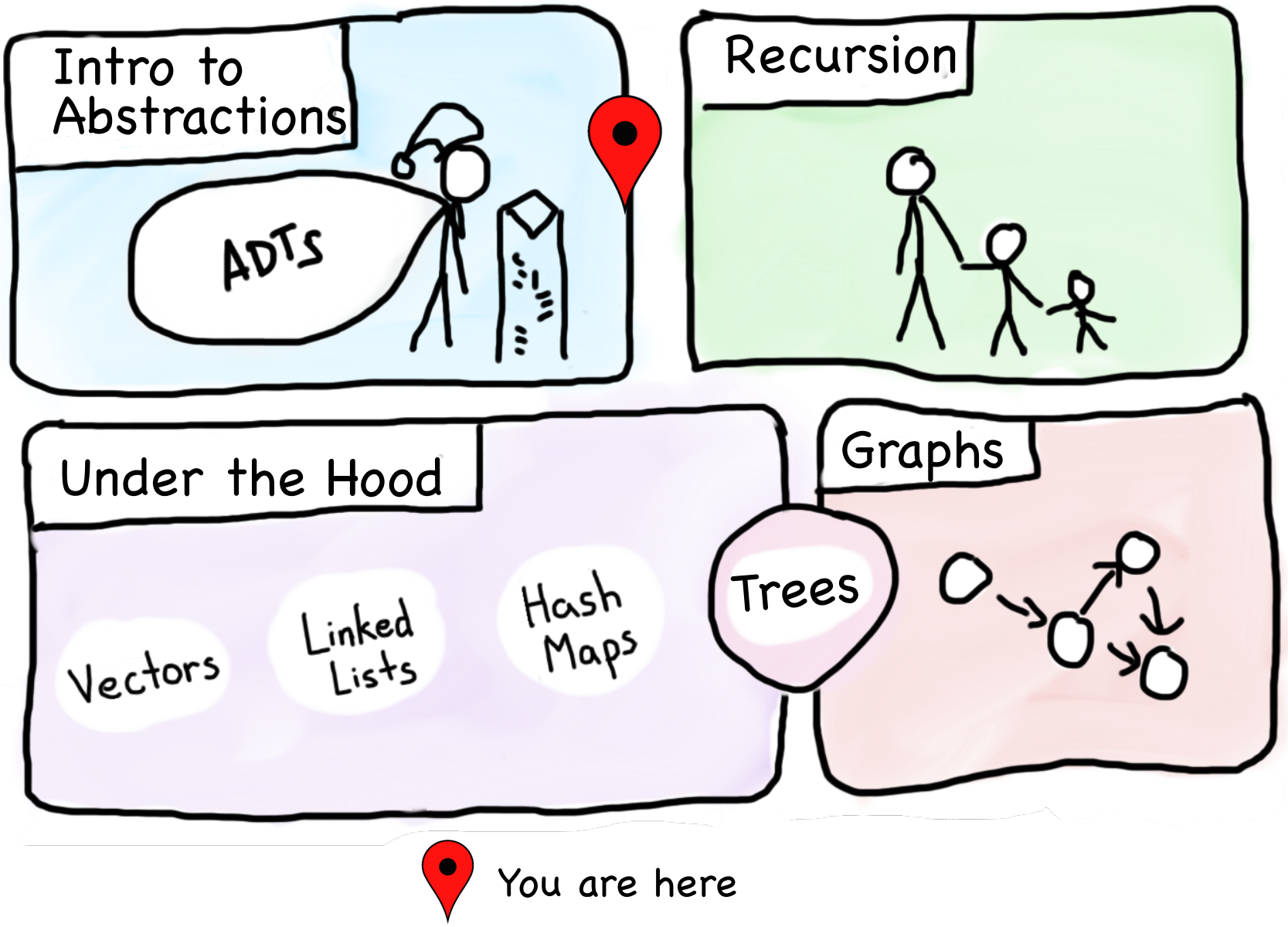
Quick Check in

What's faster?

a. Check if a Vector contains a particular element

b. Check if a Set contains a particular element

Course Syllabus



Today's Goals

1. You are ready for Assn 2

Interesting Puzzle

Counterfeiter

User

You (Distributor)

