

COMP4021

Internet Computing

HTML

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HTML

- HTML (**H**ypertext **M**arkup **L**anguage) is the language for creating web page content
- HTML5 is the latest version of the HTML family
- We will give you a brief overview of HTML in this presentation



The World Wide Web Consortium

- HTML and many other web languages are made by the World Wide Web Consortium (W3C)

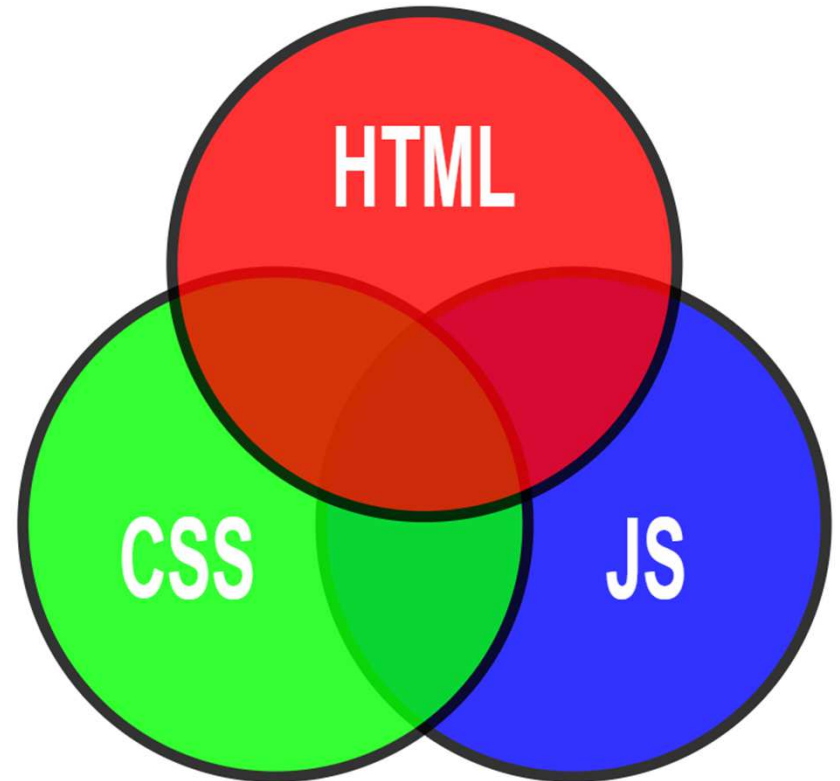


- You can find things which are discussed and have standards made about them at:

