

Part 1 - Week 2 – Introduction to HTML

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Learning outcomes

- What is HTML?
- HTML anatomy
- HTML Document Structure
- Document Head
- Document Body
- Basic HTML Tags

HTML 5

- Hyper Text Markup Language
- HTML is **not a programming language** – it does not include logic, it is all about marking up a document
- Markup languages are composed of **tags**
- Tags show how the information is structured on a web page
- HTML uses markup tags to **describe the structure** of web pages

Using HTML to describe the structure of a page

- HTML is used to describe the structure of a document
- Most pages have common elements:
 - Page Title
 - Paragraphs
 - Links
- HTML has a set of common elements that can be used to describe the content on the web page.

Title

Image

Paragraph

Links

Europe

Russia-Ukraine war: Zelenskiy urges 'just punishment' for invasion in UN address

More than 1,000 protesters have been arrested in anti-mobilisation rallies in Russia

By Léonie Chao-Fong, Martin Belam, Johana Bhuiyan, Maya Yang and Tess McClure

Politics

State pension pot faces 'massive deficit'

javascript:window.open(window.clickTag)



Newton Emerson: Truss brings down curtain on UK-US trade deal pantomime

By Newton Emerson

Only

Residential

Flann O'Brien's former home in the heart of Donnybrook for €1.195m



Michael Harding: 'I tried to cook a sausage with a hairdryer,' he told me. 'And then I ate it. The pain is terrible'

'We'll be poorer for longer' if inflation gets embedded in economy, Donohoe warns

'Send Putin to the trenches': More than 1,200 detained in Russian protests over Ukraine policy

UK aims to end North protocol row before planned Biden visit next year

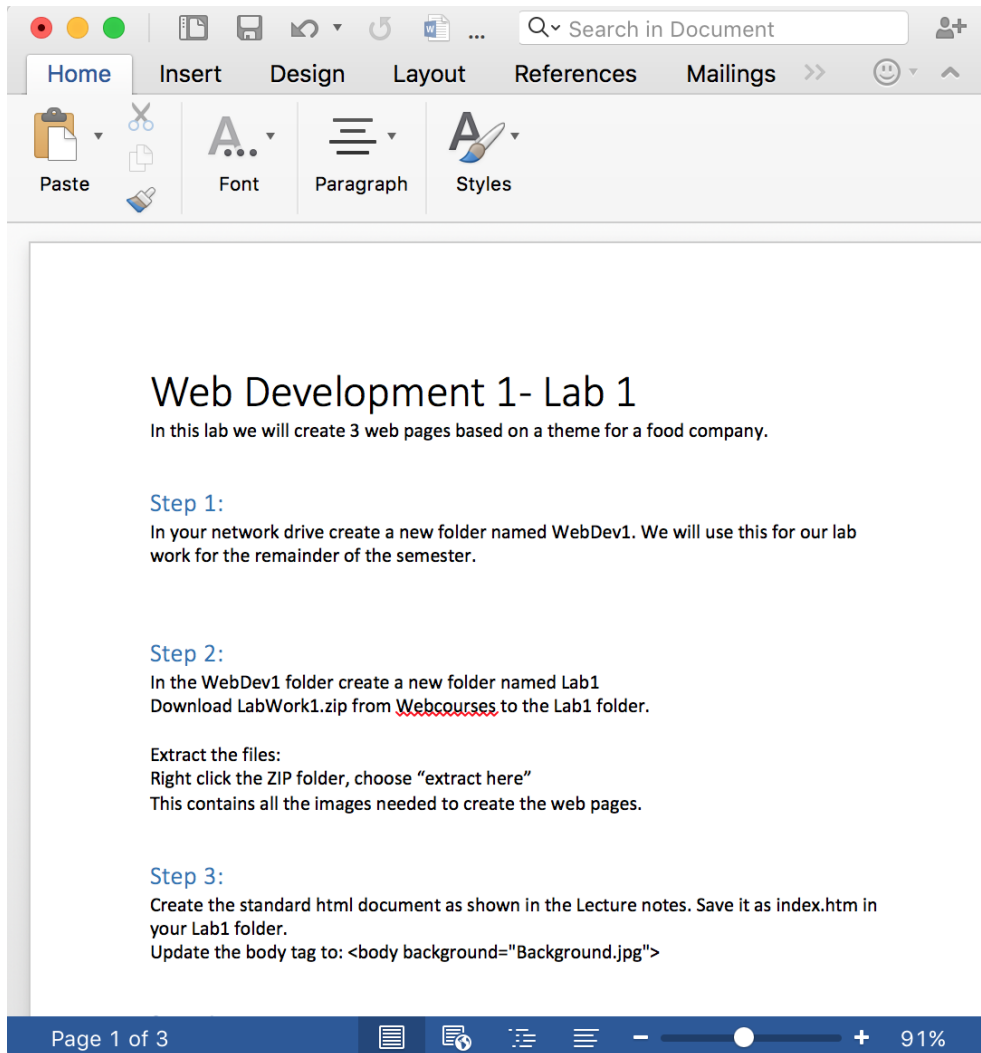


```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title>Breaking News: Scientists Discover New Species</title>
  </head>
  <body>
    <header>
      <h1>Breaking News: Scientists Discover New Species</h1>
    </header>

    <article>
      
      <p>Scientists from around the world are celebrating a groundbreaking discovery as they unveil a new species of
marine life.</p>
      <p>This new species, tentatively named <strong>Oceanicus magnificus</strong>, was found in the depths of the
Mariana Trench.</p>
    </article>

    <footer>
      <p>For more news, visit <a href="https://www.newsportal.com" target="_blank">NewsPortal.com</a></p>
    </footer>
  </body>
</html>
```

