

# Web Applications

The background of the slide features the official emblem of the United Nations. It consists of a blue globe with a grid of latitude and longitude lines. A golden olive branch with leaves is wrapped around the left side of the globe, and a golden laurel wreath is wrapped around the right side. The globe shows the outlines of the continents.

Chris Piech

CS 106B  
Lecture 23  
Mar 7, 2016

# Final Info

CS106B

Lectures ▾

Handouts ▾

Assignments ▾

Sections ▾

Tools ▾

apple Overview

## Final Info

MARCH 5 RD, 2016

**Heads up:** This handout will be updated over the next week as we release more material.

## Logistics

The CS106B Final is Monday March 14th from 8:30am to 11:30am. If you require OAE accommodations, you should email Megan by Thursday at 12pm with your availability and the accommodations you require. If you haven't already sent her your OAE documentation, please attach that to the email.

The exam is open book, open notes, closed computer.

### Final

- 📅 Mon, Mar 14th
- ⌚ 8:30-11:30am
- ⬆️ By last name

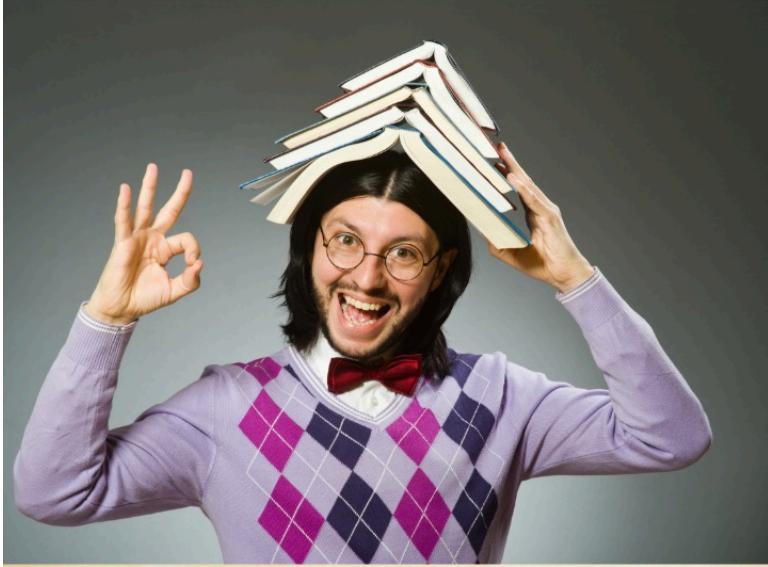
## Topics

The final covers the material presented in class from the start of class through the lecture on Friday, March 4th. Specifically you will be responsible for:

1. Functions and Pass by Reference
2. Use of Collections
3. Recursion
4. Recursive Exploration and Backtracking

# Final Practice Sitting

## Test Prep Fun!



Yeah... You  
Read That  
Right.