<https://www.w3.org/>

The 3 Main Skillsets

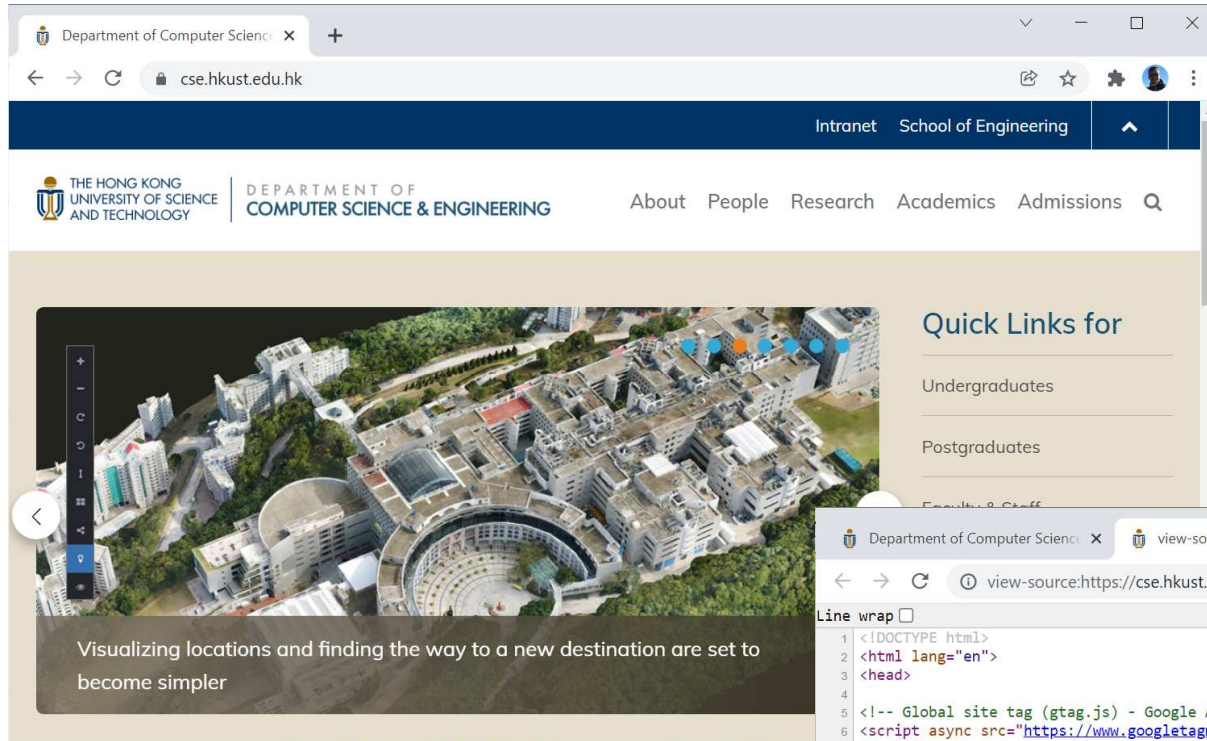
- HTML works together with style sheets (CSS) and JavaScript (JS)
- We will discuss CSS and JS in other presentations



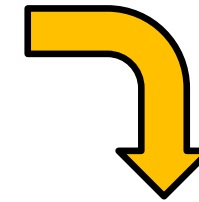
Learning HTML

- One way to learn HTML is by looking at what other people are doing
- You can easily do that in Chrome by either:
 - Getting the source, i.e. HTML, of a page
 - or
 - Using the developer tools to read or even change the HTML of a page

