SCS 1311 – Internet and Web Technologies

HTML

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What is HTML?

- HTML, which stands for **Hypertext Markup Language**, is the standard language used for creating and designing the structure of a web page.

- It allows to organize content on the website, define its structure, and establish the relationships between different elements.

- HTML uses "markup" to annotate text, images, and other content for display in a Web browser.

What is HTML Cont.

How markup works

- Tags and elements: Markup uses tags enclosed in angle brackets (< >). Together with the content, they form elements.

- Attributes: Tags can include attributes that provide extra information.

- HTML consists of a series of **elements**, which can be used to **enclose, wrap, or mark up** different parts of content to to define its structure and meaning.

Basic HTML Document Structure

```
<!DOCTYPE html>
<html>
  <head>
    <title>My First Page</title>
  </head>
  <body>
    <h1>Hello, world!</h1>
    <p>This is my first web page.</p>
  </body>
</html>
```

Roles of Each Section

- <!DOCTYPE html> → HTML5
  - Declares the document type
  - Tells the browser this page uses HTML5 (the current standard)
  - Without it, browsers may fall back to "quirks mode," which can cause inconsistent rendering

- <html> → Root element
  - The container for the entire HTML document
  - Everything (head + body) must be inside <html> ..</html>
  - Can include a lang attribute (recommended)

Roles of Each Section cont.

- <head> → Not visible, holds metadata

  - Contains information *about* the page, not content shown directly.
  - Includes <title>, <meta> tags
  - Links to CSS files
  - Links to fonts/icons
  - Links to JavaScript (optional)

Roles of Each Section cont.

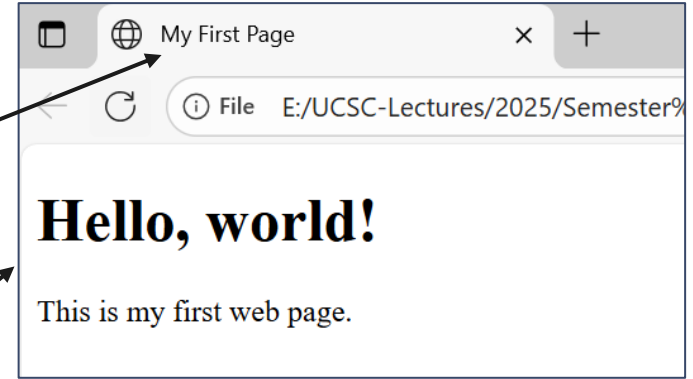- <body> → Everything visible on the page
  - Holds all the content that users see in the browser window.
  - Includes Headings, Paragraphs, Images, Links, Lists, Tables, Forms, Sections (<header>, <nav>, <main>, etc.), Multimedia (video, audio)

Web Browser Output

```
<!DOCTYPE html>
<html>
  <head>
    <title>My First Page</title>
  </head>
  <body>
    <h1>Hello, world!</h1>
    <p>This is my first web page.</p>
  </body>
</html>
```

Head section

Body section

My First Page ×

File E:/UCSC-Lectures/2025/Semester%

Hello, world!

This is my first web page.

HTML Comments

- Comments are notes inside HTML code
- Browsers do not display them
- Useful for explanations, reminders, disabling code, and grouping sections

```
<!-- This is a comment -->
```

HTML Comments

Example -

```
<body>

    <!-- Main heading of the page -->

    <h1>Welcome</h1>

</body>
```

What Are HTML Tags?

- Tags are special keywords wrapped in angle brackets:
  - <p>, <img>, <h1>
- Tags tell the browser **how to interpret** the content
- They are **case-insensitive**, but use lowercase in modern HTML
- Most tags come in pairs:
  - Opening tag: <p>
  - Closing tag: </p>
- Some tags are self-closing (void elements), eg.

Syntax of a Tag

- A basic tag looks like,

```
<tagname>content</tagname>
```

Example -

```
<h1>Hello</h1>
<p>This is a paragraph.</p>
```

What is an HTML Element?

- An element includes,

    - Opening tag

    - Content

    - Closing tag

- Example -

`<p>Hello World</p>`

Basic Types of Elements

1. Paired Elements (normal elements)

```
<p>text</p>

<h1>Heading</h1>
```

2. Void Elements (empty elements)
   - No closing tag
   - No content

```
<br> <hr> <img> <meta> <input>
```

Nesting Elements

- Elements can be nested/can go inside each other

`<p>This is <strong>important</strong> text.</p>`

`<p>This is <strong>important</p></strong>` ✖

What Are Attributes?

