

Web Development Intro for Students

The Absolute Basics

R. Scott Granneman & Jans Carton

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granneman.com/downloads/web-dev/Web-Dev-Intro-for-Students.pdf

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Notes

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Scott Granneman



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Scott Granneman is a professional web developer, author of several books, conference speaker, and a frequent contributor to Washington Post, O'Reilly, and other publications. As a content strategist, he helps businesses create user-based content that drives results.

Key Sites

Pages you'll find here:

Teaching

- Interviews
- All Presentations
 - Ladue Chapel
 - Exploring HTML5 & CSS
 - HTML to CSS to Responsive Web Design
 - Advanced CSS
 - Responsive Web Design for Designers
 - Web Design
 - Operating Systems
 - Various & Sundry
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He is a Web development company in St. Louis, Missouri. Scott has written six books for SecurityFocus and *Linux Magazine*. He is an Adjunct Professor at Washington University, [teaching courses](#) on technology, security, web development, & the cloud, and hosts websites for clients in 12 states using an open source, UNIX-based [presentations](#) all over the United States, and loves speaking to people.

Background

HTML

Hypertext Markup Language

H.P. Lovecraft

[The Call of Cthulhu](#)

[At the Mountains of Madness](#)

[Dagon](#)

[The Colour Out of Space](#)

[The Shadow Over Innsmouth](#)


Lovecraft's *Dagon*

It was in one of the most open and least frequented parts of the broad Pacific that the packet of which I was supercargo fell a victim to the German sea-raider. The great war was then at its very beginning, and the ocean forces of the Hun had not completely sunk to their later degradation; so that our vessel was made a legitimate prize, whilst we of her crew were treated ...

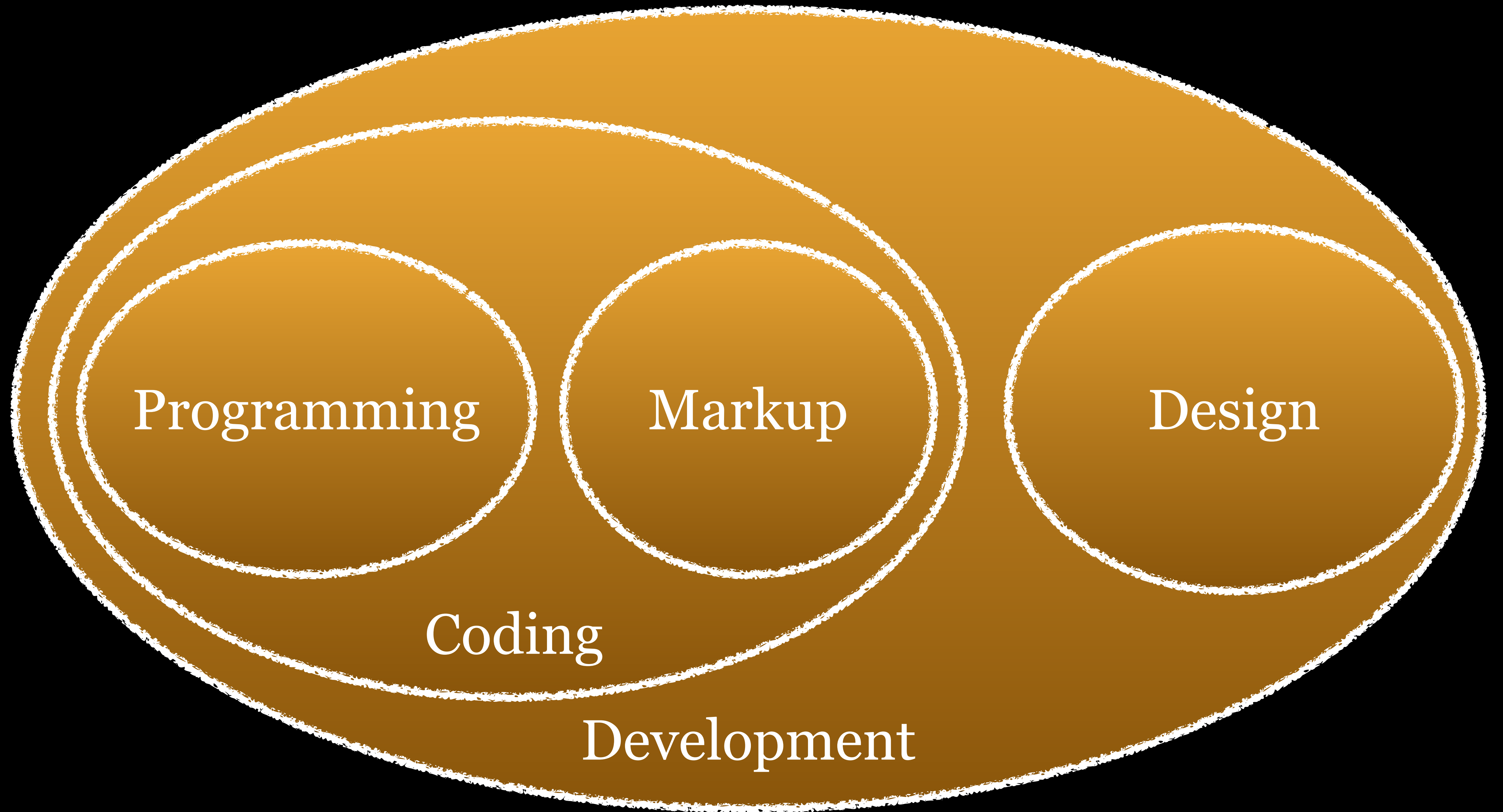
Hypertext means linking

Not HTML!

```
<recipe>
  <title>Banana Soup</title>
  <ingredientlist>
    <ingredient>1 banana</ingredient>
    <ingredient>1 cup milk</ingredient>
  </ingredientlist>
  <preparation>
    Cut banana into slices. Combine with milk.
  </preparation>
</recipe>
```



Markup annotates a document with tags



```
set theURL to "https://washingtonpost.com"
tell application "Safari"
  activate
  try
    tell window 1 to set current tab to make new
      tab with properties {URL:theURL}
  on error
    open location theURL
  end try
end tell
```

A language is a vocabulary & grammar for communicating with a computer





Tim Berners-Lee



Tim Berners-Lee

Invented the World Wide
Web & HTML
1989-1991

An aerial photograph of the CERN complex in 1989. The image shows a large, sprawling industrial and research facility with numerous buildings, parking lots, and green spaces. The complex is surrounded by a mix of forested areas and open fields. The architecture is a mix of modern and older structures, with some large, white, rectangular buildings and others that are more complex in shape. The overall scene is a detailed view of the CERN campus at the time.

Berners-Lee was a
computer scientist
at European
Organization for
Nuclear Research,
or *Conseil
Européen pour la
Recherche
Nucleaire* (CERN)

Now the European
Particle Physics
Laboratory but still
called CERN

10,000 people were connected to CERN

Lived all over the world, with many different brands of hardware & software

Very difficult for scientists to work exchanging documents & information



This caption seems both completely accurate & woefully incomplete at the same time...



Tim Berners-Lee

Current director of the
World Wide Web
Consortium (W3C)

International standards
organization for the World
Wide Web



~~HTML~~
CSS
WOFF
XML
XSLT
PNG
SVG

See www.w3.org/TR/

Oct. 1991 *HTML Tags* (informal)

Nov. 1995 HTML 2

Jan. 1997 HTML 3.2

Dec. 1997 HTML 4.0

Dec. 1999 HTML 4.01



Oct. 2014 HTML5 (+5.1 & 5.2)

May 2019 HTML 5 Living Standard

“Befre comming [sic] to CERN, Tim worked on, among other things, document production and text processing. He developped [sic] his first hypertext system, ‘Enquire’, in 1980 for his own use (although unaware of the existence of the term HyperText). With a background in text processing, real-time software and communications, *Tim decided that high energy physics needed a networked hypertext system and CERN was an ideal site for the development of wide-area hypertext ideas.*” —Tim Berners-Lee, 1992 (emphasis added)

WorldWideWeb: Proposal for a HyperText Project

To:
P.G. Innocenti/ECP, G. Kellner/ECP, D.O. Williams/CN

From:
T. Berners-Lee/CN, R. Cailliau/ECP

Date:
12 November 1990

HyperText is a way to link and access information of various kinds as a web of nodes in which the user can browse at will. It provides a single user-interface to large classes of information (reports, notes, data-bases, computer documentation and on-line help). We propose a simple scheme incorporating servers already available at CERN.

[T. Berners-Lee R. Cailliau](#)

WorldWideWeb:

Proposal for a HyperText Project
T. Berners-Lee / CN, R. Cailliau / ECP

Abstract:

HyperText is a way to link and access information of various kinds as a web of nodes in which the user can browse at will. Potentially, HyperText provides a single user-interface to many large classes of stored information such as reports, notes, data-bases, computer documentation and on-line systems help. We propose the implementation of a simple scheme to incorporate several different servers of machine-stored information already available at CERN, including an analysis of the requirements for information access needs by experiments.

Proposal for a HyperText Project

T. Berners-Lee / CN, R. Cailliau / ECP

Abstract:

HyperText is a way to link and access information of various kinds as a web of nodes in which the user can browse at will. Potentially, HyperText provides a single user-interface to many large classes of stored information such as reports, notes, data-bases, computer documentation and on-line systems help. We propose the implementation of a simple scheme to incorporate several different servers of machine-stored information already available at CERN, including an analysis of the requirements for information access needs by experiments.

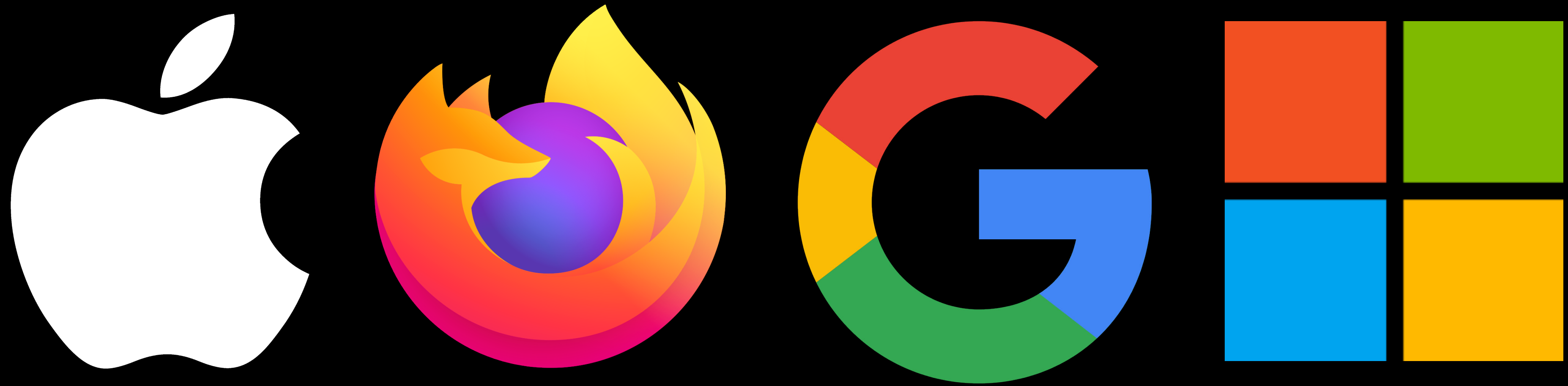


Web Hypertext Application Technology Working Group (WHATWG)

Founded in 2004 by
Apple, Opera, & Mozilla in
response to W3C's lack of
interest in HTML

Wanted to act as a spur to
the W3C

“Apple, Mozilla and Opera were becoming increasingly concerned about the W3C’s direction with XHTML, lack of interest in HTML, and apparent disregard for the needs of real-world web developers. So, in response, these organisations set out with a mission to address these concerns and the Web Hypertext Application Technology Working Group was born.”



Current Steering Group of WHATWG

For well over a decade there were specifications for HTML available on both the WHATWG & the W3C websites — & they did not always agree

This is obviously confusing

May 2019

W3C & WHATWG agree that they will work together to produce a Living Standard for HTML, which WHATWG will maintain on its website

HTML

Living Standard — Last Updated 3 September 2019

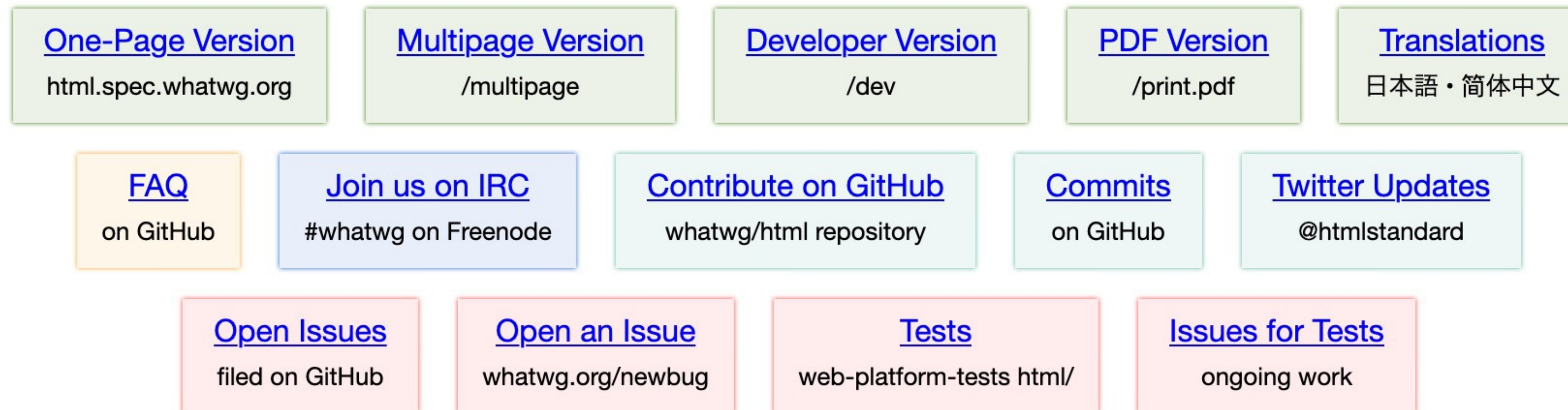


Table of contents

- 1 Introduction
- 2 Common infrastructure
- 3 Semantics, structure, and APIs of HTML documents
- 4 The elements of HTML
- 5 Microdata
- 6 User interaction
- 7 Loading Web pages
- 8 Web application APIs
- 9 Communication
- 10 Web workers



CSS SPECIFICATIONS

This page contains a list of all completed specifications and drafts by the [CSS WG](#) (formerly ‘[CSS & FP WG](#)’). If you want to follow the development of CSS3, this is the place to start. You have ideas? Contributions? See ‘[If you want to help](#)’ on this page.

A specification is not a manual. There is no excuse for badly written drafts and please complain if you find one. But specs do target a specific audience. See [fantasai's Understanding the CSS Specifications](#).. [J. David Eisenberg](#) has written another useful [How to read W3C specs](#). Or you can read about ‘[modules](#),’ ‘[levels](#),’ ‘[snapshots](#)’ and the CSS process.

The W3C still handles CSS

WHAT'S NEW?

- [2020-06-18](#) Updated Working Draft: [CSS Inline Layout Level 3](#).
- [2020-06-03](#) Updated Working Draft: [CSS Containment Level 2](#).
- [2020-06-04](#) Updated Working Draft: [CSS Inline Layout Level 3](#).
- [2020-06-03](#) Updated Working Draft: [CSS Overflow Level 3](#). Updated Working Draft: [Media Queries Level 5](#).

So if HTML & CSS are constantly evolving, which parts can you use?

The answer is “what browsers support” — & if browsers think that a feature is “insecure, harmful to users, or used very rarely” it will be removed from the specs!

Can I use

? ⚙ Settings

Index of features

▼ Filter features

Latest features

- Document Policy
- Permissions Policy
- Built-in PDF viewer
- Portals
- Web NFC

Browser scores

Current version

Dev version

Chrome 85: 387

Firefox 80: 368

Safari 14.1: 336

Most searched features

1. Flexbox
2. CSS Grid
3. WebP image format
4. ES6
5. CSS position:sticky

Third party tools

- The CanIUse Embed — Add support tables to your site
- Caniuse Component — Add support tables to your presentations
- Caniuse command line tool
- Doiuse...? — Lint your CSS to check what features work

Did you know?

If a feature you're looking for is not available on the site, you can **vote to have it included**. Better yet, if you've done the research you can even **submit it yourself!**

Next

caniuse.com

Can I use grid ? Settings

50 results found

☒ Caniuse (2)☒ MDN (48)

CSS Grid Layout (level 1) - CR

Usage

% of all users  ?

Global

93.13% + 4.21% = 97.33%



Method of using a grid concept to lay out content, providing a mechanism for authors to divide available space for layout into columns and rows using a set of predictable sizing behaviors. Includes support for all `grid-*` properties and the `fr` unit.

Current aligned

Usage relative

Date relative

Filtered

All



IE	Edge	Firefox	Chrome	Safari	Opera	iOS	Opera Mini	Android Browser	Opera Mobile	Chrome for Android	Firefox for Android	UC Browser for Android	Samsung Internet
		2-39	4-28										
		3 40-51	1 29-56		10-27								
6-9	2 12-15	4 52-53	4 57	3.1-10	1 28-43	3.2-							4-5.4







CSS Grid Layout (level 1) - CR

Usage
Global

% of all users  ?
93.13% + 4.21% = 97.33%

Method of using **2** concept to lay out content, providing a mechanism for authors to divide available space for layout into columns and rows using a set of predictable sizing behaviors. Includes support for all `grid-*` properties and the `fr` unit **3**

Current aligned Usage relative Date relative Filtered All 

IE	Edge *	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Opera Mobile *	Chrome for Android	Firefox for Android	UC Browser for Android	Samsur Interne
		2-39	4-28										
		3 40-51 	1 29-56 		10-27								
6-9	2 12-15 	4 52-53	4 57	3.1-10	1 28-43 	3.2-10.2							4-5.4
2 10 	16-83	54-79	58-84	10.1-13	44-69	10.3-13.3		2.1-4.4.4	12-12.1				6.2-11
2 11 	84	80	85	13.1	70	13.5	all	81	46	84	79	12.12	12.0
		81-82	86-88	14-TP		14.0							

Notes Known issues (3) Resources (10) Feedback

See also support for [subgrids](#)

1 Enabled in Chrome through the "experimental Web Platform features" flag in `chrome://flags`

2 Partial support in IE refers to supporting an [older version](#) of the specification



CSS Grid Layout (level 1) - CR

Usage
Global

% of all users
93.13% + 4.21% = 97.33%



Method of using a grid concept to lay out content, providing a mechanism for authors to divide available space for layout into columns and rows using a set of predictable sizing behaviors. Includes support for all `grid-*` properties and the `fr` unit.

- Current aligned
- Usage relative
- Date relative
- Filtered
- All
-

IE	Edge	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android	Opera Mobile	Chrome for Android	Firefox for Android	UC Browser for Android	Samsur Interne
		2-39	4-28										
		3 40-51	1 29-56										
6-9	2 12-15	4 52-53	4 57										4-5.4
2 10	16-83	54-79	58-84						12-12.1				6.2-11
2 11	84	80	85						46	84	79	12.12	12.0
		81-82	86-88										

Chrome 57

Support info

✓ Supported

Notes

4 There are some bugs with overflow ([1356820](#), [1348857](#), [1350925](#))

Browser version

Released Mar 8, 2017

Usage

Global: 0.02%



- Notes
- Known issues (3)
- Resources (10)
- Feedback

See also support for [subgrids](#)

1 Enabled in Chrome through the "experimental Web Platform features" flag in chrome://flags

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CSS Grid Layout (level 1) - CR

Usage

Global

% of all users

93.13% + 4.21% = 97.33%



Method of using a grid concept to lay out content, providing a mechanism for authors to divide available space for layout into columns and rows using a set of predictable sizing behaviors. Includes support for all `grid-*` properties and the `fr` unit.

Current aligned

Usage relative

Date relative

Filtered

All

IE	Edge	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android Browser	Opera Mobile	Chrome for Android	Firefox for Android	UC Browser for Android	Samsung Internet
6-9	12-15												4-5.4
10	16-83							2.1-4.4.4	12-12.1				6.2-11
11	84							81	46	84	79	12.12	12.0

Edge 12 - 15

Support info

Browser versions

~ Partial support with prefix: -ms-

Released Jul 28, 2015 - Apr 10, 2017

Total usage

Global: 0.04%

Notes

Partial support in IE refers to supporting an older version of the specification.



Notes

Known issues (3)

Resources (10)

Feedback

See also support for [subgrids](#)

¹ Enabled in Chrome through the "experimental Web Platform features" flag in chrome://flags

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CSS Grid Layout (level 1) - CR

Usage

Global

% of all users

93.13% + 4.21% = 97.33%



Method of using a grid concept to lay out content, providing a mechanism for authors to divide available space for layout into columns and rows using a set of predictable sizing behaviors. Includes support for all `grid-*` properties and the `fr` unit.

- Current aligned
- Usage relative
- Date relative
- Filtered
- All
-

IE	Edge	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Android Browser	Opera Mobile	Chrome for Android	Firefox for Android	UC Browser for Android	Samsur Interne
	IE 6 - 9												
	Support info												
	Browser versions												
6-9	x Not supported												4-5.4
10	Released Aug 26, 2001 - Mar 13, 2011					3.2-10.2							6.2-11
11	Total usage					10.3-13.3		2.1-4.4.4	12-12.1				
	Global: 0.31%					13.5	all	81	46	84	79	12.12	12.0
		81-82	86-88	14-TP		14.0							



- Notes
- Known issues (3)
- Resources (10)
- Feedback

See also support for [subgrids](#)

¹ Enabled in Chrome through the "experimental Web Platform features" flag in chrome://flags

² Partial support in IE refers to supporting an older version of the specification

If you ever have questions about HTML, CSS, or JavaScript, the first place to look is MDN Web Docs

“MDN Web Docs, previously Mozilla Developer Network ... is a documentation repository and learning resource for web developers ... In 2017, Microsoft, Google, and Samsung announced that they would shut down their own documentation projects and move all their documentation to MDN Web Docs.”

Resources for Developers, by Developers

Documenting web technologies, including CSS, HTML, and JavaScript, since 2005.



Featured Articles

HTML

<dialog>: The Dialog element

The <dialog> HTML element represents a dialog box or other interactive component, such as a

CSS

revert-layer

The revert-layer CSS keyword rolls back the value of a property in a cascade layer to the value of the property in a CSS rule matching the element in a

Web APIs

Canvas tutorial

This tutorial describes how to use the <canvas> element to draw 2D graphics, starting with the basics. The examples provided should give you some

HTML

Structure of content on the web

CSS

Code used to describe document style

JavaScript

General-purpose scripting language

HTTP

Protocol for transmitting web resources

Web APIs

Interfaces for building web applications

Web Technology

Web technology reference for developers

or Developers,

ers

cluding CSS, HTML, and JavaScript, since 2005.

**Featured Articles****HTML****<dialog>: The Dialog element**

The <dialog> HTML element represents a dialog box or other component, such as a

CSS**revert-layer**

The revert-layer CSS keyword rolls back the value of a property in a cascade layer to the value of the property in a CSS rule matching the element in a

Web APIs**Canvas tutorial**

This tutorial describes how to use the <canvas> element to draw 2D graphics, starting with the basics. The examples provided should give you some

Re
by

Docu

MDN Learning Area

Learn web development

HTML

Learn to structure web content with HTML

CSS

Learn to style content using CSS

JavaScript

Learn to run scripts in the browser

Accessibility

Learn to make the web accessible to all

velopers,

ML, and JavaScript, since 2005.

**Featured Articles****HTML****<dialog>: The Dialog element**

The <dialog> HTML element represents a dialog box or other interactive component, such as a

CSS**revert-layer**

The revert-layer CSS keyword rolls back the value of a property in a cascade layer to the value of the property in a CSS rule matching the element in a

Web APIs**Canvas tutorial**

This tutorial describes how to use the <canvas> element to draw 2D graphics, starting with the basics. The examples provided should give you some

Related Topics

HTML

Tutorials:

HTML basics

▶ Introduction to HTML

▶ Multimedia and embedding

▶ HTML tables

References:

▶ HTML elements

▶ Global attributes


▶ <input> types

HTML elements reference

This page lists all the [HTML elements](#), which are created using [tags](#).

They are grouped by function to help you find what you have in mind easily.

<https://chnsa.ws/mdn-html> to bookmark content

**Note:** For more information about the basics of HTML elements and attributes, see [the section on elements in the Introduction to HTML article](#).

Main root

Element	Description
<html>	HTML element represents the root (top-level

In this article

- Main root
- Document metadata
- Sectioning root
- Text sectioning
- Content
- Inline text semantics
- Image and multimedia
- Embedded content
- SVG and MathML
- Scripting
- Demarcating edits
- Table content

Related Topics

Learn CSS

- ▶ CSS first steps
- ▶ CSS building blocks
- ▶ Styling text
- ▶ CSS layout
- ▶ Reference
- ▶ Modules
- ▶ Properties
- ▶ Selectors
- ▶ Pseudo-classes
- ▶ Pseudo-elements

CSS reference

Use this **CSS reference** to browse an [alphabetical index](#) of all of the standard [CSS](#) properties, [pseudo-classes](#), [pseudo-elements](#), [data types](#), [functional notations](#) and [at-rules](#). You can also browse [key CSS concepts](#) and a list of

<https://chnsa.ws/mdn-css> to bookmark

Basic rule syntax

Style rule syntax

```
style-rule ::=
  selectors-list {
    properties-list
  }
```

In this article

- Basic rule syntax
- Index
- Selectors
- Concepts
- Web-CSS / CSSOM
- See also
- External Links

Related Topics

JavaScript

Tutorials:

- ▶ Complete beginners
- ▶ JavaScript Guide
- ▶ Intermediate
- ▶ Advanced

References:

- ▶ Built-in objects
- ▶ Expressions & operators
- ▶ Statements & declarations

JavaScript

JavaScript (JS) is a lightweight, interpreted, or [just-in-time](#) [↗] compiled programming language with [first-class functions](#). While it is most well-known as the scripting language for Web pages, [many non-browser environments](#) [↗]

<https://chnsa.ws/mdn-js> to bookmark

language, supporting object-oriented, imperative, and declarative (e.g. functional programming) styles. Read more [about JavaScript](#).

This section is dedicated to the JavaScript language itself, and not the parts that are specific to Web pages or other host environments. For information about [APIs](#) that are specific to Web pages, please see [Web APIs](#) and [DOM](#).

The standards for JavaScript are the [ECMAScript Language Specification](#) [↗] (ECMA-262) and the [ECMAScript Internationalization API specification](#) [↗] (ECMA-402). As soon as one browser implements a feature, we try to document it. This means that cases where some [proposals for new](#)

In this article

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mdn main



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About 5,190,000 results (0.41 seconds)

<https://developer.mozilla.org> › ... › [HTML](#) › [Elements](#) ⋮

<main> - HTML: HyperText Markup Language - MDN Web Docs

6 days ago — The **<main>** HTML element represents the dominant content of the **<body>** of a document. The **main** content area consists of content that is ...

Tag omission: None; both the starting and end... Content categories: Flow content, palpable ...
Permitted content: Flow content Permitted ARIA roles: No permitted

[Article](#) · [ARIA: main role](#) · [The Image Map element](#) · [Nav](#)

People also ask ⋮

When to use main in HTML?



How do you add a main in HTML?



What is the difference between main and body in HTML?



What is the main function of HTML?





mdn main




 **Web**  Forums  Images  Videos  News  Maps More :

United States ▼ Order By ▼ Time ▼ All Results ▼

Results in 0.24s. 6% unique Kagi results.

<main> - HTML: HyperText Markup Language I M...

developer.mozilla.org › en-US › docs › Web › HTML



Jan 17, 2023

The **<main>** HTML element represents the dominant content of the **<body>** of a document. The **main** content area consists of content that is ...

Address

Address - <main> - HTML:
HyperText Markup Languag...

Aside

Aside - <main> - HTML:
HyperText Markup Languag...

Heading

Open main menu. References
References. Overview / We...

MDN Web Docs

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your country! Support **MDN**...

Basic concepts of flexbo...

The **main** axis is defined by
flex-direction , which has fou...

Main Axis - MDN Web D...

The **main** axis in flexbox is
defined by the direction set ...



mdn main



All



Images



News



Videos



Goggles^{BETA}



United States ▾

Safe search: Moderate ▾

Any time ▾



<main> - HTML: HyperText Markup Language | MDN

developer.mozilla.org › en-US › docs › Web › HTML › Element › main

6 days ago - The HTML element represents the dominant content of the of a document. The **main** content area consists of content that is directly related to or expands upon the central topic of a document, or the central functionality of an application.



HTML main Tag

w3schools.com › tags › tag_main.asp

W3Schools offers free online tutorials, references and exercises in all the major languages of the web. Covering popular subjects like HTML, CSS, JavaScript, Python, SQL, Java, and many, many more.



GitHub - mdn/content: The content behind MDN Web Docs

github.com › mdn › content

The content behind **MDN** Web Docs. Contribute to **mdn/content** development by creating an account on GitHub.

Is MDN wrong about the main tag in their documentation?



stackoverflow.com › questions › 4791136

In the top infobox on the MDN page:

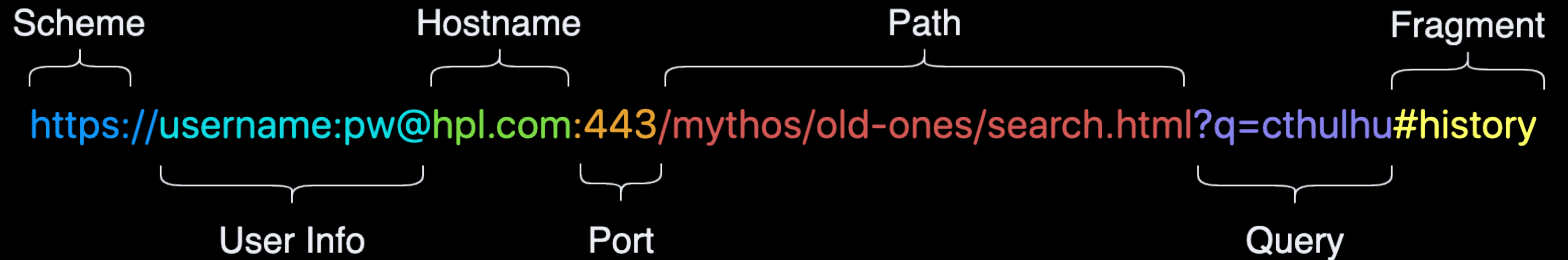
Permitted parents: Any element that accepts flow content (WHATWG). However, the W3C specification doesn't allow `<main>` to be used as a descendent of `<article>`, `<aside>`, `<footer>`, `<header>`, or `<nav>`.

How the Web Works

Browsers are the Web clients & make requests

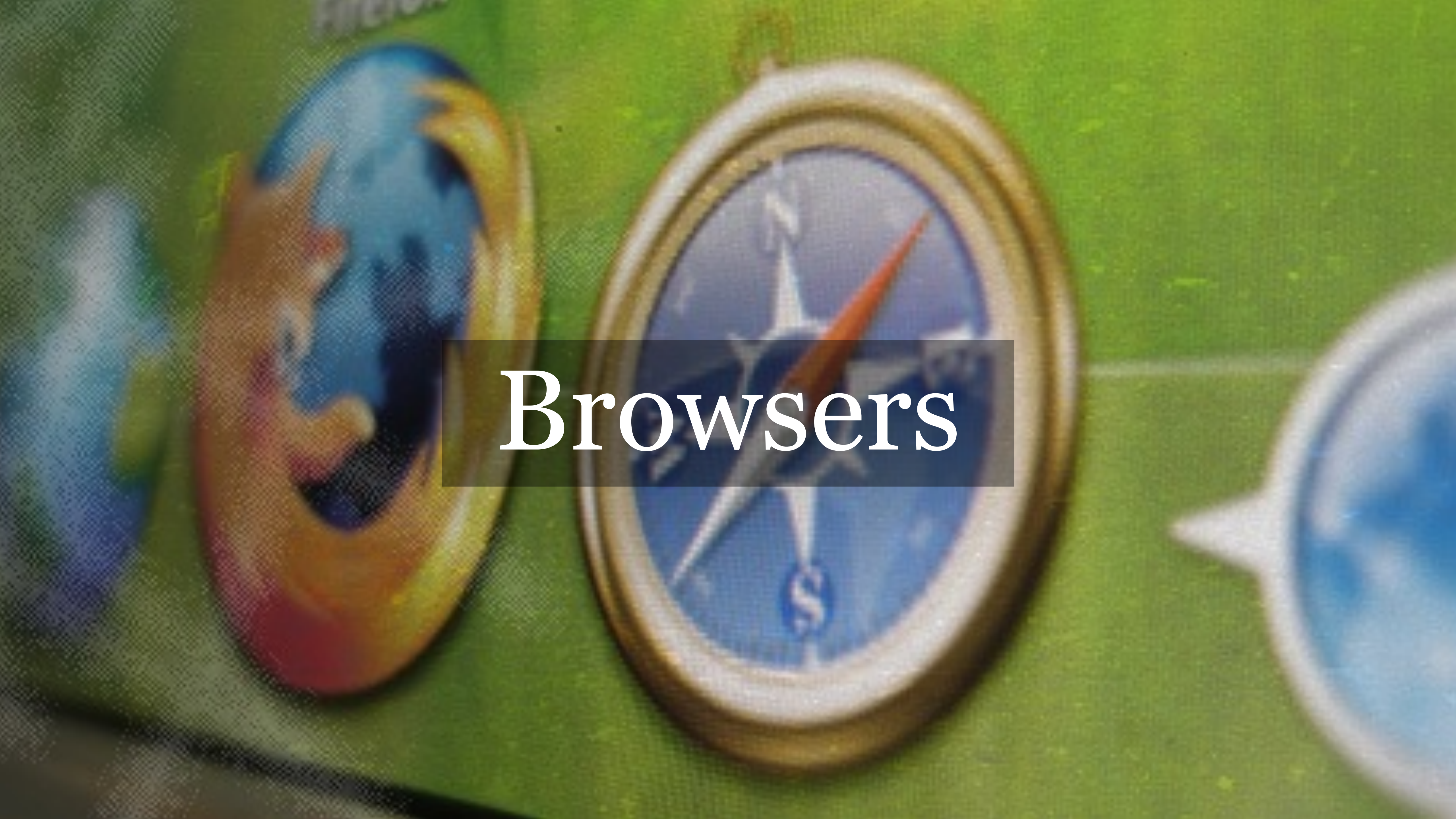
Web servers respond to client requests

HTTP is the set of rules determining how browsers & servers communicate with each other



Parts of a URL

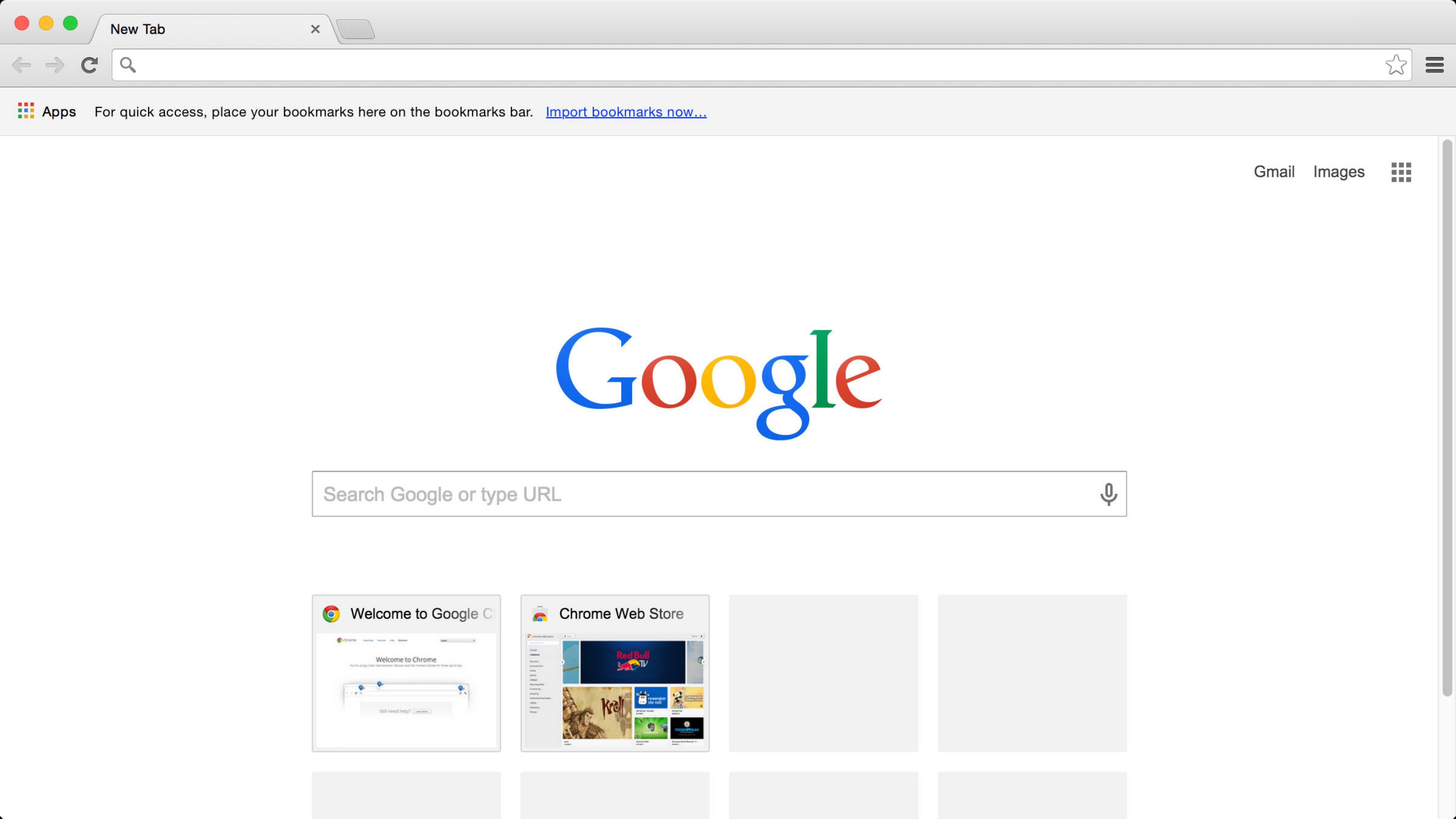
Browsers

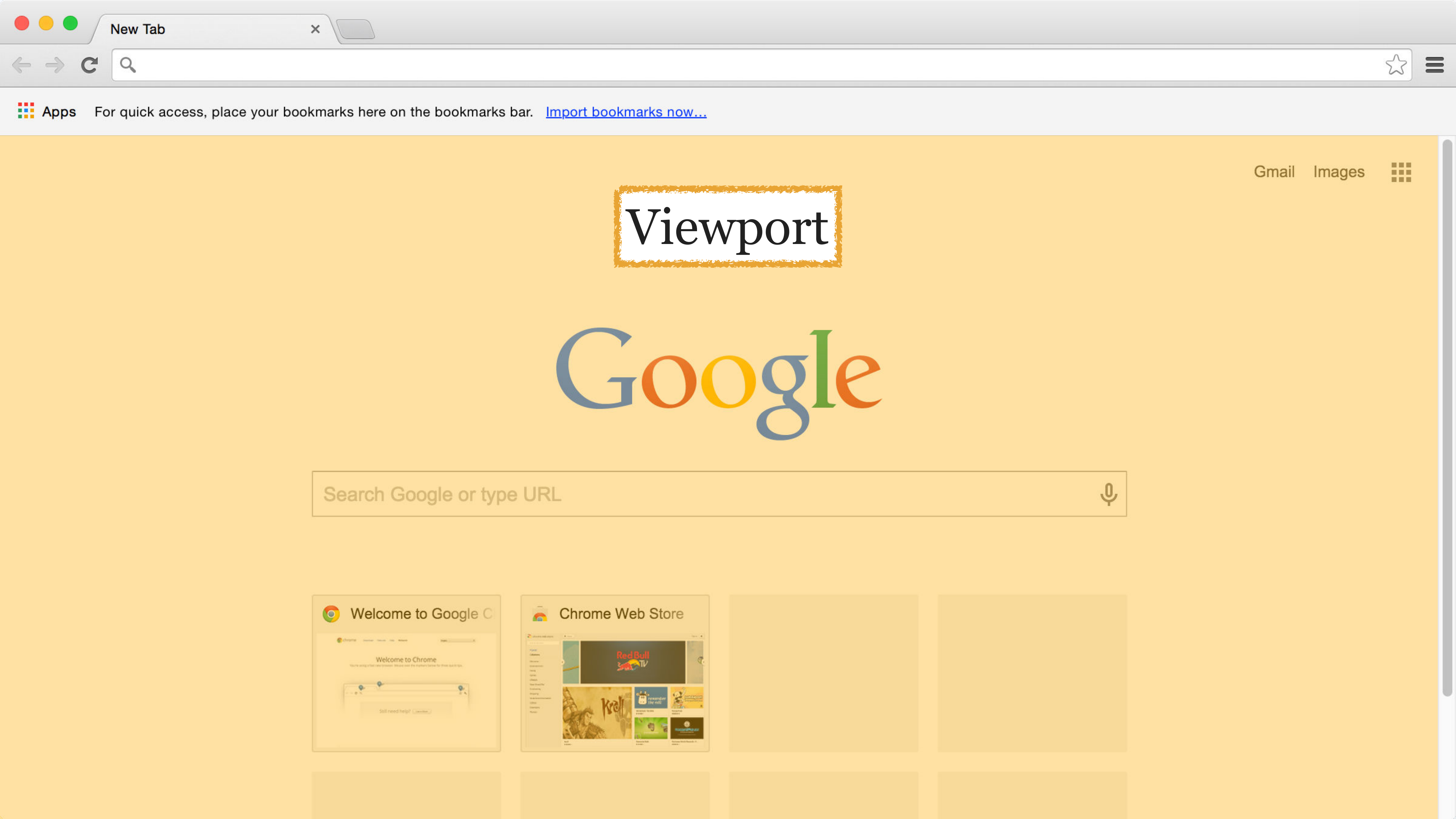


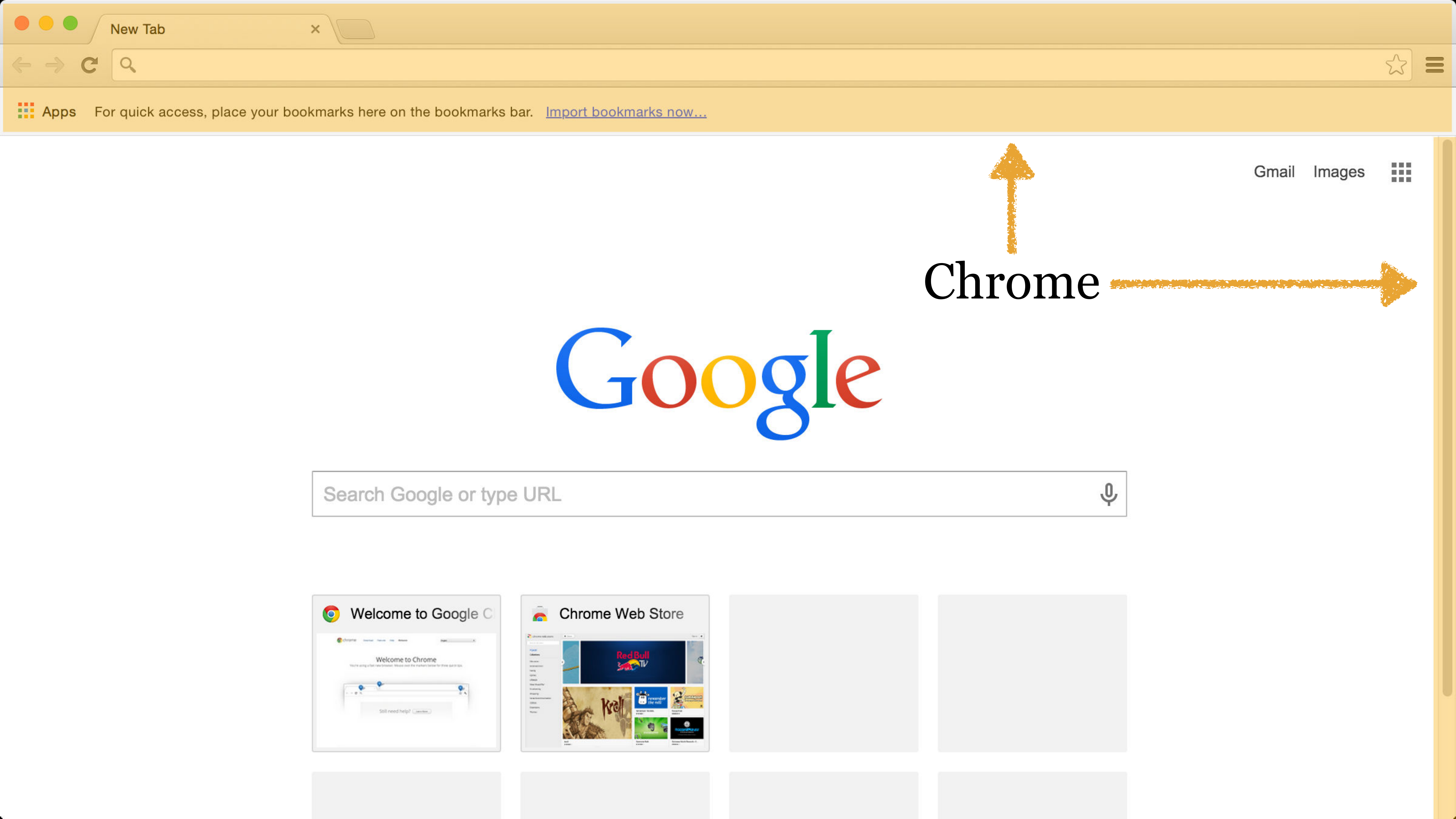
You cannot support *all* browsers (unless you are, say, Amazon)

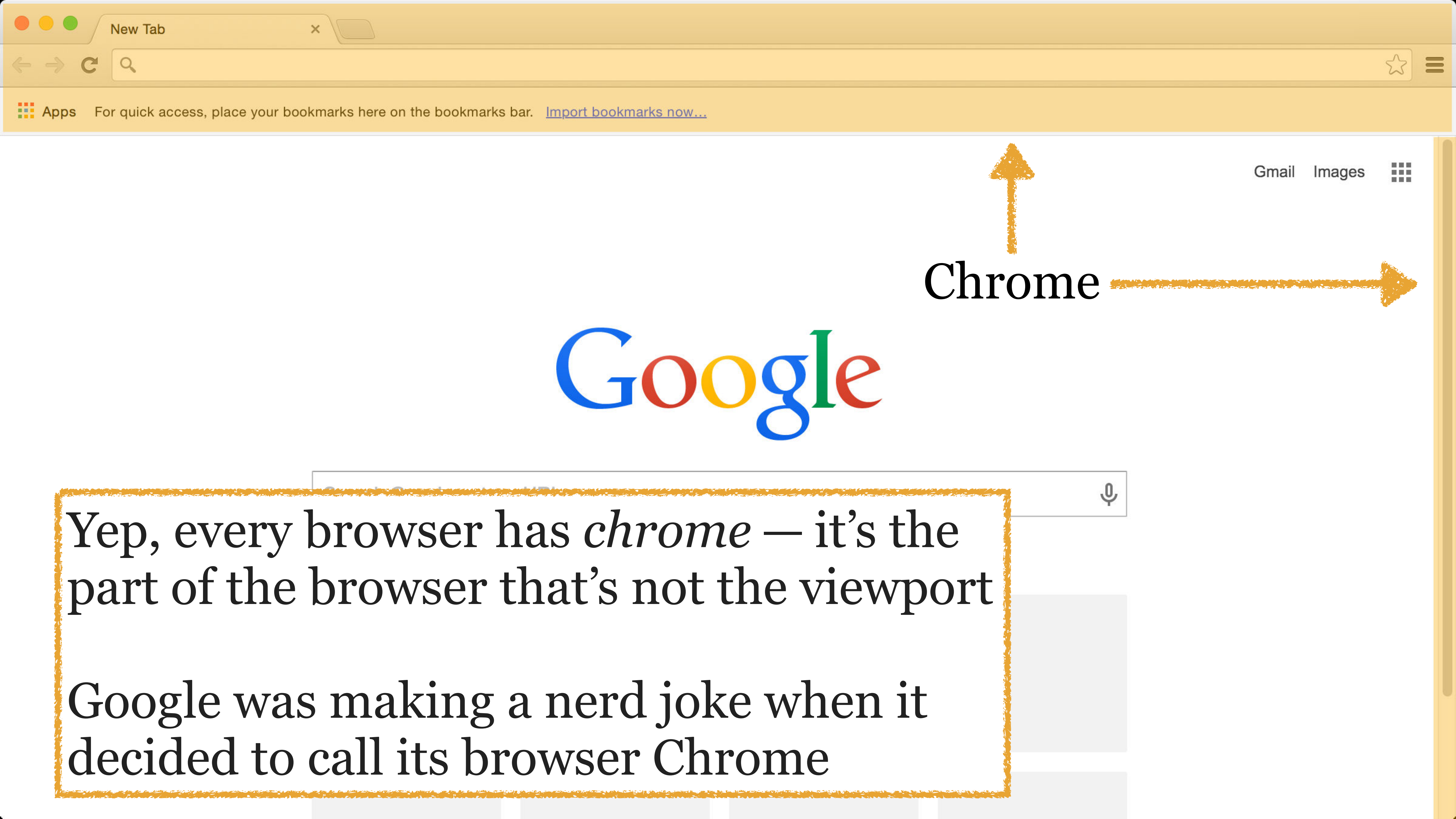
You need to choose the browsers you will support

Browser Parts









Chrome

Google

Yep, every browser has *chrome* — it's the part of the browser that's not the viewport

Google was making a nerd joke when it decided to call its browser Chrome

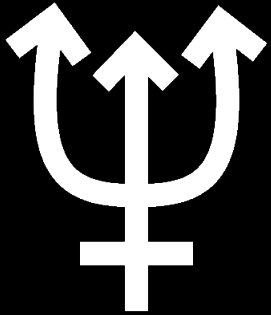
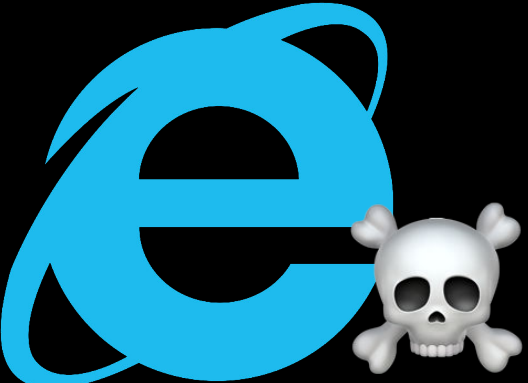
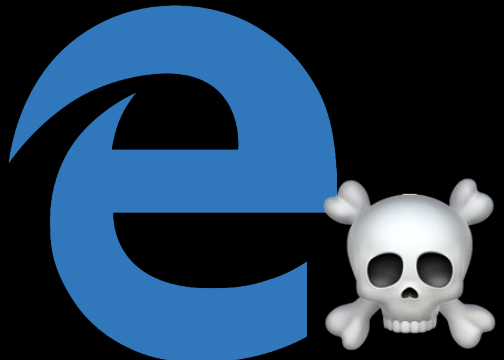







Rendering Engines

Rendering Engine (AKA Layout Engine or Web Browser Engine)

Combines HTML, CSS, & JavaScript into formatted webpages in the viewport of a web browser (or other programs, like email)

A browser cannot function without a rendering engine!

