Introduction to DOM

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Rules

Feel free to interrupt me for:

- questions

- relevant comments

Agenda

- how the web works

- how browsers request a page from a server

- how browsers render a page

- what is the DOM

How the web works

- the web is a network of computers all over the world

- it enables the sharing of information and resources

- key components: web browsers, web servers, and the internet

Web browsers, servers, and internet

- **web browser (client)**: a software application for accessing information on the web. Examples: Chrome, Firefox, etc.

- **web server**: a computer system that hosts websites and delivers web pages to browsers. Examples: Apache, Nginx, etc.

- **internet**: a global network of interconnected computers using standardized communication protocols

Communication protocols

- **HTTP/HTTPS**: protocols used for transferring web pages. HTTPS is the secure version

- **DNS (Domain Name System)**: translates human-readable domain names (like www.example.com) into IP addresses

How browsers request a page from a server

- user enters a URL in the web browser

- browser resolves the URL to an IP address using DNS

- the browser sends an HTTP request to the server

- the server processes the request and sends back an HTTP response with the web page data

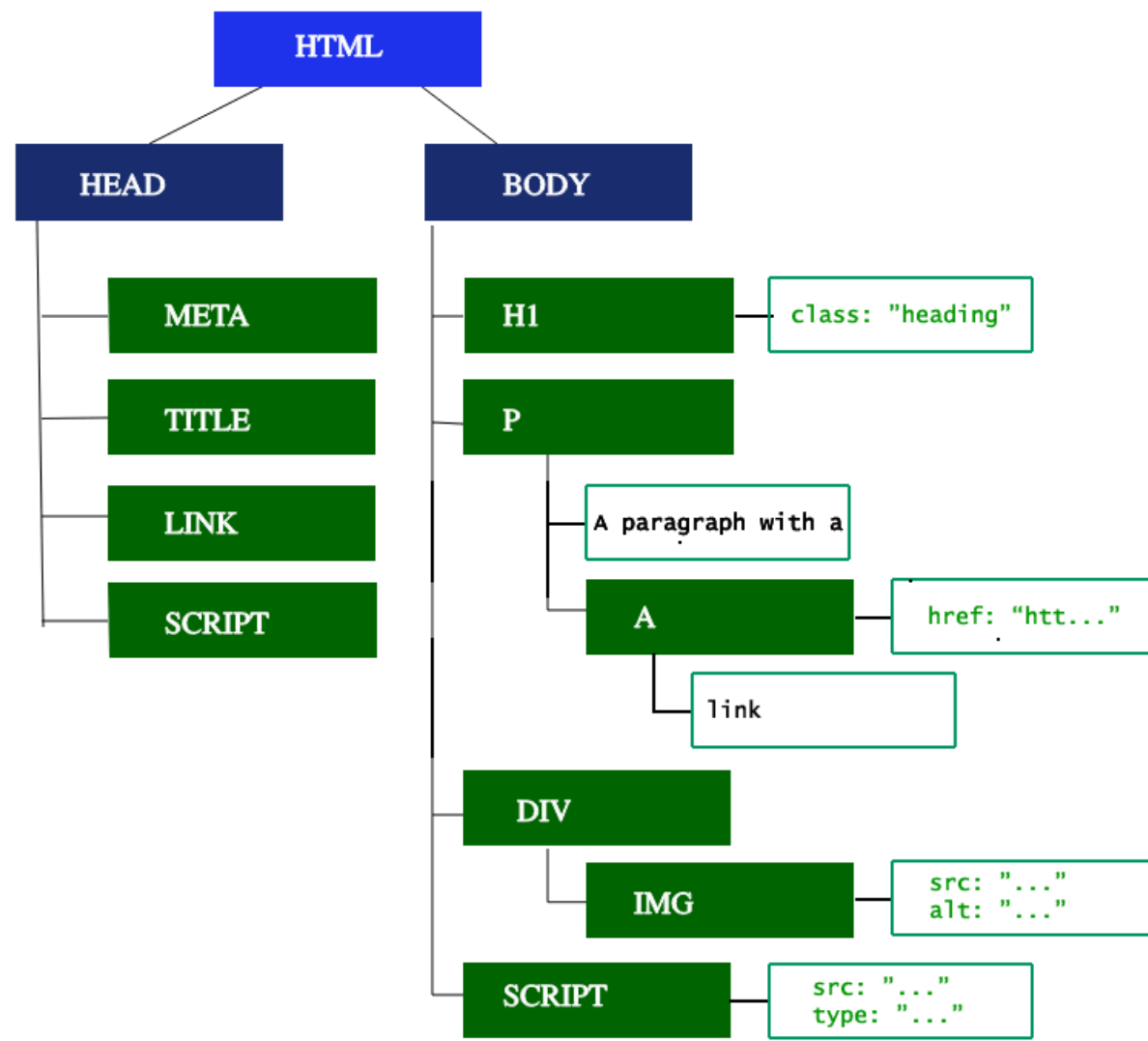- the browser receives the data

How browsers render a page

- the browser sends an **HTTP request (GET)** on behalf of the user

- it gets back a **response** (let's assume that it is an **HTML file**)

- it collects **all** the other resources needed to render the page

- the browser is **parsing** the data and builds the **DOM** and **CSSOM**

- by combining the **DOM** and **CSSOM** the browser starts to **render** the page

- the final **rendering** step is to **paint** the page to the user's screen

- everytime either the **DOM** (or **CSSOM**) changes the page re-renders

What is the DOM (Document Object Model)?

- the DOM is an object-oriented representation of the web page, which can be modified with JavaScript

- the Document Object Model (DOM) treats an HTML (or XML) document as a tree structure where each node is an object representing a part of the document

- nodes can be elements, attributes, text, etc.

- it represents the page so that programs can change the document structure, style, and content

The DOM tree

HTML and the DOM

- HTML (HyperText Markup Language) is the standard language for creating web pages

- when a web page is loaded, the browser parses the HTML and generates the DOM

- the HTML elements become the nodes of the DOM tree

JavaScript and the DOM

- JavaScript is a scripting language that can manipulate the DOM

- through JavaScript, you can add, remove, and modify elements and content on the web page dynamically

- JavaScript interacts with the DOM using various methods and properties (web APIs)

Workshop

- demo

Happy coding!