Chapter 4 Introduction to Cascading Style Sheets (CSS)

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- Positioning Elements: Absolute Positioning, span
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Outline

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站在巨人的肩膀上

- Free CSS template
  - http://www.templatemo.com/
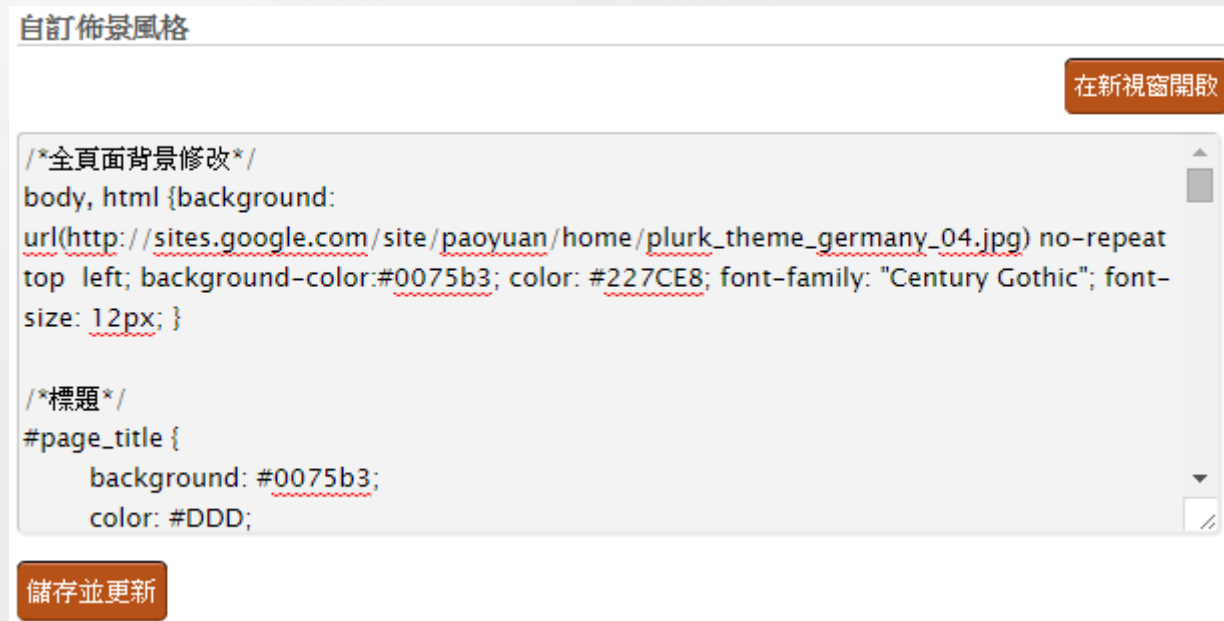 - http://www.oswd.org/
  - http://templated.co/
  - http://www.myfreecsstemplates.com/
  - http://www.free-css.com/
  - http://www.free-css-templates.com/
  - https://www.freewebtemplates.com/css-templates/
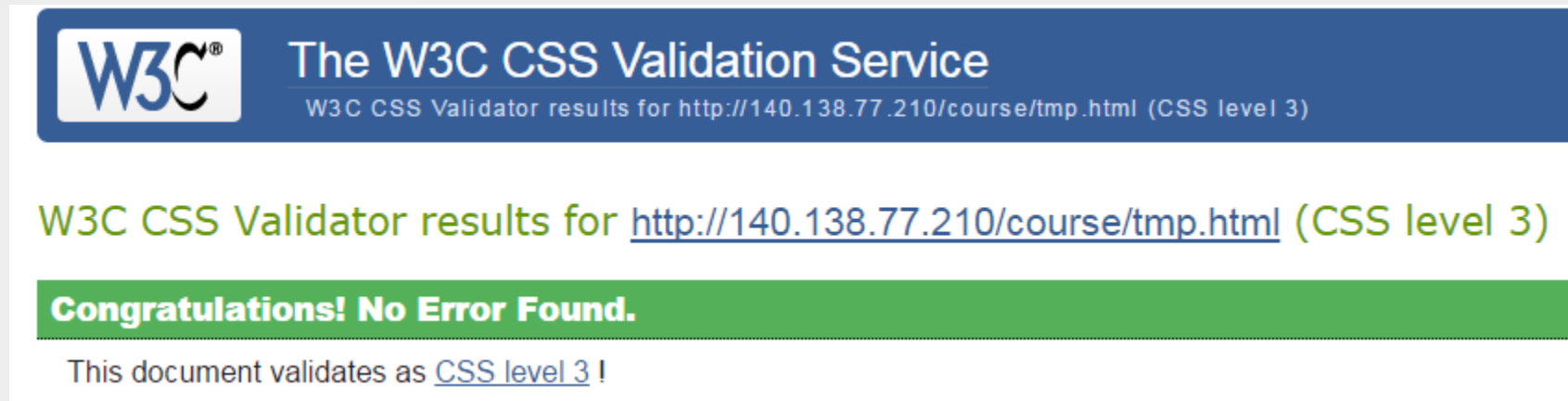
Example

- Blogger

Example

- Plurk

Introduction

- Cascading Style Sheets 3 (CSS3)
  - Used to specify the presentation of elements separately from the structure of the document.
- CSS validator
  - http://jigsaw.w3.org/css-validator/

W3C® The W3C CSS Validation Service
W3C CSS Validator results for http://140.138.77.210/course/tmp.html (CSS level 3)

W3C CSS Validator results for http://140.138.77.210/course/tmp.html (CSS level 3)

Congratulations! No Error Found.

This document validates as CSS level 3 !

Inline Styles

- Inline style
  - declare an individual element's format using the HTML5 attribute style.
- Each CSS property is followed by a colon (:) and the value of the attribute
- Multiple property declarations are separated by a semicolon(;)

Inline Styles

This text does not have any style applied to it.

This text has the *font-size* style applied to it, making it 20pt.

This text has the *font-size* and *color* styles applied to it, making it 20pt and deep sky blue.

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Inline Styles</title>
    </head>
    <body>
        <p>This text does not have any style applied to it.</p>
        <p style = "font-size: 20pt;">This text has the
            <em>font-size</em> style applied to it, making it 20pt.
        </p>
        <p style = "font-size: 20pt; color: deepskyblue;">
            This text has the <em>font-size</em> and
            <em>color</em> styles applied to it, making it
            20pt and deep sky blue.</p>
    </body>
</html>
```

Each CSS property is followed by a colon (:) and the value of the attribute

Multiple property declarations are separated by a semicolon(;)

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Inline Styles

- color property sets text color
  - Color names and hexadecimal codes may be used as the color property value.

Named	Numeric	Color name	Hex rgb	Decimal
		aliceblue	#F0F8FF	240,248,255
		antiquewhite	#FAEBD7	250,235,215
		aqua	#00FFFF	0,255,255
		aquamarine	#7FFFD4	127,255,212
		azure	#F0FFFF	240,255,255
		beige	#F5F5DC	245,245,220
		bisque	#FFE4C4	255,228,196
		black	#000000	0,0,0
		blanchedalmond	#FFEBCD	255,235,205
		blue	#0000FF	0,0,255
		blueviolet	#8A2BE2	138,43,226
		brown	#A52A2A	165,42,42
		burlywood	#DEB887	222,184,135
		cadetblue	#5F9EA0	95,158,160
		chartreuse	#7FFF00	127,255,0
		chocolate	#D2691E	210,105,30
		coral	#FF7F50	255,127,80
		cornflowerblue	#6495ED	100,149,237
		cornsilk	#FFF8DC	255,248,220
		crimson	#DC143C	220,20,60
		cyan	#00FFFF	0,255,255

Ref: http://www.w3.org/TR/css3-color/

Inline Styles

Software Engineering Observation 4.1

Inline styles do not truly separate presentation from content. To apply similar styles to multiple elements, use embedded style sheets or external style sheets, introduced later in this chapter.

Embedded Style Sheets

- A second technique for using style sheets is embedded style sheets, which enable you to embed a CSS3 document in an HTML5 document's head section.

Embedded Style Sheets

Deitel & Associates, Inc.

Deitel & Associates, Inc. is an authoring and corporate training organization specializing in programming languages, Internet and web technology, iPhone and Android app development, and object technology education.

Clients

The company's clients include many **Fortune 1000 companies**, government agencies, branches of the military and business organizations.

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Embedded Style Sheet</title>
        <style type = "text/css">
            em        { font-weight: bold;
                        color: black; }
            h1        { font-family: tahoma, helvetica, sans-serif; }
            p         { font-size: 12pt;
                        font-family: arial, sans-serif; }
            .special { color: purple; }
        </style>
    </head>
    <body>
        <h1 class = "special">Deitel & Associates, Inc.</h1>
        <p>Deitel   Associates, Inc. is an authoring and  corporate training organization
            specializing in programming languages, Internet and web technology, iPhone and
            Android app development, and object technology education.</p>
        <h1>Clients</h1>
        <p class = "special"> The company's clients include many <em>Fortune 1000 companies</em>,
            government agencies, branches of the military and business organizations.</p>
    </body>
</html>
```

放在head內

em：emphasized
font-weight：字體粗細
color：字體顏色
font-family：字型
font-size：字體大小

Embedded Style Sheets

- The style Element and MIME Types
  - Styles that are placed in a style element use selectors to apply style elements throughout the entire document
  - style element type attribute specifies the MIME type (the specific encoding format) of the style sheet. Style sheets use text/css.