January 2020–Now

Rendering Engine	Name	Browser
	Trident	
	EdgeHTML	
	Gecko	
	WebKit	
<code><blink></code>	Blink	  



Jeffrey Vagle

@jvagle@mastodon.lawprofs.org

Google's Chrome browser is now a thin candy shell of browser interface around a full-time surveillance engine and personal data monetization machine. Find a better browser, folks.

[arstechnica.com/gadgets/2023/0...](https://arstechnica.com/gadgets/2023/09/google-chrome-tracking-ad-platform/)



Google gets its way, bakes a user-tracking ad platform directly int...

Chrome now directly tracks users, generates a "topic"...

Ars Technica

Sep 09, 2023, 09:12 · 🌐 · Phanpy · ↻ 759 · ★ 557

Chromium is an open source browser, overseen by Google, that uses the Blink rendering engine

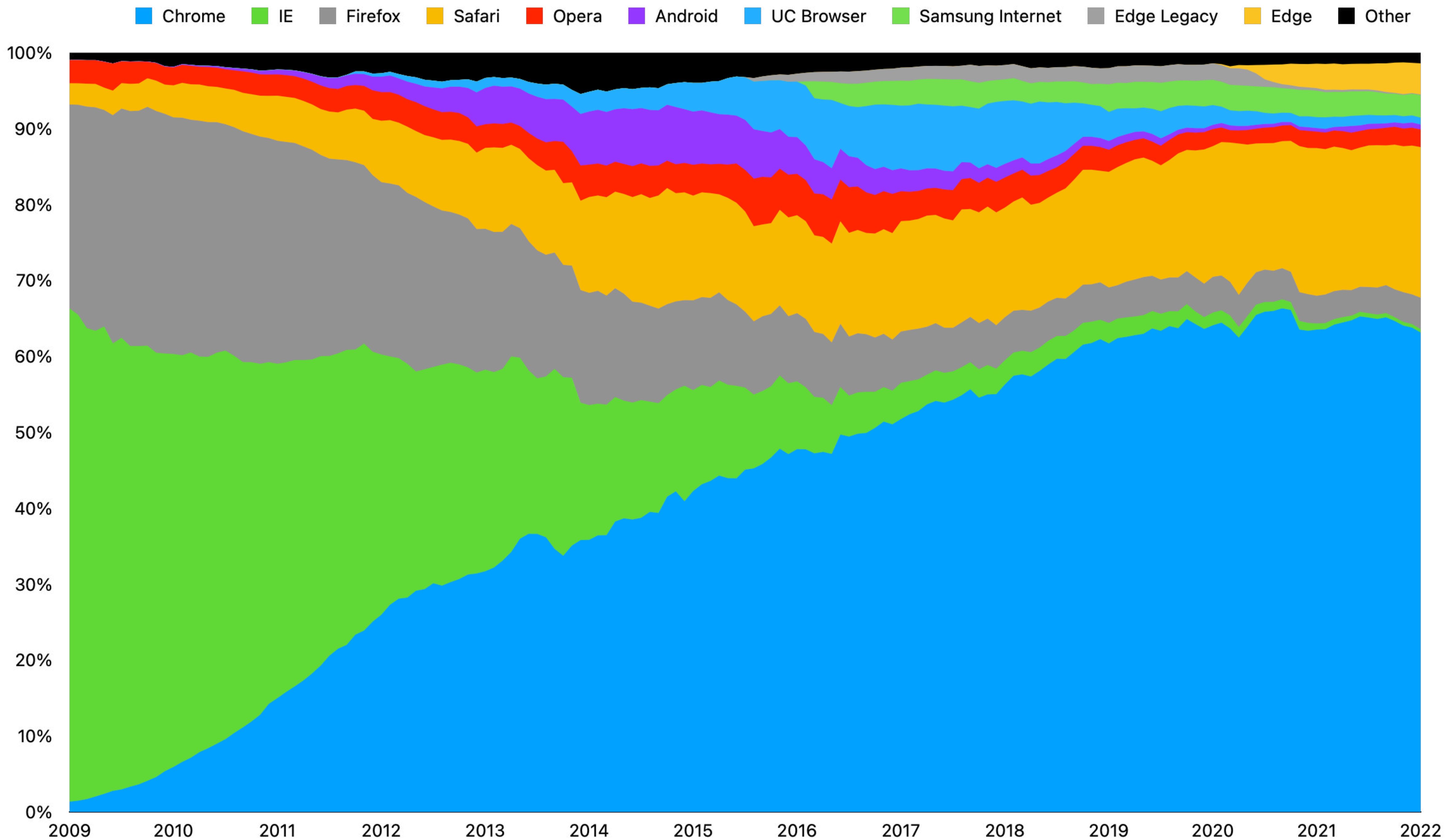
About every 6 weeks, Google takes Chromium, adds Google (spying) stuff to it & other non-open source code, & releases it as Chrome





Lots of other browsers besides Chrome are also based on Chromium

Amazon Silk • *Arc* • Blink • *Brave* • Comodo Dragon • Cốc Cốc • DuckDuckGo • Edge • Epic • Falkon • Mullvad Browser • Opera • Orion • Qihoo 360 Secure Browser • SalamWeb • Samsung Internet • Sidekick • SigmaOS • Sleipnir • Slimjet • Torch • UC Browser • *Vivaldi* • Yandex



Google Chrome



Behind the Open Source Browser Project



Brian Rakowski,
Product Manager

TODAY, MOST OF WHAT
WE USE THE WEB FOR ON A
DAY-TO-DAY BASIS AREN'T
JUST WEB PAGES, THEY'RE
APPLICATIONS.

Google introduced Chrome in 2008 by publishing a 40-page comic book illustrated by the great Scott McCloud

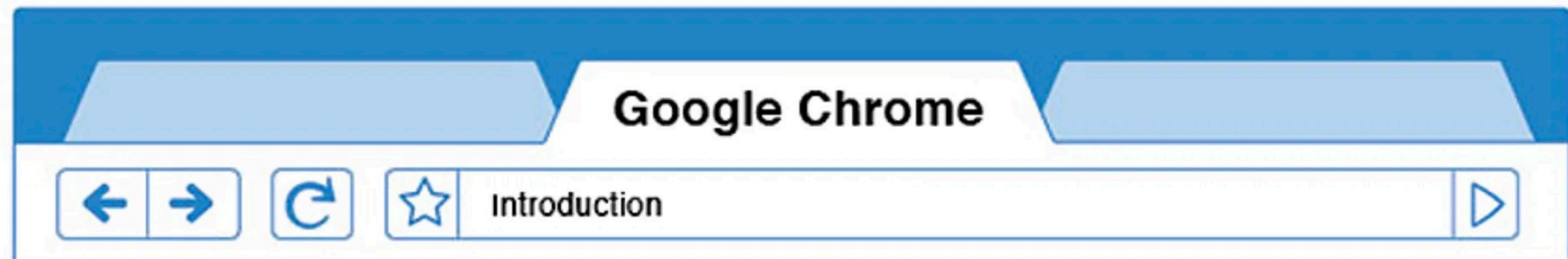
It's really good!

CONTRA CHROME



[Chapters](#) [About](#) [Contact](#)       [中 ZH-cmn](#)

To learn more about Chrome & why it's grown to be highly problematic, check out *Contra Chrome* by Leah Elliott, a 30-page comic book that parodies McCloud's original comic



Chapters



Introduction



Part 1 – Dial O for
Omnibox



Part 2 – Platform
Puzzles



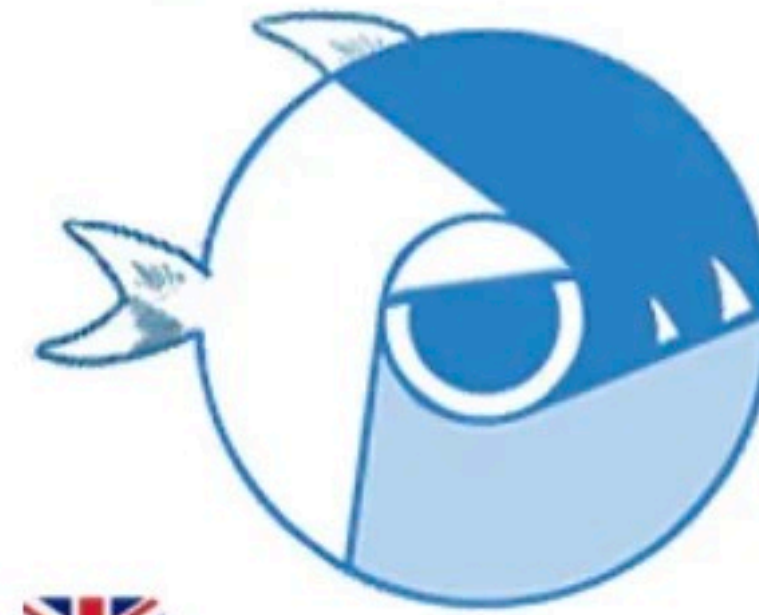
Part 3 – The
Regression Game



Part 4 – The
Shadow Text



Part 5 –
Conclusion



Epilogue

Annotations Page 1

- The online version of Scott McCloud's original Chrome Comic from 2008 can be found at:

<https://www.google.com/googlebooks/chrome/index.html>

See also <https://scottmccloud.com/7-consulting/index.html>

Original Chrome comic

Contra Chrome

DOWNLOAD



**Download the whole comic
as a free PDF & spread the
word!**

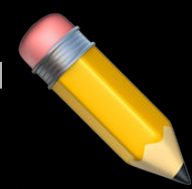
(33 pages, 22 MB, including all
links and annotations)

🇬🇧 EN

🇩🇪 DE

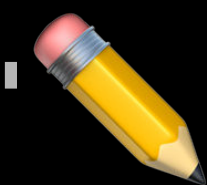
🇫🇷 FR

🇮🇹 IT



SIDE NOTE

A JavaScript engine (or interpreter) executes JavaScript code in the web browser



SIDE NOTE

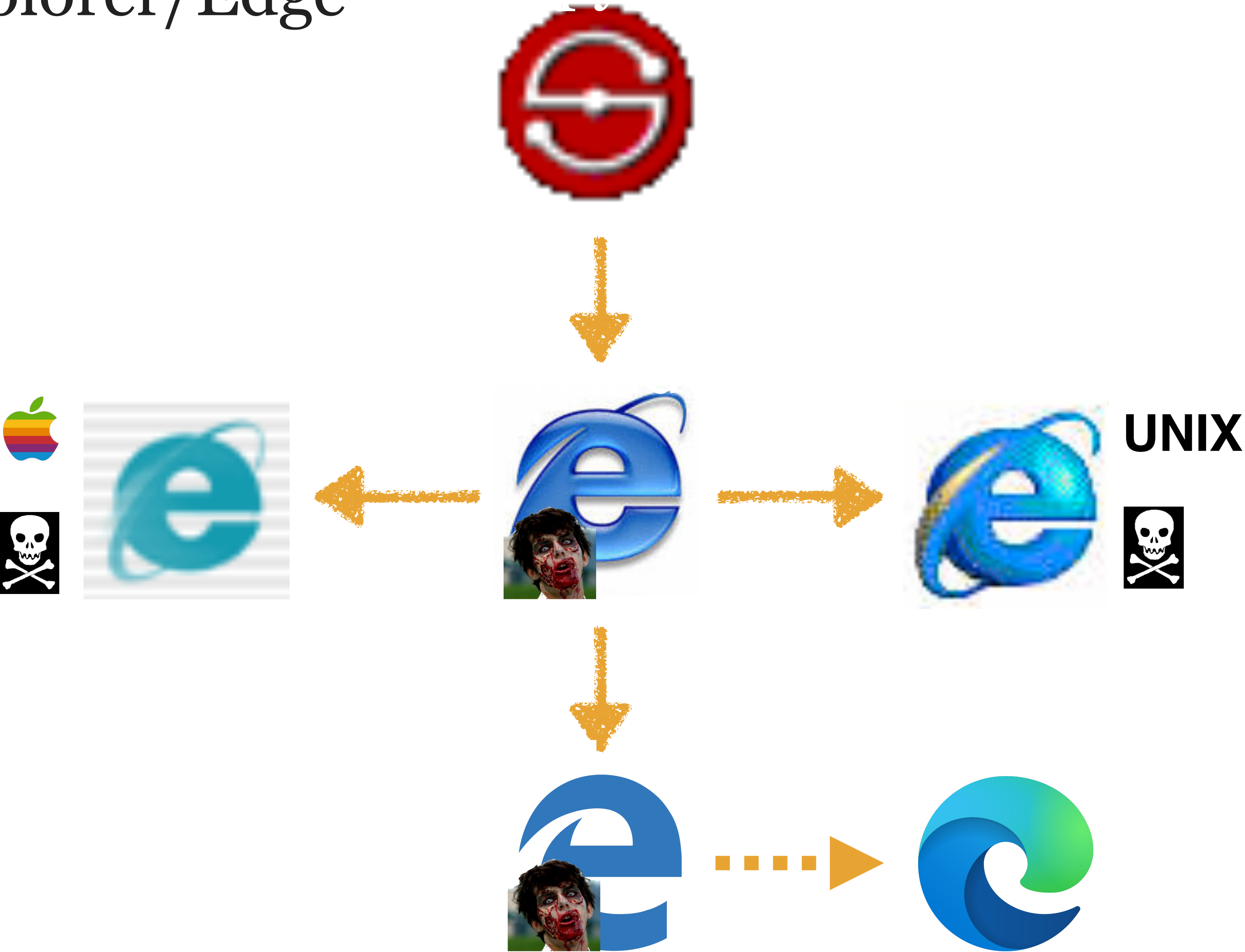
January 2020–Now

JavaScript Engine	Browser
Spider Monkey	
Nitro	
V8	

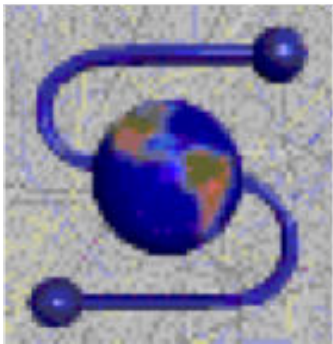


Choices

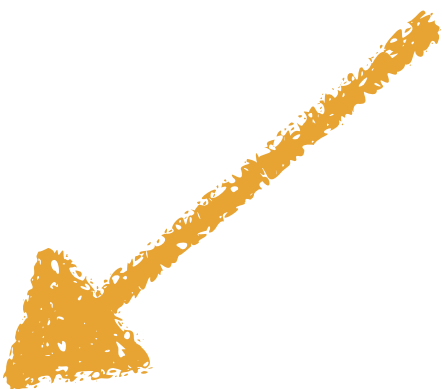
Internet Explorer/Edge Family Tree



Netscape/Mozilla/Firefox Family Tree

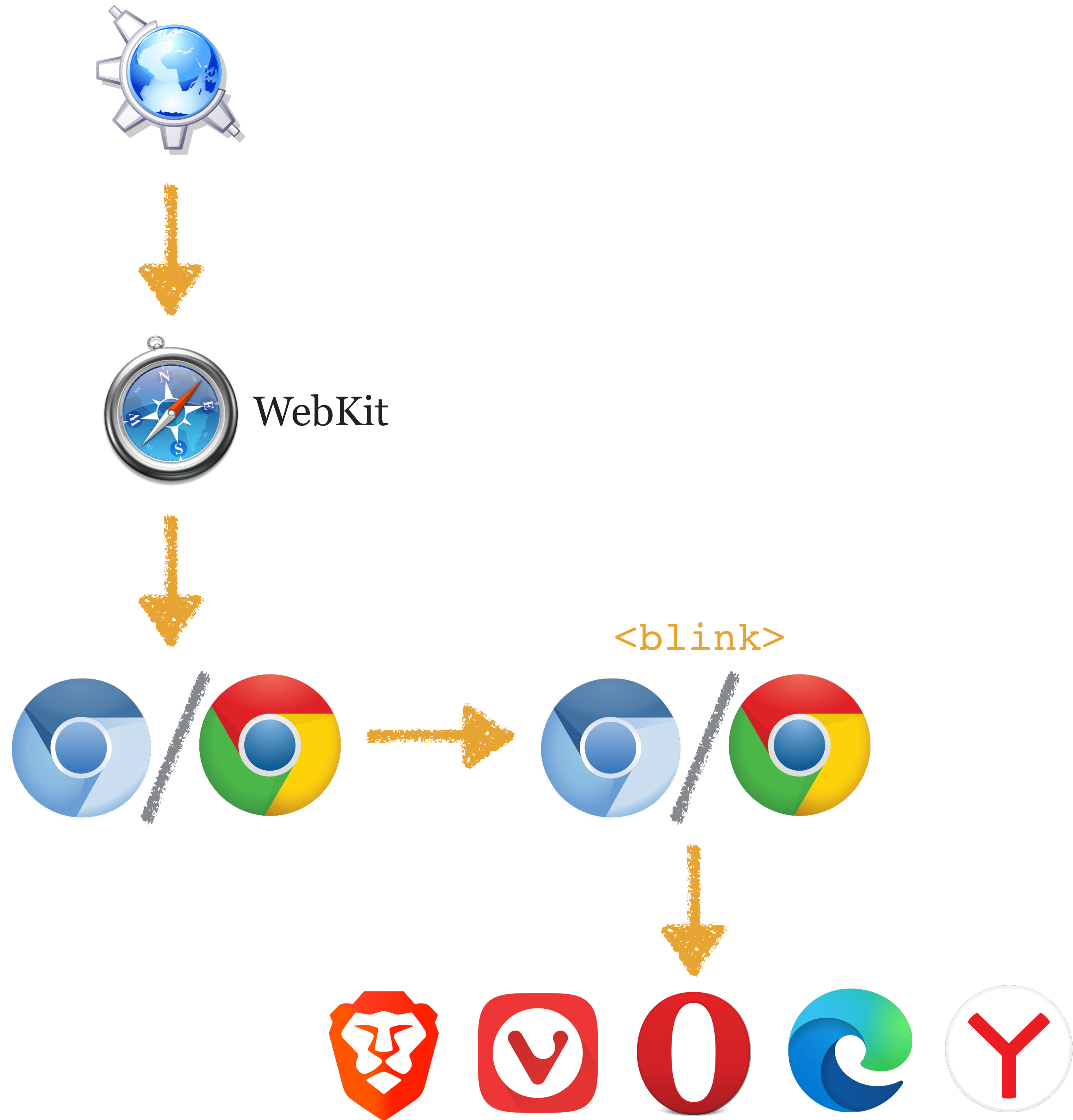


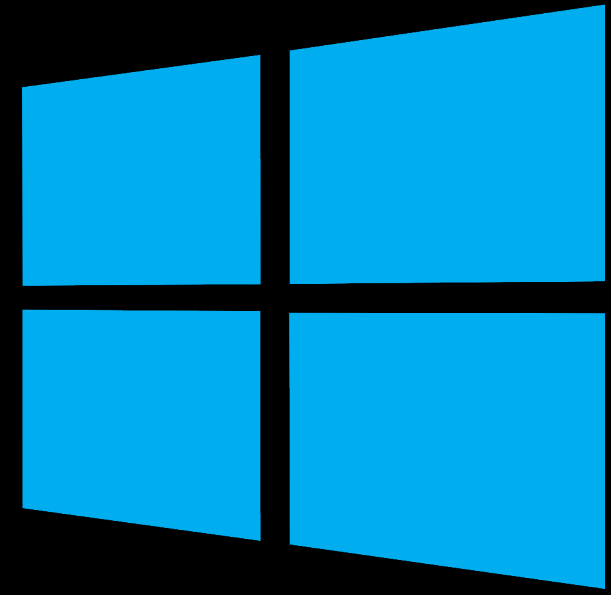
Mosaic



Thunderbird (email)

Safari/Chromium Family Tree





Internet Explorer (Trident)
Edge (EdgeHTML)
Edge (Chromium-based)

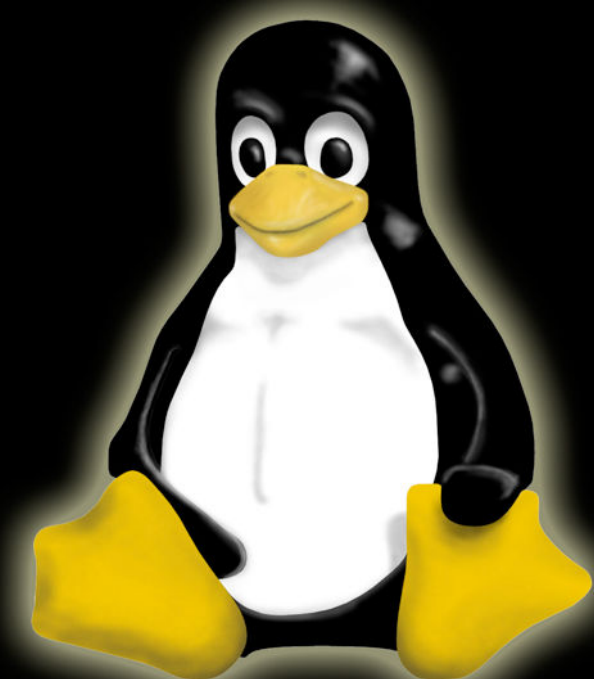
Part of operating system

Chrome/Brave/Vivaldi (Chromium-based)
Firefox (Gecko)



Safari (WebKit) | Part of operating system

Chrome/Brave/Vivaldi/Edge (Chromium-based)
Firefox (Gecko)



Chrome/Vivaldi/Brave/Edge (Chromium-based)

Firefox (Gecko)

Konqueror (KHTML or WebKit)

GNOME Web (WebKit)

Web Servers

You type `https://www.granneman.com/writing` into your browser & press Enter

Your web browser sends a request to the web server

The web server responds

Web servers are computers that run web server software

Web servers are pretty simple: they get requests, & they respond

3 key web server software packages

- » Apache 🐧🍏🌾 • 21%
- » IIS (Internet Information Services) 🌾 • 3%
- » Nginx 🐧🍏🌾 • 26%

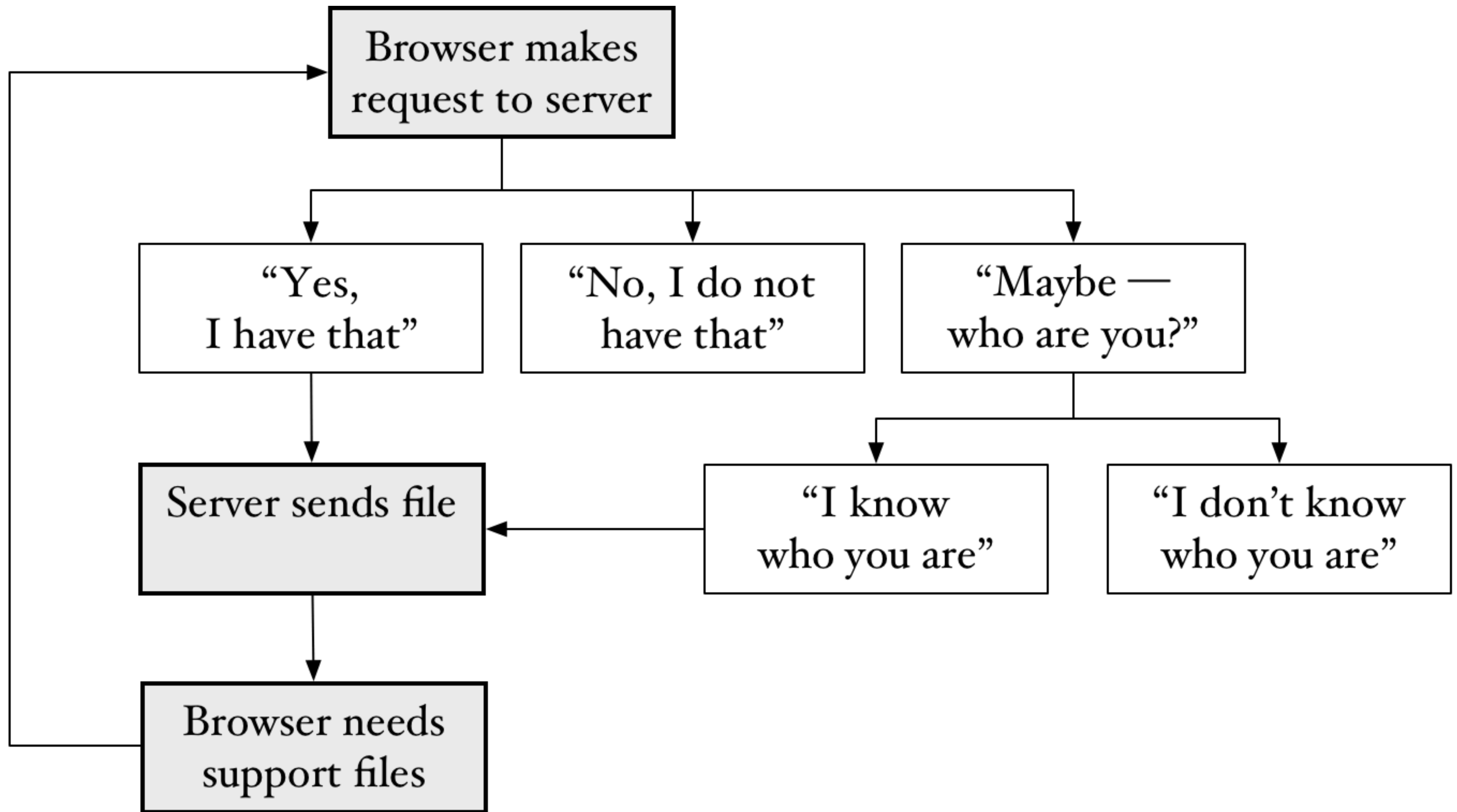
Market share as of December 2022

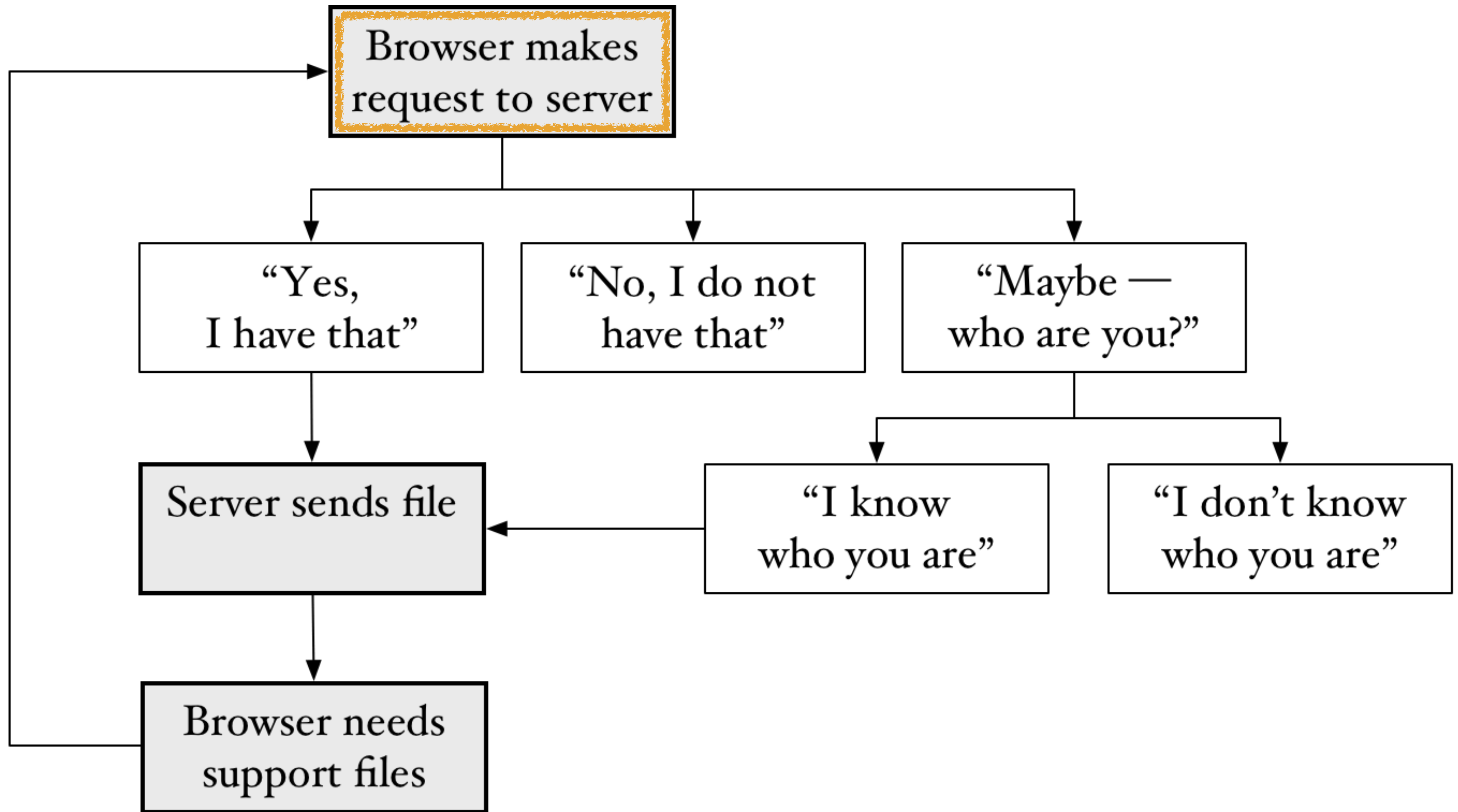
HTTP

A protocol is “a defined set of rules and regulations that determine how data is transmitted in ... computer networking” —Wikipedia

“*HTTP* [the Hypertext Transfer Protocol] is the foundation of data communication for the World Wide Web. ... HTTP is the protocol to exchange or transfer hypertext.” —Wikipedia

An HTTP *session* consists of a series of “hidden” network request-response transactions between the browser & web server





You type `https://www.granneman.com/writing` into your browser & press Enter

Your web browser sends a request to the web server

GET /writing/ HTTP/1.1
Host: www.granneman.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS
X 10.11; rv:45.0) Gecko/20100101 Firefox/45.0
Accept: text/html,application/
xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
DNT: 1
Cookie: CONCRETE5=6h8714bfr5m4g33p4mawxple93
Connection: keep-alive
Cache-Control: max-age=0

GET /writing/ HTTP/1.1

Host: www.granneman.com

User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS
X 10.11; rv:45.0) Gecko/20100101 Firefox/45.0

Accept: text/html,application/
xhtml+xml,application/xml;q=0.9,*/*;q=0.8

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate

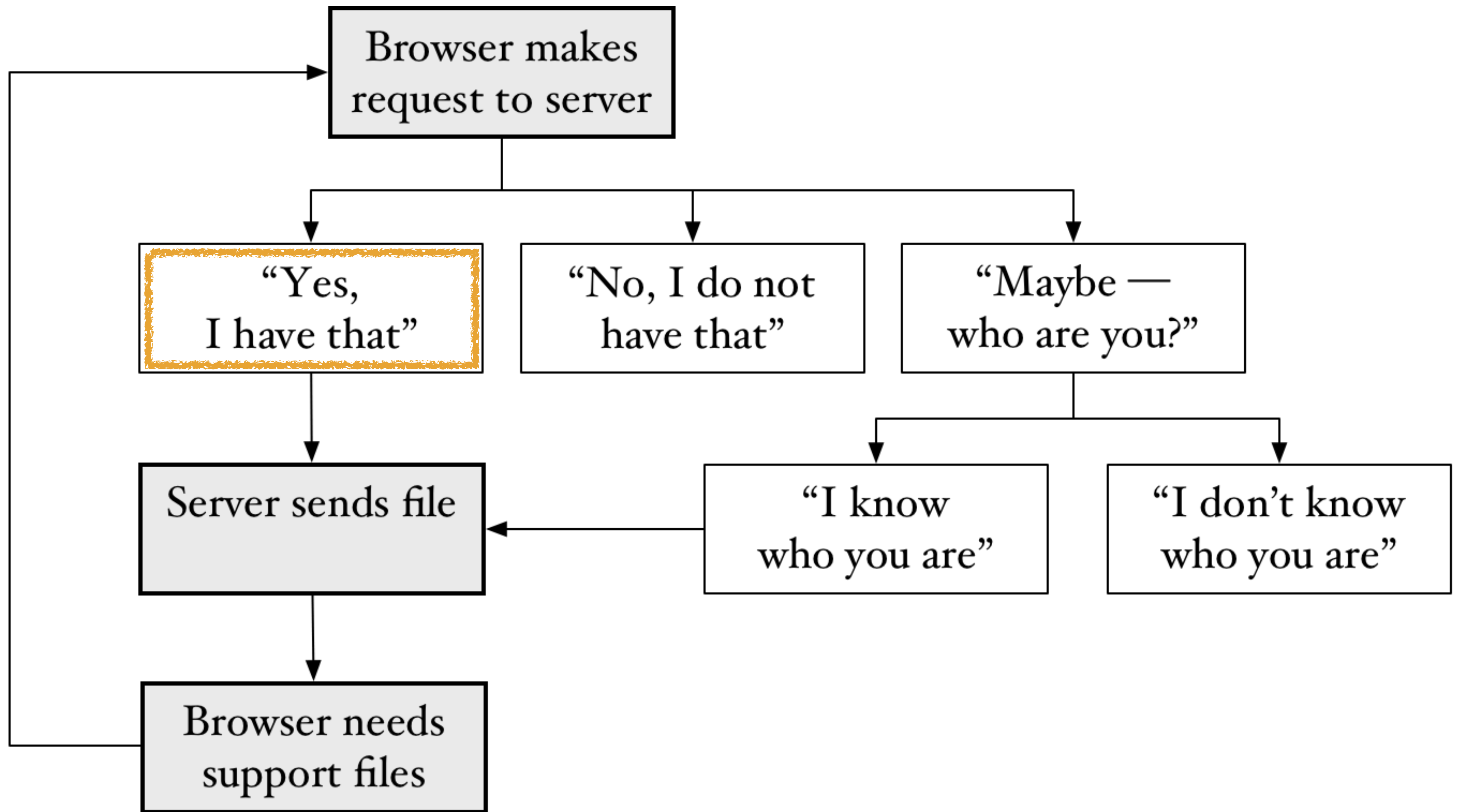
DNT: 1

Cookie: CONCRETE5=6h8714bfr5m4g33p4mawxple93

Connection: keep-alive

Cache-Control: max-age=0

The web server responds with a *Yes*, *No*, or *Maybe*



HTTP/1.1 200 OK
Date: Wed, 20 Apr 2016 17:02:26 GMT
Server: Apache
X-Frame-Options: SAMEORIGIN
Vary: User-Agent,Accept-Encoding
Expires: Thu, 19 Nov 1981 08:52:00 GMT
Cache-Control: no-store, no-cache, must-revalidate,
post-check=0, pre-check=0
Pragma: no-cache
Content-Encoding: gzip
Content-Length: 4031
Keep-Alive: timeout=2, max=100
Connection: Keep-Alive
Content-Type: text/html; charset=UTF-8

HTTP/1.1 200 OK

~~Date: Wed, 20 Apr 2016 17:02:26 GMT~~

Server: Apache

X-Frame-Options: SAMEORIGIN

Vary: User-Agent,Accept-Encoding

Expires: Thu, 19 Nov 1981 08:52:00 GMT

Cache-Control: no-store, no-cache, must-revalidate,
post-check=0, pre-check=0

Pragma: no-cache

Content-Encoding: gzip

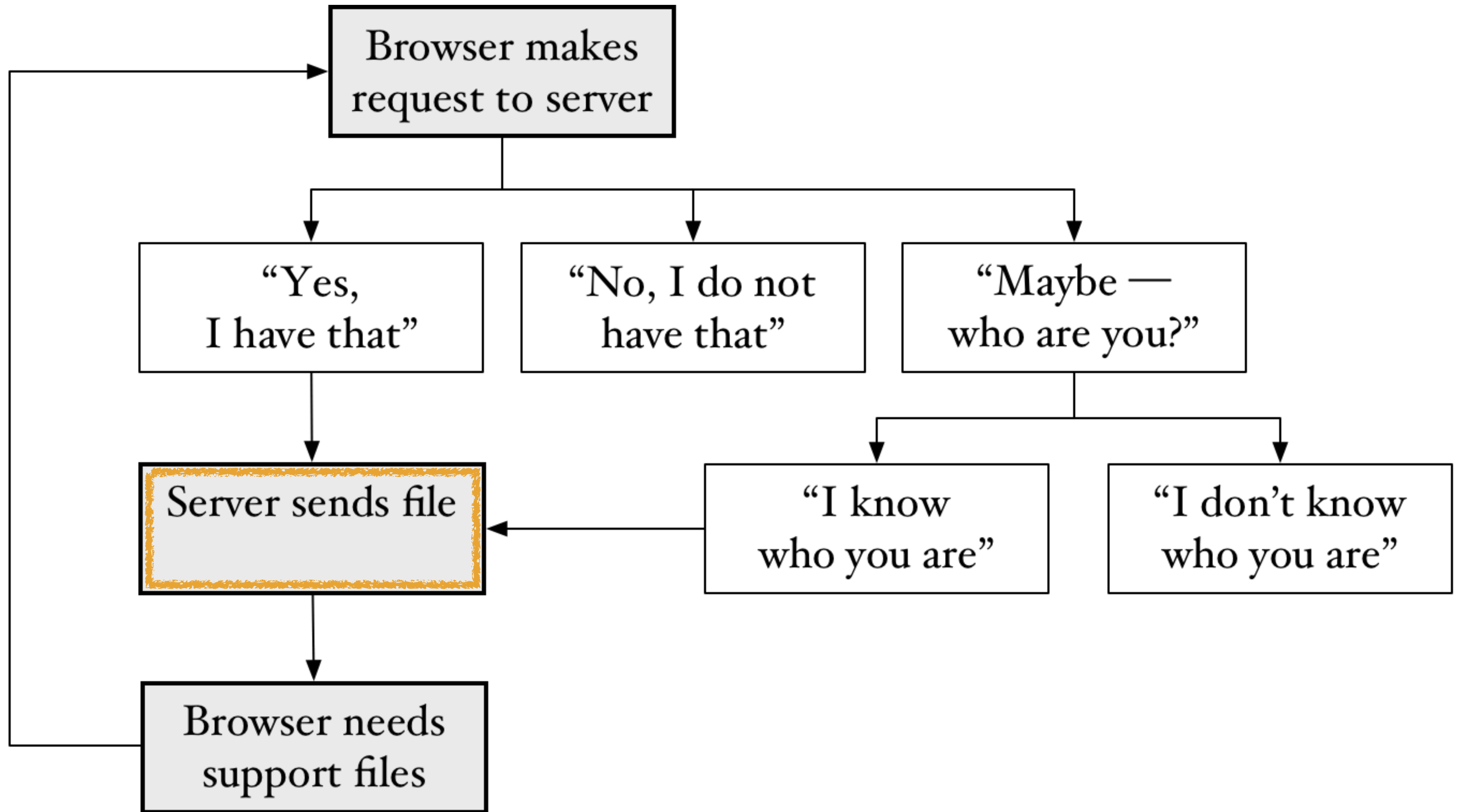
Content-Length: 4031

Keep-Alive: timeout=2, max=100

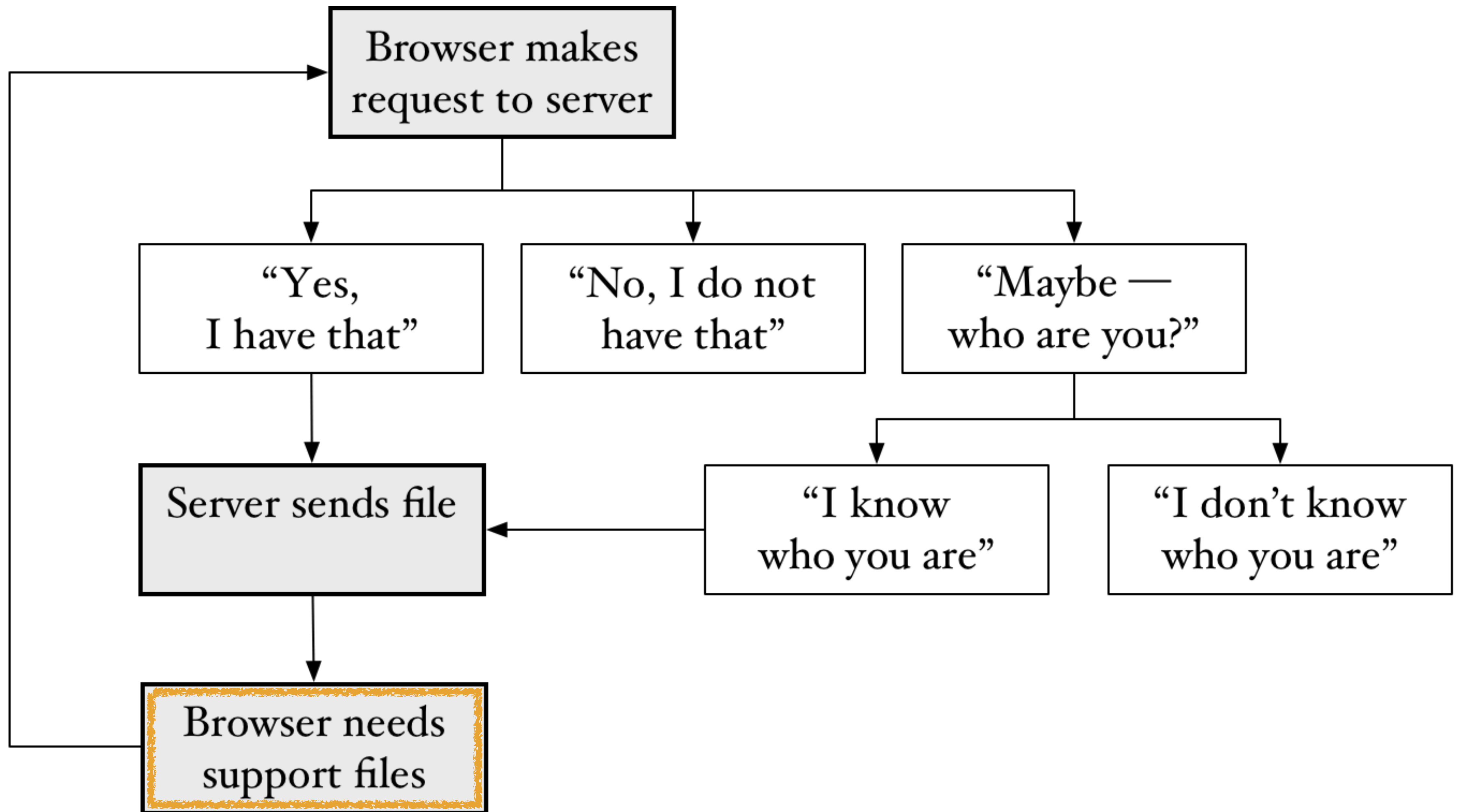
Connection: Keep-Alive

Content-Type: text/html; charset=UTF-8

The web server sends the webpage HTML to your web browser




```
<!DOCTYPE html>
<html lang="en" class="cID-95">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-
width, initial-scale=1.0">
  <title>Writing :: Scott Granneman</title>
  <meta name="description" content="Scott
Granneman's work as a professional writer.">
  <link rel="stylesheet" href="/themes/
bootstrap/css/main.css">
...
```



