

Web Development and HTML

Shan-Hung Wu
CS, NTHU

Outline

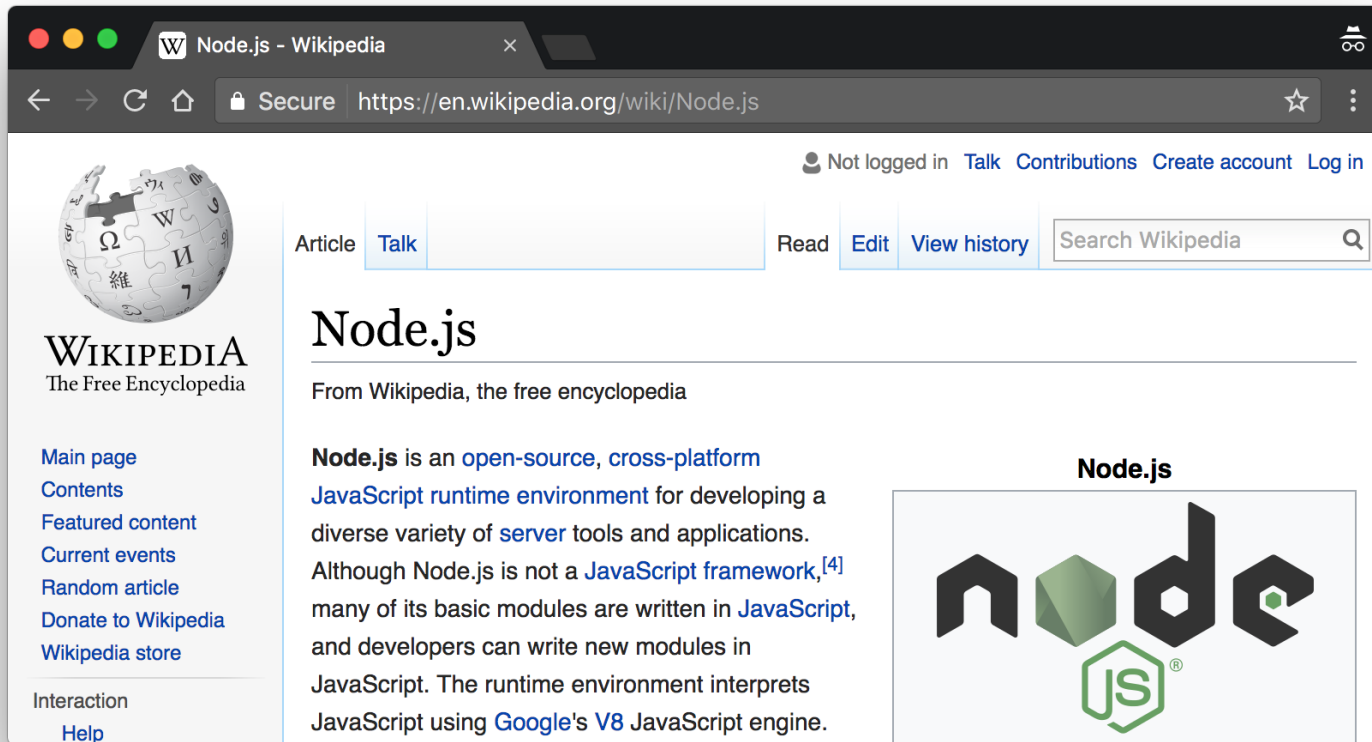
- How does Internet Work?
- Web Development
- HTML
 - Block vs. Inline elements
 - Lists
 - Links and Attributes
 - Tables
 - Forms

Outline

- How does Internet Work?
- Web Development
- HTML
 - Block vs. Inline elements
 - Lists
 - Links and Attributes
 - Tables
 - Forms

What Happened?

