

Front-end



Development

Lesson 2: HTML



University of Tehran



ACM
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Lecturer:
Misagh Mohaghegh

A Short Review...

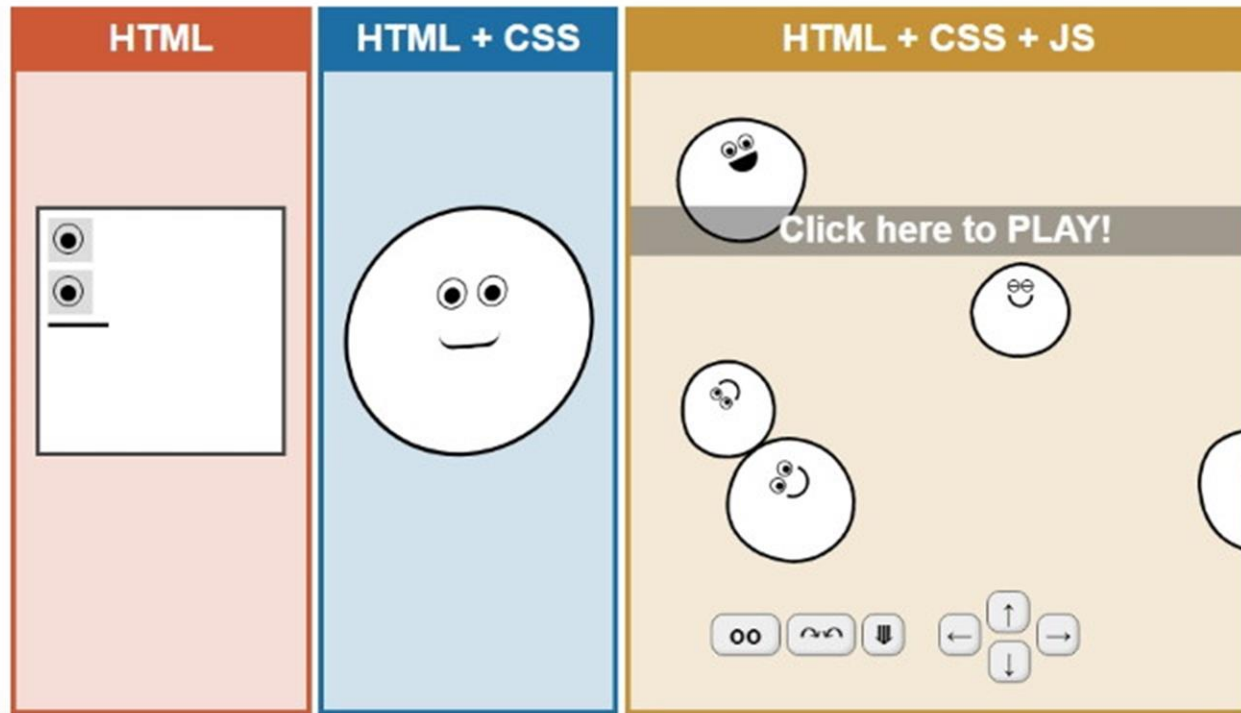
- Course Certificate (4 class absence, 70% homework)
- Prerequisites (programming, VSCode, Git, GitHub)
- UI/UX Designer vs Front-end Developer
- Web Page Building Blocks (HTML, CSS, JS)
- JS Frameworks
- Schedule (HTML, CSS, Bootstrap, JS, React, API)
- HTTP Protocol (URL, client-server model)
- HTTP Request (GET, POST, PUT, DELETE methods)
- HTTP Response (3-digit status codes)

Please ask your questions!

- Ask any questions you have in the telegram Q&A topic.
- Ask any question in the class time too!
- Ask your questions from Google and Als as well.



Time for...



Hypertext Markup Language





HTML Basics



Hypertext Markup Language

The most basic building block of the web.

- **Hypertext:** links that jump to other places in the document (like [this](#)).
- **Markup Language:** a text system to specify the structure, formatting and presentation of a document.

