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# Introduction to HTML

## Lecture 2

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# Learning Outcomes

See how **HTML** describes the structure of a web page

Learn how tags or elements are added to your document

Explore the HTML elements specification

# HTML

**HTML** stands for **HyperText Markup Language**



# HTML describes structure of pages

```
<html>

<body>
  <h1>This is the Main Heading</h1>
  <p>This text might be an introduction to the rest of the page. And if the page is a long one it might
    be split up into several sub-headings.</p>
  <h2>This is a Subheading</h2>
  <p>Many long articles have subheadings to help you follow the structure of what is being written.
    There may even be sub-sub-headings (or lower-level headings).</p>
  <h2>Another Subheading</h2>
  <p>Here you can see another subheading.</p>
</body>

</html>
```

# HTML

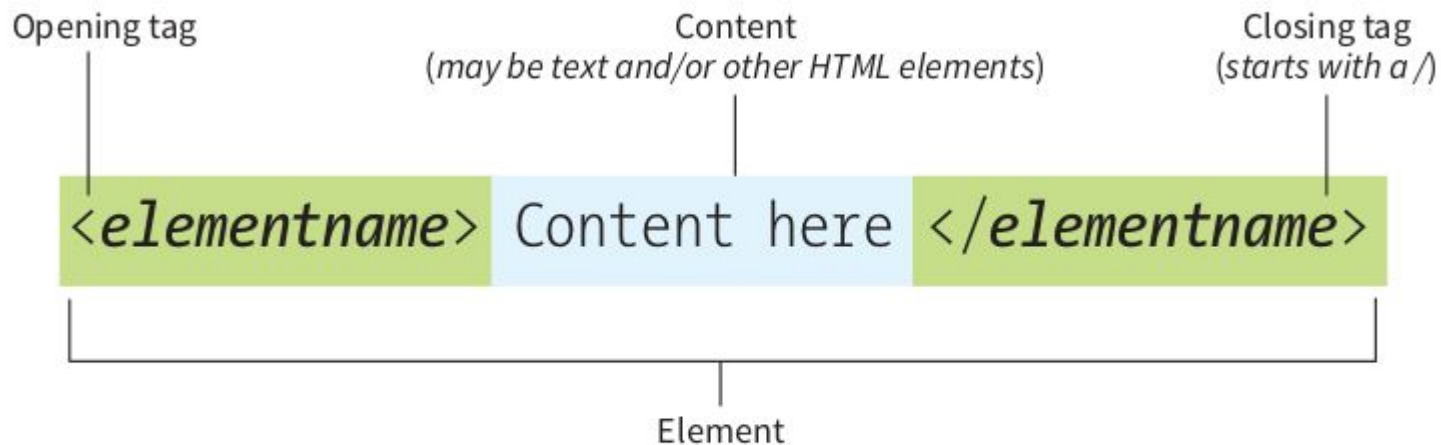
HTML code is made up of characters that live inside **angled brackets** called **HTML elements**

**HTML Elements** are usually made up of two **tags**:

an opening tag and a closing tag

Each HTML element tells the browser something about the information that sits between its opening and closing tags

# HTML Tag



Example:

```
<h1>Black Goose Bistro</h1>
```

# HTML Tag Attributes

Attributes provide additional information about the contents of an element

They appear on the opening tag of the element and are made up of two parts: a name and a value, separated by an equals sign



The diagram illustrates the structure of an HTML tag attribute. It shows the opening tag `<p lang="en-us">` with the closing tag `</p>`. The attribute `lang="en-us"` is highlighted. A bracket above the attribute points to the text "ATTRIBUTE NAME", and a bracket below the attribute points to the text "ATTRIBUTE VALUE".

```
graph TD
    AN[ATTRIBUTE NAME] --- A[lang="en-us"]
    AV[ATTRIBUTE VALUE] --- A
```

`<p lang="en-us">Paragraph in English</p>`



# Basic HTML document structure

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

  </body>
</html>
```

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```

**DOCTYPE** identifies the document as written in **HTML5**

# Basic HTML document structure

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  </body>
</html>
```