Your web browser asks the web server for the 1st linked content (e.g., JavaScript or CSS) it sees in the webpage's HTML

Header info about the 1st linked content is sent by the web server to the browser

The web server sends the 1st linked content to your web browser

Repeat the above for each linked content item (including images & videos) until complete

GET /themes/bootstrap/css/main.css HTTP/1.1
Host: www.granneman.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.11; rv:45.0) Gecko/20100101 Firefox/45.0
Accept: text/css,*/*;q=0.1
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
DNT: 1
Referer: http://www.granneman.com/writing/
Cookie: CONCRETE5=6h8714bfr5m4g33p4mawxple93
Connection: keep-alive
If-Modified-Since: Sat, 16 Apr 2016 21:11:23 GMT
If-None-Match: "3434-530a091d50037-gzip"
Cache-Control: max-age=0

GET /themes/bootstrap/css/main.css HTTP/1.1

Host: www.granneman.com

User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.11; rv:45.0) Gecko/20100101 Firefox/45.0

Accept: text/css,*/*;q=0.1

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate

DNT: 1

Referer: http://www.granneman.com/writing/

Cookie: CONCRETE5=6h8714bfr5m4g33p4mawxple93

Connection: keep-alive

If-Modified-Since: Sat, 16 Apr 2016 21:11:23 GMT

If-None-Match: "3434-530a091d50037-gzip"

Cache-Control: max-age=0

HTTP/1.1 200 OK
Date: Wed, 20 Apr 2016 17:02:27 GMT
Server: Apache
X-Frame-Options: SAMEORIGIN
Vary: User-Agent,Accept-Encoding
Last-Modified: Sat, 16 Apr 2016 21:11:23 GMT
Etag: "3434-530a091d50037-gzip"
Accept-Ranges: bytes
Content-Encoding: gzip
Content-Length: 3253
Keep-Alive: timeout=2, max=100
Connection: Keep-Alive
Content-Type: text/css

HTTP/1.1 200 OK

~~Date: Wed, 20 Apr 2016 17:02:27 GMT~~

Server: Apache

X-Frame-Options: SAMEORIGIN

Vary: User-Agent,Accept-Encoding

Last-Modified: Sat, 16 Apr 2016 21:11:23 GMT

Etag: "3434-530a091d50037-gzip"

Accept-Ranges: bytes

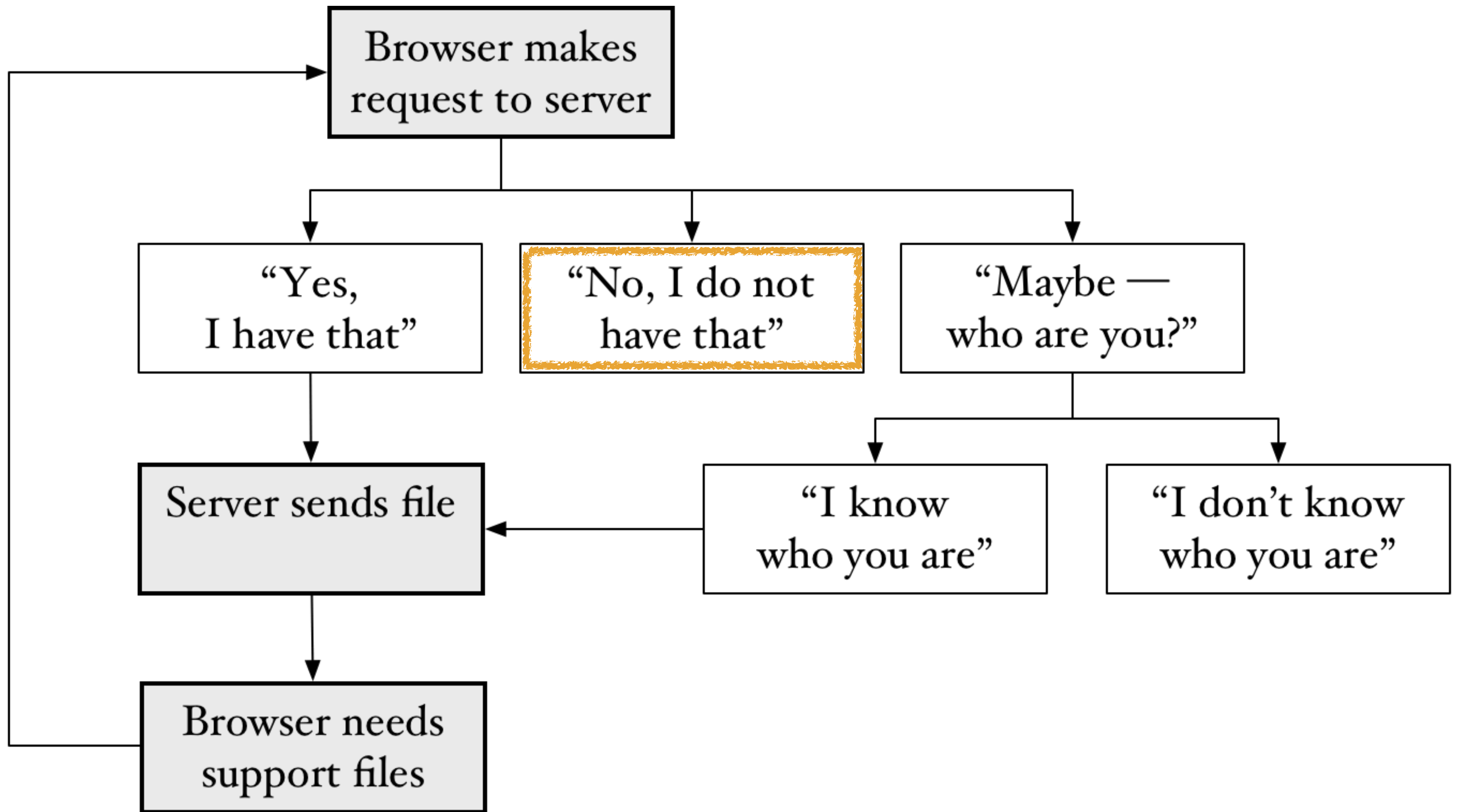
Content-Encoding: gzip

Content-Length: 3253

Keep-Alive: timeout=2, max=100

Connection: Keep-Alive

Content-Type: text/css



GET /writings/ HTTP/1.1

Host: www.granneman.com

User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.11; rv:45.0) Gecko/20100101 Firefox/45.0

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate

DNT: 1

Cookie: CONCRETE5=6h8714bfr5m4g33p4mawxple93

Connection: keep-alive

Cache-Control: max-age=0

HTTP/1.0 404 Not Found

Date: Wed, 20 Apr 2016 17:46:03 GMT

Server: Apache

X-Frame-Options: SAMEORIGIN

Vary: User-Agent

Expires: Thu, 19 Nov 1981 08:52:00 GMT

Cache-Control: no-store, no-cache, must-revalidate, post-check=0, pre-check=0

Pragma: no-cache

Connection: close

Content-Type: text/html; charset=UTF-8

HTTP/1.0 404 Not Found

Date: ~~Wed, 20 Apr 2016 17:46:03 GMT~~

Server: Apache

X-Frame-Options: SAMEORIGIN

Vary: User-Agent

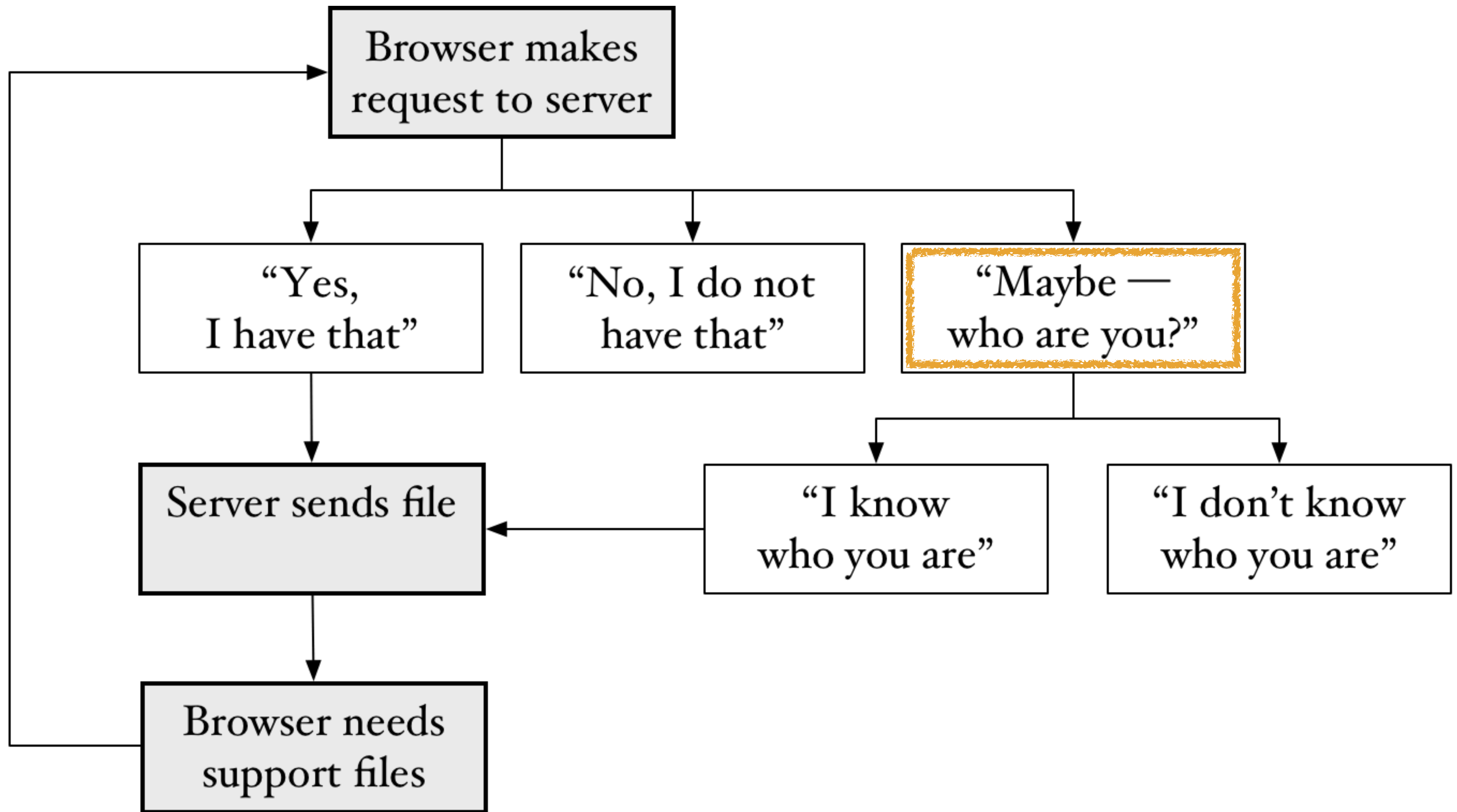
Expires: Thu, 19 Nov 1981 08:52:00 GMT

Cache-Control: no-store, no-cache, must-revalidate, post-check=0, pre-check=0

Pragma: no-cache

Connection: close

Content-Type: text/html; charset=UTF-8



GET / HTTP/1.1
Host: secret.granneman.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS
X 10.11; rv:45.0) Gecko/20100101 Firefox/45.0
Accept: text/html,application/
xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate, br
DNT: 1
Cookie:
admin=h=698765b7653426q22110079g2b476ba9&id=scott
@granneman.com
Connection: keep-alive

GET / HTTP/1.1

Host: secret.granneman.com

~~User-Agent: Mozilla/5.0~~ (Macintosh; Intel Mac OS
X 10.11; rv:45.0) Gecko/20100101 Firefox/45.0

Accept: text/html,application/
xhtml+xml,application/xml;q=0.9,*/*;q=0.8

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate, br

DNT: 1

Cookie:

admin=h=698765b7653426q22110079g2b476ba9&id=scott
@granneman.com

Connection: keep-alive

HTTP/1.1 401 Unauthorized
Date: Wed, 20 Apr 2016 17:49:28 GMT
Server: Apache
X-Frame-Options: SAMEORIGIN
WWW-Authenticate: Basic realm="Scott Only"
Content-Length: 381
Keep-Alive: timeout=2, max=100
Connection: Keep-Alive
Content-Type: text/html; charset=iso-8859-1

HTTP/1.1 401 Unauthorized

Date: Wed, 20 Apr 2016 17:49:28 GMT

Server: Apache

X-Frame-Options: SAMEORIGIN

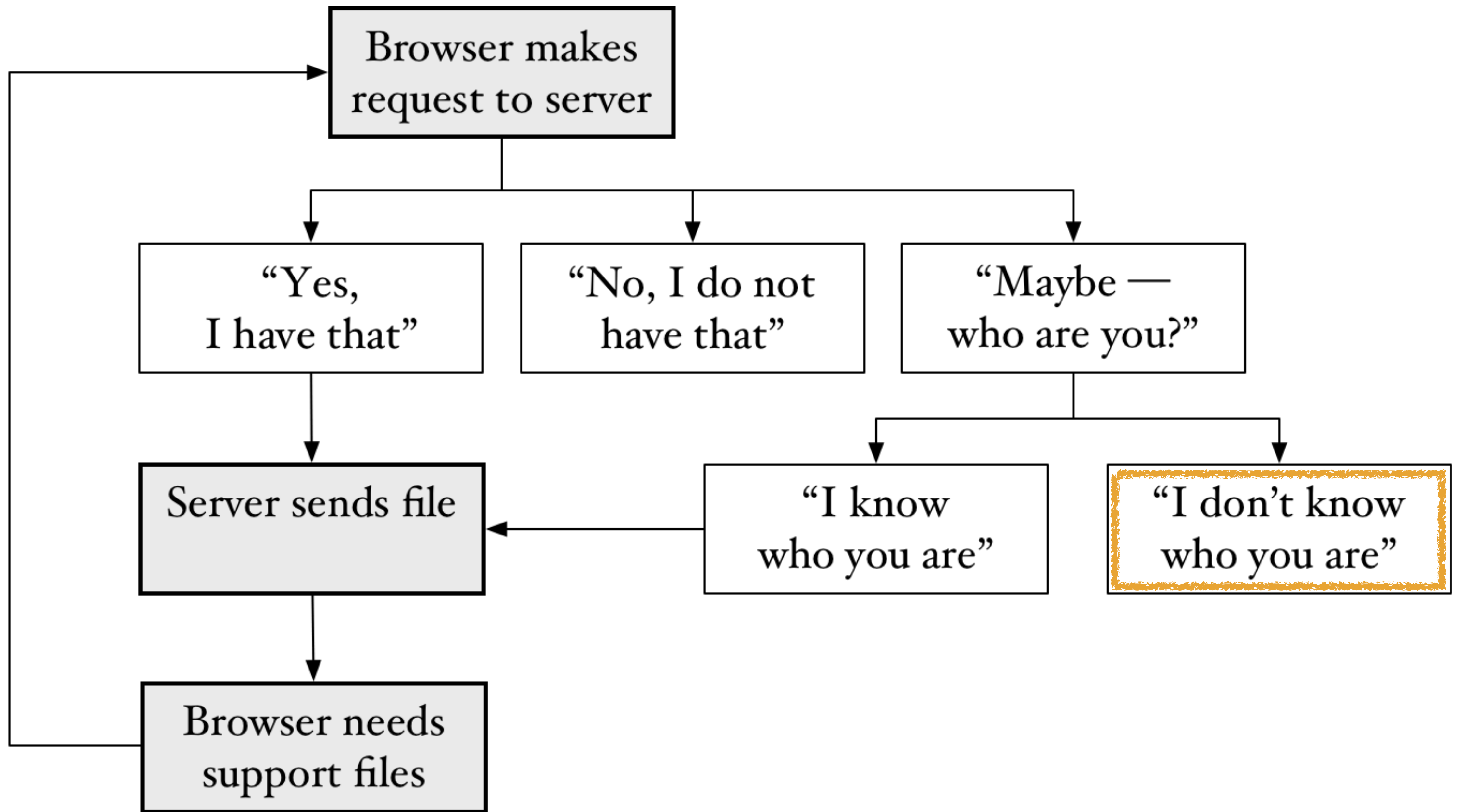
WWW-Authenticate: Basic realm="Scott Only"

Content-Length: 381

Keep-Alive: timeout=2, max=100

Connection: Keep-Alive

Content-Type: text/html; charset=iso-8859-1



HTTP/1.1 401 Unauthorized
Date: Wed, 20 Apr 2016 17:52:58 GMT
Server: Apache
X-Frame-Options: SAMEORIGIN
WWW-Authenticate: Basic realm="Scott Only"
Content-Length: 381
Keep-Alive: timeout=2, max=100
Connection: Keep-Alive
Content-Type: text/html; charset=iso-8859-1

HTTP/1.1 401 Unauthorized

Date: Wed, 20 Apr 2016 17:52:58 GMT

Server: Apache

X-Frame-Options: SAMEORIGIN

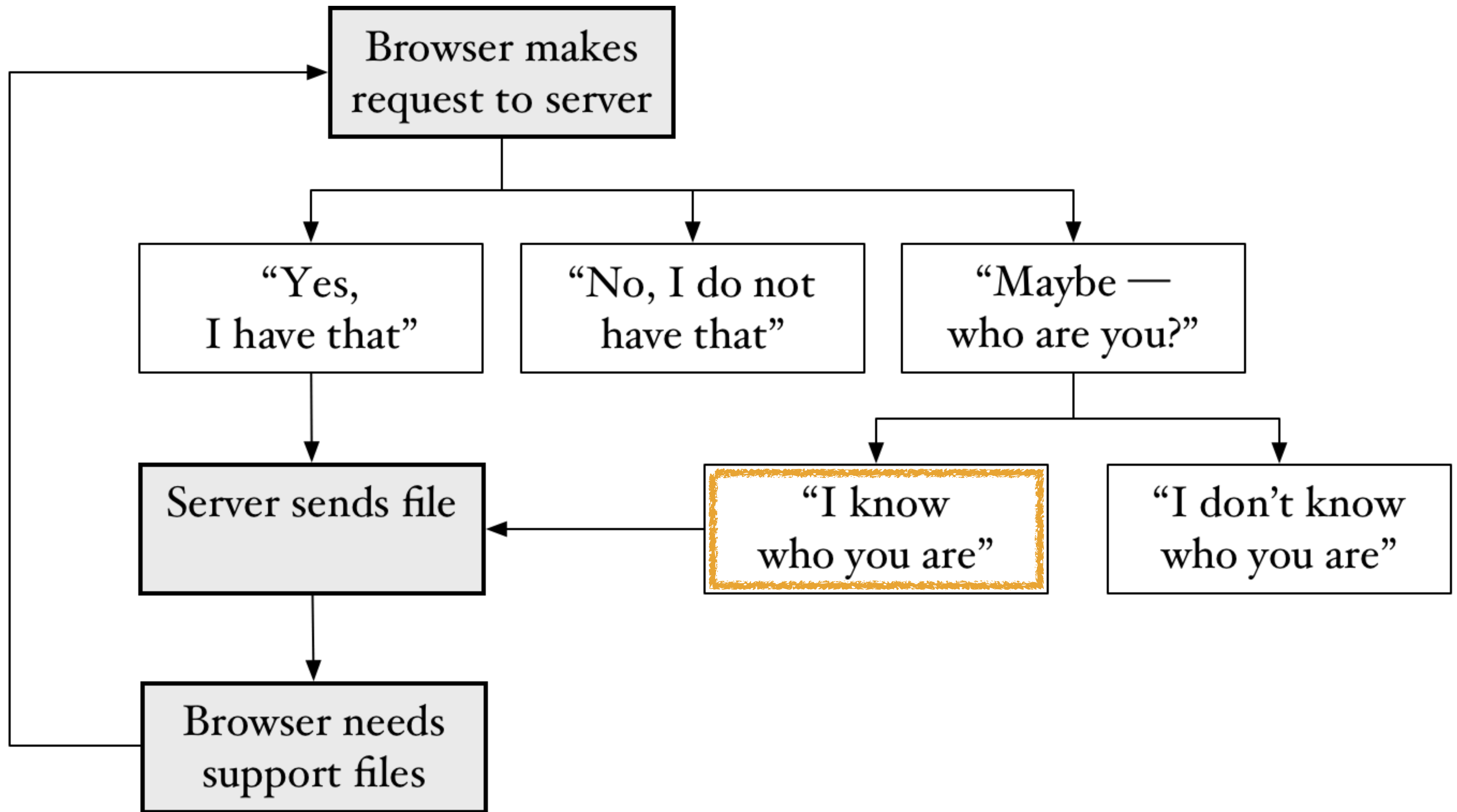
WWW-Authenticate: Basic realm="Scott Only"

Content-Length: 381

Keep-Alive: timeout=2, max=100

Connection: Keep-Alive

Content-Type: text/html; charset=iso-8859-1



HTTP/1.1 200 OK

Date: Wed, 20 Apr 2016 17:54:08 GMT

Server: Apache

X-Frame-Options: SAMEORIGIN

Vary: User-Agent,Accept-Encoding

Last-Modified: Sun, 27 Jul 2014 03:01:36 GMT

Etag: "242-4ff73294e061a-gzip"

Accept-Ranges: bytes

Content-Encoding: gzip

Strict-Transport-Security: max-age=15768000

Content-Length: 360

Keep-Alive: timeout=2, max=100

Connection: Keep-Alive

Content-Type: text/html

HTTP/1.1 200 OK

~~Date: Wed, 20 Apr 2016 17:54:08 GMT~~

Server: Apache

X-Frame-Options: SAMEORIGIN

Vary: User-Agent,Accept-Encoding

Last-Modified: Sun, 27 Jul 2014 03:01:36 GMT

Etag: "242-4ff73294e061a-gzip"

Accept-Ranges: bytes

Content-Encoding: gzip

Strict-Transport-Security: max-age=15768000

Content-Length: 360

Keep-Alive: timeout=2, max=100

Connection: Keep-Alive

Content-Type: text/html

3 Languages

Web browsers support only 3 languages

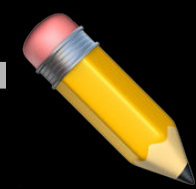
HTML provides structure & meaning for the webpage document

CSS defines style rules for presentation & layout

JavaScript is a programming language that alters the document & styles when an *event* (e.g., page loads, clicks, scrolls, form submission) occurs

HTML (1991) existed before JavaScript (1995) & CSS (1996)

HTML is *required* to make a webpage, while the others provide enhancements (though almost every webpage uses CSS & most use JavaScript)



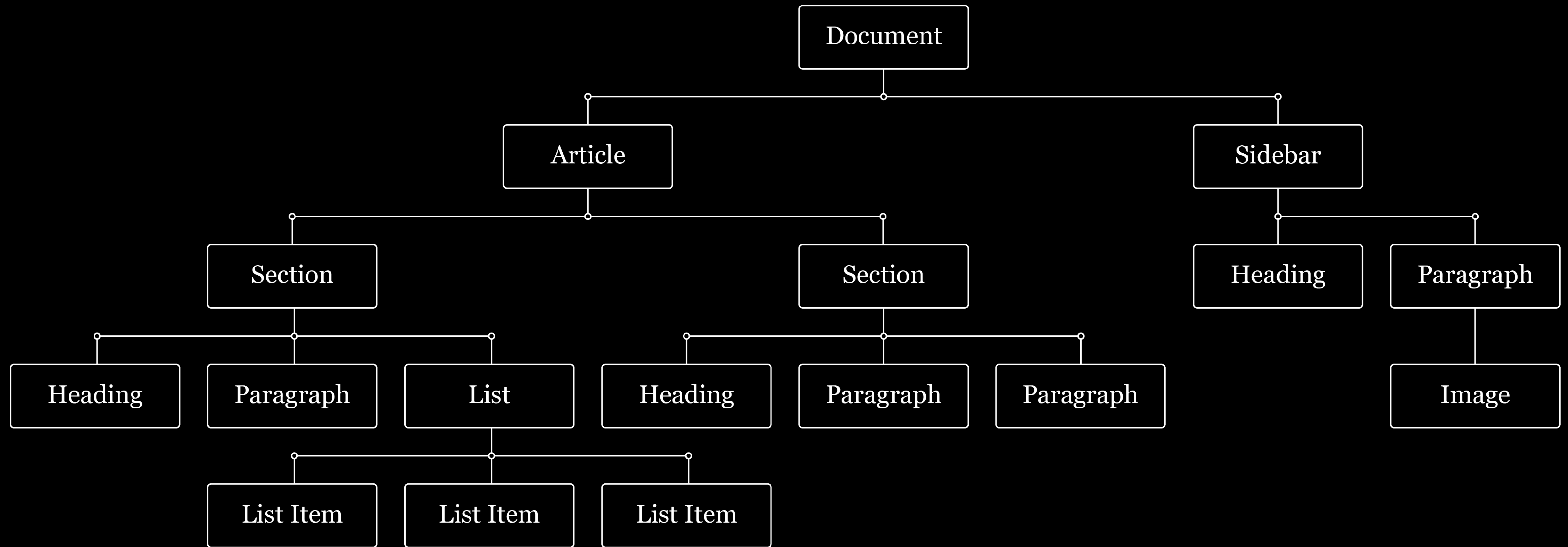
SIDE NOTE

JavaScript is *not* Java!

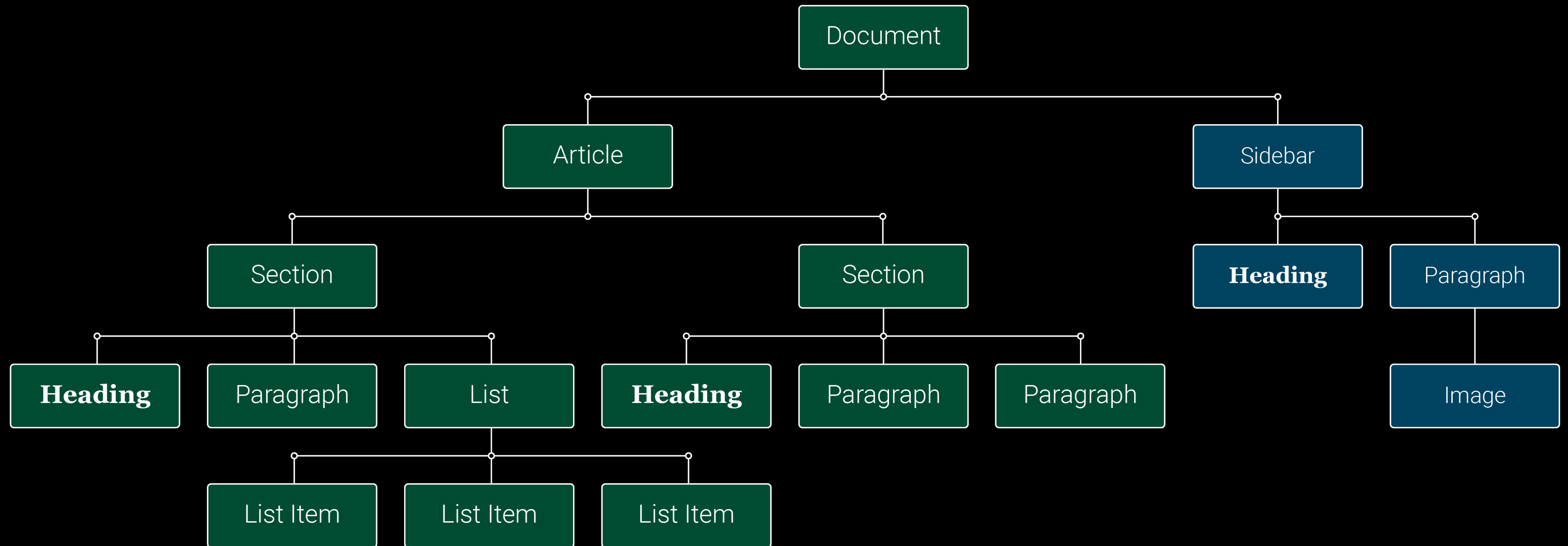
Java  is a popular programming language that was developed at Sun Microsystems & released on May 23, 1995

It has nothing to do with the Web

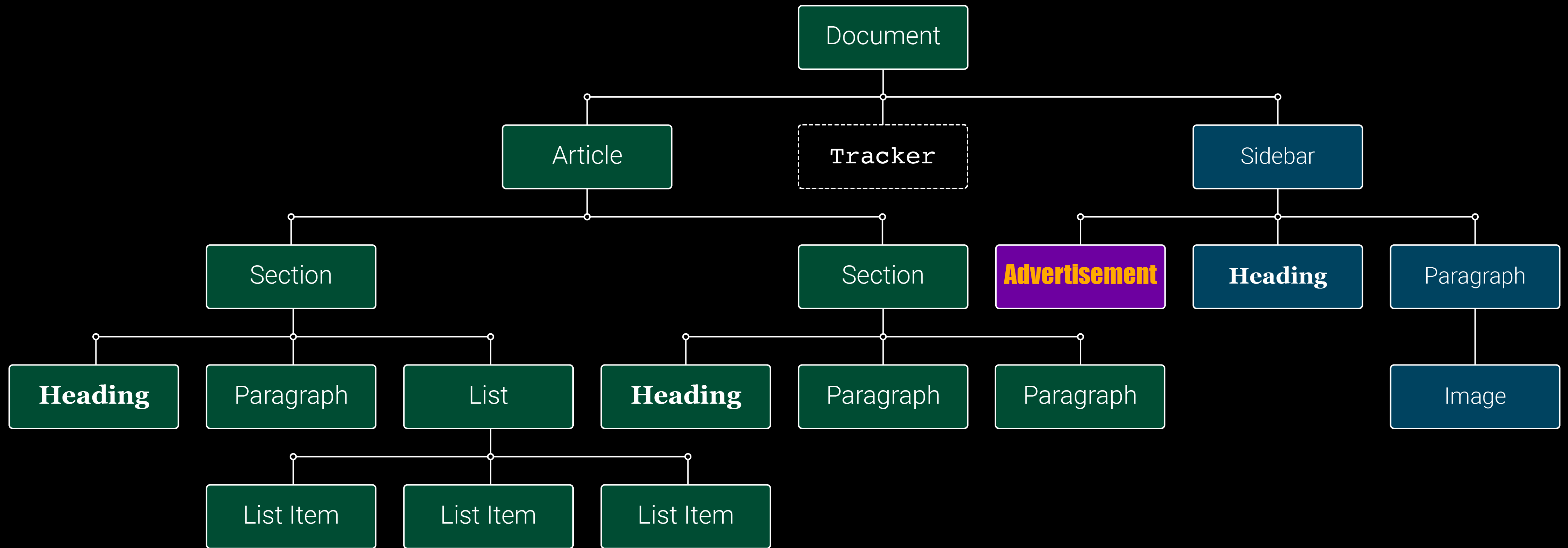
JavaScript  is a programming language for the Web that was developed at Netscape & released on December 4, 1995



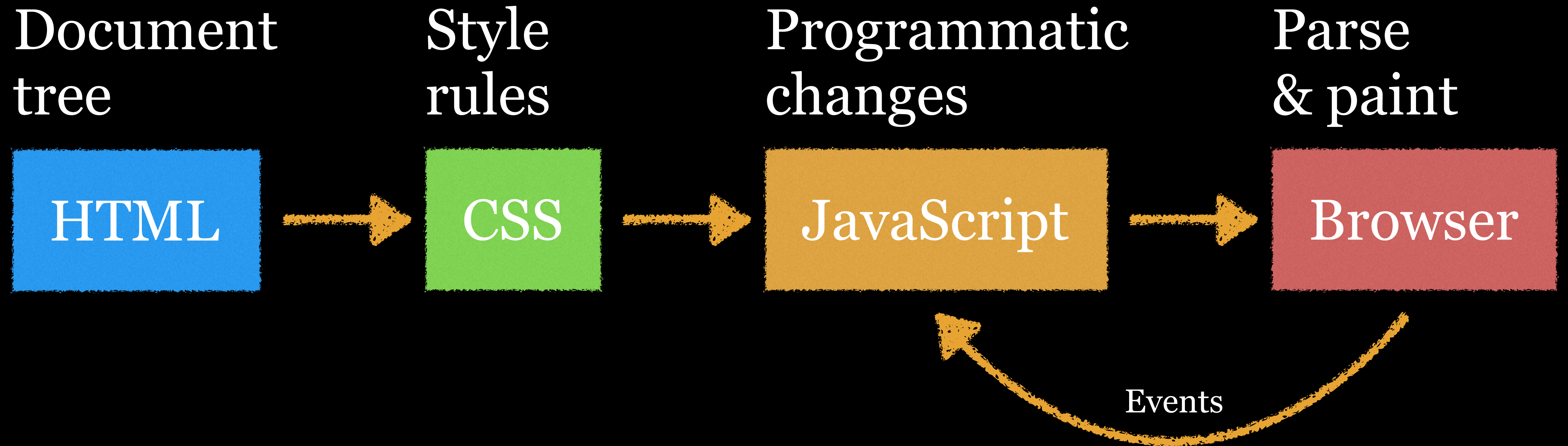
HTML creates a tree structure that defines what's in the document & how it's organized



CSS defines the styles for the nodes in the tree structure



JavaScript alters the tree & the styles when events happen, e.g., a tracker & an ad are added on the fly



The browser processing pipeline (simplified)

HTML	Structure & meaning
CSS	Presentation & layout
JavaScript	Behavior & interaction

Separation of Concerns: A design principle that separates a computer program into distinct sections, or *concerns*, each focusing on a specific resource or set of information

Note: HTML, CSS, & JavaScript can sometimes overlap their functions!

HTML

1

<h1>At
the Mountains of Madness</h1>

2

<p>By H. P.
Lovecraft</p>

3

<h2><font face="'Iowan Old Style', Georgia, serif"
size="+2">I</h2>

4

<p>I am forced into
speech because men of science have refused to follow my advice
without knowing why. It is altogether against my will that I tell
my reasons for opposing this contemplated invasion of the
antarctic—with
melting of the
my warning may

5

<p>Doubt of the real
facts, as I must reveal them, is inevitable; yet if I suppressed
what will seem extravagant and incredible there would be nothing
left.</p>

6

<p>

7

Note:
People who use Comic Sans should get a visit from Cthulhu.

8

</p>

9

CSS

JS

At the Mountains of Madness

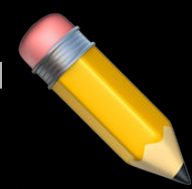
By H. P. Lovecraft

I

I am forced into speech because men of science have refused to follow my advice without knowing why. It is altogether against my will that I tell my reasons for opposing this contemplated invasion of the antarctic—with its vast fossil hunt and its wholesale boring and melting of the ancient ice-cap—and I am the more reluctant because my warning may be in vain.

Doubt of the real facts, as I must reveal them, is inevitable; yet if I suppressed what will seem extravagant and incredible there would be nothing left.

Note: People who use Comic Sans should get a visit from Cthulhu.



SIDE NOTE

Although we will *use* JavaScript in this course later, you will not *learn* JavaScript

JavaScript is a programming language that has a lot of moving parts, so it requires specialized classes of its own

However, if you want to learn JavaScript, start with...

The Modern JavaScript Tutorial

Last updated on January 11, 2025

How it's done now. From the basics to advanced topics with simple, but detailed explanations.

Search[Buy EPUB/PDF](#)[Share:](#) [Twitter](#) [Facebook](#)[23844 ★ github](#)[Discord Chat](#)

Table of contents

Main course contains 2 parts which cover JavaScript as a programming language and working with a browser. There are also additional series of thematic articles.

PART 1[The JavaScript language](#)**PART 2**[Browser: Document, Events, Interfaces](#)**PART 3**[Additional articles](#)

The JavaScript language

Here we learn JavaScript, starting from scratch and go on to advanced concepts like OOP.

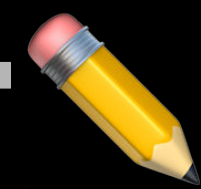
We concentrate on the language itself here, with the minimum of environment-specific notes.

The Simplest Webpage Ever

What is a webpage?

Just a text (`.txt`) file that ends with `.html`

Some older webpages end with `.htm`, but hardly any webpages use that now



SIDE NOTE




Virtually all coding is done in TXT files

CSS is just a TXT file with `.css` at the end

JavaScript is just a TXT file with `.js` at the end

And so on with almost every programming language

The Web was designed from the beginning so that you can inspect the HTML of any webpage

	⌘: Alt > Tools > Web Developer > Page Source	⌘: ^+U
	⌘: Tools > Web Developer > Page Source	⌘: ⌘U
	... > F12 Developer Tools	⌘: ^+U
	⌘: Right-click in the page > View Page Source	⌘: ^+U
	⌘: Right-click in the page > View Page Source	⌘: ^+U
	⌘: View > Developer > View Source	⌘: ⌘U
	Develop > Show Page Source	⌘: ⌘U



In the mid-1990s, I learned how to code by viewing the HTML of webpages

You can't do this now — webpages are much too complex!



SEARCH

GO

ENGLISH

ESPAÑOL

中文

GIVE THE TIMES

Account ▾

The New York Times

Saturday, July 27, 2019

Today's Paper

[World](#) [U.S.](#) [Politics](#) [N.Y.](#) [Business](#) [Opinion](#) [Tech](#) [Science](#) [Health](#) [Sports](#) [Arts](#) [Books](#) [Style](#) [Food](#) [Travel](#) [Magazine](#) [T Magazine](#) [Real Estate](#) [Video](#)

'The Weekly,' Our TV Show
Watch Episode 7 on FX and Hulu.

Listen: 'Modern Love' Podcast
Amanda Seyfried reads an essay
about a lost first love.



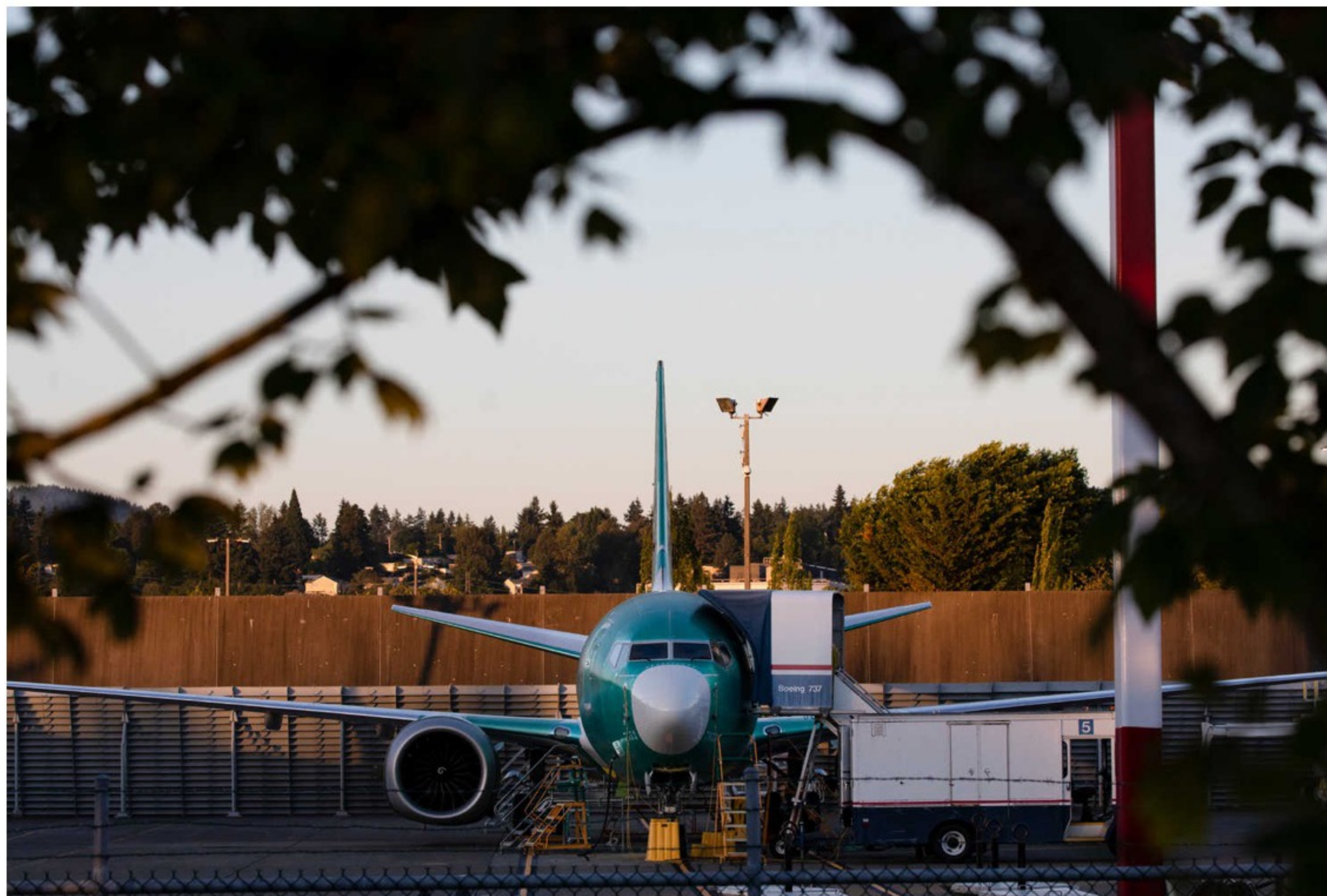
Got a confidential news tip?
Do you have the next big story?
Share it with our journalists.

× 26°C 30° 20°
× Göteborg, Sweden

S&P 500+0.74% ↑

The Roots of Boeing's 737 Max Crisis: A Regulator Relaxes Its Oversight

- The safety of the jet was seriously compromised by flawed supervision from the Federal Aviation Administration, a Times investigation found.
- Regulators came to a troubling realization after the first 737 Max crash killed 189 people: They barely understood the control system that helped cause it.

5h ago [687 comments](#)

The Boeing 737 Max certification was the culmination of a decades-long effort shifting

Opinion >

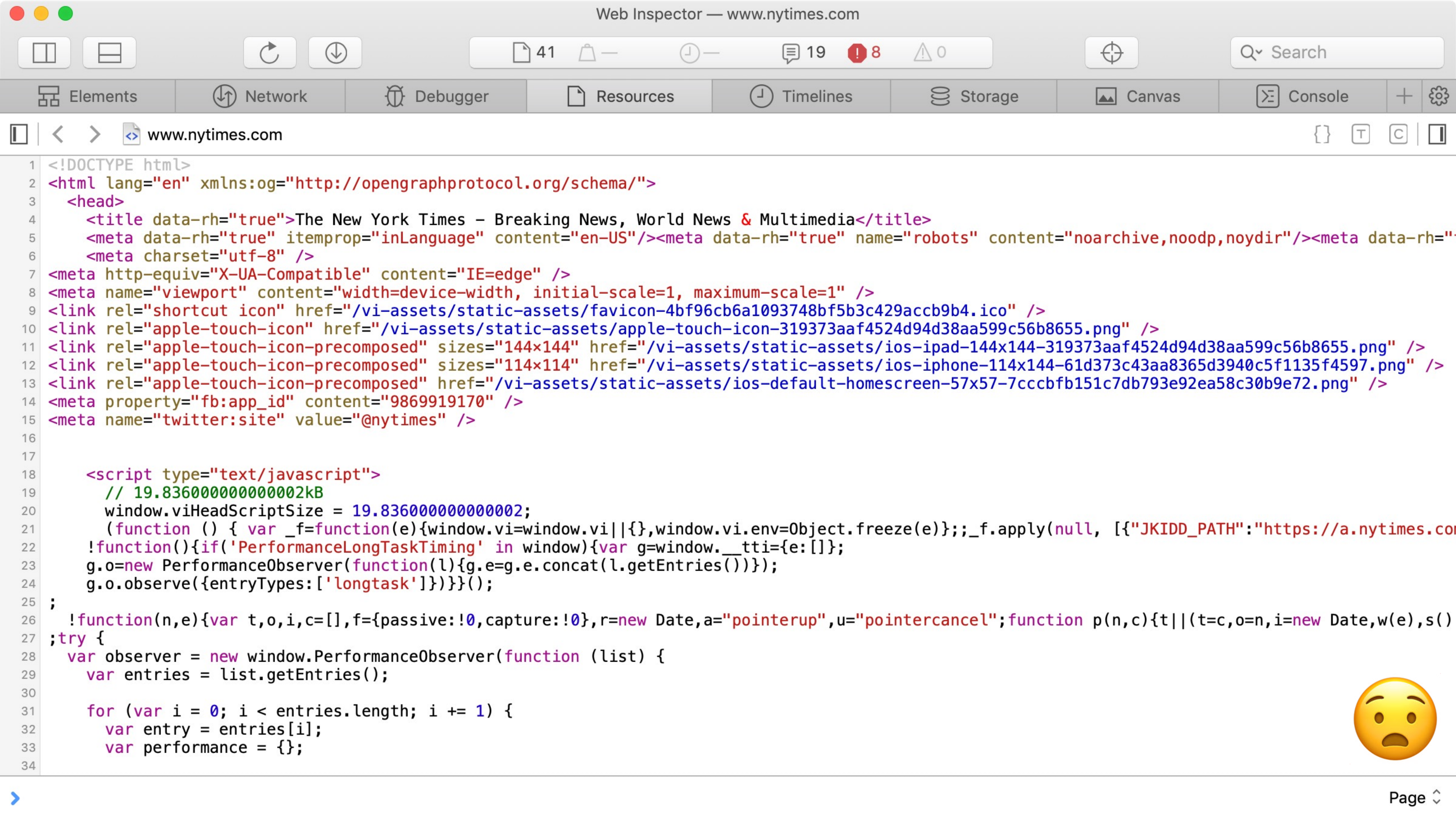


Sarah Vowell



This Guy Got Republicans to Vote for a Democrat

Steve Bullock may not be the most charismatic candidate, but he can teach his party how to get conservatives to do liberal things.



www.nytimes.com

```
1 <!DOCTYPE html>
2 <html lang="en" xmlns:og="http://opengraphprotocol.org/schema/">
3   <head>
4     <title data-rh="true">The New York Times - Breaking News, World News & Multimedia</title>
5     <meta data-rh="true" itemprop="inLanguage" content="en-US"/><meta data-rh="true" name="robots" content="noarchive,noodp,noydir"/><meta data-rh="true"
6     <meta charset="utf-8" />
7     <meta http-equiv="X-UA-Compatible" content="IE=edge" />
8     <meta name="viewport" content="width=device-width, initial-scale=1, maximum-scale=1" />
9     <link rel="shortcut icon" href="/vi-assets/static-assets/favicon-4bf96cb6a1093748bf5b3c429accb9b4.ico" />
10    <link rel="apple-touch-icon" href="/vi-assets/static-assets/apple-touch-icon-319373aaf4524d94d38aa599c56b8655.png" />
11    <link rel="apple-touch-icon-precomposed" sizes="144x144" href="/vi-assets/static-assets/ios-ipad-144x144-319373aaf4524d94d38aa599c56b8655.png" />
12    <link rel="apple-touch-icon-precomposed" sizes="114x114" href="/vi-assets/static-assets/ios-iphone-114x114-61d373c43aa8365d3940c5f1135f4597.png" />
13    <link rel="apple-touch-icon-precomposed" href="/vi-assets/static-assets/ios-default-homescreen-57x57-7cccbfb151c7db793e92ea58c30b9e72.png" />
14    <meta property="fb:app_id" content="9869919170" />
15    <meta name="twitter:site" value="@nytimes" />
16
17
18    <script type="text/javascript">
19      // 19.836000000000002kB
20      window.viHeadScriptSize = 19.836000000000002;
21      (function () { var _f=function(e){window.vi=window.vi||{},window.vi.env=Object.freeze(e)};_f.apply(null, [{"JKIDD_PATH":"https://a.nytimes.com"}]);
22      !function(){if('PerformanceLongTaskTiming' in window){var g=window.__tti={e:[]};
23      g.o=new PerformanceObserver(function(l){g.e=g.e.concat(l.getEntries())});
24      g.o.observe({entryTypes:['longtask']})}}());
25      ;
26      !function(n,e){var t,o,i,c=[],f={passive:!0,capture:!0},r=new Date,a="pointerup",u="pointercancel";function p(n,c){t||(t=c,o=n,i=new Date,w(e),s())}
27      ;try {
28      var observer = new window.PerformanceObserver(function (list) {
29      var entries = list.getEntries();
30
31      for (var i = 0; i < entries.length; i += 1) {
32      var entry = entries[i];
33      var performance = {};
```





⚙ HTML ▾

1 ▾ <html>

2 ▾ <head>

3 ▾ <title>Simple Web Page</title>

4 </head>

5 ▾ <body>

6 ▾ <h1 align="center">

7 From H. P. Lovecraft's

8
"The Whisperer in Darkness"

9 </h1>

10 ▾ <p>

11 I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory holds almost every word of its portentous message...

12 </p>

13 </body>

14 </html>

⚙ CSS ▾

⚙ JS ▾

From H. P. Lovecraft's "The Whisperer in Darkness"

I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory holds almost every word of its portentous message...

