

The background is a gradient of red and purple with abstract geometric patterns. On the left side, there are several concentric circles and arcs, some with degree markings ranging from 40 to 260. The main title is centered on the right side in a large, white, sans-serif font.

# AJAX 程式設計

# AJAX PROGRAMMING

# DESIGN

**張家瑋** 博士

助理教授

國立臺中科技大學資訊工程系



# BASIC HTML5 & CSS

H  
T  
M  
L  
5

CSS

# HTML5

- HTML的標籤是成對的
  - 「屬性」 ( property ) 和「值」 ( value )
- HTML5的主要差異
  - 可以開 WebSocket
  - 多了 Video、Canvas等標籤
  - Web storage
    - key-value pair 存字串
    - 類似 cookie (4KB) 但有5MB
    - local(可跨分頁)、session

```
<!DOCTYPE html>
<html>
<!-- created 2010-01-01 -->
<head>
  <title>sample</title>
</head>
<body>
  <p>Voluptatem accusantium
  totam rem aperiam.</p>
</body>
</html>
```

# CSS

- 裝飾HTML標籤的語言
  - 顏色、字型、排版、動畫、自適應
  - 選擇器 (selector)
    - 針對 tag
    - 針對 id (#id)
    - 針對 class (.class)
- CSS3
  - 加強動畫效果
  - 3D 效果
- 自學資源
  - Bootstrap
  - <http://zh-tw.learnlayout.com/>

```
h1 { color: white;
      background: orange;
      border: 1px solid black;
      padding: 0 0 0 0;
      font-weight: bold;
}
/* begin: seaside-theme */

body {
  background-color: white;
  color: black;
  font-family: Arial, sans-serif;
  margin: 0 4px 0 0;
  border: 12px solid;
}
```



# JAVASCRIPT

- 讓HTML可以產生互動 (基本)
  - Browser Object Model, 如 DOM 的概念
  - Loop、Conditions
- 讓HTML可以產生互動 (進階)
  - AJAX, jQuery
  - Animations
  - Events

```
<!DOCTYPE html>
<html>
<body>

<p>Click the button to loop through a block of code five times.</p>

<button onclick="myFunction()">Try it</button>

<p id="demo"></p>

<script>
function myFunction() {
  var text = "";
  var i;
  for (i = 0; i < 5; i++) {
    text += "The number is " + i + "<br>";
  }
  document.getElementById("demo").innerHTML = text;
}
</script>

</body>
</html>
```

# HTML5 提供的API

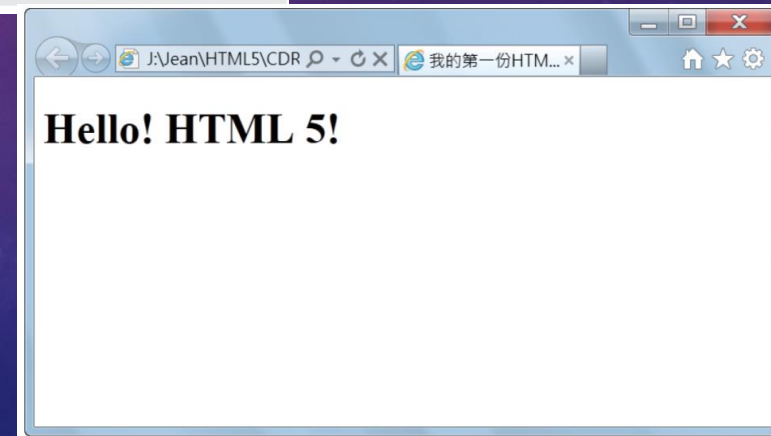
1. Video/Audio API ( 影音多媒體)
2. Canvas API ( 繪圖)
3. Drag and Drop API ( 拖放操作)
4. Web Storage API ( 網頁儲存)
5. Web SQL Database ( 網頁SQL 資料庫)
6. Indexed Database API ( 索引資料庫)
7. Geolocation API ( 地理定位)
8. File API ( 用戶端檔案存取)
9. Communication API ( 跨文件通訊)
10. Web Workers API ( 背景執行)
11. Web Sockets API ( 用戶端與伺服器端的雙向通訊)
12. XMLHttpRequest Level 2 (Ajax 技術)
13. Server-Sent Events ( 伺服器端的資料推播)

# HTML5-基礎結構

```
01:<!doctype html> — DOCTYPE
02:<html>
03:  <head>
04:    <meta charset="utf-8">
05:    <title> 我的第一份 HTML5 文件 </title>
06:  </head>
07:  <body>
08:    <h1>Hello! HTML 5!</h1>
09:  </body>
10:</html>
```