What are the differences between the documents below?



The screenshot shows a Microsoft Word document with a standard ribbon interface. The document content is as follows:

Web Development 1- Lab 1

In this lab we will create 3 web pages based on a theme for a food company.

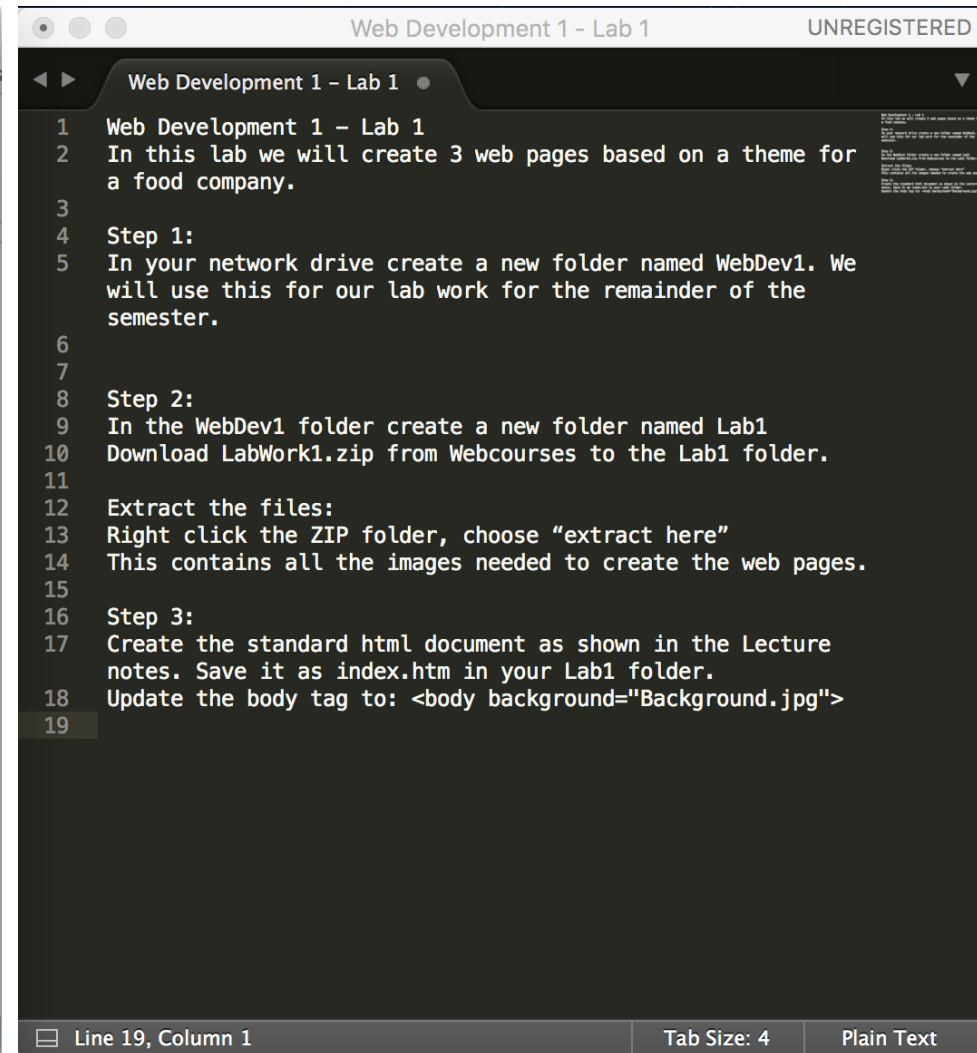
Step 1:
In your network drive create a new folder named WebDev1. We will use this for our lab work for the remainder of the semester.