The **html** element is called the **root element** because it contains all the elements in the document

# Basic HTML document structure

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  </body>
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```

The **head** element contains elements that pertain to the document that are not rendered as part of the content, such as its **title**, **style sheets**, **scripts**, and **metadata**

# Basic HTML document structure

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    <meta charset="UTF-8">
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  </head>
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  </body>
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```

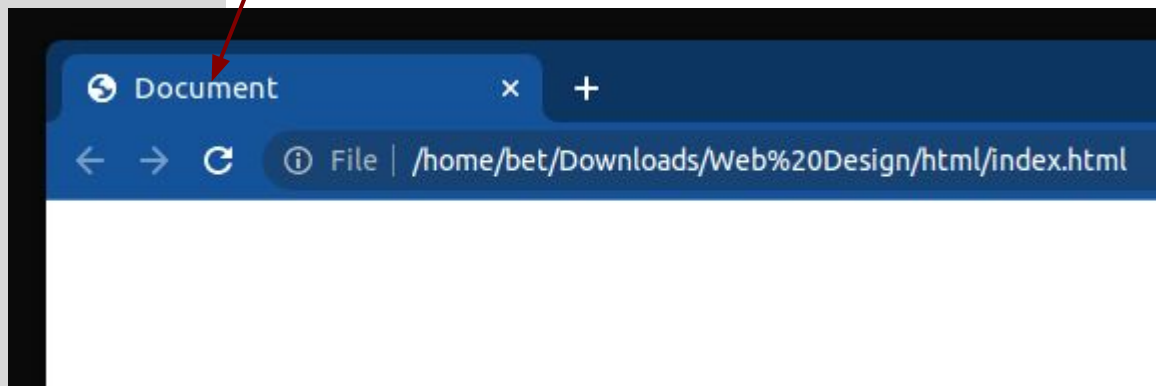
**meta** elements provide document metadata, information about the document

# Basic HTML document structure

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

  </body>
</html>
```

**title** mandatory element



# Basic HTML document structure

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<!DOCTYPE html>
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    <meta charset="UTF-8">
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  </head>
  <body>

  </body>
</html>
```

**body** element contains everything that we want to show up in the browser window

# HTML5 Specification

<https://html.spec.whatwg.org/>



# Semantic Elements in HTML5

<https://html.spec.whatwg.org/#semantics>

# Semantic Elements in HTML5

<https://html.spec.whatwg.org/multipage/sections.html#sections>

# <main>

The main content area of a document **includes content that is unique to that document** and **excludes content that is repeated across a set of documents** such as

site navigation links, copyright information, site logos and banners, and search forms (unless the document or application's main function is that of a search form)

A document **must not have more than one main element** that does not have the hidden attribute specified

<https://html.spec.whatwg.org/#the-main-element>

# <section>

The section element is used to define a generic section of a document or application

A section, in this context, is a **thematic grouping of content**, typically with a heading

<https://html.spec.whatwg.org/#the-section-element>

# <section>

Examples of sections would be

chapters, the various tabbed pages in a tabbed dialog box, or the numbered sections of a thesis

A web site's home page could be split into sections for an introduction, news items, and contact information

*It's important to note that this element isn't intended for styling purposes*

## <nav>

The nav element is used to wrap major navigational links to other pages or parts within the same page

<https://html.spec.whatwg.org/multipage/sections.html#the-nav-element>

# <article>

The article element **represents** a **complete**, or **self-contained**, composition in a document, page, application, or site and that is, in principle, **independently distributable or reusable**, e.g. in syndication

<https://html.spec.whatwg.org/multipage/sections.html#the-article-element>

# <article>

When **article** elements are **nested**, the inner article elements represent articles that are in principle **related to the contents of the outer article**

For instance,

a blog entry on a site that accepts user-submitted comments could represent the comments as article elements nested within the article element for the blog entry



# <article>

Examples:

a forum post, a magazine or newspaper article, a blog entry, a user-submitted comment, an interactive widget or gadget, or any other independent item of content

# <aside>

The aside element is used for content that is tangentially related to the content around it