HTML 文件的標頭

HTML 文件的主體



# HTML5-文字

```
<p>聽風在唱 </p>
```

```
<p><font size="1" color="green" face=" 微軟正黑體 ">聽風在唱 </font></p>
```

```
<p><font size="2" color="purple" face=" 微軟正黑體 ">聽風在唱 </font></p>
```

```
<p><font size="3" color="red" face=" 標楷體 ">聽風在唱 </font></p>
```

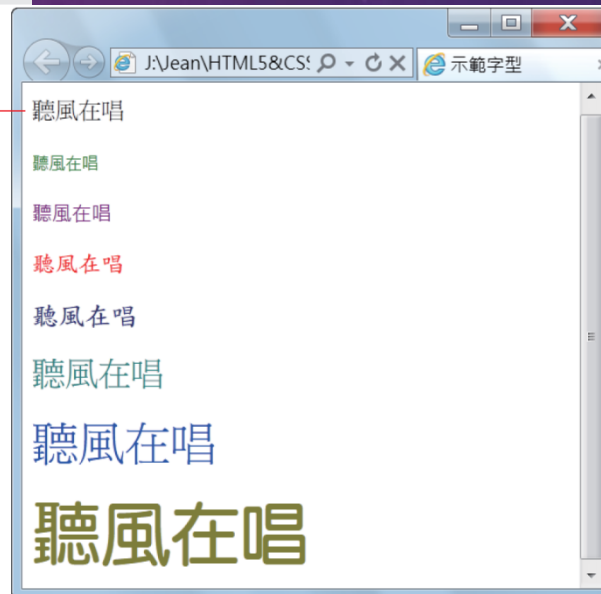
```
<p><font size="4" color="navy" face=" 標楷體 ">聽風在唱 </font></p>
```

```
<p><font size="5" color="teal" face=" 新細明體 ">聽風在唱 </font></p>
```

```
<p><font size="6" color="blue" face=" 新細明體 ">聽風在唱 </font></p>
```

```
<p><font size="7" color="olive" face=" 華康粗圓體 ">聽風在唱 </font></p>
```

預設的文字格式  
為 3 級大小、  
黑色、細明體





# HTML5-ID屬性 (I)

## Example

Use CSS to style an element with the id "myHeader":

```
<style>
#myHeader {
    background-color: lightblue;
    color: black;
    padding: 40px;
    text-align: center;
}
</style>

<h1 id="myHeader">My Header</h1>
```

Result:

My Header

# HTML5-ID屬性 (II)

```
<!DOCTYPE html>
<html>
<body>

<h2>Using The id Attribute in JavaScript</h2>
<p>JavaScript can access an element with a specified id by using the getElementById() method:</p>

<h1 id="myHeader">Hello World!</h1>
<button onclick="displayResult()">Change text</button>

<script>
function displayResult() {
    document.getElementById("myHeader").innerHTML = "Have a nice day!";
}
</script>

</body>
</html>
```

## Using The id Attribute in JavaScript

JavaScript can access an element with a specified id by using the `getElementById()` method:

## Hello World!

Change text

# HTML5-CLASS屬性 (I)

```
<!DOCTYPE html>
<html>
<head>
<style>
/* Style the element with the id "myHeader" */
#myHeader {
  background-color: lightblue;
  color: black;
  padding: 40px;
  text-align: center;
}

/* Style all elements with the class name "city" */
.city {
  background-color: tomato;
  color: white;
  padding: 10px;
}
</style>
</head>
<body>

<h2>Difference Between Class and ID</h2>
<p>An HTML page can only have one unique id applied to one specific element, while a class name can be applied to multiple elements.</p>

<!-- A unique element -->
<h1 id="myHeader">My Cities</h1>

<!-- Multiple similar elements -->
<h2 class="city">London</h2>
<p>London is the capital of England.</p>

<h2 class="city">Paris</h2>
<p>Paris is the capital of France.</p>

<h2 class="city">Tokyo</h2>
<p>Tokyo is the capital of Japan.</p>

</body>
</html>
```

## Difference Between Class and ID

An HTML page can only have one unique id applied to one specific element, while a class name can be applied to multiple elements.

### My Cities

#### London

London is the capital of England.

#### Paris

Paris is the capital of France.

#### Tokyo

Tokyo is the capital of Japan.