# Thanks Megan

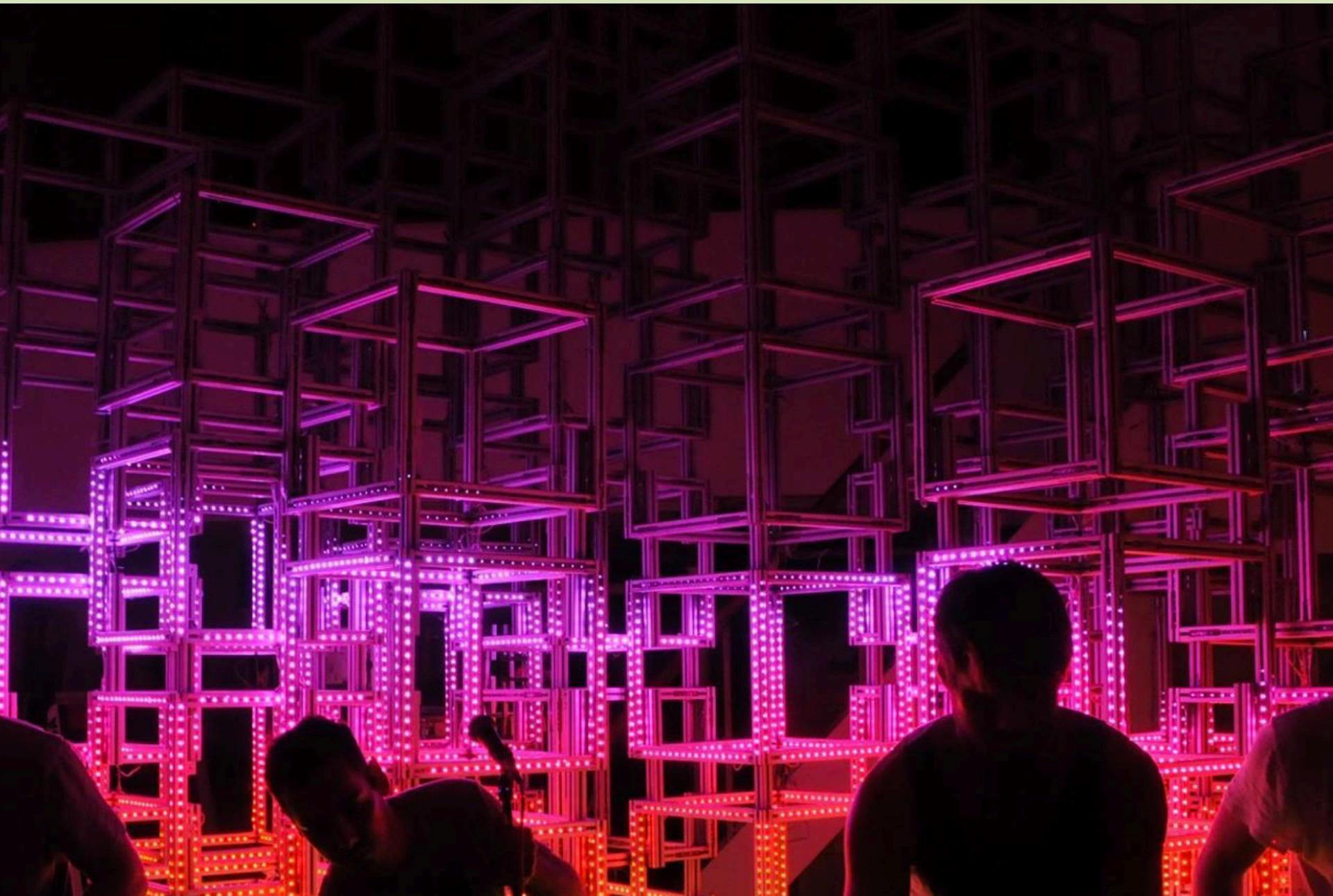


# What are We Gonna Do?

1. Multilingualism
2. Real C++
3. What was CS106B and what is next?

Not inheritance

# Special Guest Tomorrow

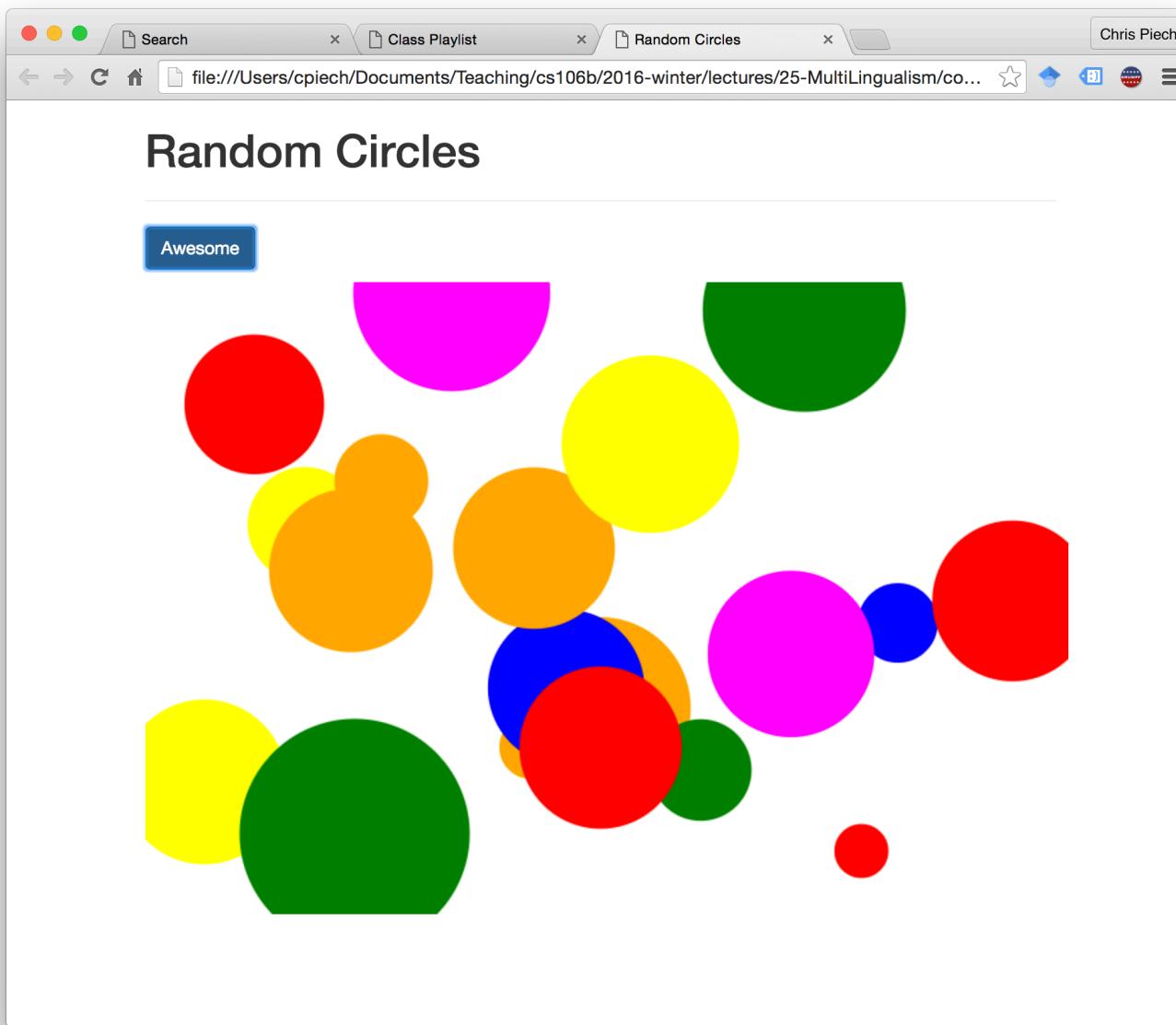


# Today's Goal

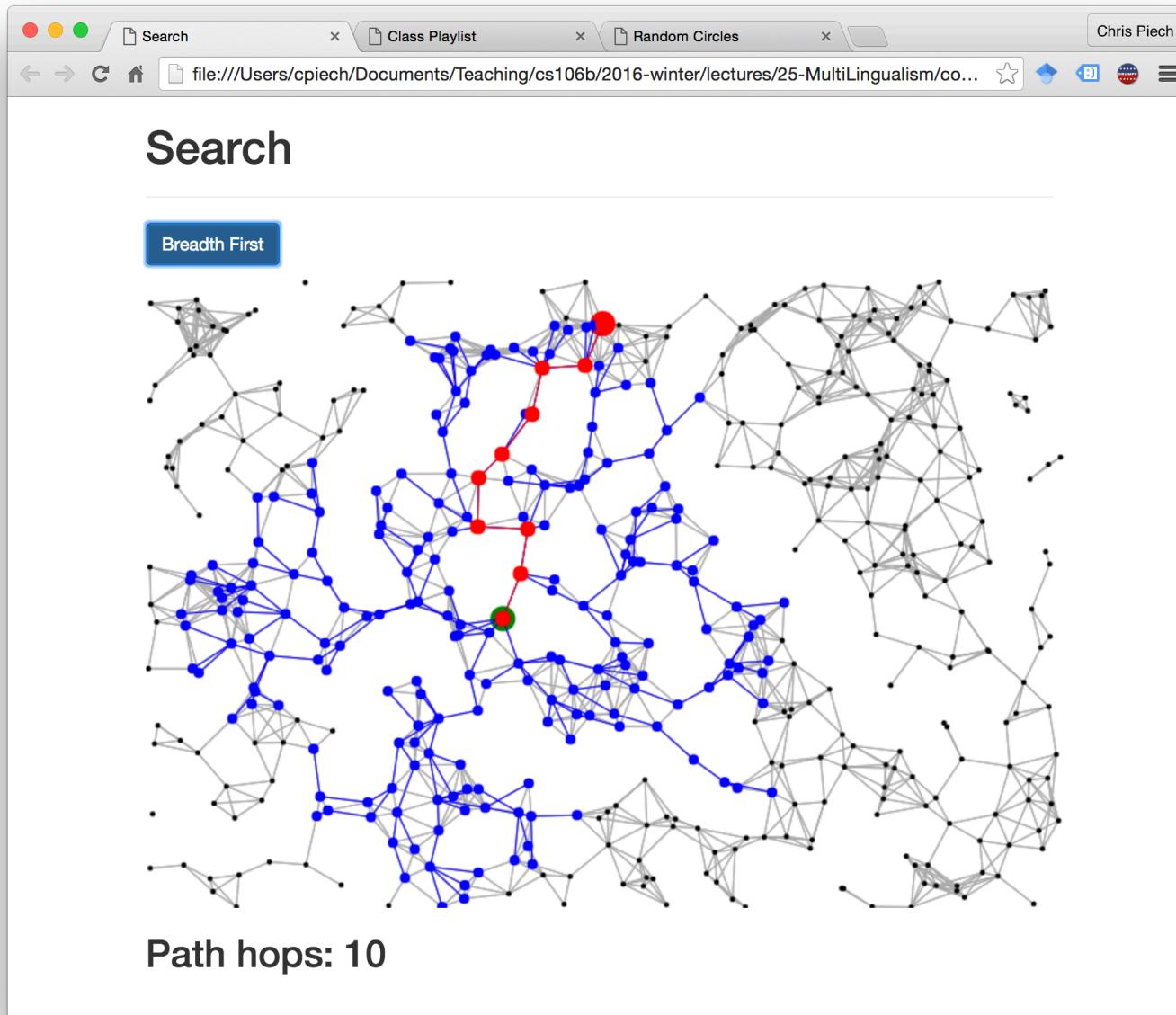
1. Multilingualism
2. How the web works
3. Javascript Ideas



# Program #1 Random Circles



# Program #2 Breadth First Search



# Program #3 Class Playlist

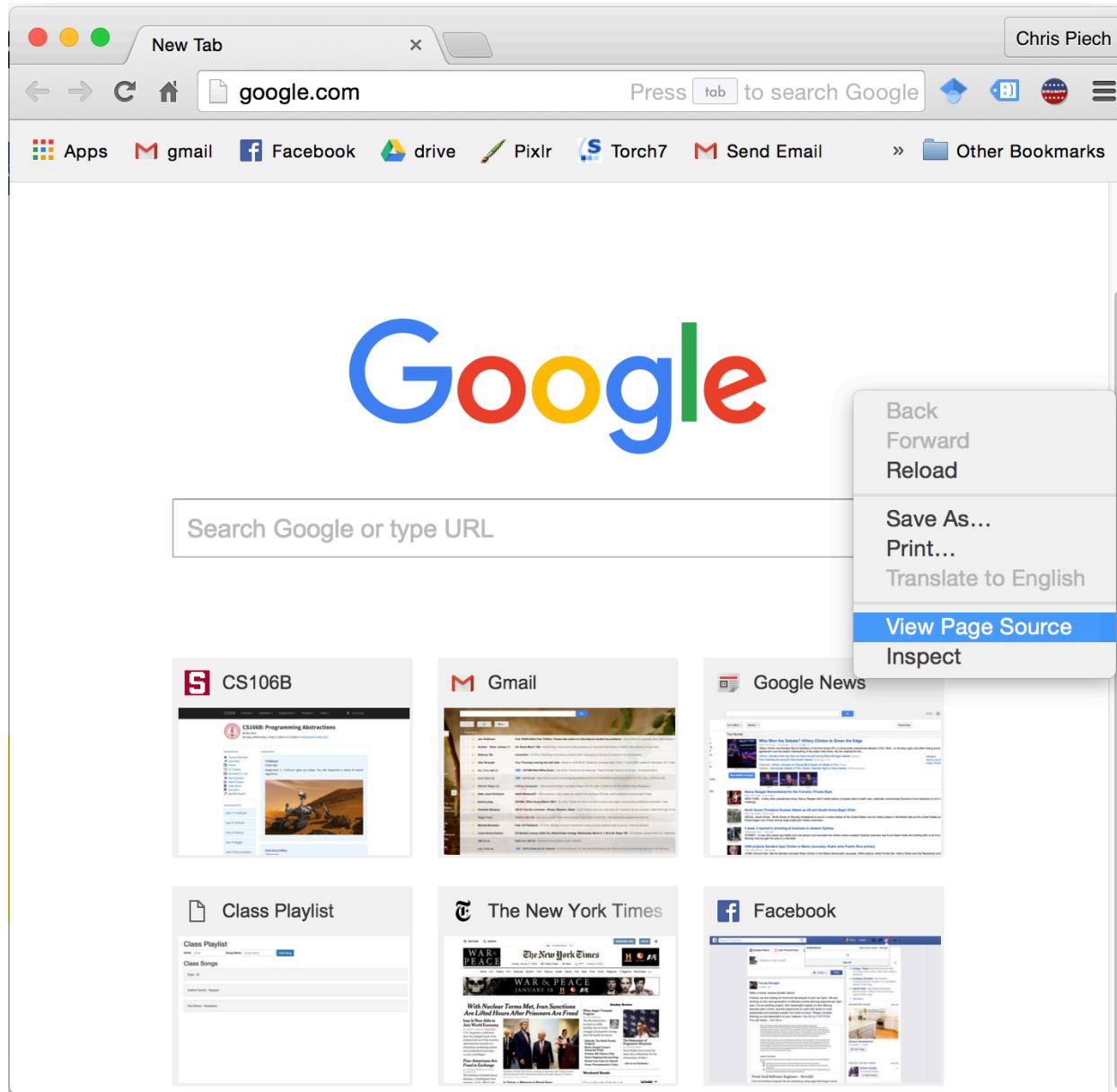
Screenshot of a web browser window titled "Class Playlist". The address bar shows the local file path: "file:///Users/cpiech/Documents/Teaching/cs106b/2016-winter/lectures/25-MultiLingualism/co...". The browser title bar also displays "Class Playlist". The main content area is titled "Class Playlist" and contains search fields for "Artist" (set to "Justin Bieber") and "Song Name" (set to "Sorry!"), along with a blue "Add Song" button. Below this, a section titled "Class Songs" lists four songs in separate cards:

- Free - All Right Now
- Aretha Franklin - Respect
- Kygo - Id
- Paul Simon - Graceland

The browser interface includes standard navigation buttons (back, forward, search) and a tab bar with other open windows like "Random Circles". The overall layout is clean and modern, typical of a web-based application.

