

Introduction to Web development (Node.js)

Demetre Labadze

Kutaisi multifunctional center

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Course Overview

By the end of the course, you will be able to:

- ▶ Build and style web pages using HTML and CSS.
- ▶ Add interactivity using JavaScript.
- ▶ Develop server-side applications with Node.js.
- ▶ Understand databases and how to interact with them.
- ▶ Learn the basics of web security.
- ▶ Work on full-stack web development projects.

Course Structure

Duration: 6 months

Meetings per week: 2 in-person sessions

- ▶ 2 hours of theory (lecture).
- ▶ 3 hours of practice (hands-on coding).

No graded exercises: Suggested tasks will be provided for outside work.

Assessments: 2 tests — one midterm and one final exam.

Overview for today

- ▶ What is the Web?
- ▶ What is HTTP?
- ▶ HTML
 - ▶ Tags for Text
 - ▶ Links
 - ▶ Lists
 - ▶ Tables

What is the Web?

- ▶ The Web (World Wide Web) is a collection of documents and resources, linked by hyperlinks and accessible via the Internet.
- ▶ The Web allows people to interact with content, services, and each other, enabling global communication and commerce.



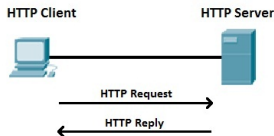
World Wide Web

- ▶ The World Wide Web (WWW) is an information system where documents and resources are identified by URLs.
- ▶ It allows users to access and navigate through interlinked web pages via the Internet.
- ▶ The Web uses hypertext to facilitate navigation through linked documents.
- ▶ Key technologies include HTML, CSS, and JavaScript.
- ▶ Tim Berners-Lee invented the World Wide Web in 1989.

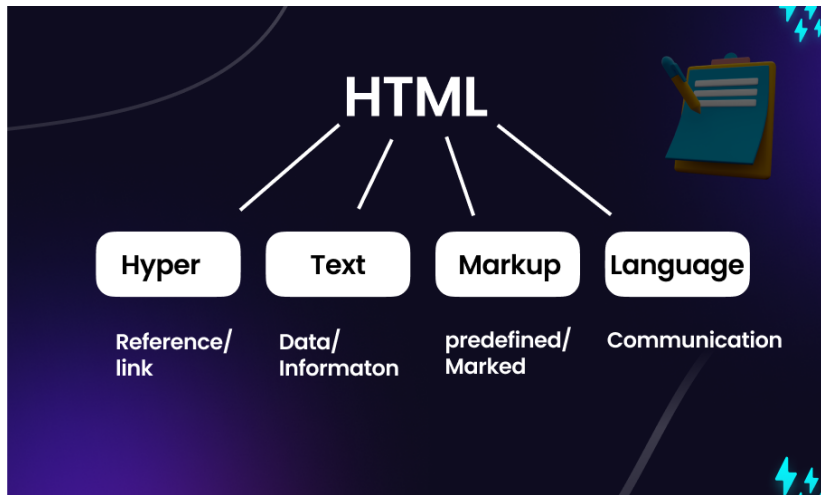


How HTTP Works

- ▶ ****HTTP**** is a protocol used for transferring hypertext requests and information on the Internet.
- ▶ It follows a client-server model:
 - ▶ The client (browser) sends a request to the server.
 - ▶ The server processes the request and returns a response.
- ▶ HTTP operates over TCP/IP protocol.



What does HTML stands for?



Definitions of Hypertext Markup Language

- ▶ **Hypertext:**

- ▶ Text that contains links to other documents or resources, allowing users to navigate between different pieces of information on the web.

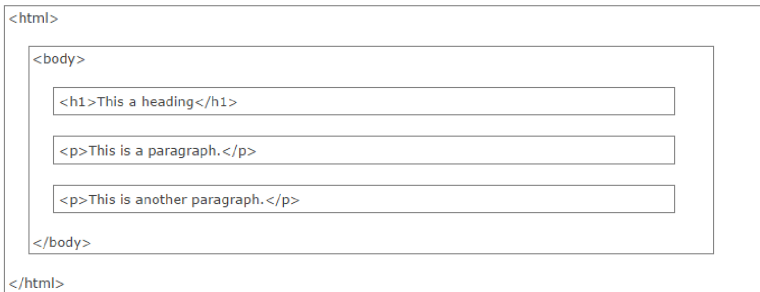
- ▶ **Markup:**

- ▶ Annotations or "tags" in a document that define its structure and layout, telling the browser how to display the content.

- ▶ **Language:**

- ▶ A system of communication with rules and syntax that can be understood by both humans and machines; in this case, it refers to the syntax used in HTML.

HTML page structure



Anatomy of an HTML tag



`<p />`



`<p></p>`



Headings

The heading tag is used in HTML to define headings of a page.

chapter-02/headings.html HTML

```
<h1>This is a Main Heading</h1>
<h2>This is a Level 2 Heading</h2>
<h3>This is a Level 3 Heading</h3>
<h4>This is a Level 4 Heading</h4>
<h5>This is a Level 5 Heading</h5>
<h6>This is a Level 6 Heading</h6>
```

RESULT

This is a Main Heading

This is a Level 2 Heading

This is a Level 3 Heading

This is a Level 4 Heading

This is a Level 5 Heading

This is a Level 6 Heading

Paragraphs

The `<p>` tag is used to define a paragraph in HTML. Each paragraph is separated by a space by default.