# HTML5-CLASS屬性 (II)

```
<!DOCTYPE html>
<html>
<style>
.city {
  background-color: tomato;
  color: white;
  padding: 10px;
}

.main {
  text-align: center;
}
</style>
<body>

<h2>Multiple Classes</h2>
<p>All three headers have the class name "city". In addition, London also have the class name "main", which center-aligns the text.</p>

<h2 class="city main">London</h2>
<h2 class="city">Paris</h2>
<h2 class="city">Tokyo</h2>

</body>
</html>
```

## Multiple Classes

All three headers have the class name "city". In addition, London also have the class name "main", which center-aligns the text.

**London**

**Paris**

**Tokyo**



# HTML5-CLASS屬性 (III)

```
<!DOCTYPE html>
<html>
<style>
.city {
  background-color: tomato;
  color: white;
  padding: 10px;
}
</style>
<body>

<h2>Same Class, Different Tag</h2>
<p>Even if the two elements do not have the same tag name, they can have the same class name, and
get the same styling:</p>

<h2 class="city">Paris</h2>
<p class="city">Paris is the capital of France.</p>

</body>
</html>
```

## Same Class, Different Tag

Even if the two elements do not have the same tag name, they can have the same class name, and get the same styling:

Paris

Paris is the capital of France.

# HTML5-CLASS屬性 (IV)

```
<!DOCTYPE html>
<html>
<body>

<h2>Using The class Attribute in JavaScript</h2>
<p>Click the button, to hide all elements with the class name "city", with JavaScript:</p>

<button onclick="myFunction()">Hide elements</button>

<h2 class="city">London</h2>
<p>London is the capital of England.</p>

<h2 class="city">Paris</h2>
<p>Paris is the capital of France.</p>

<h2 class="city">Tokyo</h2>
<p>Tokyo is the capital of Japan.</p>

<script>
function myFunction() {
  var x = document.getElementsByClassName("city");
  for (var i = 0; i < x.length; i++) {
    x[i].style.display = "none";
  }
}
</script>

</body>
</html>
```

## Using The class Attribute in JavaScript

Click the button, to hide all elements with the class name "city", with JavaScript:

Hide elements

### London

London is the capital of England.

### Paris

Paris is the capital of France.

### Tokyo

Tokyo is the capital of Japan.

# HTML5-超連結 (I)

```
<!DOCTYPE html>
<html>
<body>

<h2>HTML Links</h2>
<p><a href="https://www.w3schools.com/html/">Visit our HTML tutorial</a></p>

</body>
</html>
```

## HTML Links

[Visit our HTML tutorial](https://www.w3schools.com/html/)

# HTML5-超連結 (II)

```
<!DOCTYPE html>
<html>
<body>

<h2>Local Links</h2>

<p><a href="html_images.asp">HTML Images</a> is a link to a page on this website.</p>

<p><a href="https://www.w3.org/">W3C</a> is a link to a website on the World Wide Web.</p>

</body>
</html>
```

## Local Links

[HTML Images](#) is a link to a page on this website.

[W3C](https://www.w3.org/) is a link to a website on the World Wide Web.



# HTML5-超連結 (IV)

```
<!DOCTYPE html>
<html>
<body>

<h2>Image Links</h2>

<p>The image is a link. You can click on it.</p>

<a href="default.asp">
  
</a>

<p>We have added "border:0" to prevent IE9 (and earlier) from displaying a border around the
image.</p>

</body>
</html>
```

## Image Links

The image is a link. You can click on it.



We have added "border:0" to prevent IE9 (and earlier) from displaying a border around the image.

# HTML5-ID屬性+超連結

```
<!DOCTYPE html>
<html>
<body>

<p><a href="#C4">Jump to Chapter 4</a></p>

<h2>Chapter 1</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 2</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 3</h2>
<p>This chapter explains ba bla bla</p>

<h2 id="C4">Chapter 4</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 5</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 6</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 7</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 8</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 9</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 10</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 11</h2>
<p>This chapter explains ba bla bla</p>

<h2>Chapter 12</h2>
<p>This chapter explains ba bla bla</p>
```

[Jump to Chapter 4](#)

## Chapter 1

This chapter explains ba bla bla

## Chapter 2

This chapter explains ba bla bla

## Chapter 3

This chapter explains ba bla bla

## Chapter 4

This chapter explains ba bla bla

## Chapter 5

This chapter explains ba bla bla

## Chapter 6

This chapter explains ba bla bla

## Chapter 7

This chapter explains ba bla bla

## Chapter 8

This chapter explains ba bla bla

## Chapter 9

# HTML5-區塊DIV & SPAN (I)

```
<!DOCTYPE html>
<html>
<body>

<div>Hello</div>
<div>World</div>

<p>The DIV element is a block element, and will start on a new line.</p>

</body>
</html>
```

Hello  
World

The DIV element is a block element, and will start on a new line.

```
<!DOCTYPE html>
<html>
<body>

<span>Hello</span>
<span>World</span>

<p>The SPAN element is an inline element, and will not start on a new line.</p>

</body>
</html>
```

Hello World

The SPAN element is an inline element, and will not start on a new line.

