

Lecture 3

Mark up languages
Using markup correctly
How to publish
Cascading Style Sheets

Markup languages

Many different ones

HTML
mathML
XML
SGML
OOXML
XHTML
CML
Office XML
... and others

Markup languages

Here are some made up ones!

houseML

```
<house id="34569">  
  <type>detached</type>  
  <address>Kingston</address>  
  <bedrooms>4</bedrooms>  
</house>
```

```
<module code="BB1754">  
  <title>Information Technology for Business</title>  
  <lecturer>Barry Avery</lecturer>  
  <offered>  
    <course>Business Information Technology</course>  
    <course>Business Management</course>  
    <course>International Business</course>  
    <course>Accounting and Finance</course>  
  </offered>  
</module>
```

moduleML

Why bother to have markup languages?

How do we store information?

Choices

binary files

Often Proprietary

Can be secret

Could be patented

Sustainable?



plain text files

Readable/Writable

Visible

Maintainable

```
<house id="34569">  
<type>detached</type>  
<address>Kingston</address>  
<bedrooms>4</bedrooms>  
</house>
```

History lesson

Moon landing data

Much of it stored on Tapes and Drives no longer manufactured

Binary files on tape

Effectively lost



History lesson

Moon landing data



Old drives 'found'

Some images recovered



<http://www.collectspace.com/news/news-111408a.html>

Markup languages

Two markup languages are used to 'create' other markup languages

SGML

Standard Generalized
Markup Language

XML

Extensible Markup
Language

- Markup languages written in these are called **"..applications of .."**

Markup languages - a brief history

SGML - Standard Generalized Markup Language

- Charles Goldfarb, Edward Mosher, Raymond Lorie
- First draft 1980
- Used to write markup for many kinds of documents in law/Science

Markup languages - a brief history

XML - Extensible Markup Language

- Tim Bray, Jean Paoli, C. M. Sperberg-McQueen, Eve Maler, François Yergeau, John Cowan
- First draft 1996
- Specifically designed for electronic documents
- Much smaller specification
- Formal

Markup languages - a brief history

HTML - Hypertext Markup Language

- Many different versions
- First draft 1991 by Tim Berners-Lee
- Specifically used for Hypertext documents
- An application of SGML

HTML - Hypertext Markup Language

Version	Year	Status
-	1993	IETF working draft
2.0	1995	IETF RFCs
3.0	April 1995	Proposed by Dave Raggett / W3C
3.2	Jan 1997	W3C Recommendation
4.0	Dec 1997	W3C Recommendation
4.1	Dec 1999	W3C Recommendation / ISO standard

<http://www.w3.org/MarkUp/draft-ietf-iiir-html-01.txt>

HTML - Hypertext Markup Language

<HTML></HTML> encloses the entire document and defines it as HTML
<HEAD></HEAD> comes after the opening <HTML> tag and contains the <TITLE>
<TITLE></TITLE> contains the name of the document and must be enclosed by <HEAD> tags
<BODY></BODY> contains all of the rest of the document - it is opened after the closing </HEAD> tag and is closed at the end of the document. The only tag to go after the closing </BODY> tag is the closing </HTML> tag.

A - anchor
ADDRESS - formatting tag, often shown in italics
B - formatting tag, bold
BASE - optional head element, sets base URL for related documents
BLOCKQUOTE - formatting tag, to indicate portions of text included from other documents
BR - line break
CITE - formatting tag, to indicate text is a citation from another source
CODE - formatting tag, to indicate text is program source code
DD - list tag, definition
DIR - list tag, directory
DL - list tag, definition list
DT - list tag, definition term
EM - formatting tag, to indicate text is to be emphasized

Looks like what we use now

HTML - Hypertext Markup Language

H1 - structural heading, top (largest) level
H2 - structural heading
H3 - structural heading
H4 - structural heading
H5 - structural heading
H6 - structural heading, bottom (smallest) level
HR - horizontal rule
I - formatting tag, italics
IMG - image anchor
ISINDEX - optional head element, indicates document is a searchable index
KBD - formatting tag, indicates expected user in source code
LI - list tag, list item
LINK - indicates relationship between documents, varies from browser to browser
MENU - list tag, compacted
META - optional head element, information for client software such as last revision date
NEXTID - optional head element used by automated markup systems to keep track of anchors
OL - list tag, ordered list
P - paragraph break
PRE - formatting tag, indicates text should be preformatted (monospaced, preserve whitespace)
SAMP - formatting tag, used to mark text output from a computer program
STRONG - formatting tag, strongly emphasize text
TT - formatting tag, typewriter text, show text in fixed font
UL - list tag, unnumbered list
VAR - formatting tag, indicated a variable in program source code