Getting the Page Source



Right click >
View Page Source

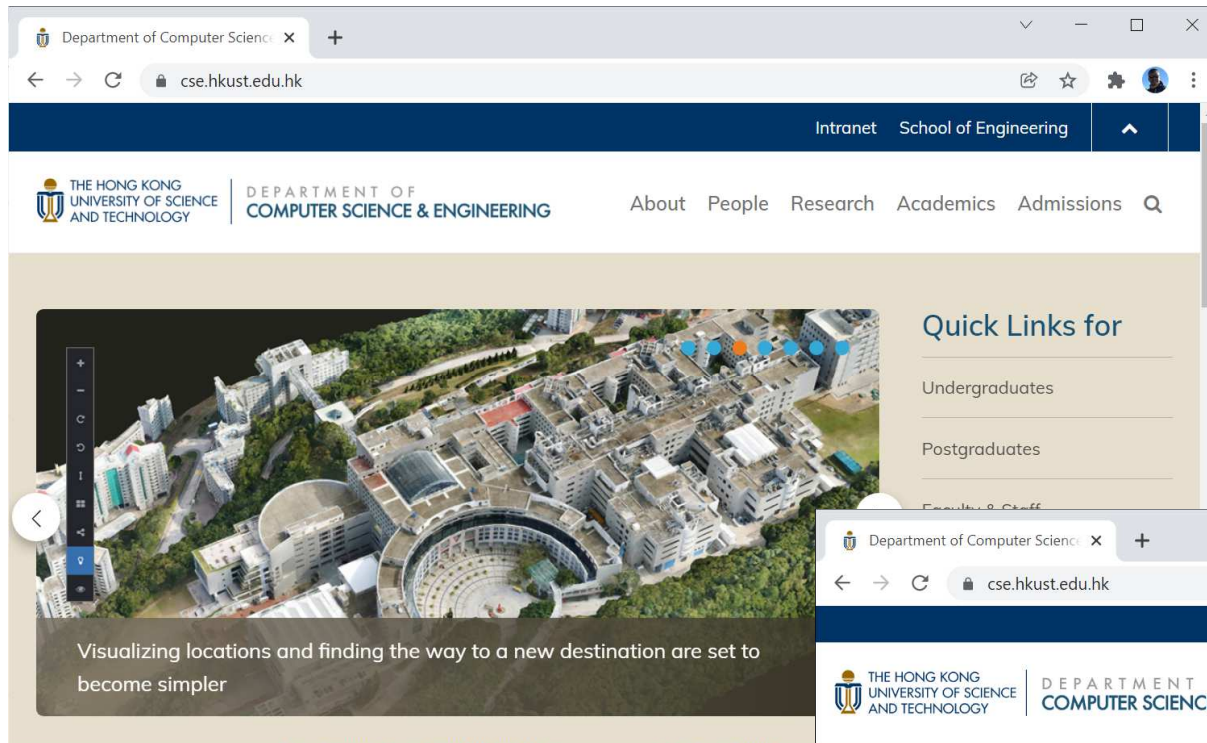


```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4
5 <!-- Global site tag (gtag.js) - Google Analytics -->
6 <script async src="https://www.googletagmanager.com/gtag/js?id=UA-2771148-1"></script>
7 <script>
8   window.dataLayer = window.dataLayer || [];
9   function gtag(){dataLayer.push(arguments);}
10  gtag('js', new Date());
11
12  gtag('config', 'UA-2771148-1');
13 </script>
14 <!-- Google Analytics Ends -->
15
16 <meta charset="utf-8">
17 <meta content="IE=edge" http-equiv="X-UA-Compatible">
18 <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
19 <link rel="canonical" href="https://cse.hkust.edu.hk/">
20 <title>Department of Computer Science and Engineering - HKUST</title>
21
22 <link rel="icon" type="image/png" href="/favicon.png">
23 <link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Mul+400,500,600,700">
24 <link rel="stylesheet" href="/css/app.css?t=1545143016">
25
26 <!-- HTML5 shim and Respond.js for IE8 support of HTML5 elements and media queries -->
27 <!--[if lt IE 9]>
28   <script src="https://oss.maxcdn.com/html5shiv/3.7.3/html5shiv.min.js"></script>
29   <script src="https://oss.maxcdn.com/respond/1.4.2/respond.min.js"></script>
30 <![endif]>
31
32 <script src="/scripts/jquery/jquery-1.12.4.min.js"></script>
```