MIME type	Description
text/css	CSS documents
image/png	PNG images
text/javascript	JavaScript markup
text/plain	Plain text
image/jpeg	JPEG image
text/html	HTML markup

Ref: http://www.iana.org/assignments/media-types/media-types.xhtml

Embedded Style Sheets

- The style sheet's body declares the CSS rules for the style sheet.
- To achieve the separation between the CSS3 code and the HTML5 that it styles, we'll use a CSS selector to specify the elements that will be styled according to a rule.
- Each rule body in a style sheet is enclosed in curly braces ({ and }).

```
<style type = "text/css">
    em          { font-weight: bold;
                  color: black; }
    h1          { font-family: tahoma, helvetica, sans-serif; }
    p           { font-size: 12pt;
                  font-family: arial, sans-serif; }
    .special { color: purple; }
</style>
```

Embedded Style Sheets

- font-weight property specifies the "boldness" of text.
  - Possible values are
    - bold
    - normal (the default)
    - bolder (bolder than bold text)
    - lighter (lighter than normal text)
  - Boldness also can be specified with multiples of 100, from 100 to 900 (e.g., 100, 200, …, 900). Text specified as normal is equivalent to 400, and bold text is equivalent to 700

Ref: http://www.w3schools.com/cssref/pr_font_weight.asp

Embedded Style Sheets

- font-family property specifies the name of the font to use.
- Generic font families allow authors to specify a type of font instead of a specific font, in case a browser does not support a specific font.
- The font-family property can hold several font names as a "fallback" system. If the browser does not support the first font, it tries the next font.

Generic font families	Examples
serif	times new roman, georgia
sans-serif	arial, verdana, futura
cursive	script
fantasy	critter
monospace	courier, fixedsys

Embedded Style Sheets

- font-size property specifies the size used to render the font.
- You can specify a point size or a relative value such as xx-small, x-small, small, smaller, medium, large, larger, x-large and xx-large.
- Relative font-size values are preferred over points, because an author does not know the specific measurements of each client's display.
- Relative values permit more flexible viewing of web pages.

Embedded Style Sheets

- font-style
  - specifies the font style for a text
    - none
    - italic
    - oblique

Normal	The five boxing wizards jump quickly.
Italic	*The five boxing wizards jump quickly.*
Oblique	*The five boxing wizards jump quickly.*

Ref : https://css-tricks.com/almanac/properties/f/font-style/

Embedded Style Sheets

- Style-class declarations are preceded by a period (.).
- They define styles that can be applied to any element.
- You can also declare id selectors.
  - If an element in your page has an id, you can declare a selector of the form #elementId to specify that element's style.

Embedded Style Sheets

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Embedded Style Sheet</title>
        <style type = "text/css">
            em        { font-weight: bold;
                        color: black; }
            h1        { font-family: tahoma, helvetica, sans-serif; }
            p         { font-size: 12pt;
                        font-family: arial, sans-serif; }
            .special { color: purple; }
            #tmp      { color: red; }
        </style>
    </head>
    <body>
        <h1 class = "special">Deitel & Associates, Inc.</h1>
        <p>Deitel  Associates, Inc. is an authoring and  corporate training organization
            specializing in programming languages, Internet and web technology,<i id ="tmp">
            iPhone and Android </i>app development, and object technology education.</p>
        <h1>Clients</h1>
        <p class = "special"> The company's clients include many <em>Fortune 1000 companies</em>,
            government agencies, branches of the military and business organizations.</p>
    </body>
</html>
```

Deitel & Associates, Inc.

Deitel & Associates, Inc. is an authoring and corporate training organization specializing in programming languages, Internet and web technology, *iPhone and Android* app development, and object technology education.

Clients

The company's clients include many **Fortune 1000 companies**, government agencies, branches of the military and business organizations.

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Embedded Style Sheets

- In many cases, the styles applied to an element (the parent or ancestor element) also apply to the element's nested elements (child or descendant elements).
- Multiple values of one property can be set or inherited on the same element, so the browser must reduce them to one value for that property per element before they're rendered.
- We discuss the rules for resolving these conflicts in the next section.

Table CSS

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8"><title>Table</title>
        <style type="text/css">
            table,th,td { border:1px solid black; }
            table { width : 100px ; height : 100px; }
            #table2 { border-collapse: collapse; }
        </style>
    </head>
    <body>
        <table id = "table1" >
            <tr>
                <td style = "text-align: center;">1</td>
                <td style = "vertical-align: bottom;">2</td>
            </tr>
            <tr>
                <td style = "background-color: yellow;">3</td>
                <td style = "color:red">4</td>
            </tr>
        </table>
        <p></p>
        <table id = "table2">
            <tr><td>1</td><td>2</td></tr>
            <tr><td>3</td><td>4</td></tr>
        </table>
    </body>
</html>
```

border
    1px: 寬度
    solid : 實線
    black : 黑色
width : 寬
height : 高
border-collapse: 邊框單/雙線
    collapse : 單線
text-align : 文字水平對齊
    right, center, left
vertical-align : 文字垂直對齊
    top, middle, bottom
background-color : 底色
color : 文字顏色

Exercise

	font-family: courier
color : blue	font-size : 18 pt
text-align : center	

border-collapse: collapse

Conflicting Styles

- Styles may be defined by a user, an author or a user agent.
  - User style sheet
    - A user agent may also allow a user to create a customized set of styles to use by default, or for specific documents.
  - Author style sheets
    - that are linked to the document via a link element, specified using a style element within the document's head element, or specified within an element style attribute
  - User Agent (typically a web browser) style sheets
    - the default sets of declarations applied by the user agent
- Priority
  - author > user > user agent

Conflicting Styles

- Most styles defined for parent elements are also inherited by child (nested) elements.

```
<style type = "text/css">
    em          { font-weight: bold;
                  color: black; }
    h1          { font-family: tahoma, helvetica, sans-serif; }
    p           { font-size: 12pt;
                  font-family: arial, sans-serif; }
    .special { color: purple; }
</style>
<p class = "special"> The company's clients include many <em>Fortune 1000 companies</em>,
government agencies, branches of the military and business organizations.</p>
```

The company's clients include many **Fortune 1000 companies**, government agencies, branches of the military and business organizations.

p

em

```
<em>
-> font-size: 12pt;
-> font-family: arial, sans-serif;
```

```
<p class = "special">
-> font-size: 12pt;
-> font-family: arial, sans-serif;
-> color: purple;
```

```
<em>
-> font-weight: bold;
-> color: black;
```

Conflicting Styles

- Properties defined for child and descendant elements have a higher specificity than properties defined for parent and ancestor elements.
- Conflicts are resolved in favor of properties with a higher specificity, so the child's styles take precedence.

Conf

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>More Styles</title>
        <style type = "text/css">
            body      { font-family: arial, helvetica, sans-serif; }
            a.nodec   { text-decoration: none; }
            a:hover   { text-decoration: underline; }
            li em     { font-weight: bold; }
            h1, em    { text-decoration: underline; }
            ul        { margin-left: 20px; }
            ul ul     { font-size: .8em; }
        </style>
    </head>
    <body>
        <h1>Shopping list for Monday:</h1>
        <ul>
            <li>Milk</li>
            <li>Bread
                <ul>
                    <li>White bread</li>
                    <li>Rye bread</li>
                    <li>Whole wheat bread</li>
                </ul>
            </li>
            <li>Carrots</li>
            <li>Yogurt</li>
            <li>Pizza <em>with mushrooms</em></li>
        </ul>
        <p><em>Go to the</em>
            <a class = "nodec" href = "http://www.deitel.com">Grocery store</a>
        </p>
    </body>
</html>
```

Shopping list for Monday:

- Milk
- Bread
    - White bread
    - Rye bread
    - Whole wheat bread
- Carrots
- Yogurt
- Pizza *with mushrooms*

Go to the Grocery store

text-decoration : the decoration added to text
   none
   underline : 文字之下
   overline : 文字之上
   line-through : 文字之中
:hover 滑鼠移到該element才啟動
margin-left : 距左邊界 20 px

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Conflicting Styles

- Pseudoclasses
  - A pseudo-class is used to define a special state of an element.
  - E.g :
    - a:link // unvisited links
    - a:visited // visited links
    - a:hover // on mouse over
    - a:active // the active link
  - Note : a:hover MUST come after a:link and a:visited, a:active MUST come after a:hover

Conflicting Styles

- Relative length measurements:
  - px
    - Pixels - size varies depending on screen resolution
  - em
    - 1em is equal to the current font size
    - usually the height of a font's uppercase M
  - ex
    - 1ex is the x-height of a font (x-height is usually about half the font-size)
  - %
    - Percentages of the font's default size

Conflicting Styles

- Absolute-length measurements (units that do not vary in size):
  - in (inches)
  - cm (centimeters)
  - mm (millimeters)
  - pt (points; 1 pt = 1/72 in)
  - pc (picas; 1 pc = 12 pt)

Conflicting Styles

Good Programming Practice 4.1

Whenever possible, use relative-length measurements. If you use absolute-length measurements, your document may not scale well on some client browsers (e.g., smartphones).

Linking External Style Sheets

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title>Linking External Style Sheets</title>
        <link rel = "stylesheet" type = "text/css" href = "styles.css">
    </head>
    <body>
        <h1>Shopping list for <em>Monday</em>:</h1>
        <ul>
            <li>Milk</li>
            <li>Bread
                <ul>
                    <li>White bread</li>
                    <li>Rye bread</li>
                    <li>Whole wheat bread</li>
                </ul>
            </li>
            <li>Carrots</li>
            <li>Yogurt</li>
            <li>Pizza <em>with mushrooms</em></li>
        </ul>
        <p><em>Go to the</em>
            <a class = "nodec" href = "http://www.deitel.com"> Grocery store</a>
        </p>
    </body>
</html>
```

styles.css

```css
/* styles.css */
body      { font-family: arial, helvetica, sans-serif; }
a.nodec   { text-decoration: none; }
a:hover   { text-decoration: underline; }
li em     { font-weight: bold; }
h1, em    { text-decoration: underline; }
ul        { margin-left: 20px; }
ul ul     { font-size: .8em; }
```

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Linking External Style Sheets

- link element
  - Uses rel attribute to specify a relationship between two documents
  - rel attribute declares the linked document to be a stylesheet for the document
- type attribute specifies the MIME type of the related document
- href attribute provides the URL for the document containing the style sheet

Linking External Style Sheets

- External style sheets are separate documents that contain only CSS rules.
- Help create a uniform look for a website
- Separate pages can all use the same styles.
- Modifying a single style-sheet file makes changes to styles across an entire website (or to a portion of one).
- When changes to the styles are required, you need to modify only a single CSS file to make style changes across all the pages that use those styles. This concept is sometimes known as skinning.