Step 2:
In the WebDev1 folder create a new folder named Lab1
Download LabWork1.zip from Webcourses to the Lab1 folder.

Extract the files:
Right click the ZIP folder, choose "extract here"
This contains all the images needed to create the web pages.

Step 3:
Create the standard html document as shown in the Lecture notes. Save it as index.htm in your Lab1 folder.
Update the body tag to: <body background="Background.jpg">

Page 1 of 3



The screenshot shows a code editor window with a dark theme. The document content is as follows:

Web Development 1 - Lab 1

1 Web Development 1 - Lab 1
2 In this lab we will create 3 web pages based on a theme for
3 a food company.
4
5 **Step 1:**
6 In your network drive create a new folder named WebDev1. We
7 will use this for our lab work for the remainder of the
8 semester.
9
10 **Step 2:**
11 In the WebDev1 folder create a new folder named Lab1
12 Download LabWork1.zip from Webcourses to the Lab1 folder.
13
14 **Extract the files:**
15 Right click the ZIP folder, choose "extract here"
16 This contains all the images needed to create the web pages.
17
18 **Step 3:**
19 Create the standard html document as shown in the Lecture
20 notes. Save it as index.htm in your Lab1 folder.
21 Update the body tag to: <body background="Background.jpg">

Line 19, Column 1 Tab Size: 4 Plain Text

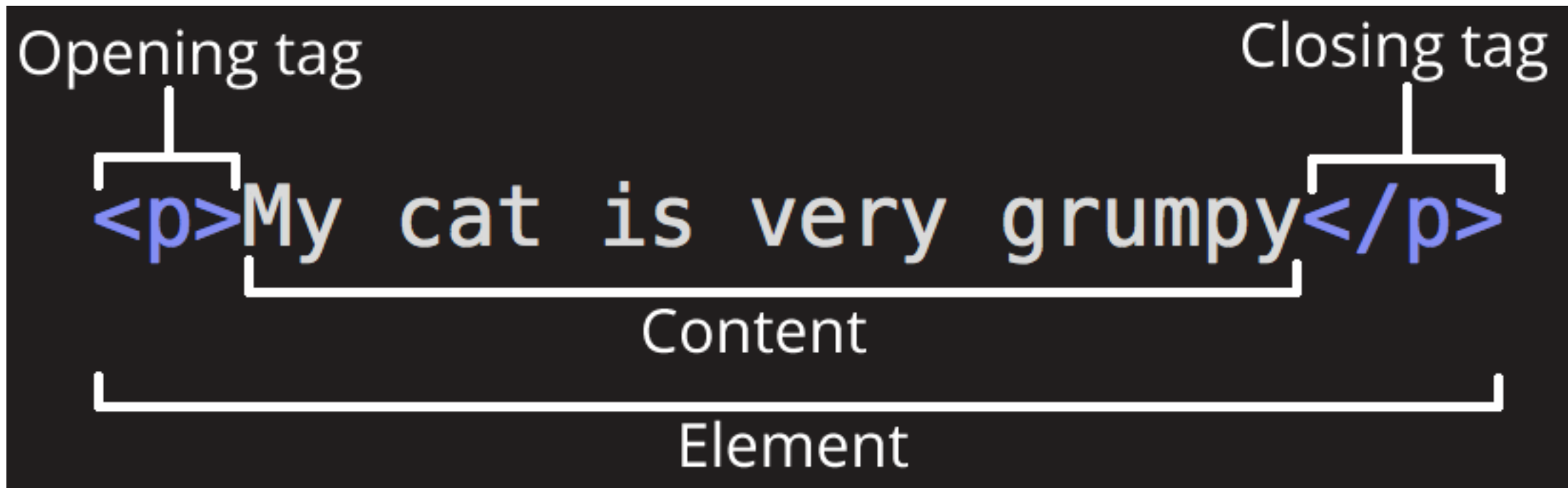
Mark up text

- HTML was created in 1989 to explain the structure of research papers
- The tags mark up the different elements – titles, paragraphs, bullet points, bold text, italic text
- Using HTML allows us to, through coding, provide a similar approach to the one seen in text processors like Word or Google Docs.
- **However**, HTML does **not** provide styling – this is a job for CSS

How does it work?

- To structure the text through HTML, we use HTML Elements, a long list of a variety of **HTML tags** that can be used to mark up the text and page content.
- HTML tags are predefined keywords surrounded by angle brackets.
- HTML is a series of nested elements
- [This website includes all HTML elements and its tags](#)

HTML anatomy



What is the difference between a **HTML tag** and a **HTML element**?

HTML anatomy

- HTML tags usually comes in pairs – an exception would be an empty tag, such as the one used to introduce a line break (<**br**>)
- The first tag is called the opening tag
- The second tag is called the closing tag
- An opening tag and contain additional information, called **attributes**
- A closing tag never contains additional information.

Element attributes

- An attribute is used to provide additional information about an element.
- The attribute will always be contained in the opening tag.
