

物件

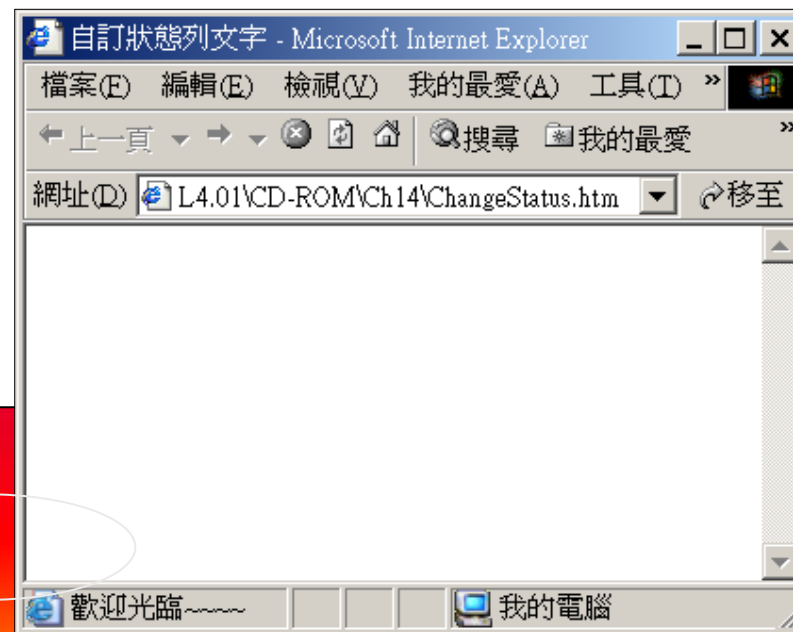
13-1 物件導向

- 物件 (object)
- 屬性 (property)
- 方法 (method)
- 事件 (event)
- 類別 (class)
- 物件 (object) 、 案例 (instance)

物件導向程式設計具有下列特點：

- 繼承 (inheritance)
- 封裝 (encapsulation)
- 多型 (polymorphism)
- 覆載 (overloading)

```
<HTML>
  <HEAD>
    <TITLE>自訂狀態列文字</TITLE>
    <SCRIPT LANGUAGE="javascript">
      window.status = "歡迎光臨~~~~";
    </SCRIPT>
  </HEAD>
  <BODY>
  </BODY>
</HTML>
```



window物件包含許多子物件，類型如下：

- 核心物件
- 環境物件
- document物件

13-2 window物件

window物件常用的屬性如下：

- closed
- defaultStatus
- length
- name
- opener
- parent
- self
- status
- top
- window
- pageXOffset
- pageYOffset
- screenX
- screenY
- screenLeft
- screenTop

window物件常用的方法如下：

- `alert(msg)`
- `prompt(msg, [input])`
- `confirm(msg)`
- `moveBy(x, y)`
- `moveTo(x, y)`
- `resizeBy(x, y)`
- `resizeTo(x, y)`
- `scrollBy(x, y)`
- `scrollTo(x, y)`
- `open(url, name, features)`
- `close()`
- `print()`
- `setInterval(exp, time)`
- `clearInterval()`
- `setTimeout(exp, time)`
- `clearTimeout()`

open() 方法的外觀參數如下：

- copyhistory=1 或 0
- directories=1 或 0
- fullscreen=1 或 0
- location=1 或 0
- menubar=1 或 0
- status=1 或 0