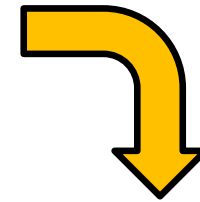
OR

Using the shortcut key
Ctrl+u / ⌘+Option+u

Using the Developer Tools

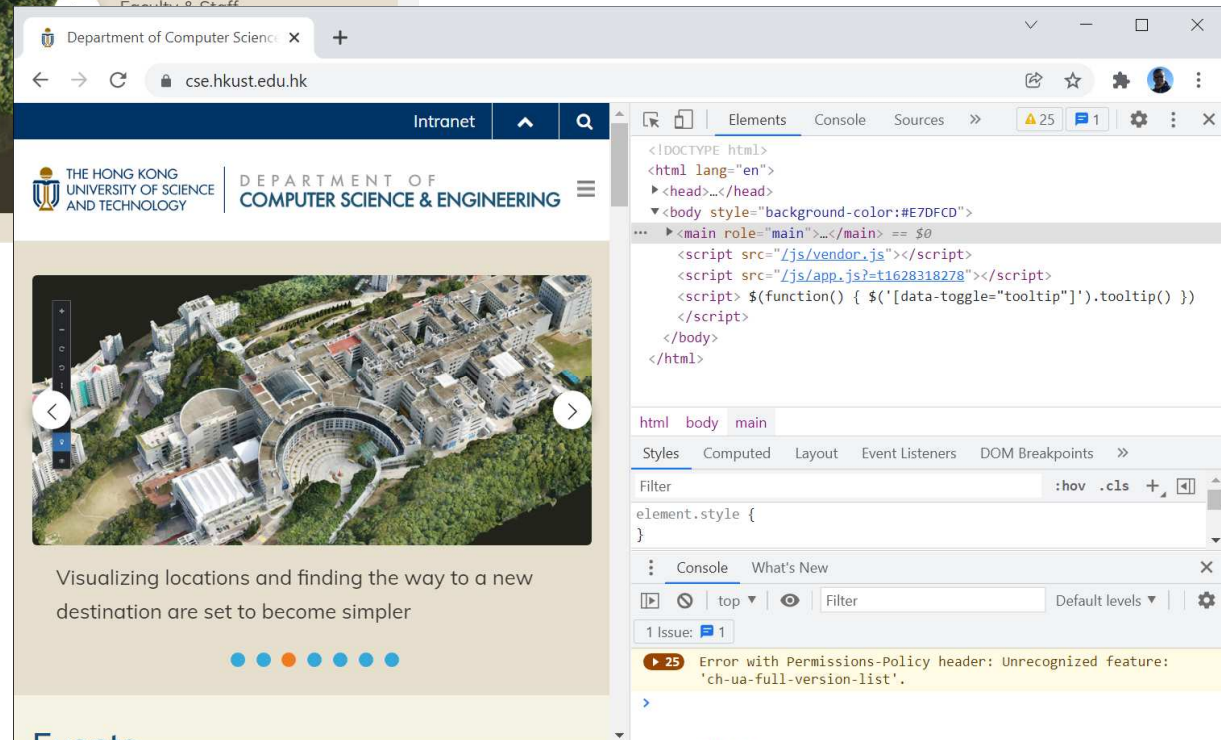


*Right click >
Inspect*



OR

*Using the shortcut key
F12 / ⌘+Option+i*



Basic HTML Structure

- An HTML document is a web page
- It has a head section and a body section
- Various things can go in the head section, e.g. the title
- The things you actually see in a browser goes in the body section

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>Greetings!</title>
```

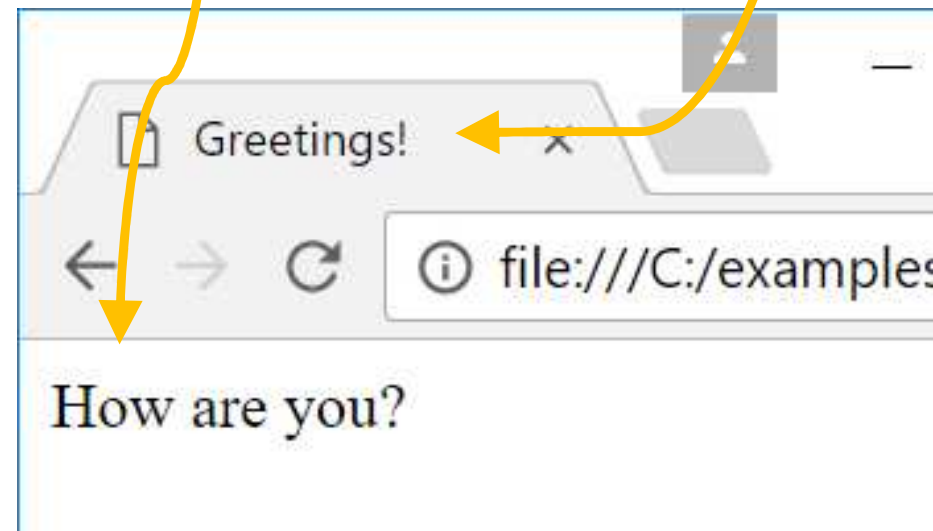
```
</head>
```