# Website Programs?

# JavaScript, Language of the Web



# JavaScript is Not Java



JavaScript



# Differences with C++

Works with HTML

No variable types

Not compiled

int division is changed

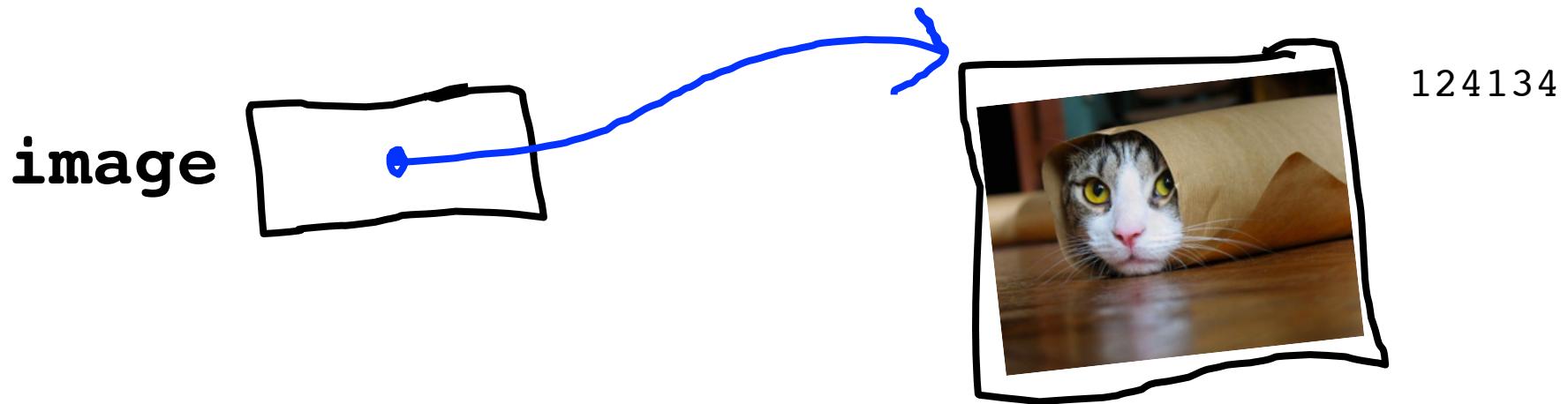
Maps, Vectors and  
Functions are first  
class types

No pause

Beyond CS106B:

Anonymous functions

# Pointers and Pass by Reference?



Numbers passed by value.  
Everything else passed by reference

# Written in 10 days



Brendan Eich

# Cover Syntax

let me  that for you

how to create a set in javascript

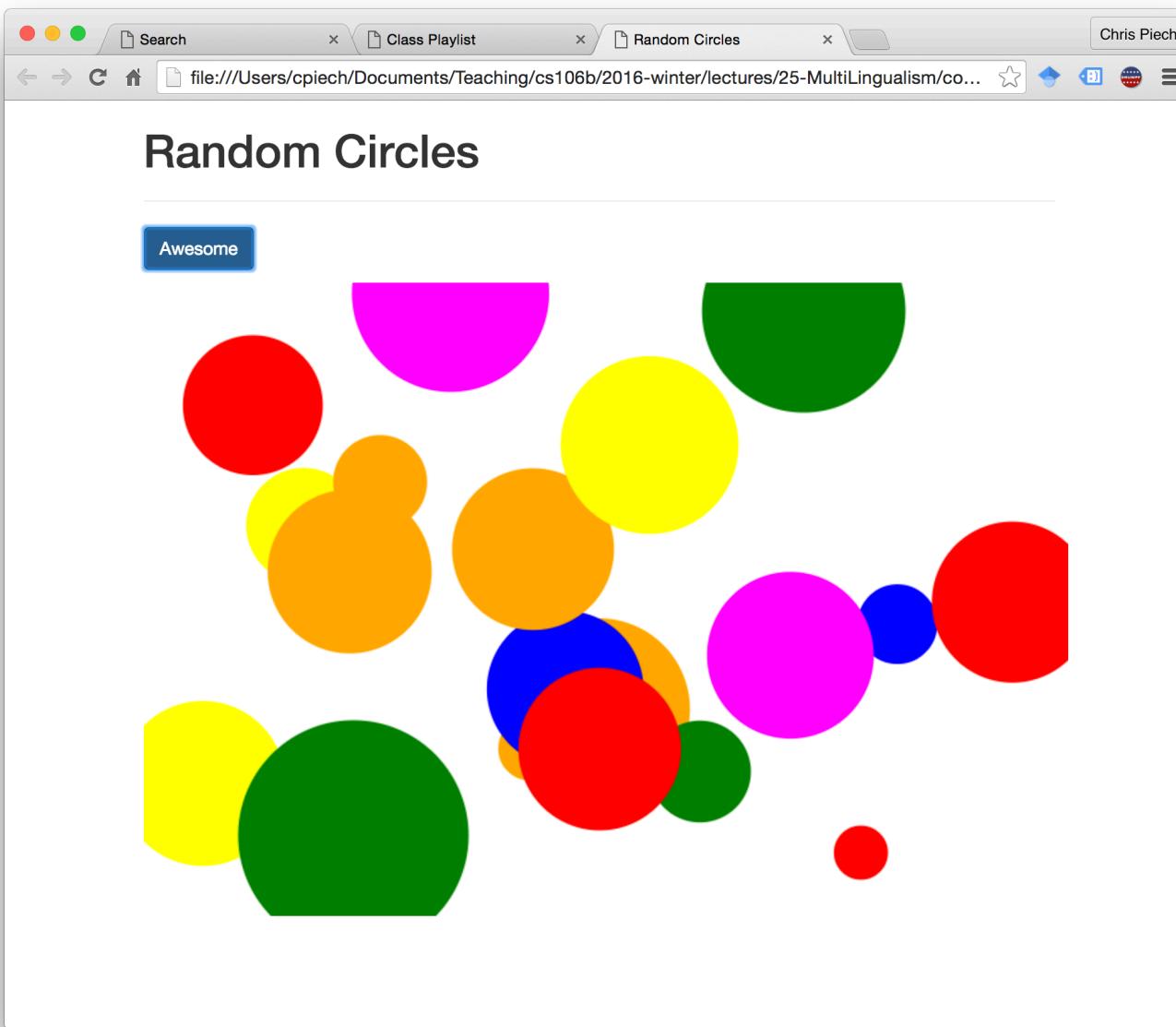
Google Search

I'm Feeling Lucky

But its not the point of today

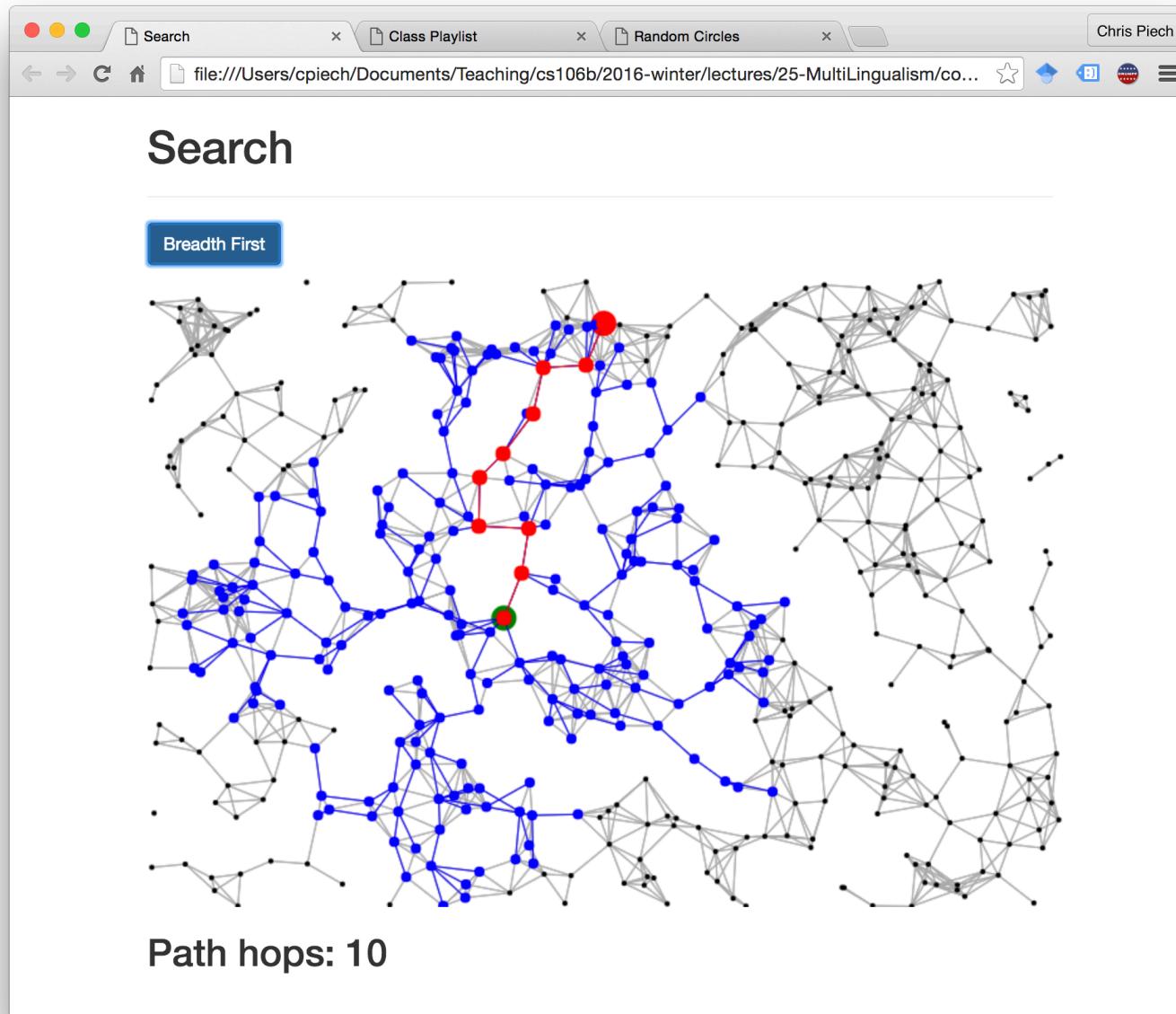
Lets give it a try!

# Program #1 Random Circles



Elementary my dear Chris

# Program #2 Breadth First Search



Is anything *really* different?

# Program #3 Class Playlist

Chris Piech

file:///Users/cpiech/Documents/Teaching/cs106b/2016-winter/lectures/25-MultiLingualism/co...