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14</html>

CSS

JS

From H. P. Lovecraft's "The Whisperer in Darkness"

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What can you tell about HTML from looking at this code?


```
HTML
1 <html>
2   <head>
3     <title>Simple Web Page</title>
4   </head>
5   <body>
6     <h1 align="center">
7       From H. P. Lovecraft's
8       <br>"The Whisperer in Darkness"
9     </h1>
10    <p>
11      I cannot do better than transcribe in
12      full, so far as is possible, the long
13      letter in which Akeley introduced himself,
14      and which formed such an important landmark
15      in my own intellectual history. It is no
16      longer in my possession, but my memory
17      holds almost every word of its portentous
18      message...
19    </p>
20  </body>
21 </html>

CSS
JS
```

From H. P. Lovecraft's "The Whisperer in Darkness"

I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory

HTML consists of different *tags*, which can be opened, closed, & nested inside each other

Tags can have *attributes* (*align*) & those can have *values* (*center*)

HTML

1<html>

2<head>

3<title>Simple Web Page</title>

4</head>

5<body>

6<h1 align="center">

7From H. P. Lovecraft's

8
"The Whisperer in Darkness"

9</h1>

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12</p>

13</body>

14</html>

CSS

JS

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I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory holds almost every word of its portentous message...

<html> ... </html>

Root of the HTML document that tells browsers where HTML starts & ends

HTML

1<html>

2<head>

3<title>Simple Web Page</title>

4</head>

5<body>

6<h1 align="center">

7From H. P. Lovecraft's

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"The Whisperer in Darkness"

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<head> ... </head>

Information & metadata primarily for browsers, computers, & bots, including links to CSS & JavaScript

HTML

1<html>

2<head>

3<title>Simple Web Page</title>

4</head>

5<body>

6<h1 align="center">

7From H. P. Lovecraft's

8
"The Whisperer in Darkness"

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<title> ... </title>

Title of the webpage for browsers, computers, & bots, although humans see that title on tabs

HTML

1<html>

2<head>

3<title>Simple Web Page</title>

4</head>

5<body>

6<h1 align="center">

7From H. P. Lovecraft's

8
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<body> ... </body>

Content that appears in the
viewport for humans to see & use



If you need help remembering...

⚙ HTML ▾

```
1 <html>
2   <head>
3     <title>Simple Web Page</title>
4   </head>
5   <body>
6     <h1 align="center">
7       From H. P. Lovecraft's
8       <br>"The Whisperer in Darkness"
9     </h1>
10    <p>
11      I cannot do better than transcribe in
12      full, so far as is possible, the long
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14      and which formed such an important landmark
15      in my own intellectual history. It is no
16      longer in my possession, but my memory
17      holds almost every word of its portentous
18      message...
19    </p>
20  </body>
21 </html>
```

⚙ CSS ▾

⚙ JS ▾

From H. P. Lovecraft's "The Whisperer in Darkness"

I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory holds almost every word of its portentous message...

<h1> ... </h1>

Heading level 1, which acts as the title of the webpage for humans to see

HTML

1<html>

2<head>

3<title>Simple Web Page</title>

4</head>

5<body>

6<h1 align="center">

7From H. P. Lovecraft's

8
"The Whisperer in Darkness"

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12</p>

13</body>

14</html>

CSS

JS

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<p> ... </p>

Paragraph

Very common element

HTML

1<html>

2<head>

3<title>Simple Web Page</title>

4</head>

5<body>

6<h1 align="center">

7From H. P. Lovecraft's

8
"The Whisperer in Darkness"

9</h1>

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12</p>

13</body>

14</html>

CSS

JS

From H. P. Lovecraft's "The Whisperer in Darkness"

I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory holds almost every word of its portentous message...

Line break that looks like single spacing, with very limited uses

Elements,
Attributes,
Values

```
<h1 align="center">  
    Ph'nglui mglw'nafh Cthulhu R'lyeh  
</h1>
```

`<h1 align="center">` is an *opening* or *start tag*

`</h1>` is a *closing* or *end tag*


```
<h1 align="center">  
  Ph'nenglui mglw'nafh Cthulhu R'lyeh:  
  <br>Cultists in <i>The Call of Cthulhu</i>  
</h1>
```

`
` does not have an end tag or content, because it is a *void* (or *empty*) *element* (how would you end a line break?!)

There are 14 of these *void elements*, including `<hr>`, ``, & `<meta>`

```
<h1 align="center">  
  Ph'nglui mglw'nafh Cthulhu R'lyeh  
</h1>
```

Ph'nglui mglw'nafh Cthulhu R'lyeh is the *content*

Strictly speaking, all of it, from <h1 on line 1 to /h1> on line 3 is an *element*


```
<h1 align="center"> ... </h1>
```

`h1` is an *tag name* (but some people call it an *element*)

`align` is an *attribute*

`center` is a *value*

`align="center"` is an *attribute-value pair*

You can have more than 1 attribute-value pair in an opening tag

```
<h1 align="center" title="Page title">
```

How many?

As many as the specification allows for!

4.7 Embedded content

4.7.1 The `img` element

Categories:

[Flow content](#).

[Phrasing content](#).

[Embedded content](#).

[Form-associated element](#).

If the element has a `usemap` attribute: [Interactive content](#).

[Palpable content](#).

Contexts in which this element can be used:

Where [embedded content](#) is expected.

Content model:

Empty.

Content attributes:

[Global attributes](#)

`alt` - Replacement text for use when images are not available

`src` - Address of the resource

`crossorigin` - How the element handles crossorigin requests

`usemap` - Name of [image map](#) to use

`ismap` - Whether the image is a server-side image map

`width` - Horizontal dimension

`height` - Vertical dimension

Tag omission in text/html:

No end tag.

``

2017: global + 7

Categories:

...

Contexts in which this element can be used:

Where [embedded content](#) is expected.

Content model:

[Nothing](#).

Tag omission in text/html:

No [end tag](#).

Content attributes:

[Global attributes](#)

alt — Replacement text for use when images are not available

src — Address of the resource

srcset — Images to use in different situations, e.g., high-resolution displays, small monitors, etc.

sizes — Image sizes for different page layouts

crossorigin — How the element handles crossorigin requests

usemap — Name of [image map](#) to use

ismap — Whether the image is a server-side image map

width — Horizontal dimension

height — Vertical dimension

referrerpolicy — [Referrer policy](#) for [fetches](#) initiated by the element

decoding — Decoding hint to use when processing this image for presentation

loading — Used when determining loading deferral

Accessibility considerations:

2022: global + 12

4.5 Text-level semantics

4.5.1 The **a** element

Categories:

Flow content.

Phrasing content.

Interactive content.

Palpable content.

Contexts in which this element can be used:

Where phrasing content is expected.

Content model:

Transparent, but there must be no interactive content descendant.

Content attributes:

Global attributes

href - Address of the hyperlink

target - Default browsing context for hyperlink navigation and form submission

download - Whether to download the resource instead of navigating to it, and its file name if so

rel - Relationship between the document containing the hyperlink and the destination resource

hreflang - Language of the linked resource

type - Hint for the type of the referenced resource

<a>

Tag omission in text/html:

Neither tag is omissible

Allowed ARIA role attribute values:

link (default - do not set), button, checkbox, menuitem, menuitemcheckbox, menuitemradio, tab Or treeitem

Allowed ARIA state and property attributes:

2017: global + 6
2022: global + 8

4.10.5 The **input** element

Categories:

[Flow content](#).

[Phrasing content](#).

If the **type** attribute is *not* in the [Hidden](#) state: [Interactive content](#).

If the **type** attribute is *not* in the [Hidden](#) state: [Listed](#), [labelable](#), [submittable](#), [resettable](#), and [reassociateable form-associated element](#).

If the **type** attribute is in the [Hidden](#) state: [Listed](#), [submittable](#), [resettable](#), and [reassociateable form-associated element](#).

If the **type** attribute is *not* in the [Hidden](#) state: [Palpable content](#).

Contexts in which this element can be used:

Where [phrasing content](#) is expected.

Content model:

Empty.

Content attributes:

[Global attributes](#)

accept - Hint for expected file type in [file upload controls](#)

alt - Replacement text for use when images are not available

autocomplete - Hint for form autofill feature

autofocus - Automatically focus the form control when the page is loaded

checked - Whether the command or control is checked

dirname - Name of form field to use for sending the element's [directionality](#) in [form submission](#)

disabled - Whether the form control is disabled

form - Associates the control with a [form](#) element

formaction - URL to use for [form submission](#)

formenctype - Form data set encoding type to use for [form submission](#)

<input>

<input>

form - Associates the control with a form element

formaction - URL to use for form submission

formenctype - Form data set encoding type to use for form submission

formmethod - HTTP method to use for form submission

formnovalidate - Bypass form control validation for form submission

formtarget - Browsing context for form submission

height - Vertical dimension

inputmode - Hint for selecting an input modality

list - List of autocomplete options

max - Maximum value

maxlength - Maximum length of value

min - Minimum value

minlength - Minimum length of value

multiple - Whether to allow multiple values

name - Name of form control to use for form submission and in the form.elements API

pattern - Pattern to be matched by the form control's value

placeholder - User-visible label to be placed within the form control

readonly - Whether to allow the value to be edited by the user

required - Whether the control is required for form submission

size - Size of the control

src - Address of the resource

step - Granularity to be matched by the form control's value

type - Type of form control

value - Value of the form control

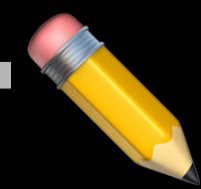
width - Horizontal dimension

Also, the title attribute has special semantics on this element when used in conjunction with the pattern attribute.

2017: global + 32
2022: global + 30

You cannot repeat attributes in a tag

`<p class="foo" class="bar">`  

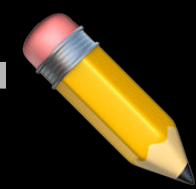


SIDE NOTE

The order of attributes doesn't matter to browsers

All of the following are equivalent (that said, the 1st is definitely the most common!):

- » ``
- » ``
- » ``



SIDE NOTE

I just used `align="center"` as an example

Never use that!

The `align` attribute was deprecated in HTML 4.01

Deprecated means that developers shouldn't use a feature because support for it will be removed in future versions of HTML

Sure enough, `align` is gone from HTML5

<center>: The Centered Text element



Deprecated: This feature is no longer recommended. Though some browsers might still support it, it may have already been removed from the relevant web standards, may be in the process of being dropped, or may only be kept for compatibility purposes. Avoid using it, and update existing code if possible; see the [compatibility table](#) at the bottom of this page to guide your decision. Be aware that this feature may cease to work at any time.

The `<center>` [HTML](#) element is a [block-level element](#) that displays its block-level or inline contents centered horizontally within its containing element. The container is usually, but isn't required to be, `<body>`.

This tag has been deprecated in HTML 4 (and XHTML 1) in favor of the [CSS](#) `text-align` property, which can be applied to the `<div>` element or to an individual `<p>`. For centering blocks, use other CSS properties like `margin-left` and `margin-right` and set them to `auto` (or set `margin` to `0 auto`).

DTD

When we looked at `<html>`, I said that it's “Always the very 1st thing in a webpage”

I lied 

The 1st thing is always a *DTD*: a *Document Type Definition*

The DTD is vitally important to a webpage

Required at the beginning of every HTML document

Tells rendering engines & validators...

- » that HTML is being used, not some other markup language
- » which version of HTML to use
- » whether to render in *quirks* (bad) or *standards mode* (good)

HTML 4.01 Transitional DTD

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01  
Transitional//EN" "http://www.w3.org/TR/html4/  
loose.dtd">
```

Thank goodness we don't have to use this anymore!

HTML5 DTD

```
<!DOCTYPE html>
```

OR

```
<!doctype html>
```

Actually, this DTD triggers standards mode in every browser back to IE 6!

Character Encoding

Character encoding tells rendering engines what language, writing system, & characters you're using in the document




Mojibake

From Wikipedia, the free encyclopedia



Mojibake (文字化け[?]) (IPA: [mo̞ᵝᵚiᵝba̞ke̞]; lit. "character transformation"), from the [Japanese](#) 文字 (moji) "character" + 化け (bake) "transform", is the garbled text that is the result of text being decoding using an unintended [character encoding](#).^[1] The result is a systematic replacement of symbols with completely unrelated ones, often from a different [writing system](#). This display may include the generic [replacement character](#) ◻ in places where the binary representation is considered invalid. A replacement can also involve multiple consecutive symbols, as viewed in one encoding, when the same binary code constitutes one symbol in the other encoding. This is either because of differing constant length encoding (as in Asian 16-bit encodings vs European 8-bit encodings), or the use of variable length encodings (notably [UTF-8](#) and [UTF-16](#)).

The rendering of glyphs, which often fails because of missing fonts, is a different issue that is not to be confused with mojibake. Symptoms include blocks with the [codepoint](#) displayed in [hexadecimal](#), or even the generic replacement character . Importantly, these replacements are *valid*, and the result of correct error handling by the software.

This article contains special characters.
Without proper rendering support, you may
see question marks, boxes, or other
symbols.

Interaction

[Help](#)

About Wikipedia

Community portal

Recent changes

[Contact page](#)

Tools

What links here

Related changes

[Upload file](#)

[Special pages](#)

Permanent link

Page information

[Wikidata item](#)

[Cite this page](#)

Print/export

Create a book

[Download as PDF](#)

Contents [\[hide\]](#)

1 Causes

1.1 Underspecification

1.2 Misspecification

1 2 1 Human ignorance



Communication

Definition

- [Wikipedia on Communication](#)
The collaborative encyclopedia defines Communication. ⚠ Only read if you want a basic overview

Characteristics

- ["Human Communication: What and Why" from Understanding Human Communication](#)
Some fundamentals of communication.

History

- [As We May Think](#)
Note the date this was written. Think about how prescient the author was. Notice also what he missed. (If you don't have time to read Bush's famous essay, read a summary at [As We May Think: A 1945 Essay on Information Overload, ~ Curation, and Open-Access Science](#))
- [Alan Kay: Transforming the Computer into a Communication Medium](#)
Alan Kay's ideas contributed to the transformation of the computer from a calculating machine to a communication medium.

Technology

- [Wikipedia on Technology](#)
The Internet encyclopedia defines Technology. ⚠ Only read if you want a basic overview

Characteristics

- Addiction
- Advertising
- Advice
- Aggregation
- Algorithms
- Amazon
- Anonymity
- Apple
- Architecture
- Archiving
- Art
- Assignments
- Audio
- Audio Resource
- Automobiles
- Banking
- Biometrics
- Biotechnology
- BitTorrent
- Blogging
- Bookmarks
- Branding
- BRIC
- Broadband
- Broadcast Flag
- Bullying
- Business-Education Partnerships
- Business Intelligence
- Business School
- Cameras
- Capitalism
- Cartels
- CBOTPA

2 character encodings you must know

» ASCII

» UTF-8

ASCII

American Standard Code for Information Interchange

1960

128 characters

- » 94 printable characters (A, a, 1, +)
- » 33 non-printing control characters (mostly obsolete)
- » 1 space

ASCII Code Chart

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	HT	LF	VT	FF	CR	SO	SI
1	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US
2		!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7	p	q	r	s	t	u	v	w	x	y	z	{		}	~	DEL

ASCII Code Chart

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	SOH	STX	ETX	EOT	ENQ	ACK	BEL	BS	HT	LF	VT	FF	CR	SO	SI
1	DLE	DC1	DC2	DC3	DC4	NAK	SYN	ETB	CAN	EM	SUB	ESC	FS	GS	RS	US
2		!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
6	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7	p	q	r	s	t	u	v	w	x	y	z	{		}	~	DEL

08 BS Backspace • 09 HT Horizontal tab • 0A LF
 Line feed (end of line with UNIX) • 1B ESC Escape •
 7F DEL Forward delete

UTF-8 (Unicode)

8-bit Unicode Transformation Format

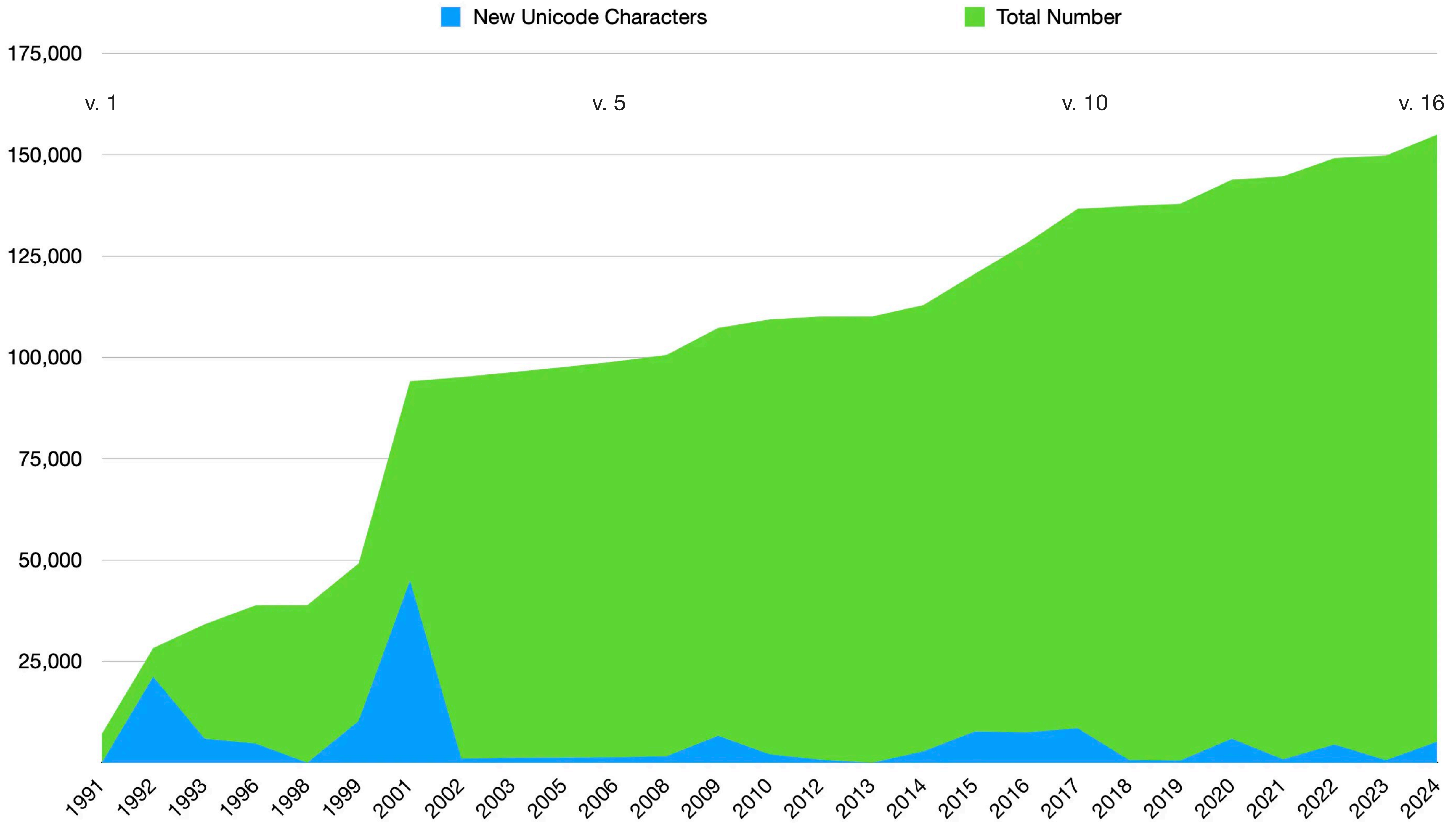
Original standard dates back to October 1991

Encompasses every character in every language in the world: version 16 includes 154,998 characters found in 168 modern & historic writing systems, plus symbols & formatting characters

UTF-8 can support up to 1,112,064 characters!



All 3,790 emoji characters are part of Unicode!



Unicode consists of *blocks*, groups of related characters, such as

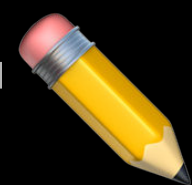
Basic Latin • Latin-1 Supplement • Hebrew • Arabic •
Currency Symbols • Arrows • Braille Patterns •
Bopomofo • CJK Strokes • Phoenician • Cuneiform •
Playing Cards • Alchemical Symbols • 308 in all!



Large square =
65,536 characters

Small square =
256 characters

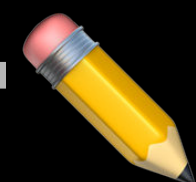
All of ASCII =
half of the small
red square in the
top left corner
(128 characters)



SIDE NOTE

In 1978 a standard was created for 6879 kanji characters used in Japanese

Later used in Unicode

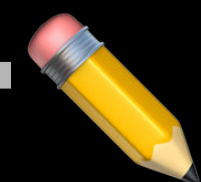


SIDE NOTE

1 year later, people noticed that there were 63 (now pared down to 12) kanji characters that were ...
strange

- » nobody knew where they came from
- » nobody knew what they meant
- » nobody knew how to pronounce them

These are now known as the *ghost characters* (幽霊文字).

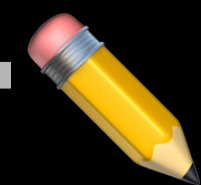


SIDE NOTE

𡗗𡗗𡗗𡗗𡗗𡗗

𡗗𡗗𡗗𡗗𡗗𡗗

Core ghost characters

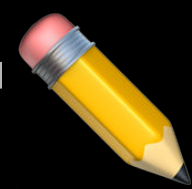


SIDE NOTE

Investigators think most of the ghosts were caused by folds & wrinkles because they were using paper back in 1978

𡗗: printers trying to create 𡗗 by pasting 山 over 女

弼: misreading of 疆 — maybe?

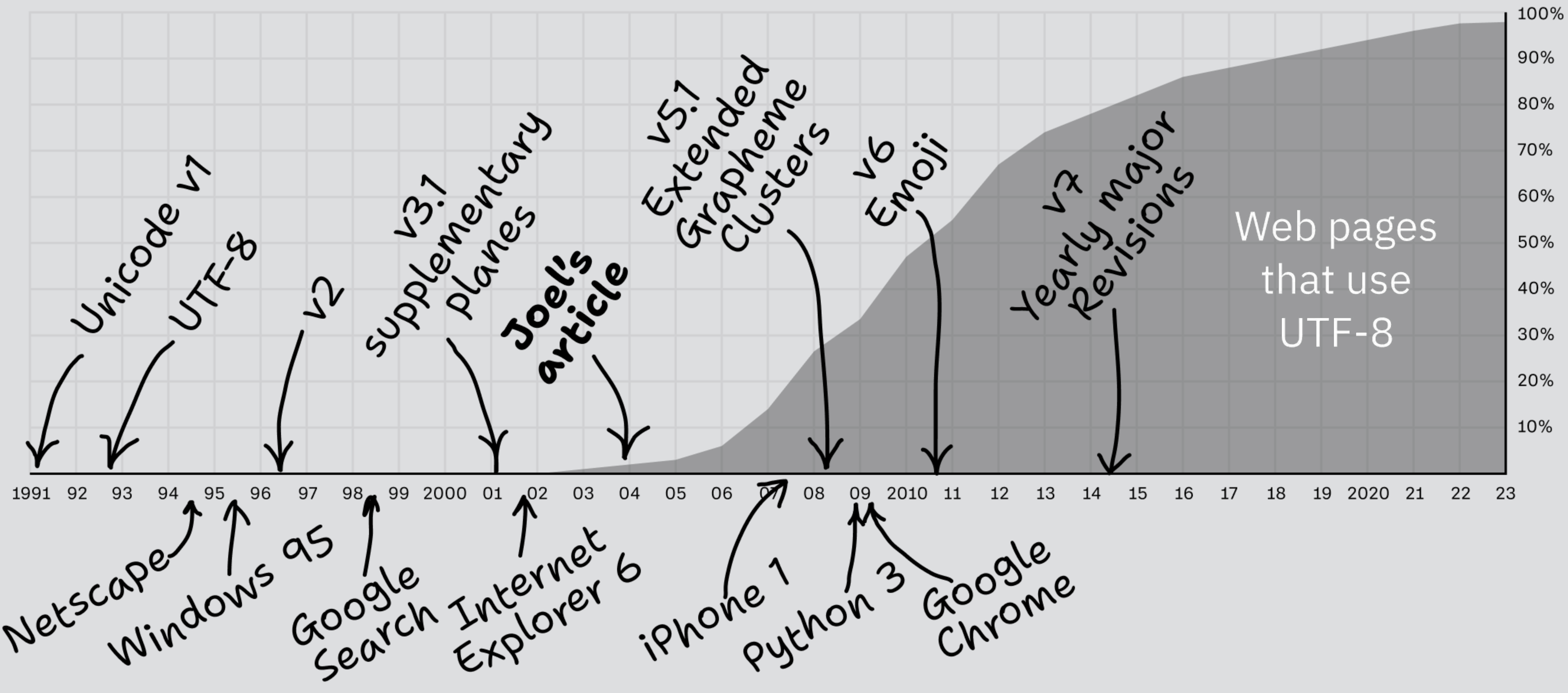


SIDE NOTE

“The errors went undiscovered just long enough to be set in stone, and now these ghosts are, at least in potential, a part of every computer on the planet, lurking in the dark corners of character tables. At this rate they’ll presumably be with humanity forever.”

—Paul McCann

98%!



UTF-8 is the standard way to represent text in files,
email, & software

Use UTF-8!

Everywhere!

In everything!

Webpages, text editors, IDEs, web browsers, email
programs, programming, APIs, operating systems...

Noto Serif

Noto Sans

Aa Gg Yy

Aa Gg Yy

a

Ankunft

a b c d e f g h i j k l m

n o p q r s t u v w x y z

0 1 2 3 4 5 6 7 8

“Noto is a font family ...
designed to cover all the
scripts encoded in the
Unicode standard.” —
Wikipedia

As of 2022, nearly 64,000
characters out of 149,186

1000+ languages!



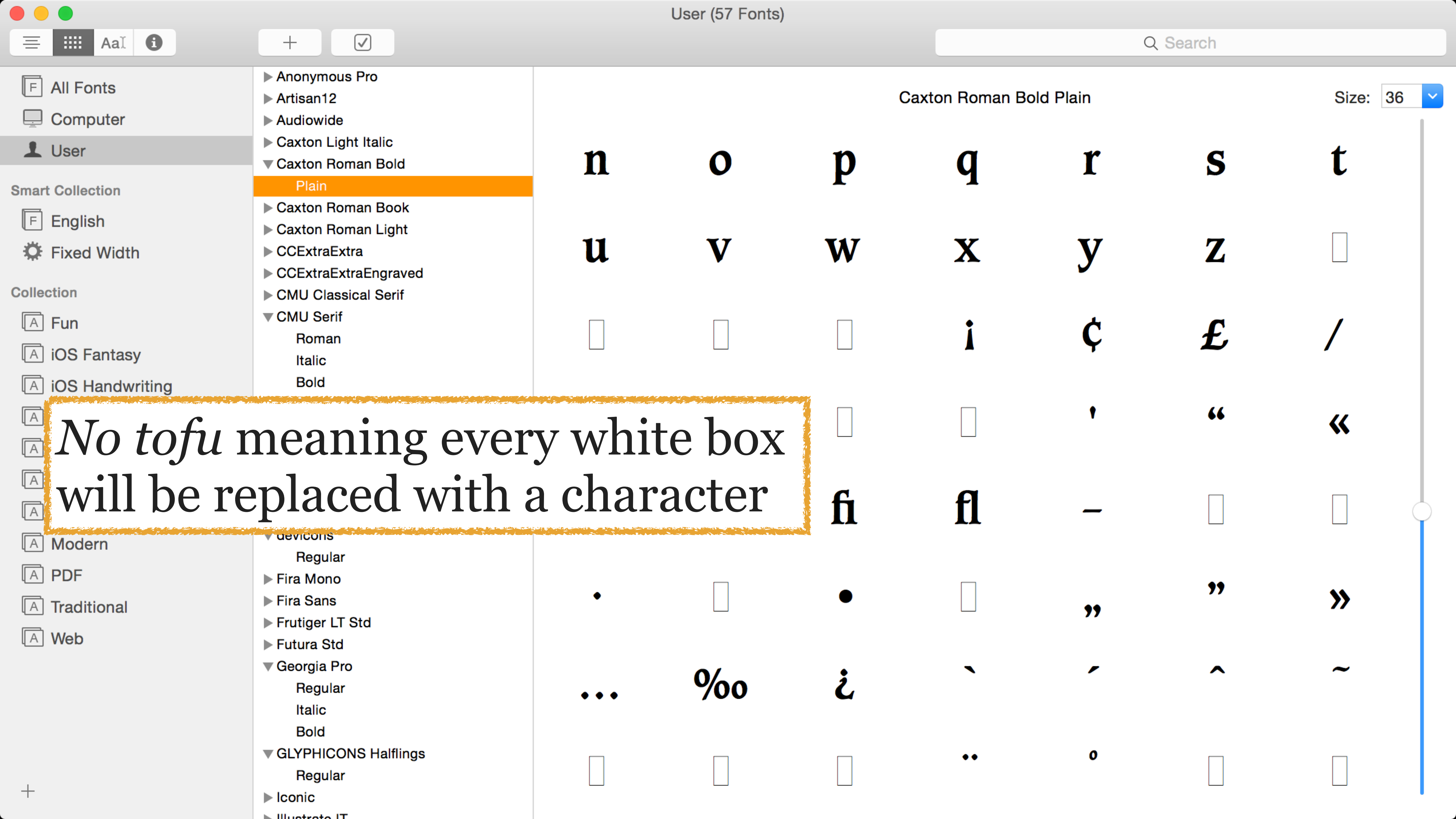
Noto is short for *no tofu*

Huh?

Why would anyone say no
to yummy, delicious tofu?!

Noto is Latin for “I write, I mark, I note”

Tofu: empty white boxes that appear when a character isn't supported in a typeface



- All Fonts
- Computer
- User
- Smart Collection
 - English
 - Fixed Width
- Collection
 - Fun
 - iOS Fantasy
 - iOS Handwriting

- Anonymous Pro
- Artisan12
- Audiowide
- Caxton Light Italic
- Caxton Roman Bold

Plain

- Caxton Roman Book
- Caxton Roman Light
- CCEXtraExtra
- CCEXtraExtraEngraved
- CMU Classical Serif
- CMU Serif
 - Roman
 - Italic
 - Bold

Caxton Roman Bold Plain

Size: 36

n o p q r s t

u v w x y z

ı ç £ /

ı “ «

fi fl _ ” »

• ° ” »

... %oo ¿ ´ ˆ ~

• ° ” »

No tofu meaning every white box
will be replaced with a character

Sans-serif variants of Noto: Sans sans-serif • Adlam • Adlam Unjoined • Anatolian Hieroglyphs • Arabic • Armenian • Avestan • Balinese • Bamum • Bassa Vah • Batak • Bengali • Bhaiksuki • Brahmi • Buginese • Buhid • Canadian Aboriginal • Carian • Caucasian Albanian • Chakma • Cham • Cherokee • Chorasmanian • Coptic • Cuneiform • Cypriot • Cypro Minoan • Deseret • Devanagari • Display • Duployan • Egyptian Hieroglyphs • Elbasan • Elymaic • Ethiopic • Georgian • Glagolitic • Gothic • Grantha • Gujarati • Gunjala Gondi • Gurmukhi • Hanifi Rohingya • Hanunoo • Hatran • Hebrew • HK • Imperial Aramaic • Indic Siyaq Numbers • Inscriptional Pahlavi • Inscriptional Parthian • Javanese • JP • Kaithi • ...

Kannada • Kawi • Kayah Li • Kharoshthi • Khmer • Khojki
• Khudawadi • KR • Lao • Lao Looped • Lepcha • Limbu •
Linear A • Linear B • Lisu • Lycian • Lydian • Mahajani •
Malayalam • Mandaic • Manichaean • Marchen •
Masaram Gondi • Math • Mayan Numerals • Medefaidrin
• Meetei Mayek • Mende Kikakui • Meroitic • Miao • Modi
• Mongolian • Mono • Mro • Multani • Myanmar •
Nabataean • Nag Mundari • Nandinagari • New Tai Lue •
Newa • NKo • NKo Unjoined • Nushu • Ogham • Ol Chiki •
Old Hungarian • Old Italic • Old North Arabian • Old
Permian • Old Persian • Old Sogdian • Old South Arabian •
Old Turkic • Oriya • Osage • Osmanya • Old Turkic • ...

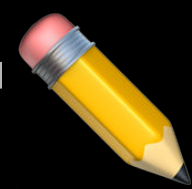
Oriya • Osage • Osmanya • Pahawh Hmong • Palmyrene
• Pau Cin Hau • Phags Pa • Phoenician • Psalter Pahlavi
• Rejang • Runic • Samaritan • Saurashtra • SC •
Sharada • Shavian • Siddham • SignWriting • Sinhala •
Sogdian • Sora Sompeng • Soyombo • Sundanese •
Syloti Nagri • Symbols • Symbols 2 • Syriac • Syriac
Eastern • Tagalog • Tagbanwa • Tai Le • Tai Tham • Tai
Viet • Takri • Tamil • Tamil Supplement • Tangsa • TC •
Telugu • Thaana • Thai • Thai Looped • Tifinagh •
Tirhuta • Traditional Nushu • Ugaritic • Vai • Vithkuqi •
Wancho • Warang Citi • Yi • Zanabazar Square

Serif variants of Noto: Serif • Ahom • Armenian •
Balinese • Bengali • Devanagari • Display • Dogra •
Ethiopic • Georgian • Grantha • Gujarati • Gurmukhi •
Hebrew • HK • JP • Kannada • Khitan Small Script •
Khmer • Khojki • KR • Lao • Makasar • Malayalam •
Myanmar • NP Hmong • Old Uyghur • Oriya • Ottoman
Siyaq • SC • Sinhala • Tamil • Tangut • TC • Telugu •
Thai • Tibetan • Toto • Vithkuqi • Yezidi

Emoji variants of Noto: Emoji • Color Emoji

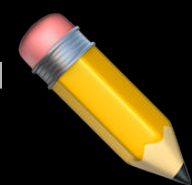
Music variants of Noto: Music • Znamenny Musical
Notation

Calligraphic variants of Noto: Kufi Arabic • Naskh
Arabic • Nastaliq Urdu • Rashi Hebrew



SIDE NOTE


Musicians have used Unicode to create a variety of problems for companies, organizations, & software trying to track, organize, sell, & play their music 😈




SIDE NOTE

Coldplay's album *Music of the Spheres* had these tracks on it:

1. 

4. 

6. 

9. 

11. 

[illegible][illegible]



Some of those albums include...

(see also, 2017)

[illegible]

[illegible]

Setting Character Encoding

Browsers know which character encoding a webpage is using via 1 of these 2 methods

1. Web server configured by admins to serve UTF-8
2. You insert the right `<meta>` element in `<head>`

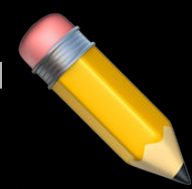
Regardless of what your server admins do, this always works: insert a `<meta>` element inside `<head>`

```
<meta charset="utf-8">
```


Actually, `<meta charset="utf-8">` works in all browsers back to IE 6!

The `<meta>` for character encoding must be the 1st thing after `<head>`

Why? Because all text after it needs to have character encoding set



SIDE NOTE

In fact, character encoding must be specified & completed within the first 1024 bytes of your document

HTML5

```
<!DOCTYPE html>
```

<html>

<head>

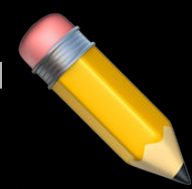
```
<meta charset="UTF-8">
```

<title>ᏊᎤᓴᙯᑭᐅᔨᖃᕈፂጰᒻᛁᑦᑲᕆᕇ</title>

</head>

<body>

● ● ●



SIDE NOTE

Sometimes you might have to work on old webpages

In HTML 4.01, this is how you declared that you were using UTF-8:

```
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
```

Again, thank goodness we don't need to do that now

(Remember, now you just use: `<meta charset="utf-8">`)

The Simplest
Webpage Ever,
Corrected

HTML

1<html>

2<head>

3<title>Simple Web Page</title>

4</head>

5<body>

6<h1 align="center">

7From H. P. Lovecraft's

8
"The Whisperer in Darkness"

9</h1>

10<p>

11I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory holds almost every word of its portentous message...

12</p>

13</body>

14</html>

CSS

JS

From H. P. Lovecraft's "The Whisperer in Darkness"

I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory holds almost every word of its portentous message...

Let's add the DTD & character encoding...

HTML

```
1 <!doctype html>
2 <html>
3   <head>
4     <meta charset="UTF-8">
5     <title>Simple Web Page</title>
6   </head>
7   <body>
8     <h1 align="center">
9       From H. P. Lovecraft's
10      <br>"The Whisperer in Darkness"
11    </h1>
12    <p>
13      I cannot do better than transcribe in
14      full, so far as is possible, the long
15      letter in which Akeley introduced himself,
16      and which formed such an important landmark
17      in my own intellectual history. It is no
18      longer in my possession, but my memory
19      holds almost every word of its portentous
20      message...
21    </p>
22  </body>
```

CSS

JS

From H. P. Lovecraft's "The Whisperer in Darkness"

I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory holds almost every word of its portentous message...

HTML

```
1 <html>
2   <head>
3     <title>Simple Web Page</title>
4   </head>
5   <body>
6     <h1 align="center">
7       From H. P. Lovecraft's
8       <br>"The Whisperer in Darkness"
9     </h1>
10    <p>
11      I cannot do better than transcribe in
12      full, so far as is possible, the long
13      letter in which Akeley introduced himself,
14      and which formed such an important landmark
15      in my own intellectual history. It is no
16      longer in my possession, but my memory
17      holds almost every word of its portentous
18      message...
19    </p>
20  </body>
21 </html>
```

CSS

JS

From H. P. Lovecraft's "The Whisperer in Darkness"

I cannot do better than transcribe in full, so far as is possible, the long letter in which Akeley introduced himself, and which formed such an important landmark in my own intellectual history. It is no longer in my possession, but my memory holds almost every word of its portentous message...

This is the "wrong" one — look at the previous slide for any differences you can spot in the rendered webpage on the right

It looked the same, even when the code was “wrong”

Why? Because rendering engines “fix” your errors as best they can

Is that a license to be sloppy or careless? No!

“... [Web browsers], while parsing an HTML document, may abort the parser at the first parse error that they encounter ...” —HTML Living Standard



On top of all that, if
potential employers or
other developers look at
your terrible code, you *will*
be judged harshly

Comments

Comments tell the rendering engine to ignore the
commented out code & text

HTML comments on a single line

```
<!-- ... -->
```

Can also be multi-line

```
<!--  
...  
...  
...  
-->
```

⚙ HTML



```
1 <p>
2   Cthulhu
3 </p>
4 <!--<p>
5   Yog-Sothoth
6 </p>
7 <p>
8   Shub-Niggurath
9 </p>-->
10 <p>
11   Nyarlathotep
12 </p>
```

Cthulhu

Nyarlathotep

⚙ CSS



⚙ JS



You cannot nest comments!

```
<!-- Cthulhu sleeps for now <!-- in Ryleh -->
waiting to awake --> 
```

“Such a comment will be closed by the first occurring
--> ... and everything that follows will be treated as
markup.” —HTML Living Standard

waiting to awake --> will appear to users

Why use comments?

Notes for you & your co-workers

```
<!-- Solution found at http://www.granneman.com/webdev/coding/dtds/ -->
```

```
<!-- Do not edit below here -->
```

```
<!-- Google Analytics -->
```


Do not be cute & leave “funny” comments in your code

```
<!-- Stupid solution to satisfy the client's  
stupid request for a stupid feature -->
```

You *will* forget to remove them before your work goes live, someone *will* look at the code, & you *will* have some awkward 'splainin' to do



A beginning coder asked a developer, “What makes code bad?”

The developer replied,



A beginning coder asked a developer, “What makes code bad?”

The developer replied, “No comment.”

Editing

Remember, a webpage is just a text file that ends with `.html`

You can create & edit webpages using a variety of tools

Never use spaces in webpage folder or file names!

This is wrong: `contact info.html`

These are right:

- » `contactinfo.html`
- » `contactInfo.html`
- » `contact_info.html`
- » `contact-info.html` ← what most developers use



PRO TIP

Never capitalize webpage folder or file names!

Don't do this: `About-Us/Contact-Info.html`

Do this instead: `about-us/contact-info.html`

Why?

- » You won't have to remember when you capitalized & when you didn't
- » Consistency
- » It's what most developers do

Ways to create & edit websites, from oldest to newest

- » Text editor
- » WYSIWYG (*What You See Is What You Get*)
- » Template-based Content Management Systems

All are still useful & used

New technologies don't mean we stop using the old ones

When we started using cars, we didn't kill all the horses...



New technologies don't mean we stop using the old ones

When we started using cars, we didn't kill all the horses...

Text editor

Create & edit HTML (& CSS, & JavaScript) by hand

OPEN FILES

✖ Snowden Revelations Timeline.html

● index.html

```
1  <!DOCTYPE html>
2  <html>
3
4  <head>
5      <meta charset="utf-8">
6      <meta http-equiv="X-UA-Compatible" content="IE=edge">
7      <title>WebSanity's Terms & Conditions</title>
8      <meta name="viewport" content="width=device-width">
9      <meta name="description" content="WebSanity standard contract terms and conditions for
website development, CMS hosting services, and any related services that WebSanity
provides.">
10     <link rel="canonical" href="http://legal.websanity.com/">
11     <!-- Custom CSS -->
12     <link rel="stylesheet" href="/css/main.css">
13 </head>
14
15 <body>
16     <header class="site-header">
17         <div class="wrap">
18             <a class="site-title" href="/">WebSanity's Terms & Conditions</a>
19             <nav class="site-nav">
20                 <a href="#" class="menu-icon"> ☰
29             </a>
30             <div class="trigger">
31                 <a class="page-link" href="/feed.xml"></a>
32                 <a class="page-link" href="/changes/">Changes</a>
```


Allows for the most control, but can be tedious & error-prone

These problems can be somewhat mitigated by automation, but not fully



FORMATTING GUIDE

You could put your code on one line

```
<!DOCTYPE html><html><head><meta  
charset="utf-8"><title>The Call of Cthulhu</  
title></head><body><h1>A Story by H.P.  
Lovecraft</h1></body></html>
```

: Rendering engines wouldn't care

 : Hard to read! Hard to parse! Collaborators 
you!



FORMATTING GUIDE

You could break things up randomly

```
<!DOCTYPE html><html><head><meta  
charset="utf-8"><title>The  
Call of  
Cthulhu  
</title></head><body><h1>A Story  
by H.P. Lovecraft</h1>  
</body></html>
```



: Rendering engines wouldn't care



: Hard to read! Hard to parse! Collaborators 🙄 you!





FORMATTING GUIDE

You should indent (*nest*) your code

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <title>The Call of Cthulhu</title>
  </head>
  <body>
    <h1>A Story by H.P. Lovecraft</h1>
  </body>
</html>
```

: Rendering engines wouldn't care

 : Easy to read!
Easy to parse!
Collaborators ❤️
you!



FORMATTING GUIDE

Always *nest* (indent) your code!

You will learn the details as we go through the course



FORMATTING GUIDE

Sometimes nesting might seem a little excessive...