```
<body>
```

```
<p>How are you?</p>
```

```
</body>
```

```
</html>
```



The Document Type

- The first line of an HTML document tells the web browser what the file is about

<!DOCTYPE html>

<html>

...

- There's more than one variation of HTML
- We are looking at the most commonly used HTML, so the line shown above should be put at the start

HTML Tags

- The rest of the HTML document is made up of *HTML tags*, which look like this:

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

Opening tag

Closing tag

- Many HTML tags have opening tag and closing tag, e.g. `<h1> . . . </h1>` (header) and `<p> . . . </p>` (paragraph)
- But some of them only have a single tag, i.e. no closing tag, e.g. `` (image) and `
` (break a line of text)

HTML Elements

- We call an HTML tag, together with the content that it encloses, an HTML element
- The following is an HTML element `<p>...</p>`, which is a paragraph of text:

`<p>How are you?</p>`

An HTML paragraph element

The paragraph element is inside the body

- HTML elements can be nested, i.e. one element is inside another element

```
<body>  
  <p>How are you?</p>  
</body>
```

Text Headers

- If we keep on using only the `<p>` tag to show text paragraphs, the web page will be very boring
- We can make it more interesting by using various HTML tags for headers:
 - `<h1>...</h1>` for big headers,
i.e. top level headers
 - `<h2>...</h2>` for second level headers
 - `<h3>...</h3>` for third level headers
 - And so on

Example Text Headers

Text Elements

There are many text elements you can use.

Paragraphs and Spans

You use `<p>` for paragraphs and `` for text spans.