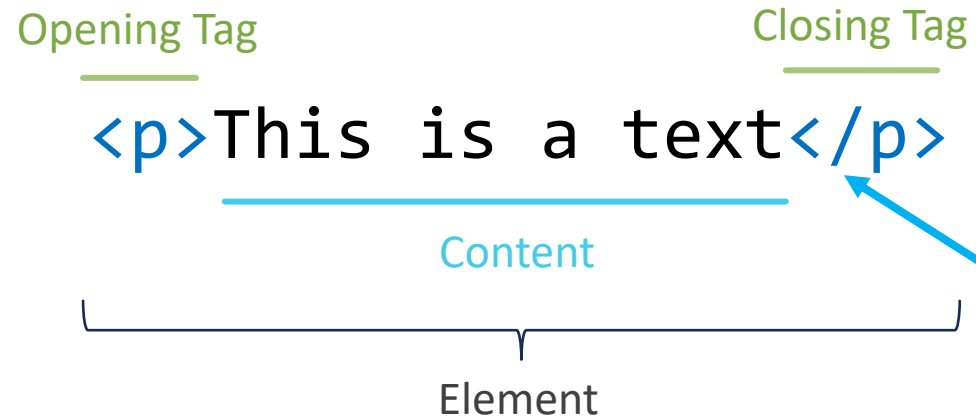
Version History: (W3C recommendation)

- **HTML 1.0** (1993): Initial version, basic structural elements and hyperlinks.
- **HTML 2.0** (1995): Standardized, forms and tables.
- **HTML 3.2** (1997): Basic styling, feature enhancements.
- **HTML 4.01** (1999): CSS support, new tags.
- **HTML5** (2014): Semantic tags, multimedia tags.

HTML Elements

HTML elements are made of **tags**, **attributes**, and their **content**.

Tags are placed between two angle brackets: <tagname>



Nested Elements

The opening and closing order of the tags matter.

```
<p>This is a <i>short</i> text</p>
```

```
<ul>  
  <li>list item one</li>  
  <li>list item <b>two</b></li>  
</ul>
```

Void Elements

Void elements do not need a closing tag.

`
`

`
`

Creates a line break.

`<hr>`

`<hr />`

Creates a horizontal rule.

Attributes

Attributes contain extra information about our element that doesn't appear in the content. They are key-value pairs written inside the opening tag of an element.

```
<p id="bottom-note" class="editor-note">Example paragraph text</p>
```

Attribute key="value"

```

```

```

```

```
<input type="text" name="username">
```

Comments

To insert comments in our HTML code:

```
<!-- This is a comment! -->  
<h1>Level 1 heading here</h1>
```

XHTML

XML (Extensible Markup Language)

XHTML (Extensible HyperText Markup Language)

There are some differences between them.

XHTML is less lenient than HTML:

- All elements must be closed (even void elements). `
` `<!-- invalid -->`
- Tag and attribute names are case-sensitive. HTML: `` = `` `<!-- not in XHTML -->`
- Attribute minimization not allowed. `<option selected>` => `<option selected="selected">`

Global Attributes

Global attributes are some specific attributes that can appear on all elements.

Such as:

- **id**: sets a unique identifier for the element.
- **class**: space-separated list of CSS class names. These can be reused.
- **dir**: sets the direction of text for the element and its children. Can be "ltr" or "rtl".
- **lang**: sets the language for the content of the element, e.g. "en".
- **title**: set extra information for an element (appears on hover).
- **hidden**: marks the element as semantically hidden and does not display it.
- **data-***: custom user-defined attributes.
- **style**: set inline CSS style for the element.

```
<p id="unique-name" class="class-name another-one" data-my-key="value"  
  dir="rtl" lang="en" title="World Wide Web Consortium" hidden>  
  W3C – Welcome!  
</p>
```

So Many Tags!

- <!--...-->
- <!DOCTYPE>
- <a>
- <abbr>
- <acronym>
- <address>
- <applet>
- <area>
- <article>
- <aside>
- <audio>
-
- <base>
- <basefont>
- <bdi>
- <bdo>
- <big>
- <blockquote>
- <body>
-

- <button>
- <canvas>
- <caption>
- <center>
- <cite>
- <code>
- <col>
- <colgroup>
- <data>
- <datalist>
- <dd>
-
- <details>
- <dfn>
- <dialog>
- <dir>
- <div>
- <dl>
- <dt>
-
- <embed>
- <fieldset>
- <figcaption>
- <figure>
-
- <footer>
- <form>
- <frame>
- <frameset>
- <h1> to <h6>
- <head>
- <header>
- <hr>
- <html>
- <i>
- <iframe>
-
- <input>
- <ins>
- <kbd>
- <label>
- <legend>
-
- <link>
- <main>
- <map>
- <mark>
- <meta>
- <meter>
- <nav>
- <noframes>
- <noscript>
- <object>
-
- <optgroup>
- <option>
- <output>
- <p>
- <param>
- <picture>
- <pre>
- <progress>
- <q>
- <rp>
- <rt>
- <ruby>
- <s>
- <samp>
- <script>
- <section>
- <select>
- <small>
- <source>
-
- <strike>
-
- <style>
- <sub>
- <summary>
- <sup>
- <svg>
- <table>
- <tbody>
- <td>
- <template>
- <textarea>
- <tfoot>
- <th>
- <thead>
- <time>
- <title>
- <tr>
- <track>
- <tt>
- <u>
-
- <var>
- <video>
- <wbr>