HTML - Hypertext Markup Language

TYPICAL RENDERING

H1	Bold very large font, centered. One or two lines clear space between this and anything following. If printed on paper, start new page.
H2	Bold, large font,, flush left against left margin, no indent. One or two clear lines above and below.
H3	Italic, large font, slightly indented from the left margin. One or two clear lines above and below.
H4	Bold, normal font, indented more than H3. One clear line above and below.
H5	Italic, normal font, indented as H4. One clear line above.
H6	Bold, indented same as normal text, more than H5. One clear line above.

HTML - Hypertext Markup Language

```
<HTML>
<TITLE>
  A sample HTML instance
</TITLE>
<H1>
  An Example of Structure
</H1>
Here's a typical paragraph.
<P>
<UL>
<LI>
  Item one has an
  <A NAME="anchor">
    anchor
  </A>
<LI>
  Here's item two.
</UL>
</HTML>
```

```
<OL>
<LI> When you get to the station, leave
by the southern exit, on platform one.
<LI> Turn left to face toward the mountain
<LI> Walk for a mile or so until you reach the
"Asquith Arms" then
<LI> Wait and see...
</OL>
```

```
< MENU >
<LI> The oranges should be pressed fresh
<LI> The nuts may come from a packet
<LI> The gin must be good quality
</MENU>

< DIR >
<LI> A-H<LI> I-M
<LI> M-R<LI> S-Z
</DIR>
```

```
<DL>
<DT> Term the first<DD> definition paragraph is reasonably
long but is still displayed clearly
<DT> Term2 follows<DD> Definition of term2
</DL>
```

```
<DL COMPACT>
<DT> Term<DD> definition paragraph
<DT> Term2<DD> Definition of term2
</DL>
```

HTML - Hypertext Markup Language

```
<HTML>
<TITLE>
  A sample HTML instance
</TITLE>
<H1>
  An Example of Structure
</H1>
Here's a typical paragraph.
<P>
<UL>
  <LI>
    Item one has an
    <A NAME="anchor">
      anchor
    </A>
  <LI>
    Here's item two.
  </UL>
</HTML>
```

- Note CASE isn't important

<TITLE> <title>

- Closing tags optional

 ??

- Attributes don't have to be in quotes

- Because HTML is an application of SGML

HTML - Versions

Version	Year	Changes
-	1993	
2.0	1995	tables, image maps, internationalisation
3.0	April 1995	Style sheet links, tables, text flow and maths symbols
3.2	Jan 1997	Includes vendor specific tags
4.0	Dec 1997	Offers "flavours" of HTML - adds, cleans and deprecates features
4.1	Dec 1999	Tweaks, fixes and ISO - standardisation

HTML 4.0 + "flavours"

Strict	Deprecated features forbidden
Transitional	Deprecated features allowed
Frameset	Frames are allowed

Marks some elements and attributes as deprecated

Valid syntax for markup is specified in separate **doctype** files

HTML 4.0 + "flavours"

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<head>
...
</head>
<body>
...
</body>
</html>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
<html>
<head>
...
</head>
<body>
...
</body>
</html>
```

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Frameset//EN"
"http://www.w3.org/TR/html4/frameset.dtd">
<html>
<head>
...
</head>
<frameset>
...
</frameset>
</html>
```

Markup languages - a brief history

XHTML - Hypertext Markup Language as an XML application

- A few versions (1.0, 1.1 and 2.0)
- First draft 1998 by W3C
- Reformulate HTML using XML rather than SGML
- XHTML is an application of XML
- Consequence - formal requirements in syntax

XHTML

Tags must be in lower case

```
<title>My title </title>
```

End tags cannot be omitted

```
<p>Most tags have an end tag that's
so don't forget your end tag </p>
```

Empty elements must close

```
<image src = "myimage.png" / >
```

Tags must be correctly nested

```
<b>Example text in bold
with <i>correct</i> nesting </b>
```

Attribute values must be in quotes

```

```


Special head required for correct validation

```
<?xml version="1.0" encoding="utf-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">

<head>
  <title>An XHTML 1.0 Strict standard template</title>
  <meta http-equiv="content-type" content="text/html; charset=utf-8" />
</head>
```

OR - others available ...