## Class Playlist

Artist  Song Name  Add Song

---

### Class Songs



Free - All Right Now



Aretha Franklin - Respect



Kygo - Id



Paul Simon - Graceland

# When You Navigate to a Website



Facebook.com

<http://facebook.com>

# Web Applications



Facebook.com

# Web Applications



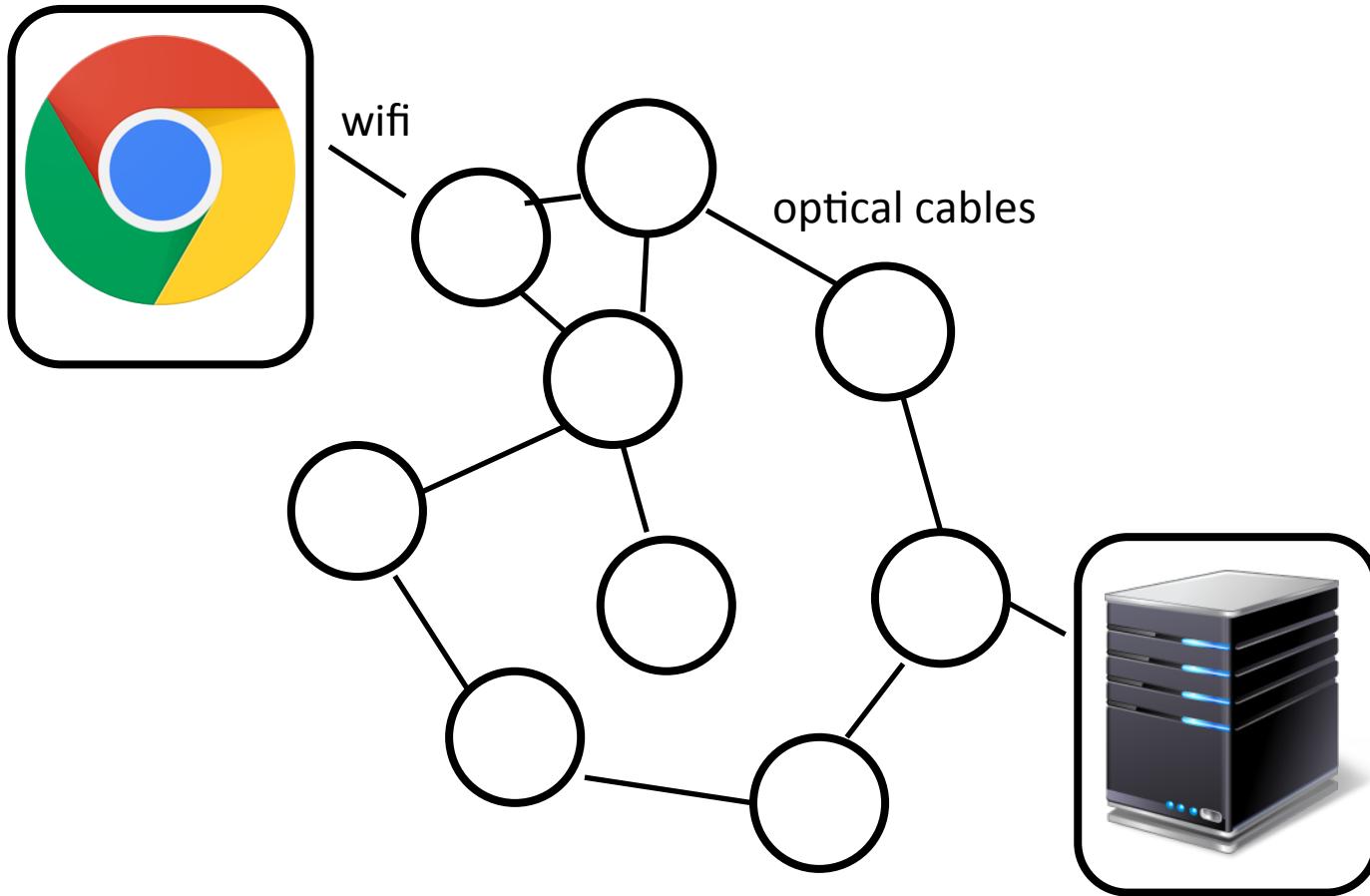
Probably in Greenland  
or something



Facebook.com

128.234.233.442

# Web Applications



Facebook.com

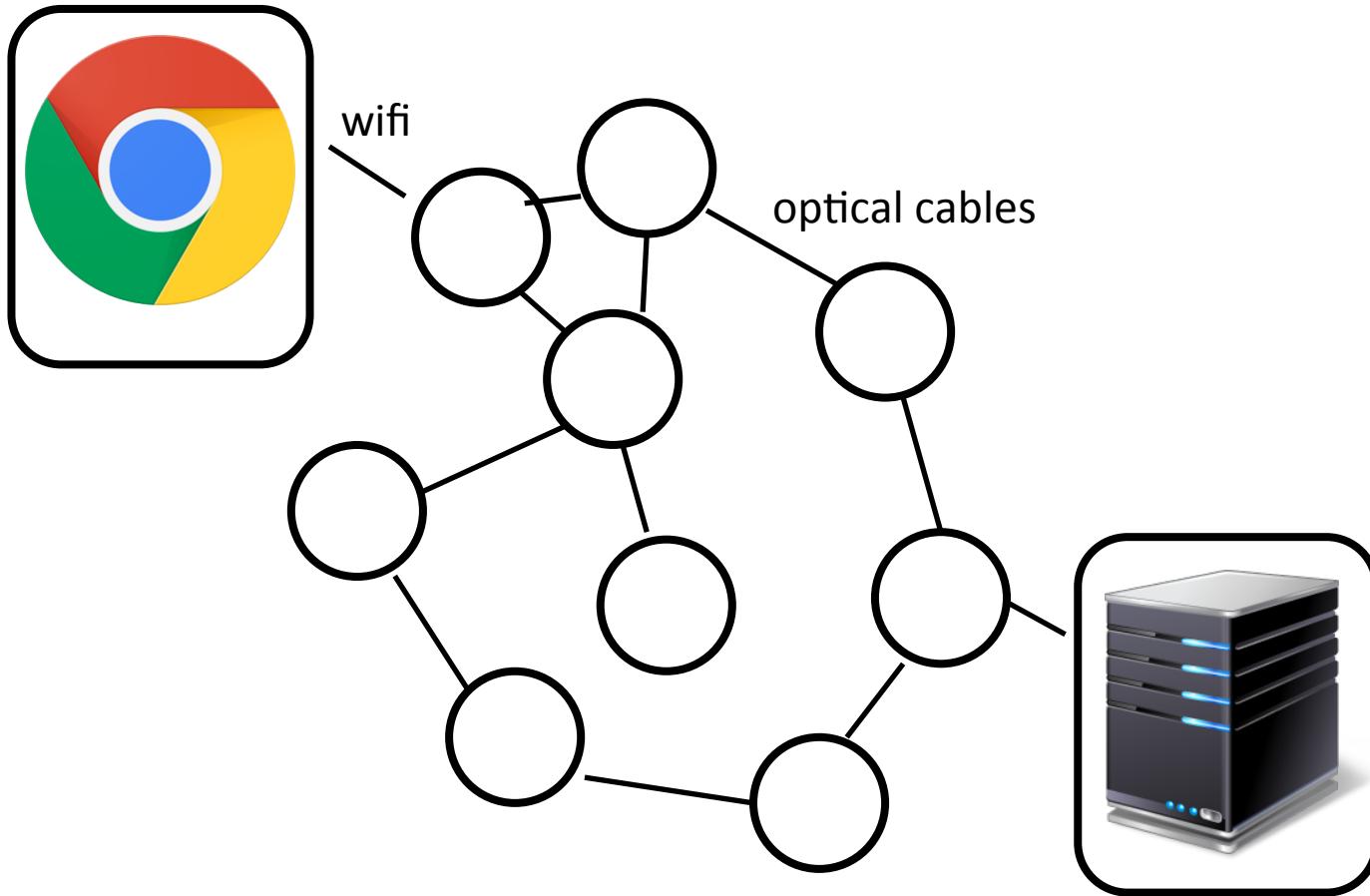
128.234.233.442

Each router has run a search algorithm

Dijkstra? BFS? A-Star?

# Dijkstra

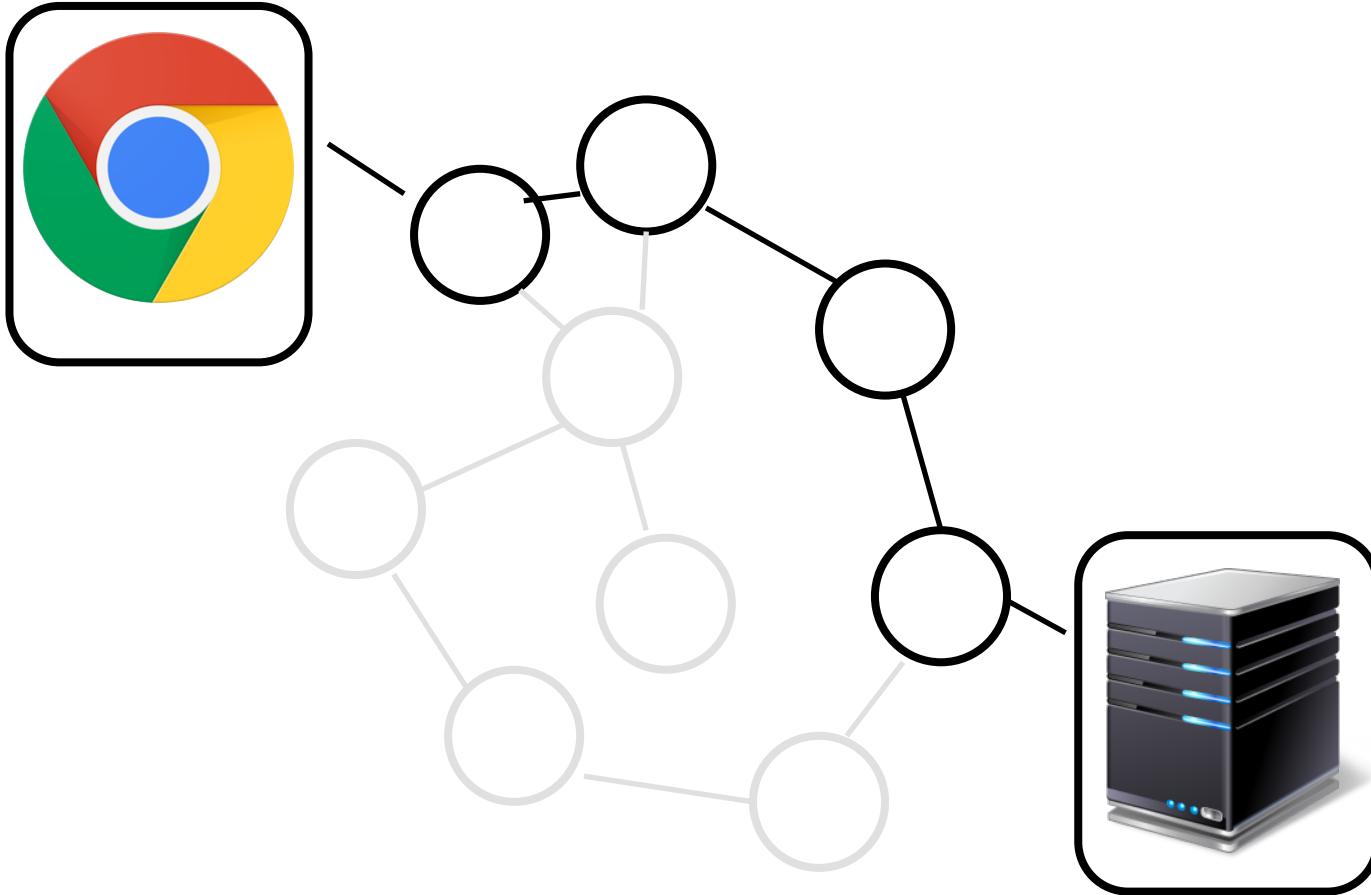
# Web Applications



Facebook.com

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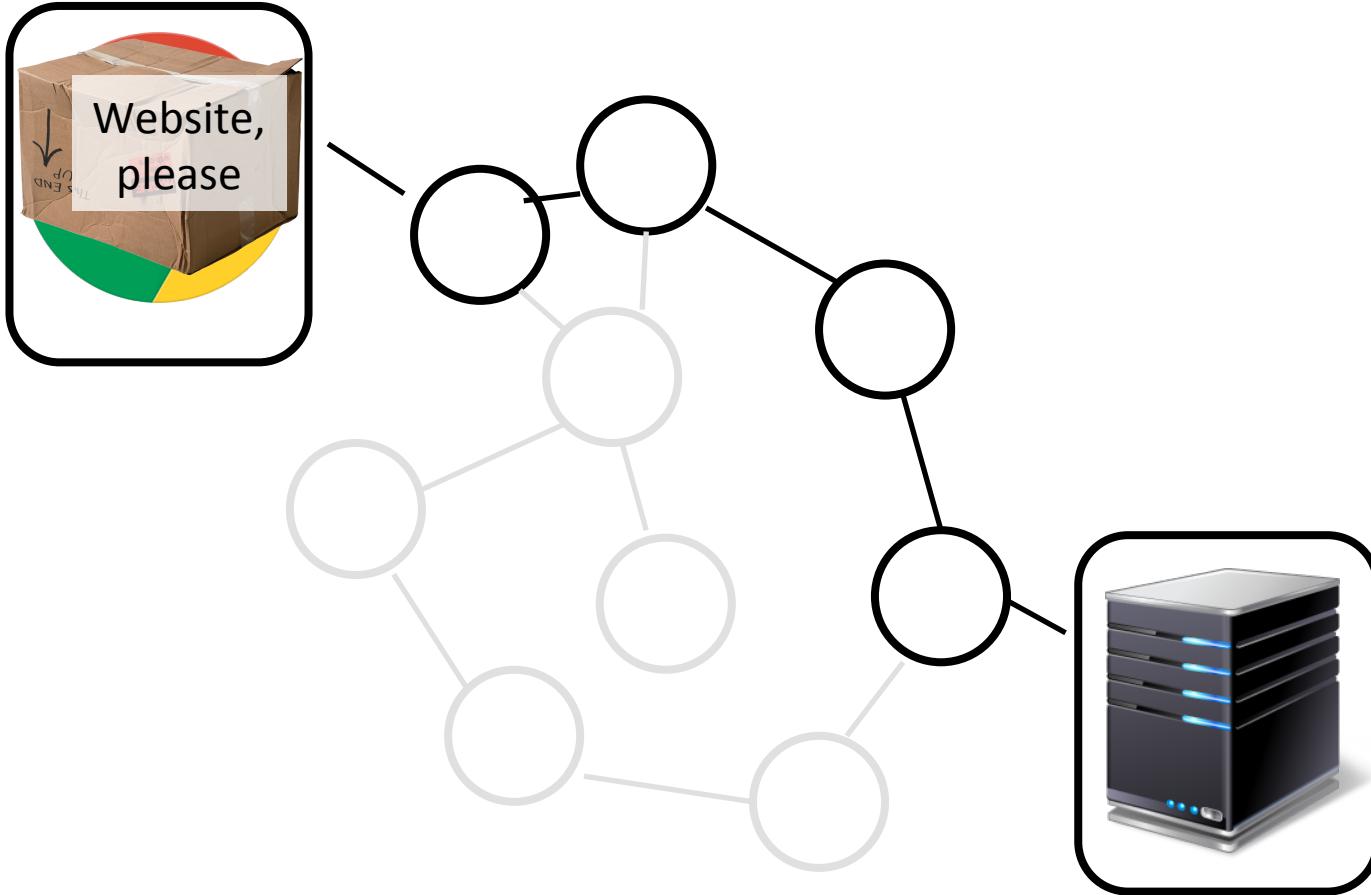
# Web Applications