Construction of an HTML Page



Anatomy

<html>

<head>

<title>This Is Your Title **</title>**

</head>

<body>

<h1> This Is Your Header **</h1>**

<p> This is your paragraph. **</p>**

</body>

</html>

Anatomy

```
1  <!doctype html>
2  <html lang="en">
3    <head>
4      <meta charset="utf-8">
5      <title>My test page</title>
6    </head>
7    <body>
8      
9    </body>
10 </html>
```

Anatomy

```
1  <!-- The HTML document type must be set first -->
2  <!doctype html>
3
4  <!-- The <html> root element wraps the entire page -->
5  <html lang="en">
6
7      <!-- The <head> element defines meta information -->
8      <head>
9          <meta charset="utf-8">
10         <title>My test page</title>
11     </head>
12
13     <!-- The <body> element contains the page content -->
14     <body>
15         
16     </body>
17 </html>
```

<html>

First of all, the **<!doctype html>** line must be written.

The **html** tag typically has the **lang** attribute.

The **head** element contains page metadata.

The **body** element contains page content.

Remember to close the tags.

```
<!doctype html>
<html lang="en">
  <head>
    ...
  </head>

  <body>
    ...
  </body>
</html>
```

Metadata

Here is a list of tags that can be put in the head element:

- **<title>**: the page name at the top of the browser. `<title>My Page Title</title>`
- **<link>**: mostly for linking CSS files and favicon. `<link rel="stylesheet" type="text/css" href="file.css">`
`<link rel="icon" type="image/x-icon" href="file.ico">`
- **<style>**: writing CSS styles.
- **<script>**: writing JS code.
- **<meta>**: defining metadata:
 - Character set: `<meta charset="utf-8">`
 - Keywords: `<meta name="keywords" content="HTML, CSS, JS">`
 - Description: `<meta name="description" content="Front-end Course">`
 - Author: `<meta name="author" content="Misagh Mohaghegh">`
 - Auto Refresh: `<meta http-equiv="refresh" content="60">`
 - Viewport: `<meta name="viewport" content="with=device-width, initial-scale=1.0">`

Body

Lets check out the most useful HTML tags in code!

My first html

My first html

My first html

My first html

My first html

My first html

go to Google



click here!

- item 1
- item 2
- item 3

1. item 1
2. item 2
3. item 3

term 1
definition 1

term 2
definition 2

header-1 header-2

data-1 data-2

data-1 data-2

This is HTML

default < & >

bold
strong (bold)
italic
emphasis/caption (italic)
underline
inserted text (underline)
~~strike (incorrect)~~
~~strike (deleted text)~~
mark highlight
mono font (code)
text ^{up} _{down}
Random Address
Some Street
Iran

It's a question of “to be, or not to be”

Body

```
1 <!DOCTYPE html>
2 <html lang="en">
3
4 <head>
5     <title>ACM SoC 2024 Front</title>
6     <meta charset="UTF-8">
7     <meta name="viewport" content="width=device-width, initial-scale=1">
8     <meta name="description" content="Front-end Development Course">
9     <meta name="keywords" content="front-end, acm, soc">
10    <meta name="author" content="Misagh Mohaghegh">
11    <link rel="icon" type="image/x-icon" href="./favicon.ico">
12
13    <script type="text/javascript" src="./script.js" defer></script>
14    <script>
15        console.log("Test");
16    </script>
17
18    <link rel="stylesheet" type="text/css" href="./style.css">
19    <style>
20        body {
21            margin: 10px;
22        }
23    </style>
24 </head>
```

Body

```
<div>
  <h1>My first html</h1>
  <h2>My first html</h2>
  <h3>My first html</h3>
  <h4>My first html</h4>
  <h5>My first html</h5>
  <h6>My first html</h6>
</div>
<hr>
```

My first html

My first html

My first html

My first html

My first html

My first html

```
<div>
  <a href="https://google.com">go to Google</a><br>
  <br>
  <button>click here!</button>
</div>
<hr>
```

[go to Google](https://google.com)



click here!

```
<div>
  <ul>
    <li>item 1</li>
    <li>item 2</li>
    <li>item 3</li>
  </ul>
  <ol>
    <li>item 1</li>
    <li>item 2</li>
    <li>item 3</li>
  </ol>
  <dl>
    <dt>term 1</dt>
    <dd>definition 1</dd>
    <dt>term 2</dt>
    <dd>definition 2</dd>
  </dl>
  <table>
    <thead>
      <tr>
        <th>header-1</th>
        <th>header-2</th>
      </tr>
    </thead>
    <tbody>
      <tr>
        <td>data-1</td>
        <td>data-2</td>
      </tr>
      <tr>
        <td>data-1</td>
        <td>data-2</td>
      </tr>
    </tbody>
  </table>
</div>
<hr>
```