<http://www.w3.org/QA/2002/04/valid-dtd-list.html>

Most people just cut and paste one in

So what about this course?

- Use **XHTML** semantically for content

XHTML - Hypertext Markup Language as an XML application

- Use **CSS** for design

CSS - Cascading Style Sheets

Semantic XHTML

- No official specification
- Use **XHTML** to convey the meaning of the document (**content**)
- **NOT** presentation (**style**) or how conveyed

Semantic

adj.

Of or relating to meaning, especially meaning in language.

Of, relating to, or according to the science of semantics.

Semantic XHTML

- Avoid presentation markup

Good

```
<h1>, <h2>, ..<h6>
<p>, <br>, <ul>, <li>
<em>, <strong>
<blockquote>, <cite>
```

Tags we have been using anyway..except use

Bad

```
<font color="...",
align="center"...
<font ...face="...
<blink>
bgcolor="#FFFFFF"
text="#000080"
<hr>, <i>, <b>
... etc..
```

- Use these tags to mark up the documents structure

<html>	HTML document
<head>	Meta information block
<title>	Window bar text
<body>	Displayed block
<h1> ..<h6>	Headings
<p>	Paragraphs
<a>	Hyperlinks (anchors)
	Images

- Use these tags to mark up the documents structure

	list item
 	Unordered / ordered lists
<table>	Table
<tr>	Table row
<th> <td>	Table heading / data
	Make something standout
	Emphasise something

Semantic XHTML example

Flash drives

Flash drive capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.



Current capacities

Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to appear soon.

Mark it up...

Flash drives

Flash drive capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.

Current capacities

Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to appear soon.

So we end up with this:

Flash drives

Flash drive capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.



Current capacities

Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to appear soon.

And NOT this:



Which comes from this mess:

```
<html>
<head>
<title><b>Flash drive</b></title>
<body>
<b><p>Flash drives</p></b>
<p><i>Flash drive capacities</i></p>
<p>Here is a picture of a 128MB flash drive which was popular at one time. Note
the USB connector. 128MB is regarded as being rather small now.</p>
</img>
<p><i>Current capacities</i></p>
Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger
sized devices scheduled to appear soon.</p>
</html>
```

No other tags allowed in titles
Missing </head>
Attempting to use other tags rather than <h1>

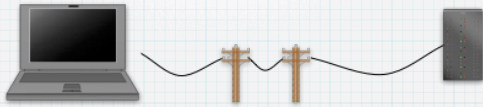
Which comes from this mess:

```
<html>
<head>
<title><b>Flash drive</b></title>
<body>
<b><p>Flash drives</p></b>
<p><i>Flash drive capacities</i></p>
<p>Here is a picture of a 128MB flash drive which was popular at one time. Note
the USB connector. 128MB is regarded as being rather small now.</p>
</img>
<p><i>Current capacities</i></p>
Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger
sized devices scheduled to appear soon.</p>
</html>
```

Attempting to use other tags rather than <h2>
Image tag not properly closed
Missing <h2>
Missing <p>
Missing </body>

World Wide Web - how it works

User on a machine somewhere



Server machine

Web Browser software

Firefox

Firefox - Rediscover the web - Mozilla Firefox

search mozilla: Go

Products Support Store Developers About

Free Download
Firefox 1.0.4 For Windows, English (4.7MB)
Other Systems and Languages

- System Requirements
- Release Notes
- Other Contributed Builds

The wait is over. Firefox empowers you to browse faster, more safely and more efficiently than with any other browser. Join more than 64 million others and **make the switch today** - Firefox imports your Favorites, settings and other information, so you have nothing to lose.

Internet Explorer

Microsoft - Wikipedia, the free encyclopedia - Windows Internet Explorer

Welcome to Wikipedia, the free encyclopedia that anyone can edit. Last 101 articles in English

Today's featured article: Nirvana was a popular American rock band from Aberdeen, Washington. With the lead single "Smells Like Teen Spirit" from their 1991 album *Incesticide*, Nirvana exploded onto the mainstream, bringing along with it an attitude of punk and alternative rock referred to as grunge. As Nirvana's frontman, Kurt Cobain found himself referred to in the media as the "apostle of a generation" with Nirvana's "raging band" of "Generation X". Cobain was unaccountable with the attention, and placed his focus on the band's music, challenging the band's audience with their third studio...