It can be used for side-bars, pull quotes, advertising, and groups of navigation elements

<https://html.spec.whatwg.org/multipage/sections.html#the-aside-element>

# <header>

The header element represents a **group of introductory** or **navigational aids**

A **header** element is intended to usually contain a heading (an `h1–h6` element or an **hgroup** element), but this is not required

The header element can also be used to wrap a **section's table of contents**, a **search form**, or **any relevant logos**

<https://html.spec.whatwg.org/multipage/sections.html#the-header-element>

# <footer>

The footer element represents **a footer for its nearest ancestor sectioning content element, or for the body element if there is no such ancestor**

A footer typically contains information about its section such as

who wrote it, links to related documents, copyright data, and the like

<https://html.spec.whatwg.org/multipage/sections.html#the-footer-element>

`<h1>`, `<h2>`, `<h3>`, `<h4>`, `<h5>`, `<h6>`

These elements represent headings for their sections

<https://html.spec.whatwg.org/multipage/sections.html#the-h1,-h2,-h3,-h4,-h5,-and-h6-elements>

# <hgroup>

The hgroup element represents a heading and related content

The element may be used to group an **h1–h6** element with one or more **p** elements containing content representing a **subheading**, **alternative title**, or **tagline**

<https://html.spec.whatwg.org/multipage/sections.html#the-hgroup-element>

# <hgroup>

```
<hgroup>
```

```
  <h1>The reality dysfunction</h1>
```

```
  <p>Space is not the only void</p>
```

```
</hgroup>
```

# Grouping Contents

<https://html.spec.whatwg.org/multipage/grouping-content.html>



<P>

The **p** element represents a paragraph

<https://html.spec.whatwg.org/multipage/grouping-content.html#the-p-element>

**<hr>**

The **hr** element represents a paragraph-level thematic break, e.g. a scene change in a story, or a transition to another topic within a section of a reference book

<https://html.spec.whatwg.org/multipage/grouping-content.html#the-hr-element>

# <blockquote>

The **blockquote** element represents a section that is quoted from another source

<https://html.spec.whatwg.org/multipage/grouping-content.html#the-blockquote-element>

# <ol>

The **ol** element represents **a list of items**, where the **items have been intentionally ordered**, such that **changing the order would change the meaning of the document**

<https://html.spec.whatwg.org/multipage/grouping-content.html#the-ol-element>

## <ul>

The **ul** element represents **a list of items**, where the **order of the items is not important** — that is, where changing the order would not materially change the meaning of the document

<https://html.spec.whatwg.org/multipage/grouping-content.html#the-ul-element>

## <menu>

The **menu** element represents a **toolbar** consisting of its contents, in the form of an unordered list of items (represented by li elements), each of which represents a command that the user can perform or activate

<https://html.spec.whatwg.org/multipage/grouping-content.html#the-menu-element>

# <figure>

The **figure** element represents some flow content, optionally with a caption, that is self-contained (like a complete sentence) and is typically referenced as a single unit from the main flow of the document

The element can be used to **annotate illustrations, diagrams, photos, code listings**, etc.

<https://html.spec.whatwg.org/multipage/grouping-content.html#the-menu-element>

# <div>

The **div** element has no special meaning at all

It represents its children

It can be used with the **class**, **lang**, and **title** attributes to mark up semantics common to a group of consecutive elements.



# Text-Level Semantics

<https://html.spec.whatwg.org/multipage/text-level-semantics.html#usage-summary>

# <a>

If the **a** element has an **href** attribute, then **it represents a hyperlink** (a hypertext anchor) labeled by its contents

The **target**, **download**, **ping**, **rel**, **hreflang**, **type**, and **referrerpolicy** attributes **must be omitted if the href attribute is not present**

<https://html.spec.whatwg.org/multipage/text-level-semantics.html#the-a-element>

<em>

The **em** element represents **stress emphasis** of its contents

<https://html.spec.whatwg.org/multipage/text-level-semantics.html#the-em-element>

# <strong>

The **strong** element represents **strong importance, seriousness, or urgency** for its contents

<https://html.spec.whatwg.org/multipage/text-level-semantics.html#the-strong-element>