- Attributes give extra information about an element

  `attribute="value"`

Example -

`<img src="photo.jpg" alt="A photo">`

Common Attributes

Attribute	Used For	Example
src	image/video source	`<img src="cat.jpg" width="300" height="200" alt="A cute cat">`
width	Width of element	
height	Height of element	
alt	image description	

Common Attributes

Attribute	Used For	Example
href	link target	`<a href="https://example.com"> Go to Example</a>`
type	type of input	`<input type="password">`
value	input value	`<input type="text" value="Hello">`

Attribute Types

1. **Global Attributes**
● Can be applied to any HTML element
● Provide universal functionality like identification, styling, or accessibility

2. Local (Element-Specific) Attributes
● Attributes that only apply to certain elements
● Control behavior unique to that element type

Attribute Types

3. Boolean Attributes

- Attributes that are either present or absent and no value needed.
- Switch a feature on/off

Attribute Types

```html
<body>
  <!-- Global attributes: id, class, title -->
  <p id="intro" class="highlight" title="Extra info">Sample text</p>

  <!-- Local attributes: src, alt, width, height (specific to <img>) -->
  <img src="example.jpg" alt="Tree" width="300" height="200">

  <!-- Boolean attributes: disabled, required, autofocus -->
  <form>
    <input type="email" placeholder="Enter email" required>
    <input type="text" value="Disabled field" disabled>
    <input type="text" placeholder="Focused field" autofocus>
    <button type="submit">Submit</button>
  </form>

</body>
```
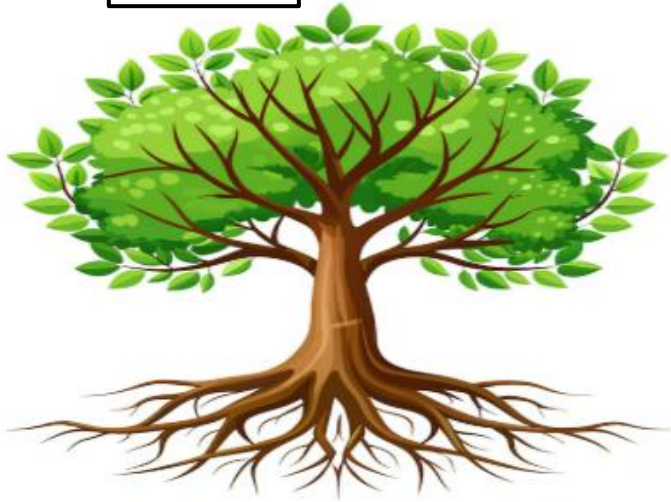
Attribute Types

Sample text

Extra Info

Enter email

Disabled field

Focused field

Submit

⚠ Please fill out this field.

Text & Headings

- HTML provides 6 levels of headings
- <h1> is the most important heading
- <h6> is the least important
- Headings **define content hierarchy, not size**
- Search engines use headings to understand structure

```
<h1>Main Title</h1>

<h2>Section Title</h2>

<h3>Subsection Title</h3>
```

Main Title

Section Title

Subsection Title

Paragraph

- `<p>` defines a block of text

- Browsers add automatic spacing

- Only for meaningful paragraphs, not layout

```
<p>First paragraph.</p>
<p>Second paragraph.</p>
```
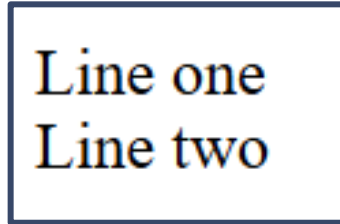
First paragraph.

Second paragraph.

Line Breaks and Horizontal Rules

**
 - Line Break**

- Inserts a single line break
- Use only for small line breaks (poetry, addresses)

```
<p>Line one<br>Line two</p>
```

Line one
Line two

Line Breaks and Horizontal Rules

<hr> - Thematic Break

● Creates a horizontal rule (line) that represents a thematic division in content

```
<h2>Introduction</h2>

<p>This is the opening section.</p>

<hr>

<h2>Conclusion</h2>

<p>This is the closing section.</p>
```

Introduction

This is the opening section.

Conclusion

This is the closing section.

Inline Text Formatting (Semantic Tags)

- Semantic inline elements:

  - `<strong>` – strong importance
  - `<em>` – emphasis
  - `<u>` – underline
  - `<mark>` – highlight
  - `<small>` – side text / fine print
  - `<sub>` – subscript
  - `<sup>` – superscript

Inline Text Formatting (Semantic Tags)

```
<p>This is <strong>important</strong>
information.</p>
<p><u>Water formula</u>: H<sub>2</sub>O</p>
<p>4<sup>2</sup> = 16</p>
<p>This is <mark>highlighted</mark>
text.</p>
<p><small>Note: This is additional fine
print.</small></p>
```

Inline Text Formatting (Semantic Tags)

This is **important** information.

Water formula: H_2O

$4^2 = 16$

This is <mark>highlighted</mark> text.

Note: This is additional fine print.

Non-Semantic Inline Elements

- \<span\> — a generic inline container

- Used when,

  - You need to select part of text

  - The text has no special meaning

```
<p>This is <span class="highlight">special</span>
text.</p>
```

Block vs Inline (Text Context)

- Block-level elements,

  - Start on a new line
  - Take full width by default
  - Structure the page layout

- Inline elements,

  - Do not start on a new line
  - Take only the space needed
  - Are used inside text content

Thank You!