Positioning Elements: Absolute Positioning, z-index

- CSS position property
  - Allows absolute positioning, which provides greater control over where on a page elements reside
  - Specifying an element's position as absolute removes it from the normal flow of elements on the page and positions it according to distance from the top, left, right or bottom margin of its parent element

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Absolute Positioning</title>
        <style type = "text/css">
        .background_image   { position: absolute;
                    top: 0px;
                    left: 0px;
                    z-index: 1;  }
        .foreground_image    { position: absolute;
                    top: 25px;
                    left: 100px;
                    z-index: 2;  }
        .text    { position: absolute;
                    top: 25px;
                    left: 100px;
                    z-index: 3;
                    font-size: 20pt;
                    font-family: tahoma, geneva, sans-serif; }
        </style>
    </head>
    <body>
        <p><img src = "background_image.png" class = "background_image"
            alt = "First positioned image" /></p>
        <p><img src = "foreground_image.png" class = "foreground_image"
            alt = "Second positioned image" /></p>
        <p class = "text">Positioned Text</p>
    </body>
</html>
```

Positioned Text

foreground_image.png

background_image.png
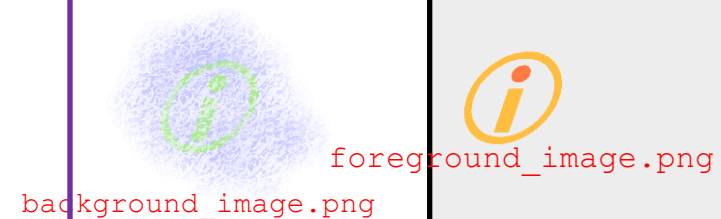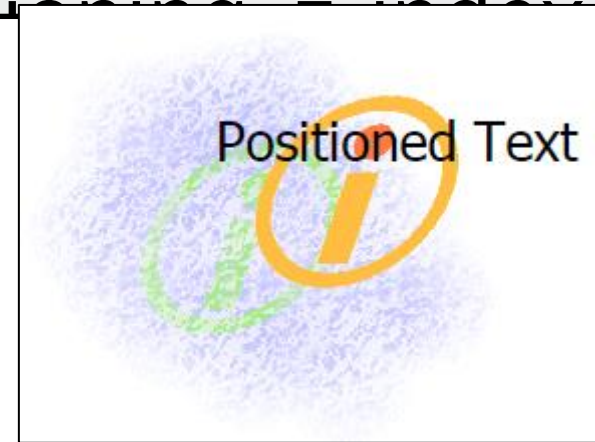
Position : position an element
Z-index : the stack order of an element

Positioning Elements: Absolute Positioning, z-index

- Position : position an element
  - static : positioned element is always positioned according to the normal flow of the page.
  - fixed: positioned relative to the browser window
  - relative: positioned relative to its normal position
  - absolute : positioned relative to the first parent element
- Z-index : the stack order of an element
  - An element with greater stack order is always in front of an element with a lower stack order.
  - If two positioned elements overlap without a z-index specified, the element positioned last in the HTML code will be shown on top.

Posi... span

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Relative Positioning</title>
        <style type = "text/css">
            p             { font-size: 1.3em;
                            font-family: verdana, arial, sans-serif; }
            span          { color: red;
                            font-size: .6em;
                            height: 1em; }
            .super        { position: relative;
                            top: -1ex; }
            .sub          { position: relative;
                            bottom: -1ex; }
            .shiftleft    { position: relative;
                            left: -1ex; }
            .shiftright   { position: relative;
                            right: -1ex; }
        </style>
    </head>
    <body>
        <p>The text at the end of this sentence
            <span class = "super">is in superscript</span>.</p>
        <p>The text at the end of this sentence
            <span class = "sub">is in subscript</span>.</p>
        <p>The text at the end of this sentence
            <span class = "shiftleft">is shifted left</span>.</p>
        <p>The text at the end of this sentence
            <span class = "shiftright">is shifted right</span>.</p>
    </body>
</html>
```

The text at the end of this sentence ^{is in superscript}.

The text at the end of this sentence _{is in subscript}.

The text at the end of this sentence is shifted left .

The text at the end of this sentence is shifted right

Positioning Elements: Relative Positioning, span

- Inline-level elements
  - Do not change the flow of the document
    - img, a, em, strong, span

- Block-level elements
  - Displayed on their own line
  - Have virtual boxes around them
    - p,h1 … h6, div

Exercise

- Hint :
  - position : relative
  - position : absolute
  - Font-size: 24px

TEST Normal

TEST absolute letf:20px, top: 35px
TEST Left 20px

TEST right 20px

Backgrounds

- CSS can control the backgrounds of block-level elements by adding:
  - Colors
  - Images

Backgrounds

```html
<!DOCTYPE html>
<html>
   <head>
      <meta charset = "utf-8">
      <title>Background Images</title>
      <style type = "text/css">
         body  {background-image : url(logo.png);
               background-position: bottom right;
               background-repeat: no-repeat;
               background-attachment: fixed;
               background-color: LightGrey }
         p     { font-size: 18pt;
               color: DarkBlue;
               text-indent: 1em;
               font-family: arial, sans-serif; }
         .dark { font-weight: bold; }
      </style>
   </head>
   <body>
      <p>
         This example uses the background-image, background-position and background-
         attachment styles to place the <span class = "dark">Deitel  Associates, Inc.</span>
         logo in the bottom-right corner of the page. Notice how the logo stays in the proper
         position when you resize the browser window. The background-color fills in where
         there is no image.
      </p>
   </body>
</html>
```

This example uses the background-image, background-position and background-attachment styles to place the **Deitel & Associates, Inc.** logo in the bottom-right corner of the page. Notice how the logo stays in the proper position when you resize the browser window. The background-color fills in where there is no image.

text-indent: 首行縮排

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Backgrounds

- **background-image**
  - Specifies the URL of the image, in the format url(fileLocation)

- **background-position**
  - Places the image on the page
    - top, bottom, center, left and right individually or in combination
    - position by using lengths
      - (horizontal position, vertical position)
      - The top left corner is 0 0
      - E.g : background-position: 50px 100px;

50px

100px

Backgrounds

- **background-repeat**
  - controls the **tiling** of the background image
    - repeat
      - both vertically and horizontally
    - repeat-x
      - only horizontally
    - repeat-y
      - only vertically
    - no-repeat
      - not be repeated

Backgrounds

- **background-attachment**
  - sets whether a background image is fixed or scrolls with the rest of the page
    - scroll
      - Scrolling the browser window will not move the image from its set position.
      - default
    - fixed
      - Fixes the image in the position specified by background-position.

Element Dimensions

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Box Dimensions</title>
        <style type = "text/css">
            p { background-color: LightSkyBlue;
                margin-bottom: .5em;
                font-family: arial, helvetica, sans-serif; }
        </style>
    </head>
    <body>
        <p style = "width: 20%;">Here is some
            text that goes in a box which is
            set to stretch across twenty percent
            of the width of the screen.</p>
        <p style = "width: 80%; text-align: center;">
            Here is some CENTERED text that goes in a box
            which is set to stretch across eighty percent of
            the width of the screen.</p>
        <p style = "width: 20%; height: 150px; overflow: scroll;">
            This box is only twenty percent of
            the width and has a fixed height.
            What do we do if it overflows? Set the
            overflow property to scroll!</p>
    </body>
</html>
```

Here is some text that goes in a box which is set to stretch across twenty percent of the width of the screen.

Here is some CENTERED text that goes in a box which is set to stretch across eighty percent of the width of the screen.

This box is only twenty percent of the width and has a fixed height. What do we do if it overflows? Set the overflow property to scroll!!

Element Dimensions

- Dimensions of elements on a page can be set with CSS by using properties height and width
  - Their values can be relative or absolute
- overflow Property and Scroll Bars
  - Problem with setting both vertical and horizontal dimensions of an element
  - Content might sometimes exceed the set boundaries, in which case the element must be made large enough for all the content to fit
  - Can set the overflow property to scroll, which adds scroll bars if the text overflows the boundaries set for it

Element Dimensions

visible: 內容不會被刪除, 會超出元素外
hidden: 內容會被刪除, 元素保持設定大小
scroll: 支援scroll bar
auto: 需要時才會出現scroll bar

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Box Dimensions</title>
        <style type = "text/css">
          p { background-color: LightSkyBlue;
              margin-bottom: 2em;
              font-family: arial, helvetica, sans-serif; }
        </style>
    </head>
    <body>
        <p style = "width: 20%; height: 150px; overflow: visible;">
        This box is only twenty percent ofthe width and has a fixe
What do we do if it overflows? Set the overflow property to scro
        <p style = "width: 20%; height: 150px; overflow: hidden;">
        This box is only twenty percent ofthe width and has a fixe
What do we do if it overflows? Set the overflow property to scro
        <p style = "width: 20%; height: 150px; overflow: scroll;">
        This box is only twenty percent ofthe width and has a fixe
What do we do if it overflows? Set the overflow property to scro
        <p style = "width: 20%; height: 150px; overflow: auto;">
        This box is only twenty percent ofthe width and has a fixed height.
What do we do if it overflows? Set the overflow property to scroll!</p>
    </body>
</html>
```
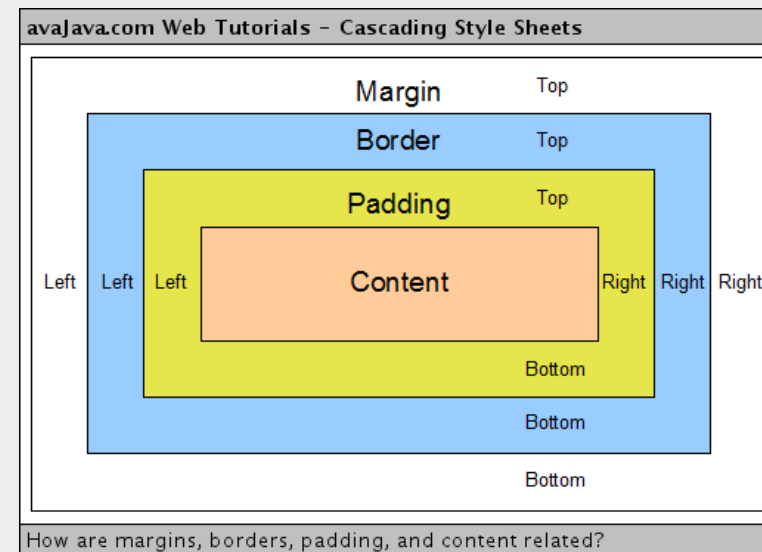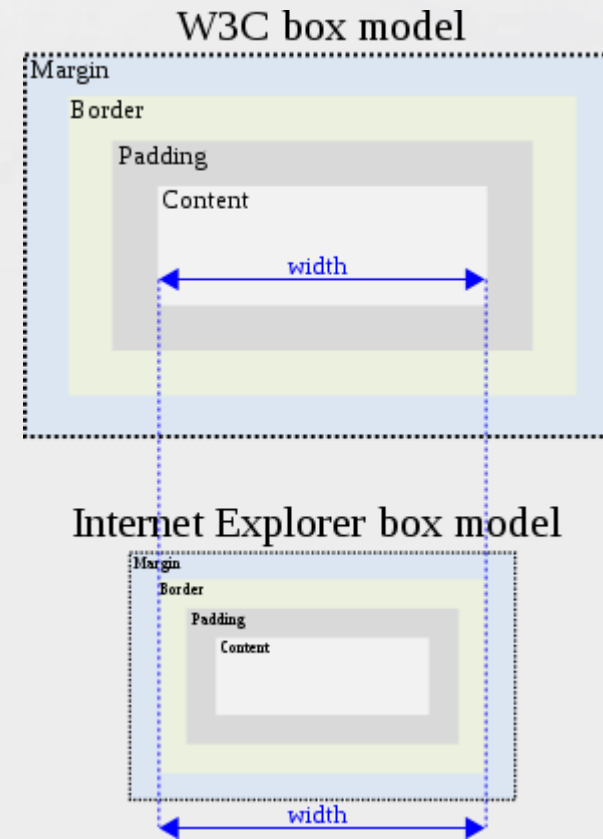
49