Interesting Puzzle

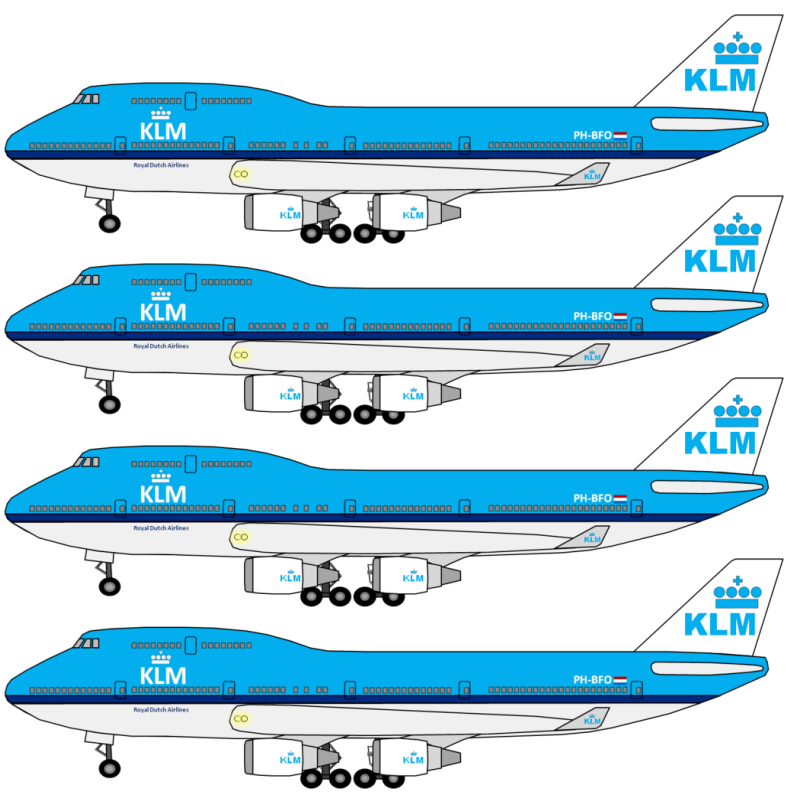
Counterfeiter

You (Distributor)

User

Fake Medicine is a Problem

700,000 deaths a year from fake malaria and tuberculosis drugs [1]



Equivalent of this many crashes per day

[1] http://www.un.org/africarenewal/magazine/may-2013/counterfeit-drugs-raise-africa%E2%80%99s-temperature

Interesting Puzzle

Counterfeiter

You (Distributor)

User

Real Life Challenge

Counterfeiter

You (Distributor)

User

M Pedigree


Artelum®
Artemether Lumefantrin
Anti-malarial agent
342302033
40 /24
Bright Simons

Mpedigree Datastructure (aka ADT)