Stefán Jökull Sigurðarson - CCP Ghost rider

@stebets



Search Twitter



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Replying to [@benstein](#) and [@softwarejameson](#)



6:29 PM · Nov 3, 2021 · Twitter for iPhone

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Stefán Jökull Sigurðarson - CCP Ghost rider

@stebets



Search Twitter



Settings

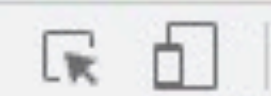
Replying to [@benstein](#) and [@softwarejameson](#)



6:29 PM · Nov 3, 2021 · Twitter for iPhone

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[Ads info](#) [More ...](#) © 2021 Twitter, Inc.


```
-ms flex align: stretch;  
-ms flex direction: column;  
-ms flex negative: 0;  
-ms flex preferred size: auto;  
-webkit align items: stretch;  
-webkit-box-align: stretch;  
-webkit-box-direction: normal;  
-webkit-box-orient: vertical;  
-webkit flex basis: auto;  
-webkit flex direction: column;  
-webkit flex shrink: 0;  
align-items: stretch;  
border: 0 solid black;  
box-sizing: border-box;  
display: webkit box;  
display: moz box;  
display: ms flexbox;  
display: webkit flex;  
display: flex;
```

Elements

Console

Sources

Network

Performance

Memory

Application

Security

Lighthouse

CSS Overview

8 2

1



... <div class="css-1dbjc4n r-eqz5dr r-16y2uox r-1wbh5a2"> flex == \$0

<div class="css-1dbjc4n r-16y2uox r-1wbh5a2 r-1ny4l3l"> flex

<div class="css-1dbjc4n"> flex

<div class="css-1dbjc4n">...</div> flex

<div class="css-1dbjc4n r-18u37iz r-15zivkp">...</div> flex

<div class="css-1dbjc4n"> flex

<div class="css-1dbjc4n r-4qtp9 r-plpxzi r-1s2b4r4">...</div>

<div class="css-1dbjc4n">...</div> flex

<div class="css-1dbjc4n"> flex

<div aria-labelledby="id__6p4534zy04q id__zi43ddw8vu" class="css-

<div class="css-1db

<div class="css-1d

<div class="css-

<div class="r-1

<div class="r-1

<div class="cs

<div class="

<div class="

<div class="

<div class="r-1adg3ll r-13qz1uu" style="padding-bottom

<div class="r-1p0dtai r-1pi2tsx r-1d2f490 r-u8s1d r-ip

<div style="height: 100%; position: relative; transfo

<div style="height: 100%; position: absolute; width

<div style="position: relative; width: 100%; heigh

<video preload="auto" playsinline aria-label="No

</div>

</div>

<div tabindex="0" class="css-1dbjc4n r-1p0dtai r-1d

</div>

</div>

</div>

37 levels of
nesting from
<body> to <video>

Styles Computed Layout >>

Filter :hov .cls +, <|

element.style {
}

.r-eqz5dr { <style>
-webkit-box-direction: normal;
-webkit-box-orient: vertical;
flex-direction: column;
}

.r-1wbh5a2 { <style>
flex-shrink: 1;
}

.r-16y2uox { <style>
-webkit-box-flex: 1;
flex-grow: 1;
}

.css-1dbjc4n { <style>
~~ms-flex-align: stretch;~~
~~ms-flex-direction: column;~~
~~ms-flex-negative: 0;~~
~~ms-flex-preferred-size: auto;~~
~~webkit-align-items: stretch;~~
~~webkit-box-align: stretch;~~
~~webkit-box-direction: normal;~~
~~webkit-box-orient: vertical;~~
~~webkit-flex-basis: auto;~~
~~webkit-flex-direction: column;~~
~~webkit-flex-shrink: 0;~~
align-items: stretch;
border: 0 solid black;
box-sizing: border-box;
display: webkit-box;
display: moz-box;
display: ms-flexbox;
display: webkit-flex;

WYSIWYG: *What You See Is What You Get*

“...a system in which editing software allows content to be edited in a form that resembles its appearance when printed or displayed as a finished product ... WYSIWYG implies the ability to directly manipulate the layout of a document without having to type or remember names of layout commands.” —Wikipedia

F1 Help. Push■JustOff. 99% Free. 0% Thru. Edit "work.doc"

The Quick Brown Fox Jumps Over The Lazy Dog

ⓈThis is some bold textⓈ

ⓈThis is some underlined textⓈ

PC-Write (1985) was not a
WYSIWYG

Ctrl+B or Alt+B toggles Bold

.R:letter sets font to setting
coded by Alt+letter
(e.g., .R:B for bold)

F1 Help. Push■JustOff. 99% Free. 0% Thru. Edit "work.doc"

The Quick Brown Fox Jumps Over The Lazy Dog

ⓈThis is some bold textⓈ

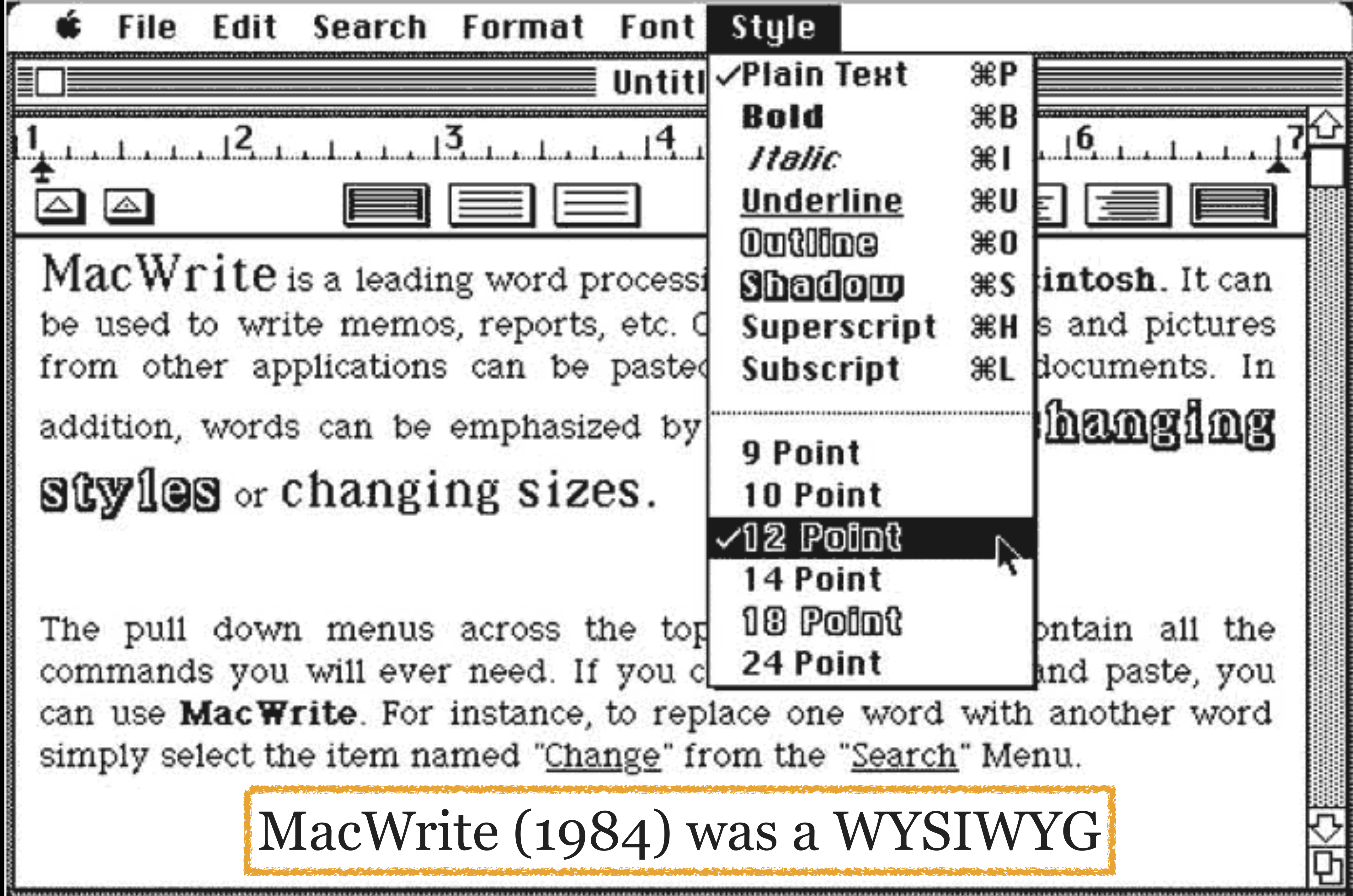
ⓈThis is some underlined textⓈ

These symbols don't print

PC-Write (1985) was not a WYSIWYG

Ctrl+B or Alt+B toggles Bold

.R:letter sets font to setting coded by Alt+letter (e.g., .R:B for bold)



MacWrite (1984) was a WYSIWYG

WYSIWYG webpage editors use a GUI (*Graphical User Interface*) to automatically generate HTML (often incorrect) that is hidden from user

Main WYSIWYG editors

- » ~~Adobe PageMill~~ Dreamweaver
- » ~~Microsoft FrontPage~~ Expression
- » ~~Nvu~~ ~~Kompozer~~ BlueGriffon



(no class)

Variable width

(no ARIA role)

[WebSanity's Terms & Co...](#)

1040px

The WebSanity content management system (CMS) features in-context editing, making it more “editor friendly” than many systems. It is open source, which delivers many benefits to clients, and utilizes the LAMP (Linux, Apache, MySQL, PHP) technology stack, which makes it standards-compliant and portable. It is browser-based and database-driven; it uses templates, HTML, XML, Cascading Style Sheets, and JavaScript. It provides managerial control of content, including copy, photos, and other site elements, and control of site structure, the site’s navigation system. |

Requirements for Using the CMS

The CMS enables site editing over the Internet, using a browser-based content editor. Editors need a browser that is compliant with current web standards, and cookies and JavaScript must be enabled.

Data Center Environment

WebSanity hosts websites in a small-group curated environment; we select, maintain, and monitor all CMS add-ons and support software, in contrast to a bulk hosting environment where you are responsible for everything. Client sites are hosted with the CMS, for ready access to upgrades and modifications. We host via Amazon's Website Services division and Linode, both of which are highly regarded for security and stability. In this manner WebSanity seeks to minimize service

Wysiwyg Source

```
<body> > <div .page-content> > <div .wrap> > <p>
```




Paragraph

(no ID)

(no class)

Variable width

(no ARIA role)

WebSanity's Terms & Co...

```
33 <div class="page-content">
34   <div class="wrap">
35     <p> The following are <a href="http://www.websanity.com">WebSanity</a>
36     standard contract terms and conditions for website development, CMS
37     hosting services, and any related services that WebSanity provides.
38     They are an integral part of any development proposal. </p>
39     <h2 id="cms-site-characteristics-and-capabilities">CMS Site
40     Characteristics and Capabilities</h2>
41     <p> The WebSanity content management system (CMS) features in-context
42     editing, making it more "editor friendly" than many systems. It is
43     open source, which delivers many benefits to clients, and utilizes the
44     LAMP (Linux, Apache, MySQL, PHP) technology stack, which makes it
45     standards-compliant and portable. It is browser-based and
46     database-driven; it uses templates, HTML, XML, Cascading Style Sheets,
47     and JavaScript. It provides managerial control of content, including
48     copy, photos, and other site elements, and control of site structure,
49     the site's navigation system. </p>
50     <h2 id="requirements-for-using-the-cms">Requirements for Using the CMS</h2>
51     <p> The CMS enables site editing over the Internet, using a
52     browser-based content editor. Editors need a browser that is compliant
53     with current web standards, and cookies and JavaScript must be
54     enabled. </p>
55     <h2 id="data-center-environment">Data Center Environment</h2>
56     <p> WebSanity hosts websites in a small-group curated environment; we
57     select, maintain, and monitor all CMS add-ons and support software, in
58     contrast to a bulk hosting environment where you are responsible for
59     everything. Client sites are hosted with the CMS, for ready access to
60     upgrades and modifications. We host via Amazon's Website Services
61     division and Linode, both of which are highly regarded for security
62     and stability. In this manner WebSanity seeks to minimize service
63     interruptions and provide a secure, stable environment for client
```

Wysiwyg

Source

Creating & editing websites using both text editors & WYSIWYGs share similar problems

- » Scalability
- » Maintainability

Scalability

With both solutions, a website of 1000 pages is just that: 1000 HTML pages

Change the logo's location? Change the background color? Alter the footer's text?

You have to change 1000 pages

Maintainability

Specialized technical knowledge is required to edit & maintain the website 🧐

A template-based *Content Management System* solves
both scalability & maintainability

With a CMS, all content—templates, text, images, scripts—is stored & managed in a database

Need to make a change?

Do it once, to the item in the database, & it's fixed for the entire site

A good CMS also makes it easy for non-technical users to edit the website by incorporating a WYSIWYG editor into the website

WebSanity uses Concrete CMS

WordPress is another very popular CMS (which is used inappropriately on way, way, *way* too many websites)

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[Home](#) ► [Animals](#) ► [About the Animals](#) ► [Mammals](#) ► [Elephants](#)

Asian Elephant

ANIMALS



Geographical Range India, Sri Lanka, Southeast Asia

Habitat Scrub forests, adjoining grasslands, jungles where remaining

Scientific Name *Elephas maximus*

Conservation Status Endangered

Elephants and Us

Asian elephants have long been important to humans. Whether it's their key role in the Hindu religion and culture, their longstanding use as beasts of burden, their slaughter for the ivory trade, or their current conflicts with the exploding human population -- elephants have always fascinated us.

Elephants have been domesticated in Asia for centuries, bred to move people and cargo. In the past, wealthy Indians and royalty owned elephants, riding on

World Elephant Day

Tuesday, August 12, 2014
Activities at River's Edge
10 a.m. to 3 p.m.

World Elephant Day is celebrated across the globe every year and is designed to bring attention to the plight of elephants in the wild.

Stop by the elephant habitats at River's Edge to meet the Zoo's three-generation family of Asian elephants, talk with keepers, see and touch elephant biofacts, learn about elephants through family activities and take home a souvenir.

[Edit](#)

Powered by concrete5.

[Dashboard](#)[Sign Out](#) 

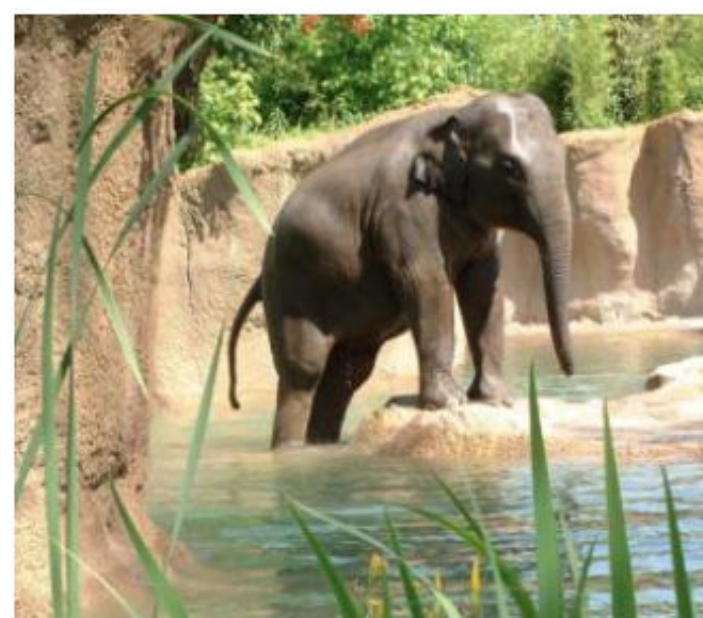
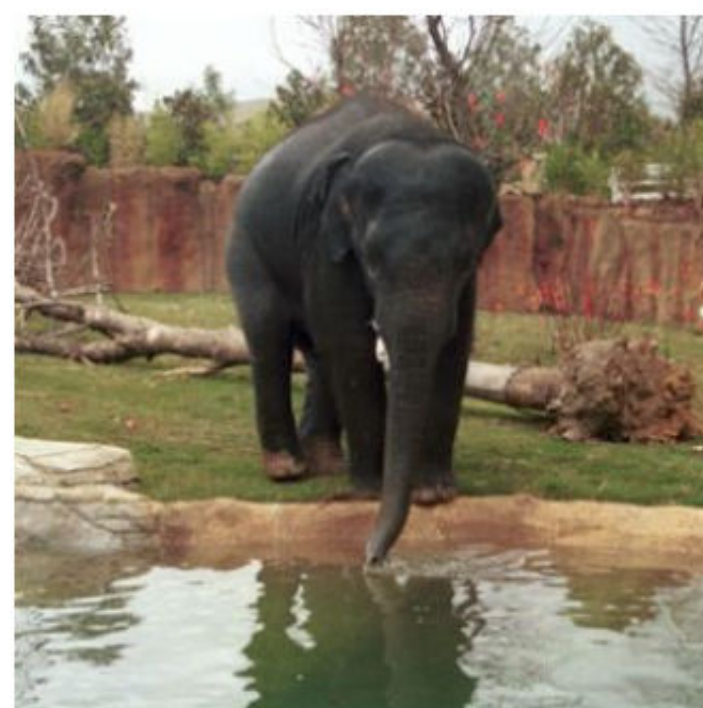
Saint Louis Zoo

Animals Always®

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World Elephant Day

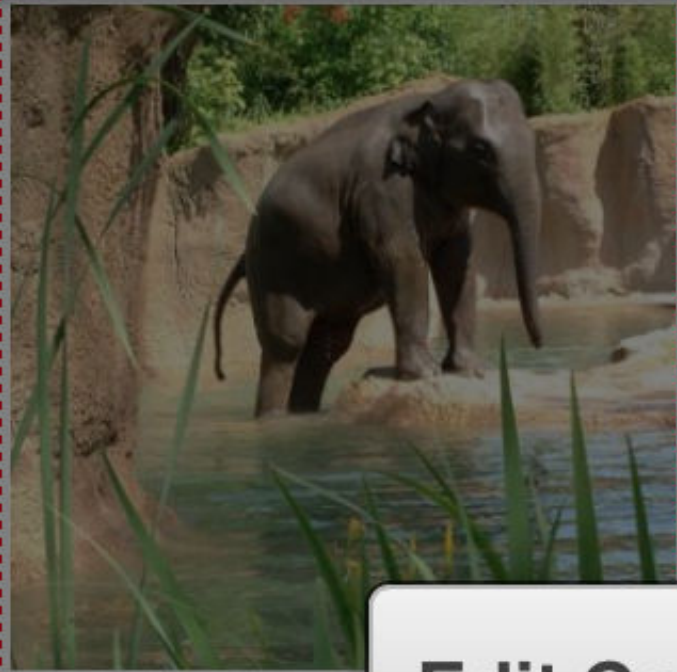
Tuesday, August 12, 2014

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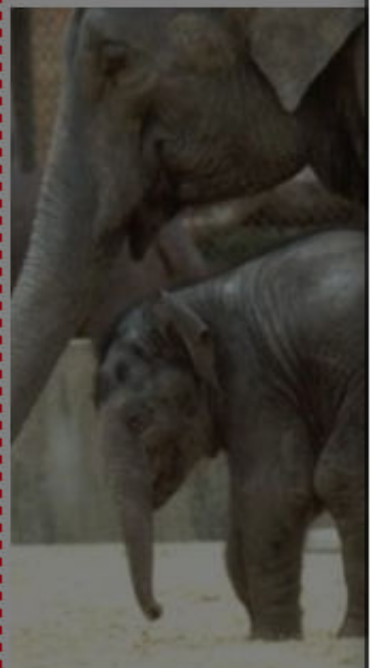
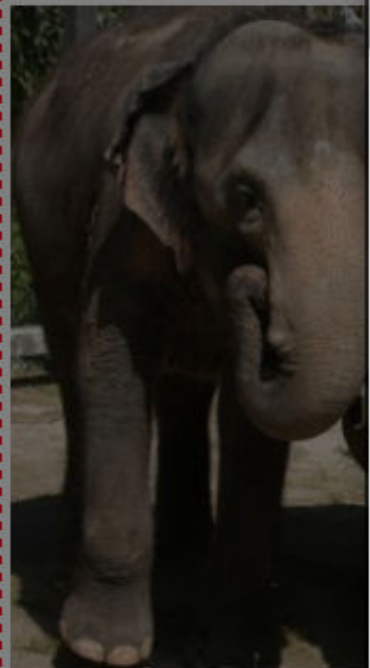
Elephants and Us

Asian elephants have long been important to humans. Whether it's their key role in the Hindu religion and culture, their longstanding use as beasts of

the plight of elephants in the wild.

Stop by the elephant habitats at River's Edge to meet the Zoo's three-generation family of Asian elephants, talk with keepers, see

much elephant biofacts, about elephants through activities and take home a



Edit Content

Link to File Link to Page Use the **Image Block** to insert images!

B *I* ^{x²} _{x₂} Styles                                                          

Elephants and Us

Asian elephants have long been important to humans. Whether it's their key role in the Hindu religion and culture, their longstanding use as beasts of burden, their slaughter for the ivory trade, or their current conflicts with the exploding human population -- elephants have always fascinated us.

Elephants have been domesticated in Asia for centuries, bred to move people and cargo. In the past, wealthy Indians and royalty owned elephants, riding on their elaborately decorated backs on hunting trips into the bush. Because they are intelligent and docile (when well treated), they have been widely used in the lumber industry to haul heavy items such as teak logs.

Path: h2

Cancel

Save

Jans creates the templates using Visual Studio Code, a text editor

Clients edit content using a WYSIWYG

Everything is managed by a CMS & stored in a database

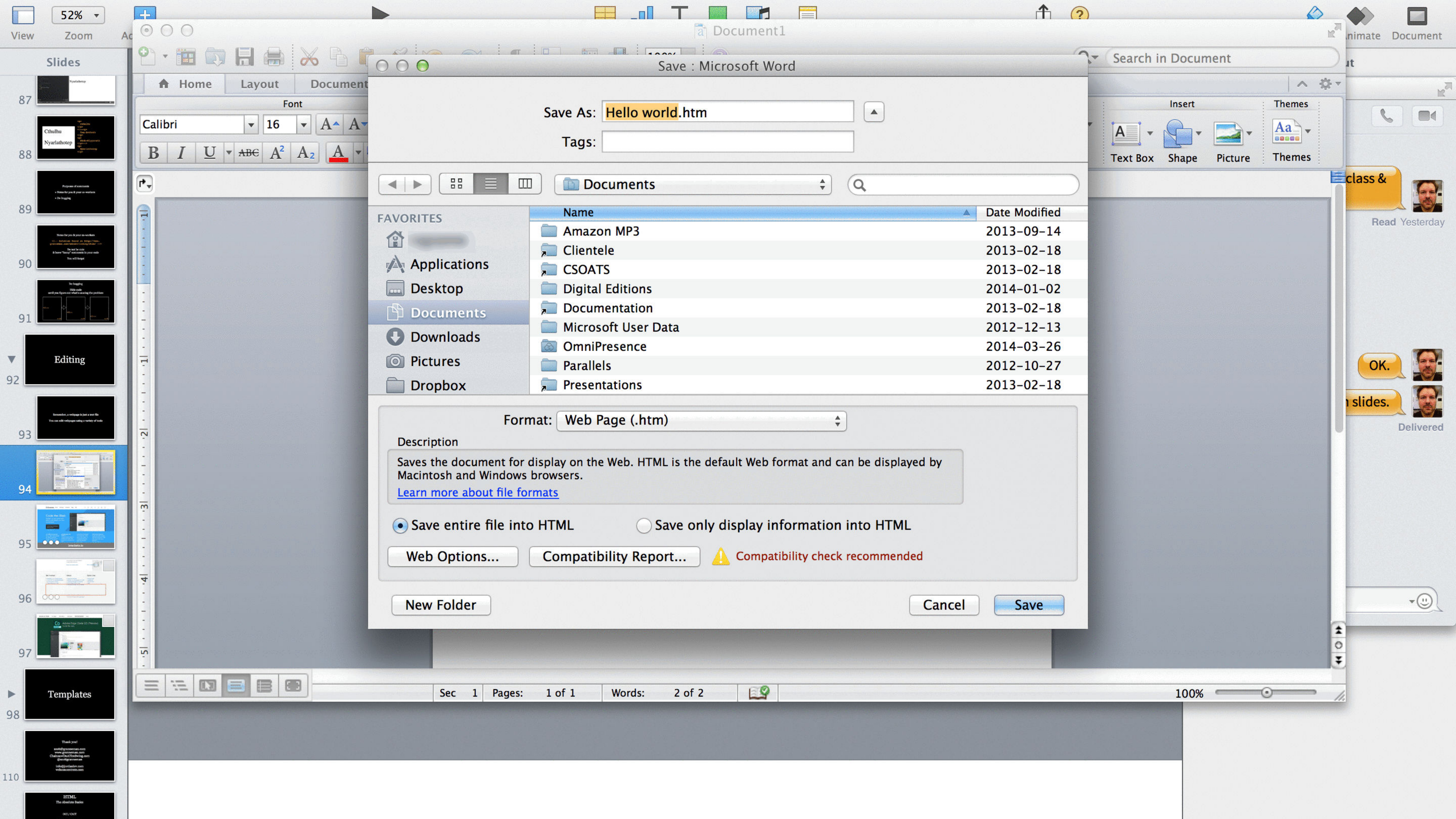
So what do professionals use to develop webpages?

Do *not* use Word



Do *not* use Word





The screenshot shows a Mac OS X desktop environment. A Finder window titled "Word to HTML" is open, displaying a folder named "Hello world_files" containing three files: "filelist.xml" (165 bytes, XML), "themedata.xml" (3 KB, XML), and "Hello world.htm" (22 KB, HTML). The "Hello world.htm" file is selected. A file information popup is open for "Hello world.htm", showing details such as "Kind: HTML document", "Size: 21831 bytes (25 KB on disk)", "Where: /Users/rsgranne/Desktop/Word to HTML", "Created: Today, 9:48 AM", and "Modified: Today, 9:48 AM". The popup also includes sections for "Add Tags...", "General", "More Info", "Name & Extension", and "Comments". The background shows a sidebar with various locations like "All My Files", "AirDrop", "Applications", "Desktop", "Documents", "Downloads", "Pictures", "Dropbox", "Chainsaw", "Inbox", "WebSanity Share", and "Git". The status bar at the bottom indicates "1 of 4 selected, 56.81 GB available".

Working Files



Hello world.htm

Word to HTML ▾

▾ Hello world_files

filelist.xml

themedata.xml

Hello world.htm

```
1 <html xmlns:o="urn:schemas-microsoft-com:office:office"
2   xmlns:w="urn:schemas-microsoft-com:office:word"
3   xmlns:m="http://schemas.microsoft.com/office/2004/12/omml"
4   xmlns="http://www.w3.org/TR/REC-html40">
5
6 <head>
7   <meta name=Title content="">
8   <meta name=Keywords content="">
9   <meta http-equiv=Content-Type content="text/html; charset=macintosh">
10  <meta name=ProgId content=Word.Document>
11  <meta name=Generator content="Microsoft Word 14">
12  <meta name=Originator content="Microsoft Word 14">
13  <link rel=File-List href="Hello%20world_files/filelist.xml">
14  <!--[if gte mso 9]><xml>
15    <o:DocumentProperties>
16      <o:Author>Scott Granneman</o:Author>
17      <o:LastAuthor>Scott Granneman</o:LastAuthor>
18      <o:Revision>1</o:Revision>
19      <o:TotalTime>3</o:TotalTime>
20      <o:Created>2014-04-17T14:34:00Z</o:Created>
21      <o:LastSaved>2014-04-17T14:48:00Z</o:LastSaved>
22      <o:Pages>1</o:Pages>
23      <o:Words>1</o:Words>
24      <o:Characters>12</o:Characters>
25      <o:Company>Washington University in St. Louis</o:Company>
26      <o:Lines>1</o:Lines>
27      <o:Paragraphs>1</o:Paragraphs>
28      <o:CharactersWithSpaces>12</o:CharactersWithSpaces>
```



Working Files

• Hello world.htm

Word to HTML ▾

▼ Hello world_files

filelist.xml

themedata.xml

Hello world.htm

```
435 mso-style-parent:"";
436 mso-padding-alt:0in 5.4pt 0in 5.4pt;
437 mso-para-margin:0in;
438 mso-para-margin-bottom:.0001pt;
439 mso-pagination:widow-orphan;
440 font-size:12.0pt;
441 font-family:Cambria;
442 mso-ascii-font-family:Cambria;
443 mso-ascii-theme-font:minor-latin;
444 mso-hansi-font-family:Cambria;
445 mso-hansi-theme-font:minor-latin;}
446 </style>
447 <![endif]-->
448 </head>
```

449

```
450 ▼<body bgcolor=white lang=EN-US style='tab-interval:.5in'>
451
452 ▼<div class=WordSection1>
453
454 ▼<p class=MsoNormal><span style='font-size:16.0pt;font-family:Calibri'>Hello
455 world!<o:p></o:p></span></p>
456
457 </div>
458
459 </body>
460
461 </html>
```



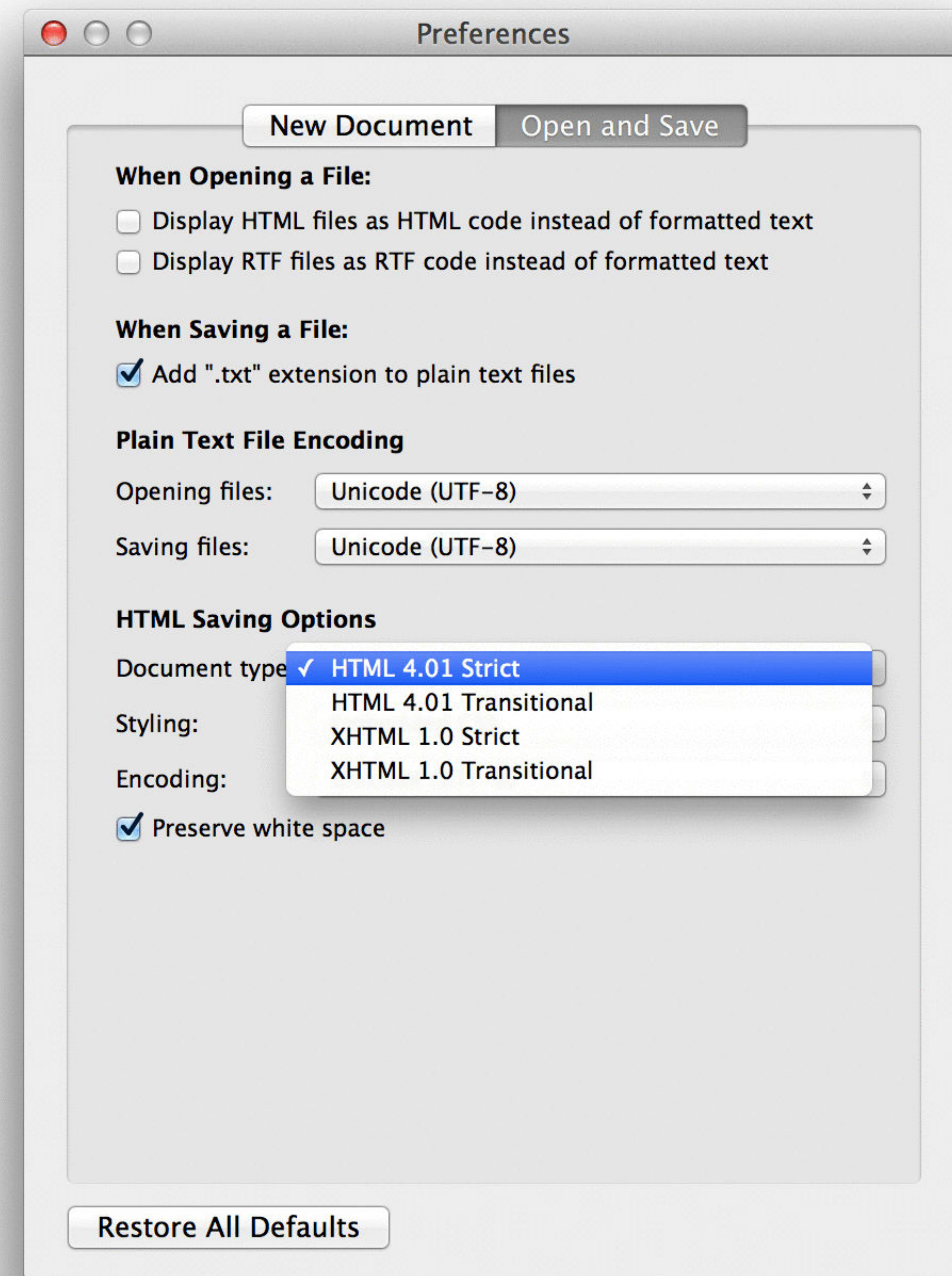

File Edit Format View Help

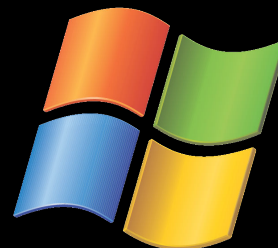
Sample document|

Do not use Notepad on Windows

There are *many* better options
(& it just sucks in general)

Do not use TextEdit on macOS
It's actually an RTF editor
Still doesn't support HTML5!





Version 1.69 is now available! Read about the new features and fixes from June.

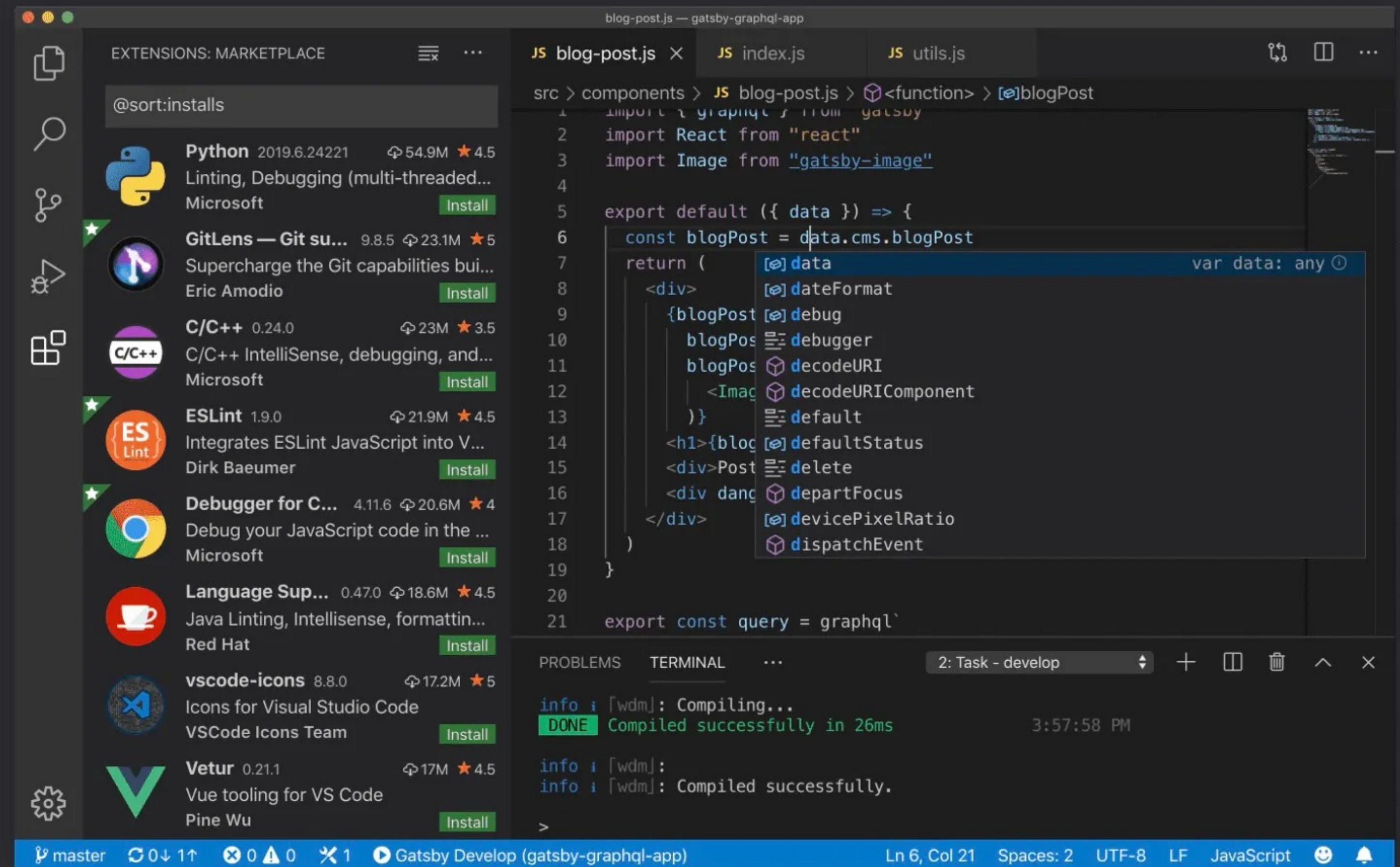
Code editing. Redefined.

Free. Built on open source. Runs everywhere.

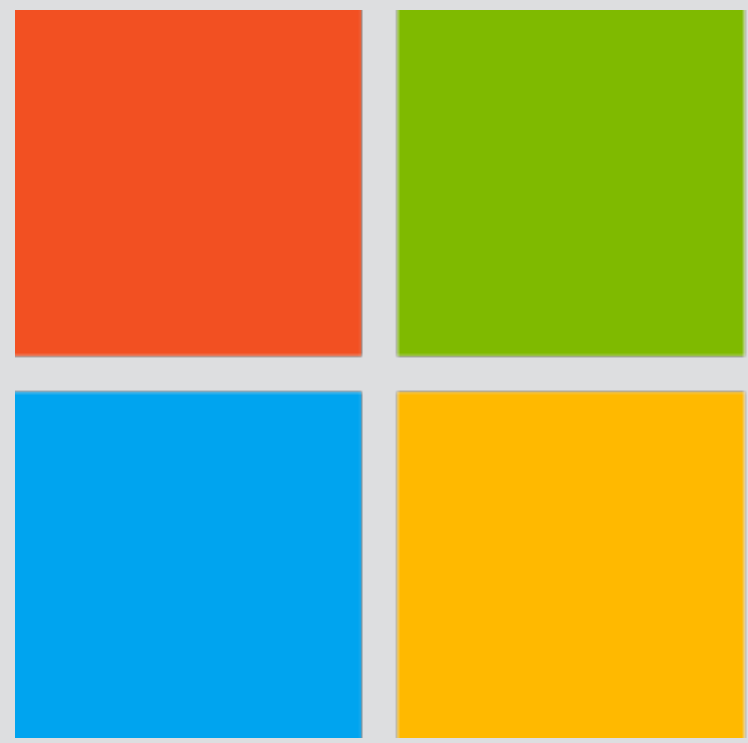
Download Mac Universal
Stable Build

Web, Insiders edition, or other platforms

By using VS Code, you agree to its
license and privacy statement.



code.visualstudio.com



Microsoft



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Pull requests Issues Marketplace Explore



Microsoft / **vscode**

Watch

2,418

★ Unstar

57,697

Fork

7,458

<> Code

Issues 5,000+

Pull requests 152

Wiki

Insights

Branch: master

vscode / LICENSE.txt

Find file

Copy path



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- ✗ Warranty

Conditions

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joaomoreno fix line endings

12ab70d on Mar 5



3 contributors

24 lines (18 sloc) | 1.08 KB

Raw

Blame

History



1 MIT License

2

3 Copyright (c) 2015 – present Microsoft Corporation



Search or jump to...



Pull requests

Issues

Marketplace

Explore



Microsoft / **vscode**

Watch

2,418

★ Unstar

57,697

Fork

7,458

<> Code

Branch: master



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✓ Distribution

✗ Warranty

copyright notice

Permissions

- ✓ Commercial use
- ✓ Modification
- ✓ Distribution
- ✓ Private use

Limitations

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Conditions

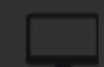
- ⓘ License and copyright notice

24 lines (18 sloc) | 1.08 KB

Raw

Blame

History



1 MIT License

2

3 Copyright (c) 2015 – present Microsoft Corporation

Common features found in VS Code

- » Cross-platform
- » Project-based
- » Syntax highlighting
- » Robust find & replace, with regex
- » Linting & debugging
- » Autocompletion
- » LESS & SCSS (CSS preprocessor) support
- » Multiple cursors & selections
- » Inline help

If VS Code doesn't do something you want it to do, you can probably find it in an *extension*—an add-on that extends the capability of VS Code

EXTEN...

Search Extensions in ...

Auto Close Tag

2ms

Automatically add HTML...

Jun Han

AutoComplate shell

AutoComplate shell script

truman

Better Align

Align code without selec...

wwm

Code Spell Che...

19ms

Spel...cker for sou...

1

Software...

Color Picker

Helper with GUI to gene...

anseki

Cron Explained

8ms

Translate cron-like sche...

tumido

CSS Flexbox Ch...

4ms

Open a flexbox cheatsh...

Dzhavat Ushev

CSS Grid Snippets

index.html 9+

Settings

main.css 2

index.html > html > body > main > blockquote > p

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

<h2>Testimonials</h2>

<h3>The Moore Family</h3>

<blockquote>

<p>

"It looks even better than I imagined. You did everything that you stated you would do, when you stated you would do it, and went above and beyond to ensure the job was perfect. I am very grateful for your honesty, integrity, and skills. And that the wild Shoggoths only ate one of our dogs."

</p>

</blockquote>

<h3>The Jones Family</h3>

<blockquote>

<p>

"We couldn't be any more pleased with the appearance and workmanship of the job you completed for us. It all integrates so well that one person didn't notice we had landscaping recently done; they thought it had been there the whole time! Then they noticed the tentacles..."

</p>

</blockquote>

<h3>The Granneman Family</h3>

<blockquote>

<p>

"Amazing job! Our yard was covered in Poison Ivy, Nightshade, and other poisonous and/or deadly plants, and now it's safe enough to hold our weekly baby fights out there! Everyone is much happier us

Ln 34, Col 13

Spaces: 2

UTF-8



LF

HTML



EXTENSIONS: M...    ... Extension: rust-analyzer

rust





rust-analyzer  1.6M ★ 5
Rust language support for ...
The Rust Prog... [Install](#) 





rust  21K
extensions for rust
1YiB [Install](#) 





Rust Syntax  234K ★ 5
Improved Rust syntax highl...
Dusty Pomerleau [Install](#) 




Rust Extensi...  162K ★ 4
Extension Pack for Rust
Swellaby [Install](#) 



Rust Doc Vie...  107K ★ 5
View locally generated rust...
JSearcy [Install](#) 



anycode-rust  67K
Rust for Anycode
Microsoft [Install](#) 

r.

rust-analyzer v0.3.1451

The Rust Programming Language  [rust-lang.org](#) 

Rust language support for Visual Studio Code

[Install](#) 

DETAILS

FEATURE CONTRIBUTIONS

rust-analyzer

This extension provides support for the [Rust programming language](#). It is recommended over and replaces `rust-lang.rust`.

Features

- [code completion](#) with imports insertion
- go to [definition](#), [implementation](#), [type definition](#)
- [find all references](#), [workspace symbol search](#),

Categories

















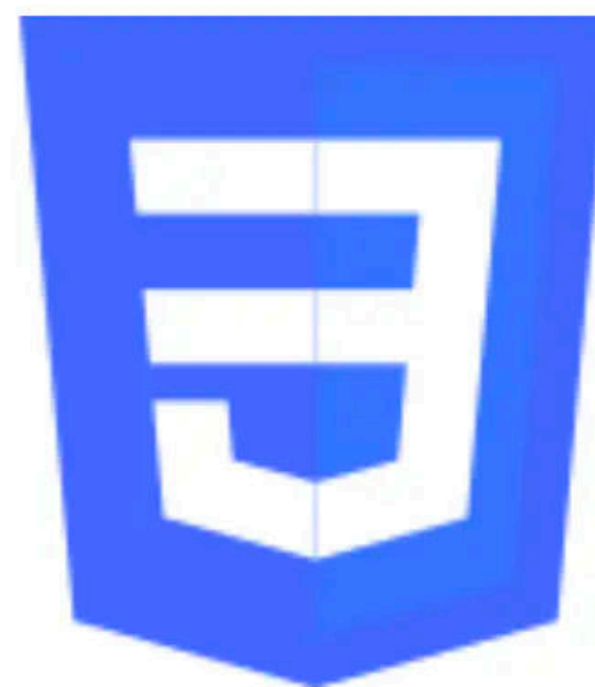

[Programming Languages](#)

Extension Resources

[Marketplace](#)[Repository](#)[License](#)[The Rust Programmi...](#)

EXTENSIONS: M...    ... Extension: HTML CSS Support

CSS

 **HTML CSS ...**  14.2M  3.5
CSS Intellisense for HTML
ecmel [Install](#)  **CSS Peek**  4.1M  3.5
Allow peeking to css ID an...
 Pranay Prakash [Install](#)  **IntelliSense for C...**  49ms
CSS class name completio...
Zignd  **JS-CSS-HT...**  3.4M  1.5
Format ,prettify and beauti...
lonefy [Install](#)   **Tailwind CSS IntelliSense**
Intelligent Tailwind CSS to...
 Tailwind Labs  **CSS Format...**  1.4M  4.5
Formatter for CSS
Martin Aeschlim... [Install](#) 

HTML CSS Support v1.13.1

ecmel |  14,277,447 |      (96) |  Spc

CSS Intellisense for HTML

[Install](#)  [DETAILS](#)[FEATURE CONTRIBUTIONS](#)[CHANGELOG](#)

Visual Studio Code CSS Intellisense for HTML

HTML **id** and **class** attribute completion for Visual Studio Code.

Features

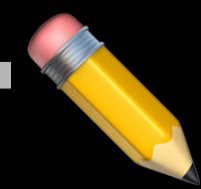
- HTML **id** and **class** attribute completion
- Supports linked and embedded style sheets.
- Supports template inheritance

Categories

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Languages](#)

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ecmel



SIDE NOTE

Electron combines the Chromium rendering engine blink with node.js to make it easy for developers to create desktop apps for macOS, Windows, & Linux using HTML, CSS, & JavaScript

A lot of cross-platform apps are built using Electron, e.g., Atom, Bitwarden, Discord, GitKraken, Microsoft Teams, Notion, Signal, Skype, Slack, TIDAL, Wire, & many others

Main complaint: slower than native apps

Visual Studio Code has a lot of great aspects

Updated every month

Good documentation

Supports almost any development language, but aimed at Web developers

Very performant

Start Coding

Search Pens

Challenges

Spark

CodePen PRO



The best place to build, test, and discover front- end code.

CodePen is a **social development environment** for front-end designers and developers. Build and deploy a website, show off your work, build test cases to learn and debug, and find inspiration.

Sign Up for Free

HTML

```
<div class="rect"></div>
```

SCSS

```
.rect {  
  background: linear-gradient  
    -119deg,  
    $gray 0%,  
    $dark-gray 100%); |
```

JS

```
var colors =  
["#74B087", "#DE7300", "#74B087"];  
  
function animate() {};
```



codepen.io/websanity/

Search Pens

Challenges

Spark

CodePen PRO

@websanity



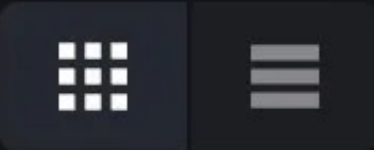
www.websanity.com

23 Followers 0 Following + Follow

St Louis

Pens Collections

Showcase Popular All Pens Templates Forked Loved Tags



Title	Created	Last Updated	Stats			
Sandbox: table styles	May 15, 2014	May 15, 2014	♥ 15	💬 0	👁 24,293	⋮
Simple Responsive 2-Column Table	March 28, 2016	December 14, 2017	♥ 2	💬 0	👁 5,518	⋮
CSS: display:list-item	May 6, 2014	August 4, 2014	♥ 0	💬 0	👁 4,395	⋮
SCSS: Multiplication arithmetic operation with varia...	January 24, 2016	January 25, 2016	♥ 0	💬 0	👁 4,237	⋮
CSS: display:inline-table	May 14, 2014	August 4, 2014	♥ 0	💬 0	👁 3,295	⋮

CodePen is like YouTube for developers

Developers publish their work so others can view & learn

All open source

If you're serious about Web dev, you should create a free account at CodePen & learn how to use it


```
HTML
whether they danced often upon
Lerion; but the farmer and his
wife would only make the Elder
Sign and tell him the way to
Nir and Ulthar.
3 </p>
4 
5 <p>
6 At noon he walked through the
one broad high street of Nir,
which he had once visited and
which marked his farthest
former travels in this
direction; and soon afterward
```

```
* CSS
1 img {
2 float: left;
3 margin: .4em .5em .5em 0;
4 }
5
JS
```

crept through the grass behind. At another house, where people were stirring, he asked questions about the gods, and whether they danced often upon Lerion; but the farmer and his wife would only make the Elder Sign and tell him the way to Nir and Ulthar.