Box Model and Text Flow

- Block-level HTML5 elements have a virtual box drawn around them based on the box model
- When the browser renders an element using the box model, the content is surrounded by padding, a margin and a border.

Ref : http://www.avajava.com/tutorials/lessons/how-are-margins-borders-padding-and-content-related.html

Box Model and Text Flow

- Internet Explorer box model bug
  - Version :IE6-

Ref : http://en.wikipedia.org/wiki/Internet_Explorer_box_model_bug

Box Model and Text Flow

- **Padding**
  - The padding property determines the distance between the content inside an element and the edge of the element
  - Padding be set for each side of the box by using padding-top, padding-right, padding-left and padding-bottom
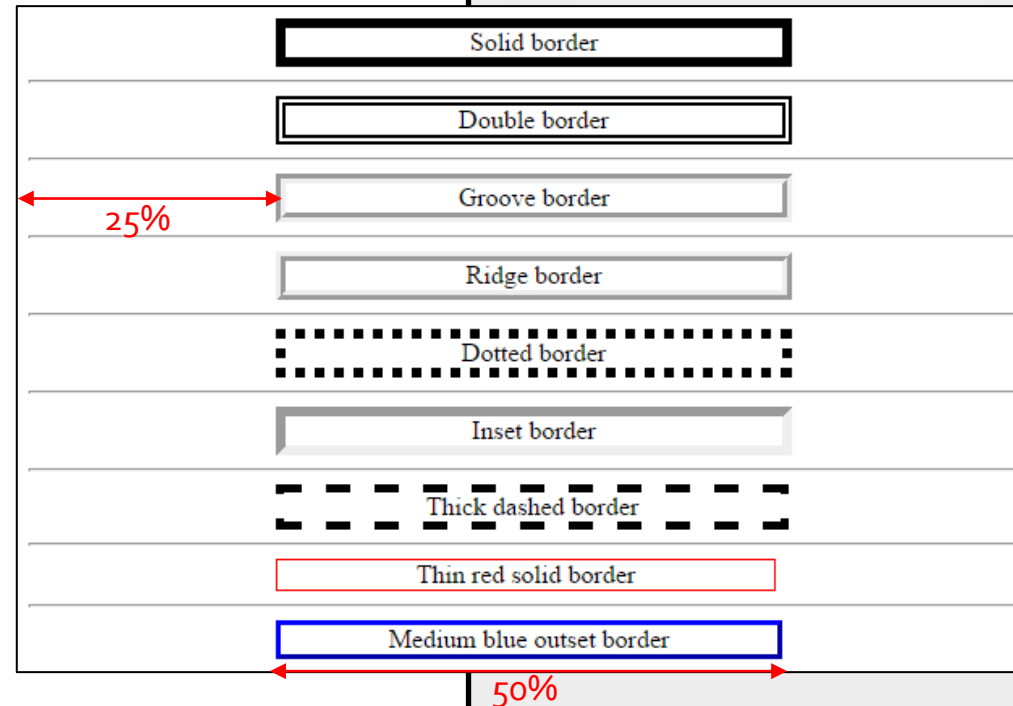- **Margin**
  - Determines the distance between the element's edge and any outside text
  - Margins for individual sides of an element can be specified by using margin-top, margin-right, margin-left and margin-bottom

Box Model and Text Flow

- Border
  - border-width
    - May be set to any of the CSS lengths or to the predefined value of thin, medium or thick
  - border-color
    - Sets the color used for the border
  - border-style
    - Options are: none, hidden, dotted, dashed, solid, double, groove, ridge, inset and outset
- CSS controls the border using three properties: border-width, border-color and border-style.

Box

```
!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Borders</title>
        <style type = "text/css">
            div      { text-align: center;
                       width: 50%;
                       position: relative;
                       left: 25%;
                       border-width: 6px; }
            .thick  { border-width: thick; }
            .medium { border-width: medium; }
            .thin   { border-width: thin; }
            .solid  { border-style: solid; }
            .double { border-style: double; }
            .groove { border-style: groove; }
            .ridge  { border-style: ridge; }
            .dotted { border-style: dotted; }
            .inset  { border-style: inset; }
            .outset { border-style: outset; }
            .dashed { border-style: dashed; }
            .red    { border-color: red; }
            .blue   { border-color: blue; }
        </style>
    </head>
    <body>
        <div class = "solid">Solid border</div><hr>
        <div class = "double">Double border</div><hr>
        <div class = "groove">Groove border</div><hr>
        <div class = "ridge">Ridge border</div><hr>
        <div class = "dotted">Dotted border</div><hr>
        <div class = "inset">Inset border</div><hr>
        <div class = "thick dashed">Thick dashed border</div><hr>
        <div class = "thin red solid">Thin red solid border</div><hr>
        <div class = "medium blue outset">Medium blue outset border</div>
    </body>
</html>
```

Solid border

Double border

25%   Groove border

Ridge border

Dotted border

Inset border

Thick dashed border

Thin red solid border

Medium blue outset border

50%

54

Box

```html
<!DOCTYPE html>
<html>
   <head>
      <meta charset = "utf-8">
      <title>Flowing Text Around Floating Elements</title>
      <style type = "text/css">
         header   { background-color: SkyBlue;
                    text-align: center;
                    font-family: arial, helvetic
                    padding: .2em; }
         p        { text-align: justify;
                    font-family: verdana, geneva
                    margin: .5em; }
         h1       { margin-top: 0px; }
         .floated { background-color: LightGrey;
                    font-size: 1.5em;
                    font-family: arial, helvetic
                    padding: .2em;
                    margin-left: .5em;
                    margin-bottom: .5em;
                    float: right;
                    text-align: right;
                    width: 50%; }
         section { border: 1px solid skyBlue; }
      </style>
   </head>
   <body>
      <header><img src = "deitel.png" alt = "Deitel" /></header>
      <section>
         <h1 class = "floated">Corporate Training and Authoring</h1>
         <p>Deitel  Associates, Inc. is an internationally recognized corporate training and authoring
         organization specializing in programming languages, Internet/web technology, iPhone and Android
         app development and object technology education. The company provides courses on Java, C++, C#,
         Visual Basic, C, Internet and web programming, Object Technology and iPhone and Android app
         development.</p>
      </section>
      <section>
         <h1 class = "floated">Programming Books and Videos</h1>
         <p>Through its publishing partnership with Pearson, Deitel  Associates, Inc. publishes
         leading-edge programming textbooks, professional books and interactive web-based and DVD
         LiveLessons video courses.</p>
      </section>
   </body>
</html>
```
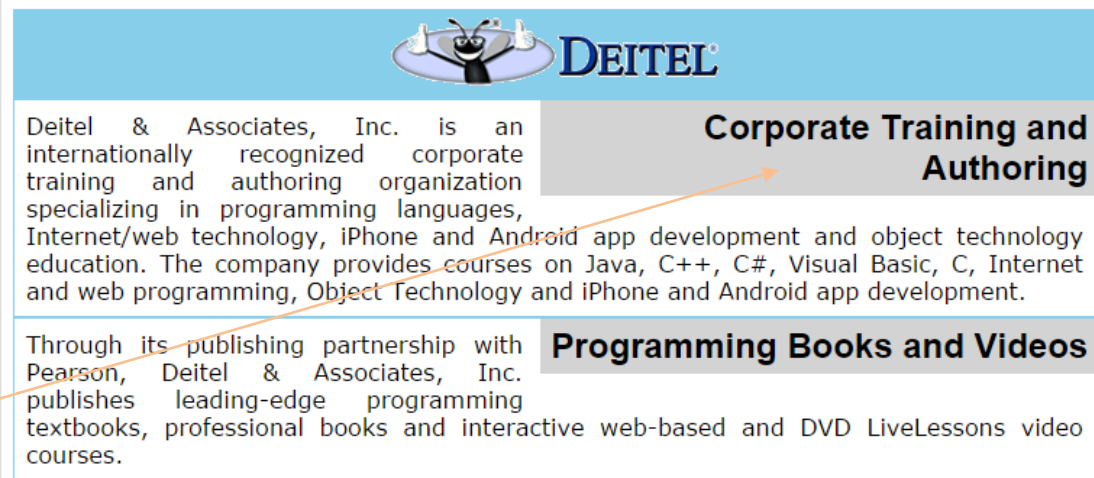
```
<style type = "text/css">
   header    { background-color: SkyBlue;
               text-align: center;
               font-family: arial, helvetica, sans-serif;
               padding: .2em; }
   p         { text-align: justify;
               font-family: verdana, geneva, sans-serif;
               margin: .5em; }
   h1        { margin-top: 0px; }
   .floated { background-color: LightGrey;
               font-size: 1.5em;
               font-family: arial, helvetica, sans-serif;
               padding: .2em;
               margin-left: .5em;
               margin-bottom: .5em;
               float: right;
               text-align: right;
               width: 50%; }
   section { border: 1px solid skyBlue; }
</style>
```

