

## Hyperlinks

- Without hyperlinks, it wouldn't be a web!
- HTML uses 'anchor' elements for hyperlinks:
  - Tag: `<a>`
  - Attribute: `href`
  - Attribute value the **Uniform Resource Locator** (URL) of the target document
  - Content: the 'clickable' text or image or...
- E.g.

```
<a href="http://en.wikipedia.org/wiki/Ernest_Hemingway">Ernest Hemingway</a>
```

## HTML attributes and values

- *Start tags* can contain **attributes** with their **values**
- Attributes provide extra information about the element
- E.g.

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

```
<li class="cocktail" lang="es">Mojitos</li>
```

```
<a href="http://en.wikipedia.org/wiki/Ernest_Hemingway">Ernest Hemingway</a>
```

```

```

```
<p id="warning">
```

## External resources

- An HTML web page may refer to **external resources**:
  - Resources that are stored separately, in their own files
  - Might be on the same server as the web page, or on a different server
- We will look at:
  - images (GIFs, JPEGs, PNGs, ...)
  - video files, audio files
  - CSS stylesheets

## Images

- Typically, images are stored in files, separate from the web page itself
  - Tag: `<img>`
  - `src` attribute: its value is the URL of the image file
  - Other attributes, e.g.: `alt`, `title`
  - Attributes to avoid: `width`, `height`
  - It's a **void element**

- Eg.

```

```

## Display of images

- By default, images are displayed 'inline' — continuing on the same line
- There are many ways to arrange for them to be displayed instead as a 'block' on a new line
- One of the best ways is to nest the `<img>` within a `<figure>` element
- Compare these:

```
Here is an image:

Nice isn't it?
```

```
Here is an image:
<figure>
  
</figure>
Nice isn't it?
```

- The `<figure>` element can also contain a `<figcaption>` element

## Video and audio

- Video sites such as YouTube will give you HTML that you can include, e.g.

```
<iframe width="640" height="360" src="https://www.youtube.com/embed/e36Z5uagLNo" frameborder="0" allow
```

- But for your own video files, HTML5 also has the `<video>` element, e.g.

```
<video width="640" height="360" controls>
  <source src="mojito.webm" type="video/webm" />
</video>
```

- Similarly, the `<audio>` element

## CSS stylesheets

- An HTML file contains the **content** plus markup that imposes **structure** on that content
- How do we affect the **appearance** of the web page?
  - We use one or more **CSS stylesheets**
  - These too are often external resources, stored in separate files on servers
  - To create a relationship between web page and stylesheet, e.g.:

```
<link rel="stylesheet" href="styles.css" />
```

- **Question:** What kind of element is `<link>`?

## External resources

- Suppose a web page references several external resources (stylesheets, images, etc.)
- The server does not send all the content in one go
- The client receives the web page and then sends a *separate request* for each external resource

## HTML syntax rules

Ensuring your HTML is well-formed:

- Only certain tags are permitted
  - E.g. any element can have a lang attribute (it's a global attribute)
- Only certain attributes and values are permitted
  - E.g. only a few elements can have an alt attribute (e.g. <img>)
- Often, only certain content is permitted
  - E.g. a <ul> element can only contain zero, one or more <li> elements
- Nesting must be done properly:
  - E.g. This is <em>correct</em></p>
  - This is <em>incorrect</p></em>
- ...and lots more

## Q: How many requests will be made?

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Derek's pretend RTE page</title>
  <link rel="stylesheet" href="rte_styles.css">
</head>
<body>
  <figure>
    
  </figure>
  <main>
    <h1>Welcome to RTE</h1>
    <br>
    
    There's high-drama in Cork this week when Conor and Jack
    receive CAO offers to study computer Science in UCC.
  </p>
  <p>
    
    Watch on Friday as we piss away your license fees on third-rate
    guests in this tired format.
  </p>
  <p>
    
    In the news, we ask: Is the Pope a Catholic?
  </p>
</body>
</html>
```

## Class exercise

- A student wants to produce this nested list:

- badgers
- wombats
  - common wombat
  - hairy-nosed wombat
- squirrels

- This is what s/he writes. What is the error? Fix it.

```
<ul>
  <li>badgers</li>
  <li>wombats</li>
  <li>
    <li>common wombat</li>
    <li>hairy-nosed wombat</li>
  </li>
  <li>squirrels</li>
</ul>
```

## Two syntaxes

- In fact, HTML5 has two sets of syntax rules
- **XML syntax** uses a very strict set of rules, e.g.:
  - tags must be in lowercase
  - each start tag must have an end tag or, for void elements, an extra slash
  - attribute values must be quoted
  - ...and so on
- **HTML syntax** allows you to break all the above rules...*in certain cases*
- Ironically, in my view, it's easier to use the strict rules!

## HTML validation

- What does your browser do if your web page is **not** well-formed?
  - Browsers (almost) never give error messages
  - They do their best to build the tree and display the page
- So how do you know if your page is well-formed or not?
  - **Validate** it:  
<https://html5.validator.nu/>
- (Similarly, you can check that all links work:  
<https://validator.w3.org/checklink>)