

# Lecture 4

Representing data

CSS

Representing data






bits

binary

lots of maths

## Zeros and Ones

- Everything is stored in binary code
- Patterns of 1's and 0's
- A single 1 or 0 is called a **Bit**

Word, Excel	
Images	
Web pages	
Music	
Video	
Numbers	
Colours	
Alphabets	

## BIT

- **binary digit**
- But ... sizes in computing use **Bytes**
- KB, MB, GB, TB (1000 GB)

10101010100101001001010100101010010101010

6 Bytes

8 bits is called 1 Byte

**Remember:** We can store one character in a byte




- One byte can represent one letter or character

Hello there



- 11 bytes

So how do we represent

Word, Excel	
Images	
Web pages	
Music	
Video	
Numbers	
Colours	
Alphabets	

So how do we represent  
Numbers ?

Word, Excel	
Images	
Web pages	
Music	
Video	
Numbers	
Colours	
Alphabets	

Binary patterns can represent denary numbers

- denary = base 10
- The number system we use every day in computing
- Uses these symbols {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}
- binary = base 2
- Uses these symbols {0, 1}

In base 10, each column is worth 10 times more than the previous one

12,563

10000	1000	100	10	1
1	2	5	6	3

Meaning  $10000 + 2000 + 500 + 60 + 3 = 12563$

Alternatively (if you like maths)

$10000^4$	$1000^3$	$100^2$	$10^1$	$10^0$
1	2	5	6	3

Meaning  $10000 + 2000 + 500 + 60 + 3 = 12563$

In base 2, each column is worth 2 times more than the previous one

The binary number 10110

16	8	4	2	1
1	0	1	1	0

Meaning

one 16   zero 8s   one 4   one 2   zero 1s

$16 + 0 + 4 + 2 + 0 = 22$

Alternatively (if you like maths)

$2^4$	$2^3$	$2^2$	$2^1$	$2^0$
1	0	1	1	0

Meaning  $16 + 0 + 4 + 2 + 0 = 22_{10}$

**Tip**

The base of a number is often indicated in subscript -  $1078_{10}$  means 1078 in base 10.



To convert from **denary** to **binary**

**Q. What is  $1678_{10}$  in binary?**

Step One: draw a grid doubling the column heading for as far as we need to go....

1024	512	256	128	64	32	16	8	4	2	1

**Q. What is  $1678_{10}$  in binary?**

Step Two: Starting from the left, add 0's and 1's to make up the number...

Start here



1024	512	256	128	64	32	16	8	4	2	1
1										

Can we use 1024? Yes - so place a 1

Which leaves us with  $1678 - 1024 = 654$  to get

**Q. What is  $1678_{10}$  in binary?**

Next      654 to get



1024	512	256	128	64	32	16	8	4	2	1
1	1									

Can we use 512? Yes - so place a 1

Which leaves us with  $654 - 512 = 142$  to get

**Q. What is  $1678_{10}$  in binary?**

Next 142 to get



1024	512	256	128	64	32	16	8	4	2	1
1	1	0								

Can we use 256? No - so place a 0

Still 142 to get

**Q. What is  $1678_{10}$  in binary?**

Next 142 to get



1024	512	256	128	64	32	16	8	4	2	1
1	1	0	1							

Can we use 128? Yes - so place a 1

Which leaves us with  $142 - 128 = 14$  to get

**Q. What is  $1678_{10}$  in binary?**

Next 14 to get



1024	512	256	128	64	32	16	8	4	2	1
1	1	0	1	0						

Can we use 64? No - so place a 0

Still 14 to get

**Q. What is  $1678_{10}$  in binary?**

Next      14 to get  
↓

1024	512	256	128	64	32	16	8	4	2	1
1	1	0	1	0	0					

Can we use 32? No - so place a 0

Still 14 to get

**Q. What is  $1678_{10}$  in binary?**

Next      14 to get  
↓

1024	512	256	128	64	32	16	8	4	2	1
1	1	0	1	0	0	0				

Can we use 16? No - so place a 0

Still 14 to get

**Q. What is  $1678_{10}$  in binary?**

Next      14 to get  
↓

1024	512	256	128	64	32	16	8	4	2	1
1	1	0	1	0	0	0	1			

Can we use 8? Yes - so place a 1

Still  $14 - 8 = 6$  to get

**Q. What is  $1678_{10}$  in binary?**

1024	512	256	128	64	32	16	8	4	2	1
1	1	0	1	0	0	0	1	1		

Next 6 to get

Can we use 4? Yes - so place a 1

Still  $6 - 4 = 2$  to get

**Q. What is  $1678_{10}$  in binary?**

									Next	
									2 to get	↓
1024	512	256	128	64	32	16	8	4	2	1
1	1	0	1	0	0	0	1	1	1	0

Can we use 2? Yes - so place a 1

Finished - fill rest of grid with 0's

What is  $1678_{10}$  in binary?  $11010001110_2$

## To convert from binary to denary

**Q. What is  $11010001110_2$  in denary?**

**Step One:** draw a grid doubling the column heading for as far as we need to go....

[illegible]



To convert from **binary** to **denary**

**Q. What is  $11010001110_2$  in denary?**

Step Two: Place the numbers in the grid..