.5em

0px

.2em

Corporate Training and Authoring

Deitel & Associates, Inc. is an internationally recognized corporate training and authoring organization specializing in programming languages, Internet/web technology, iPhone and Android app development and object technology education. The company provides courses on Java, C++, C#, Visual Basic, C, Internet and web programming, Object Technology and iPhone and Android app development.

.5em

.5em

.5em

.5em

Through its publishing partnership with Pearson, Deitel & Associates, Inc. publishes leading-edge programming textbooks, professional books and interactive web-based and DVD LiveLessons video courses.

Programming Books and Videos

Box Model and Text Flow

- float
  - Floating allows you to move an element to one side of the screen; other content in the document then flows around the floated element.
    - none
    - left
    - right
  - Absolutely positioned elements ignores the float property!

Padding / Margin

- Padding
  - padding-top, padding-right, padding-left and padding-bottom
- Margin
  - margin-top, margin-right, margin-left and margin-bottom
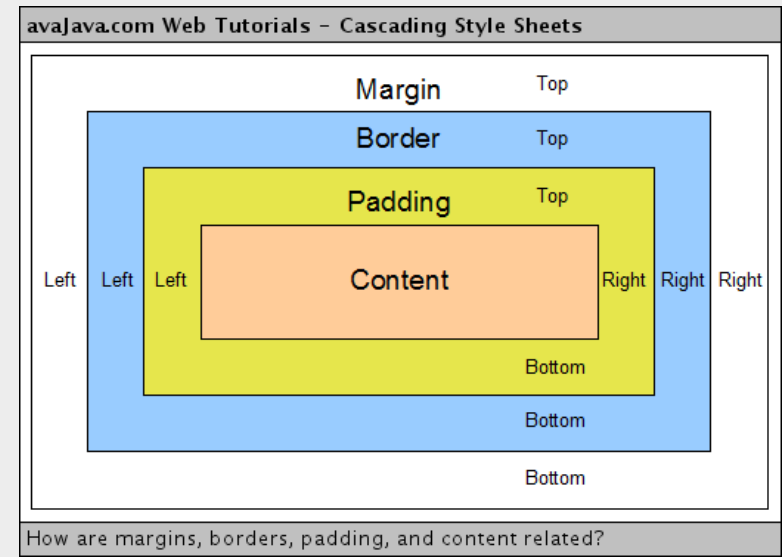
padding: 20px;
/* 上下左右皆 20px */

padding: 16px 20px;
/* 上下 16px，左右 20px */

padding: 10px 30px 20px;
/* 上 10px，左右 30px, 下 20px */

padding: 10px 3px 30px 5px;
/* 依序圍上、右、下、左，順時針方向 */

avaJava.com Web Tutorials – Cascading Style Sheets

Margin — Top

Border — Top

Padding — Top

Left Left Left | Content | Right Right Right

Bottom

Bottom

Bottom

How are margins, borders, padding, and content related?

Padding / Margin

```
padding: 10px                   /* 上下左右皆 10px */
padding: 10px 20px              /* 上下 10px 左右 20px */
padding: 10px 20px 30px         /* 上 10px 左右 20px 下 30px */
padding: 10px 20px 30px 40px    /* 上 10px 右 20px 下 30px 左 40px */
```

```
margin: 10px                    /* 上下左右皆 10px */
margin: 10px 20px               /* 上下 16px ，左右 20px */
margin: 10px 20px 30px          /* 上 10px 左右 20px 下 30px */
margin: 10px 20px 30px 40px     /* 上 10px 右 20px 下 30px 左 40px */
margin: 10px auto               /* 上下 10px 左右由瀏覽器設定 */
margin: auto                    /* 由瀏覽器設定 */
```

```
padding : 20px 40px 60px 80px;
```


20px

80px

40px

60px

Deitel & Associates, Inc., is an internationally recognized authoring and corporate training organization. The company offers instructor-led courses delivered at client sites worldwide on programming languages and other software topics such as C++, Visual C++®, C, Java™, C#®, Visual Basic®, Objective-C®, XML®, Python®, JavaScript, object technology, Internet and web programming, and Android and iPhone app development.

Padding / Margin

- Chrome
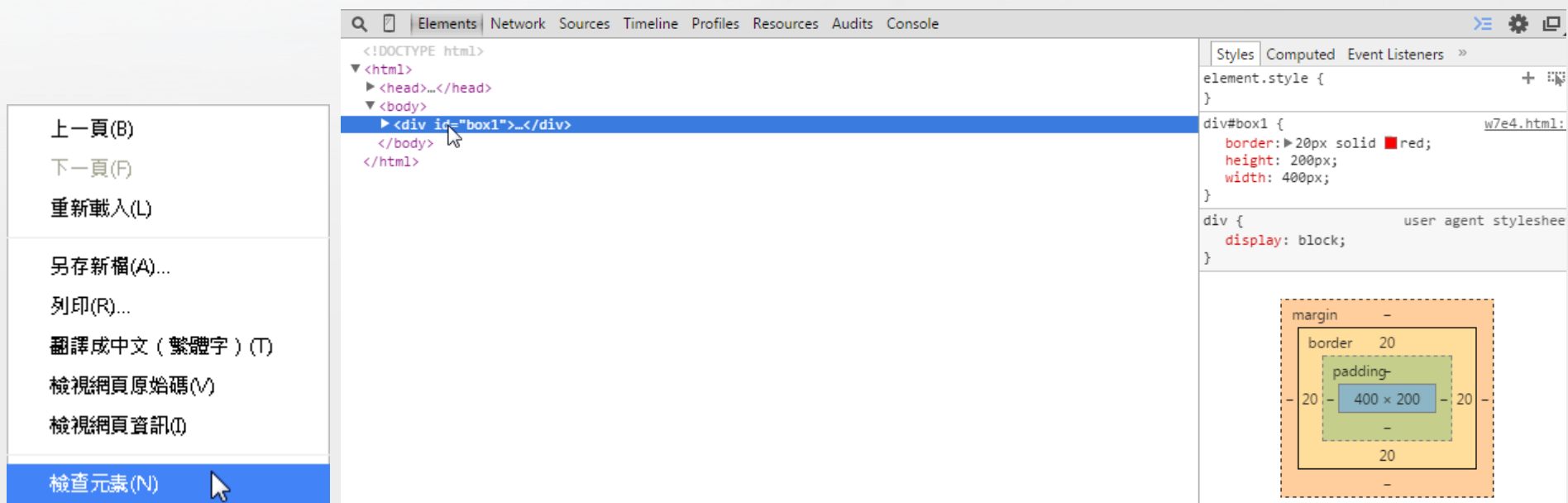
Padding / Margin

```
 div#box1
{
    border: 20px solid red;
    height : 200px;
    width : 400px;
    padding : 25px;
}
div#box2
{
    border: 20px solid yellow;
    height :…;
    width : …;
}
```

```
<div id = "box1">
    <div id = "box2">
    </div>
</div>
```
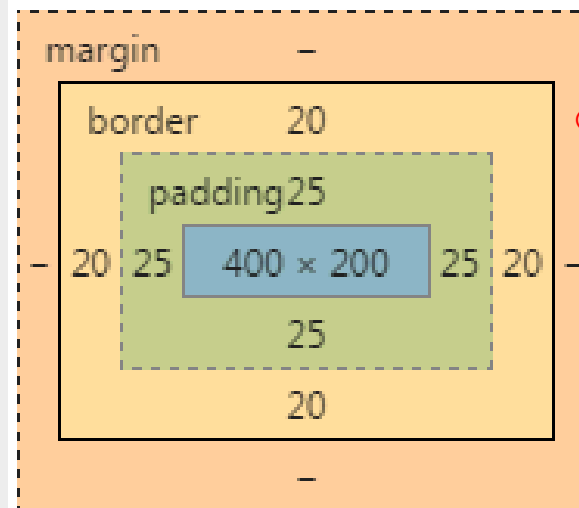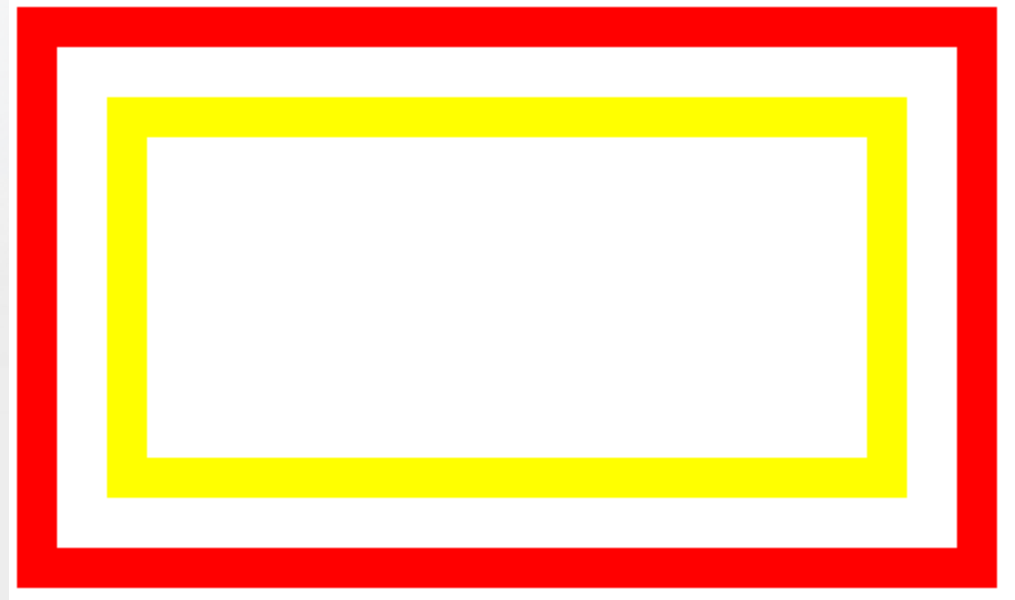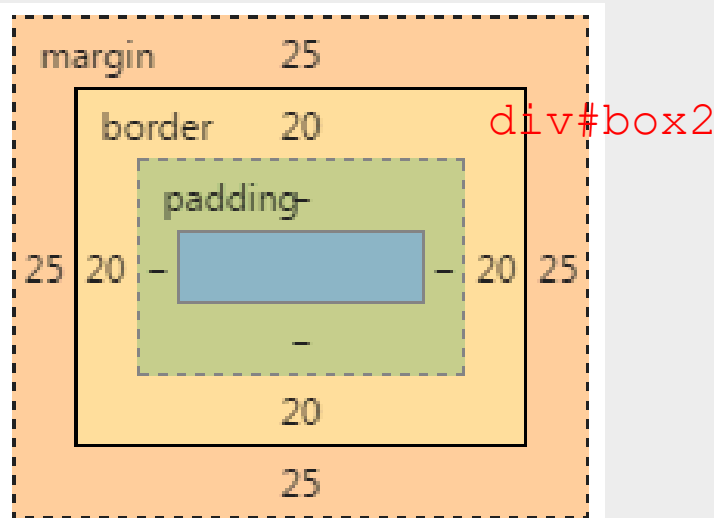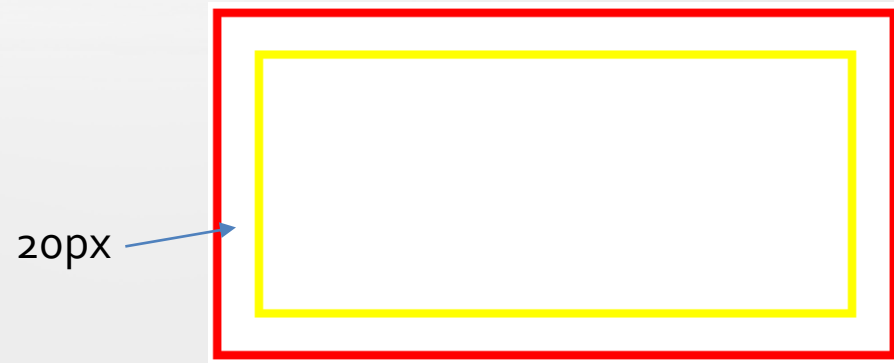
div#box1