- toolbar=1 或 0
- scrollbars=1 或 0
- resizable=1 或 0
- height=nwidth=n

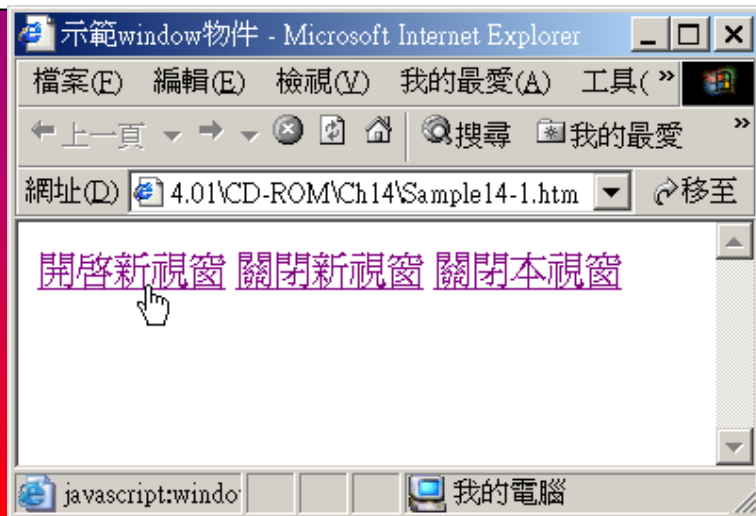

```
<SCRIPT LANGUAGE="javascript">
  var MyWin = null;
  function OpenNewWindow()
  {
    MyWin = window.open("new.htm", "MyWin", "height=200,
width=400");
  }
  function CloseNewWindow()
  {
    if(MyWin && MyWin.open && !MyWin.closed)
      MyWin.close();
  }
  function CloseWindow()
  {
    window.close();
  }
</SCRIPT>
```

```
<BODY>
```

```
<A HREF="javascript:window.OpenNewWindow();">開啟新視窗  
</A>
```

```
<A HREF="javascript:window.CloseNewWindow();">關閉新視窗  
</A>
```

```
<A HREF="javascript:window.CloseWindow();">關閉本視窗</A>  
</BODY>
```



13-3 核心物件

13-3-1 Number物件

```
var X = new Number(123.456);  
var X = 123.456;
```

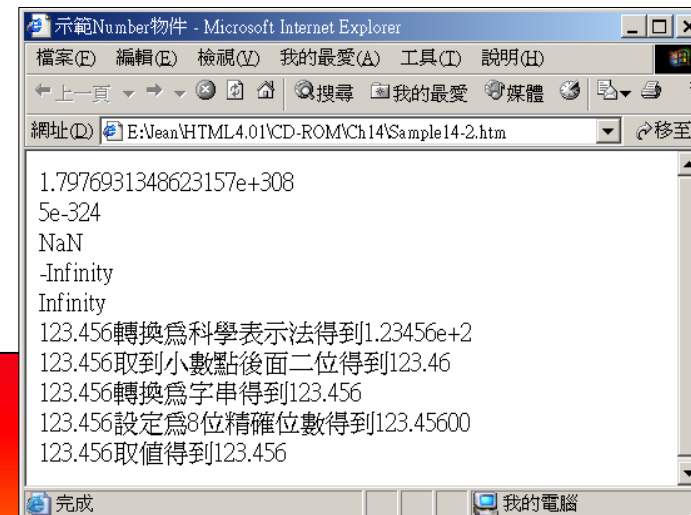
Number物件的屬性如下：

- MAX_VALUE
- MIN_VALUE
- NaN
- NEGATIVE_INFINITY
- POSITIVE_INFINITY

Number物件的方法如下：

- toExponential()
- toFixed(*num*)
- toString()
- toPrecision(*num*)
- valueOf()

```
<SCRIPT LANGUAGE="javascript">
  window.document.write(Number.MAX_VALUE + "<BR>");
  window.document.write(Number.MIN_VALUE + "<BR>");
  window.document.write(Number.NaN + "<BR>");
  window.document.write(Number.NEGATIVE_INFINITY + "<BR>");
  window.document.write(Number.POSITIVE_INFINITY + "<BR>");
  var X = new Number(123.456);
  window.document.write(X + "轉換為科學表示法得到" + X.toExponential() + "<BR>");
  window.document.write(X + "取到小數點後面二位得到" + X.toFixed(2) + "<BR>");
  window.document.write(X + "轉換為字串得到" + X.toString() + "<BR>");
  window.document.write(X + "設定為8位精確位數得到" + X.toPrecision(8) + "<BR>");
  window.document.write(X + "取值得到" + X.valueOf() + "<BR>");
</SCRIPT>
```