Headers

You use `<h1>`, `<h2>` and so on for headers, i.e. big text.

Headers

Paragraphs

Text Formatting

- Making some headers gives you a better organization of the web page display
- If you want to format individual part of the text, you can do that with some common text formatting tags, such as:
 - `` for bold, `<i>` for italic and `<u>` for underline text
 - `<big>` and `<small>` for big and small text
 - `<sub>` for subscript and `<sup>` for superscript
 - `<code>` for program code

Example Text Formatting

Some Example Text Formatting

This is **bold text**.

This is *italic text*.

This is underline text.

I am **big** and you are small.

Subscript and superscript are useful in maths like $(x_0)^2$.

You write `var x;` to create a variable `x` in JavaScript.

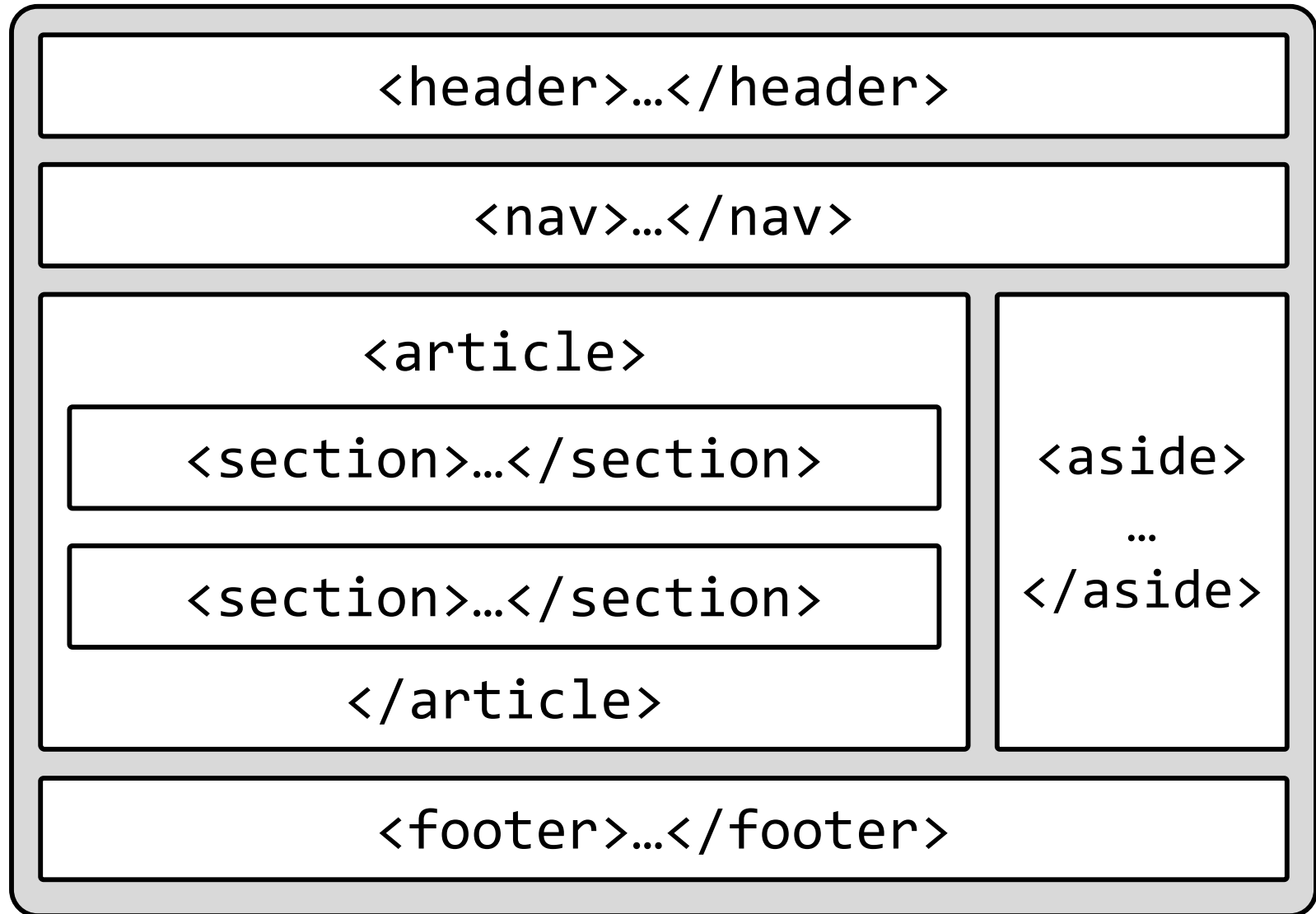
Alternatives to `` and `<i>`

- Officially, you are supposed to use `` instead of ``
- And you are supposed to use `` instead of `<i>` (`` means *emphasis*)
- The idea is that strong and emphasis have some kind of meaning, whereas `` and `<i>` don't
- However, `` and `<i>` are still very commonly used

Grouping Elements

- The previous elements are simple text
- There are various tags which you can use to give extra structure to an HTML document
- For example, you can use the tags `<nav>`, `<article>`, `<section>`, `<header>` and `<footer>` for different parts of a document
- Alternatively, you can also use the `<div>` tag to group elements together

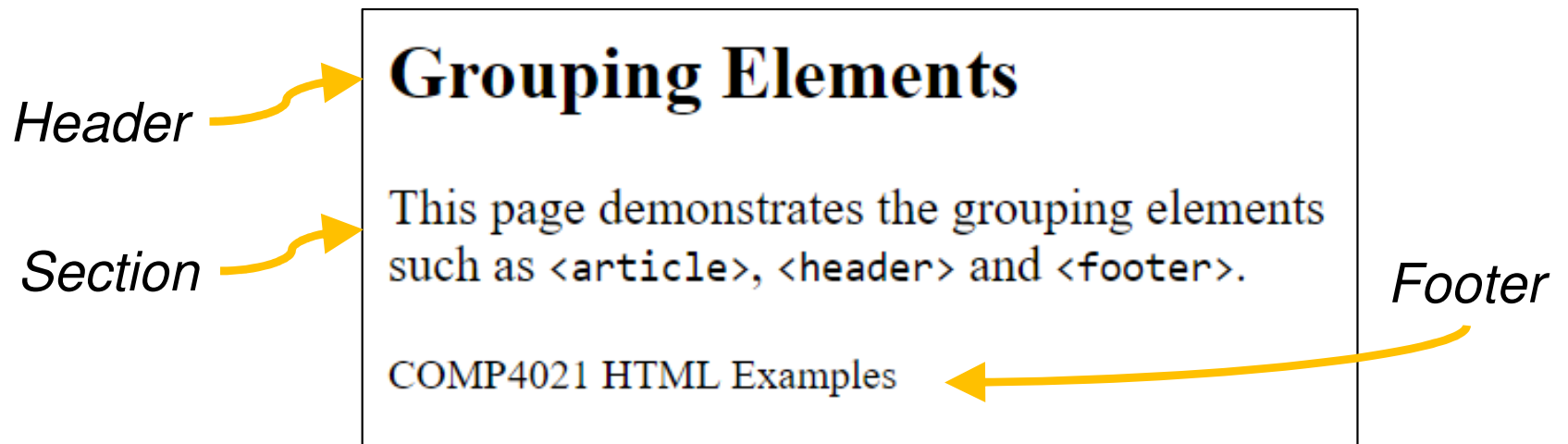
An Example Page With Structure



Another Example

- < and > are examples of special characters, see next slide