# HTML5-區塊DIV & SPAN (II)

```
<!DOCTYPE html>
<html>
<body>

<h1>My <span style="color:red">Important</span> Heading</h1>

</body>
</html>
```

**My Important Heading**

```
<!DOCTYPE html>
<html>
<body>

<div style="background-color:black;color:white;padding:20px;">
  <h2>London</h2>
  <p>London is the capital city of England. It is the most populous city in the United Kingdom, with a metropolitan area of over 13 million inhabitants.</p>
  <p>Standing on the River Thames, London has been a major settlement for two millennia, its history going back to its founding by the Romans, who named it Londinium.</p>
</div>

</body>
</html>
```

## London

London is the capital city of England. It is the most populous city in the United Kingdom, with a metropolitan area of over 13 million inhabitants.

Standing on the River Thames, London has been a major settlement for two millennia, its history going back to its founding by the Romans, who named it Londinium.



# HTML5-嵌入圖片(I)

```
<!DOCTYPE html>
<html>
<body>

<h2>HTML Image</h2>


</body>
</html>
```

HTML Image



```

```

# HTML5-嵌入圖片(II)

```
<!DOCTYPE html>
<html>
<body>

<h2>Image Size</h2>

<p>Use the style attribute to specify the width and height of an image:</p>


</body>
</html>
```

```

```

## Image Size

Use the style attribute to specify the width and height of an image:



# HTML5-嵌入圖片(III)

```
<!DOCTYPE html>
<html>
<body style="background-image:url('clouds.jpg')">

<h2>Background Image</h2>

<p>By default the background image will repeat itself if it is smaller than the element where it is specified, in this case the BODY element.</p>

</body>
</html>
```

```
<p style="background-image:url('clouds.jpg')">
```

## Background Image

By default the background image will repeat itself if it is smaller than the element where it is specified, in this case the BODY element.





# HTML5-嵌入圖片(IV)

```
<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
<body>

<h2>The picture Element</h2>

<picture>
  <source media="(min-width: 650px)" srcset="img_pink_flowers.jpg">
  <source media="(min-width: 465px)" srcset="img_white_flower.jpg">
  
</picture>

<p>Resize the browser to see different versions of the picture loading at different viewport sizes.
The browser looks for the first source element where the media query matches the user's current viewport width,
and fetches the image specified in the srcset attribute.</p>

<p>The img element is required as the last child tag of the picture declaration block.
The img element is used to provide backward compatibility for browsers that do not support the
picture element, or if none of the source tags matched.
</p>

<p><strong>Note:</strong> The picture element is not supported in IE12 and earlier or Safari 9.0
and earlier.</p>

</body>
</html>
```

## The picture Element



Resize the browser to see different versions of the picture loading at different viewport sizes. The browser looks for the first source element where the media query matches the user's current viewport width, and fetches the image specified in the srcset attribute.

The img element is required as the last child tag of the picture declaration block. The img element is used to provide backward compatibility for browsers that do not support the picture element, or if none of the source tags matched.

**Note:** The picture element is not supported in IE12 and earlier or Safari 9.0 and earlier.



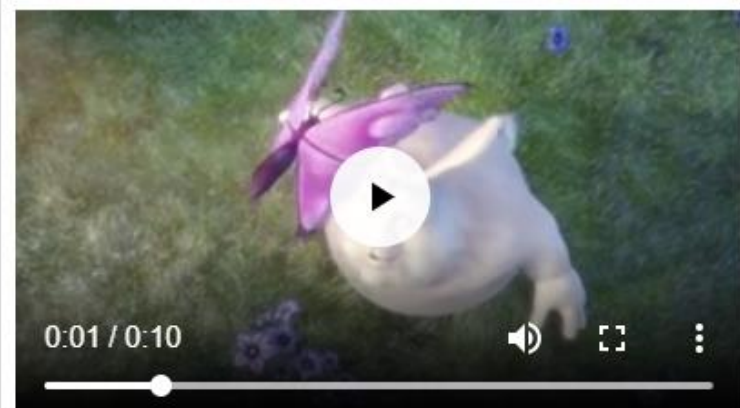
# HTML5-嵌入影片(I)

```
<!DOCTYPE html>
<html>
<body>

<video width="400" controls>
  <source src="mov_bbb.mp4" type="video/mp4">
  <source src="https://www.w3schools.com/html/mov_bbb.mp4" type="video/ogg">
  Your browser does not support HTML5 video.
</video>

<p>
Video courtesy of
<a href="https://www.bigbuckbunny.org/" target="_blank">Big Buck Bunny</a>.
</p>

</body>
</html>
```



Video courtesy of [Big Buck Bunny](https://www.bigbuckbunny.org/).

