Creative Coding

The web as a medium

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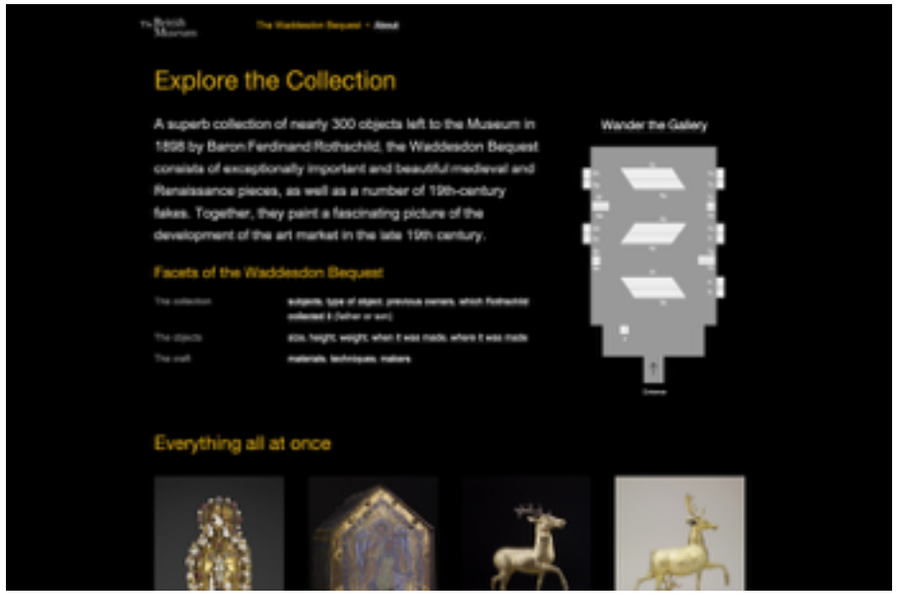
@philgyford
www.gyford.com

wb.britishmuseum.org

www.pepysdiary.org

www.twelescreen.com



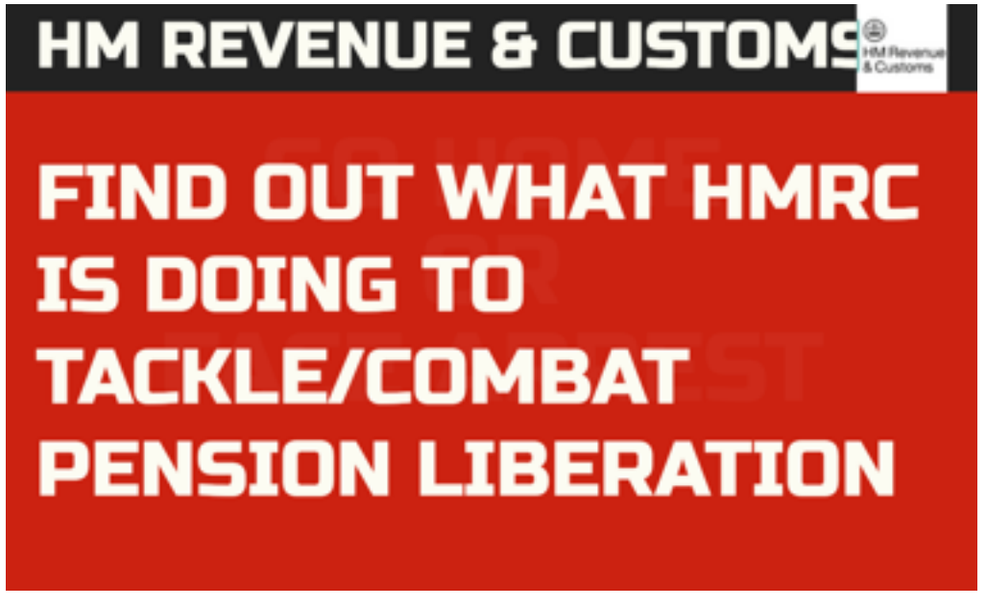
Waddesdon Bequest

wb.britishmuseum.org

The Diary of Samuel Pepys

www.pepysdiary.com

@samuelpepys



Twelescreen.com

Media

Chris Patten: Osborne lax over human rights concerns on China trip

Former Conservative party chairman tells of surprise at chancellor's actions on trade visit and says 'the jury's out' on Osborne

George Osborne risked failing to show due regard for concerns about human rights and civil liberties on his recent trade mission to China, according to a former chairman of the Conservative party.