- item 1
- item 2
- item 3

1. item 1
2. item 2
3. item 3

term 1
definition 1

term 2
definition 2

header-1 header-2

data-1	data-2
data-1	data-2

Body

```
<div>
  <p>This is <abbr title="HyperText Markup Language">HTML</abbr></p>
  <p style="color: blue;">default &lt; &gt;</p>

  <b>bold</b><br>
  <strong>strong (bold)</strong><br>

  <i>italic</i><br>
  <em>emphasis/caption (italic)</em><br>

  <u>underline</u><br>
  <ins>inserted text (underline)</ins><br>

  <s>strike (incorrect)</s><br>
  <del>strike (deleted text)</del><br>

  <mark>mark highlight</mark><br>
  <code>mono font (code)</code><br>
  <span>text <sup>up</sup> <sub>down</sub></span><br>

  <address>
    Random Address<br>
    Some Street<br>
    Iran
  </address>

  <p>It's a question of <q>to be, or not to be</q></p>
  <small>&copy; 2024 My Site</small><br>
</div>
<hr>
```

This is HTML

default < & >

bold

strong (bold)

italic

emphasis/caption (italic)

underline

inserted text (underline)

~~strike (incorrect)~~

~~strike (deleted text)~~

mark highlight

mono font (code)

text ^{up} down

Random Address

Some Street

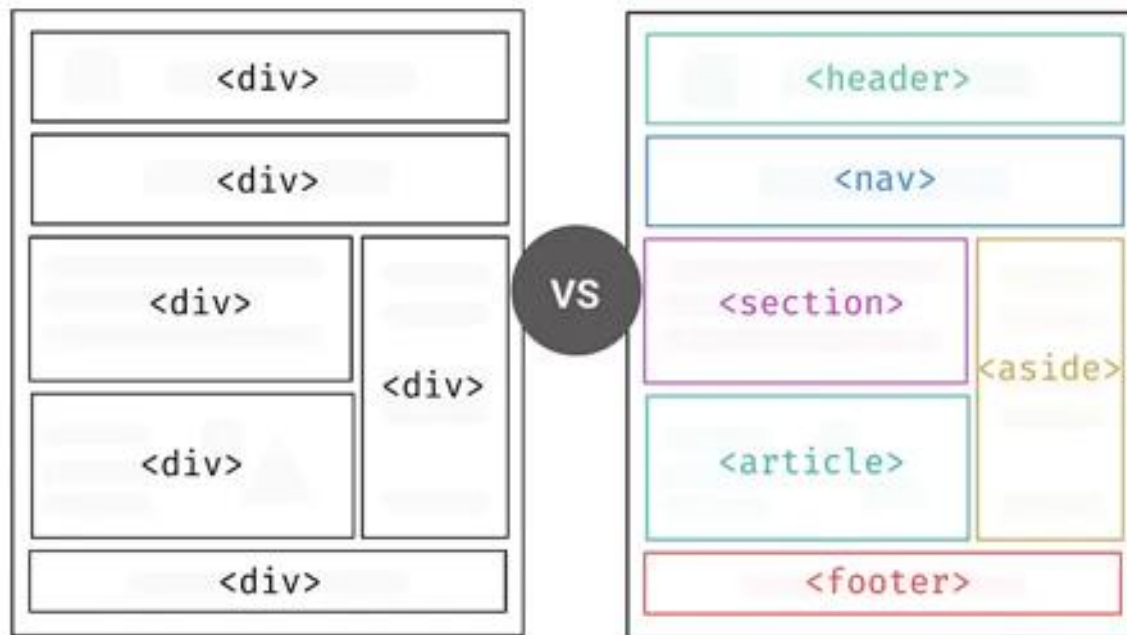
Iran

It's a question of “to be, or not to be”

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Semantic Tags

The **<div>** tag is used to create divisions and group sections of a web page together like a container. But there are tags that do the same thing but have more meaning.