13-3-2 Boolean物件

```
var X = new Boolean(false);  
var X = false;
```

13-3-3 String物件

- `var X = new String("JavaScript程式設計");`
- `var X = "JavaScript程式設計";`
- `alert(X.length);`



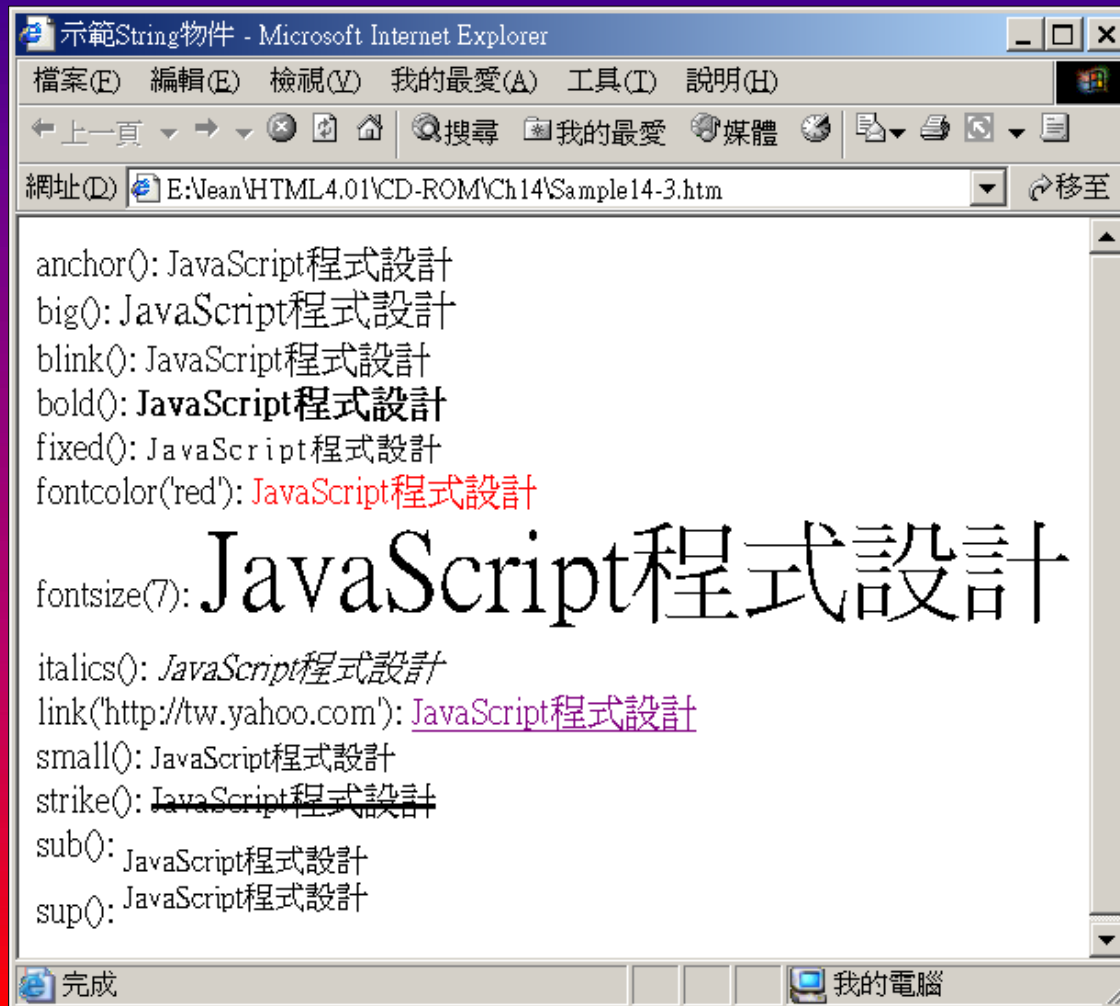
String物件常見的方法如下：

- `charAt(index)`
- `charCodeAt(index)`
- `indexOf(str, start)`
- `lastIndexOf(str)`
- `match(str)`
- `search(str)`
- `concat(str)`
- `replace(str1, str2)`
- `split(str)`
- `substr(index, length)`
- `substring(i1, i2)`
- `toLowerCase()`
- `toUpperCase()`