Safari

Safari - Apple

Logos: Leopard, Windows with a View, Watch the new ads, YouTube, meet Apple TV

Top Sites: Apple Unveils New iPod Mac OS X Leopard, The new iPod... Apple Unveils New iPod Mac OS X Leopard, The new iPod... Apple Unveils New iPod Mac OS X Leopard, The new iPod...

Safari on iPhone



Web server software

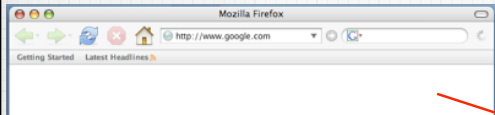


Apache web server



Microsofts web server (IIS)

User types in a URL*



Request is sent to server using HTTP**

*Uniform Resource Locator

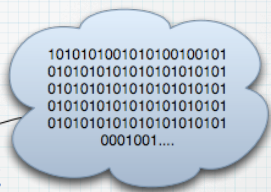


**Hypertext Transfer Protocol - an agreed language / standard for requesting and sending hypertext pages

Browser displays the page



Page is sent back



Server software finds the page

So to publish a web page....



...Need to get the page onto here

Server machine

Use SFTP - Secure File Transfer protocol

- To copy files from one machine to another use SFTP
- A protocol is a set of well defined, well understood rules for doing something

Careful here

- There are differences between protocols, standards and pieces of software
- An SFTP client is a piece of software that has been written to use the SFTP protocol
- SFTP is a well documented and agreed protocol so it is also a standard

Demo

- Using an SFTP client
- Need to know the name of the remote server `studentnet.kingston.ac.uk`
- Need to know your username and password
- You should save your files in the WWW folder

Also

- Your URL (address) will be `studentnet.kingston.ac.uk/~kxxxxxxx`
- Its visible outside so don't be rude
- Replace the default `index.html` file

Cascading Style Sheets

CSS

What they are

How to use them

Start with some html

Flash drives

Flash drive capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.



Current capacities

Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to appear soon.

```
<h1>Flash drives</h1>
```

```
<h2>Flash drive capacities</h2>
```

```
<p>Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.</p>
```

```

```

```
<h2>Current capacities</h2>
```

```
<p>Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to appear soon.</p>
```

Lets make it more "colourful" in Frontpage

Flash drives

Flash drive capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.



Current capacities

Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to appear soon.

```
<body bgcolor="#FFFFFF" text="#000080">
```

```
<h1 align="center"><font color="#408080"
size="6" face="Tunga">Flash
drives</font></h1>
```

```
<h2 align="right"><font color="#FF0000"
face="Impact">Flash <blink>drive</blink>
```

```
capacities</font></h2>
```

```
<blockquote>
<p><font face="Arial Narrow">Here is a
picture of a 128MB
flash drive which was popular at one time.
Note the USB
connector. 128MB is regarded as being
rather small now.</font></p>
</blockquote>
```

```
<p align="center"> </p>
```

Source is messy and confusing

```
<h2 align="center"><font color="#800040"
face="Comic Sans MS">Current
capacities</font></h2>
```

```
<blockquote>
<p><font face="Arial Narrow">Current
standards are measured
in Gigabytes (1GB, 2GB) with increasingly
larger sized
devices scheduled to appear soon.</font></
p>
```

```
</blockquote>
</body>
```

```
<body bgcolor="#FFFFFF" text="#000080">
```

```
<h1 align="center"><font color="#408080"
size="6" face="Tunga">Flash
drives</font></h1>
```

```
<h2 align="right"><font color="#FF0000"
face="Impact">Flash <blink>drive</blink>
```

```
capacities</font></h2>
```

```
<blockquote>
<p><font face="Arial Narrow">Here is a
picture of a 128MB
flash drive which was popular at one time.
Note the USB
connector. 128MB is regarded as being
rather small now.</font></p>
</blockquote>
```

```
<p align="center"> </p>
```