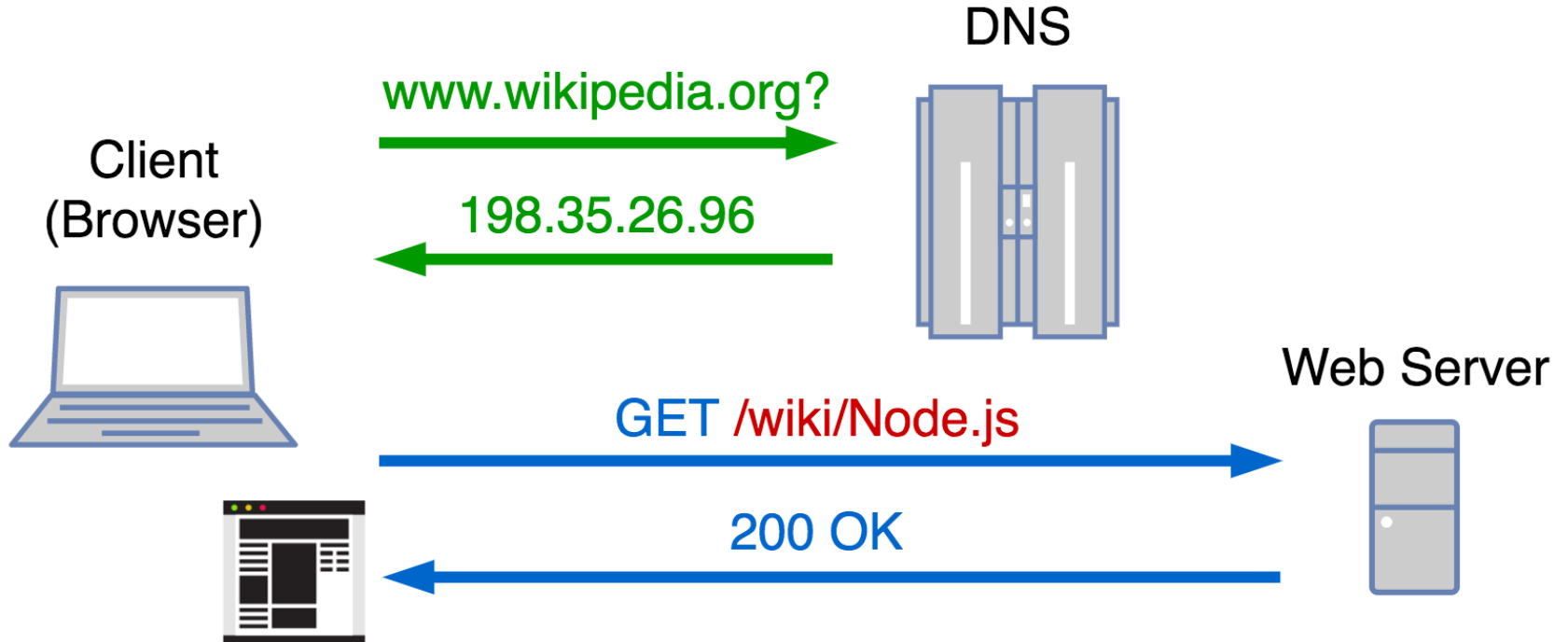
<https://www.wikipedia.org/wiki/Node.js>



The image shows a browser window displaying the Wikipedia article for Node.js. The browser's address bar shows the URL <https://en.wikipedia.org/wiki/Node.js>. The page header includes the Wikipedia logo, the text "WIKIPEDIA The Free Encyclopedia", and a navigation menu with links for "Main page", "Contents", "Featured content", "Current events", "Random article", "Donate to Wikipedia", and "Wikipedia store". The article title "Node.js" is prominently displayed, followed by the text "From Wikipedia, the free encyclopedia". The main content of the article begins with "Node.js is an open-source, cross-platform JavaScript runtime environment for developing a diverse variety of server tools and applications. Although Node.js is not a JavaScript framework,^[4] many of its basic modules are written in JavaScript, and developers can write new modules in JavaScript. The runtime environment interprets JavaScript using Google's V8 JavaScript engine." To the right of the text is a large image of the Node.js logo, which consists of the word "node" in a stylized font with a green cube and the letters "JS" in a green hexagon.

From URL to Web Page

<https://www.wikipedia.org/wiki/Node.js>



HTTP

- A ***protocol*** is language spoken by machines
 - Defines structure of messages to be exchanged
- HyperText Transfer Protocol (HTTP) defines:
 - Messages: HTTP ***request*** and HTTP ***response***
 - Requests: accessing ***resources*** (web pages) via **GET, POST, PUT**, and **DELETE** methods
 - Responses: **200** OK, **301** Moved, **404** Not Found, **500** Server Error, etc.

HTTP Messages

- Each HTTP message have
 - Initial line, header lines, and optionally body

Request:

```
GET /wiki/Node.js HTTP/1.1
Host: www.wikipedia.org
Accept: text/html,
        application/json
```

Response:

```
HTTP/1.1 200 OK
Content-Type: text/html
Content-Length: 3324
```

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

- A resource can have different **presentations**
 - HTML, XML, JSON, etc.