```
<header><h1>Grouping Elements</h1></header>
<article>
  <p>
    This page demonstrates the grouping elements such as
    <code>&lt;article&gt;</code>,
    <code>&lt;header&gt;</code> and
    <code>&lt;footer&gt;</code>.
  </p>
</article>
<footer><small>COMP4021 HTML Examples</small></footer>
```



HTML Entities

`<code><footer></code>`

- From the previous example, you can see `<` and `>` in the HTML code
- They are called HTML entities, which are used to represent some special characters
- You can see the use of `<`, `>`, `&` and `"` quite often

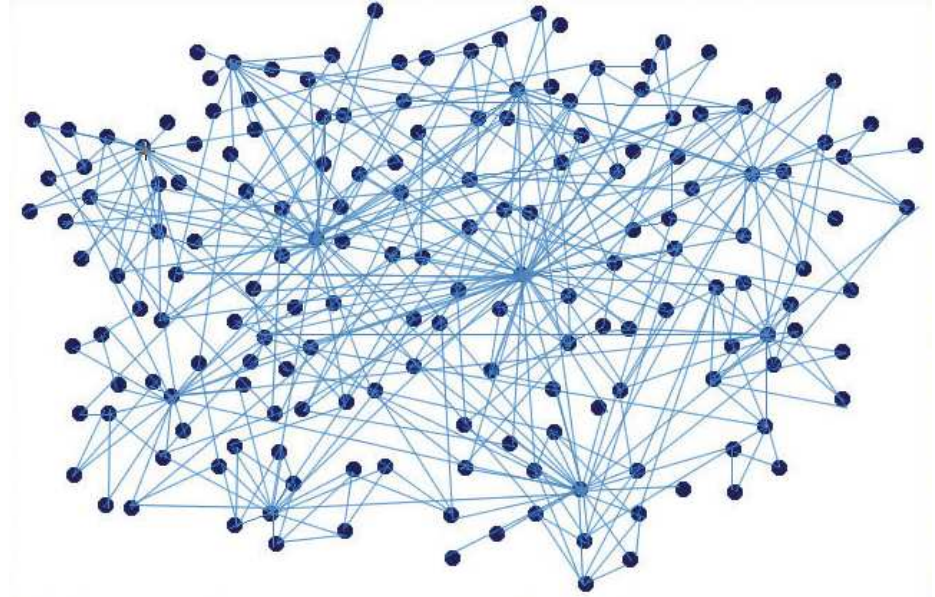
Some Example Entities

<code>&Tab;</code>	<code>&NewLine;</code>	! <code>&excl;</code>	" <code>&quot; &QUOT;</code>	# <code>&num;</code>	\$ <code>&dollar;</code>	% <code>&percnt;</code>	& <code>&amp; &AMP;</code>
' <code>&apos;</code>	(<code>&lpar;</code>) <code>&rpar;</code>	* <code>&ast; &midast;</code>	+ <code>&plus;</code>	, <code>&comma;</code>	. <code>&period;</code>	/ <code>&sol;</code>
: <code>&colon;</code>	; <code>&semi;</code>	< <code>&lt; &LT;</code>	= <code>&equals;</code>	> <code>&gt; &GT;</code>	? <code>&quest;</code>	@ <code>&commat;</code>	[<code>&lbrack; &lsqb;</code>

From: <https://dev.w3.org/html5/html-author/charref>

Hyperlinks

- The reason the Web is called the Web is because of *hyperlinks*
- Hyperlinks link one document to other
- To create a hyperlink you use the `<a>` tag
- The tag encloses something e.g. some text or an image
- When you click on that thing the browser follows the link



Links and Attributes

- Some HTML tags use parameters
- For example, a link to another web page can be created by using the `<a>` tag with an href parameter
- In HTML they are called *attributes* rather than parameters