HTML

chapter-02/paragraphs.html

```
<p>A paragraph consists of one or more sentences  
that form a self-contained unit of discourse. The  
start of a paragraph is indicated by a new  
line.</p>  
<p>Text is easier to understand when it is split up  
into units of text. For example, a book may have  
chapters. Chapters can have subheadings. Under  
each heading there will be one or more  
paragraphs.</p>
```

RESULT

A paragraph consists of one or more sentences that form a self-contained unit of discourse. The start of a paragraph is indicated by a new line.

Text is easier to understand when it is split up into units of text. For example, a book may have chapters. Chapters can have subheadings. Under each heading there will be one or more paragraphs.

Bold and Italic

In HTML, you can make text **bold** with the `` tag or `` tag, and *italic* with the `<i>` tag or `` tag.

chapter-02/bold.html

HTML

```
<p>This is how we make a word appear <b>bold.</b>
</p>
<p>Inside a product description you might see some
  <b>key features</b> in bold.</p>
```

This is how we make a word appear **bold**.

RESULT

Inside a product description you might see some **key features** in bold.

chapter-02/italic.html

HTML

```
<p>This is how we make a word appear <i>italic</i>.
</p>
<p>It's a potato <i>Solanum tuberosum</i>.</p>
<p>Captain Cook sailed to Australia on the
  <i>Endeavour</i>.</p>
```

This is how we make a word appear *italic*.

RESULT



Superscript and Subscript

The `<sup>` tag is used for superscript, and the `<sub>` tag is used for subscript text in HTML.

HTMLchapter-02/superscript-and-subscript.html

```
<p>On the 4<sup>th</sup> of September you will learn  
about E=MC<sup>2</sup>.</p>  
<p>The amount of CO<sub>2</sub> in the atmosphere  
grew by 2ppm in 2009<sub>1</sub>.</p>
```

RESULT

On the 4th of September you will learn about E=MC².

The amount of CO₂ in the atmosphere grew by 2ppm in 2009₁.

Lists in HTML

Ordered List

1. Information Gathering
2. Planning
3. Design
4. Development
5. Testing & Deployment
6. Maintenance

Unordered List

- HTML
 - CSS
-
- SQL
 - PHP
-
- JavaScript
 - Python

Description List

HTML

HTML stands for Hyper Text Markup Language. HTML is the standard markup language for creating Web pages. HTML describes the structure of a Web page.

CSS

CSS is the acronym of "Cascading Style Sheets". CSS is the language use to style an HTML document. CSS describes how HTML elements should be displayed.

PHP

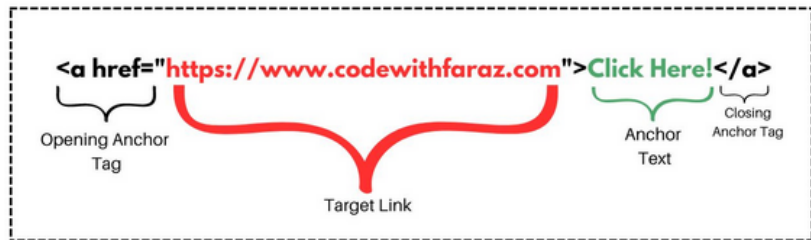
PHP is an acronym for "PHP: Hypertext Preprocessor". PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages.

Lists

| chapter-03/ordered-lists.html | HTML | HTML | chapter-03/unordered-lists.html |
|---|------|--------|---|
| <pre> Chop potatoes into quarters Simmer in salted water for 15-20 minutes until tender Heat milk, butter and nutmeg Drain potatoes and mash Mix in the milk mixture </pre> | | | <pre> 1kg King Edward potatoes 100ml milk 50g salted butter Freshly grated nutmeg Salt and pepper to taste </pre> |
| | RESU | RESULT | |
| <ol style="list-style-type: none">1. Chop potatoes into quarters2. Simmer in salted water for 15-20 minutes until tender3. Heat milk, butter and nutmeg4. Drain potatoes and mash5. Mix in the milk mixture | | | <ul style="list-style-type: none">• 1kg King Edward potatoes• 100ml milk• 50g salted butter• Freshly grated nutmeg• Salt and pepper to taste |

| chapter-03/definition-lists.html | HTML |
|--|--------|
| <pre><dl> <dt>Sashimi</dt> <dd>Sliced raw fish that is served with condiments such as shredded daikon radish or ginger root, wasabi and soy sauce</dd> <dt>Scale</dt> <dd>A device used to accurately measure the weight of ingredients</dd> <dd>A technique by which the scales are removed from the skin of a fish</dd> <dt>Scamorze</dt> <dt>Scamorzo</dt> <dd>An Italian cheese usually made from whole cow's milk (although it was traditionally made from buffalo milk)</dd> </dl></pre> | |
| | RESULT |
| <p>Sashimi Sliced raw fish that is served with condiments such as shredded daikon radish or ginger root, wasabi and soy sauce</p> <p>Scale A device used to accurately measure the weight of ingredients A technique by which the scales are removed from the skin of a fish</p> <p>Scamorze Scamorzo An Italian cheese usually made from whole cow's milk (although it was traditionally made from buffalo milk)</p> | |