Ambiguous Sections

Clear Sections



Calculator Example

```
Calculator.html > ...
Calculator.html > ...
1 <!DOCTYPE html>
2 <html lang="en">
3
4 <head>
5   <meta charset="UTF-8">
6   <title>Calculator</title>
7 </head>
8
9 <body>
10   <header>
11     <nav>
12       <ul>
13         <li>|||</li>
14         <li><h1>Standard</h1></li>
15         <li><a href="#">$</a></li>
16       </ul>
17     </nav>
18   </header>
19
20   <main>
21     <section>
22       <div>
23         <label for="output">Output:</label>
24         <input name="output" type="number" value="70" disabled="">
25         <input type="button" value="del">
26       </div>
27       <div>
28         <form action="#" method="post">
29           <div>
30             <input type="button" value="9">
31             <input type="button" value="8">
32             <input type="button" value="7">
33             <input type="button" value="6">
34             <input type="button" value="5">
```

```
Calculator.html > ...
Calculator.html > ...
2 <html lang="en">
9 <body>
20 <main>
54   <aside>
55     <ul>
56       <li>History</li>
57       <li>Memory</li>
58     </ul>
59     <div>
60       <section>
61         <ol>
62           <li>3 + 4 = 7</li>
63           <li>1 + 2 = 3</li>
64         </ol>
65       </section>
66       <section>
67         <ol>
68           <li>a = 2</li>
69         </ol>
70       </section>
71     </div>
72   </aside>
73 </main>
74
75 <footer>
76   <small>&copy; ACM SoC 2024</small>
77 </footer>
78 </body>
79
80 </html>
81
```

Calculator

http://127.0.0.1:3000/Calculator.html

- |||
- Standard
- \$

Output: 70 del

9 8 7 6 5 4 3 2 1 +/- 0 .

+ - * / =

- History
- Memory

1. 3 + 4 = 7
2. 1 + 2 = 3

1. a = 2

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Calculator

Standard History Memory

0

MC MR M+ M- MS

% CE C \sqrt{x}

$\frac{1}{x}$ x^2 $\sqrt[3]{x}$ \div

7 8 9 \times

4 5 6 $-$

1 2 3 $+$

+/- 0 . =

3 + 4 = 7
1 + 2 = 3



Forms & Inputs



Forms

HTML forms are used to collect user input. This is usually sent to a server for processing.

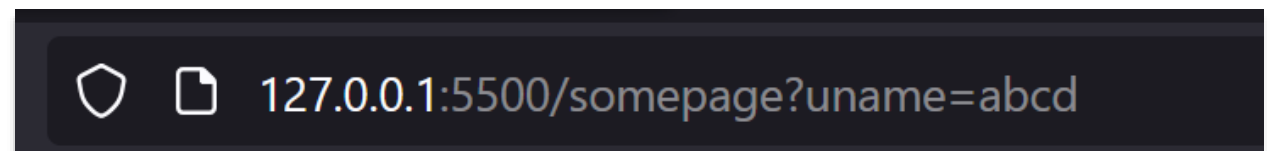
First of all, a **<form>** element is created.

There can be any element nested inside of it, but mostly **<label>** and **<input>** elements are used.

Other input elements include: **<select>** & **<option>**, **<textarea>**, and **<button>**.

```
<form method="get" action="/somepage">  
  <label for="username">Username:</label><br>  
  <input type="text" id="username" name="uname">  
  <input type="submit" value="Submit Form">  
</form>
```

Username:



Labels

There are two ways to assign labels to an input:

```
<label for="username">Username:</label><br>  
<input type="text" id="username" name="uname">
```

```
<label>  
  Username:<br>  
  <input type="text" name="uname">  
</label>
```

Inputs are optional by default. To mandate users to fill the input, use the **required** attribute:

```
<input type="text" name="uname" required>
```

Input Types

There are many input types:

`<input type="text">`
`<input type="email">`
`<input type="url">`
`<input type="password">`

`<input type="number">`
`<input type="tel">`
`<input type="range">`

`<input type="checkbox">`
`<input type="radio">`

☒ a ☐ b
☐ a ☒ b ☐ c

`<input type="date">`
`<input type="time">`
`<input type="datetime-local">`

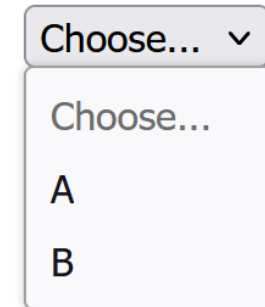
`<input type="file">`
`<input type="color">`
`<input type="hidden">`

`<input type="button">`
`<input type="submit">`
`<input type="reset">`

More Inputs

Other input types not a part of the `<input>` element:

```
<select name="key">
  <option value="" disabled selected>Choose...</option>
  <option value="a">A</option>
  <option value="b">B</option>
</select>
```



```
<textarea name="comment" rows="5" cols="32"
  placeholder="Write a comment!"></textarea>
```



Thank you for your attention.