Padding / Margin

```
 div#box1
{
    border: 20px solid red;
    height : 200px;
    width : 400px;
}
div#box2
{
    border: 20px solid yellow;
    margin: 25px;
    height :…;
    width : …;
}
```

```
<div id = "box1">
    <div id = "box2">
    </div>
</div>
```

Exercise

- Hint :
  - padding or margin
  - <div id="box1"> <div id="box2"></div></div>

20px →

```
box1 {
        width : 400px;
        height: 200px;
        border : 5px solid red;
        …
      }
box2 {
        border : 5px solid yellow;
        …
      }
```
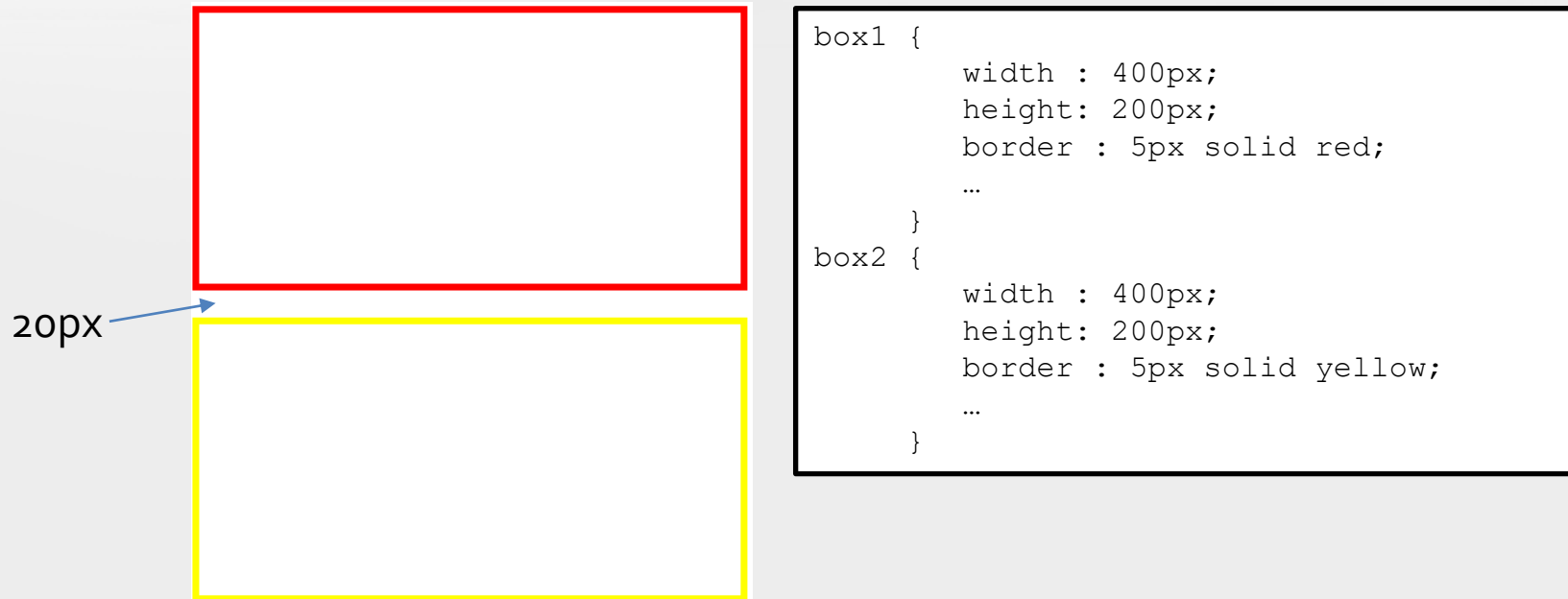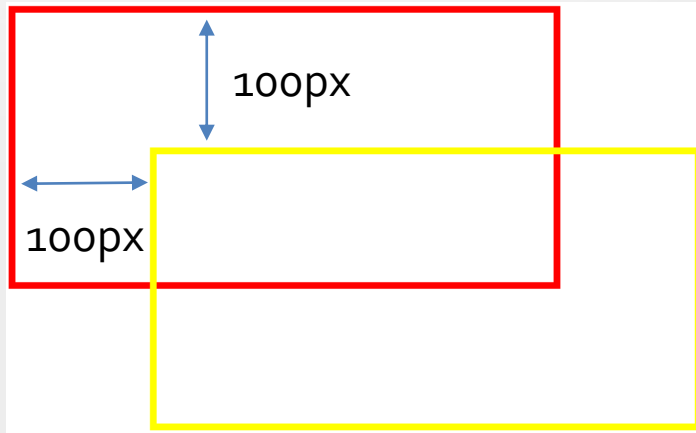
W3C box model

Margin
Border
Padding
Content
width

Internet Explorer box model

Margin
Border
Padding
Content
width

Exercise

- Hint :
  - padding or margin
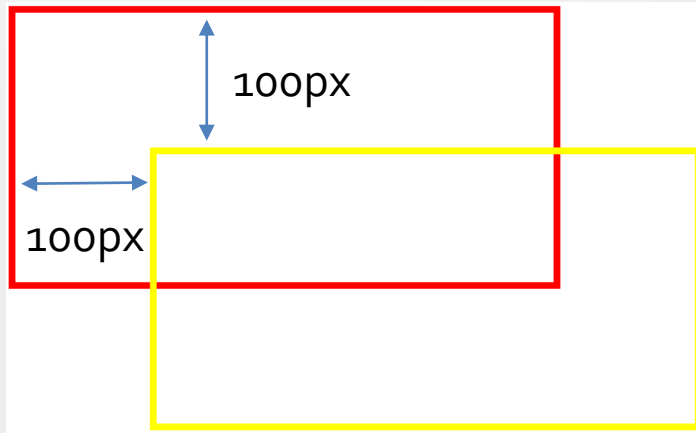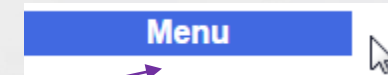 - <div id="box1"></div><div id="box2"></div>

```
box1 {
        width : 400px;
        height: 200px;
        border : 5px solid red;
        …
     }
box2 {
        width : 400px;
        height: 200px;
        border : 5px solid yellow;
        …
     }
```