```
<a href="https://canvas.ust.hk">
```

Click here to go to canvas!

```
</a>
```

[Click here to go to canvas!](https://canvas.ust.hk)

The Href Attribute

- The link in the href attribute can be *relative* to the current file location, for example:

```
<a href="more.html">Show more!</a>
```

- The link can also be *absolute*, including the complete URL of the other page, like this:

```
<a href="https://www.cse.ust.hk">CSE Dept</a>
```



*HTML attributes use quotation marks
(even if it's a number)*

List Elements

- HTML has two types of lists:
 - Ordered list created using the `` tag
 - Unordered list created using the `` tag
- Items inside the list are created using the `` tags,
for example:

```
<ul>
  <li>Breakfast at 8am</li>
  <li>Lunch at 2:30pm</li>
  <li>Dinner at 7pm</li>
</ul>
```

Example Lists

Today's Schedule

- Breakfast at 8am
- Lunch at 2:30pm
- Dinner at 7pm

An unordered list

```
<ul>  
  <li>...</li>  
  <li>...</li>  
  <li>...</li>  
</ul>
```

Shopping List

1. Biscuits
2. Instant noodles
3. Apples
4. Chocolate

An ordered list

```
<ol>  
  <li>...</li>  
  <li>...</li>  
  <li>...</li>  
  <li>...</li>  
</ol>
```

Form Elements

- Form elements are useful for getting inputs from the user on the HTML page
- We will explain the use of some of these form elements later in the course

Useful Form Elements

Here are some form elements that you may use later.

A drop down list:

A text input

A slider

A text area

A button

Graphics

- There are different ways to put graphics on a web page
- Here are some examples:
 - Use `` to embed images
 - Use `<svg>` for vector graphics
 - Use `<canvas>` to create and manipulate bitmap graphics
- We will look at how to use SVG and canvas later in the course

Putting Image Files in a Page

- The `` tag puts an image inside a page like this:

```
<h1>This is my face...</h1>  

```

- The `src` attribute is the location of the image file and the `alt` attribute describes what the image is



HTML Validator

- Even if you write bad HTML, most likely it can still be displayed in a browser
- However, it is better to get your HTML correct so that it can be shown consistently across different browsers and systems
- W3C has a validation service at:

<https://validator.w3.org/>

for you to check whether your HTML is correct

Validating Bad HTML

```
<!DOCTYPE html>
<html>
<head>
  <title>Greetings!</title>
</head>
<body>
  <p><b>How are
    you?</p>
</body>
</html>
```

Bad HTML here!

*Validate using the
W3C validator*



- Error** End tag `p` seen, but there were open elements.
[From line 7, column 23; to line 7, column 26](#)
`w are you?</p>↵</bod`
- Error** Unclosed element `b`.
[From line 7, column 8; to line 7, column 10](#)
`y>↵ <p>How ar`
- Error** End tag for `body` seen, but there were unclosed elements.
[From line 8, column 1; to line 8, column 7](#)
`you?</p>↵</body>↵</htm`