Link



OUTPUT: [Click Here!](https://www.codewithfaraz.com)

Linking to other page on same web app

RELATIVE LINK TYPE

EXAMPLE (from diagram on previous page)

SAME FOLDER

To link to a file in the same folder, just use the file name. (Nothing else is needed.)

To link to music reviews from the music homepage:

```
<a href="reviews.html">Reviews</a>
```

CHILD FOLDER

For a child folder, use the name of the child folder, followed by a forward slash, then the file name.

To link to music listings from the homepage:

```
<a href="music/listings.html">Listings</a>
```

GRANDCHILD FOLDER

Use the name of the child folder, followed by a forward slash, then the name of the grandchild folder, followed by another forward slash, then the file name.

To link to DVD reviews from the homepage:

```
<a href="movies/dvd/reviews.html">  
Reviews</a>
```

PARENT FOLDER

Use `../` to indicate the folder above the current one, then follow it with the file name.

To link to the homepage from the music reviews:

```
<a href="../index.html">Home</a>
```

GRANDPARENT FOLDER

Repeat the `../` to indicate that you want to go up two folders (rather than one), then follow it with the file name.

To link to the homepage from the DVD reviews:

```
<a href="../../index.html">Home</a>
```

Opening link in new window

HTML

chapter-04/opening-links-in-a-new-window.html

```
<a href="http://www.imdb.com" target="_blank">  
Internet Movie Database</a> (opens in new window)
```

RESULT

[Internet Movie Database](http://www.imdb.com) (opens in new window)

Mail to

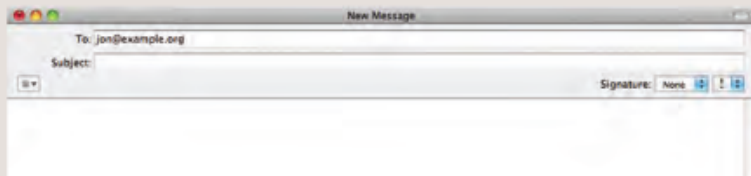
chapter-04/email-links.html

HTML

```
<a href="mailto:jon@example.org">Email Jon</a>
```

RESULT

[Email Jon](mailto:jon@example.org)



Specific part of the page

chapter-05/linking-to-a-specific-part.html

HTML

```
<h1 id="top">Film-Making Terms</h1>
<a href="#arc_shot">Arc Shot</a><br />
<a href="#interlude">Interlude</a><br />
<a href="#prologue">Prologue</a><br /><br />
<h2 id="arc_shot">Arc Shot</h2>
<p>A shot in which the subject is photographed by an
  encircling or moving camera</p>
<h2 id="interlude">Interlude</h2>
<p>A brief, intervening film scene or sequence, not
  specifically tied to the plot, that appears
  within a film</p>
<h2 id="prologue">Prologue</h2>
<p>A speech, preface, introduction, or brief scene
  preceding the the main action or plot of a film;
  contrast to epilogue</p>
<p><a href="#top">Top</a></p>
```

Table

- ▶ The `<table>` element is used to add tables to a web page.
- ▶ A table is drawn out row by row. Each row is created with the `<tr>` element.
- ▶ Inside each row there are a number of cells represented by the `<td>` element (or `<th>` if it is a header).
- ▶ You can make cells of a table span more than one row or column using the `rowspan` and `colspan` attributes.
- ▶ For long tables you can split the table into a `<thead>`, `<tbody>`, and `<tfoot>`.

Table

HTML

chapter-06/border-and-background.html

```
<table border="2" bgcolor="#efefef">
  <tr>
    <th width="150"></th>
    <th>Withdrawn</th>
    <th>Credit</th>
    <th width="150" bgcolor="#cccccc">Balance</th>
  </tr>
  <tr>
    <th>January</th>
    <td>250.00</td>
    <td>660.50</td>
    <td bgcolor="#cccccc">410.50</td>
  </tr>
  <tr>
    <th>February</th>
    <td>135.55</td>
    <td>895.20</td>
    <td bgcolor="#cccccc">1170.15</td>
  </tr>
</table>
```

RESULT

| | Withdrawn | Credit | Balance |
|----------|-----------|--------|---------|
| January | 250.00 | 660.50 | 410.50 |
| February | 135.55 | 895.20 | 1170.15 |

HTML Hello World Example

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Hello World</title>
</head>
<body>
  <h1>Hello , World!</h1>
</body>
</html>
```

Thank You!

For questions or more information, contact:
demetrelabadze1@gmail.com