- Attributes follow the **name = “value”** format

```

```

- SRC and ALT are the attributes, they follow the **name = “value”** format.

Start coding with HTML

- We will be using CodePen for some in-class demonstrations, but our main code editor will be Visual Studio Code (VS Code)
- To create an HTML file, we need to open VS Code and save a file with the **.html** extension. This will:
 - Allow VS Code to understand we are dealing with HTML
 - Allow the browser to understand what we expect when this file is loaded
 - Host the website on a local server (your computer / the lab computer)

Basic HTML structure

Also called HTML skeleton or boilerplate

```
<!DOCTYPE html>  
<html lang="en">  
  <head>  
    <meta charset="UTF-8">  
    <title>Web Page Title</title>  
  </head>  
  <body>  
  </body>  
</html>
```

```
<!DOCTYPE html>
```

Tell the browser you are using HTML5. It makes sure the browser renders properly. It doesn't have a closing tag.

```
<html lang="en-US">
```

```
<head>
```

```
<meta charset="utf-8" />
```

Some aspects related to language and characters to be displayed. Useful for search engines.

```
<title>What a beautiful website</title>
```

Title of the website shown in the browser tab

```
</head>
```

```
<body>
```

```

```

The content you want your user to see – text, images, videos, games etc.

```
</body>
```

```
</html>
```

The <html> tag

```
<html lang="en-US">
```

- The information contained between the **<html></html>** tags describes the page. This is the root element of our web page and **everything else will descend from it.**
- The **<html>** tag is the outermost element and is also referred to as the root element.
- Developers are encouraged to specify a **lang attribute** on the root **<html>** tag, giving the document's language. This aids screen readers and text-to-speech tools.
- Example: **<html lang="en-US">**

The <head> tag

```
<html lang="en-US">
  <head>
    <meta charset="utf-8" />
    <title>What a beautiful website</title>
  </head>
```

- The head tag contains information about the page.
- The page info does not appear in the browser content.
- The charset attribute specifies the character encoding for the HTML document.
- The UTF-8 character set covers most of the characters and symbols in the world.
- Tags can be added to the head section to tell the browser where to find external CSS and JavaScript files.
- The following tags can be added to the head section:
 <base>, <link>, <meta>, <script>, <style>, <title>.

The <body> tag

- The body tag contains the main information to be displayed on the webpage. Different tags can be used within the body section to describe the content.