# HTML5-嵌入影片 (II)

```
<!DOCTYPE html>
<html>
<body>

<video width="320" height="240" autoplay>
  <source src="movie.mp4" type="video/mp4">
  <source src="movie.ogv" type="video/ogg">
  Your browser does not support the video tag.
</video>

<p><b>Note:</b> The autoplay attribute does not work on some mobile devices.</p>

</body>
</html>
```



**Note:** The autoplay attribute does not work on some mobile devices.

# HTML5-嵌入影片 (III)

```
<html>
<body>

<div style="text-align:center">
  <button onclick="playPause()">Play/Pause</button>
  <button onclick="makeBig()">Big</button>
  <button onclick="makeSmall()">Small</button>
  <button onclick="makeNormal()">Normal</button>
  <br><br>
  <video id="video1" width="420">
    <source src="mov_bbb.mp4" type="video/mp4">
    <source src="mov_bbb.ogv" type="video/ogg">
    Your browser does not support HTML5 video.
  </video>
</div>

<script>
var myVideo = document.getElementById("video1");

function playPause() {
  if (myVideo.paused)
    myVideo.play();
  else
    myVideo.pause();
}

function makeBig() {
  myVideo.width = 560;
}

function makeSmall() {
  myVideo.width = 320;
}

function makeNormal() {
  myVideo.width = 420;
}
</script>

<p>Video courtesy of <a href="https://www.bigbuckbunny.org/" target="_blank">Big Buck Bunny</a>.</p>
</body>
</html>
```



Video courtesy of [Big Buck Bunny](https://www.bigbuckbunny.org/).

\*支援 mp4, ogg, WebM

# HTML5-地理位置資訊(I)

```
<!DOCTYPE html>
<html>
<body>

<p>Click the button to get your coordinates.</p>

<button onclick="getLocation()">Try It</button>

<p id="demo"></p>

<script>
var x = document.getElementById("demo");

function getLocation() {
    if (navigator.geolocation) {
        navigator.geolocation.watchPosition(showPosition);
    } else {
        x.innerHTML = "Geolocation is not supported by this browser. ";
    }
}

function showPosition(position) {
    x.innerHTML="Latitude: " + position.coords.latitude +
    "<br>Longitude: " + position.coords.longitude;
}
</script>

</body>
</html>
```

Click the button to get your coordinates.

Try It

Latitude: 24.1513644

Longitude: 120.68479590000001



# HTML5-地理位置資訊(II)

```
<!DOCTYPE html>
<html>
<body>

<p id="demo">Click the button to get your position.</p>

<button onclick="getLocation()">Try It</button>

<div id="mapholder"></div>

<script>
var x = document.getElementById("demo");

function getLocation() {
  if (navigator.geolocation) {
    navigator.geolocation.getCurrentPosition(showPosition, showError);
  } else {
    x.innerHTML = "Geolocation is not supported by this browser.";
  }
}

function showPosition(position) {
  var latlon = position.coords.latitude + "," + position.coords.longitude;
  var img_url = "https://maps.googleapis.com/maps/api/staticmap?center="
    +latlon+"&zoom=14&size=400x300&key=AIzaSyBu-916DdpKAjTmJNIngS6HL_kDIKU0aU";
  document.getElementById("mapholder").innerHTML = "<img src='"+img_url+"'>";
}

//To use this code on your website, get a free API key from Google.
//Read more at: https://www.w3schools.com/graphics/google_maps_basic.asp

function showError(error) {
  switch(error.code) {
    case error.PERMISSION_DENIED:
      x.innerHTML = "User denied the request for Geolocation."
      break;
    case error.POSITION_UNAVAILABLE:
      x.innerHTML = "Location information is unavailable."
      break;
    case error.TIMEOUT:
      x.innerHTML = "The request to get user location timed out."
      break;
    case error.UNKNOWN_ERROR:
      x.innerHTML = "An unknown error occurred."
      break;
  }
}
</script>
</body>
</html>
```

Click the button to get your position.





# THANK YOU

自學資源

- [W3SCHOOLS](#)
- [CODECADEMY](#)