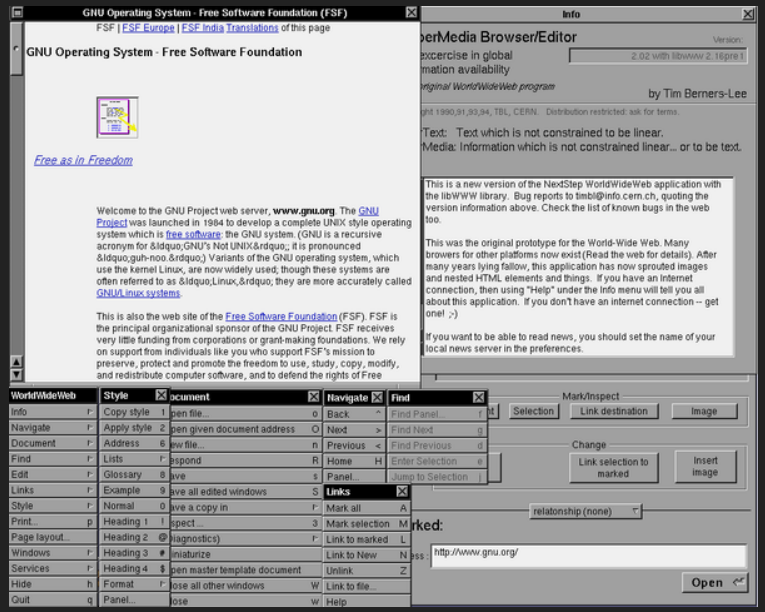
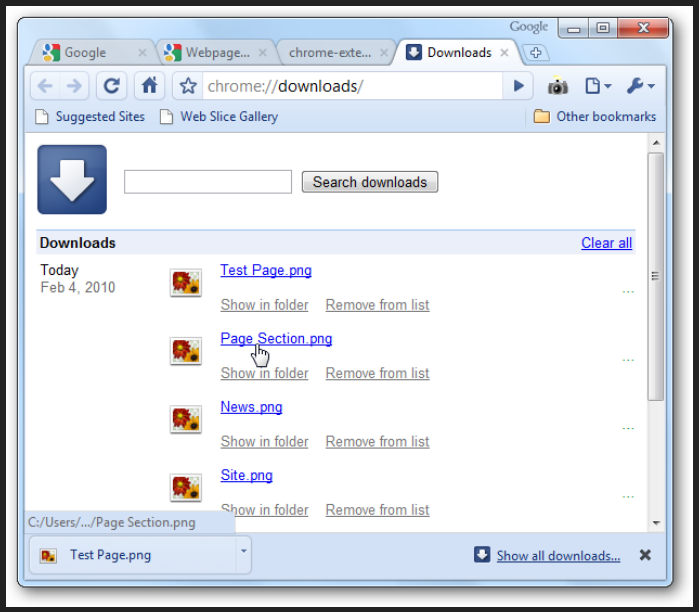
Browsers

INFO 253A: Front End Web Architecture

Kay Ashaolu

What is the core?





Features of a Browser

- Network Access
- Interpreting the fetched data
- Possibly fetching and interpreting dependencies like images
- Rendering HTML with CSS rules
- Running scripts in the context of the web page

Pinterest.com -> Web page

- Analyze address bar to determine protocol and server
- Connect to server, download data and all dependencies
- Analyze HTML, generate a Document Object Model (DOM)

What is the DOM?

The DOM (Document Object Model) is an interface that represents how your HTML documents are read by the browser. It allows a language (JavaScript) to manipulate, structure, and style your website.

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- Apply CSS to the DOM
- Display the DOM
- Start executing scripting code and re-render the DOM as required
- Continue executing and interpreting user actions

Separate Browser from Websites?

- Composability!
- Improve the features around the website without upgrading the website
- Original browser did not have Forward or Back buttons
- Accessibility

Separate Browser from Websites?