# <data>

The **data** element represents its contents, along with a machine-readable form of those contents in the value attribute

The value attribute must be present. Its value must be a representation of the element's contents in a machine-readable format

<https://html.spec.whatwg.org/multipage/text-level-semantics.html#the-data-element>

## <sup>, <sub>

The **sup** element represents a superscript and the **sub** element represents a subscript

<https://html.spec.whatwg.org/multipage/text-level-semantics.html#the-sub-and-sup-elements>



The **i** element represents a span of text in an **alternate voice** or **mood**, or otherwise **offset from the normal prose** in a manner indicating a **different quality of text**, such as a **taxonomic designation**, a **technical term**, an idiomatic phrase from another language, transliteration, a thought

<https://html.spec.whatwg.org/multipage/text-level-semantics.html#the-i-element>



The **b** element represents a span of text to which **attention is being drawn** for utilitarian purposes without conveying any extra importance and with no implication of an alternate voice or mood, such as

keywords in a document abstract, product names in a review, actionable words in interactive text-driven software, or an article lede

<https://html.spec.whatwg.org/multipage/text-level-semantics.html#the-b-element>



# <span>

The **span** element doesn't mean anything on its own, but can be useful when used together with the global attributes, e.g. **class**, **lang**, or **dir**

It represents its children

# <br>

The **br** element represents a line break.

**br** elements must be used only for line breaks that are actually part of the content, as in poems or addresses.

<https://html.spec.whatwg.org/multipage/text-level-semantics.html#the-br-element>

# Embedded content

<https://html.spec.whatwg.org/multipage/embedded-content.html>

# <picture>

The **picture** element is a container which **provides multiple sources to its contained `img` element to allow authors to declaratively control or give hints to the user agent about which image resource to use**, based on the **screen pixel density, viewport size, image format**, and other factors

It represents its children

<https://html.spec.whatwg.org/multipage/embedded-content.html#the-picture-element>

# <img>

An **img** element represents an image

The image given by the **src** and **srcset** attributes is the embedded content

The value of the **alt** attribute provides equivalent content for those who cannot process images or who have image loading disabled

<https://html.spec.whatwg.org/multipage/embedded-content.html#the-img-element>

<https://html.spec.whatwg.org/multipage/images.html>

# <img>

**The `src` attribute must be present**, and must contain a valid non-empty URL potentially surrounded by spaces referencing a non-interactive, optionally animated, image resource that is neither paged nor scripted

# <iframe>

The **iframe** element represents its nested navigable

The **src** attribute gives the URL of a page that the element's nested navigable is to contain. The attribute, if present, must be a valid non-empty URL potentially surrounded by spaces

<https://html.spec.whatwg.org/multipage/iframe-embed-object.html#the-iframe-element>

# <video>

A **video** element is used for playing videos or movies, and audio files with captions

The **src**, **crossorigin**, **preload**, **autoplay**, **loop**, **muted**, and controls attributes are the attributes common to all media elements

The **poster** attribute gives the URL of an image file that the user agent can show while no video data is available

<https://html.spec.whatwg.org/multipage/media.html#the-video-element>



# <audio>

An **audio** element represents a sound or audio stream

The **src**, **crossorigin**, **preload**, **autoplay**, **loop**, **muted**, and controls attributes are the attributes common to all media elements

<https://html.spec.whatwg.org/multipage/media.html#the-audio-element>

# Forms

<https://html.spec.whatwg.org/multipage/forms.html#forms>

## <form>

The **form** element represents a hyperlink that can be manipulated through a collection of form-associated elements, some of which can represent editable values that can be submitted to a server for processing

<https://html.spec.whatwg.org/multipage/forms.html#forms>

# Tabular Data

<https://html.spec.whatwg.org/multipage/tables.html#tables>

# <table>

The **table** element represents data with more than one dimension, in the form of a table

Tables have **rows**, **columns**, and **cells** given by their descendants

The rows and columns form a **grid**; a table's cells must completely cover that grid without overlap

<https://html.spec.whatwg.org/multipage/tables.html#tables>