Chrome Inspector

URI vs. URL vs. URN

- An Uniform Resource Identifier (URI) identifies a resource on the Internet
- An Uniform Resource Locator (URL) is a specialized URI that identifies a resource **by reachable location**
 - E.g., “http://...”, “https://...”, “ftp://...”
 - Case sensitive
 - Must be [URL encoded](#)
 - “http://host/hello world!” → “http://host/hello%20world%21”
- An Uniform Resource Name (URN) is a specialized URI that identifies a resource **by name**
 - E.g., “urn:isbn:0451450523”

Outline

- How does Internet Work?
- **Web Development**
- HTML
 - Block vs. Inline elements
 - Lists
 - Links and Attributes
 - Tables
 - Forms

Web Development

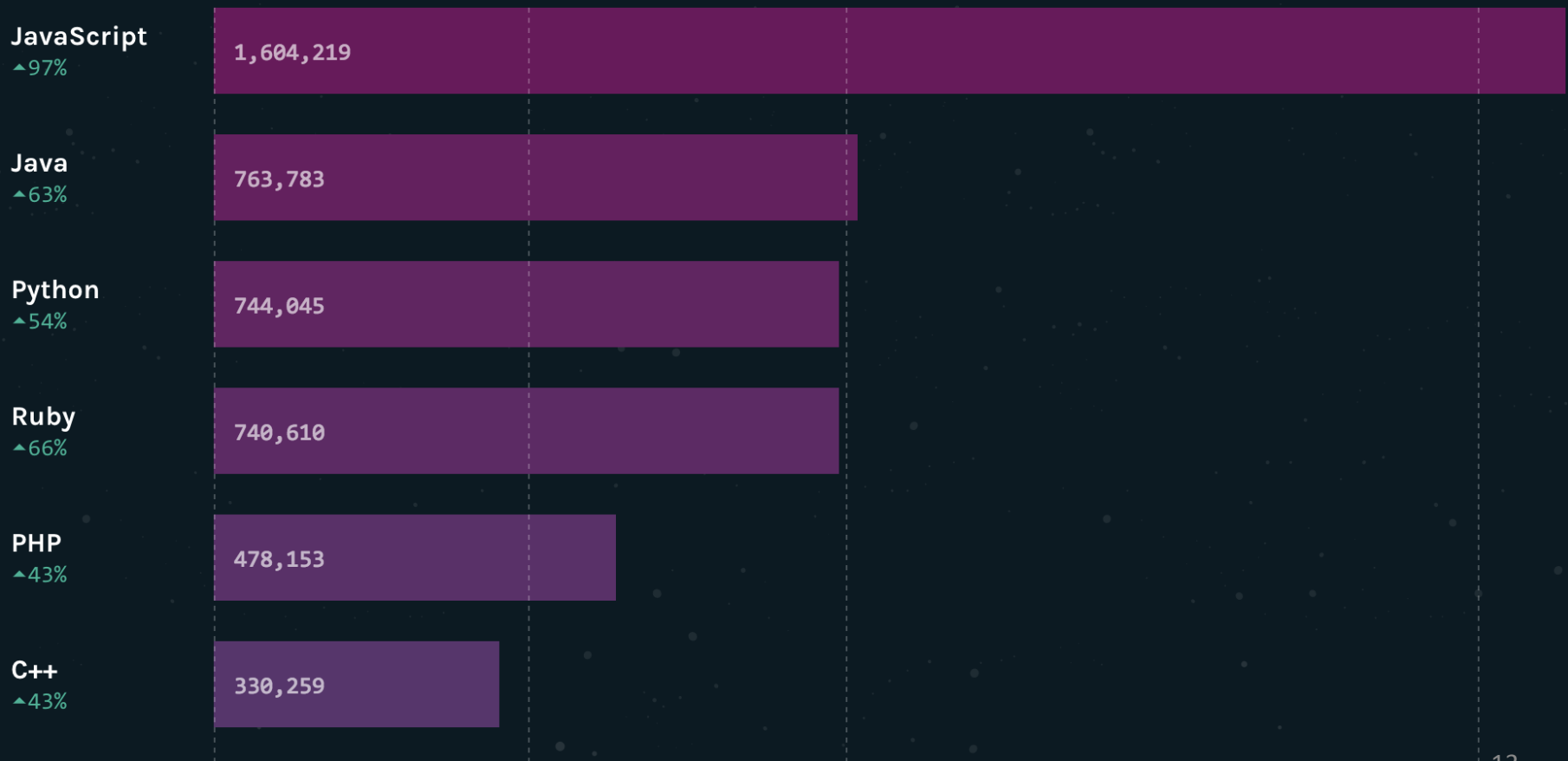
- To build a website that serves web pages
- Code to be run at client side (front end):
 - Displays pages
 - Interacts with user
 - Sends additional requests
- Code to be run at server side (back end):
 - Handles requests (from multiple clients)
 - Stores data
 - Sends “personalized” responses
- We focus on client-side development for now

What's Inside a Web Page?