20px
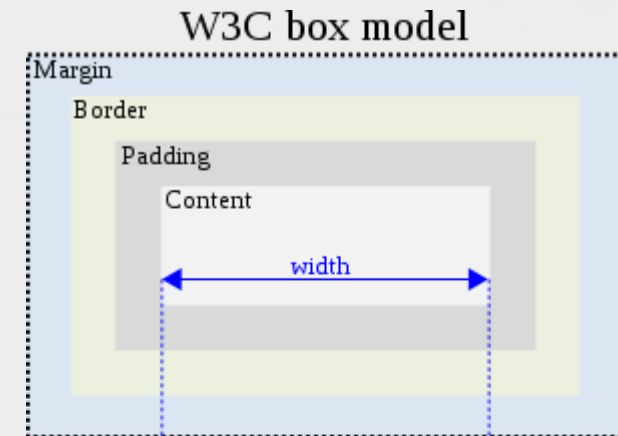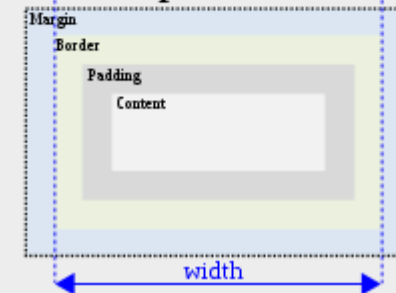
Exercise

- Hint :
  - position
  - <div id="box1"> </div><div id="box2"></div>


```
box1 {
        width : 400px;
        height: 200px;
        border : 5px solid red;
        …
    }
box2 {
        width : 400px;
        height: 200px;
        border : 5px solid yellow;
        …
    }
```

Exercise

- Hint :
  - padding or margin
  - <div id="box1"> </div><div id="box2"></div>


```
box1 {
        width : 400px;
        height: 200px;
        border : 5px solid red;
        …
     }
box2 {
        width : 400px;
        height: 200px;
        border : 5px solid yellow;
        …
     }
```

Drop

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Drop-Down Menu</title>
        <style type = "text/css">
            body                { font-family: arial, sans-serif }
            nav                 { font-weight: bold;
                                  color: white;
                                  border: 2px solid RoyalBlue;
                                  text-align: center;
                                  width: 10em;
                                  background-color: RoyalBlue; }
            nav ul              { display: none;
                                  list-style: none;
                                  margin: 0;
                                  padding: 0; }
            nav:hover ul        { display: block; }
            nav ul li           { border-top: 2px solid RoyalBlue;
                                  background-color: white;
                                  width: 10em;
                                  color: black; }
            nav ul li:hover     { background-color: PowderBlue; }
            a                   { text-decoration: none; }
        </style>
    </head>
    <body>
        <nav>Menu
            <ul>
                <li><a href = "#">Home</a></li>
                <li><a href = "#">News</a></li>
                <li><a href = "#">Articles</a></li>
                <li><a href = "#">Blog</a></li>
                <li><a href = "#">Contact</a></li>
            </ul>
        </nav>
    </body>
</html>
```
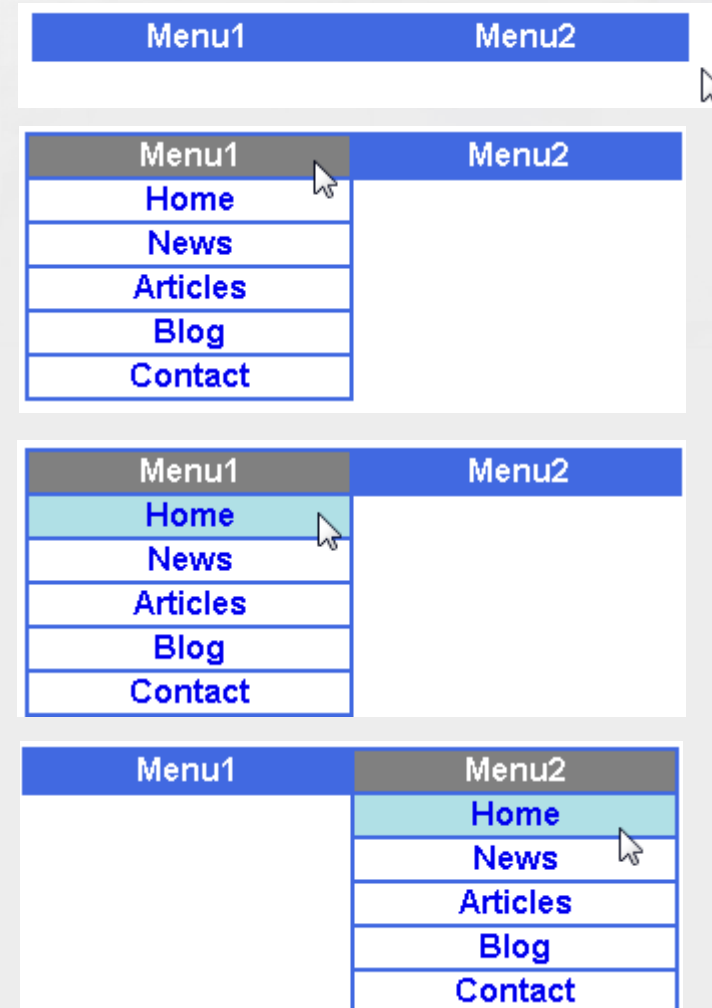
Drop-Down Menus

- display property
  - block
    - Displays an element as a block element (like <p>)
  - inline
    - Displays an element as an inline element (like)
  - none
    - The element will not be displayed at all

Exercise

- Hint :
  - float
  - a:hover
  - display

Media Types and Media Queries

- CSS media types
- allow you to decide what a page should look like depending on the kind of media being used to display the page
- Most common media type for a web page is the screen media type, which is a standard computer screen

Med

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Media Types</title>
        <style type = "text/css">
            @media all
            {
                body    { background-color: SteelBlue; }
                h1      { font-family: verdana, helvetica, sans-serif;
                          color: PaleGreen; }
                p       { font-size: 12pt;
                          color: white;
                          font-family: arial, sans-serif; }
            } /* End @media all declaration. */
            @media print
            {
                body    { background-color: white; }
                h1      { color: SeaGreen; }
                p       { font-size: 14pt;
                          color: SteelBlue;
                          font-family: "times new roman", times, serif; }
            } /* End @media print declaration. */
        </style>
    </head>
    <body>
        <h1>CSS Media Types Example</h1>
        <p>
            This example uses CSS media types to vary how the page appears in print and how it
            appears on any other media. This text will appear in one font on the screen and a
            different font on paper or in a print preview. To see the difference in Internet
            Explorer, go to the Print menu and select Print Preview. In Firefox, select Print
            Preview from the File menu.
        </p>
    </body>
</html>
```

CSS Media Types Example

This example uses CSS media types to vary how the page appears in print and how it appears on any other media. This text will appear in one font on the screen and a different font on paper or in a print preview. To see the difference in Internet Explorer, go to the Print menu and select Print Preview. In Firefox, select Print Preview from the File menu.

CSS Media Types Example

This example uses CSS media types to vary how the page appears in print and how it appears on any other media. This text will appear in one font on the screen and a different font on paper or in a print preview. To see the difference in Internet Explorer, go to the Print menu and select Print Preview. In Firefox, select Print Preview from the File menu.

Media Types and Media Queries

- Media Types
  - all
    - all media type devices
  - handheld
    - small or mobile Internet devices
  - print
    - printers
  - screen
    - standard computer screen

Media Types and Media Queries

- Media Types
  - speech
    - speech and sound synthesizers
  - braille
    - braille tactile feedback devices
  - embossed
    - paged braille printers
  - projection
    - projected presentations, like slides
  - tty
    - media using a fixed-pitch character grid, like teletypes and terminals
  - tv
    - television-type devices

Media Types and Media Queries

Look-and-Feel Observation 4.1

Pages with dark background colors and light text use a lot of ink and may be difficult to read when printed, especially on a black-and white-printer. Use the `print` media type to avoid this.

Look-and-Feel Observation 4.2

In general, sans-serif fonts look better on a screen, while serif fonts look better on paper. The `print` media type allows your web page to display a sans-serif font on a screen and change to a serif font when it's printed.

Media Types and Media Queries

- Allow you to format your content to specific output devices.
- Include a media type and expressions that check the media features of the output device.
- IE8- not supported

Ref: http://caniuse.com/#feat=css-mediaqueries

Med

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Media Types</title>
        <style type = "text/css">
          @media screen
      {
            body   { background-color: SteelBlue; }
            h1     { font-family: verdana, helvetica, sans-serif;
                     color: PaleGreen; }
            p      { font-size: 12pt;
                     color: white;
                     font-family: arial, sans-serif; }
        } /*for PC*/
        @media screen and (device-width: 375px) and (device-height: 812px) and (-webkit-device-pixel-ratio: 3)
        {
            body   { background-color: pink; }
            h1     { color: SeaGreen; }
            p      { font-size: 14pt;
                     color: SteelBlue;
                     font-family: "times new roman", times, serif; }
        }/* for iphone X, iphone 12 mini*/
        @media screen and (device-width: 394px) and (device-height: 844px) and (-webkit-device-pixel-ratio: 3)
        {
            body   { background-color: LightGrey ; }
            h1     { color: white; }
            p      { font-size: 14pt;
                     color: DarkBlue;
                     font-family: "times new roman", times, serif; }
        } /* for iphone 13*/
        </style>
    </head>
    <body>
        <h1>CSS Media Types Example</h1>
        <p>TEST STYLE</p>
    </body>
</html>
```

CSS Media Types Example

TEST STYLE

CSS Media Types Example

TEST STYLE

CSS Media Types Example

TEST STYLE

Media Types and Media Queries

- Common media features
  - width / height with max/min prefix
    - the width / height of the part of the screen on which the document is rendered, including any scrollbars
  - device-width / device-height with max/min prefix
    - the width / height of the screen of the output device
  - orientation
    - if the height is greater than the width, orientation is portrait, and if the width is greater than the height, orientation is landscape
  - aspect-ratio with max/min prefix
    - the ratio of width to height
  - device-aspect-ratio with max/min prefix
    - the ratio of device-width to device-height

Media Types and Media Queries

- WebKit is a layout engine software component for rendering web pages in web browsers. It powers Apple's Safari web browser and was previously used in Google's Chrome web browser.

Media Types and Media Queries

- Specific device
  - http://cssmediaqueries.com/target/
  - https://webdevpuneet.com/iphone-x-8-8-plus-media-queries-css/
  - https://css-tricks.com/snippets/css/media-queries-for-standard-devices/

- An example for mobile :