Chris Patten, who was the last British governor of Hong Kong and a former chair of the BBC Trust, said he was surprised by what Osborne was doing and saying on his five-day trip last month, where he announced a deal with China to finance and build nuclear power stations in the UK.

In an interview with the Guardian, Patten said he did not believe David Cameron had "departed very far from traditional Tory instincts" but "the jury's out" on Osborne.

On the chancellor's China trip, he said: "There was a danger that the Treasury would be allowed to get away with the argument that 'soft power' doesn't include regard for human rights and civil liberties around the

Today's Guardian

gyford.guardian.com

Monday & Tuesday

- How the web works
- Creating web pages in HTML
- Styling web pages with CSS
- Making a basic portfolio site

Thursday & Friday

- The basics of JavaScript
- A couple of very simple JavaScript pages
- Using JavaScript to combine data from other sites to make an interactive page

This week won't make you…

- Proficient in HTML, CSS or JavaScript
- A brilliant programmer

But, this week should…

- Give you enough knowledge to explore further
- Provide useful basic skills for the future
- Show you how to experiment
- Learn how to find and fix problems
- Help you use the internet’s data as your medium

Now

How the web works

The web is not the internet

www.w3.org/20

Tim Berners-Lee and Vint Cerf (*one* of the inventors of the internet)

The internet

- Email
- Slack
- Adobe Creative Cloud
- Snapchat
- iCloud
- Dropbox
- Netflix
- Xbox Live
- The web
- App Store
- Phone apps
- PlayStation Network
- Amazon Kindle
- Internet of Things devices
- Apple TV
- Spotify
- WhatsApp
- And more…

All of these are parts of, on on, the Internet.
Only one part is the web.

ARPANET, 1969

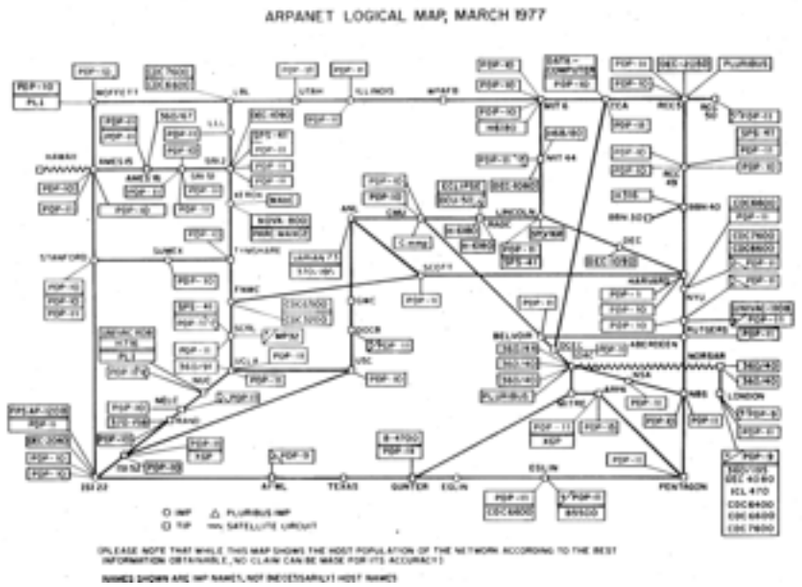
personalpages.manchester.ac.uk/staff/m.dodge/cybergeography/atlas/historical.html

Started in the 1960s, as ARPANET, US military-funded.
The first computer, the size of a wardrobe, connected to ARPANET.