What Datastructure

A. Vector<int>

B. Set<int>

C. Map<int, string>

D. Stack<int>


Qt

Collections

Vector

Grid

Map

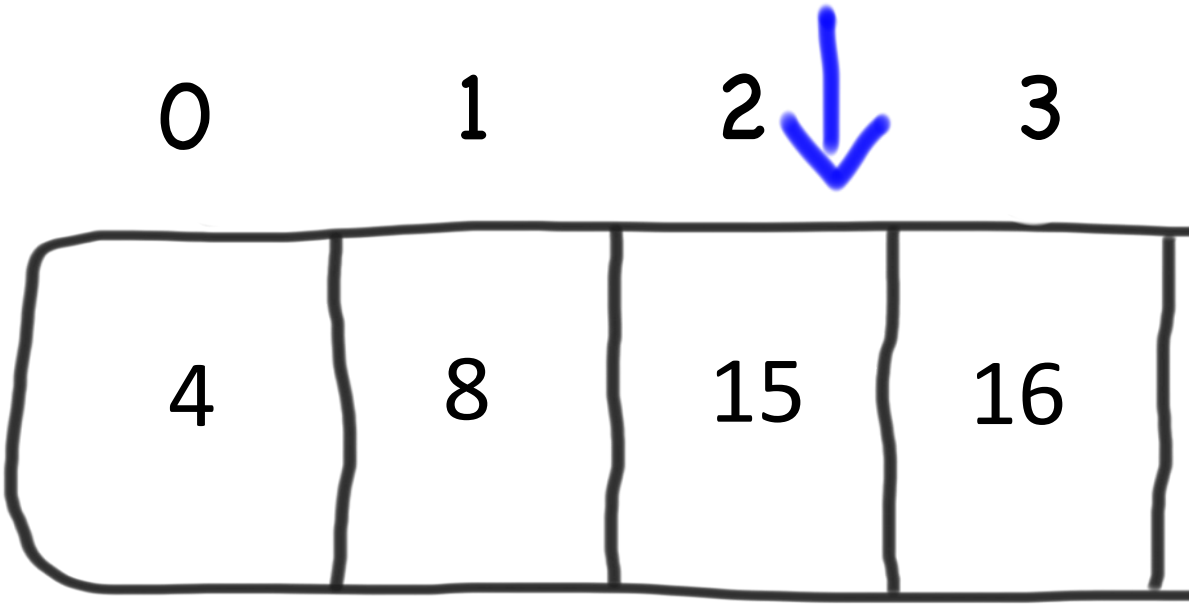
Stack

Queue

Set

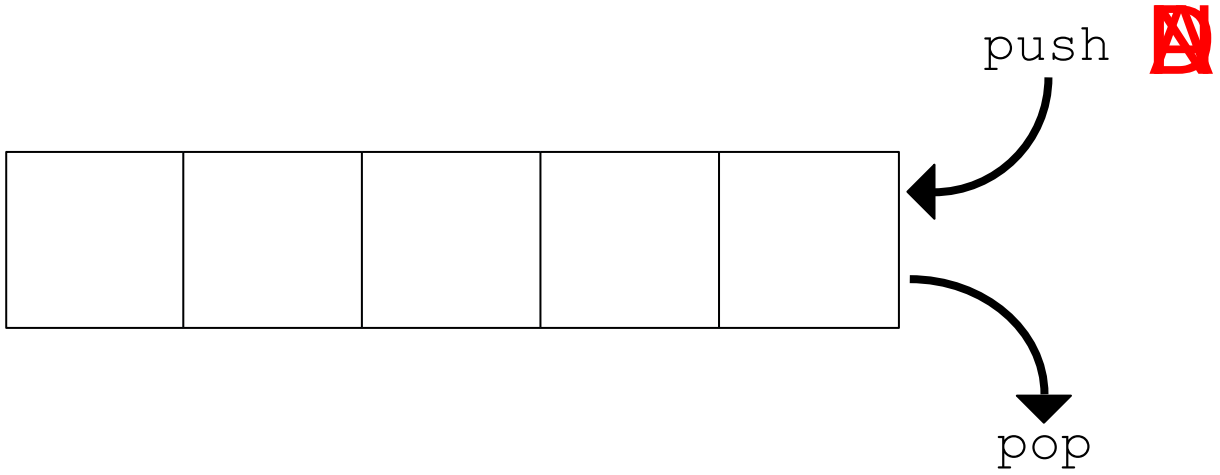
Vectors

- Can grow to any size you need.
- Supports random access.



