

# Introduction to Web development (Node.js)

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# Why Learn Web Development?

- 1. High Demand:** Web development skills are highly sought after in today's job market.
- 2. Creativity and Problem-Solving:** It combines design, coding, and logic to create real-world applications.
- 3. Career Opportunities:** Frontend, backend, and full-stack development roles are widely available.
- 4. Community and Open Source:** Many resources, frameworks, and tools are free and open-source, fostering collaboration.
- 5. Independence:** Web development allows you to build personal projects, startups, or freelance work.

# 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.



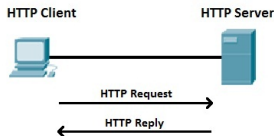
# World Wide Web

- ▶ 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.



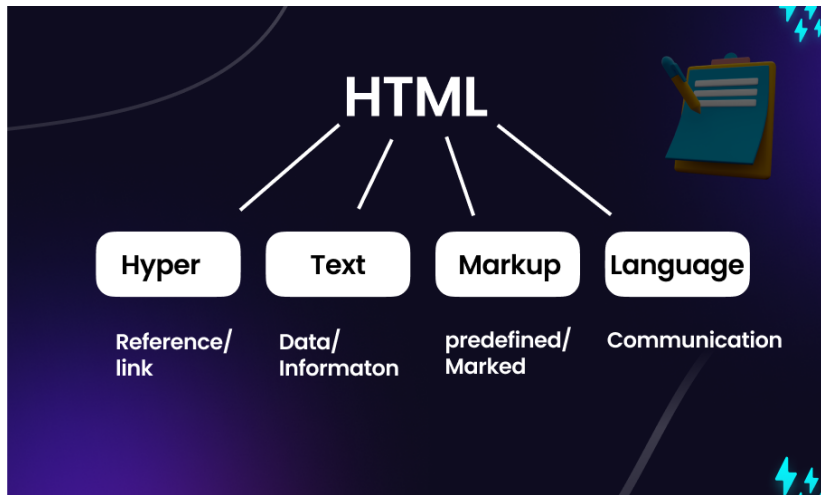
# How HTTP Works

- ▶ **\*\*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.

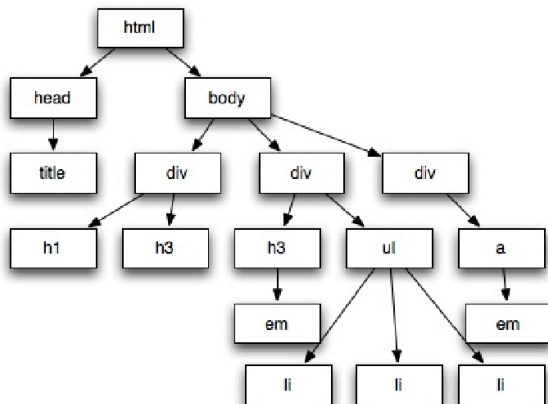
- ▶ **Markup:**

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

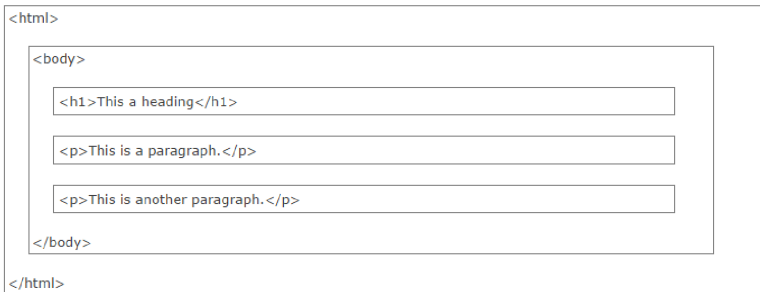
- ▶ **Language:**

- ▶ 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 Structure as Tree



# 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 `<b>` tag or `<strong>` tag, and *italic* with the `<i>` tag or `<em>` 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 teberosum</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.

**HTML**chapter-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 4<sup>th</sup> of September you will learn about E=MC<sup>2</sup>.

The amount of CO<sub>2</sub> in the atmosphere grew by 2ppm in 2009<sub>1</sub>.

## 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.

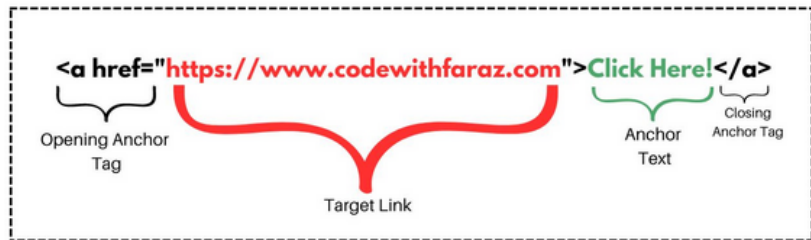
# Lists

chapter-03/ordered-lists.html	HTML	HTML	chapter-03/unordered-lists.html
<pre>&lt;ol&gt; &lt;li&gt;Chop potatoes into quarters&lt;/li&gt; &lt;li&gt;Simmer in salted water for 15-20 minutes until tender&lt;/li&gt; &lt;li&gt;Heat milk, butter and nutmeg&lt;/li&gt; &lt;li&gt;Drain potatoes and mash&lt;/li&gt; &lt;li&gt;Mix in the milk mixture&lt;/li&gt; &lt;/ol&gt;</pre>			<pre>&lt;ul&gt; &lt;li&gt;1kg King Edward potatoes&lt;/li&gt; &lt;li&gt;100ml milk&lt;/li&gt; &lt;li&gt;50g salted butter&lt;/li&gt; &lt;li&gt;Freshly grated nutmeg&lt;/li&gt; &lt;li&gt;Salt and pepper to taste&lt;/li&gt; &lt;/ul&gt;</pre>
	RESU	RESULT	
<ol style="list-style-type: none"><li>1. Chop potatoes into quarters</li><li>2. Simmer in salted water for 15-20 minutes until tender</li><li>3. Heat milk, butter and nutmeg</li><li>4. Drain potatoes and mash</li><li>5. Mix in the milk mixture</li></ol>			<ul style="list-style-type: none"><li>• 1kg King Edward potatoes</li><li>• 100ml milk</li><li>• 50g salted butter</li><li>• Freshly grated nutmeg</li><li>• Salt and pepper to taste</li></ul>

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

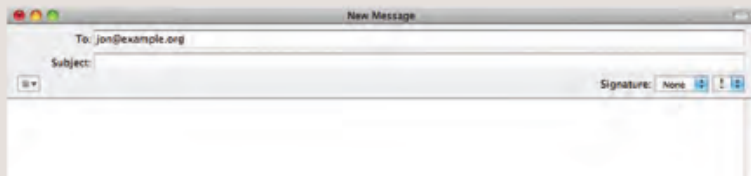
chapter-04/email-links.html

HTML

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

RESULT

Email Jon



## 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](mailto:demetrelabadze1@gmail.com)