ARPANET, 1971

personalpages.manchester.ac.uk/staff/m.dodge/cybergeography/atlas/historical.html

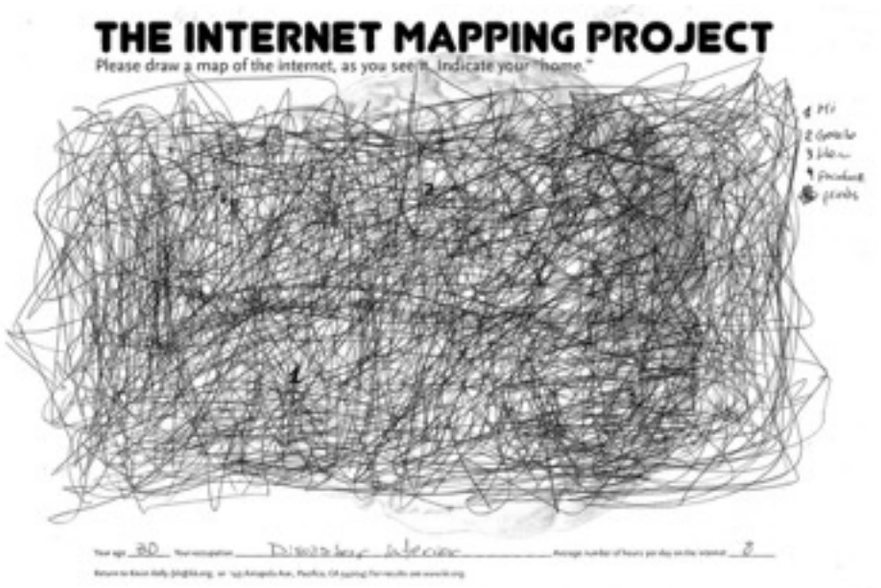
More sites connected.



ARPANET, 1977

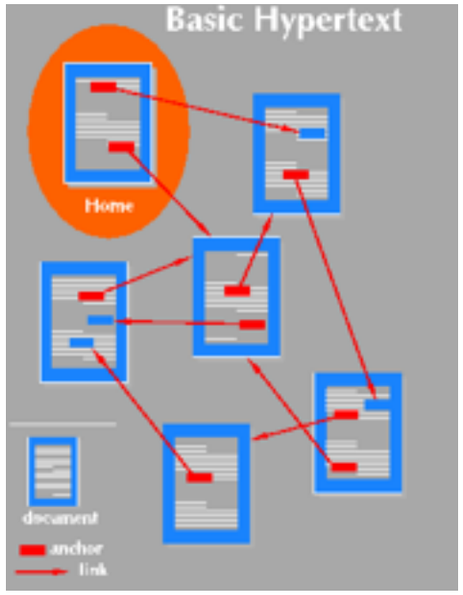
personalpages.manchester.ac.uk/staff/m.dodge/cybergeography/atlas/historical.html

Wiggly lines are satellite links.
London is towards bottom-right.
It grew, other networks were created. They joined and merged to form the internet.