- Hyper-Text Markup Language (**HTML**)
 - Content and structure
- Cascade Style Sheet (**CSS**):
 - Styles (e.g., color, font, width, height, etc.)
- **JavaScript**:
 - Interactions
 - A general-purpose programming language

Javascript Lies beyond Browsers

15 most popular languages used on GitHub by opened Pull Request and percentage change from previous period



Hello HTML

Grammar

`<tag> content </tag>`

Core HTML Elements

```
<!DOCTYPE html>
```

```
<html>
```

```
  <head>
```

```
    <!-- Metadata goes here -->
```

```
    <title>...</title>
```

```
  </head>
```

```
  <body>
```

```
    <!-- Content goes here -->
```

```
  </body>
```

```
</html>
```


Block vs. Inline Elements

- A block element:
 - Creates new lines above and under
 - Can contain text and other block/inline elements
 - Unless specified, has height fitting its content
 - Unless specified, has width fitting its container
- An inline element:
 - Creates no new line
 - Can contain only text and other inline elements
 - Unless specified, has width and height fitting its content

Viewport & Responsiveness

`<meta name="viewport" content="width=device-width, initial-scale=1.0">`



Outline

- How does Internet Work?
- Web Development
- **HTML**
 - Block vs. Inline elements
 - Lists
 - Links and Attributes
 - Tables
 - Forms

Block vs. Inline Elements I

- Block elements (by default):
 - `<h1>`-`<h6>`, `<p>`, `<div>`, ``, ``, ``, `<table>`,
`<form>`, `<hr>`
- Inline elements (by default):
 - `<a>`, ``, ``, ``, `<label>`, `<input>`,
`<button>`, `
`
- Empty elements (no content):
 - `<hr>`, `
`, ``

Block vs. Inline Elements II

- A block element:
 - Creates new lines above and under
 - Can contain text and other block/inline elements
 - Unless specified, has height fitting its content
 - Unless specified, has width fitting its container
- An inline element:
 - Creates no new line
 - Can contain only text and other inline elements
 - Unless specified, has width and height fitting its content

MDN Reference

Lists

```
<ul>  
  <li>List Item 1</li>  
  <li>List Item 2</li>  
</ul>
```

```
<ol>  
  <li>List Item 1</li>  
  <li>List Item 2</li>  
</ol>
```

HyperLinks and Attributes

```
<a href="www.example.com">Text</a>
```

```

```


Tables

```
<table>
  <tr>
    <th>Header 1</th>
    <th>Header 2</th>
  </tr>
  <tr>
    <td>Cell (1,1)</td>
    <td>Cell (1,2)</td>
  </tr>
  <tr>
    <td>Cell (2,1)</td>
    <td>Cell (2,2)</td>
  </tr>
</table>
```

Forms I



Sign Up

It's free and always will be.

First name

Last name

Email or mobile number

Re-enter email or mobile number

New password

Birthday

Month Day Year [Why do I need to provide my birthday?](#)

Female Male

By clicking Sign Up, you agree to our [Terms](#) and that you have read our [Data Policy](#), including our [Cookie Use](#).

Forms II

```
<form action="/sign-in-url"  
  method="post">  
  <label for="acc">Account:</label>  
  <input id="acc" type="text"  
    name="account">  
  <label for="pw">Password:</label>  
  <input id="pw" type="password"  
    name="passwd">  
  <button>Login</button>  
</form>
```

Query Strings

`http://...?name1=val1&name2=val2`

- GET resources/pages conditionally
 - Based on device type, locale, etc.
- Passing arguments in POST
 - E.g., account and password in user login

Form Validation

```
<form action="..." method="...">  
  ...  
  <input ... required>  
  ...  
  <input ... required>  
  ...  
</form>
```

Entities

- How to type '<' in content?