Facebook.com

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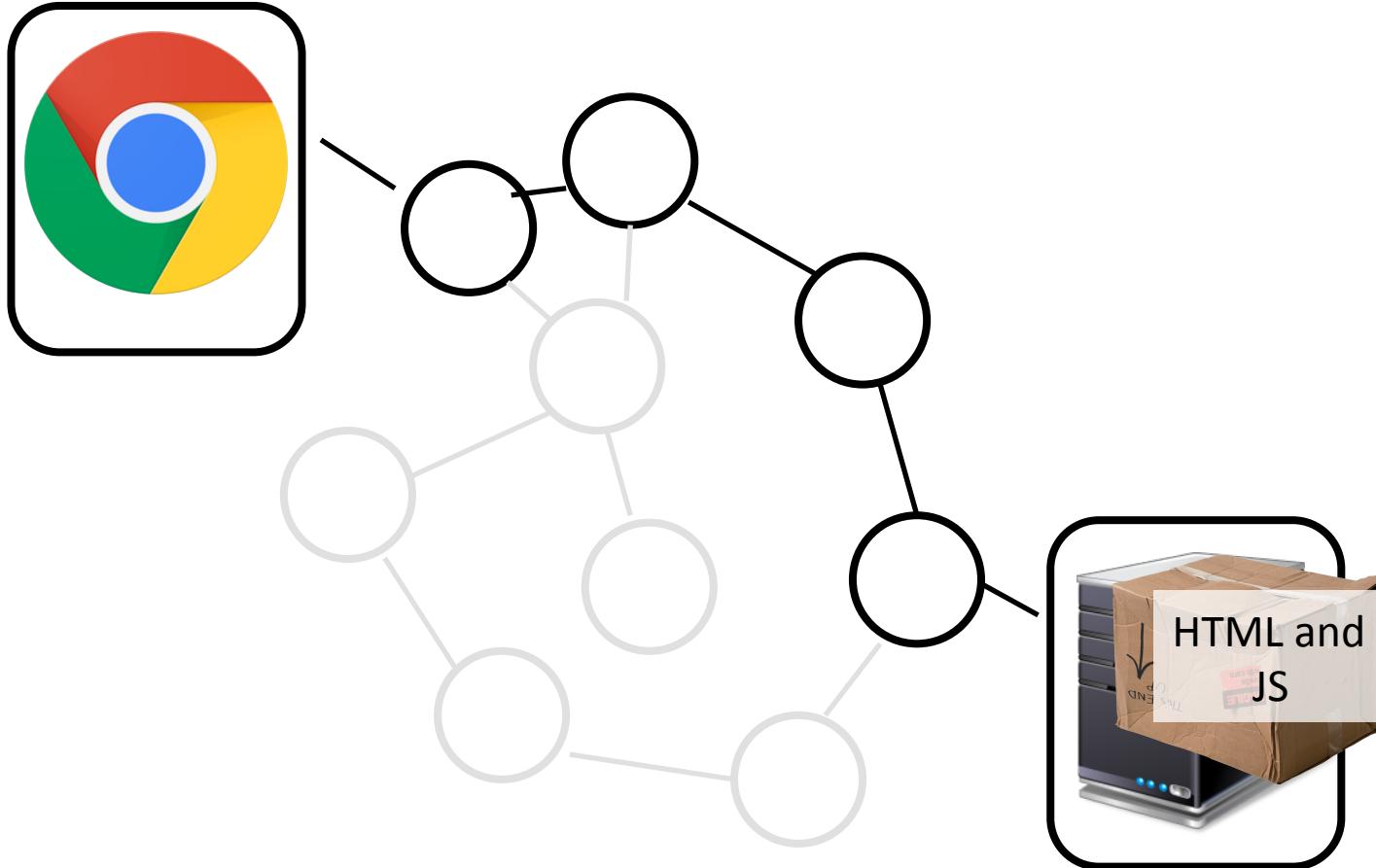
# Web Applications



Facebook.com

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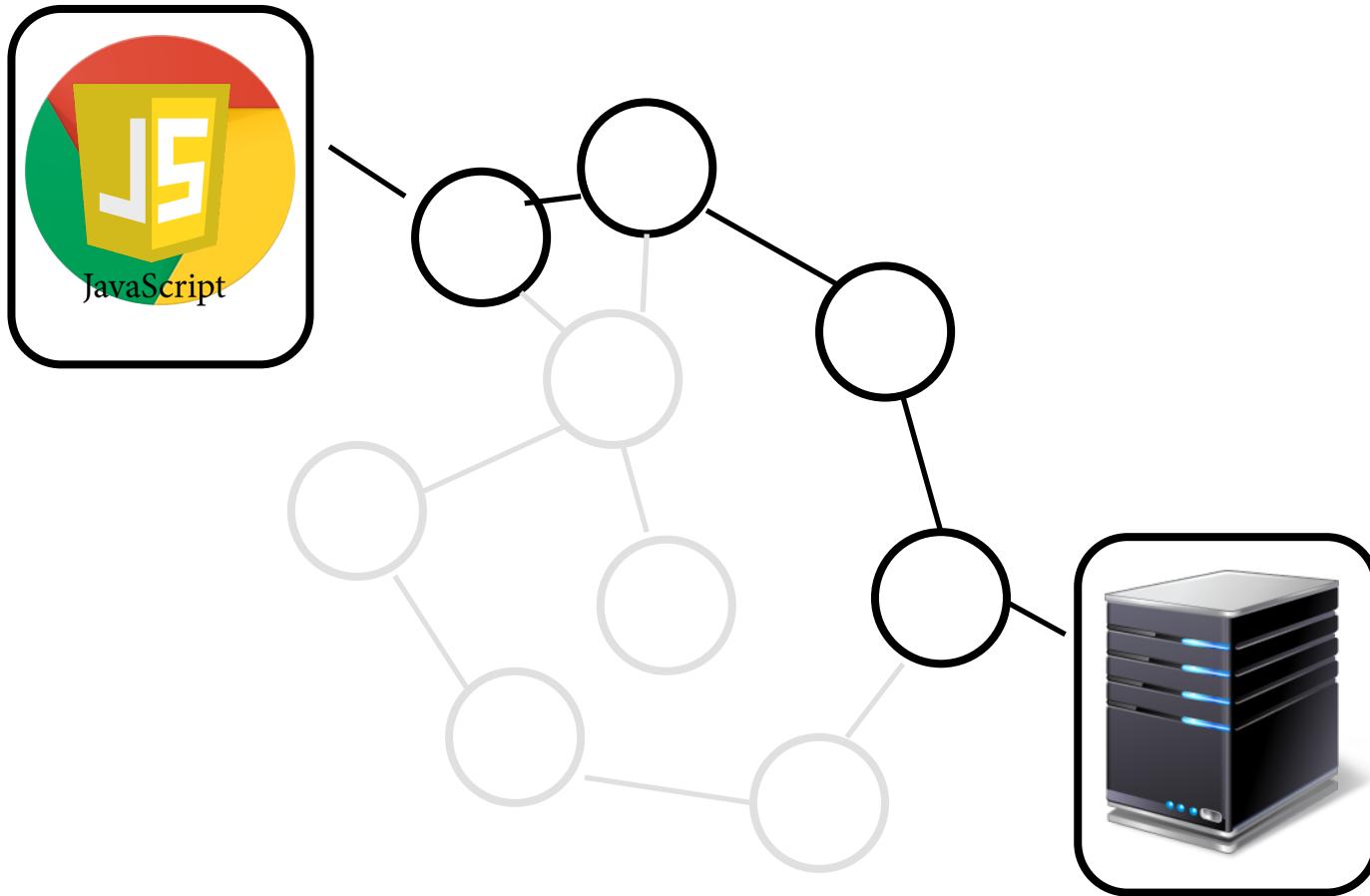
# Web Applications