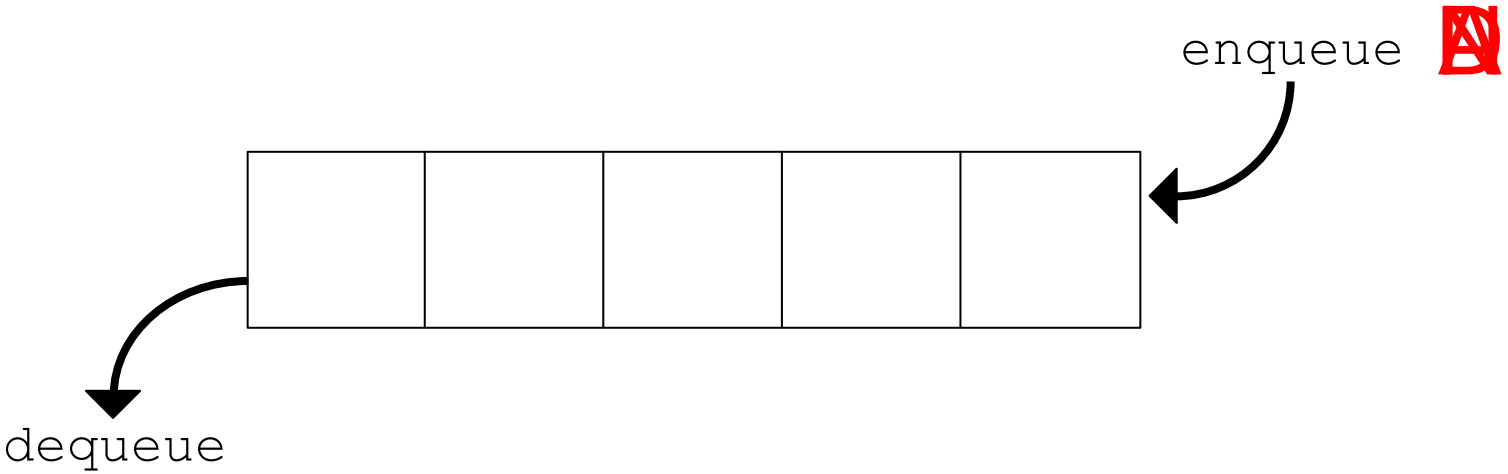
Stack

- Last in, First Out (so rude)
- Slightly faster than vector.
- Great style.



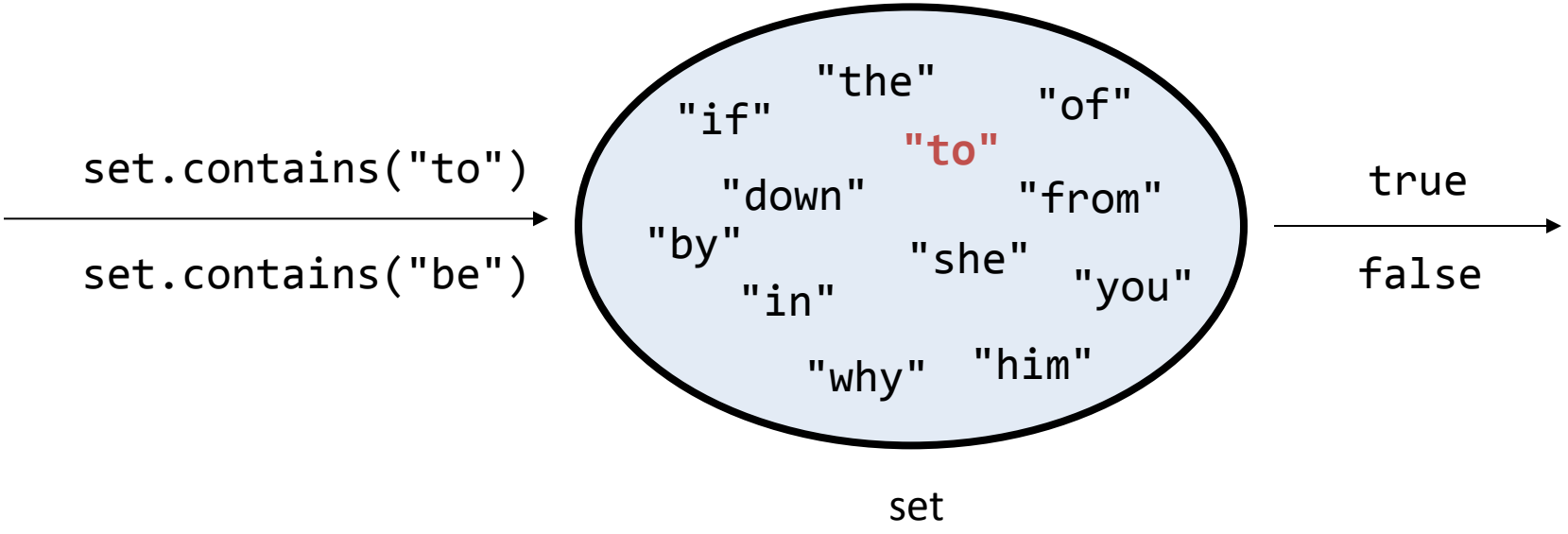
Queue

- First in, First Out (very fair)
- Slightly faster than vector.
- Great style.