Lost the content ...

```
<h2 align="center"><font color="#800040"
face="Comic Sans MS">Current
capacities</font></h2>
```

```
<blockquote>
<p><font face="Arial Narrow">Current
standards are measured
in Gigabytes (1GB, 2GB) with increasingly
larger sized
devices scheduled to appear soon.</font></
p>
```

```
</blockquote>
</body>
```

```
<body bgcolor="#FFFFFF" text="#000080">
```

```
<h1 align="center"><font color="#408080"
size="6" face="Tunga">Flash
drives</font></h1>
```

```
<h2 align="right"><font color="#FF0000"
face="Impact">Flash <blink>drive</blink>
```

```
capacities</font></h2>
```

```
<blockquote>
<p><font face="Arial Narrow">Here is a
picture of a 128MB
flash drive which was popular at one time.
Note the USB
connector. 128MB is regarded as being
rather small now.</font></p>
</blockquote>
```

```
<p align="center"> </p>
```

... in with the 'style' or design

```
<h2 align="center"><font color="#800040"
face="Comic Sans MS">Current
capacities</font></h2>
```

```
<blockquote>
<p><font face="Arial Narrow">Current
standards are measured
in Gigabytes (1GB, 2GB) with increasingly
larger sized
devices scheduled to appear soon.</font></
p>
```

```
</blockquote>
</body>
```


Also

- What happens when the same **content** is to be used in different ways...
...displayed in **different styles**

Print

- Typically **B&W**
- **Headers & Footers**
- **Page numbers**



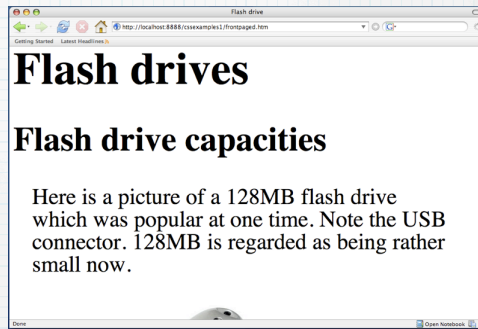
PDA's / Mobile devices

- **Smaller screen**
- **May not support full range of colours or fonts**



Readers for visual impairments

- Enlarges text
- May discard pictures
- May read the page aloud



Solution:

Design
Cascading Style Sheets

Separate Design
from content

Content
Semantic HTML

A style sheet

Flash drives

Flash drive capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.

```
<html>
<head>
<title>Flash drive</title>
</head>
<body>
<h1>Flash drives</h1>
<h2>Flash drive capacities</h2>
```

```
<p>Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.</p>

</body>
</html>
```

Content

+

Design

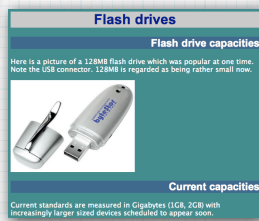
Final transformed document

```
body {
background: teal;
}

h1 {
font-family: Arial, sans-serif;
font-size: 200%;
color: navy;
background: silver;
text-align: center;
}

h2 {
font-family: Arial, sans-serif;
background: #255780;
color: white;
text-align: right;
}

p {
font-family: "Lucida Grande";
color: white;
}
```



Flash drives

Flash drive capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.



Current capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.

```
<h1>Flash drives</h1>  
<h2>Flash drive capacities</h2>  
<p>Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.</p>  
  
<h2>Current capacities</h2>  
<p>Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to appear soon.</p>  
</body>  
</html>
```

A different style sheet

```
body {  
  background: black;  
}  
  
h1 {  
  font-family: Courier New, Courier, mono;  
  font-size: 200%;  
  color: red;  
  background: silver;  
  text-align: left;  
}  
  
h2 {  
  font-family: Arial, sans-serif;  
  background: red;  
  color: white;  
  text-align: center;  
}  
  
p {  
  font-family: Arial, Helvetica, sans-serif;  
  color: white;  
}
```



Content

+

Design

Final transformed document

Flash drives

Flash drive capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.