The internet, 2009

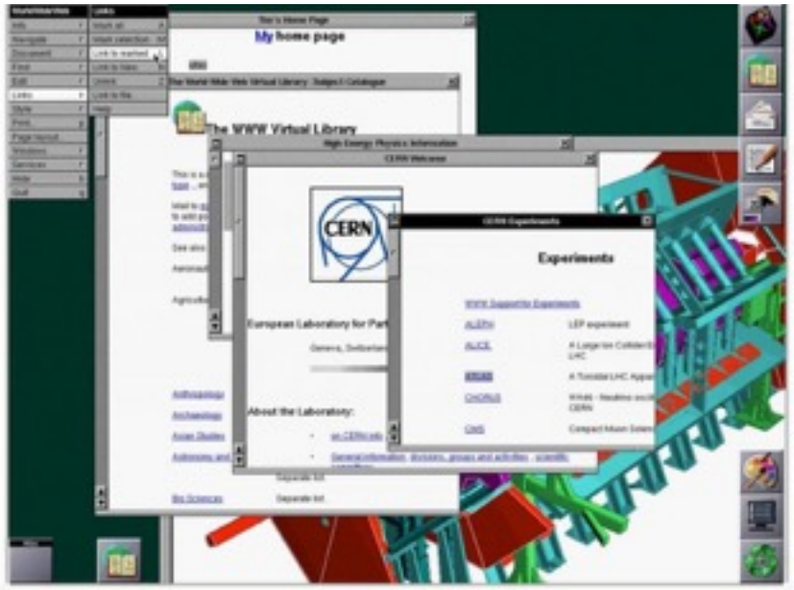
kk.org/ct2/the-internet-mapping-project



Hypertext

www.w3.org/Talks/General/Concepts.html

Image from 1991/2.
Clicking links in pages, like we do on the web, seems natural now.
Hard to imagine *before* hypertext.
Vannevar Bush, ‘As We May Think’, 1945.
Ted Nelson coined ‘hypertext’, 1963.



The World Wide Web

info.cern.ch

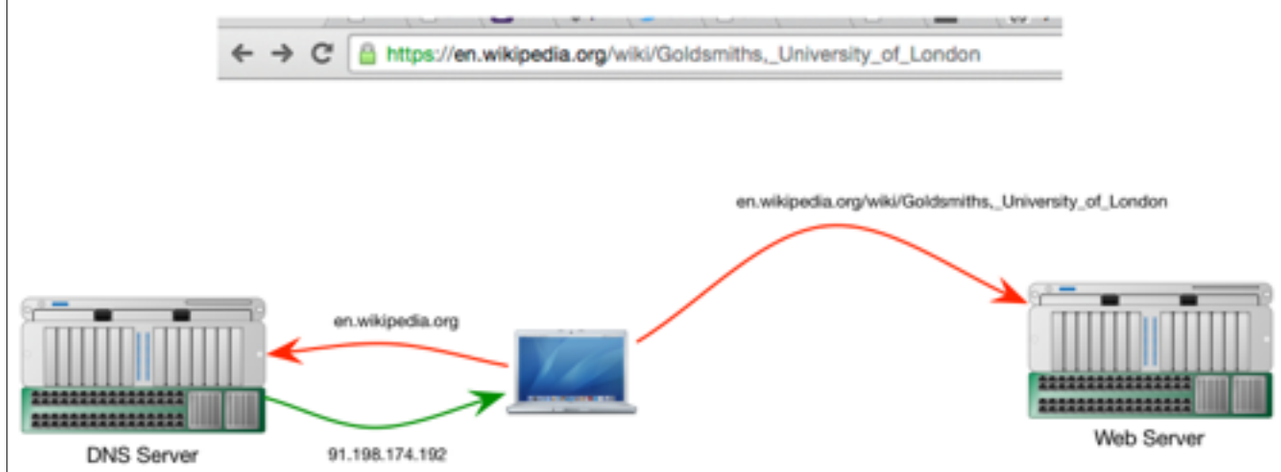
Tim Berners-Lee, created WWW in 1990.
This screenshot from 1993.

What happens when we type a URL or click a link?