```
@media screen and (min-device-width: 200px) and (max-device-width: 600px)
/* 200px < device-width < 600px */
```

Browser Detect

- Use Javascript
  - http://www.quirksmode.org/js/detect.html

- Use HTML
  - https://msdn.microsoft.com/en-us/library/ms537512(VS.85).aspx#dlrevealed

Browser Detect

```html
<!DOCTYPE html>
<html>
    <head>
        <meta charset = "utf-8">
        <title>Browser Detect</title>
    </head>
    <body>
<!--[if IE]> Don't use IE <![endif]-->
<!--[if !IE]><!--> Welcome <!--<![endif]-->
    </body>
</html>
```
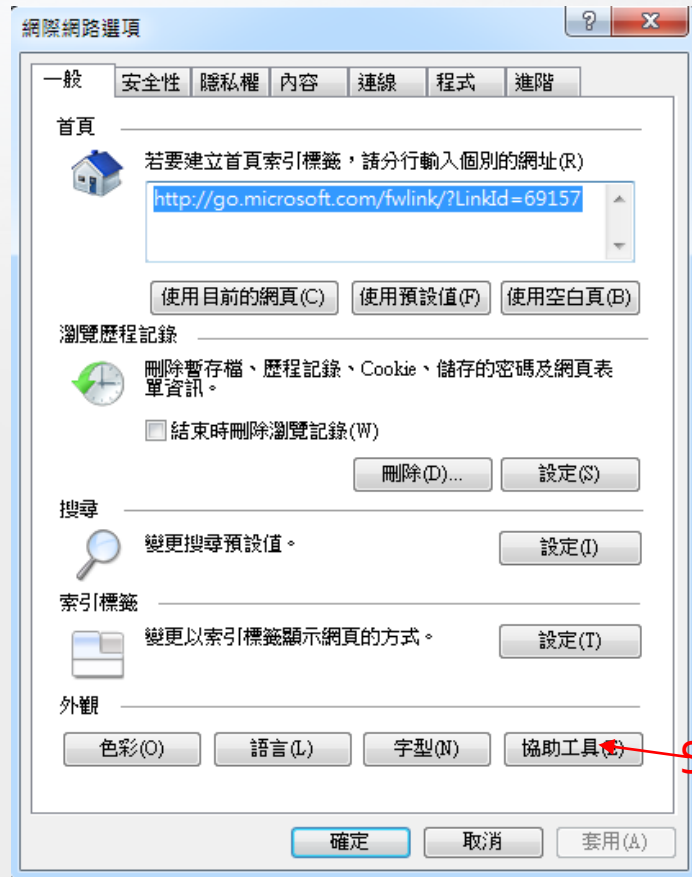

Don't use IE

Welcome
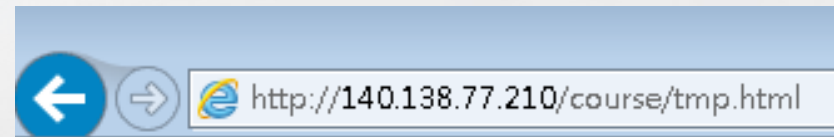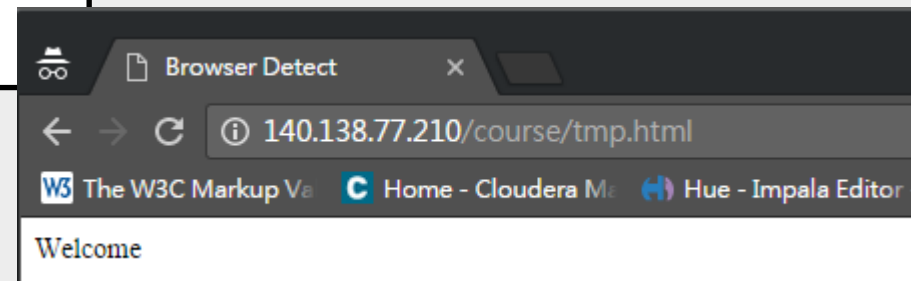
User Style Sheets

- Users can define their own user style sheets to format pages based on their preferences
- Absolute font size measurements override user style sheets, while relative font sizes will yield to a user-defined style
- User style sheets are not linked to a document; rather, they are set in the browser's options

User Style Sheets
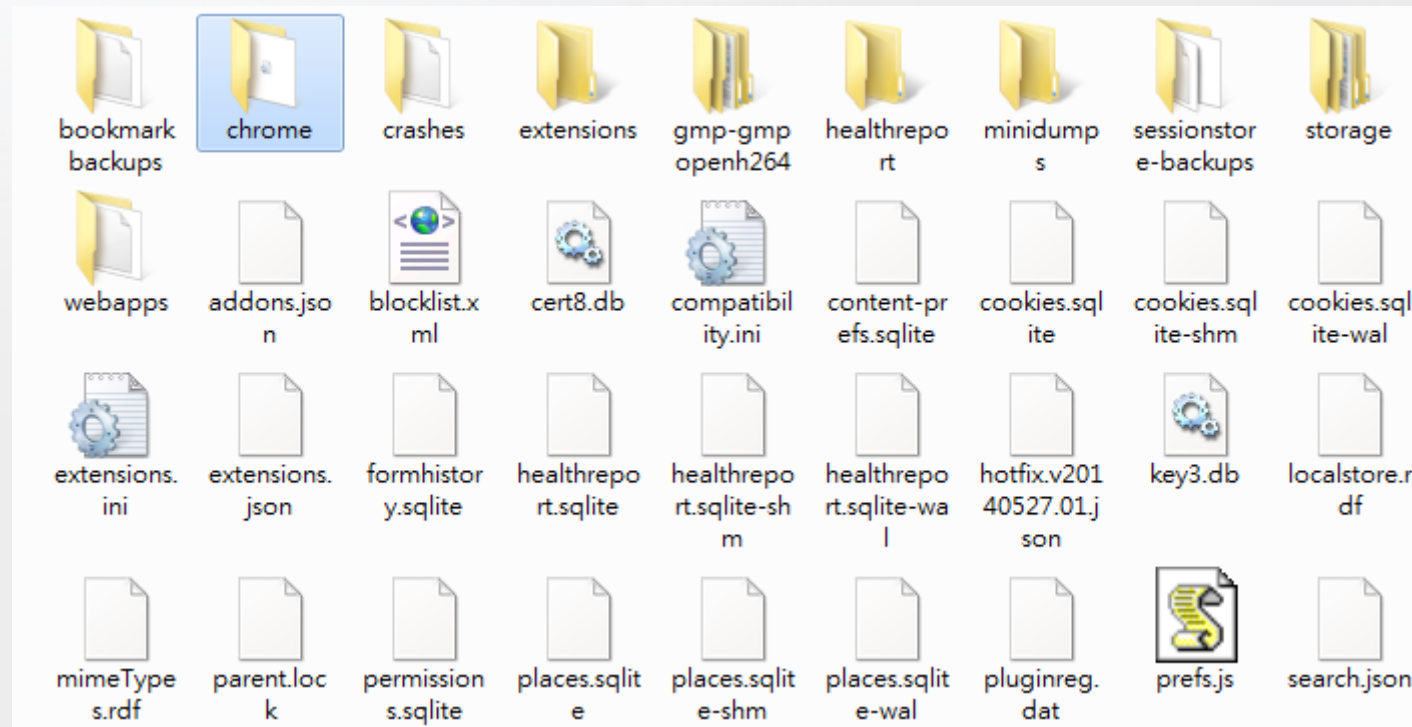
- IE

Step 1: click

Step 2: click

User Style Sheets
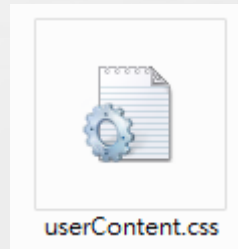
- Firefox

User Style Sheets

- Firefox

Step3: add the folder "chrome" and then open it

User Style Sheets

- Firefox
  - Step 4:
    - Edit your style sheets and name as "userContent.css"

userContent.css

  - Step 5:
    - Reopen Firefox

User Style Sheets

- Chrome :
  - User style sheets support removed in Chrome 33+

User Style Sheets

```
<!DOCTYPE html>
<html>
   <head>
      <meta charset = "utf-8">
      <title>User Styles</title>
      <style type = "text/css">
         .note { font-size: 9pt; }
      </style>
   </head>
   <body>
      <p>Thanks for visiting my website. I hope you enjoy it. </p>
      <p class = "note">Please Note: This site will be
         moving soon. Please check periodically for updates.</p>
   </body>
</html>
```

userstyle.css

```
body       { font-size: 20pt;
             color: yellow;
             background-color: Navy; }
```

Thanks for visiting my website. I hope you enjoy it.

Please Note: This site will be moving soon. Please check periodically for updates.

Thanks for visiting my website. I hope you enjoy it.

Please Note: This site will be moving soon. Please check periodically for updates.

User Style Sheets

```html
<!DOCTYPE html>
<html>
   <head>
      <meta charset = "utf-8">
      <title>User Styles</title>
      <style type = "text/css">
         .note { font-size: .75em; }
      </style>
   </head>
   <body>
      <p>Thanks for visiting my website. I hope you enjoy it. </p>
      <p class = "note">Please Note: This site will be
         moving soon. Please check periodically for updates.</p>
   </body>
</html>
```

userstyle.css

```css
body      { font-size: 20pt;
            color: yellow;
            background-color: Navy; }
```

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Q&A