String物件亦提供了如下的格式編排方法：

- anchor()
- big()
- blink()
- bold()
- fixed()
- fontcolor(*color*)
- fontsize(*size*)
- italics()
- link(*url*)
- small()
- strike()
- sub()
- sup()

```
<SCRIPT LANGUAGE="javascript">
  var X = new String("JavaScript程式設計");
  window.document.write("anchor(): " + X.anchor() + "<BR>");
  window.document.write("big(): " + X.big() + "<BR>");
  window.document.write("blink(): " + X.blink() + "<BR>");
  window.document.write("bold(): " + X.bold() + "<BR>");
  window.document.write("fixed(): " + X.fixed() + "<BR>");
  window.document.write("fontcolor('red'): " + X.fontcolor("red") +
"<BR>");
  window.document.write("fontsize(7): " + X.fontsize(7) + "<BR>");
  window.document.write("italics(): " + X.italics() + "<BR>");
  window.document.write("link('http://tw.yahoo.com'): " +
  X.link("http://tw.yahoo.com") + "<BR>");
  window.document.write("small(): " + X.small() + "<BR>");
  window.document.write("strike(): " + X.strike() + "<BR>");
  window.document.write("sub(): " + X.sub() + "<BR>");
  window.document.write("sup(): " + X.sup() + "<BR>");
</SCRIPT>
```



13-3-4 Function物件

```
var Sum = new Function("X", "Y", "return(X +  
    Y)");
```

```
function Sum(X, Y)  
{  
    return(X + Y);  
}
```

13-3-5 Object物件

```
var objEmployee = new Object();  
objEmployee.Name = "小丸子";  
objEmployee.Age = 25;
```