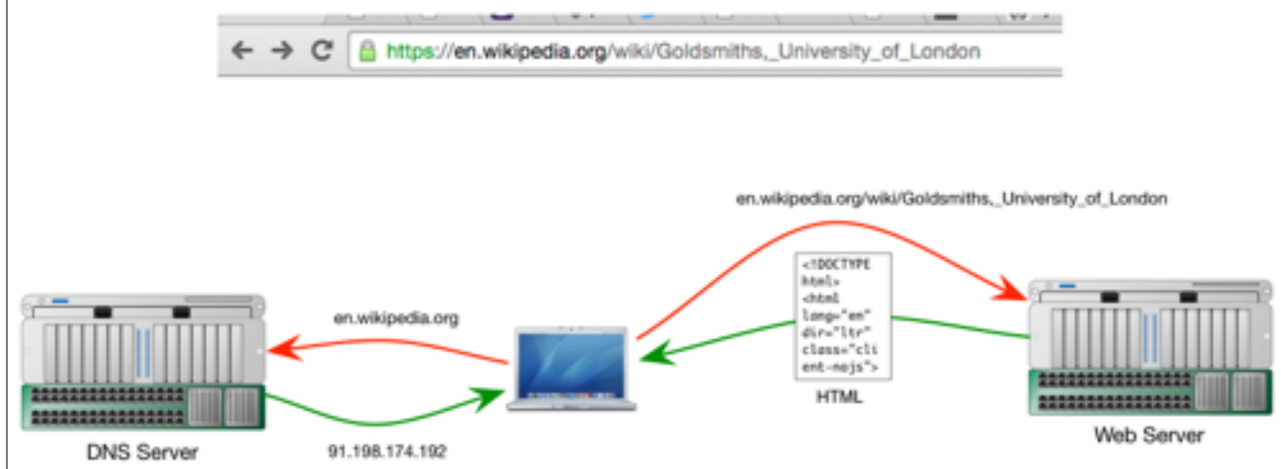

https://en.wikipedia.org/wiki/Goldsmiths,_University_of_London


https://en.wikipedia.org/wiki/Goldsmiths,_University_of_London

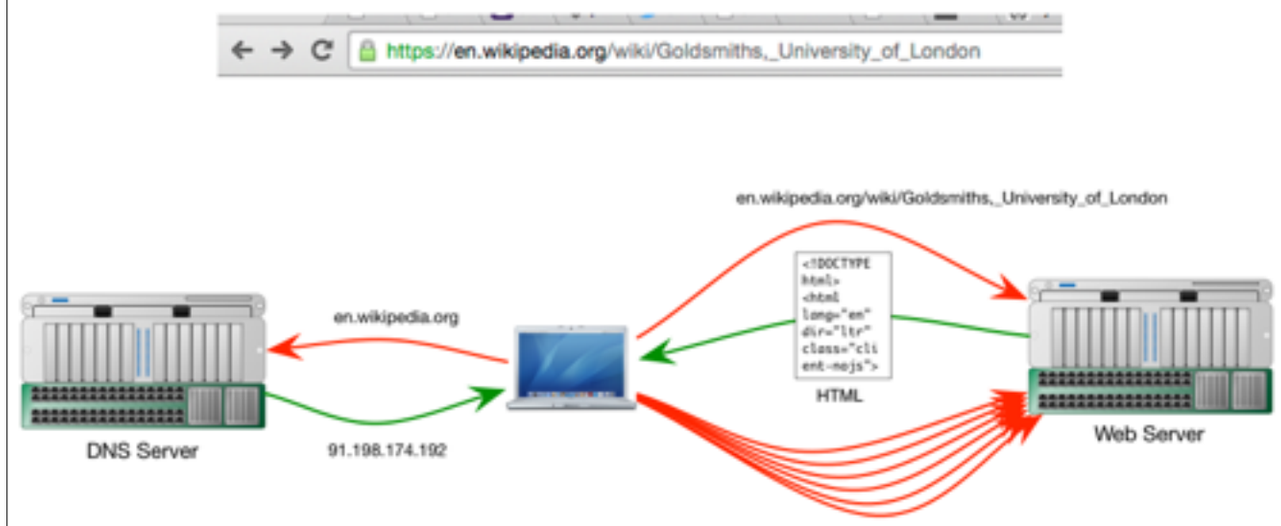