← → ↻ 🏠 ⓘ File | /Users/mrocha/OneDrive%20-%20Technological%20University%20Dublin/Mo



Click to see the code:

https://codepen.io/fatma_eltaher/pen/jEbwKYL

```
<!DOCTYPE html>
<html lang="en-US">
  <head>
    <meta charset="utf-8" />
  </head>
  <body>
    
  </body>
</html>
```

Comments in HTML

- An HTML comment begins with `<!--` and ends with `-->`
- Anything in the comment does not appear/render in the browser, but it is visible in the pages source code.
 - `<!-- This won't appear in the browser -->`
 - `<!-- <h1>This won't appear either </h1> -->`
- Usage:
 - Comment out code segments
 - Add notes to explain how something works, this can be useful for future edits.

The heading `<h*>` tag

- The Heading Tag should be used to add a heading to a section on a web page.
- The size and importance of the heading decrease with the number. This way, `<h1>` is more important than `<h6>`

- There are 6 types of heading tags:

`<h1>My Heading</h1>`

`<h2>My Heading</h2>`

`<h3>My Heading</h3>`

`<h4>My Heading</h4>`

`<h5>My Heading</h5>`

`<h6>My Heading</h6>`

```
HTML
1 <h1> Cats are great.</h1>
2 <h2>Cats are great.</h2>
3 <h3>Cats are great.</h3>
4 <h4>Cats are great.</h4>
5 <h5>Cats are great.</h5>
6 <h6>Cats are great.</h6>
7
```

Cats are great.

Cats are great.

Cats are great.

Cats are great.

Cats are great.

Click on the code to see the example in CodePen



The anchor <a> tag

- The anchor <a> tag is a **hyperlink**
- The hyperlink can take the user to a different page

```
HTML
1 <h2> Cats are great, they are <a
  href="https://www.hillspet.com/cat-care/behavior-
  appearance/how-smart-are-cats"> intelligent</a>, kind,
  funny, and amazing. </h2>
2
3
```

Cats are great, they are [intelligent](https://www.hillspet.com/cat-care/behavior-appearance/how-smart-are-cats), kind, funny, and amazing.

Click on the code to see the example in CodePen



“Hello Web!” Quick Build

1.Open CodePen (or VS Code).

2.Type the following starter code:

```
<!DOCTYPE html>
<html>
  <head>
    <title>My First Page</title>
  </head>
  <body>
    <!-- Add your content below -->
  </body>
</html>
```

3.Inside

- A level-1 heading with your name.
- One paragraph describing your favorite hobby.
- A link to any website you like.

The article <article> tag

- The article tag should be used as a container of information on a given subject.
- For example, it could hold news, story, reviews etc.
- An article should have a heading and some content.

```
HTML
1 <article>
2   <h1> All about cats </h1>
3   <p>A lot of text about cats, what they eat, where they
    live, what they like, and so much more.</p>
4 </article>
5
6
```

All about cats

A lot of text about cats, what they eat, where they live, what they like, and so much more.

Click on the code to see the example in CodePen



The aside <aside> tag

- The aside element identifies content that is separate from, but tangentially related to, the surrounding content.
- When the aside tag is used inside the article tag, the contents of the aside tag should be related to the topic of the article.

```
HTML
1 <article>
2 <h1>Web Typography</h1>
3 <p>Back in 1997, there were competing font formats and tools for making them...</p>
4 <p>We now have a number of methods for using beautiful fonts on web pages...</p>
5 <aside>
6 <h2>Web Font Resources</h2>
7 <ul>
8 <li><a href="http://typekit.com/">Typekit</a></li>
9 <li><a href="http://fonts.google.com">Google Fonts</a></li>
10 </ul>
11 </aside>
12 </article>
```

Web Typography

Back in 1997, there were competing font formats and tools for making them...

We now have a number of methods for using beautiful fonts on web pages...

Web Font Resources

- [Typekit](http://typekit.com/)
- [Google Fonts](http://fonts.google.com)

Click on the code to see the example in CodePen

The section <section> tag

- The section tag is used to group content into sections (divisions) on a web page.
- The content of the section should be thematic
- If the idea is to divide the code into sections considering other aspects such as style, it is preferred to use <div>

```
HTML
1 <section>
2   <p>A lot of information here will be related to cats.</p>
3 </section>
4
5 <section>
6   <p>A lot of information here will be related to birds.</p>
7 <section>
```

A lot of information here will be related to cats.