1024	512	256	128	64	32	16	8	4	2	1
1	1	0	1	0	0	0	1	1	1	0

To convert from **binary** to **denary**

**Q. What is  $11010001110_2$  in denary?**

Step Three: Add them up

1024	512	256	128	64	32	16	8	4	2	1
1	1	0	1	0	0	0	1	1	1	0

$$1024 + 512 + 128 + 8 + 4 + 2 = 1678_{10}$$

Alternatively

Use a calculator

So how do we represent  
Colours ?  
(on the web)

Word, Excel	
Images	
Web pages	
Music	
Video	
Numbers	
Colours	
Alphabets	

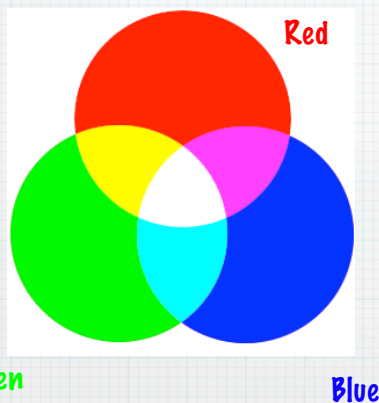
color names - 16 built in names

Color Name	BGCOLOR= "name"
Aqua	Aqua
Black	Black
Blue	Blue
Fuchsia	Fuchsia
Gray	Gray
Green	Green
Lime	Lime
Maroon	Maroon

Color Name	BGCOLOR= "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
- A binary number / pattern

Colours (colors) on the web



Colours made up from  
amounts of red, green  
and blue

Often abbreviated to  
RGB

## Colours (colors) on the web

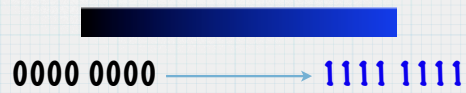
Red



Green



Blue



## Colours formed by mixing 'amounts' of these

Red

00000000

Green

00000000

Blue

00000000



## Colours formed by mixing 'amounts' of these

Red

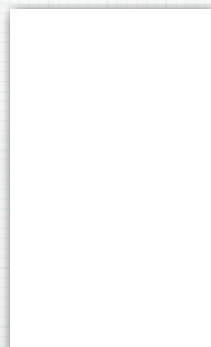
11111111

Green

11111111

Blue

11111111



Colours formed by mixing 'amounts' of these

Red

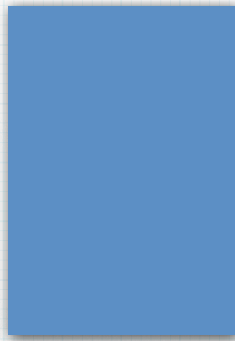
01000000

Green

01111011

Blue

10111100



Colours formed by mixing 'amounts' of these

Write the colour down in RGB order:

01000000 01111011 10111100

Is there a shorthand way to write this...?

01111011

hexadecimal

10111100

## Hexadecimal

- hexadecimal = base 16
- Used in computing as allows a shorthand for binary



## Hexadecimal

- Base 2 uses 2 symbols {0, 1}
- Base 10 uses 10 symbols {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}
- Base 16 uses 16 symbols

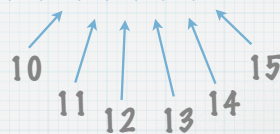
{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ...}

Problem.. we've  
run out of symbols

## Hexadecimal

- Use A, B, C, D, E, F

{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F}



## Example hexadecimal numbers

- 3E2D0
- 2456
- 11111111

So how is hex a shortcut?

## Hexadecimal base 16

Binary pattern	Hex
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8

- **Shortcut table**

Binary pattern	Hex
1001	9
1010	A
1011	B
1100	C
1101	D
1110	E
1111	F

### Example - converting from binary to hex

Split the number into blocks of four from right

0000000000000111000110111100

### Example - converting from binary to hex

Split the number into blocks of four from right

0100 0000 0111 1011 1011 1100

You may need to add 0's on the left to get a block of four

### Example - converting from binary to hex

Replace each 4 bit pattern with the hex digit

0140 0000 0171 1071 1071 1100

40 7B BC

### Example - converting from binary to hex

So 0100 0000 0111 1011 1011 1100<sub>2</sub>

is 40 7B BC<sub>16</sub>  
40 7B BC<sub>H</sub> in hexadecimal  
# 40 7B BC

Again

- Most calculators can transform from Hex to Binary (and back again)
- Find colour hex representation using on-line tools

<http://www.dhtmlgoodies.com/scripts/color-schemer/color-schemer.html>

Choose a primary color

Color options

☐ Named colors ☐ Web colors ☒ Sliders

R:

G:

B:

Color values

H: °

S: %

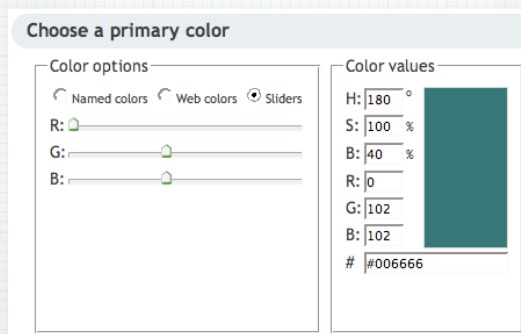
B: %

R:

G:

B:

#



<http://www.dhtmlgoodies.com/scripts/color-schemer/color-schemer.html>

Complementary

Split complementary

Triade

Tetrad

Analogic



# Cascading Style Sheets

3 x 3

3 ways to attach styles

3 ways to declare styles



### 3 ways to attach styles

- in-line
- internal style sheet
- external style sheet

### 3 ways to attach styles

- in-line
- internal style sheet
- external style sheet

#### in-line

- insert the style directly into an element start tag
- use the **style** attribute

`<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a markup language such as HTML. </p>`

`<h2>Common browsers</h2>`

`<p>There are a number of browsers in use (from a variety of different sources) such as IE7, Firefox and Safari.</p>`

`<p>There are other browsers as well (Opera, Konquerer).</p>`

## style attribute

- Uses

`style=" name-value pairs"`

e.g.

`style="font-size: 12pt; color: fuchsia"`

## in-line

- To apply this style to two of the <p> elements

`<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a markup language such as HTML. </p>`

`<h2>Common browsers</h2>`

`<p>There are a number of browsers in use (from a variety of different sources) such as IE7, Firefox and Safari.</p>`

`<p>There are other browsers as well (Opera, Konquerer).</p>`

## in-line

- To apply this style to two of the <p> elements

`<p style="font-size: 12pt; color: fuchsia">Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a markup language such as HTML. </p>`

`<h2>Common browsers</h2>`

`<p>There are a number of browsers in use (from a variety of different sources) such as IE7, Firefox and Safari.</p>`

`<p>There are other browsers as well (Opera, Konquerer).</p>`

## in-line

- To apply this style to two of the <p> elements

```
<p style="font-size: 12pt; color: fuchsia">Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a markup language such as HTML. </p>
```

```
<h2>Common browsers</h2>
```

```
<p style="font-size: 12pt; color: fuchsia">There are a number of browsers in use (from a variety of different sources) such as IE7, Firefox and Safari.</p>
```

```
<p>There are other browsers as well (Opera, Konquerer).</p>
```

## Advantages

- Simple to place a style/see where a style is being used
- Approach commonly seen with pre-css html editors

## Disadvantages

- Lots of repetition
- No-reuse
- Mangles design in with content

### 3 ways to attach styles

- in-line
- internal style sheet
- external style sheet

### 3 ways to attach styles

- in-line
- internal style sheet
- external style sheet

### internal

- insert the style into the head of the document
- use the **style** element



```
<head>  
<title>Browsers</title>  
</head>
```

```
<body>
```

```
<p>Web browsers allow users to ask for, receive and display pages that have been formatted  
(typically) in a markup language such as HTML. </p>
```

```
<h2>Common browsers</h2>
```

```
<p>There are a number of browsers in use (from a variety of different sources) such as IE7,  
Firefox and Safari.</p>
```



## style element

- Uses

```
<style type="text/css">  
...style information  
</style>
```

e.g.

```
<style type="text/css">  
p {font-size: 12pt; color: fuchsia }  
body { font-family: gill, helvetica, sans-serif }  
</style>
```

## internal

insert the style element

```
<head>  
<title>Browsers</title>  
</head>  
  
<body>  
<p>Web browsers allow users to ask for, receive and display pages that have been formatted  
(typically) in a markup language such as HTML. </p>  
  
<h2>Common browsers</h2>  
  
<p>There are a number of browsers in use (from a variety of different sources) such as IE7,  
Firefox and Safari.</p>  
  
<p>There are other browsers as well (Opera, Konquerer).</p>
```

## internal

insert the style element

```
<head>  
<style type="text/css">  
p {font-size: 12pt; color: fuchsia }  
body { font-family: gill, helvetica, sans-serif }  
</style>  
<title>Browsers</title>  
</head>  
  
<body>  
<p>Web browsers allow users to ask for, receive and display pages that have been formatted  
(typically) in a markup language such as HTML. </p>  
  
<h2>Common browsers</h2>  
  
<p>There are a number of browsers in use (from a variety of different sources) such as IE7,  
Firefox and Safari.</p>  
  
<p>There are other browsers as well (Opera, Konquerer).</p>
```

## Advantages

- Browser has to only get 'one' page from the web server
- Style information directly associated with page

## Disadvantages

- Lots of repetition if more than one page in a site (style has to be in each page)
- Maintenance of a large number of pages costly

### Tip

Use internal style sheets during the design process, or where a page has a unique style

## 3 ways to attach styles

- in-line
- internal style sheet
- external style sheet

### 3 ways to attach styles

- in-line
- internal style sheet
- external style sheet

(this is the way we have seen)

#### external

- insert a link to the stylesheet in the head of the document

- use the link element

```
<head>
<title>Browsers</title>
</head>

<body>
<p>Web browsers allow users to ask for, receive and display pages that have been formatted
(typically) in a markup language such as HTML. </p>

<h2>Common browsers</h2>

<p>There are a number of browsers in use (from a variety of different sources) such as IE7,
Firefox and Safari.</p>
```