en.wikipedia.org
DNS Server
91.198.174.192



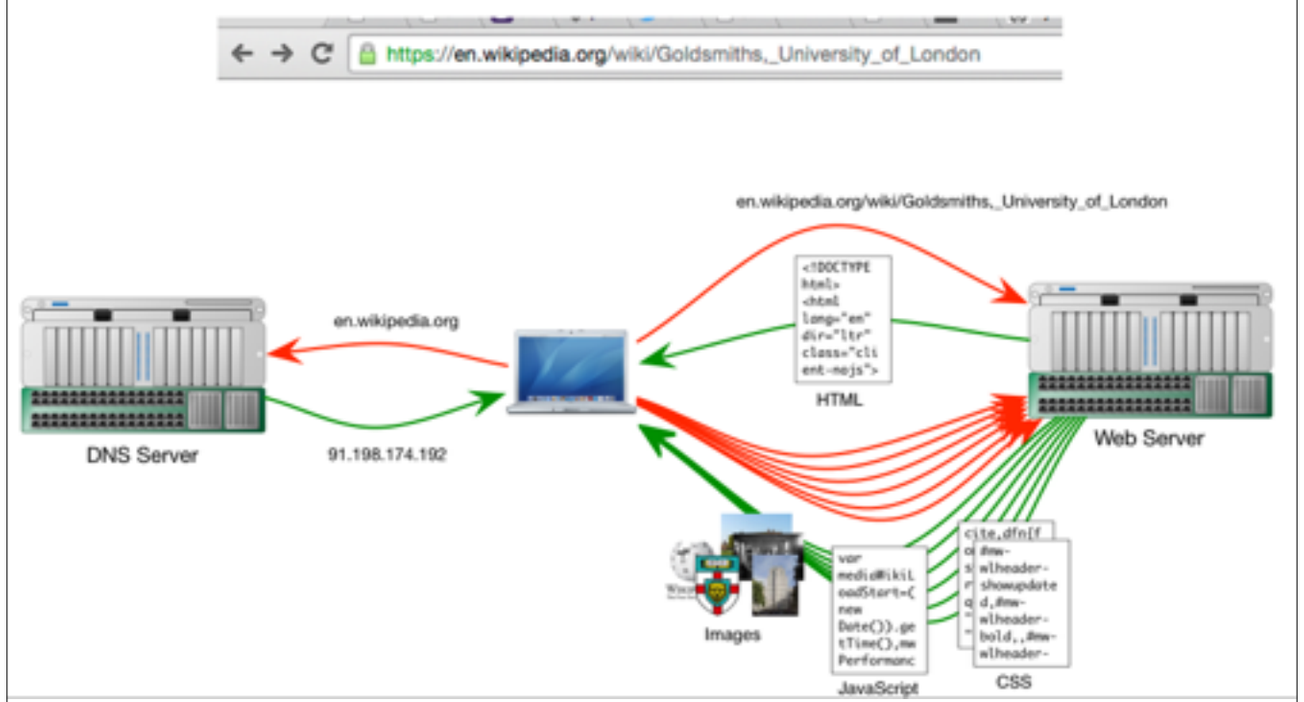
Could show it’s more complicated by doing a traceroute.
The server parses the URL to work out what to send back.