Facebook.com

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# Web Applications



Facebook.com

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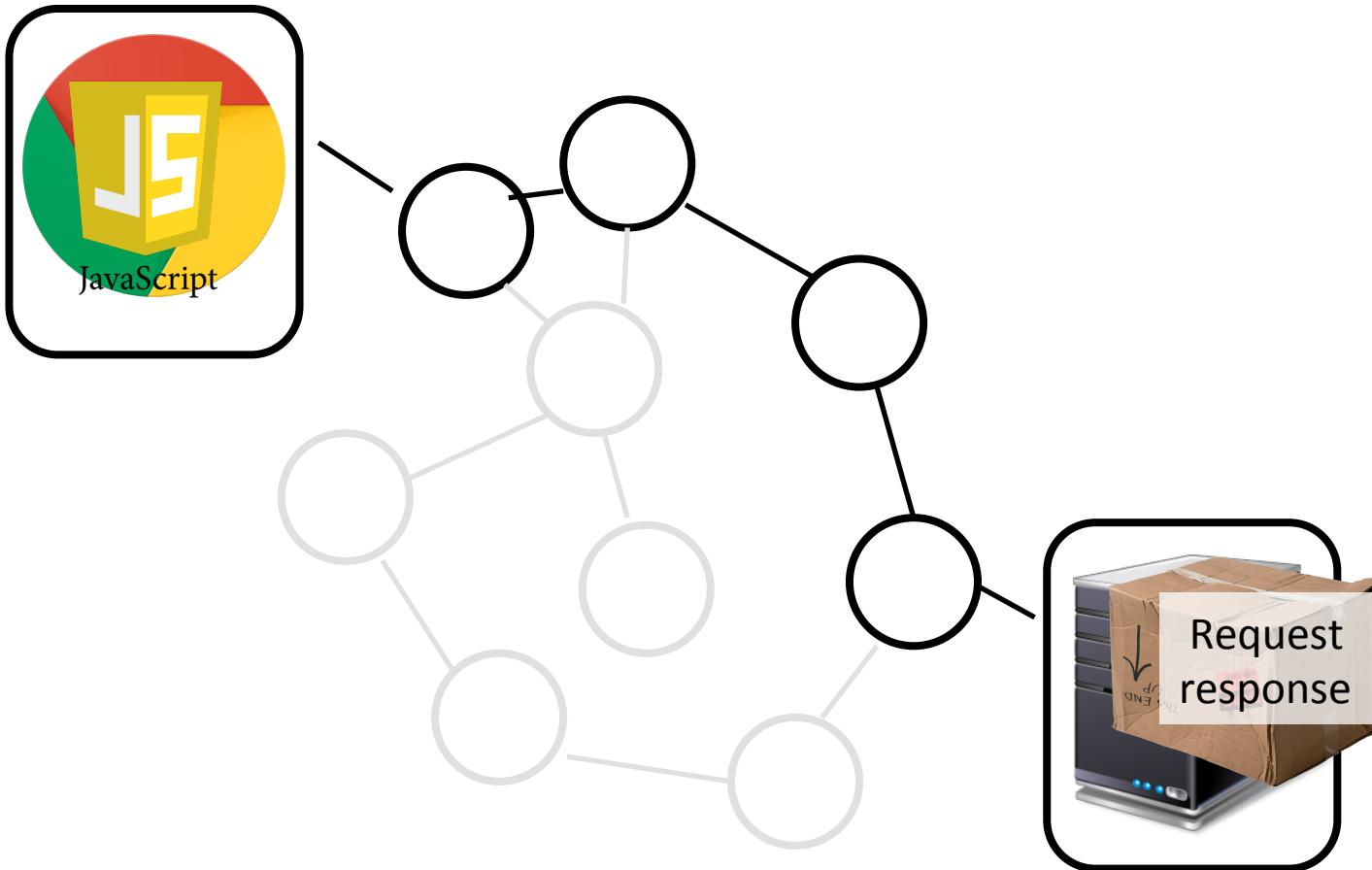
# Web Applications



Facebook.com

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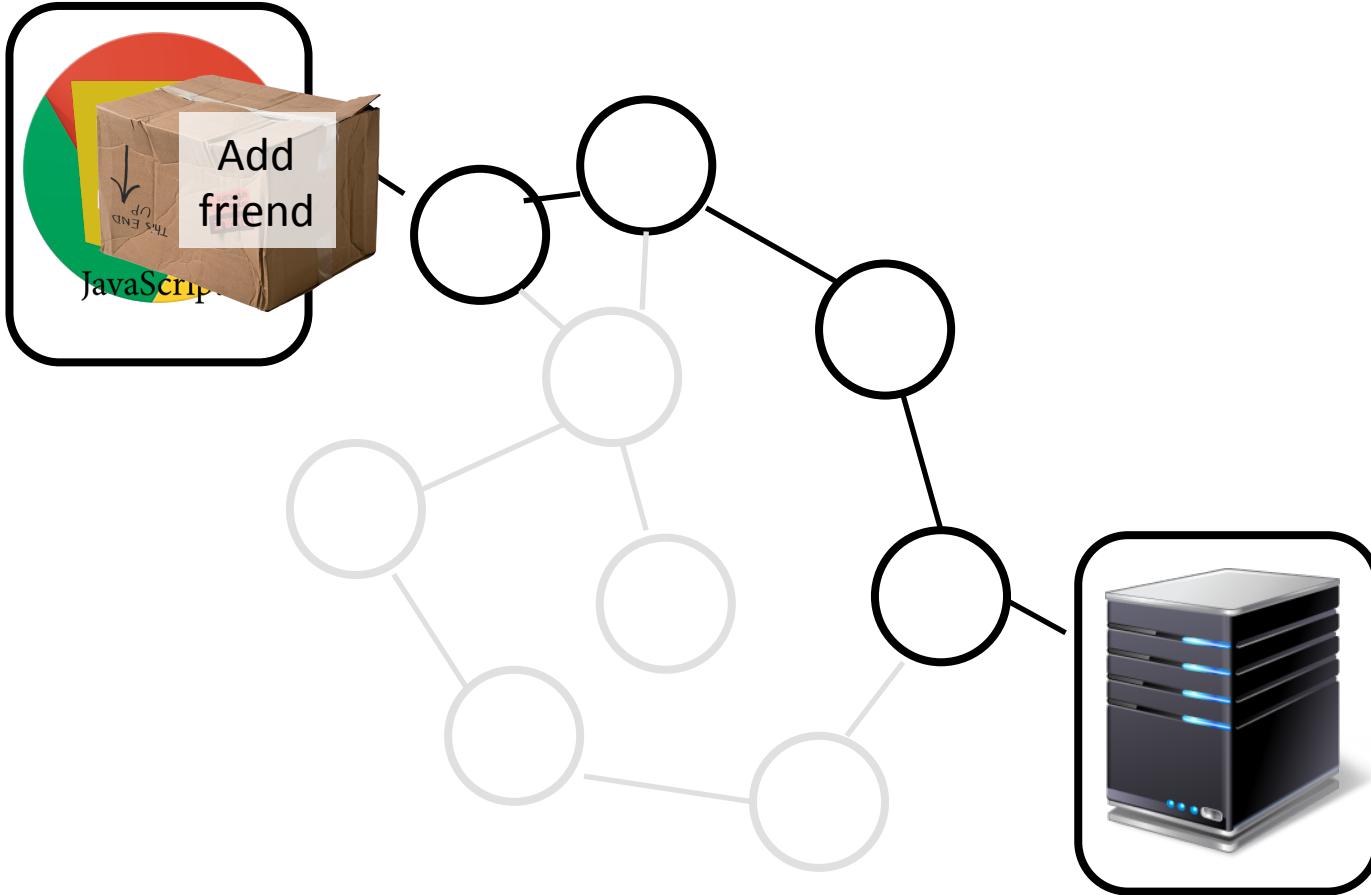
# Server Data Requests