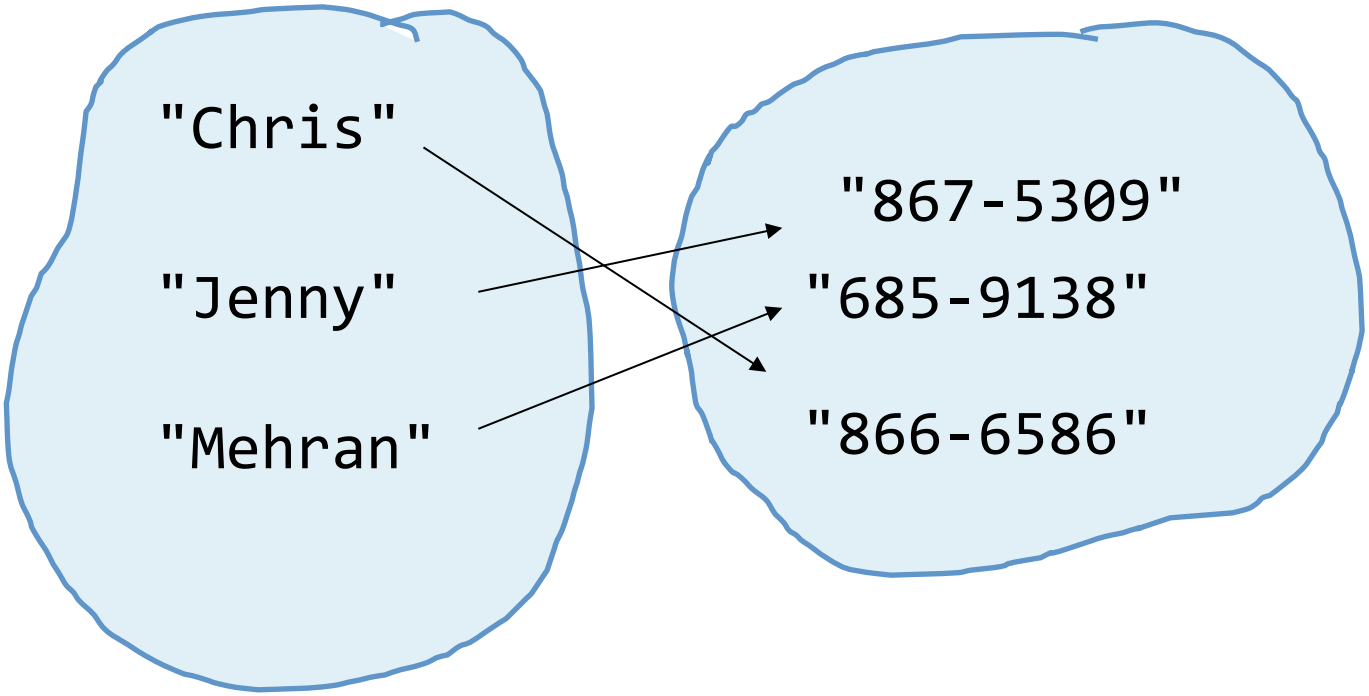
Sets

- Stores unique elements.
- Put, contains and get are all incredibly fast.
- No random access.



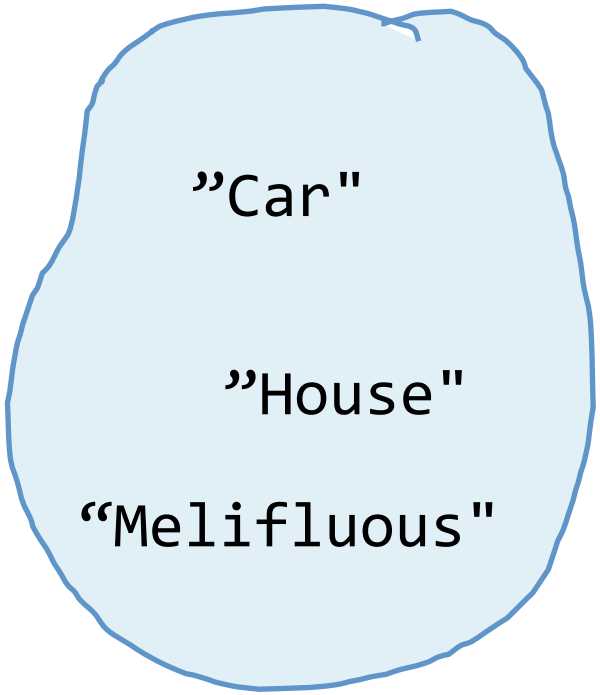
Maps

- Stores key value pairs.
- Put, contains and get are all incredibly fast.
- Can get values using keys



Lexicon

- Like a set for words.
- Convenient methods.
- Can check if prefix exists.