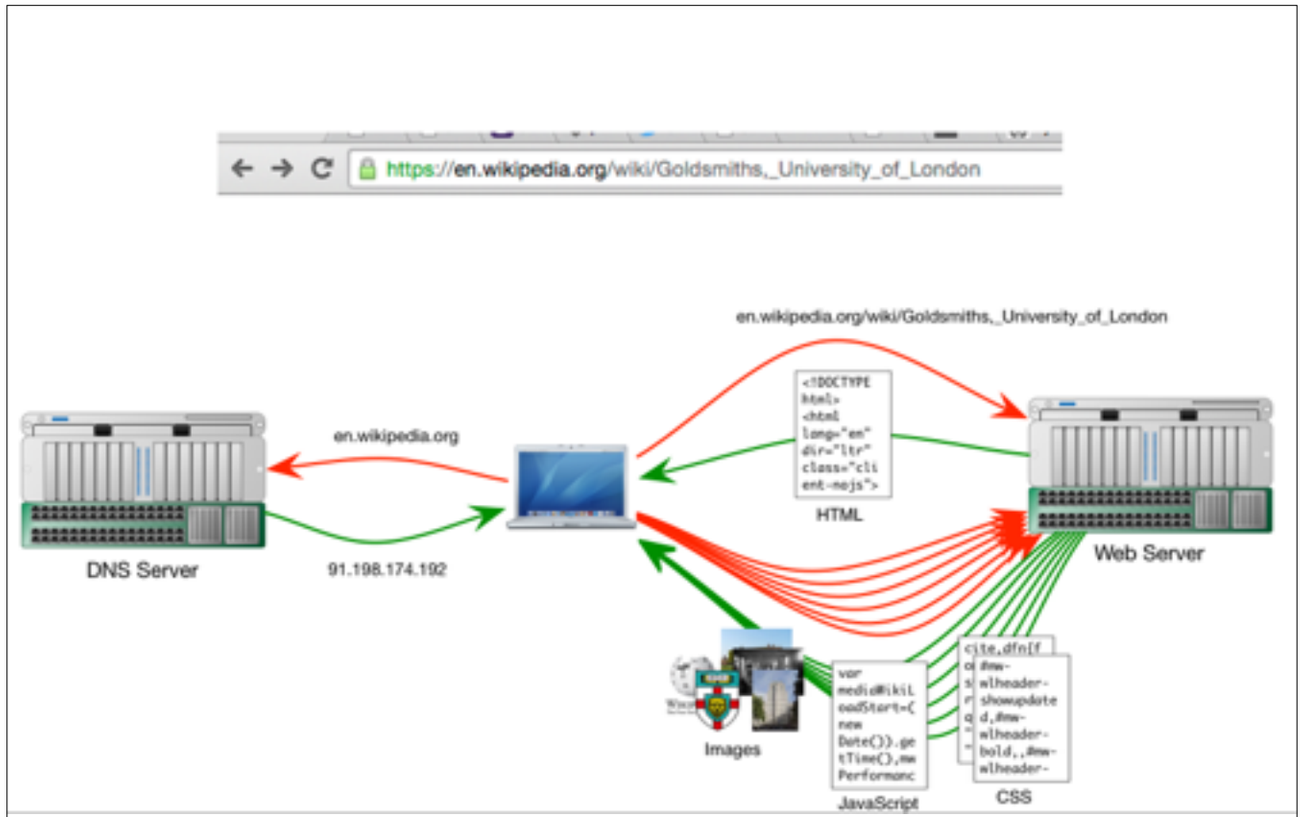
Browser parses the document sent back, to find other things it needs to request.



These might be requests to different servers, maybe on different domains.



Next slide shows front-end and back-end.


https://en.wikipedia.org/wiki/Goldsmiths,_University_of_London
en.wikipedia.org/wiki/Goldsmiths,_University_of_London
en.wikipedia.org
91.198.174.192
DNS Server
HTML
Web Server
Images
JavaScript
CSS
Front-end
Back-end

Back-end

- **Languages:** PHP, Python, Ruby, Perl, JavaScript, Java, ASP, Go, C, C++, Erlang, Scala…
- **Databases:** MySQL, PostgreSQL, Oracle, SQL Server, MongoDB, Redis, SQLite…
- **And also:** webservers, caching, load-balancing, backups…

Front-end

- HTML
- CSS
- JavaScript

HTML

Hypertext Markup Language

View source

Do view source on a page.

Chrome: View > Developer > View Source

Safari: Safari > Preferences > Advanced. “Show Develop menu in menu bar”.

Then: Develop > Show Page Source

FF: Tools > Web Developer > Page Source

Paragraphs

```
<p>This is a paragraph.</p>
```

Paragraphs

```
<p>This is a paragraph.</p>

<p>
  This is a
  paragraph.
</p>
```

These will look the same.