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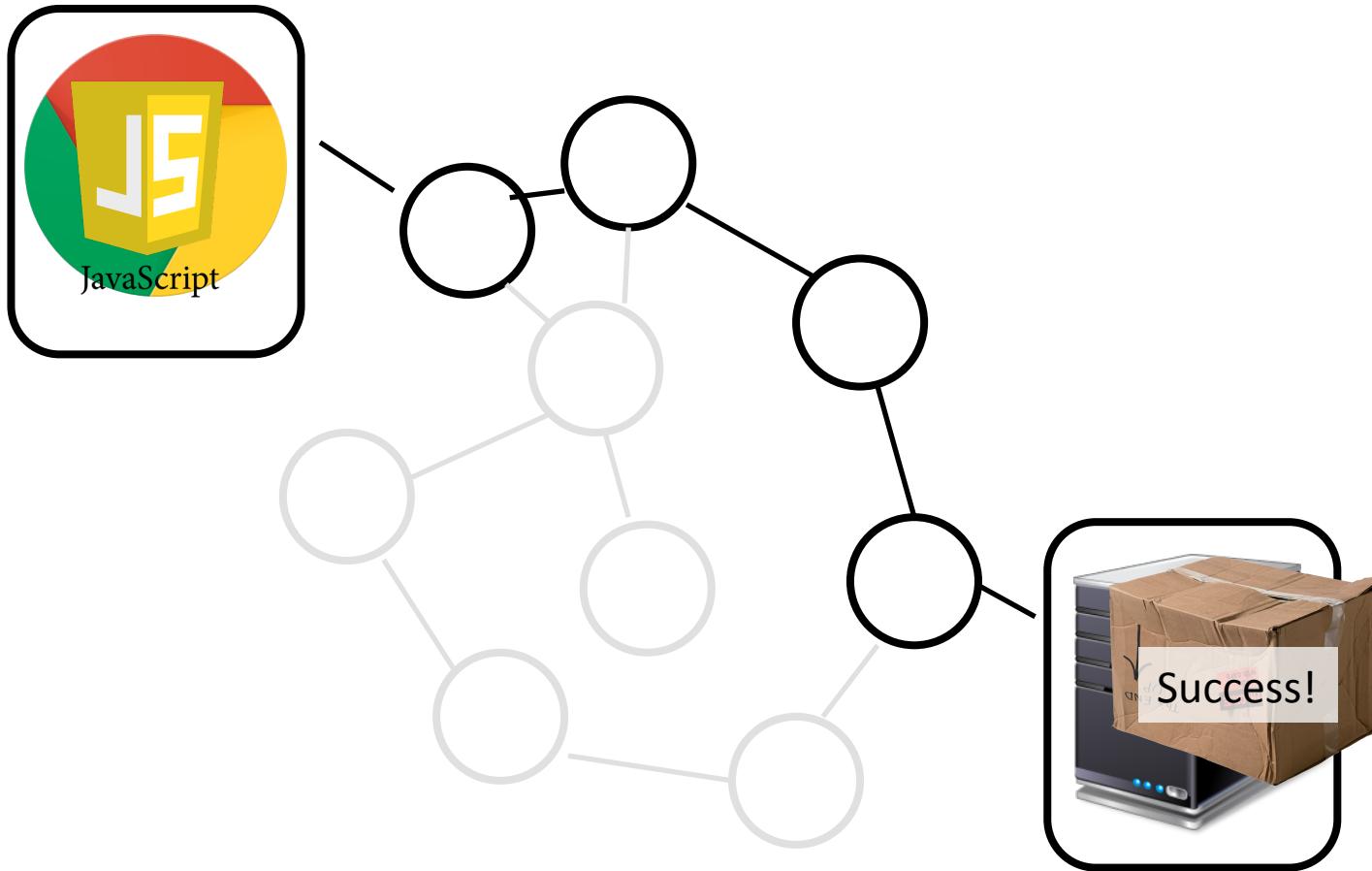
# Web Applications



Facebook.com

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# Web Applications

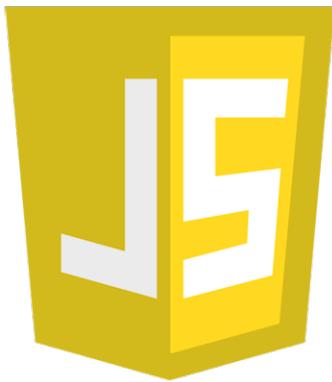


Facebook.com

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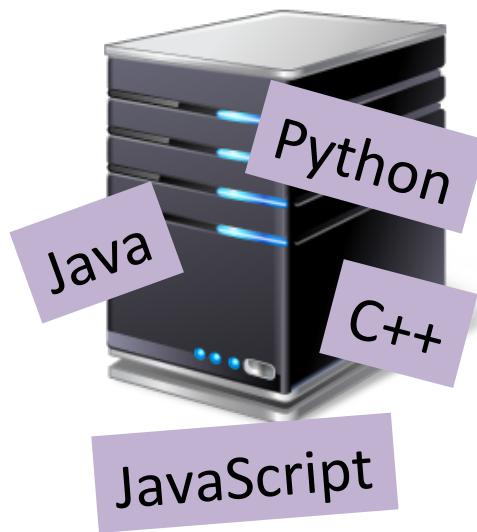
# You Write Two Programs

Client code



JavaScript

Server code



# Program #3 Class Playlist

Chris Piech

file:///Users/cpiech/Documents/Teaching/cs106b/2016-winter/lectures/25-MultiLingualism/co...

## Class Playlist

Artist  Song Name  Add Song

---

### Class Songs



Free - All Right Now



Aretha Franklin - Respect



Kygo - Id



Paul Simon - Graceland

`http://localhost:8888/getSongs`

This is a public request



`http://localhost:8888/getSongs`



`http://localhost:8888/addSong?  
artist=kygo&songName=id`

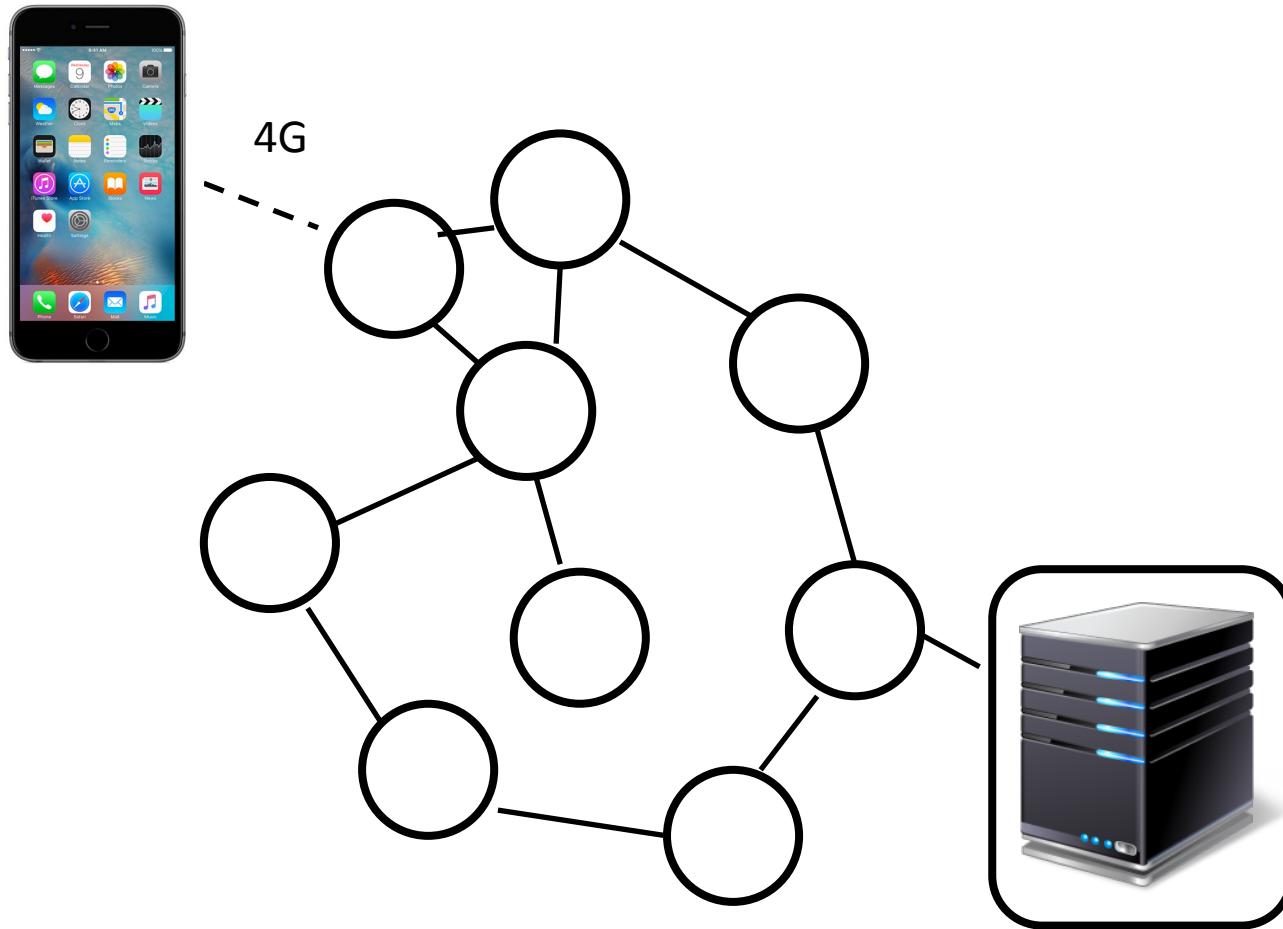
`http://localhost:8888/addSong?  
artist=kygo&songName=id`

The diagram illustrates a URL for adding a song. It consists of the base URL `http://localhost:8888/addSong?` followed by two parameters: `artist=kygo` and `songName=id`. Two white arrows point upwards from descriptive text labels to the corresponding fields in the URL. The first arrow points from the label "put desired artist here" to the `artist` field. The second arrow points from the label "put desired songName here" to the `songName` field.

put desired artist here

put desired songName here

# Paradigm Applies to Mobile Too



Facebook.com

128.234.233.442

# Program #3 Class Playlist

Chris Piech

file:///Users/cpiech/Documents/Teaching/cs106b/2016-winter/lectures/25-MultiLingualism/co...

## Class Playlist

Artist  Song Name  Add Song

---

### Class Songs



Free - All Right Now



Aretha Franklin - Respect



Kygo - Id



Paul Simon - Graceland

You can learn any language you want

# Today's Goal

1. Multilingualism
2. How the web works
3. Javascript Ideas



# Learn JavaScript

CS42

Learn on  
your own

You have free website space at Stanford