Collections

Vector

Grid

Map

Stack

Queue

Set


Sets, good
Maps, good
Sets + Maps, good

Anagram Exercise

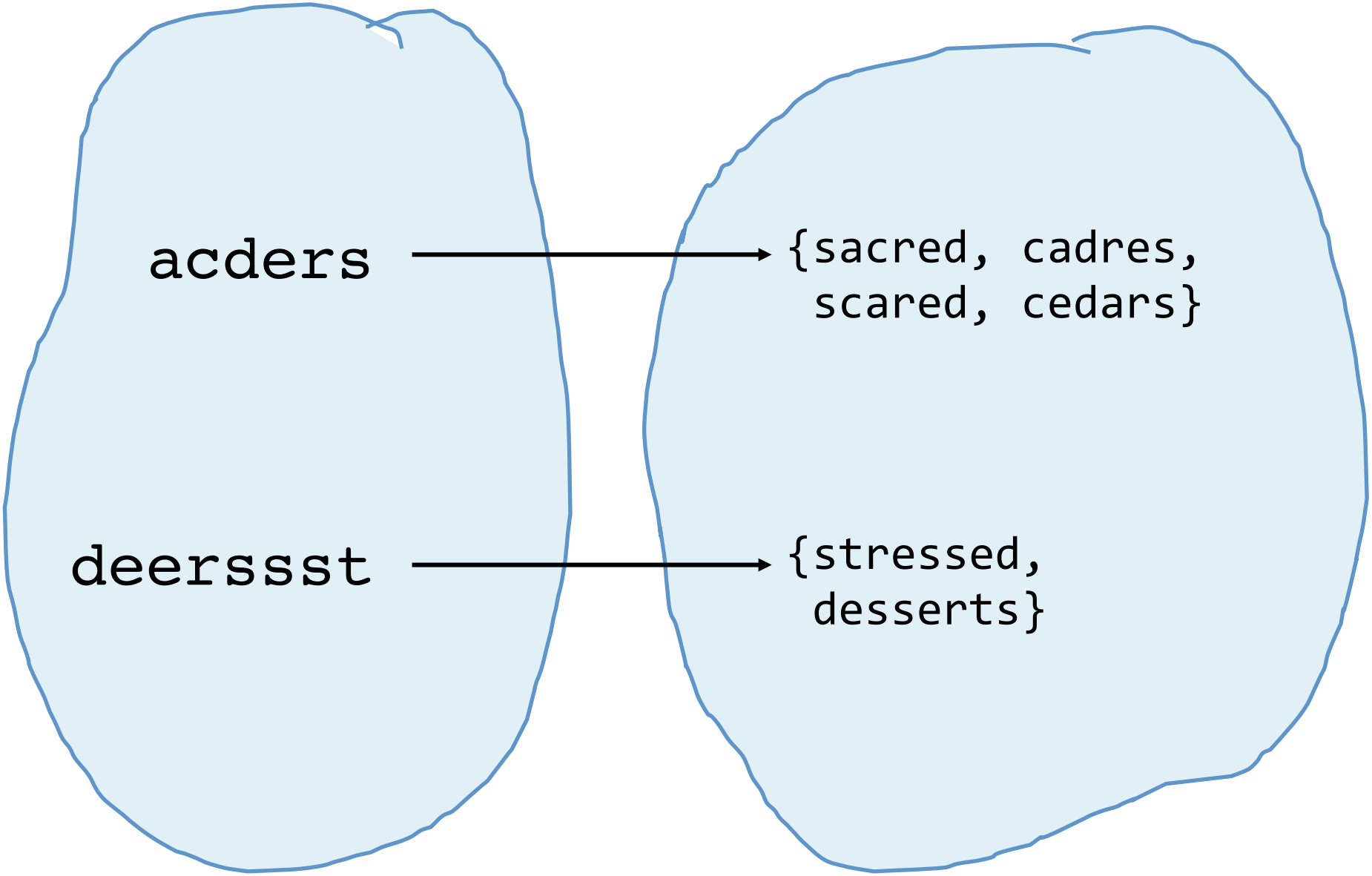
Write a program to find all anagrams of a word the user types.

```
Type a word [Enter to quit]: scared
Anagrams of scared:
cadres
cedars
sacred
scared
```