At noon he walked through the one broad high street of Nir, which he had once visited and which marked his farthest former travels in this direction; and soon afterward he came to the great stone bridge across the Skai, into whose central piece the masons had sealed a living human sacrifice when they built it thirteen-hundred years before. Once on the other side, the frequent presence of cats (who all arched their backs at the trailing Zoogs) revealed the near neighborhood of Ulthar; for in Ulthar, according to an ancient and significant law, no man may kill a cat. Very pleasant were the suburbs of Ulthar, with their little green cottages and neatly fenced farms; and still pleasanter was the quaint town itself, with its old peaked roofs and overhanging upper stories and numberless chimney-pots and narrow hill streets where one can see old cobbles whenever the graceful cats afford space enough. Carter, the cats being somewhat dispersed by the half-seen Zoogs, picked his way directly to the modest Temple of the



HTML

```
1 <canvas id=c></canvas>
2 <div id=stats><span
  id=score>0</span><span
  id=outOf>0</span></div>
3 <div id=rules>Click anywhere to make an
  explosion. If any of the squares will
  bump into your explosion they'll explode
```

CSS

```
1 canvas{
2   position:absolute;
3   top:0px; left:0px;
4 }
5 #stats{
6   color:white;
7   background-color:rgba(255, 255, 255,
```

JS

```
1 var w=window.innerWidth,
2     h=window.innerHeight,
3     amount=((w*h)/10000)|0;
4 outOf.textContent=amount+1;
5 c.width=w;
6 c.height=h;
7 var ctx=c.getContext('2d');
```

27/47





Slides

granneman.com/downloads/web-dev/Web-Dev-Intro-for-Students.pdf

chnsa.ws/web-dev-intro-stu-slides



Notes

granneman.com/downloads/web-dev/Web-Dev-Intro-for-Students.txt

chnsa.ws/web-dev-intro-stu-notes



All of my presentations

granneman.com/presentations/all-presentations

chnsa.ws/all-presentations

Thank you!

scott@granneman.com

www.granneman.com

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@scottgranneman

jans@websanity.com

websanity.com

Web Development Intro for Students

The Absolute Basics

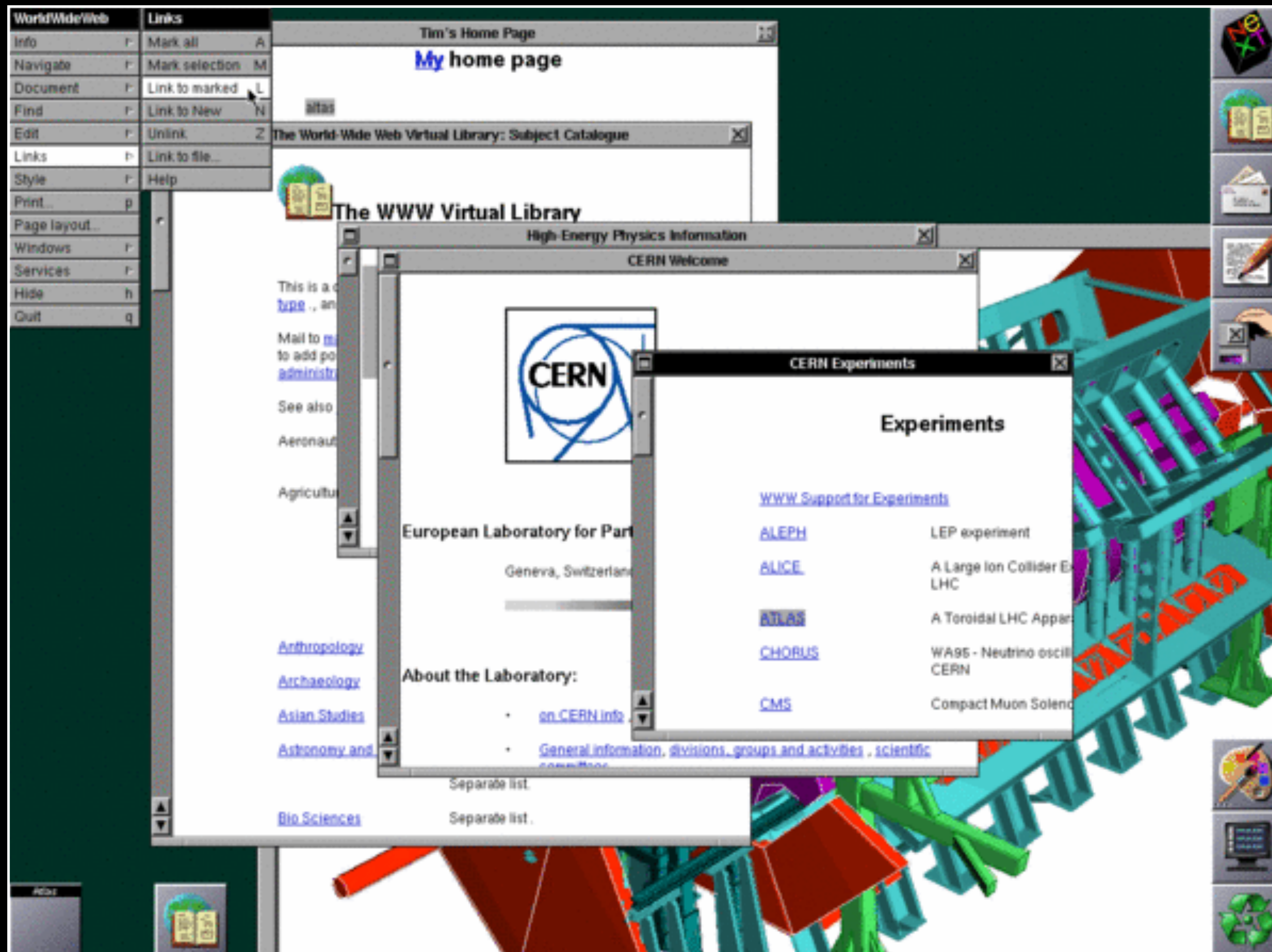
R. Scott Granneman & Jans Carton

© 2010 R. Scott Granneman • v3.20 2025-03-20 • Licensed CC BY-SA 4.0

Bonus

History

AOL Explorer • Arena • Arora • Avant • AWeb •
BlackBerry Browser • Camino • Canary • Cello • Chrome
• Chromium • Cruz • Dolphin • ELinks • Epiphany •
Firebird • Firefox • Flock • Galeon • HotJava • iCab •
Internet Explorer • K-Meleon • Konqueror • Links •
Lunascape • Lynx • Maxthon • Mercury • Minimo • Miro
• Mosaic • Navigator • NetPositive • Netscape •
OmniWeb • Opera • Phoenix • PocketWeb • ReKonq •
RockMelt • Safari • SeaMonkey • Shiira • Sleipner •
Stainless • Sunrise • Teashark • Tor Browser • UdiWWW
• Viola • WebExplorer • WebKit • WorldWideWeb • w3m



1990: WorldWideWeb, the 1st GUI Web browser

Main Page

From Wikipedia, the free encyclopedia.

Welcome[1] to Wikipedia[2], a free-content[3] encyclopedia in many languages[4]. In this English edition, started in January 2001, we are working on 396548 articles[5]. Visit our Community Portal[6] to find out how you can edit any article[7], or experiment in the sandbox[8].[9] (http://en.wikipedia.org/wiki.php?title=Main_Page&action=purge)

Other languages[10]

Sister projects[11]

No tables[12]

FAQ[13]

Browse[14]: Culture[15] | Geography[16] | History[17] | Life[18]

| Mathematics[19] | Science[20] | Society[21] | Technology[22]

1-260, Top, Up, Bottom, Down or <RETURN> for more,

Quit, or Help: █

1991: CERN line-mode browser, the 1st text-only Web browser


```
Terminal — lynx — 100x40
#<<< Scott Granneman's Classes (p1 of 11)
#Scott Granneman's Classes RSS Feed Scott Granneman's Classes Atom Feed Scott Granneman's
Classes » Home Comments Feed Scott Granneman's Classes

* Home
* About
* Syllabi
  + Technology in Our Changing Society Syllabus
  + Web Site Management Syllabus
  + Technology and the Law Syllabus
  + Using Everyday Technology Syllabus
  + From Blogs to Wikis Syllabus
  + Technology for Managers Syllabus
  + Practical Security Syllabus
  + Search Engines Syllabus
  + Historical Syllabi

Scott Granneman's Classes

Scott Granneman's Classes

Syllabi, Readings, and Research
CommentsPosts

Tags & Categories

* Abandoned Purchases
* Absurdity
* Addiction
* Advertising
* Advice
* Aggregation
* Amazon
(NORMAL LINK) Use right-arrow or <return> to activate.
Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list
```

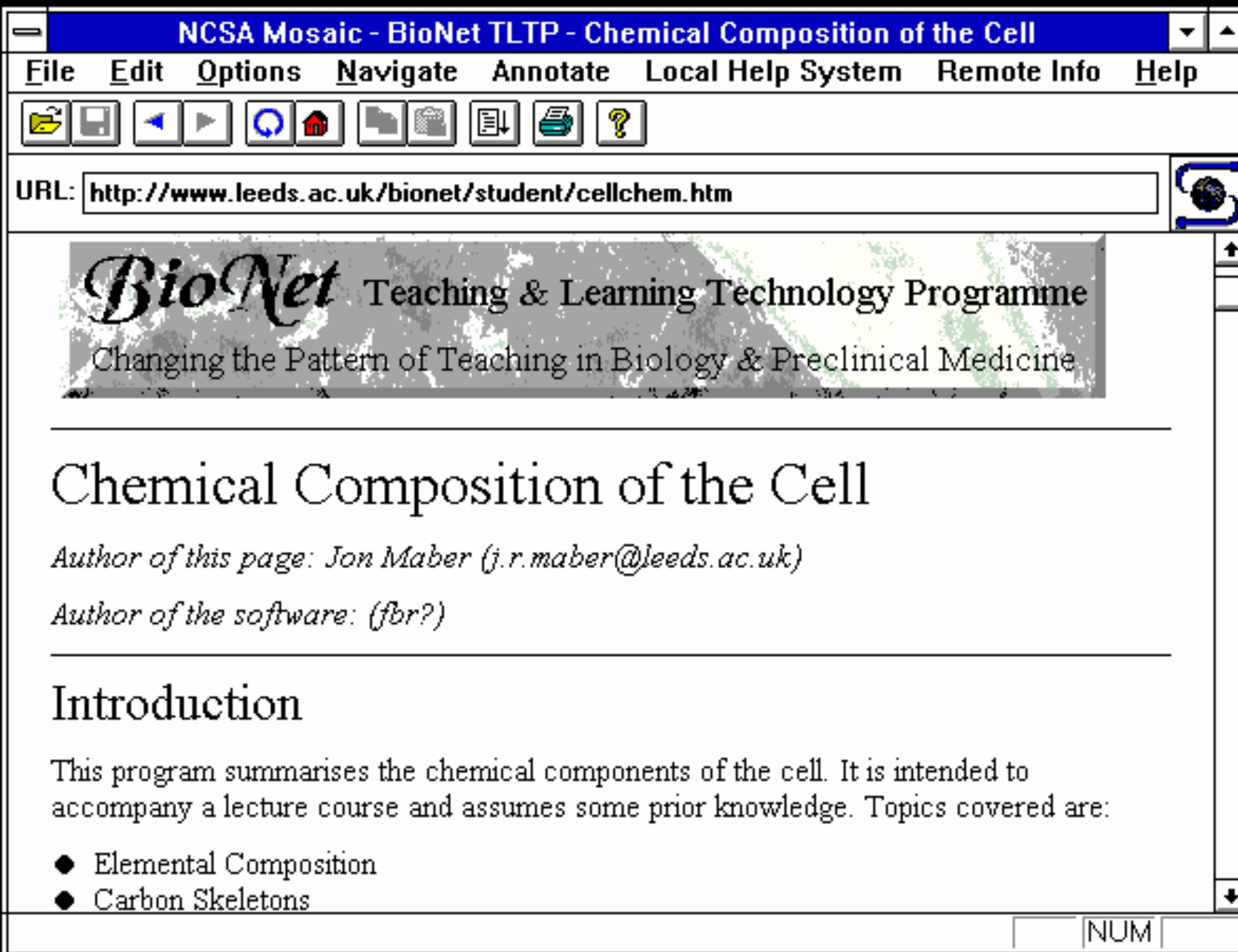
1992: Lynx, the oldest browser still in use & developed



Late 1992: Marc Andreessen, a computer science undergrad at University of Illinois at Urbana–Champaign, develops the Mosaic browser along with Eric Bina while working at the NCSA (*National Center for Super-computing Applications*)



1993: Tim Berners-Lee convinces CERN to release the World Wide Web (idea & code) into the public domain



1993: NCSA
Mosaic makes
the Web popular
& introduces
lots of still-
common
features

1994: Jim Clark & Marc Andreessen...

- » found Mosaic Communications Corporation
- » release 1st beta of Mosaic Netscape (\$99 for businesses, free for individuals)
- » rename company to Netscape Communications



... & release
Netscape
Navigator 1.0
for Windows,
Mac OS, Linux,
OS/2, Solaris,
BSD, IRIX, AIX,
& HP-UX

August 1995: Netscape's IPO begins dot-com boom of the late 1990s

90% market share for Netscape Navigator

1994: Windows 95 still in development, with no Web browser planned

Early 1995: Microsoft licenses Spyglass (which was acting as a licensor for NCSA Mosaic) & re-names it *Internet Explorer*

Microsoft was to pay Spyglass a quarterly fee + a % of revenues Microsoft received from selling IE





For Windows 95-BASED PCs WITH 486 OR PENTIUM PROCESSORS

Microsoft

Have a Great-Looking, Self-Tuning PC!

Surf the
Internet for
20 hours at
no charge.

(See details on back.)

Microsoft
Plus!

Companion for Windows 95

June 1995: Microsoft still plans to include IE separately from Windows 95, as part of “Microsoft Plus! Companion for Windows 95”

Late June 1995: Microsoft sees Netscape as a threat & decides to give away IE for free & bundle IE with Windows

Since Microsoft gave IE away freely, Spyglass ended up making around \$400,000

Spyglass sued in 1997 & Microsoft settled for \$8 million

Microsoft changes license to PC OEMs

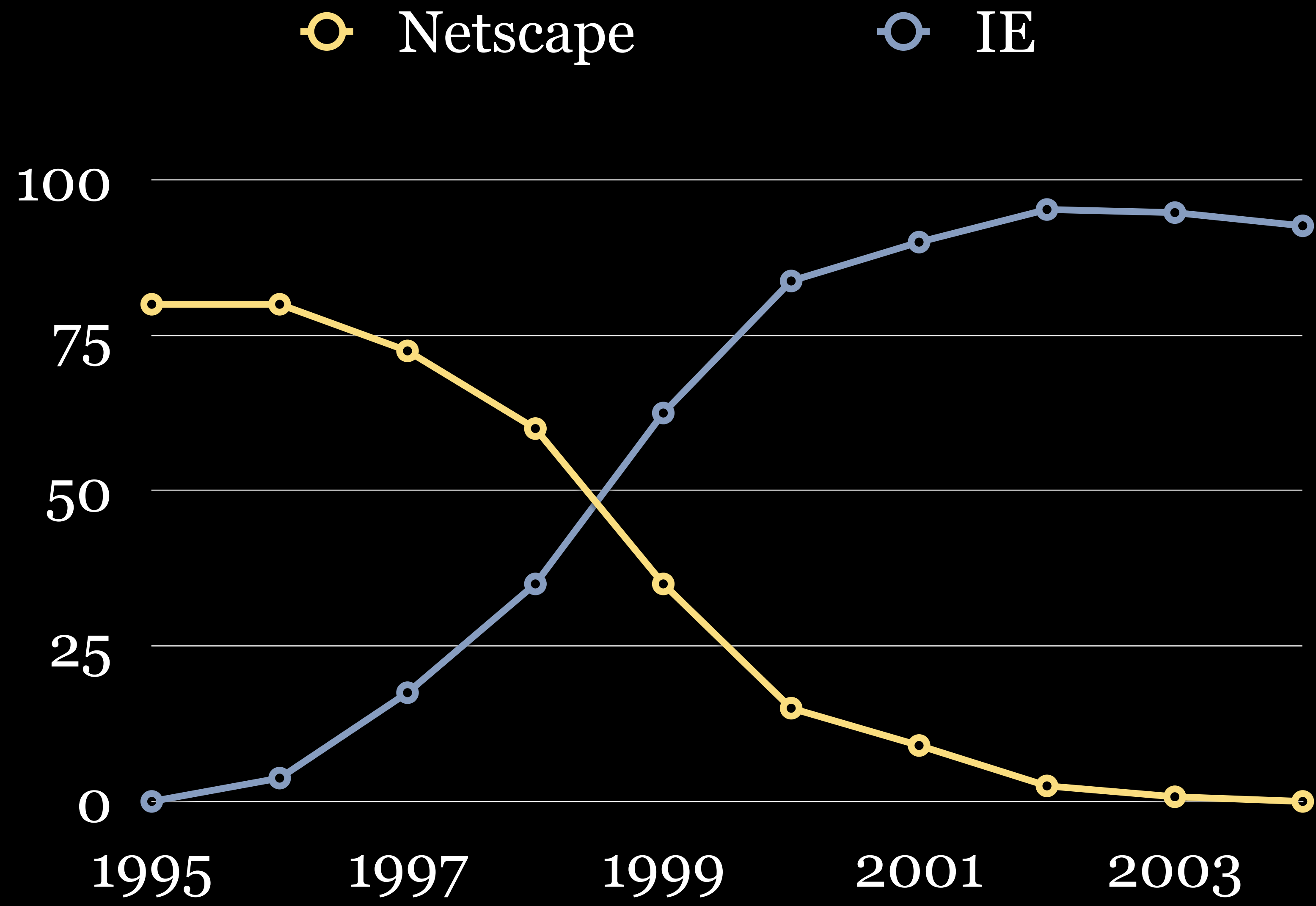
- » Can't remove IE from desktop or Start menu
- » Can't give consumers choice of 3rd party browsers

If they don't obey Microsoft, it will revoke their Windows license

If they complain, Microsoft charges them more



August 1995:
Windows 95
ships with
Internet
Explorer 1.0





mozilla.org

January 1998: Netscape open sources its browser code as the Mozilla Project

- **The Mozilla Organization**

- [Our Mission](#)
- [Who We Are](#)
- [Getting Involved](#)
- [Community](#)
- [Editorials](#)
- [What's New](#)

- **[Development](#)**

- [Roadmap](#)
- [Module Owners](#)
- [Blue Sky](#)
- [Projects](#)
- [Status](#)
- [Tools](#)



Developers around the world are invited to collaborate on a new & better browser



IE stagnated once Microsoft “won” the browser wars

IE Version	Release Date
1	August 1995
2	November 1995
3	August 1996
4	October 1997
5	March 1999
5.5	July 2000
6	October 2001
7	October 2006

IE 1: 6 programmers at Microsoft

IE 3: 100 programmers

IE 5: 1,000 programmers

After IE 6 came out, what was the number of full-time programmers working on IE at Microsoft?

0

7 May 2003: Microsoft announces that “there will be no future standalone installations. IE6 SP1 is the final standalone installation.”



To update IE, you will need to buy the new version of Windows



June 16, 2003: Microsoft
cancels IE for Mac

Apple – Safari

http://www.apple.com/safari/ Google

Dev. Resources Mac Stuff News Entertainment Food & Drink Bookmarklets Ace Project Clients Banking

Store iPod + iTunes .Mac QuickTime Support Mac OS X

Hot News Switch Hardware Software Made4Mac Education Pro Business Developer Where to Buy

Safari

The fastest browser on the Mac – the best browser on any platform.



Download Safari 1.2



Safari, the Mac OS X default web browser, offers you a superior web experience with outstanding performance. Even the most complex of pages load at breakneck speed. In fact, Safari loads pages more quickly than any other Mac web browser. But that's not all. Safari uses the advanced interface technologies underlying Mac OS X to offer you an all-new view of the web, one that's much easier to use.



Bookmarks View Favorites Tabs Naming Sheet Google SnapBack

Type a name for the bookmark, and choose where to keep it.

Sneak preview
Mac OS X v10.4 Tiger

Learn More About Safari

New in Safari 1.2

- Improved compatibility with websites and web applications
- Support for personal certificate authentication

June 23, 2003:
One week later,
Steve Jobs
releases Safari
for Mac OS X



1998: Mozilla Project developers realize that Netscape's code is a complete mess & decide to re-write from scratch



June 5, 2002:
Mozilla 1.0
released

Mozilla was based on Netscape Communicator, which is actually a suite of programs

- » *Navigator*: Web browser
- » *Mail*: Email
- » *Composer*: webpage editor
- » *Address Book*
- » & several other programs

Slow! Bloated!

2002

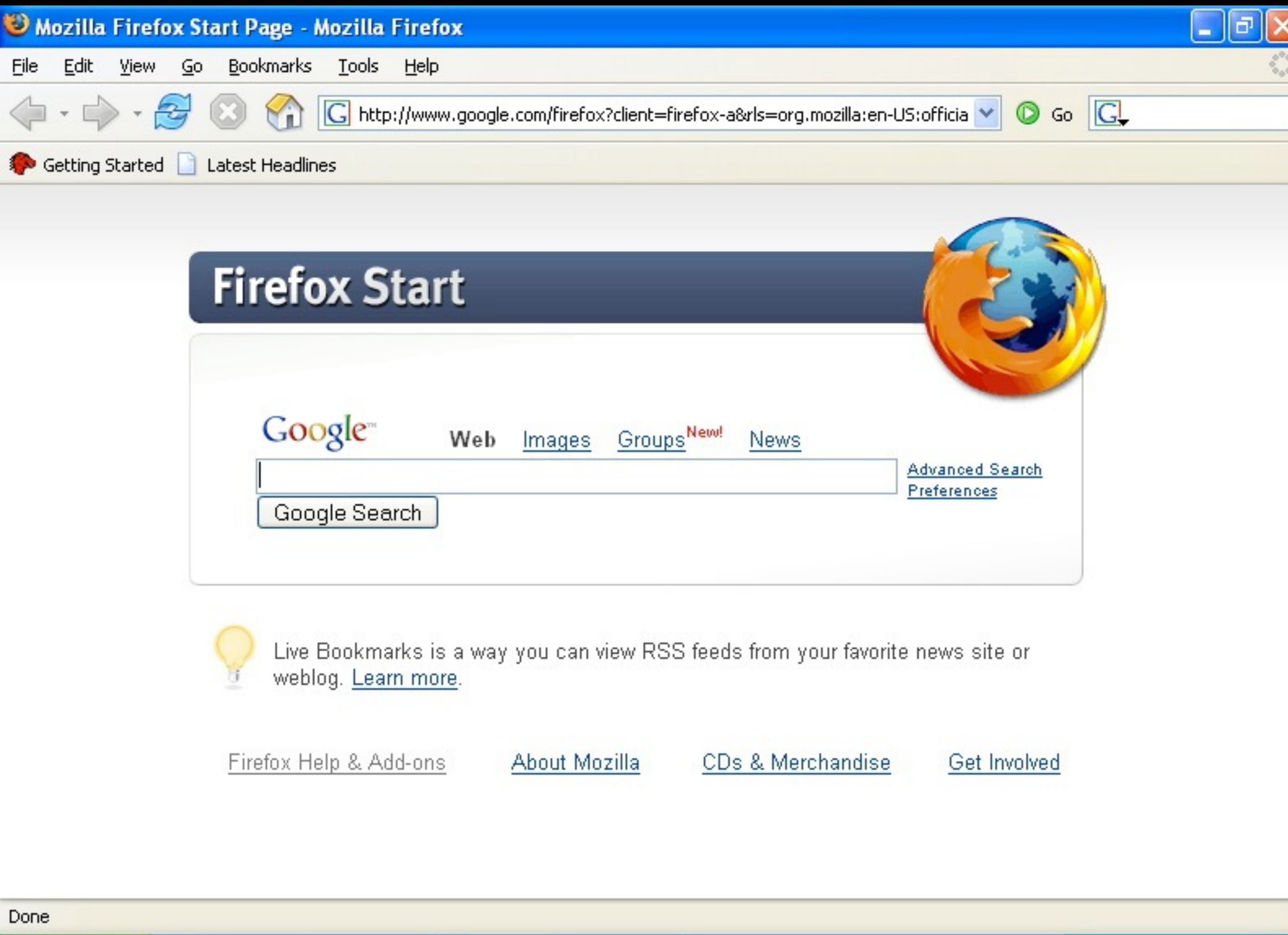
Phoenix 0.1 released, Mozilla's web browser component

2003

Phoenix → Firebird 0.6

February 2004

Firebird → Firefox 0.8



November
2004: Firefox
1.0 released



Microsoft changed its mind about browser upgrades requiring OS upgrades

Why? Firefox became popular

Result? IE 7 was available for download for XP SP 2 users & was in Vista

THE GEARS GUYS WERE THINKING ABOUT A MULTI-THREADED BROWSER, BUT THAT LED US TO TALK ABOUT, WELL, INSTEAD OF MULTIPLE THREADS --

-- WHAT IF WE HAVE MULTIPLE PROCESSES? EACH HAVING ITS OWN MEMORY AND ITS OWN COPY OF THE GLOBAL DATA STRUCTURES.

CHROME PROCESS MANAGER

PROCESS

PROCESS

PROCESS

PROCESS

PROCESS

PROCESS

Arnold Weber, Software Engineer

WE'RE APPLYING THE SAME KIND OF PROCESS ISOLATION YOU FIND IN MODERN OPERATING SYSTEMS.

SO, SEPARATE PROCESSES RENDERING SEPARATE TABS.

4

PROCESS

PROCESS

AND NOW YOU HAVE SEPARATE JAVASCRIPT THREADS AS WELL.

ONE TAB CAN BE BUSY, WHILE YOU'RE STILL USING ALL THE OTHERS.

AND IF THERE'S A BROWSER BUG IN THE RENDERER (AND OUR EXPERIENCE IS THAT IT'S ALMOST IMPOSSIBLE TO ELIMINATE ALL BUGS), WE STILL ONLY LOSE THE ONE TAB.

WHEN ONE TAB GOES DOWN YOU GET A 'SAD TAB' BUT IT DOESN'T CRASH THE WHOLE BROWSER.

AND YES, IT REALLY LOOKS LIKE THIS.

A MULTI-PROCESS DESIGN MEANS USING A BIT MORE MEMORY UP FRONT, EACH PROCESS HAS A FIXED ADDITIONAL COST.

BUT OVER TIME, IT WILL ALSO MEAN LESS MEMORY BLOAT.

LAUNCH

IN A TRADITIONAL BROWSER, YOU ONLY HAVE ONE PROCESS AND ONE ADDRESS SPACE THAT YOU KEEP LOADING WEB PAGES INTO.

WHEN YOU HAVE TOO MANY TABS OPEN, YOU CAN CLOSE SOME TO FREE UP MEMORY.

WHEN YOU BRING IN ANOTHER TAB, YOU USE THE MEMORY THAT WAS PREVIOUSLY USED.


5

September 2008: Google announces Chrome with a 38-page comic book

SIDE NOTE

[webcomics](#) [print comics](#) [home](#) [inventions](#) [about](#) [presentations](#) [consulting](#)

[Zot! The Complete Black and White Collection](#)
[Making Comics](#)
[Reinventing Comics](#)
[Understanding Comics](#)
[The Original Zot!](#)
[Destroy!!](#)
[Writing Superman](#)
[The New Adventures of Abraham Lincoln](#)
[The Big List](#)



Understanding Comics

1993

224 pages. Black and White with 8-page color section.

A 215-page comic book about comics that explains the inner workings of the medium and examines many aspects of visual communication. *Understanding Comics* has been translated into 16 languages, excerpted in textbooks, and its ideas applied in other fields such as game design, animation, web development, and interface design.

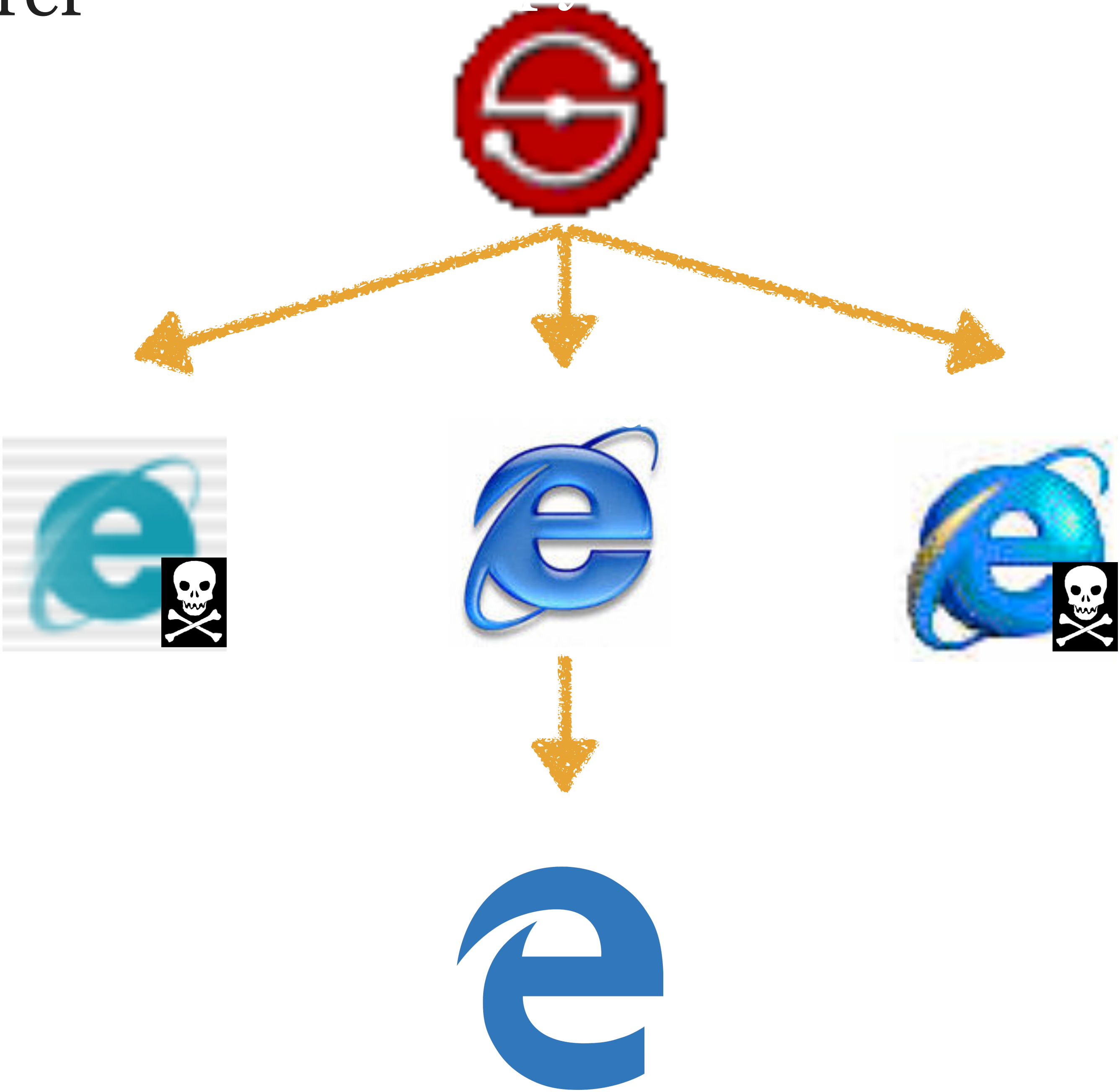
Winner of the Harvey and Eisner Award, the Alph'art Award at Angoulême, and a *New York Times* Notable Book for 1994 (mass market edition).

Topics include:

- Definitions, history, and potential.
- Visual Iconography and its Effects.
- Closure, reader participation between the panels.
- Word-picture dynamics.
- Time and motion.
- The psychology of line styles and color.
- Comics and the artistic process.

"With Scott McCloud's *Understanding Comics* the dialogue on and about what comics are and, more importantly, what comics can be has begun. If you read, write, teach or draw comics; if you want to; or if you simply want to watch a master explainer at work, you must read this book."

Internet Explorer Family Tree





Problems with IE

- » Security
- » Ridiculously complex settings
- » Poor support for Web standards
- » Slowest in terms of overall performance 🐢

Complexity



Internet Properties



General

Security

Privacy

Content

Connections

Programs

Advanced

Home page



To create home page tabs, type each address on its own line.

<http://go.microsoft.com/fwlink/?LinkId=69157>

Use current

Use default

Use new tab

Startup

☐ Start with tabs from the last session

☒ Start with home page

Tabs

Change how webpages are displayed in tabs.

Tabs

Browsing history

Delete temporary files, history, cookies, saved passwords, and web form information.

☐ Delete browsing history on exit

Delete...

Settings

Appearance

Colors

Languages

Fonts

Accessibility

OK

Cancel

Apply

Internet Properties

?

X

General

Security

Privacy


Content

Connections


Programs

Advanced


Select a zone to view or change security settings.




Internet




Local intranet



Trusted sites



Restricted sites

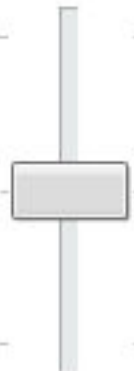


Internet
This zone is for Internet websites, except those listed in trusted and restricted zones.

Sites

Security level for this zone

Allowed levels for this zone: Medium to High



Medium-high

- Appropriate for most websites
- Prompts before downloading potentially unsafe content
- Unsigned ActiveX controls will not be downloaded

☒ Enable Protected Mode (requires restarting Internet Explorer)

Custom level...