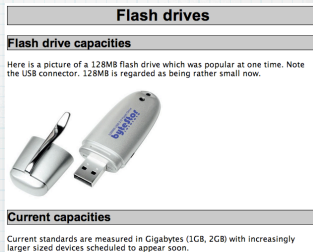
Current capacities

Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.

```
<h1>Flash drives</h1>  
<h2>Flash drive capacities</h2>  
<p>Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is regarded as being rather small now.</p>  
  
<h2>Current capacities</h2>  
<p>Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to appear soon.</p>  
</body>  
</html>
```

A different style sheet

```
body {  
  background: white;  
}  
  
h1 {  
  font-family: Arial, sans-serif;  
  font-size: 200%;  
  color: black;  
  background: silver;  
  text-align: center;  
  border: 1px solid black;  
}  
  
h2 {  
  font-family: Arial, sans-serif;  
  background: black;  
  color: white;  
  text-align: left;  
  border: 1px solid black;  
}  
  
p {  
  font-family: "Lucida Grande";  
  color: black;  
}
```



Content

+

Design

Final transformed document

Semantic HTML

- No official specification
- Use HTML to convey the meaning of the document (content)
- NOT presentation (style) or how conveyed

Semantic

adj.
Of or relating to meaning, especially meaning in language.

Of, relating to, or according to the science of semantics.

Semantic HTML

- Avoid presentation markup

Good
<h1>, <h2>, ..<h6>
<p>,
, ,
,
<blockquote>, <cite>

Tags we have been using anyway

Bad
<font color="...",
align="center"...
<font ...face="...
<blink>
bgcolor="#FFFFFF"
text="#000080"
<hr>, <i>,
... etc..

Cascading Style Sheets

CSS level 1	17 Dec 1996, revised 11 Jan 1999	http://www.w3.org/TR/REC-CSS1
CSS level 2	12-May-1998, revision Working Draft 11 April 2006	http://www.w3.org/TR/REC-CSS2/ http://www.w3.org/TR/CSS21/
CSS level 3	(As at Oct 2006) Working draft documents	http://www.w3.org/Style/CSS/current-work

Variable browser support for different levels

http://www.webdevout.net/browser_support.php

How to use CSS:

```
<html>  
<head>  
<title>Flash drive</title>
```

```
</head>  
<body>  
<h1>Flash drives</h1>
```

```
<h2>Flash drive capacities</h2>
```

Add a link to your external style file in the head of your HTML document

How to use CSS:

```
<html>
<head>
<link rel="stylesheet" type="text/css" href="style1.css" />
<title>Flash drive</title>

</head>
<body>
<h1>Flash drives</h1>

<h2>Flash drive capacities</h2>
```

Insert `<link>` tag here

How to use CSS:

```
<html>
<head>
<link rel="stylesheet" type="text/css" href="style1.css" />
....
```

`<link>` element

- Defines relationship between two linked documents

How to use CSS:

```
<html>
<head>
<link rel="stylesheet" type="text/css" href="style1.css" />
....
```

`<link>` element

- An empty element that can only appear in the head
 - Can appear many times
- Only has attributes inside

How to use CSS:

```
<html>
<head>
<link rel="stylesheet" type="text/css" href="style1.css" />
....
```

- **rel** defines the type of relationship between two linked documents

alternate
contents
section

next
stylesheet
help

previous
chapter
index

How to use CSS:

```
<html>
<head>
<link rel="stylesheet" type="text/css" href="style1.css" />
....
```

- **type** indicates the nature of the document at the end of the link
- A MIME type

MIME types

- Multimedia Internet Mail Extensions
- Originally created to indicate what kind of file was attached to an email message...
- ...and how it could be transmitted and processed

text/css
text/javascript
image/gif

<http://www.iana.org/assignments/media-types/>

How to use CSS:

```
<html>
<head>
<link rel="stylesheet" type="text/css" href="style1.css" />
....
```

- **href** indicates the location/name of the stylesheet

<link> example

- Use the **<link>** **rel**, **type** and **href** attributes

```
<html>
<head>
<link rel="stylesheet" type="text/css" href="style1.css" />
<title>Flash drive</title>

<body>
<h1>Flash drives</h1>
```