- The **trade-off** is the layouts need to follow rules, designers must design with multiple audiences in mind

Browsers, Apps, Operating Systems

- Traditionally browsers were applications running in an OS like Windows
- Scripting enables browsers to run their own code
- Complex web pages (e.g. Google Docs, Slack) behave like an application

Browsers, Apps, Operating Systems

- Browsers could become an OS themselves (e.g. ChromeOS)
- Frameworks enable using web technologies for native applications (e.g. Electron)
- The lines between browsers, apps, and operating systems are increasingly blurred

Browsers, Apps, Operating Systems

Browsers interpret data as text

- HTML
- CSS
- JavaScript

Browsers interpret data as other media

- Images
- Music
- Video

HTML

- HyperText Markup Language
- HyperText is essentially text with links
- Provides the content of a page

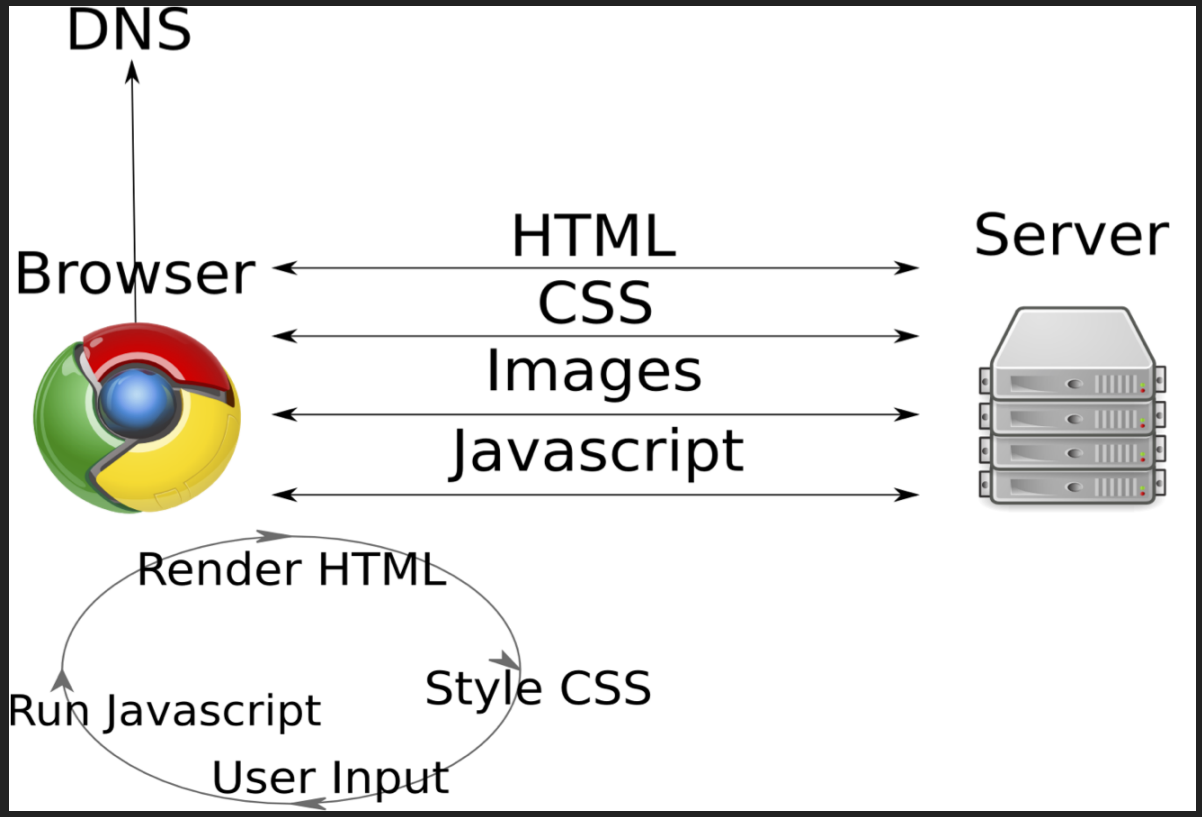
CSS

- Cascading Style Sheet
- Modifies the look and feel of the web page
- Instructs the destination (browser) how to display the content (HTML)

JavaScript

- General programming language, but designed with HTML in mind
- Provides interactivity to web pages
- Can modify HTML and CSS after a web page has been loaded
- Some web applications are written only in JavaScript

Overview


DNS
Browser
HTML
CSS
Images
Javascript
Server
Render HTML
Style CSS
Run Javascript
User Input

Questions?