#### external

- insert a link to the stylesheet in the head of the document

- use the link element

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

<body>
<p>Web browsers allow users to ask for, receive and display pages that have been formatted
(typically) in a markup language such as HTML. </p>

<h2>Common browsers</h2>
```

## Advantages

- Style separated from content
- Great for maintenance of large site designs

## Disadvantages

- Two retrievals required (one for the HTML, one for the style sheet)

External style sheets are the preferred mechanism for most sites nowadays

## 3 ways to declare styles

- tag style
- id style
- class style



### 3 ways to declare styles

- tag style
  - id style
  - class style
- (this is the way we have seen)

```
<html>
<head>
<link rel="stylesheet" type="text/css" href="cssforlecture1.css" />
<title>Browsers</title>
</head>

<body>
<h1>Web browsers</h1>
<h2>What they do</h2>

<p>Web browsers allow users to ask for, receive and display pages that have been formatted
(typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as
HTML.  </p>

<h2>Common browsers</h2>

<p>There are a number of browsers in use (from a variety of different sources):</p>
<ul>
<li>Microsofts Internet Explorer 7</li>
<li>Mozillas Firefox</li>
<li>Apples Safari</li>
</ul>
<p>There are other browsers as well (Opera, Konquerer).</p>
</body>
</html>
```

h2 { color: green ;  
background-color: black  
}

Arrows point from the `<h2>` tags in the HTML code to the CSS rule box.

### 3 ways to declare styles

- tag style
- id style
- class style

### 3 ways to declare styles

- tag style
- id style
- class style

#### id style

- Uses the **id** attribute
- Used to assign a **unique** name to any element

```
<p id="introduction">Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a markup language such as HTML. </p>
```

```
<h2>Common browsers</h2>
```

```
<p>There are a number of browsers in use (from a variety of different sources) such as IE7, Firefox and Safari.</p>
```

```
<p>There are other browsers as well (Opera, Konqueror).</p>
```

#### id style

- Uses the **id** attribute
- Used to assign a **unique** name to any element

```
<p id="introduction">Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a markup language such as HTML. </p>
```

```
<h2>Common browsers</h2>
```

```
<p id="explanation">There are a number of browsers in use (from a variety of different sources) such as IE7, Firefox and Safari.</p>
```

```
<p>There are other browsers as well (Opera, Konqueror).</p>
```

## id style

```
#introduction {  
  color: blue;  
  background-color: yellow;  
}  
  
#explanation {  
  color: black;  
  background-color: yellow;  
}
```

- Use the # symbol to indicate an id name in the style sheet

### Watch-out

ids in a single document **MUST** be unique; try to use single short words - no spaces are allowed

## id style

- Watch out for id mania

## id style

```
<html>  
<head>  
<title>Browsers</title>  
</head>
```

```
<body>  
<h1 id="title">Web browsers</h1>  
<h2 id="subtitle">What they do</h2>
```

```
<p id="myfirstparagraph">Web browsers allow users to ask for, receive and display pages that  
have been formatted (typically) in a <a href="http://www.w3.org/MarkUp/">markup  
language</a> such as  
HTML.  </p>
```

```
<h2 id="anothersubtitle">Common browsers</h2>
```

```
<p id="mythirdparagraph">There are a number of sources:</p>  
<ul id="myorderedlist">  
<li>Microsofts Internet Explorer 7</li>  
<li>Mozillas Firefox</li>  
<li>Apples Safari</li>  
</ul>  
<p id="myforthparagraph">There are other browsers as well (Opera, Konquerer).</p>  
</body>
```

- Far too many ids

- Poorly chosen names as well - try to avoid design led names - focus on content context

## id style

- **ids** work best with **div** and **span** tags to structure a document - more on this later

## 3 ways to declare styles

- tag style
- **id style**
- class style

## 3 ways to declare styles

- tag style
- id style
- **class style**



## class style

- a **class** is a group of elements that will share a common style

Probably best explained by example...

## class style

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a

markup language such as HTML.

#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsoft's Internet Explorer 7
- Mozilla's Firefox
- Apple's Safari

There are other browsers as well (Opera, Konqueror).

We want this `<h2>` element to be blue

We also want this `<p>` element to have the same style

## class style

- Uses the **class** attribute
- Used to assign a **class** name to any element

`<h2>What they do</h2>`

`<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a markup language such as HTML. </p>`

`<h2>Common browsers</h2>`

`<p>There are a number of browsers in use (from a variety of different sources) such as ...`



## class style

- Uses the **class** attribute
- Used to assign a **class** name to any element

```
<h2 class="bluestyle">What they do</h2>
```

```
<p>What is bluestyle?</p>  
<p>Web browser allow use of class style to add display page and  
display page for a web browser. It is a mark up language for  
src="picture.jpg" /></p>  
<h2>Common browsers</h2>  
<h2>Common browsers</h2>  
<p>There are a number of browsers in use (from a variety of different sources) such as ...  
<p>There are a number of browsers in use (from a variety of different sources) such as ...
```

## class style