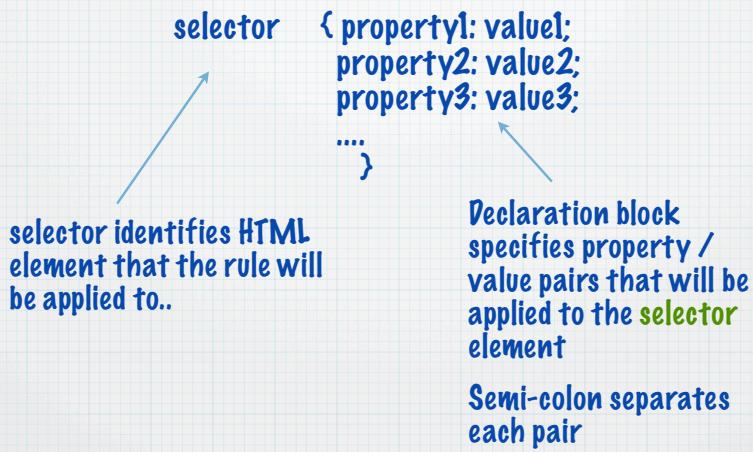
Tip

Use the **rel** and **type** values as shown and change the **href** value to be the name of your external stylesheet

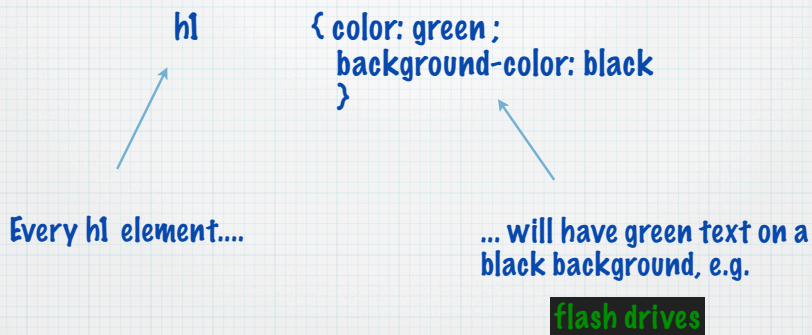
External Style sheets

- Simple text files (create in the same way as HTML files)
- Tradition indicates using **.css** as the extension (no requirement to do this)
- Write **style rules** in sequence as follows

Style rule syntax



Syntax example



Syntax

- White space and line returns are ignored

```
h1 { color: green ;background-color: black }
```

Tip

Better to place each property/ value pair on its own line, a semi-colon at the end of every line

background-color property

This property sets the background color of an element

value	color name or transparent or inherit
initial value	transparent
applies to	all elements
inherited	no

color names - 16 built in names

Color Name	
Aqua	Aqua
Black	Black
Blue	Blue
Fuchsia	Fuchsia
Gray	Gray
Green	Green
Lime	Lime
Maroon	Maroon

Color Name	
Navy	Navy
Olive	Olive
Purple	Purple
Red	Red
Silver	Silver
Teal	Teal
White	White
Yellow	Yellow

- Other colours can be specified by a number

color property

This property describes the text colour of an element (often referred to as the foreground colour).

value	color
initial value	UA specific
applies to	all elements
inherited	yes

One of 16 built in color names

Depends on the User Agent*

.. more on this in a minute...

*Web browser or client

How Style sheets are applied

- html elements may inherit properties from containing html elements
- To determine if inheritance applies, look in the specification for the CSS property

```
<HTML>
<head>
  <title>
  Flash drive
  </title>
</head>
<body>
  <h1>
  Flash drives
  </h1>
  <h2>
  Flash drive capacities
  </h2>
  <p>
  Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is
  regarded as being rather small now.
  </p>
  
  <h2>
  Current capacities
  </h2>
  <p>
  Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to
  appear soon.
  </p>
</body>
</html>
```

..which is inside the <html> element

..is inside the <body> element

This <h2> element..

```
<HTML>
<head>
  <title>
  Flash drive
  </title>
</head>
<body>
  <h1>
  Flash drives
  </h1>
  <h2>
  Flash drive capacities
  </h2>
  <p>
  Here is a picture of a 128MB flash drive which was popular at one time. Note the USB connector. 128MB is
  regarded as being rather small now.
  </p>
  
  <h2>
  Current capacities
  </h2>
  <p>
  Current standards are measured in Gigabytes (1GB, 2GB) with increasingly larger sized devices scheduled to
  appear soon.
  </p>
</body>
</html>
```

So if we say this will be red

..this will inherit the red

..as will this (unless we tell it not to)

font-family property

The value is a prioritized list of font family names and/or generic family names. Values are separated by a comma to indicate that they are alternatives

value	family-name, family-name, ...generic-family
initial value	UA specific
applies to	all elements
inherited	yes

font-family example

```
body { font-family: gill, helvetica,  
        sans-serif }
```