A lot of information here will be related to birds.

Click on the code to see the example in CodePen



The details <details> tag

- The details tag allows for information to be hidden on the webpage and can be shown to the user when required.

```
HTML
1 <details>
2   <summary>Info about cats.</summary>
3   <p>They are great</p>
4 </details>
5
```

▼ Info about cats.

They are great

Click on the code to see the example in CodePen



The img tag

- The img tag is used to show an image on a webpage.

← → ↺ 🏠 ⓘ File | /Users/mrocha/OneDrive%20-%20Technological%20University%20Dublin/Mo



Click to see the code:

https://codepen.io/fatma_eltaher/pen/jEbwKYL

```
<!DOCTYPE html>
<html lang="en-US">
  <head>
    <meta charset="utf-8" />
  <title>What a beautiful website</title>
</head>
<body>
  
</body>
</html>
```

The footer <footer> tag

- The footer tag defines a footer for a section or the webpage.
- It can hold information about the page creator, copyright information, and social media links.

HTML

```
1 <article>
2 <header>
3 <h1>More about WOFF</h1>
4 <p>by Jennifer Robbins, <time datetime="2017-11-11">November 11,2017</time></p>
5 </header>
6 <!-- article content here -->
7 <footer>
8 <p><small>Copyright &copy;2017 Jennifer Robbins.</small></p>
9 </footer>
10 </article>
```

More about WOFF

by Jennifer Robbins, November 11,2017

Copyright ©2017 Jennifer Robbins.

Click on the code to see the example in CodePen

The navigation <nav> tag

- The nav tag defines a container to hold links to other parts of the website
- It is used to implement a menu bar

```
/ HTML  
1 <nav>  
2   <a href="#home">Home</a>  
3   <a href="#more">More</a>  
4 </nav>  
5 <h2 id="home">Welcome to the Home Page</h2>  
6 <p>This is the home section content.</p>  
7  
8 <h2 id="more">Learn More About Us</h2>  
9 <p>Here is more detailed information.</p>  
10
```

[Home](#) [More](#)

Welcome to the Home Page

This is the home section content.

Learn More About Us

Here is more detailed information.

Click on the code to see the example in CodePen



The ordered list tag

- An ordered list tag creates a numbered list

```
HTML
1 <p>Reasons to love cats</p>
2 <ol>
3   <li>They are great</li>
4   <li>They are smart</li>
5   <li>They are clean</li>
6 </ol>
```

Reasons to love cats

1. They are great
2. They are smart
3. They are clean

Click on the code to see the example in CodePen



The unordered list tag

- An unordered list creates a bullet points list

```
HTML
2 <ul>
3   <li>They are great</li>
4   <li>They are smart</li>
5   <li>They are clean</li>
6 </ul>
```

Reasons to love cats

- They are great
- They are smart
- They are clean

Click on the code to see the example in CodePen



What If No Existing HTML Element Fits?

HTML provides two generic elements for these cases:


1. `<div>` – Block-level container

- Used for grouping elements together
- Often used in layout and structure

1. `` – Inline container

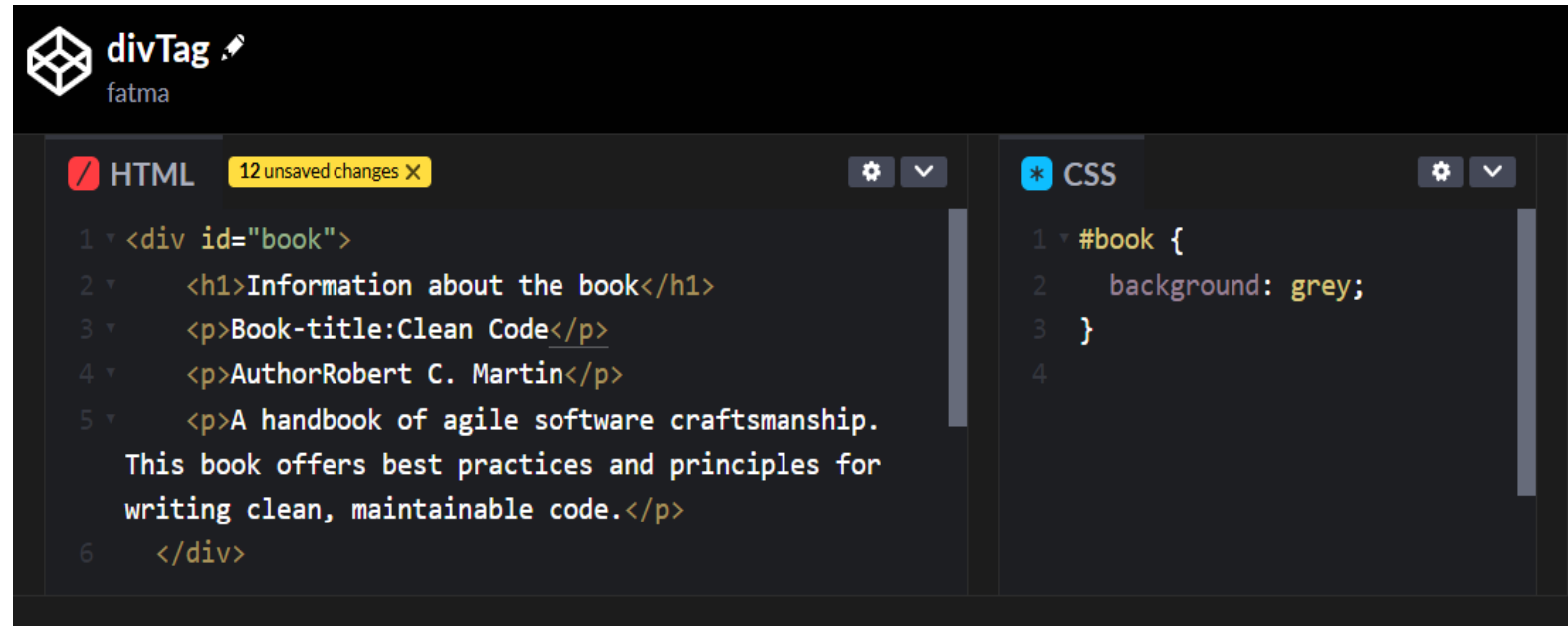
- Represents a word or phrase within a line of text
- Useful when no specific inline tag (like ``, ``, etc.) applies

Tip: These elements get their meaning through:

- `id` (unique identifier)
- `class` (used for styling or scripting)
-  We'll explore `id` and `class` soon

The div <div> tag (GENERIC ELEMENT)

- The div tag is used to group content on a web page.
- The div element has no special meaning.
- Can be used for styling



The screenshot shows a code editor with two panels. The left panel is titled 'HTML' and shows the following code:

```
1 <div id="book">
2   <h1>Information about the book</h1>
3   <p>Book-title:Clean Code</p>
4   <p>AuthorRobert C. Martin</p>
5   <p>A handbook of agile software craftsmanship.
   This book offers best practices and principles for
   writing clean, maintainable code.</p>
6 </div>
```

The right panel is titled 'CSS' and shows the following code:

```
1 #book {
2   background: grey;
3 }
4
```