```
.bluestyle {  
  color: blue;  
}
```

```
h3.bluestyle {  
  color: blue;  
  size: 120%;  
}
```

- Use the **.** symbol to indicate a **class** name in the style sheet

## Cascading Style Sheets



## Boxes

## Start with some HTML in a browser

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in

a markup language such as HTML.

#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

h1  
h2

img

p

anchor (hyperlink)

p

ul / li

p

```
<html>
<head>
<title>Browsers</title>
</head>
```

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

```
<p>Web browsers allow users to ask for, receive and display pages that have been formatted
(typically) in a <a href="http://www.w3.org/MarkUp/">markup language</a> such as
HTML.  </p>
```

```
<h2>Common browsers</h2>
```

```
<p>There are a number of browsers in use (from a variety of different sources):</p>
```

```
<ul>
<li>Microsofts Internet Explorer 7</li>
<li>Mozillas Firefox</li>
<li>Apples Safari</li>
</ul>
```

```
<p>There are other browsers as well (Opera, Konquerer).</p>
```

```
</body>
</html>
```

Source

## Blocks

- The placement of elements creates a logical structure in the document
- Elements cause the document to be subdivided into blocks

```
<html>
<head>
<title>Browsers</title>
</head>
```

## Initial containing block

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as HTML.  </p>

```
<h2>Common browsers</h2>
```

<p>There are a number of browsers in use (from a variety of different sources):</p>

```
<ul>
<li>Microsofts Internet Explorer 7</li>
<li>Mozillas Firefox</li>
<li>Apples Safari</li>
</ul>
```

<p>There are other browsers as well (Opera, Konquerer).</p>

```
</body>
</html>
```

```
<html>
<head>
<title>Browsers</title>
</head>
```

## Initial containing block

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as HTML.  </p>

```
<h2>Common browsers</h2>
```

<p>There are a number of browsers in use (from a variety of different sources):</p>

```
<ul>
<li>Microsofts Internet Explorer 7</li>
<li>Mozillas Firefox</li>
<li>Apples Safari</li>
</ul>
```

<p>There are other browsers as well (Opera, Konquerer).</p>

```
</body>
</html>
```

```
<html>
<head>
<title>Browsers</title>
</head>
```

## body block 'inside' the outer block

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as HTML.  </p>

```
<h2>Common browsers</h2>
```

<p>There are a number of browsers in use (from a variety of different sources):</p>

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<ul>
<li>Microsofts Internet Explorer 7</li>
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<li>Apples Safari</li>
</ul>
```

<p>There are other browsers as well (Opera, Konquerer).</p>

```
</body>
</html>
```

```
<html>
<head>
<title>Browsers</title>
</head>
```

## body block 'inside' the outer block

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as HTML.  </p>

```
<h2>Common browsers</h2>
```

<p>There are a number of browsers in use (from a variety of different sources):</p>

```
<ul>
```

```
<li>Microsofts Internet Explorer 7</li>
```

```
<li>Mozillas Firefox</li>
```

```
<li>Apples Safari</li>
```

```
</ul>
```

<p>There are other browsers as well (Opera, Konquerer).</p>

```
</body>
```

```
</html>
```

```
<html>
<head>
<title>Browsers</title>
</head>
```

## headings / paragraphs

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as HTML.  </p>

```
<h2>Common browsers</h2>
```

<p>There are a number of browsers in use (from a variety of different sources):</p>

```
<ul>
```

```
<li>Microsofts Internet Explorer 7</li>
```

```
<li>Mozillas Firefox</li>
```

```
<li>Apples Safari</li>
```

```
</ul>
```

<p>There are other browsers as well (Opera, Konquerer).</p>

```
</body>
```

```
</html>
```

```
<html>
<head>
<title>Browsers</title>
</head>
```

## headings / paragraphs

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as HTML.  </p>

```
<h2>Common browsers</h2>
```

<p>There are a number of browsers in use (from a variety of different sources):</p>

```
<ul>
```

```
<li>Microsofts Internet Explorer 7</li>
```

```
<li>Mozillas Firefox</li>
```

```
<li>Apples Safari</li>
```

```
</ul>
```

<p>There are other browsers as well (Opera, Konquerer).</p>

```
</body>
```

```
</html>
```



```
<html>
<head>
<title>Browsers</title>
</head>
```

## anchor

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as HTML.  </p>

```
<h2>Common browsers</h2>
```

```
<p>There are a number of browsers in use (from a variety of different sources):</p>
<ul>
<li>Microsofts Internet Explorer 7</li>
<li>Mozillas Firefox</li>
<li>Apples Safarik</li>
</ul>
<p>There are other browsers as well (Opera, Konquerer).</p>
</body>
</html>
```

```
<html>
<head>
<title>Browsers</title>
</head>
```

## image

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as HTML.  </p>

```
<h2>Common browsers</h2>
```

```
<p>There are a number of browsers in use (from a variety of different sources):</p>
<ul>
<li>Microsofts Internet Explorer 7</li>
<li>Mozillas Firefox</li>
<li>Apples Safarik</li>
</ul>
<p>There are other browsers as well (Opera, Konquerer).</p>
</body>
</html>
```

```
<html>
<head>
<title>Browsers</title>
</head>
```

## unordered list

```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

<p>Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as HTML.  </p>