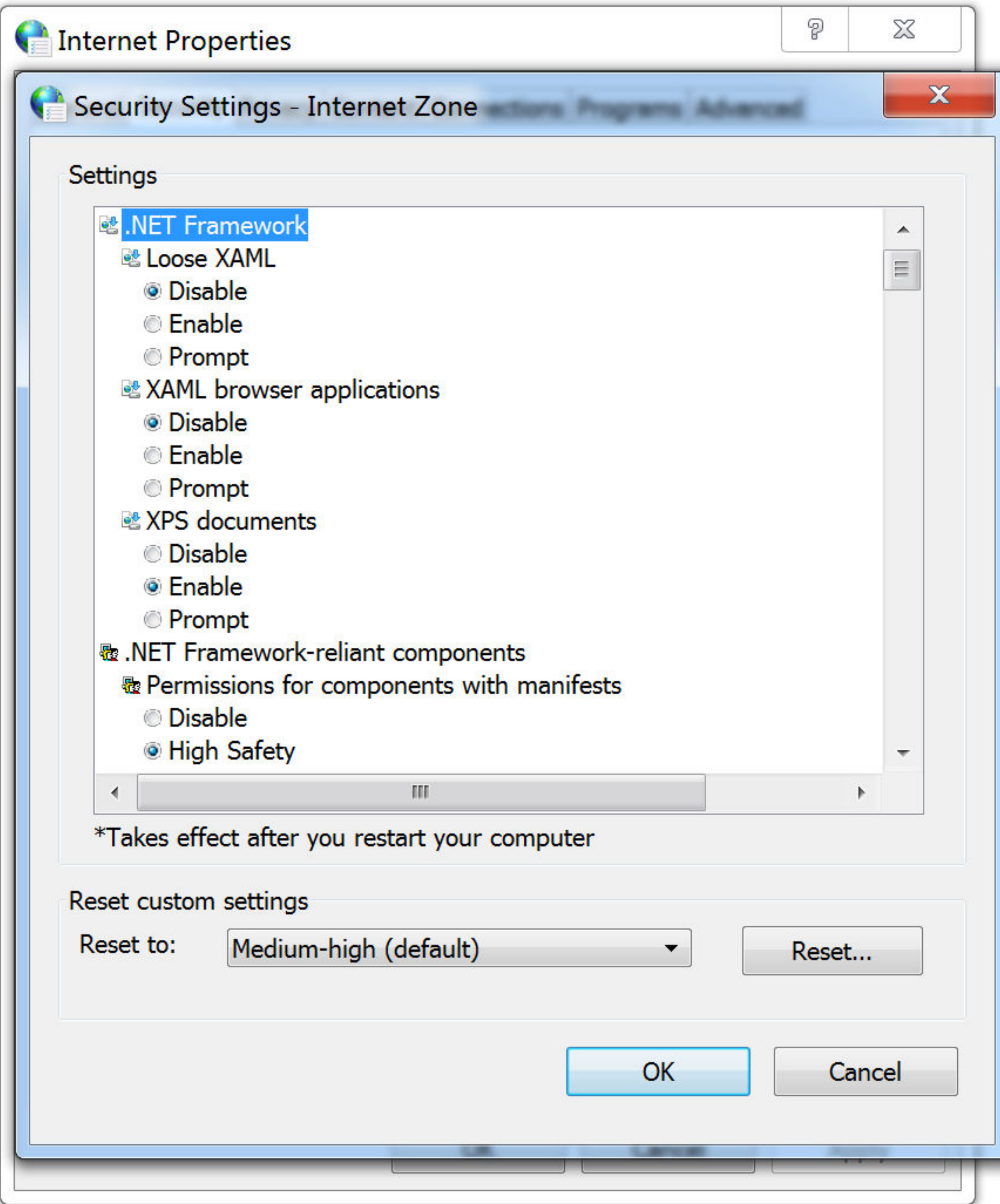
Default level

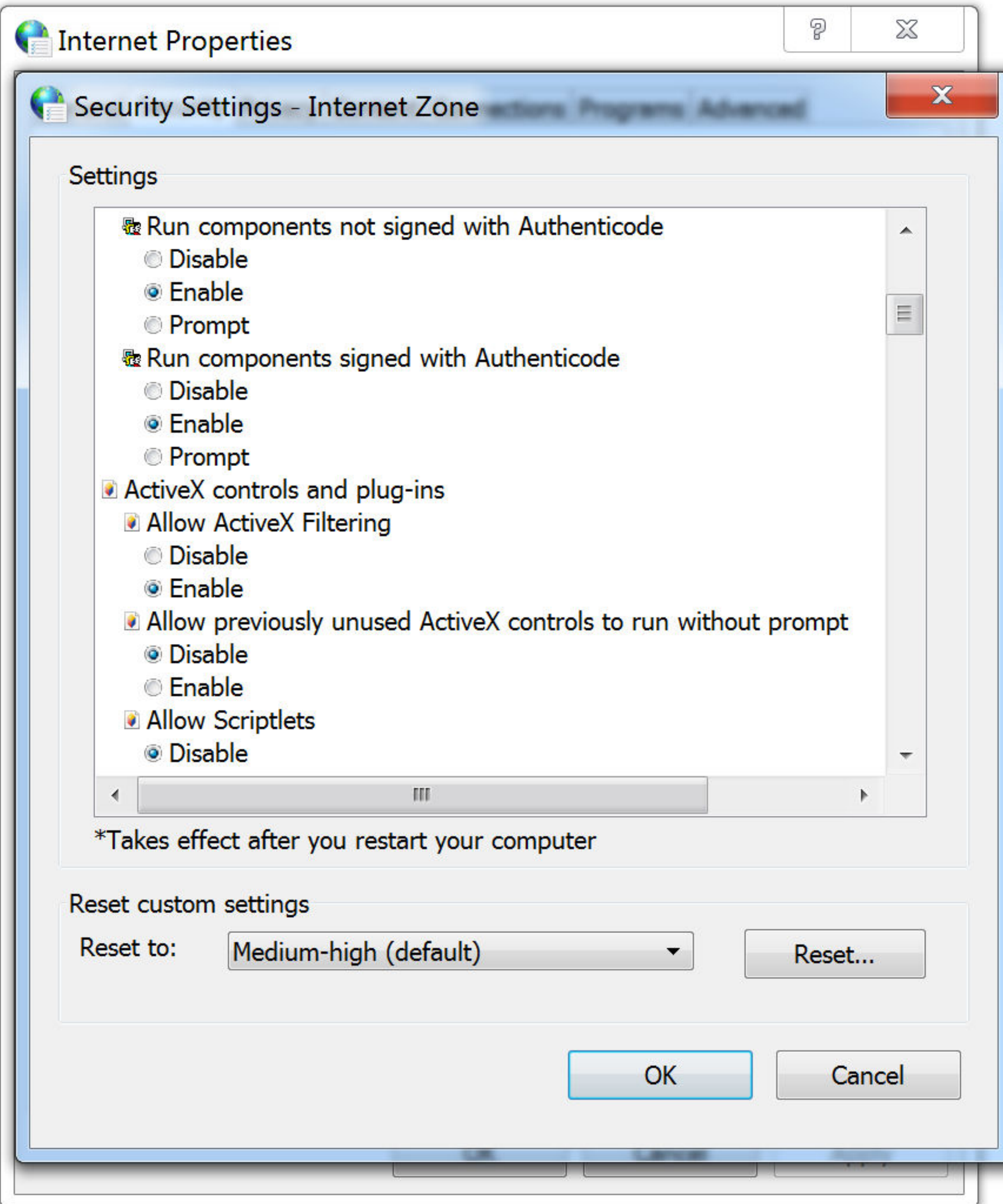
Reset all zones to default level

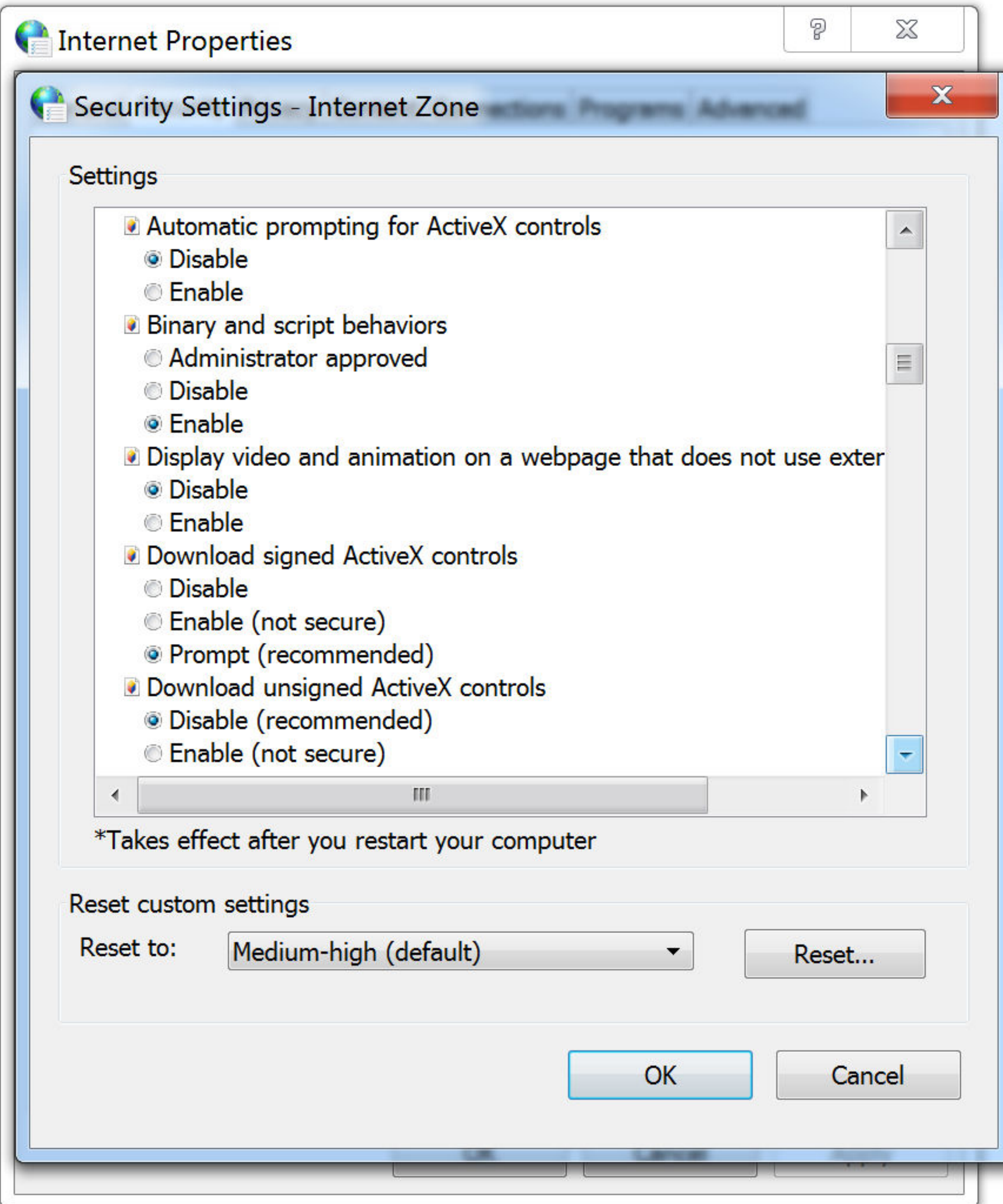
OK

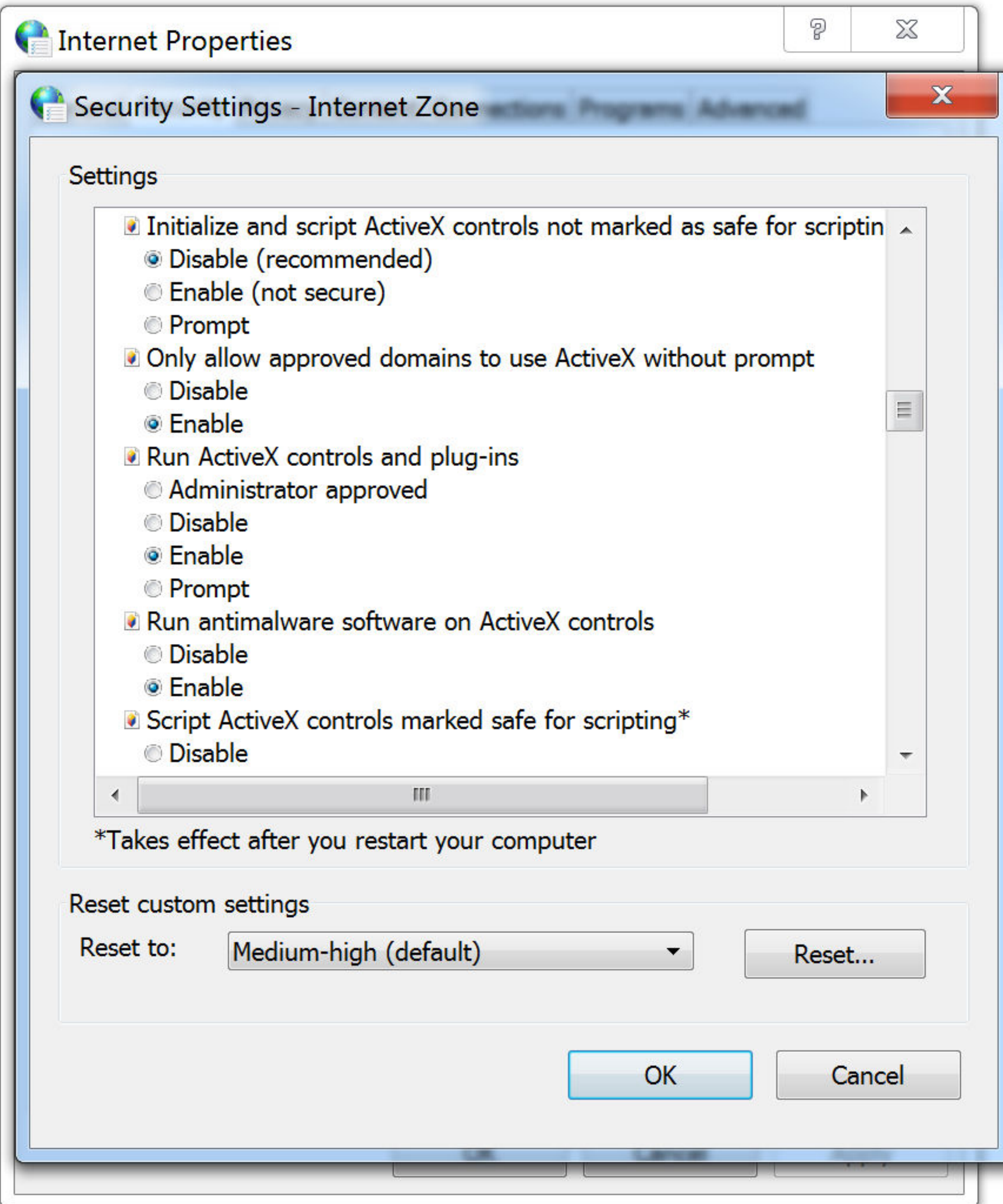
Cancel

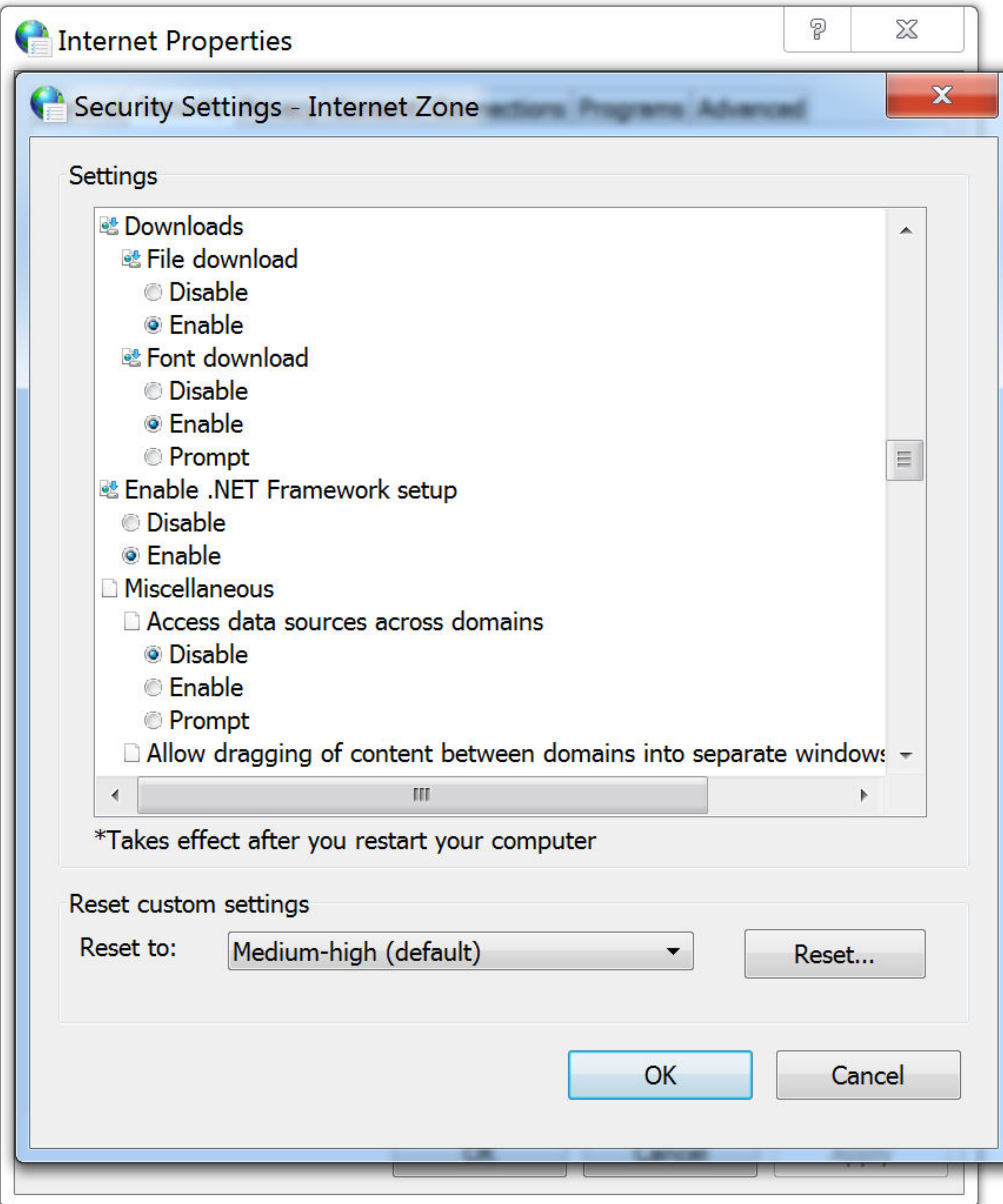
Apply

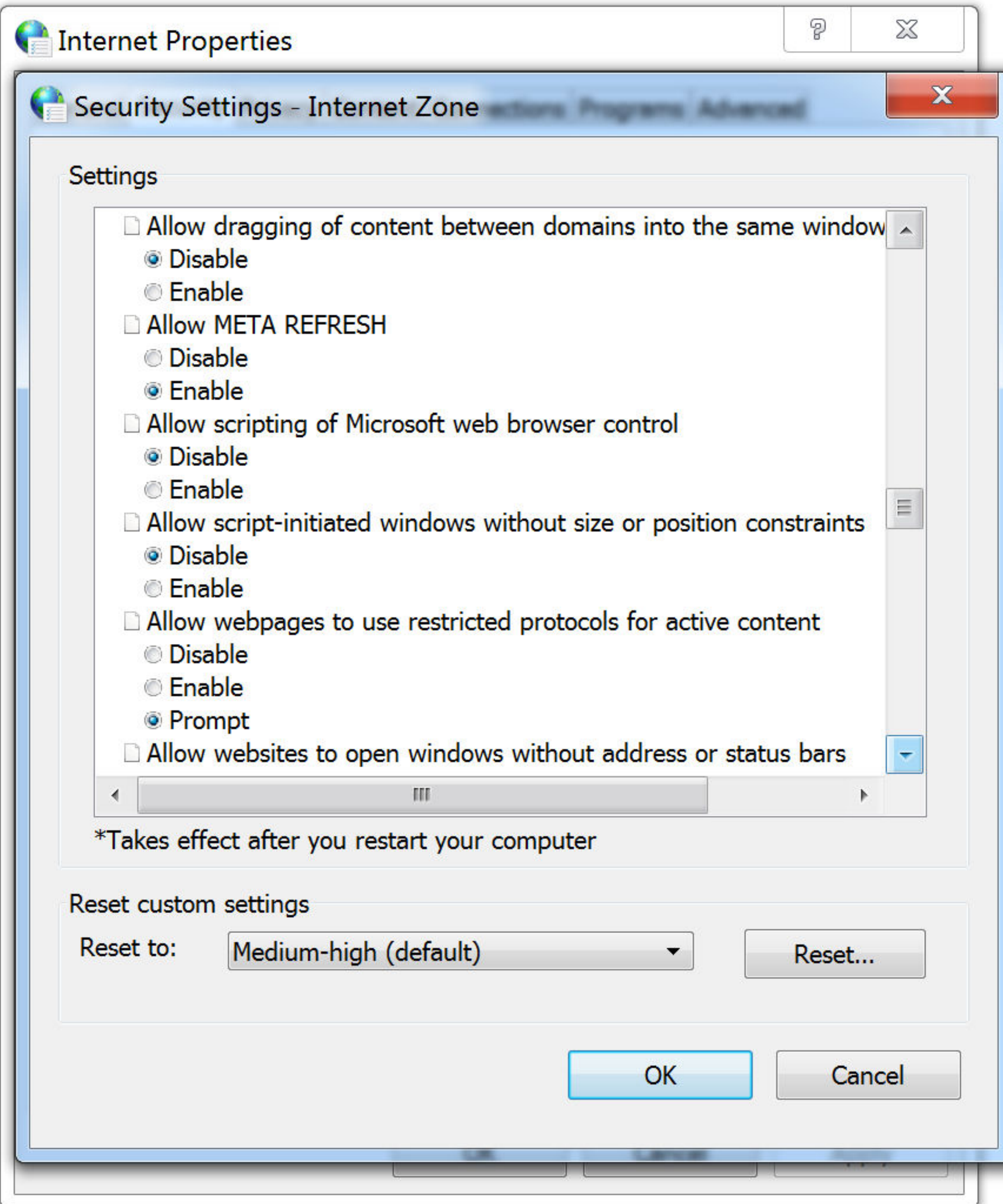


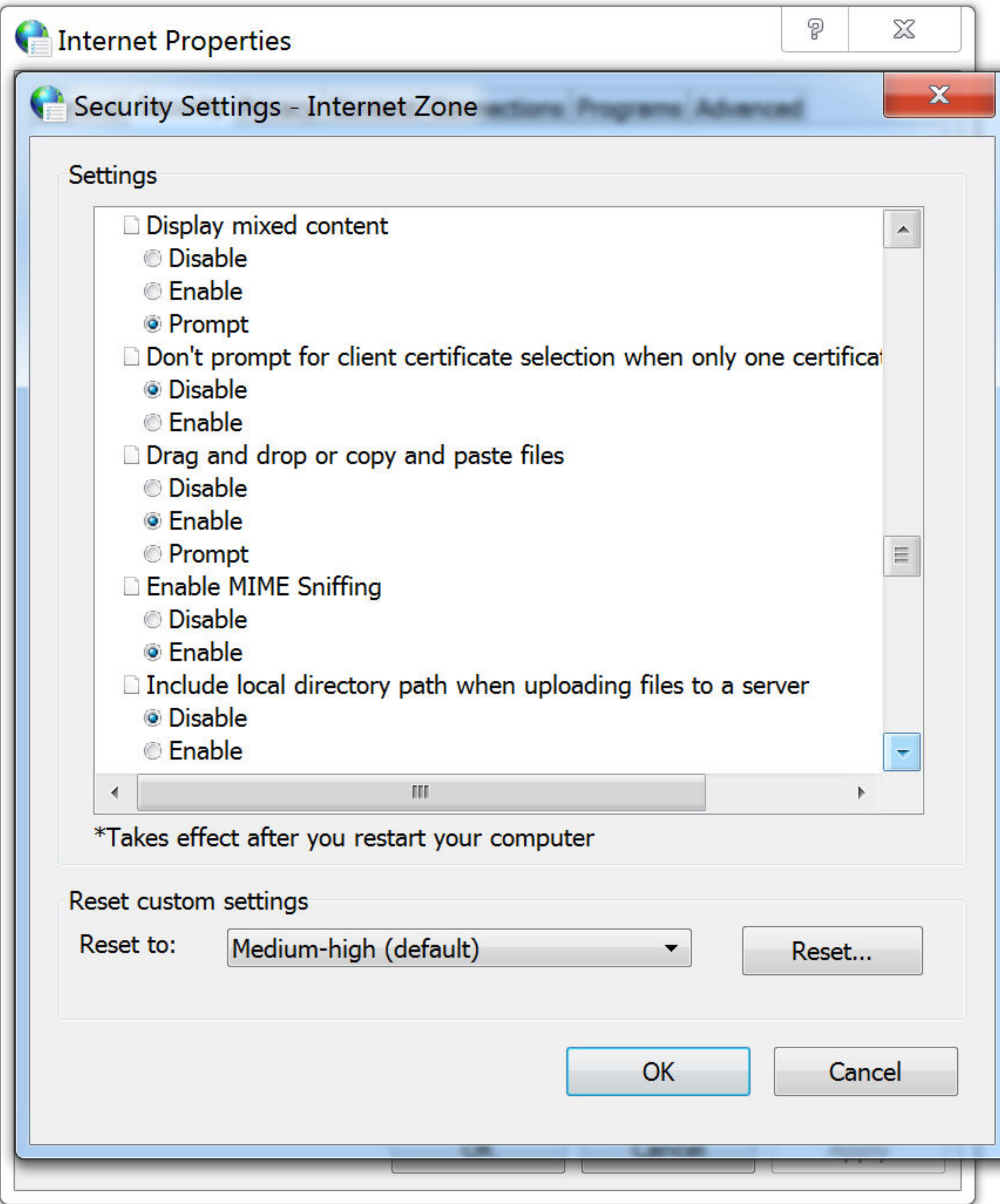


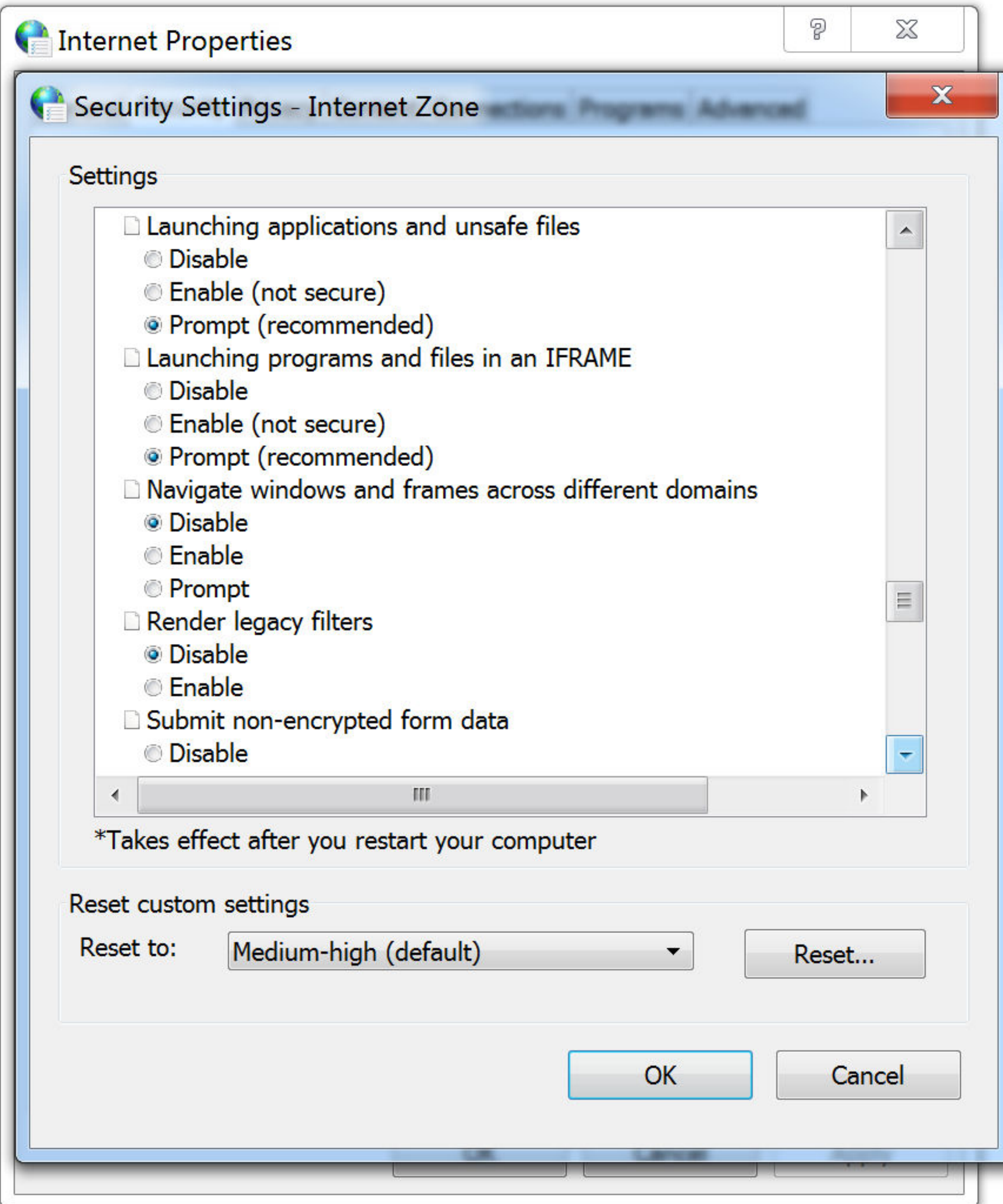


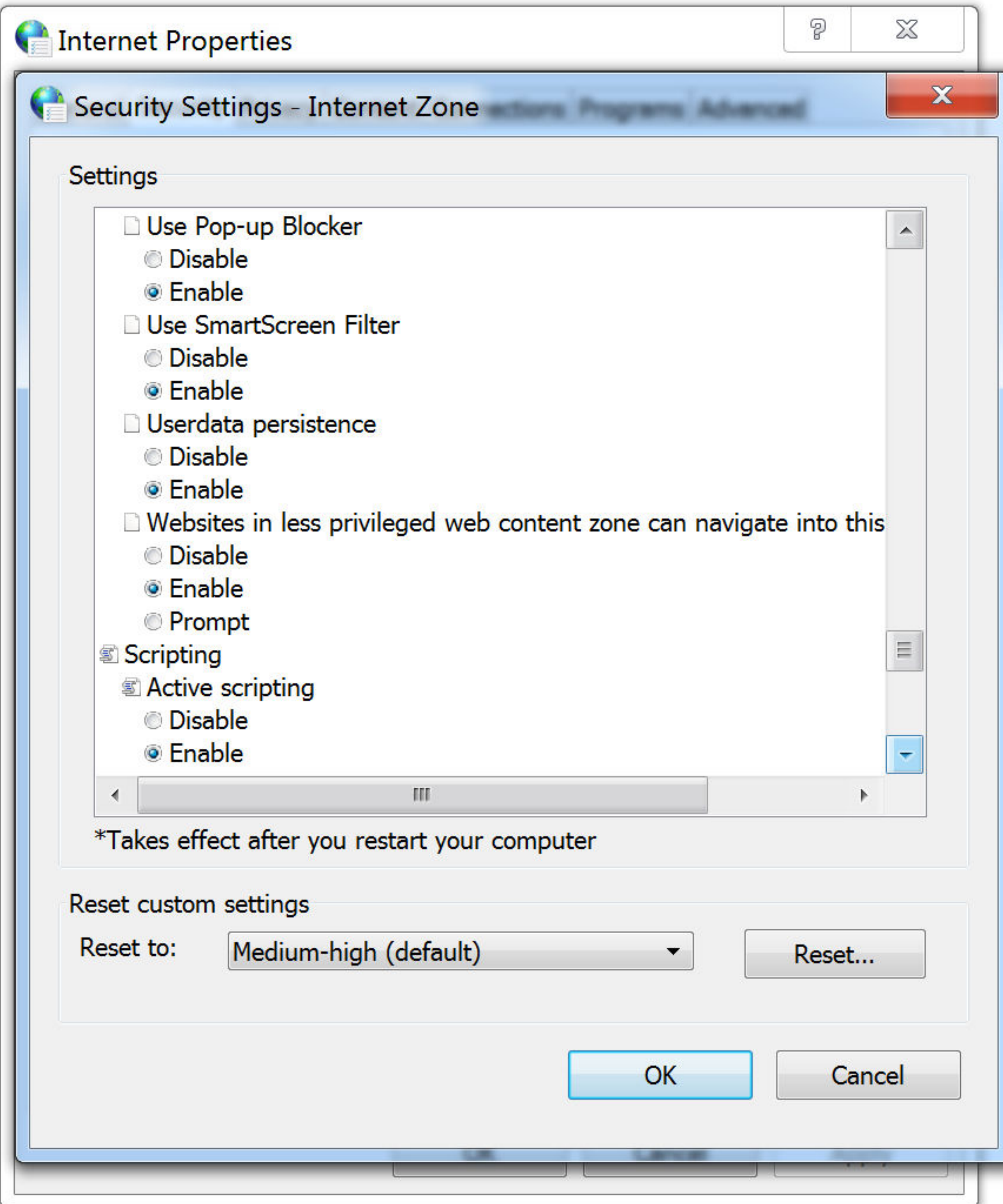


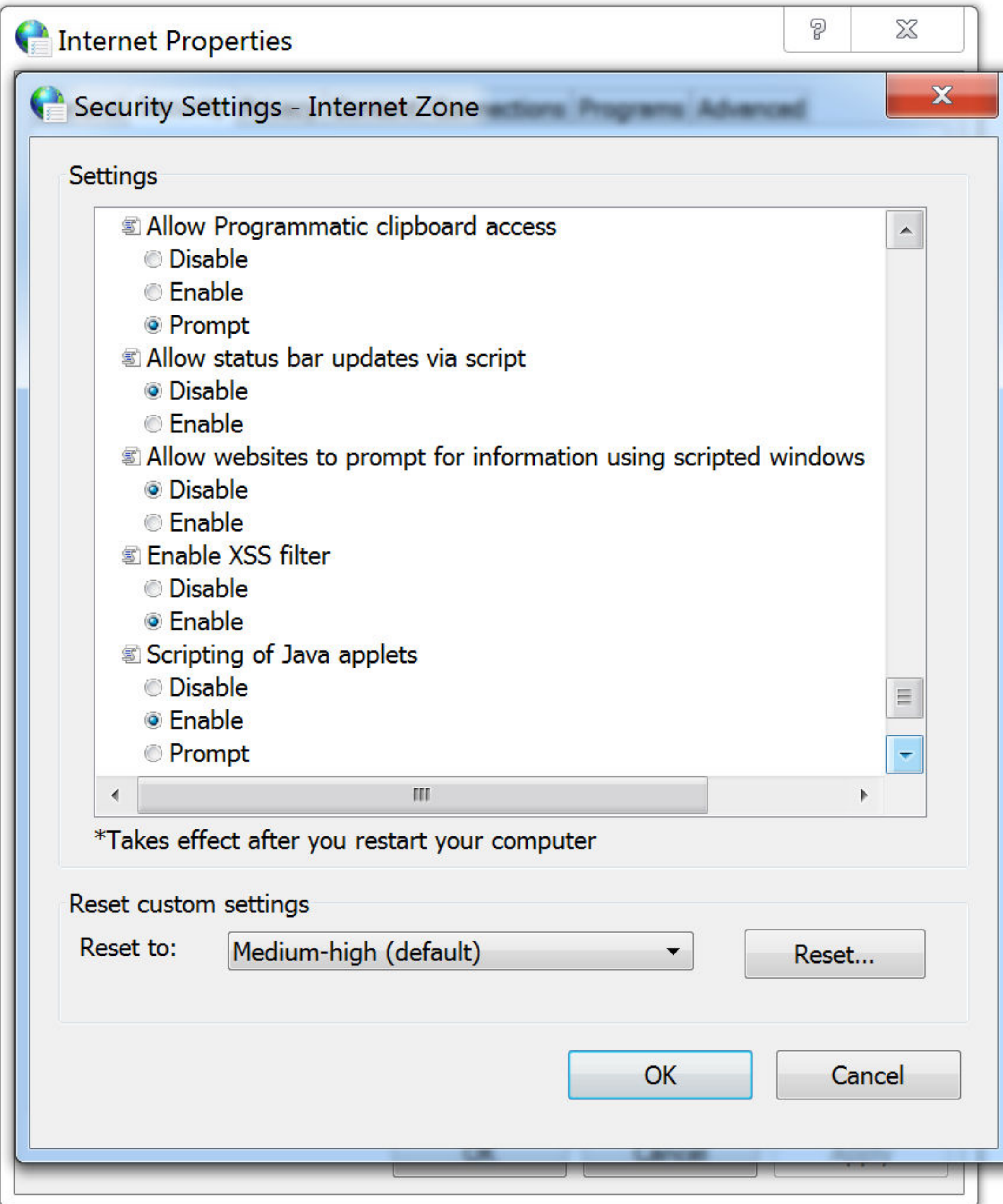


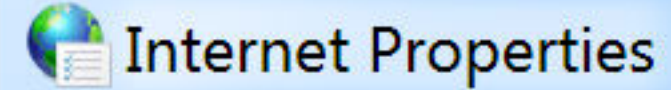












General	Security	Privacy	Content	Connections	Programs	Advanced
---------	----------	---------	---------	-------------	----------	----------

Settings

Select a setting for the Internet zone.

Medium



- Blocks third-party cookies that do not have a compact privacy policy
- Blocks third-party cookies that save information that can be used to contact you without your explicit consent
- Restricts first-party cookies that save information that can be used to contact you without your implicit consent

Sites

Import

Advanced

Default

Location

☐ Never allow websites to request your physical location

Clear Sites

Pop-up Blocker

☒ Turn on Pop-up Blocker

Settings

InPrivate

☒ Disable toolbars and extensions when InPrivate Browsing starts

OK

Cancel

Apply



Internet Properties



General Security Privacy Content Connections Programs Advanced

Family Safety



Control the Internet content that can be viewed.



Family Safety

Certificates



Use certificates for encrypted connections and identification.

Clear SSL state

Certificates

Publishers

AutoComplete



AutoComplete stores previous entries on webpages and suggests matches for you.

Settings

Feeds and Web Slices




Feeds and Web Slices provide updated content from websites that can be read in Internet Explorer and other programs.

Settings

OK

Cancel


Apply

 Internet Properties

?

X

GeneralSecurityPrivacyContentConnectionsProgramsAdvanced



To set up an Internet connection, click Setup.

Setup

Dial-up and Virtual Private Network settings

Add...

Add VPN...

Remove...

Settings

Choose Settings if you need to configure a proxy server for a connection.

Local Area Network (LAN) settings

LAN Settings do not apply to dial-up connections.
Choose Settings above for dial-up settings.

LAN settings

OK

Cancel

Apply



Internet Properties



General Security Privacy Content Connections Programs Advanced

Default web browser



Internet Explorer is not currently the default web browser.

Make default

☒ Tell me if Internet Explorer is not the default web browser.

Manage add-ons



Enable or disable browser add-ons installed in your system.

Manage add-ons

HTML editing



Choose the program that you want Internet Explorer to use for editing HTML files.

HTML editor:

Internet programs

Choose the programs you want to use for other Internet services, such as e-mail.

Set programs

OK

Cancel

Apply



Internet Properties



General Security Privacy Content Connections Programs **Advanced**

Settings

Accelerated graphics

☐ Use software rendering instead of GPU rendering*

Accessibility

☐ Always expand ALT text for images

☐ Enable Caret Browsing for new windows and tabs

☐ Move system caret with focus/selection changes

☐ Play system sounds

☐ Reset text size to medium for new windows and tabs

☐ Reset zoom level for new windows and tabs

Browsing

☐ Always record developer console messages

☐ Close unused folders in History and Favorites*

☒ Disable script debugging (Internet Explorer)

☒ Disable script debugging (Other)

☐ Display a notification about every script error

*Takes effect after you restart your computer

Restore advanced settings

Reset Internet Explorer settings

Resets Internet Explorer's settings to their default condition.

Reset...

You should only use this if your browser is in an unusable state.

OK

Cancel

Apply



Internet Properties



General Security Privacy Content Connections Programs **Advanced**

Settings

- ☒ Enable automatic crash recovery*
- ☒ Enable FTP folder view (outside of Internet Explorer)
- ☐ Enable Suggested Sites
- ☒ Enable third-party browser extensions*
- ☒ Enable visual styles on buttons and controls in webpages
- ☐ Go to an intranet site for a single word entry in the Address bar
- ☒ Load sites and content in the background to optimize performance
- ☒ Notify when downloads complete
- ☒ Show friendly HTTP error messages
- ☐ Underline links
 - ☒ Always
 - ☐ Hover
 - ☐ Never
- ☐ Use inline AutoComplete in File Explorer and Run Dialog
- ☒ Use inline AutoComplete in the Internet Explorer Address Bar as you type

*Takes effect after you restart your computer

Restore advanced settings

Reset Internet Explorer settings

Resets Internet Explorer's settings to their default condition.

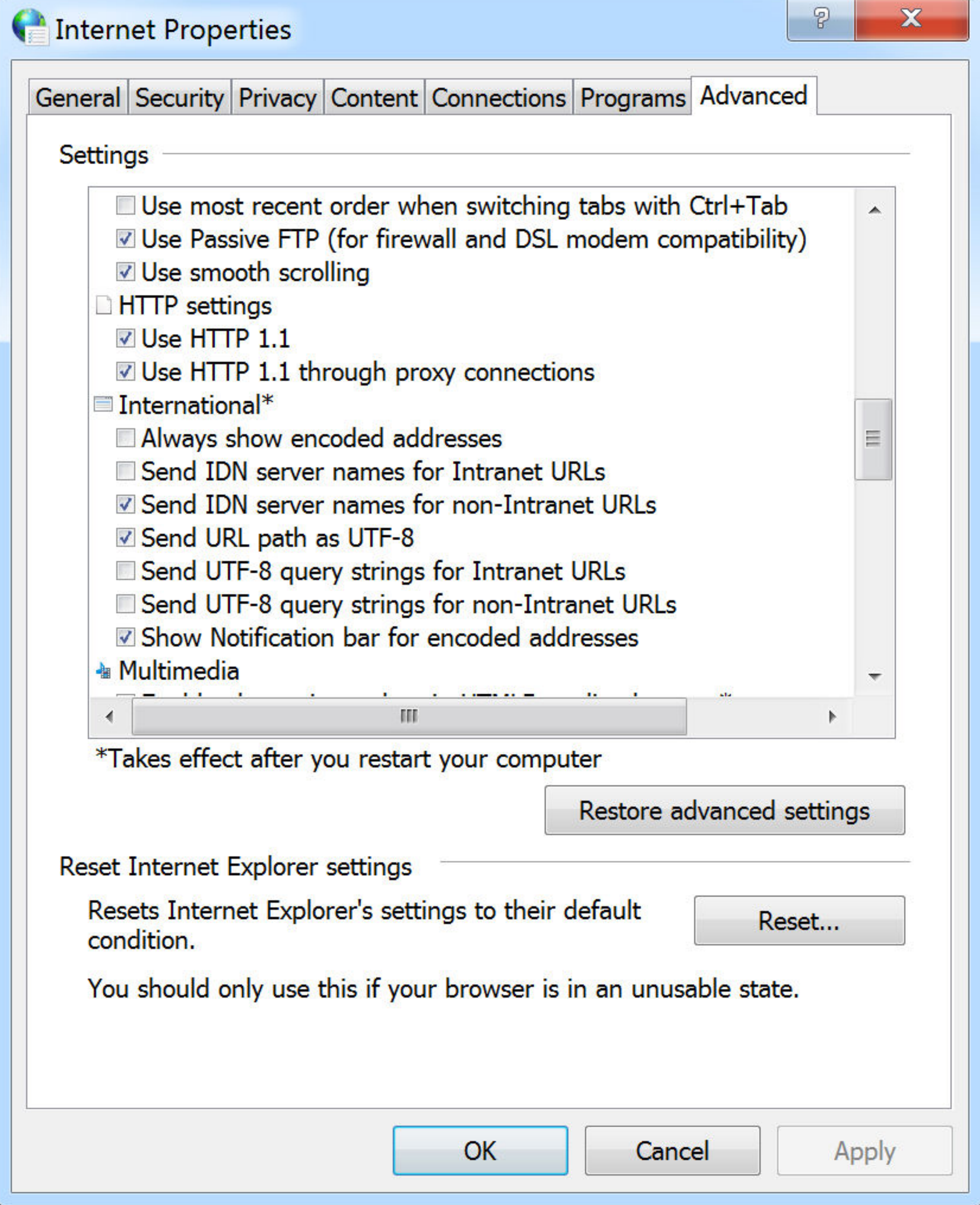
Reset...

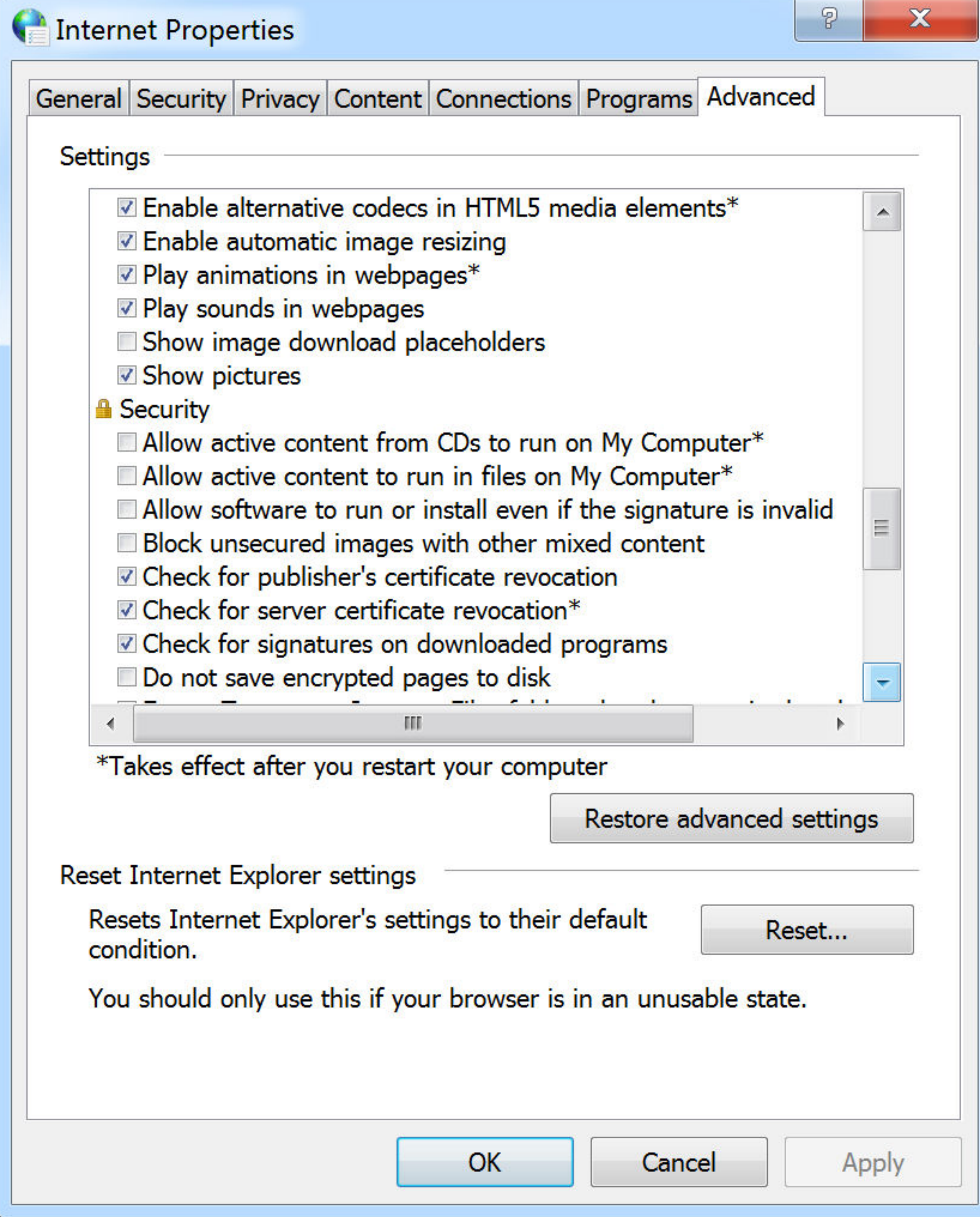
You should only use this if your browser is in an unusable state.

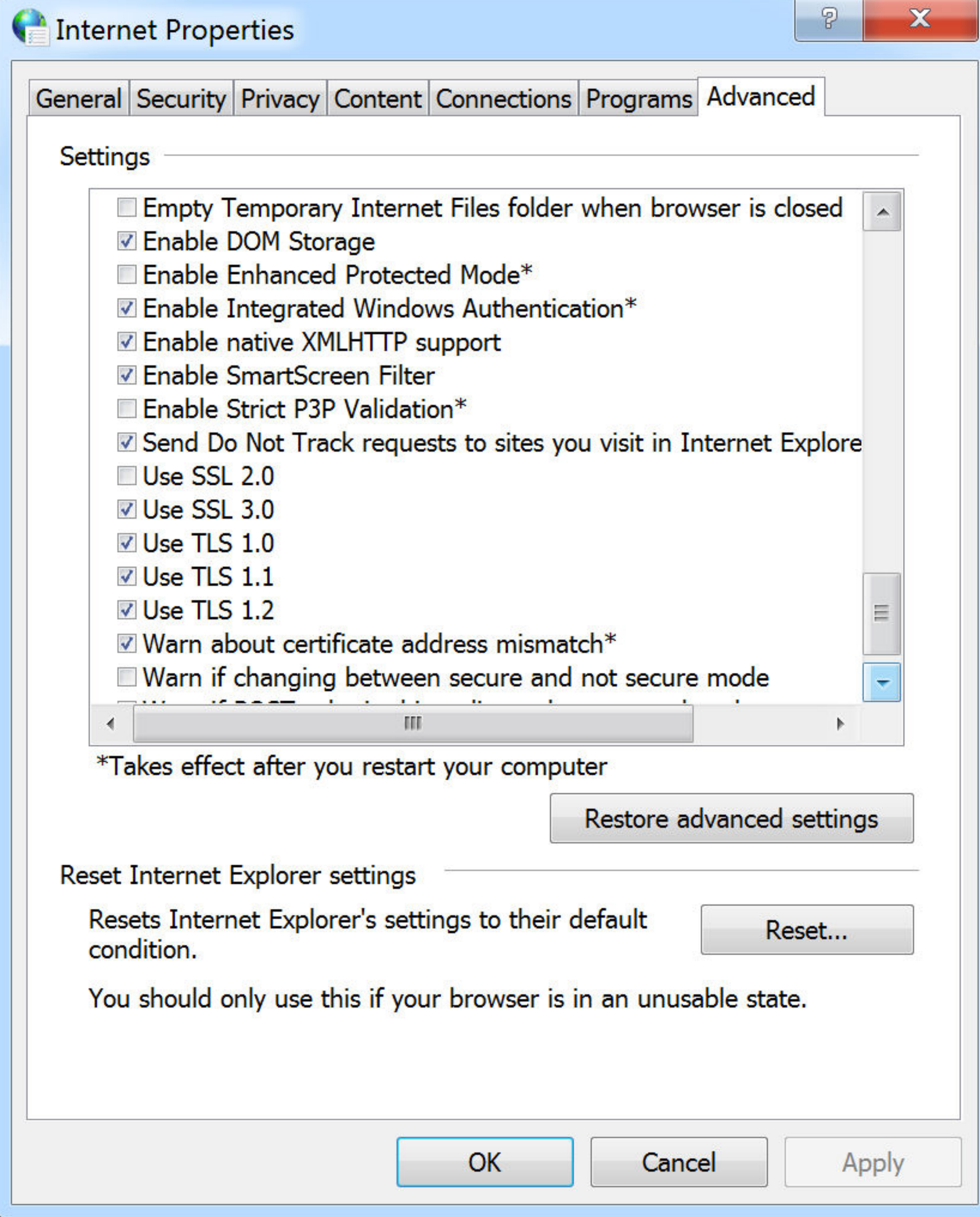
OK

Cancel

Apply







Conversation Between Browsers

What are we?



Browsers!



...



Browsers!



Browsers!



What do we want?



Faster!



...



Faster!



Faster!



When do we want it?



Now!



...



Now!



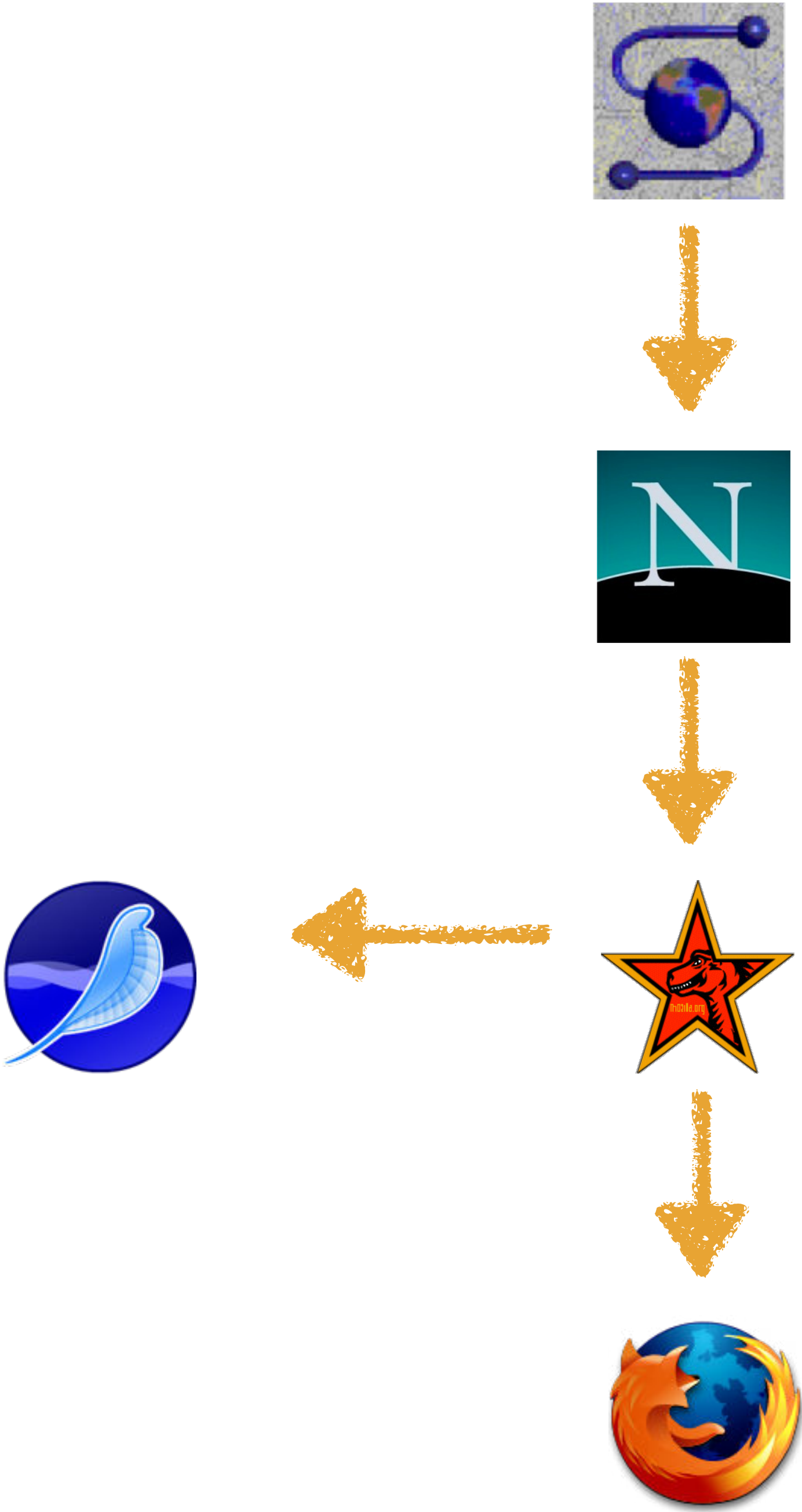
Now!

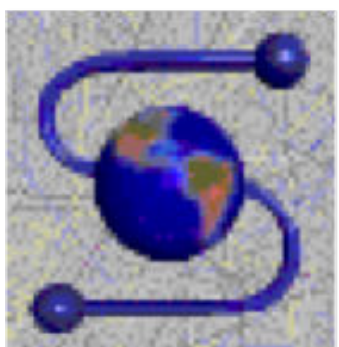


Browsers!



Firefox Family Tree





Firefox has many cool features

Session Restore

Firefox was the 1st major browser to support *session restore*: the browser remembers what you were doing if it closes or crashes, & re-opens windows & tabs

Now supported by Chrome, Safari, & Opera

General

General

Tabs

Content

Applications

Privacy

Security

Sync

Advanced

Startup

When Firefox starts: Show my home page

Home Page: Mozilla

Restore to Default

Downloads

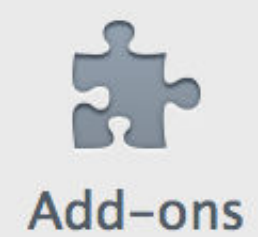
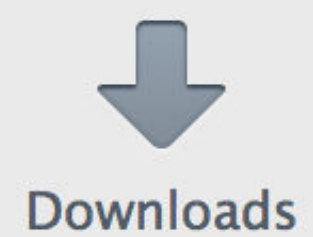
Save files to

Downloads

Choose...

Always ask me where to save files

?



Restore Previous Session

Profiles

Firefox stores important settings & data in a *profile folder*

You can create as many profiles as you'd like

You can switch between profiles when you start Firefox



Firefox – Choose User Profile

Firefox stores information about your settings, preferences, and other user items in your user profile.

Create Profile...

Rename Profile...

Delete Profile...



Default



Multimedia



WebDev



Research



Testing

☐ Work offline

☐ Use the selected profile
without asking at startup

Exit

Start Firefox

Bookmarks

Downloads

Browsing History

Passwords

Site-Specific Preferences

Search Engines

Personal Dictionary

Autocomplete History

Cookies

Security Certificate Settings

Security Device Settings

Download Actions

Plugin MIME Type

Stored Session

Toolbar Customization

User Styles

Extensions & Themes

Hundreds of thousands of add-ons for Firefox



ADD-ONS

EXTENSIONS | THEMES | COLLECTIONS | MORE...



EXPLORE

Featured >

Most Popular >

Top Rated >

CATEGORIES

Alerts & Updates >

Appearance >

Bookmarks >

Download Management >

Feeds, News & Blogging >

Games & Entertainment >

Language Support >

Photos, Music & Videos >

Privacy & Security >

Search Tools >

Shopping >

Social & Communication >

First time with Add-ons?

Not to worry, here are three to get started.



Idderall

A tool to keep you off distracting websites when you really need to get something done. Follow on twitter for n...



Awesome Screens...

Capture the whole page or any portion, annotate it with rectangles, circles, arrows, lines and text, blur sensitive...



Copy As Plain Text

Removes formatting from copied text.

Featured Extensions [See all »](#)



YouTube Anywhere Player

Games & Entertainment

★★★★★ (45)



Converter

Shopping

★★★★★ (53)



WebRank SEO Toolbar

Alerts & Updates

★★★★★ (56)



TinyURL Generator

Social & Communication

★★★★★ (62)



Classic Toolbar Buttons

Appearance

★★★★★ (100)



Google Translator, Web T...

Social & Communication

★★★★★ (378)

MOST POPULAR [All »](#)

1. **Adblock Plus**
19,221,263 users

2. **Video DownloadHelper**
5,926,179 users

3. **Firebug**
2,939,471 users

4. **NoScript Security Suite**
2,193,669 users

5. **Greasemonkey**
1,621,873 users

6. **DownThemAll!**



ADD-ONS

EXTENSIONS | THEMES | COLLECTIONS | MORE...

→

EXPLORE

- Featured >
- Most Popular >
- Top Rated >

CATEGORIES

- Alerts & Updates >
- Appearance >
- Bookmarks >
- Download Management >
- Feeds, News & Blogging >
- Games & Entertainment >
- Language Support >
- Photos, Music & Videos >
- Privacy & Security >
- Search Tools >
- Shopping >
- Social & Communication >
- Tabs >

Home >> Extensions

Featured Extensions

Sort by: **Featured** | Most Users | Top Rated | Newest | More ▾

Subscribe



Stylish **FEATURED**

Restyle the web with Stylish, a user styles manager. Stylish lets you easily install themes and skins for Google, Facebook, YouTube, Orkut, and many, many other sites. You can even customize Firefox and other programs themselves.

★★★★★ (614) · 700,154 users



CookieKeeper **NO RESTART** **FEATURED**

Extended Cookie Manager - Keep only wanted cookies.

★★★★★ (12) · 8,658 users



FireFTP **FEATURED**

FireFTP is a free, secure, cross-platform FTP/SFTP client for Mozilla Firefox which provides easy and intuitive access to FTP/SFTP servers.

Check out my new project, [FireSSH!](#)

★★★★★ (839) · 707,677 users



Free Memory **NO RESTART** **FEATURED**



ADD-ONS

EXTENSIONS | THEMES | COLLECTIONS | MORE...