Information about the book

Book-title:Clean Code

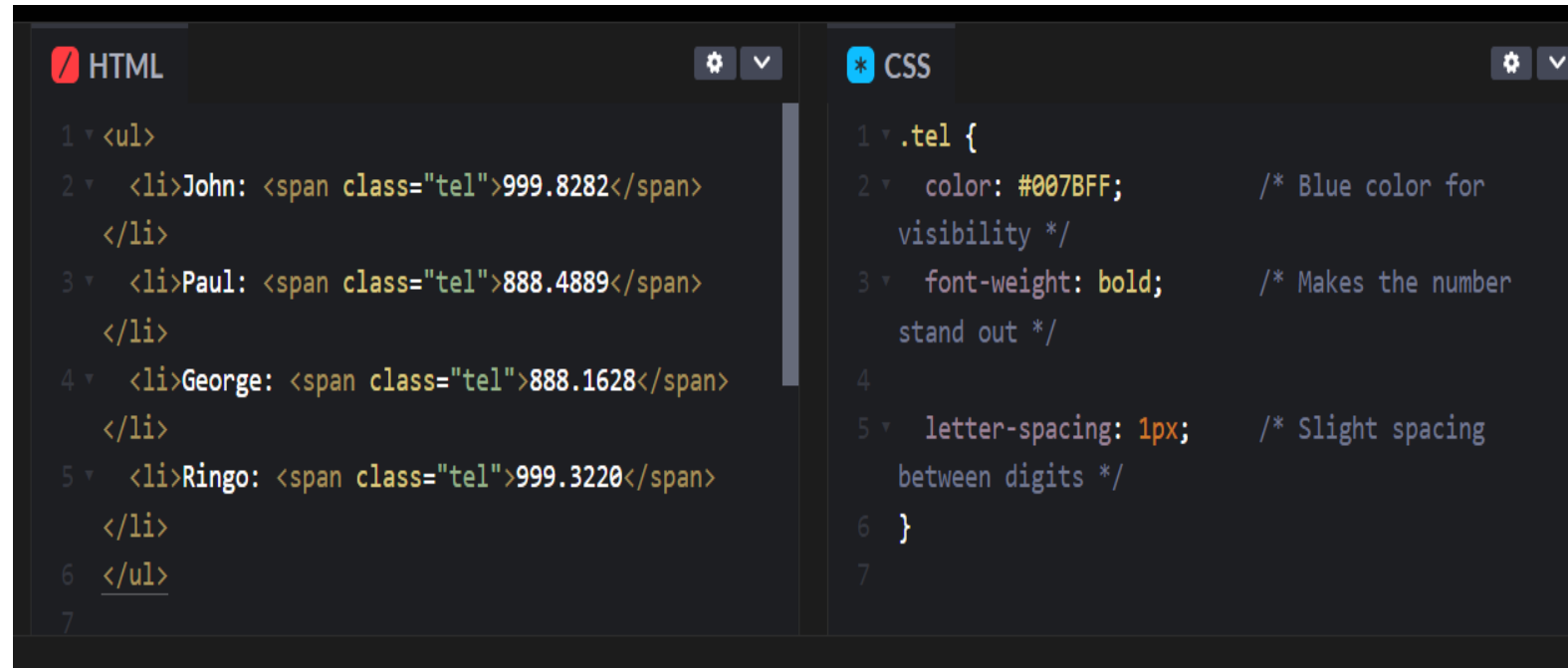
AuthorRobert C. Martin

A handbook of agile software craftsmanship. This book offers best practices and principles for writing clean, maintainable code.

Click on the code to see the example in CodePen

The span `` tag (GENERIC ELEMENT)

- A span offers the same benefits as the div element, except it is used for phrase elements and does not introduce line breaks.



```
HTML
1 <ul>
2   <li>John: <span class="tel">999.8282</span>
3   </li>
4   <li>Paul: <span class="tel">888.4889</span>
5   </li>
6   <li>George: <span class="tel">888.1628</span>
7   </li>
8   <li>Ringo: <span class="tel">999.3220</span>
9   </li>
10 </ul>
```

```
CSS
1 .tel {
2   color: #007BFF; /* Blue color for
3   visibility */
4   font-weight: bold; /* Makes the number
5   stand out */
6   letter-spacing: 1px; /* Slight spacing
7   between digits */
8 }
```

- John: 999.8282
- Paul: 888.4889
- George: 888.1628
- Ringo: 999.3220

Click on the code to see the example in CodePen

Bug Hunt:

Goal: Find and fix at least 5 mistakes in 3 minutes.

Tip: Don't just look for typos—think about proper HTML syntax.

```
<!DOCTYPE html>
<html lang="en-US">
<head>
  <meta charset="UTF-8">
  <title>My First Webpage<title>
</head>
<body>
  <h1>Welcome to my page<h1>
  
  <p>Here is a paragraph about my cat.
  <a href="https://example.com">Visit my blog</a
</body>
</html>
```

Bug Hunt:

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<body>
  <h1>Welcome to my page</h1>
  
  <p>Here is a paragraph about my cat.</p>
  <a href="https://example.com">Visit my blog</a>
</body>
</html>
```

Additional reading

- <http://www.w3schools.com/html/>
- <https://developer.mozilla.org/en-US/docs/Web/HTML>
- <https://www.codecademy.com/learn/learn-html>