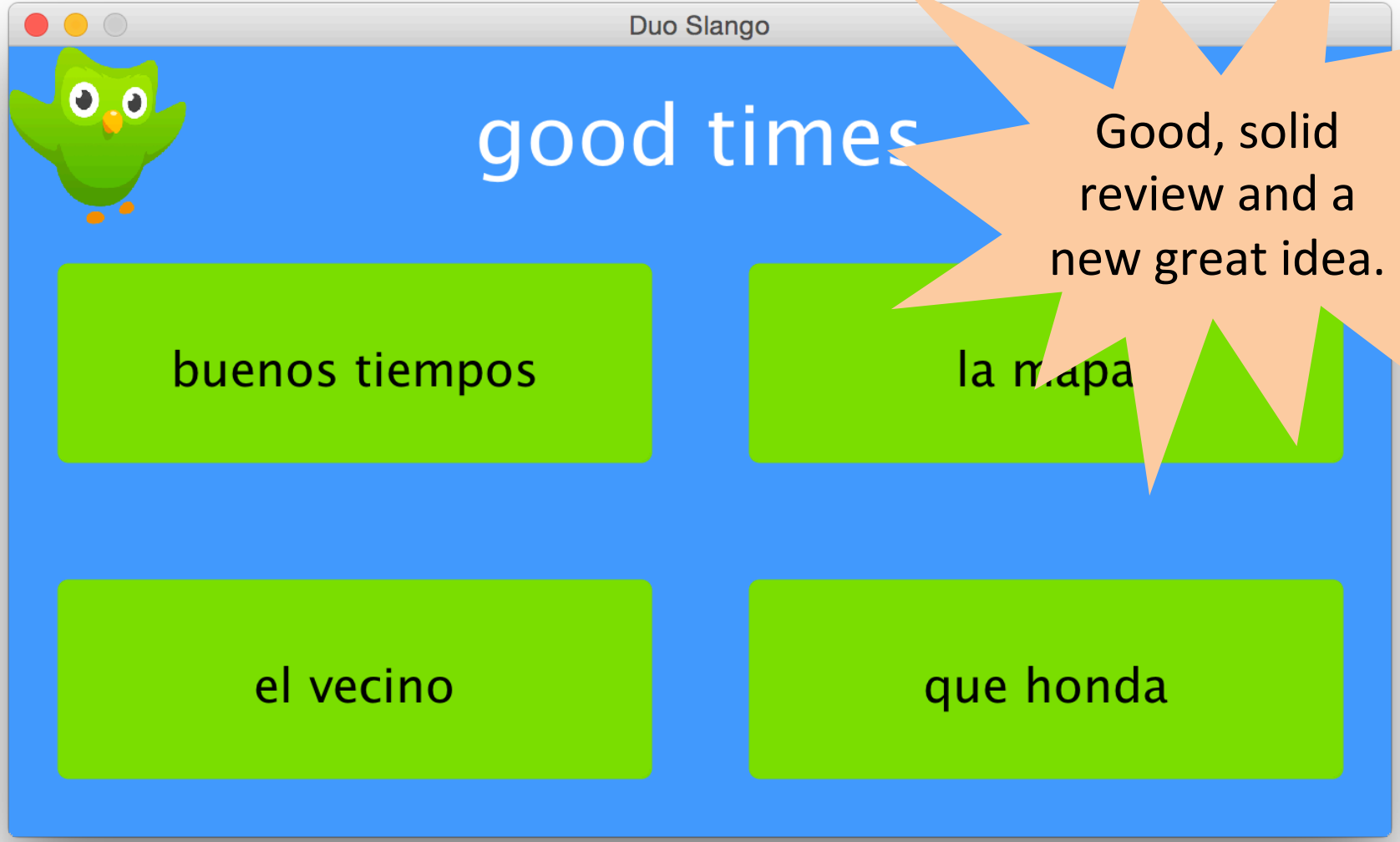
What is the appropriate collection to use to solve this problem?

Hint: Use a compound collection...

Anagram Exercise



Another Cool New Program




Qt

In lecture I stopped here.

But read on for some more review…

Waypoints for your Spaceship?

Queue<Point>

Google Search?

Search term Urls

Map<string, Set<string> >

Store the classes that all students in Stanford are taking?

student classes

Map<string, Set<string> >

Map<string, Set<string> >

class students

The Value of All Variables
in a C++ Program?

For each function

Variable value (a little awk)

Stack<Map<string, string>>

Variable name

Facebook Newsfeed?

PriorityQueue<string>

html

Today's Goals

1. You are ready for Assn 2

A Little Bit of Slope

Thanks for the Time