```
<h2>Common browsers</h2>
```

```
<p>There are a number of browsers in use (from a variety of different sources):</p>
<ul>
<li>Microsofts Internet Explorer 7</li>
<li>Mozillas Firefox</li>
<li>Apples Safarik</li>
</ul>
<p>There are other browsers as well (Opera, Konquerer).</p>
</body>
</html>
```



```
<html>
<head>
<title>Browsers</title>
</head>
```

## list items

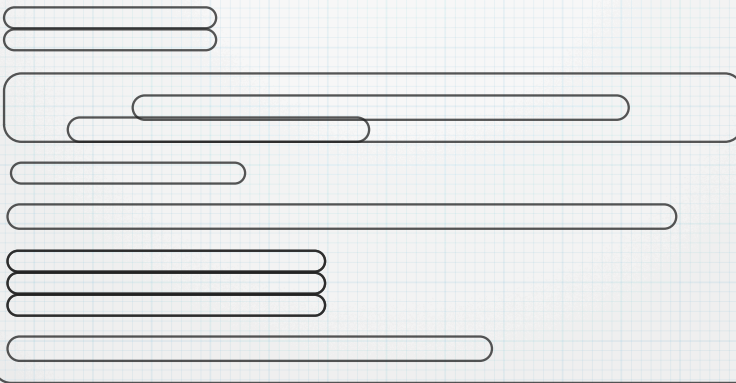
```
<body>
<h1>Web browsers</h1>
<h2>What they do</h2>
```

```
<p>Web browsers allow users to ask for, receive and display pages that have been formatted
(typically) in a <a href="http://www.w3.org/Markup/">markup language</a> such as
HTML. </p>
```

```
<h2>Common browsers</h2>
```

```
<p>There are a number of browsers in use (from a variety of different sources):</p>
<ul>
<li>Microsofts Internet Explorer 7</li>
<li>Mozillas Firefox</li>
<li>Apples Safari</li>
</ul>
<p>There are other browsers as well (Opera, Konqueror).</p>
</body>
</html>
```

## Blocks within blocks



## Blocks

- Two common types of blocks

Block level elements

In-line block elements

So what's the difference?

## Block level elements

- Are laid out vertically inside the containing block

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in

a markup language such as HTML.

#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsoft's Internet Explorer 7
- Mozilla's Firefox
- Apple's Safari

There are other browsers as well (Opera, Konquerer).

h1  
h2

p

h2

p

## in-line elements

- are laid out horizontally in the containing block

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in

a markup language such as HTML.

#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsoft's Internet Explorer 7
- Mozilla's Firefox
- Apple's Safari

There are other browsers as well (Opera, Konquerer).

anchor

img

## Defaults

### Block level elements

p  
h2  
ol  
li  
h1  
h3 ...  
ul ...

### In-line elements

img  
strong  
a  
emph

### Note

Lists / List items use a different display style for its elements, called list-item. For the moment, think of ol/ul/li as being block

## So what can we do with blocks?

- Change the blocks nature **display property**
- Float them **float property**
- Clear space next to them **clear property**
- Treat them as boxes and change the visual aspects

**the CSS box model**

## display property

This property can be used to change how an element block is situated

value	inline or block or none or inherit*
initial value	element specific / inline
applies to	all elements
inherited	no (unless value indicates it)

**\*Other values are available**

## Demo

### Empty stylesheet

```
h1 {  
}  
  
img {  
}  
  
a {  
}
```

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in

a [markup language](#) such as HTML.



#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsoft's Internet Explorer 7
- Mozilla's Firefox
- Apple's Safari

There are other browsers as well (Opera, Konqueror).

## Demo - change **h1** to none

### stylesheet

```
h1 {  
  display: none;  
}
```

```
img {  
}
```

```
a {  
}
```

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a



[markup language](#) such as HTML.

#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsoft's Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## Demo - change **img** to none

### stylesheet

```
h1 {  
  display: none;  
}
```

```
img {  
  display: none;  
}
```

```
a {  
}
```

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a [markup language](#) such as HTML.

#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsoft's Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

- Microsoft's Internet Explorer 7
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## Demo - change **a** to block

### stylesheet

```
h1 {  
  display: none;  
}
```

```
img {  
  display: none;  
}
```

```
a {  
  display: block;  
}
```

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a [markup language](#) such as HTML.

#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsoft's Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## float property

- This property 'floats' a block left or right
- The block floats to the side until its edge touches another block

## float property

Any in-line element floated becomes a block style element

value	left or right or none or inherit
initial value	none
applies to	all but positioned elements
inherited	no (unless value indicates it)

## Demo

### Empty stylesheet

```
h1 {  
}  
  
img {  
}  
  
a {  
}
```

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in

a [markup language](#) such as HTML.



#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsoft's Internet Explorer 7
- Mozilla's Firefox
- Apple's Safari

There are other browsers as well (Opera, Konqueror).



## Demo - floating to the right

stylesheet

```
h1 {  
}  
img {  
  float: right;  
}  
a {  
}
```

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a [markup language](#) such as HTML.

#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).



## Demo - floating to the left

stylesheet

```
h1 {  
}  
img {  
  float: left;  
}  
a {  
}
```

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a [markup language](#) such as HTML.



#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## clear property

- This property clears space on a blocks **left** or **right**

value	left or right or none or inherit or both
initial value	none
applies to	block-level elements
inherited	no (unless value indicates it)

## Demo

### Empty stylesheet

```
h1 {  
}  
  
img {  
}  
  
a {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in

a [markup language](#) such as HTML.



### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## Demo - floating the image to the right

### stylesheet

```
h1 {  
}  
  
img {  
  float: right;  
}  
  
h2 {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a [markup language](#) such as HTML.

### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).



## Demo - now to clear the h2 heading

### stylesheet

```
h1 {  
}  
  
img {  
  float: right;  
}  
  
h2 {  
  clear: right;  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a [markup language](#) such as HTML.

### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).



## CSS box model

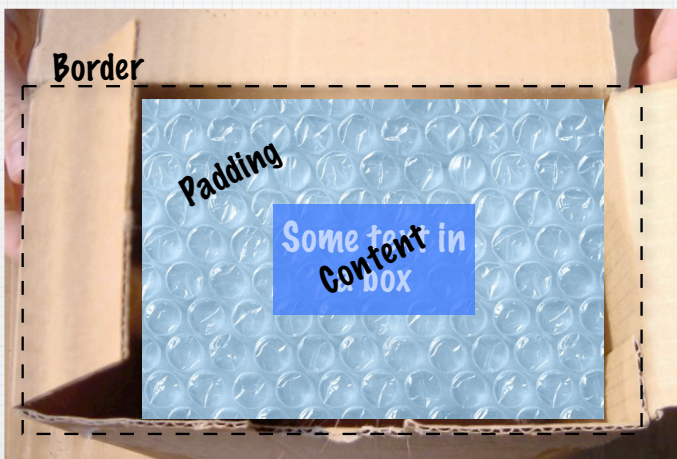
- Blocks can be styled as boxes
- Boxes have properties such as

height                      margin  
border                      width                      padding

## CSS box model



## CSS box model



## border

- Can set the border-style

none  
hidden  
dotted  
dashed  
solid  
double  
groove  
ridge  
inset  
outset

- Can set the border-width

px  
pt  
em

1pt=1/72inch  
em=based of the  
width of an 'M'

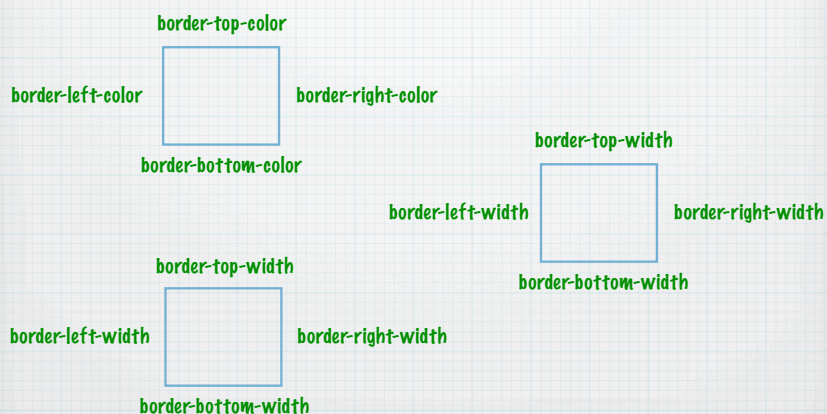
## border

- Can set the border-color

Standard colour  
technique using 24bit  
palette

## border

- Can set the values individually for the 4 sides





## Demo

### Empty stylesheet

```
h1 {  
}
```

```
h2 {  
}
```

```
a {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in

a [markup language](#) such as HTML.



### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## Demo

### stylesheet

```
h1 {  
}
```

```
h2 {  
border-style: solid;  
}
```

```
a {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in

a [markup language](#) such as HTML.



### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## Demo

### stylesheet

```
h1 {  
}
```

```
h2 {  
border-style: dotted;  
}
```

```
a {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in

a [markup language](#) such as HTML.



### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).



## Demo

### stylesheet

```
h1 {  
}  
  
h2 {  
border-style: dashed;  
}  
  
a {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in



a [markup language](#) such as HTML.

### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## Demo

### stylesheet

```
h1 {  
}  
  
h2 {  
border-style: solid;  
border-color:red;  
}  
  
a {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in



a [markup language](#) such as HTML.

### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## Demo

### stylesheet

```
h1 {  
}  
  
h2 {  
border-style: solid;  
border-color:red;  
border-width:10px;  
}  
  
a {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically)



in a [markup language](#) such as HTML.

### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

## width

- Can set the element **width**

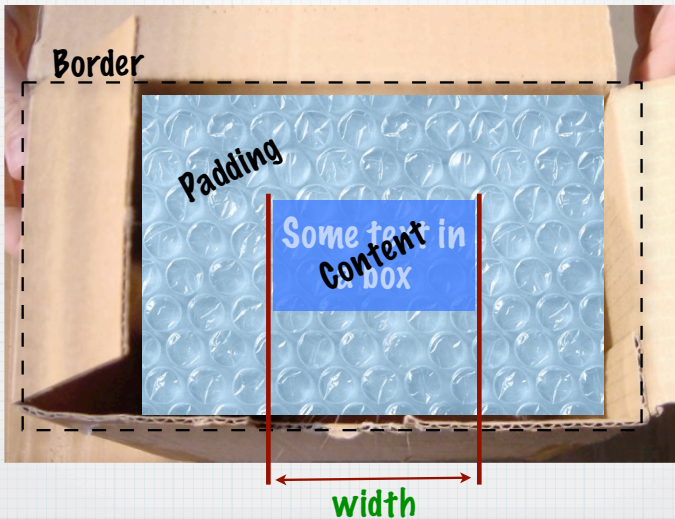
1px=1 pixel

1pt=1/72inch

em=current font size of current element - used to be based on the width of the letter 'M'

% as a percentage of the containing block

## CSS box model



## Demo

### stylesheet

```
h1 {  
}  
h2 {  
  border-style: solid;  
  width: 50%;  
}  
a {  
}
```

### Web browsers

#### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a

[markup language](#) such as HTML.

#### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konqueror).

## padding

- Can set the elements padding size

1px=1 pixel

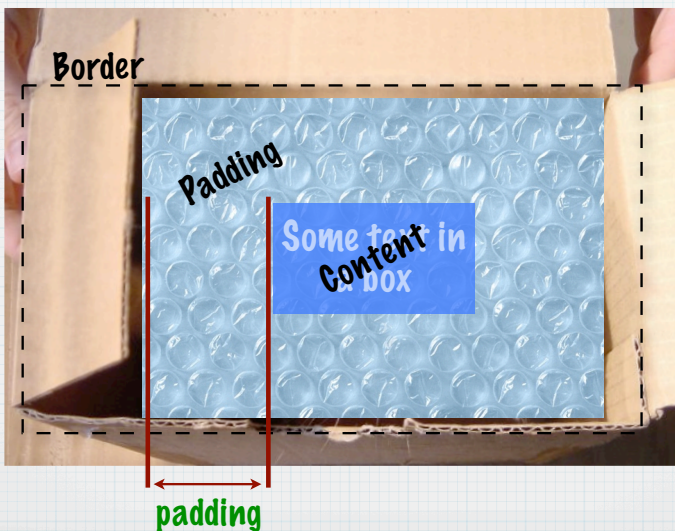
1pt=1/72inch

em=current font size of current element - used to be based on the width of the letter 'M'

% as a percentage of the containing block

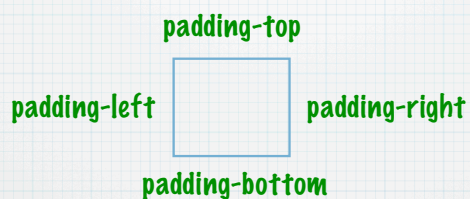
- Padding sits between the content and the border

## CSS box model



## padding

- Can set the padding individually for the 4 sides



## Demo

### stylesheet

```
h1 {  
}  
  
h2 {  
border-style: solid;  
width: 50%;  
padding: 10px;  
}  
  
a {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a



markup language such as HTML.

### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
- Mozilla's Firefox
- Apples Safari

There are other browsers as well (Opera, Konquerer).

## margin

- Can set the size of the space around an element

1px=1 pixel

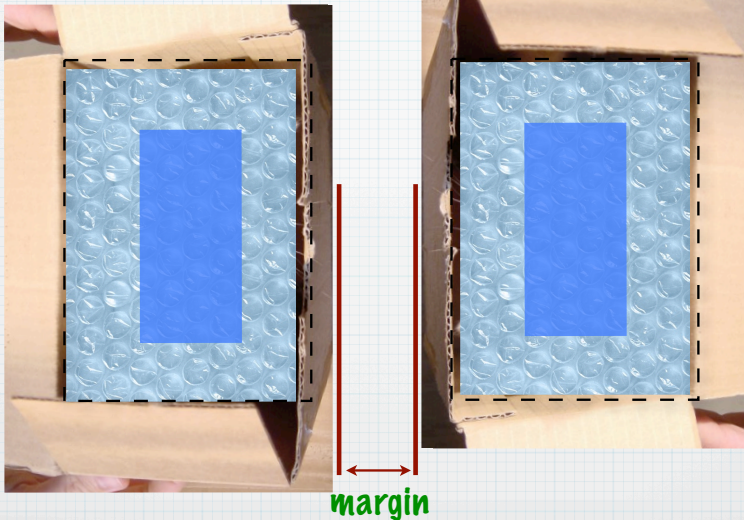
1pt=1/72inch

em=current font size of current element - used to be based on the width of the letter 'M'

% as a percentage of the containing block

- Special rules are used to calculate the gap between two horizontal elements with margins

## CSS box model





```
h1 {  
}
```

```
h2 {  
border-style: solid;  
width: 50%;  
padding: 10px;  
margin: 20px;  
}
```

```
a {  
}
```

## Web browsers

### What they do

Web browsers allow users to ask for, receive and display pages that have been formatted (typically) in a

[markup language](#) such as HTML.



### Common browsers

There are a number of browsers in use (from a variety of different sources):

- Microsofts Internet Explorer 7
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There are other browsers as well (Opera, Konquerer).