`<p>a < b</p>`

- `<` → `<`;
- `>` → `>`;
- `&` → `&`;
- `"` → `"`;
- Space → ` `;

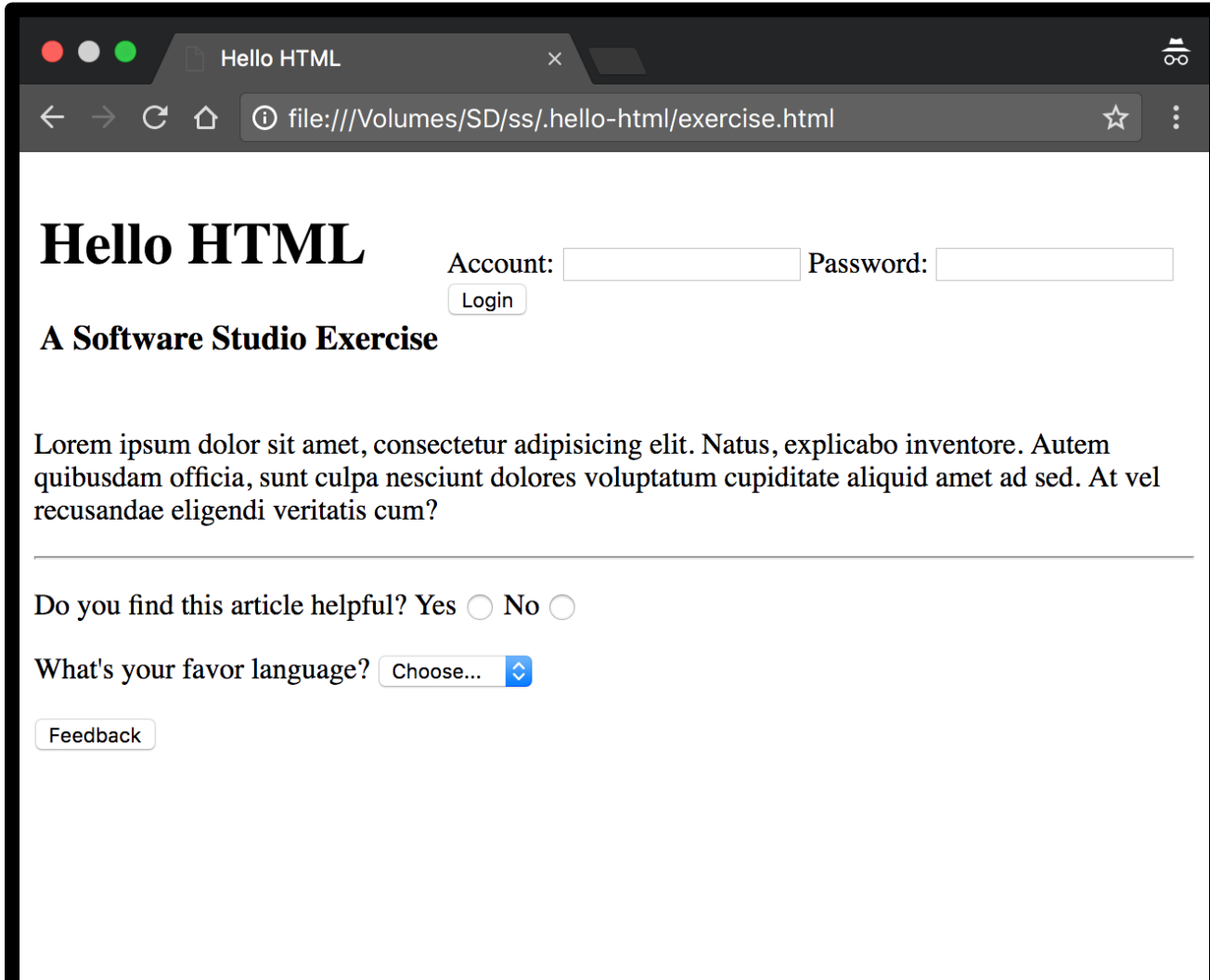
Assigned Reading

- [HTML5 tutorial](#)

Reference

- [Mozilla Developer Network](#) (MDN)

Exercise



The screenshot shows a web browser window with a dark theme. The title bar reads 'Hello HTML'. The address bar shows the file path 'file:///Volumes/SD/ss/.hello-html/exercise.html'. The page content includes a main heading 'Hello HTML', a login form with 'Account:' and 'Password:' labels and input fields, and a 'Login' button. Below this is a sub-heading 'A Software Studio Exercise' followed by a paragraph of Lorem Ipsum text. At the bottom, there is a feedback section with the question 'Do you find this article helpful?' and radio buttons for 'Yes' and 'No', a language selection dropdown menu, and a 'Feedback' button.

Hello HTML Account: Password:

A Software Studio Exercise

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Natus, explicabo inventore. Autem quibusdam officia, sunt culpa nesciunt dolores voluptatum cupiditate aliquid amet ad sed. At vel recusandae eligendi veritatis cum?

Do you find this article helpful? Yes No

What's your favor language?