Headings

```
<h1>This is a heading</h1>
```

Headings

```
<h1>This is a heading</h1>
<h2>This is a 2nd level heading</h2>
<h3>This is a 3rd level heading</h3>
<h4>This is a 4th level heading</h4>
<h5>This is a 5th level heading</h5>
<h6>This is a 6th level heading</h6>
```

Images

```
<img src="kittens.jpg" alt="Kittens">
```

Anatomy of a tag

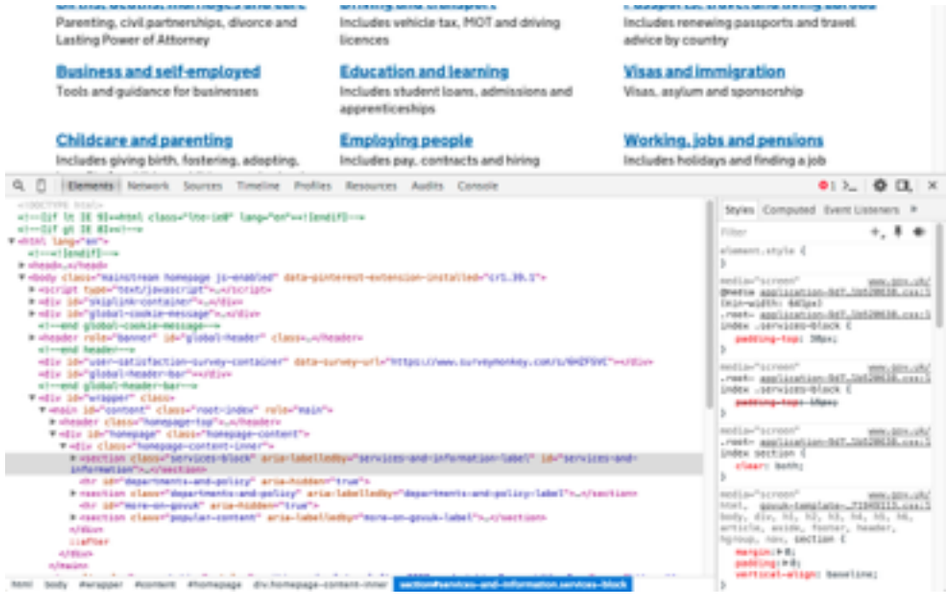
```
<tag attribute="value">
  Some content.
</tag>

<tag attribute="value">
```

Empty, self-closing, void elements.

Tags within tags

```
<p>
  <b>This is bold.</b>
  <br>
  <img src="kittens.jpg" alt="Kittens">
</p>
```

Note
 tag.



Web Inspector

Go to www.bbc.co.uk/news or gov.uk, inspect. Change things. Play.

Chrome: View > Developer Tools

Safari: Develop > Show Web Inspector

FF: Tools > Web Developer > Inspector

Text editors

- atom.io
- SublimeText.com

Download. Open. Make new folder.
Make index.html in it containing “hello”. Your first HTML page!
Add a tag or two.
HTML5 structure.
Make a page.

An HTML5 page

```
<!DOCTYPE html>
<html>
    <head>
        <title></title>
    </head>
    <body>

    </body>
</html>
```

utf-8

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title></title>
    </head>
    <body>

    </body>
</html>
```

Add utf-8 meta tag.

```
<main></main>
<section></section>
<article></article>
<header></header>
<footer></footer>
<nav></nav>

<div></div>

<h1></h1>   (h1-h6)
<p></p>

<ul>        (or <ol></ol>)
  <li></li>
  <li></li>
</ul>

<form></form>
```

```
<a href="" title=""></a>

<img src="" alt="">

<br>

<strong></strong>
<em></em>

<b></b>
<i></i>
<u></u>

<input type="" value="">
<label></label>
<button></button>
```

Useful links

- **Reference:** devdocs.io
- **and:** developer.mozilla.org/en-US/docs/Web/HTML
- **Help:** stackoverflow.com
- **Browser support:** caniuse.com
- **Learn more:** codecademy.com/tracks/htmlcss