Themes

Up & Coming
Most Popular
Top Rated
Recently Added

Abstract
Causes
Fashion
Film and TV
Firefox
Foxkeh
Holiday
Music
Nature
Other
Scenery
Seasonal
Solid
Sports
Websites

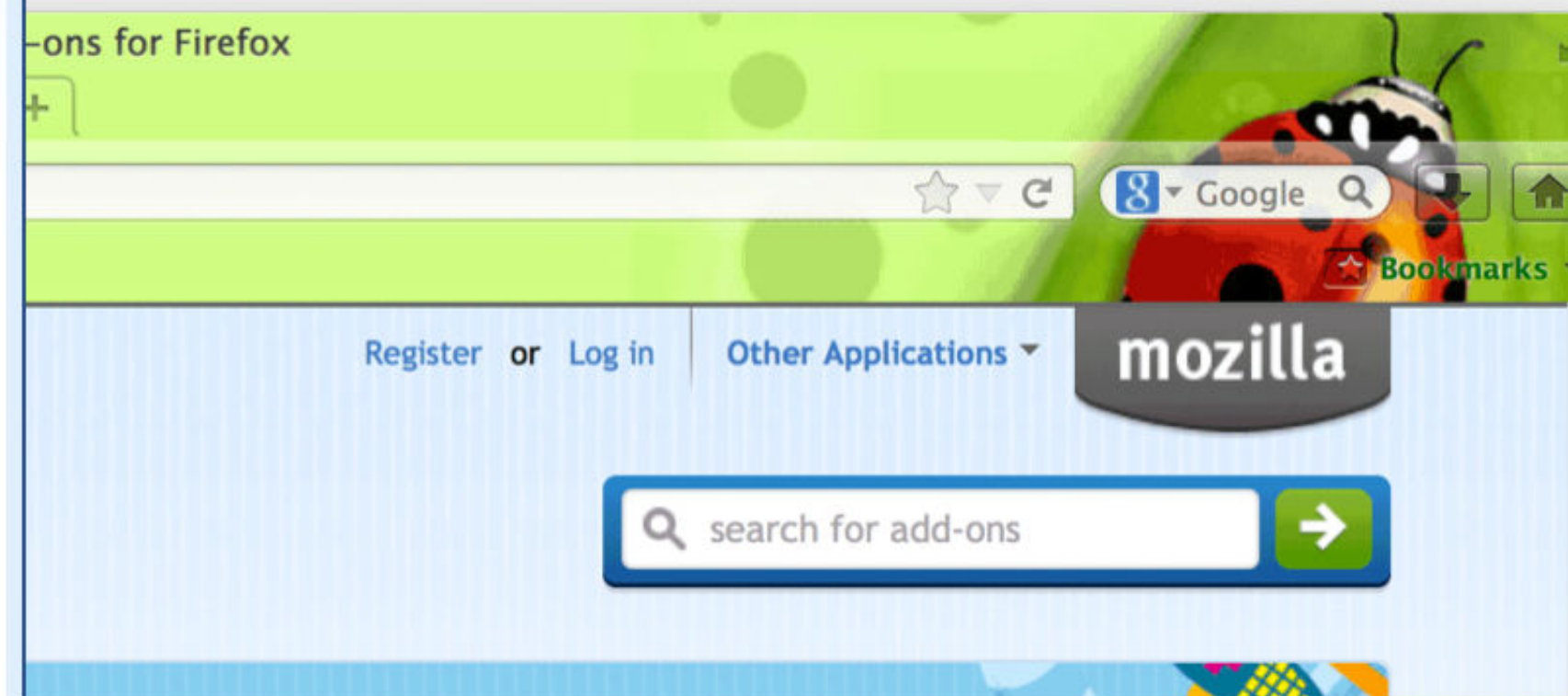
Create Your Own Theme

Your browser, your

Add-ons for Firefox > Themes

Themes

Over 300,000 designs to personalize your browser! Move your mouse over a Background Theme to try it on. **Start exploring** ▶



Want more personalization?

Complete Themes transform the look of your browser with styles for the window frame, address bar, buttons, tabs, and



Get Add-ons

Extensions


User Scripts

Appearance

Plugins

User Styles

Services




1Password

4.1.0

Password and identity manager for Mac, Windows, iOS and Android. [More](#)

Disable

Remove




Clip to DEVONthink

1.2.3

Clip selected web content to your DEVONthink database directly from Firefox. [More](#)

Disable

Remove



Downloads in Tab


1.00

Opens "Downloads" manager in tab from Tools menu or automatically when a download start... [More](#)

Preferences

Disable

Remove



FEBE


7.3.0.1

Backup your Firefox data [More](#)

Preferences

Disable

Remove



Greasemonkey


1.15

A User Script Manager for Firefox [More](#)

Preferences

Disable

Remove



It's All Text!


1.8.1

Edit text using your favorite editor! [More](#)

Preferences

Disable

Remove



LastPass


3.1.1

Last Password you will ever need [More](#)

Preferences

Disable

Remove



Lazarus: Form Recovery

2.3

Recover lost forms with a single click [More](#)

Preferences

Disable

Remove

Firefox

about:addons

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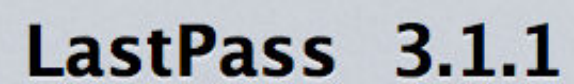
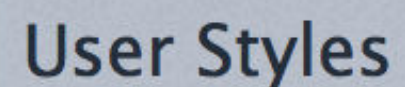
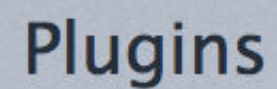
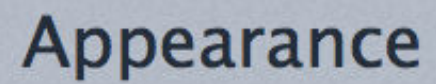
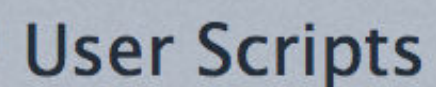
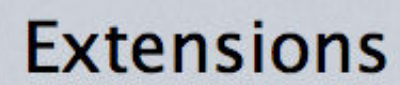
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Search all add-ons

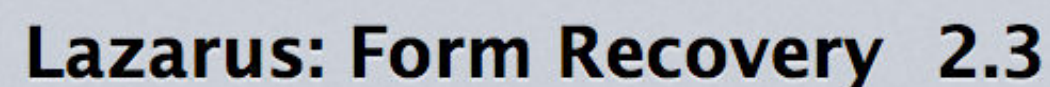


Last Password you will ever need [More](#)

Preferences

Disable

Remove

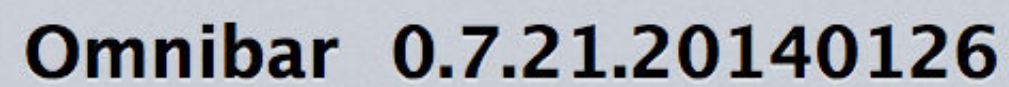


Recover lost forms with a single click [More](#)

Preferences

Disable

Remove



Integrates search bar to the location bar. [More](#)

Preferences

Disable

Remove

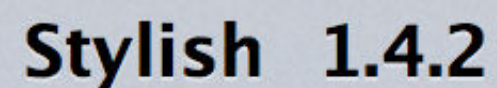


Enhance Google search results and remove ads and spam [More](#)

Preferences

Disable

Remove

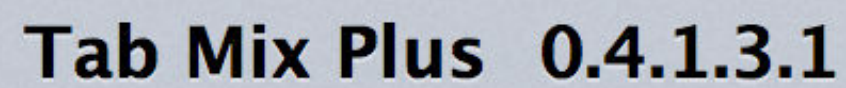


Restyle the web with Stylish, a user styles manager. [More](#)

Preferences

Disable

Remove

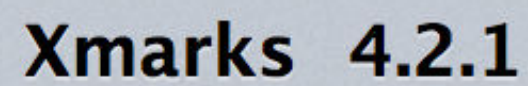


Tab browsing with an added boost. [More](#)

Preferences

Disable

Remove



Bookmark Sync and Web Discovery [More](#)

Preferences

Disable


Remove



Ads were yesterday! [More](#)

Enable

Remove



-  Services






 **Firefogg 2.9.19**
video encoding and uploading for Firefox [More](#) Disable Remove


Add-ons Manager



+

about:addons


Google  


    





 


Search all add-ons


Get Add-ons


Extensions

User Scripts

Appearance


Plugins

Services

**Flashblock 1.5.17**


Replaces Flash objects with a button you can click to view them. [More](#)

PreferencesDisableRemove

**FlashGot 1.5.5.96**


Enables single and massive ("all" and "selection") downloads using the most popular external download ... [More](#)

PreferencesDisableRemove

**Greasemonkey 2014.01.30.nightly**


A User Script Manager for Firefox [More](#)

PreferencesDisableRemove

**Lazarus: Form Recovery 2.3**


Recover lost forms with a single click [More](#)

PreferencesDisableRemove

**Omnibar 0.7.20.20131218**


Integrates search bar to the location bar. [More](#)

PreferencesDisableRemove

**Snagit Autoscroll Helper 1.9.6**


Helps Snagit capture whole pages instantly [More](#)

DisableRemove

**Test Pilot 1.2.3**

Help make Firefox better by running user studies. [More](#)

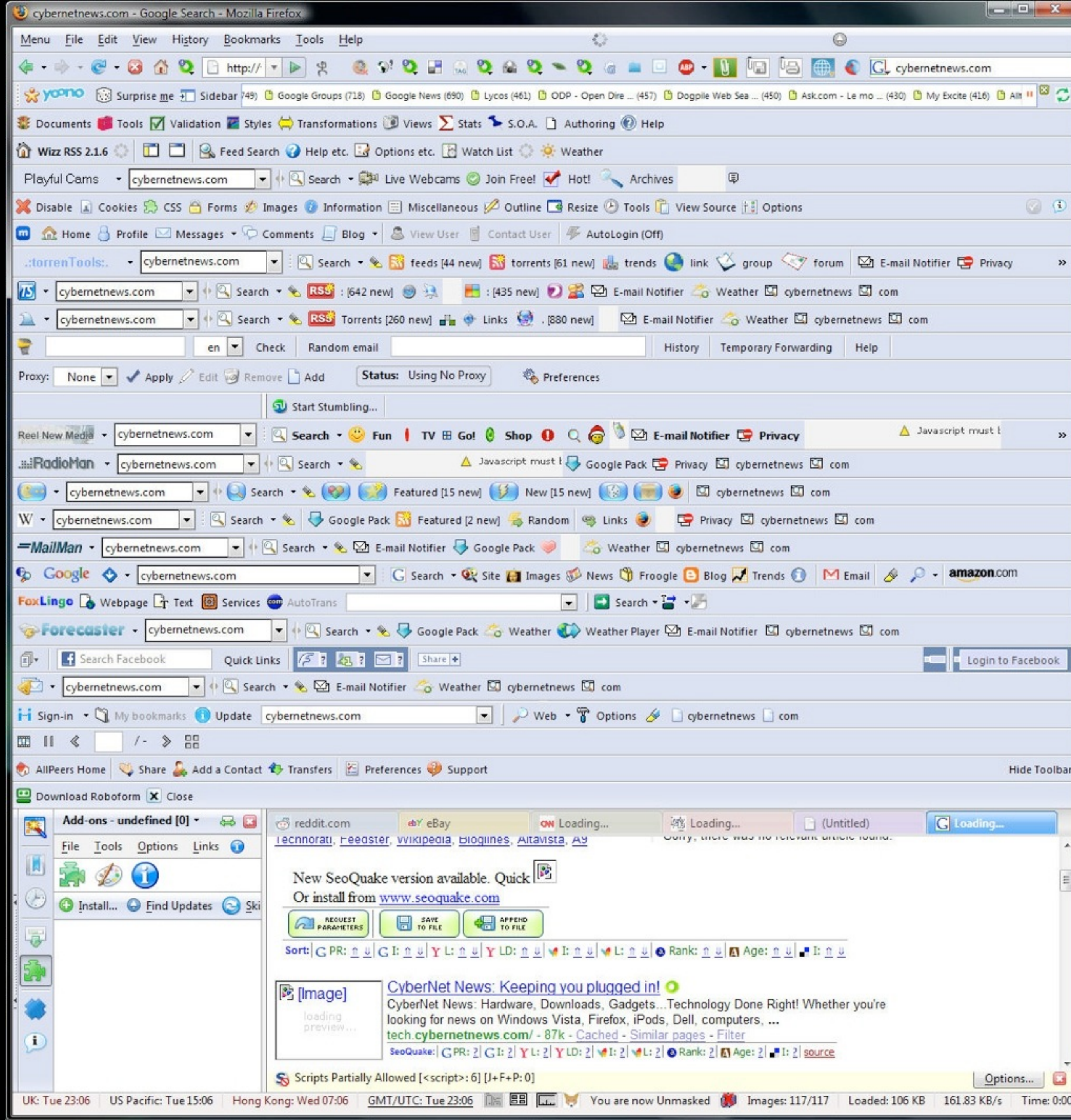
DisableRemove

**Xmarks 4.2.1**

Bookmark Sync and Web Discovery [More](#)

PreferencesDisableRemove

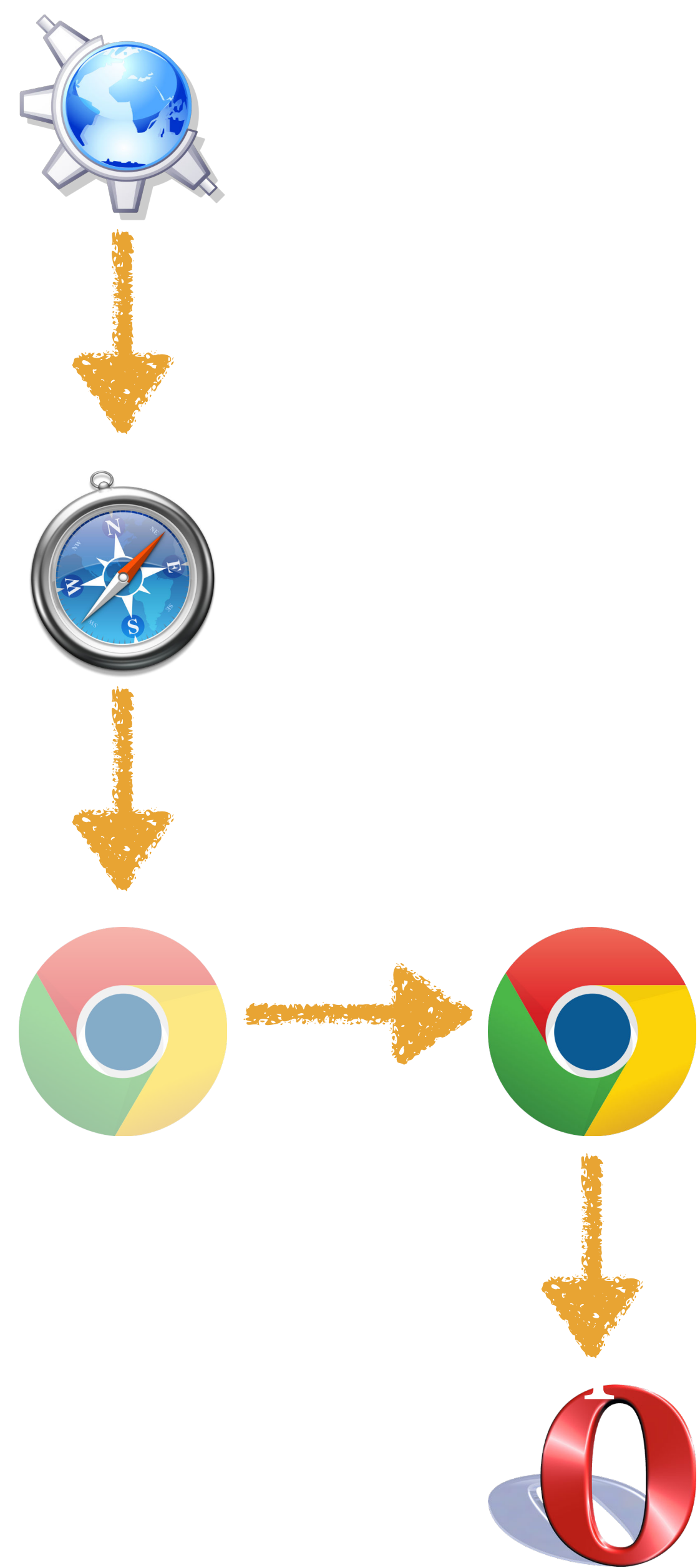
200
is too many!



Other reasons Firefox is cool

- » Multi-platform support: Windows, OS X, Linux
- » Excellent support for Web standards
- » Best-of-breed developer tools

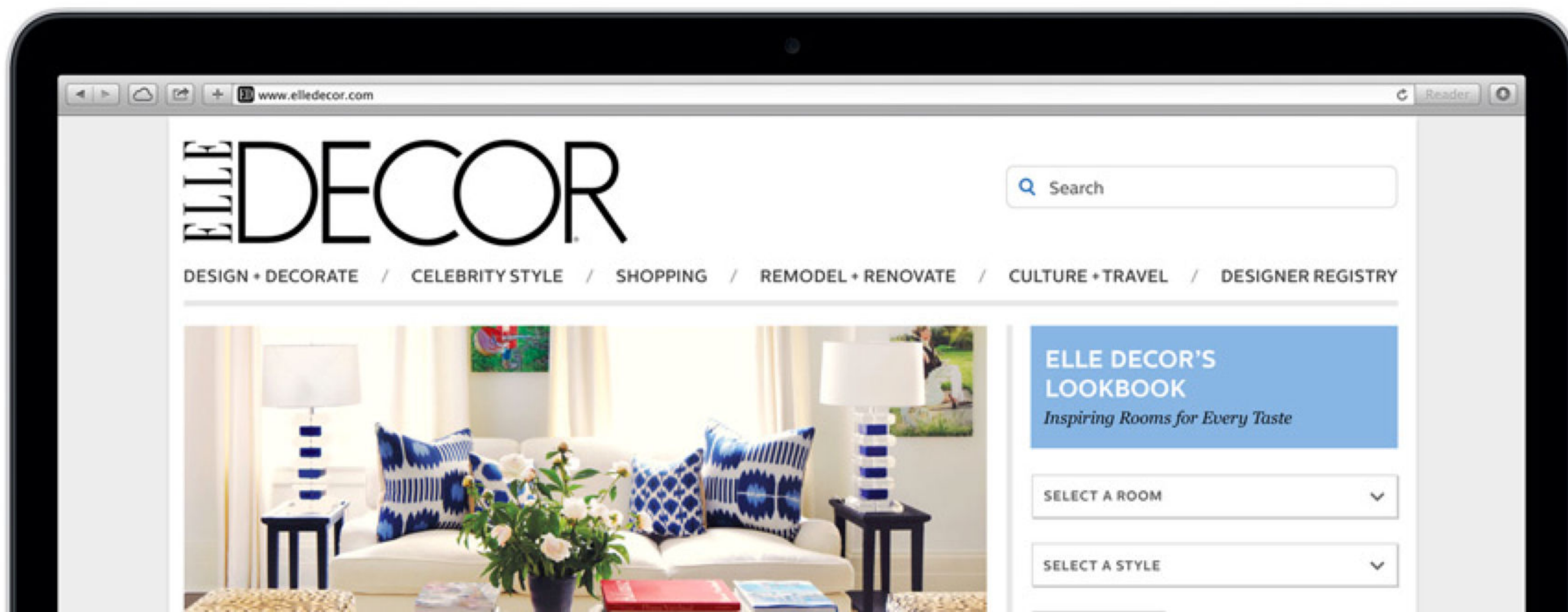
Safari/Chrome/Opera Family Tree



[Store](#)[Mac](#)[iPod](#)[iPhone](#)[iPad](#)[iTunes](#)[Support](#)

Safari

The smartest way to surf.



Specific Safari features

- » Reader
- » iCloud Keychain
- » iCloud Bookmarks
- » iCloud Tabs

Before Shooting in Iraq, a Warning on Blackwater – NYTimes.com

Reader

www.nytimes.com/2014/06/30/us/before-shooting-in-iraq-warning-on-blackwater.html?hp&action=cli

Bonjour ▾S-FocEnt ▾RSG ▾G ▾WS ▾Soc ▾Apps ▾lets ▾News ▾Save ▾Open URL

SECTIONS

HOME

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The New York Times

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Formula for on and



Before Shooting in Iraq, a Warning on Blackwater



Andy Coulson to Face Retrial in Royal Phone Hacking Case



CITY ROOM
New York Today: Behind Grand Central's Shine



Pistorius Was Not Mentally Ill at Time of Shooting, Psychiatrists Report



North India Defies Balli

U.S.

213 COMMENTS

Before Shooting in Iraq, a Warning on Blackwater

By JAMES RISEN JUNE 29, 2014

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WASHINGTON — Just weeks before [Blackwater](#) guards [fatally shot 17](#) civilians at Baghdad's Nisour Square in 2007, the State Department began investigating the security contractor's operations in [Iraq](#). But the inquiry was abandoned after Blackwater's top manager there issued a threat: "that he could kill" the government's chief



A | A

Before Shooting in Iraq, a Warning on Blackwater

Photo



Blackwater personnel escorting Paul Bremer, an American civil administrator, upon his

WASHINGTON — Just weeks before [Blackwater](#) guards [fatally shot 17](#) civilians at Baghdad's Nisour Square in 2007, the State Department began investigating the security contractor's operations in [Iraq](#). But the inquiry was abandoned after Blackwater's top manager there issued a threat: "that he could kill" the government's chief investigator and "no one could or would do anything about it as we were in Iraq," according to department reports.

American Embassy officials in Baghdad sided with Blackwater rather than the State Department investigators as a dispute over the probe escalated in August 2007, the previously undisclosed documents show. The officials told the investigators that they had disrupted the embassy's relationship with the security contractor and ordered them to leave the country, according to the reports.

After returning to Washington, the chief investigator wrote a scathing report to State Department officials documenting misconduct by Blackwater employees and warning that lax oversight of the company, which had a contract worth more than \$1 billion to protect American diplomats, had created "an environment full of liability and negligence."

Continue reading the main story



"The management structures in place to manage and monitor our contracts in Iraq have become subservient to the contractors themselves," the investigator, Jean C.

iCloud Keychain syncs your user names, passwords, & credit card info between Safari on your Mac & Mobile Safari on your iOS devices

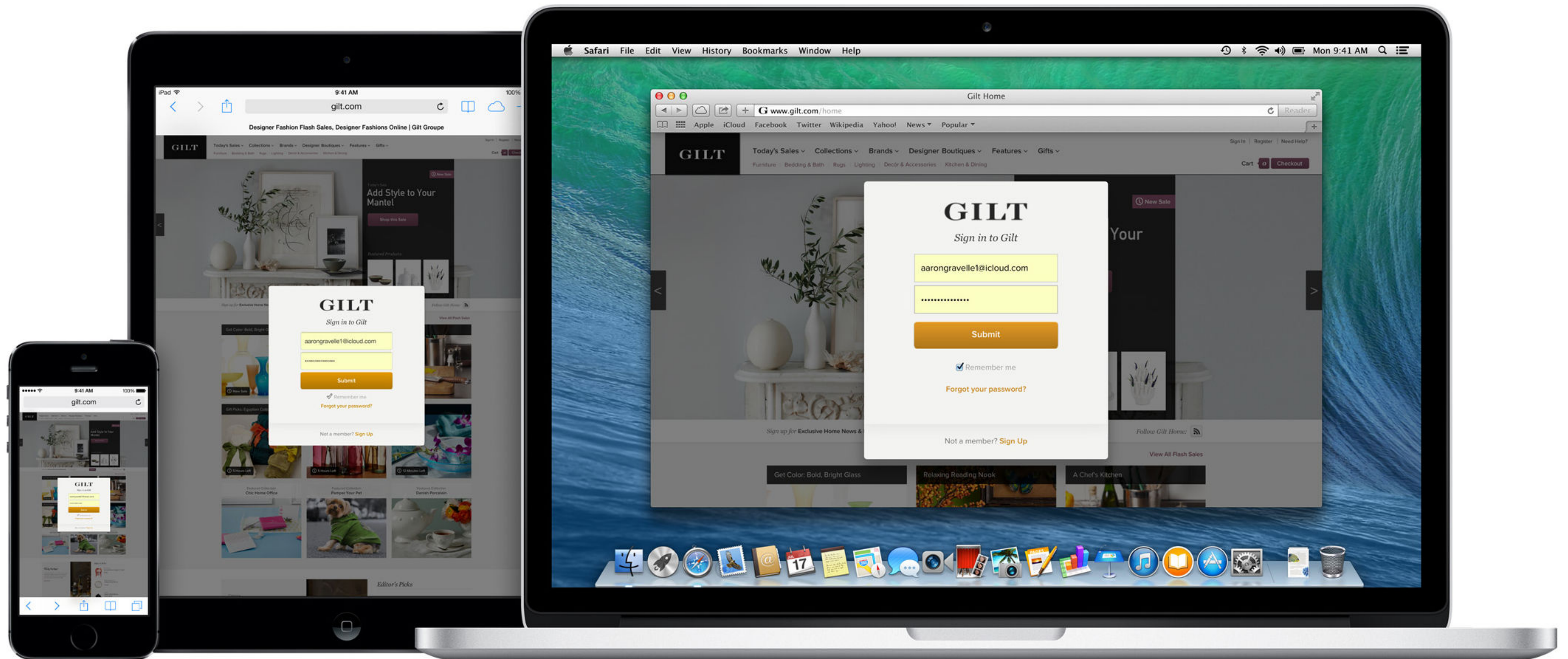
Everything is encrypted with 256-bit AES

iCloud Keychain

iCloud Bookmarks

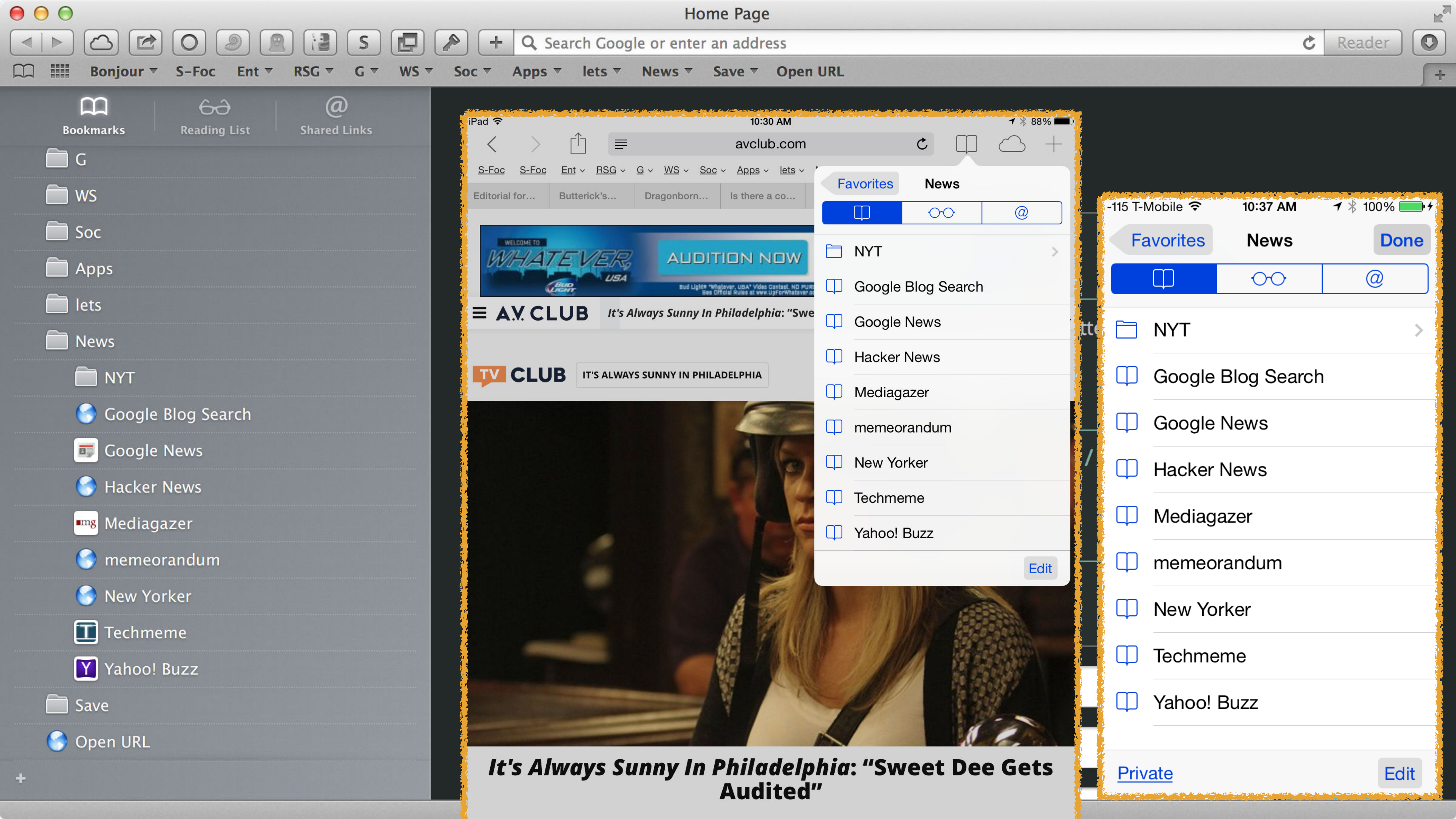
iCloud Tabs

Reading List

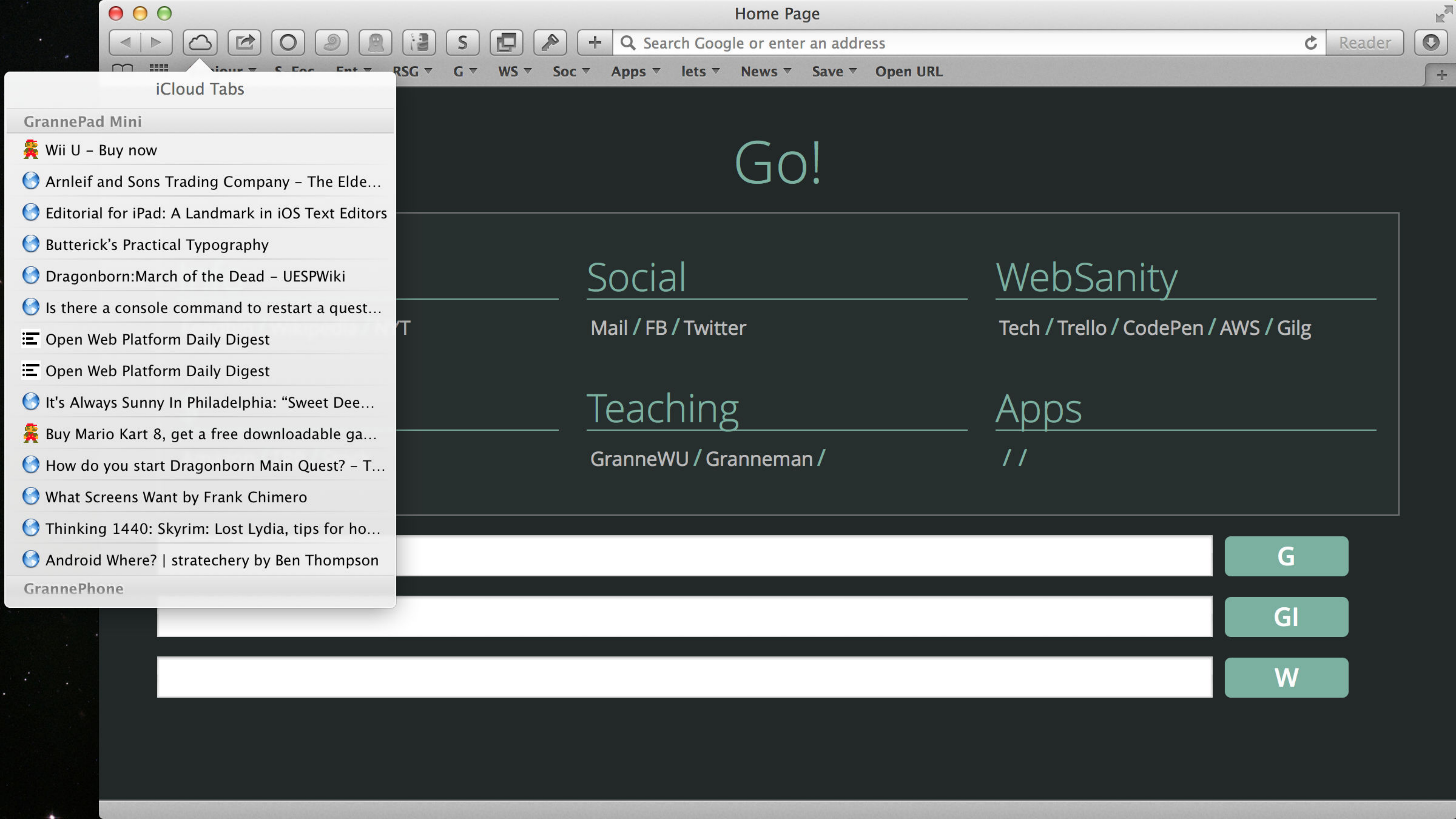


iCloud Keychain securely stores your user names, passwords, and credit card numbers and keeps them up to date on your other approved devices. So you can easily sign in to your favorite websites and quickly make online purchases. And everything is protected with robust 256-bit AES encryption.

iCloud Bookmarks sync bookmarks between Safari on your Mac & Mobile Safari on your iOS devices



iCloud Tabs syncs tabs between Safari on your Mac & Mobile Safari on your iPhone & iPad



iCloud Tabs

- GrannePad Mini
- 🎮 Wii U – Buy now
- 🌐 Arnleif and Sons Trading Company – The Elde...
- 🌐 Editorial for iPad: A Landmark in iOS Text Editors
- 🌐 Butterick's Practical Typography
- 🌐 Dragonborn:March of the Dead – UESPWiki
- 🌐 Is there a console command to restart a quest...
- ☰ Open Web Platform Daily Digest
- ☰ Open Web Platform Daily Digest
- 🌐 It's Always Sunny In Philadelphia: "Sweet Dee..."
- 🎮 Buy Mario Kart 8, get a free downloadable ga...
- 🌐 How do you start Dragonborn Main Quest? – T...
- 🌐 What Screens Want by Frank Chimero
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- 🌐 Android Where? | stratechery by Ben Thompson

GrannePhone

Go!

Social

Mail / FB / Twitter

WebSanity

Tech / Trello / CodePen / AWS / Gilg

Teaching

GranneWU / Granneman /

Apps

//

G

GI

W

I have 7 web browsers on my Mac—Safari, Firefox, Brave, Brave Browser Beta, & TorBrowser — but I often use Safari

Why?

- » Private: Apple isn't collecting data on my browsing
- » Fast: always in the top 3
- » Extensions: the ones I want
- » Secure: good security record
- » Scriptable: great for the automation tools I use
- » Development: good Web developer tools
- » Printing: excellent support for generating PDFs



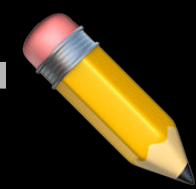
Google Chrome has lots of advantages

- » Fast
- » Advanced
- » Gazillions of extensions
- » Good security (but not privacy)
- » Syncing of data

Google Chrome has really bad disadvantages

- » Google spying so Google knows even more about you
- » Strange UI decisions
- » Extensions at Chrome Web Store often not policed well

3 Languages

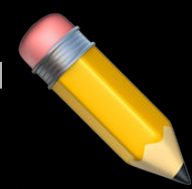


SIDE NOTE

Why is it called JavaScript?

Early 1995

Netscape decides to add scripting to its browser after embedding Java support with the browser & hiring Brendan Eich to add support for Scheme



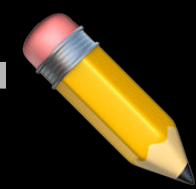
SIDE NOTE

May 1995

Brendan Eich creates Mocha scripting language at Netscape in 10 days

September 1995

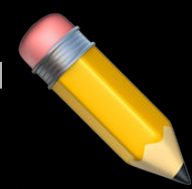
Netscape Navigator 2.0b3 ships LiveScript



SIDE NOTE

December 4, 1995

Netscape & Sun announce JavaScript: “The JavaScript language complements Java ... While Java is used by programmers to create new objects and applets, JavaScript is designed for use by HTML page authors and enterprise application developers to dynamically script the behavior of objects running on either the client or the server.”

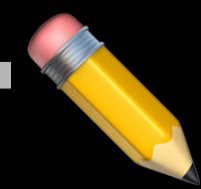


SIDE NOTE

So why is it called JavaScript, even though it has next to nothing technically to do with Java?

A bad marketing decision 25 years ago!

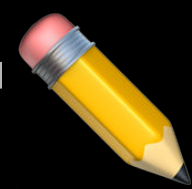
UTF-8



SIDE NOTE

Japanese kaomoji (顔文字, lit. “face characters”) 1st appeared in 1986 on ASCII NET, an early Japanese online service

(*_*) (-_-;) (^.^) [o_o] (`Д´) ∫°ǎ°] ㊄_㊄ >.<



SIDE NOTE

Other emoticons

ò_ó ã_o t(-_-t) <(^.^)> <(^.^)> - ㄥ - ({^})

(^_^) “Lenny”

ㄟ(ˋ)ㄟ

(͡° ͜° ͡°) ㄣ Table flip!


$$\begin{array}{cc|c} \square & \square & / \\ \square & \square & \backslash \end{array}$$
$$\begin{array}{cc|c} \square & \square & / \\ \square & \square & /) \end{array}$$

| | | |

Changelog

2025-03-20 3.20: Changed Chrome icon to Chromium on JavaScript Engines page; hid slide showing Microsoft's deprecation of IE & old version of Edge; added slides in *Rendering Engines* about Chrome comic & *Contra Chrome* comic

2025-01-20 3.19: Changed theme to Granneman 1.13; minor fixes; updated *separation of concerns* slide & added example; added slide for *The Modern JavaScript Tutorial*

Changelog

2024-10-23 3.18: Added **DEL** to *ASCII*; added list of 208 Noto fonts

2024-09-15 3.17: Updated UTF-8 to version 16 & number of emojis, along with citations; added Unicode numbers chart; added more notes & citations re: ASCII

2024-04-02 3.16: Moved **.htm** to a footnote; removed audio pronunciation of “mojibake”; added icons for Java & JavaScript

Changelog

2024-02-07 3.15: Added audio file pronouncing “mojibake”; added details re CERN & Berners-Lee

2024-01-13 3.14: Updated for Unicode 15.1; added tweet re: Chrome spying; added slide for `<center>` showing deprecation; added slides re: musicians using Unicode; added a couple of slides re: what to notice re: HTML in *The Simplest Webpage Ever*; added 2 diagrams re: UTF-8; added QR codes

Changelog

2023-07-31 3.13: Added images showing browsers based on Chromium

2023-06-12 3.12: Added Parts of a URL to *How the Web Works*

2023-06-12 3.11: Quoted TB-L on why he created the Web; reorganized Safari in *Bonus*

Changelog

2023-03-30 3.10: Updated screenshots of VS Code's Extensions View

2023-03-19 3.9: Added citation for quirks mode; added slide re: you cannot nest comments; added quote from HTML Living Standard re: parse errors & moved getting judged re: bad code to new slide; added quotation from WHATWG re: removing features; added box around BS in ASCII Code Chart

Changelog

2023-03-13 3.8: For *Web Servers*, added icons showing supported operating systems & current marketshare numbers; added more to the list of Chromium-based browsers; updated UTF-8 & Noto numbers, plus better explanation of *no tofu*; added Tim Berners-Lee image

2023-01-23 3.7: Removed Quirks Mode; moved kaomoji to Bonus; added gVim to Windows Vim; added chnsa.ws links to MDN reference links; added examples how to search by putting mdn 1st

Changelog

2022-07-15 3.6: Separated *protocol* & *HTTP* onto separate slides; minor edits; glad we don't use the HTML 4.01 DTD or character encoding any longer; more on why sloppy code is bad; more on why not to leave “funny” comments in; more on why not to capitalize files & folders; more explanation why PC-Write was not a WYSIWYG; a teeny bit more about CodePen; minor edits & alterations

Changelog

2022-07-12 3.5: Added MDN Web Docs to Background; new screenshots of MDN reference pages, including JavaScript; added HTML 5.1 & 5.2 to HTML timeline, with sleeping emojis; updated *all* citations; added details to Browser Choices; updated *many* screenshots; simplified Setting Character Encoding; improved Noto; big update!

2022-01-23 3.0: Changed to Web Dev Intro to Students; removed lots of stuff that is really only for Professionals; reversed Chrome & Viewport; rearranged a few things, added some stuff, & clarified things that weren't clear; bumped to 3.0 because of the big changes

Changelog

2021-11-28 2.8: Changed wording slightly explaining an *element*; added example from Twitter of 37 levels of nesting

2021-06-10 2.7: Removed 1 kaomoji because it was really an emoticon; better examples of *hypertext*, *markup*, & *language*; added hidden slide re W3C charter for HTML5

Changelog

2021-04-14 2.6: Updated theme to Granneman 1.7; cleaned up *lots* of minor formatting issues; added section on kaomoji

2020-09-08 2.5: Cleaned up *lots* of little stuff; added slides describing node.js, Electron, great features of VSCode; updated CanIUse screenshots; updated Web server marketshare; added summary note about JavaScript's name; updated *Bonus > History* section to make it a lot better; clarified void elements in *Elements, Attributes, Values*

Changelog

2020-08-19 2.4: Added slide re Microsoft ending support for IE 11 & Edge Legacy

2020-08-06 2.3: Added number of emoji & a few details re UTF-8 in *Character Encoding*

2020-07-13 2.2: Added details re: ECMAScript (JavaScript) & ECMA; fixed caniuse.com screenshots; minor wording changes; added history of JavaScript

Changelog

2020-07-05 2.1: Added other specs overseen by WHATWG & that W3C still oversees CSS; minor fixes

2020-06-26 2.0: Combined *Browsers, Web Servers, & HTTP* into a new section: *How the Web Works*; added *3 Languages* section; reorganized sections to make more sense; added kick-ass diagrams to *3 Languages*; added details re: DTD & quirks mode; minor wording fixes; bumped up to version 2 because of the large changes & restructuring

Changelog

2020-06-10 1.29: Minor fixes & updates; hid tips from *Pragmatic Programmer*; added stats & tables to Rendering Engines; updated web server marketshare

2020-02-05 1.28: Added `</head><body>` tattoo photo; added details about Chromium-based browsers; added release date for new Edge; fixed all browser logos to be historically accurate; fixed family trees in Choices

Changelog

2019-09-14 1.27: Added info re: WHATWG hosting living HTML spec; moved Choices last under Browsers; added info re: Chromium; minor fixes

2019-08-28 1.26: Added info re: supporting browsers; added how the Web was designed to view source code; added *closing tags & void elements*; replaced Microsoft logo; added Formatting Guide pages re: nesting code under Text Editor; changed colors of Development Venn diagram; added *HTML Tags* to history of HTML

Changelog

2018-12-24 1.25: Updated UTF-8 & Noto info; added Emoji slide to *UTF-8*; added that CodePen is like YouTube; order of attributes doesn't matter; cannot repeat attributes; added note re: character encoding in 1st 1024 characters; added details on Noto; added rendering engine slides re: Edge moving to `<blink>`, added JavaScript engines; added *ghost characters* to UTF-8; added neat ASCII chart

2018-10-01 1.24: Minor formatting fixes; fixed images for Simplest Webpage; updated theme to Granneman 1.5

Changelog

2018-08-22 1.23: Added new Windows-1252 diagram; fixed ISO-8859-1 page; changed font in Markup Venn diagram; updated web server marketshare; added section on *Visual Studio Code* & hid *Brackets*; re-formatted table of editors; hid *Templates* section; several more slides on Can I Use; better image for Outlook rendering engines

Changelog

2018-05-07 1.22: Changed theme to Granneman 1.4; lots of formatting fixes; additional notes re: Notepad & TextEdit; added how to set character encoding in browsers; added instructions for setting Chrome's character encoding to UTF-8; moved tofu under Noto; changed wording on Notepad; updated HTML Templates; updated installation screenshots

Changelog

2017-11-03 1.21: Added Visual Studio Code to list of editors; added *HTTP & Web Servers* sections

2017-10-23 1.20: In *Background*, better ordered slides, hid a few, added Can I Use, & improved HTML versions slide; added browser marketshare in Browsers; in *DTD*, hid older DTDs; added Noto to UTF-8 in *Character Encoding*; linked to my version of HTML Templates extension for Brackets; new link & examples for Brackets HTML Templates extension

Changelog

2017-09-15 1.19: Updated HTML Templates slides; hid Outlook's rendering engine; added tips from *Pragmatic Programmer*; added more attribute examples; updated View Source instructions; replaced HTML5 Taxonomy & Status image; hid Opera Mini; more detail on browser family trees; hid some browser parts to focus on chrome & viewport

2016-09-07 1.18: Many small changes & fixes; added slide showing status of W3C HTML5 & related techs; updated theme to Granneman 1.2

2016-08-23 1.17: Removed centering on W3C slide

Changelog

2016-01-10 1.16: Added slide re: feature phones

2016-01-10 1.15: Added slide re: capitalizing files & folders; updated info on browser support for *DTD* & *Character Encoding*

2015-08-31 1.14: Changed theme to Georgia Pro, so I had to fix a lot of things; made versions of DTD with versions of HTML clearer; clarified & cleaned up *Character Encoding*; clarified IE Edge Mode; minor edits to *Editing*; better explained WYSIWYGs; took out 1 CodePen slide

Changelog

2015-08-27 1.13: Removed 6-week release cycle for Brackets; shortened WebSanity CodePen URL; debugging not a good reason for comments; added EdgeHTML to rendering engines; improved deprecation slide; minor changes & fixes

2015-08-26 1.12: Removed slide showing Edge; put Opera on same line as Chrome; added browser family trees; updated *Browser Parts* from Safari to Chrome; updated Brackets features provided via extensions

Changelog

2015-06-13 1.11: Made the Tim Berners-Lee slides a lot cooler; added info about font tofu & Noto; changed name of Spartan to Edge

2015-02-02 1.10: Removed HTML5 REC; added info about Spartan & EdgeHTML; added info re: Outlook's rendering engine; added slide about original purpose of the Web (documents); added year of WHATWG's founding; added dates of HTML releases & Flash

2015-01-24 1.9: Added Mojibake term & example to *Character Encoding*

Changelog

2015-01-12 1.8: Removed ? after 2014 for HTML5; removed Adobe Edge Code; added preprocessing support to Brackets

2014-09-06 1.7: Removed Frameworks slide from *Templates*; rearranged W3C & WHATWG pages; moved side note about IE Edge Mode to *Character Encoding*; added examples to comments; various small tweaks & fixes

2014-09-02 1.6: Added slide on spaces in file names; strikethroughs on certain Brackets extensions because they were added to the program; added screenshots of CodePen

Changelog

2014-08-28 1.5: Changed “web browser” to “rendering engine” where appropriate; re-ordered a few slides; added Scott McCloud

2014-08-27 1.4: Moved *History* to *Bonus*

2014-08-26 1.3: Cleaned up *Browser History*

Changelog

2014-08-26 1.2: Minor fixes; added images for text editors & WYSIWYG; added *Browser History* & *Browser Choices* sections

2014-07-28 1.1.3: Added better WYSIWYG slides

2014-07-28 1.1.2: Added CodePen slides

2014-07-01 1.1.1: Added slides to *Rendering Engines* showing support for HTML5 & CSS

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