If **gill** is available use this

Otherwise if **helvetica** is available use this

Otherwise use any available **sans-serif** font

font-families

- CSS Fonts fall into 5 different generic-families

- **serif** (e.g., Times)
- **sans-serif** (e.g., Arial or Helvetica)
- *cursive* (e.g., Zapf-Chancery)
- *fantasy* (e.g., Western)
- **monospace** (e.g., Courier)

serif fonts

- serifs - A small decorative line added as embellishment to the basic form of a character

serif

sans-serif fonts

- sans-serifs - without the small decorative lines..

sans-serif

cursive fonts

- cursive fonts - looks like hand writing

cursive

fantasy fonts

- Exotic fonts

fantasy

monospace fonts

- Evenly spaced characters

monospace

font-family example

```
body { font-family: gill, helvetica,  
        sans-serif }
```

Make the last font in the list
one of the five generic font families (in
case any of the others are not available)

fonts common to PCs and Macs

Windows fonts / Mac fonts / Font family

Normal style
Arial, Arial, Helvetica, <i>sans-serif</i>
Arial Black, Arial Black, Gadget, sans-serif
Comic Sans MS, Comic Sans MS ⁵ , <i>cursive</i>
Courier New, Courier New, Courier ⁶ , <i>monospace</i>
Georgia ¹ , Georgia, <i>serif</i>
Impact, Impact⁵, Charcoal⁶, sans-serif
Lucida Console, Monaco ⁵ , <i>monospace</i>
Lucida Sans Unicode, Lucida Grande, <i>sans-serif</i>
Palatino Linotype, Book Antiqua ³ , Palatino ⁶ , <i>serif</i>
Tahoma, Geneva, <i>sans-serif</i>
Times New Roman, Times, <i>serif</i>
Trebuchet MS ¹ , Helvetica, <i>sans-serif</i>

fonts common to PCs and Macs

Times New Roman, Times, <i>serif</i>
Trebuchet MS ¹ , Helvetica, <i>sans-serif</i>
Verdana, Verdana, Geneva, <i>sans-serif</i>
Symbol, Symbol (Symbol ² , Symbol ²)
Webdings, Webdings (Webdings ² , Webdings ²)
Wingdings, Zapf Dingbats (Wingdings ² , Zapf Dingbats ²)
MS Sans Serif ⁴ , Geneva, <i>sans-serif</i>
MS Serif ⁴ , New York ⁶ , <i>serif</i>

<http://www.ampsoft.net/webdesign-1/WindowsMacFonts.html>

font-size property

This property describes the size of the font

value	absolute-size or relative-size or length or percentage or inherit
initial value	medium
applies to	all elements
inherited	yes

font-sizes

absolute-size possible values are:

xx-small or **x-small** or **small** or **medium** or **large** or **x-large** or **xx-large**

On a computer screen a scaling factor of 1.2 is suggested between adjacent indexes

(from the CSS 2 standard)

font-sizes

relative-size possible values are:

smaller or **larger**

compared to the parent element

font-sizes

percentage-size:

83% or **100%** or **120%** or **140%** or ...

A percentage value specifies an absolute font size relative to the parent element's font size.

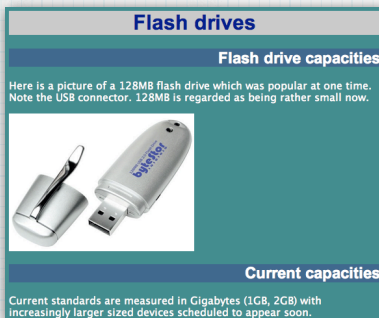
text-align property

This property describes how text is aligned within the element.

value	left or right or center or justify
initial value	UA specific
applies to	block level elements*
inherited	yes

*more on this next week

Example CSS file used in class



```
body {  
background-color: teal;  
color: white;  
}
```

```
h1 {  
background-color: silver;  
color: navy;  
font-family: Arial, sans-serif;  
font-size: 200%;  
text-align: center;  
}
```

```
h2 {  
background-color: navy;  
font-family: Arial, sans-serif;  
text-align: right;  
}
```

```
p {  
font-family: "Lucida Grande", sans-serif;  
}
```