13-3-6 Math物件

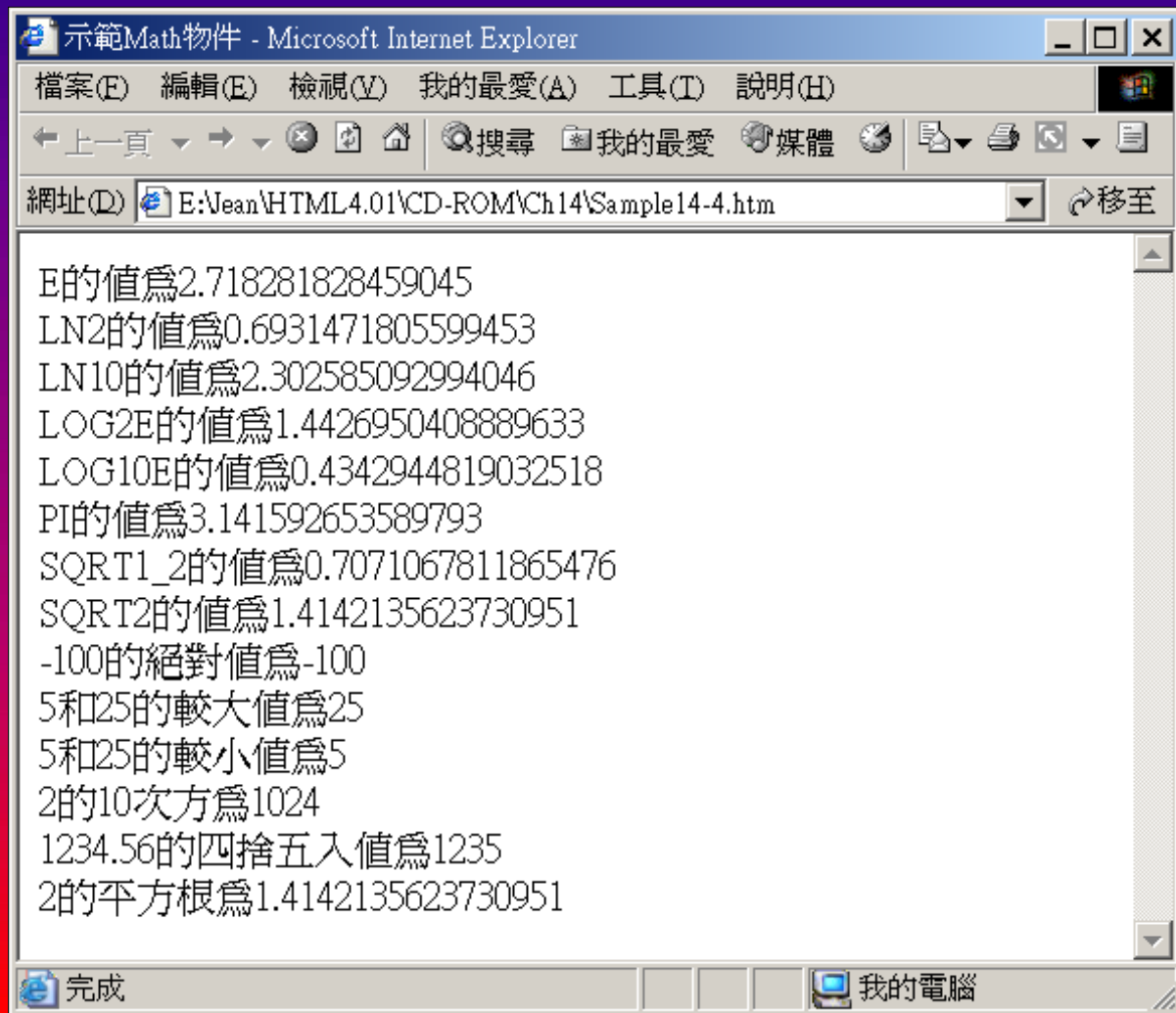
Math物件的屬性如下：

- Math.E
- Math.LN2
- Math.LN10
- Math.LOG2E
- Math.LOG10E
- Math.PI
- Math.SQRT1_2
- Math.SQRT2

Math物件的方法如下：

- `Math.abs(num)`
- `Math.acos(num)`
- `Math.asin(num)`
- `Math.atan(num)`
- `Math.ceil(num)`
- `Math.cos(num)`
- `Math.exp(num)`
- `Math.floor(num)`
- `Math.log(num)`
- `Math.max(n1,n2)`
- `Math.min(n1,n2)`
- `Math.pow(n1,n2)`
- `Math.random()`
- `Math.round(num)`
- `Math.sin(num)`
- `Math.sqrt(num)`
- `Math.tan(num)`

```
window.document.write("E的值为" + Math.E + "<BR>");  
window.document.write("LN2的值为" + Math.LN2 + "<BR>");  
window.document.write("LN10的值为" + Math.LN10 + "<BR>");  
window.document.write("LOG2E的值为" + Math.LOG2E + "<BR>");  
window.document.write("LOG10E的值为" + Math.LOG10E + "<BR>");  
window.document.write("PI的值为" + Math.PI + "<BR>");  
window.document.write("SQRT1_2的值为" + Math.SQRT1_2 + "<BR>");  
window.document.write("SQRT2的值为" + Math.SQRT2 + "<BR>");  
window.document.write("-100的绝对值为" + Math.max(-100) + "<BR>");  
window.document.write("5和25的较大值为" + Math.max(5,25) + "<BR>");  
window.document.write("5和25的较小值为" + Math.min(5,25) + "<BR>");  
window.document.write("2的10次方为" + Math.pow(2,10) + "<BR>");  
window.document.write("1234.56的四舍五入值为" + Math.round(1234.56)  
+ "<BR>");  
window.document.write("2的平方根为" + Math.sqrt(2) + "<BR>");
```

13-3-7 Date物件

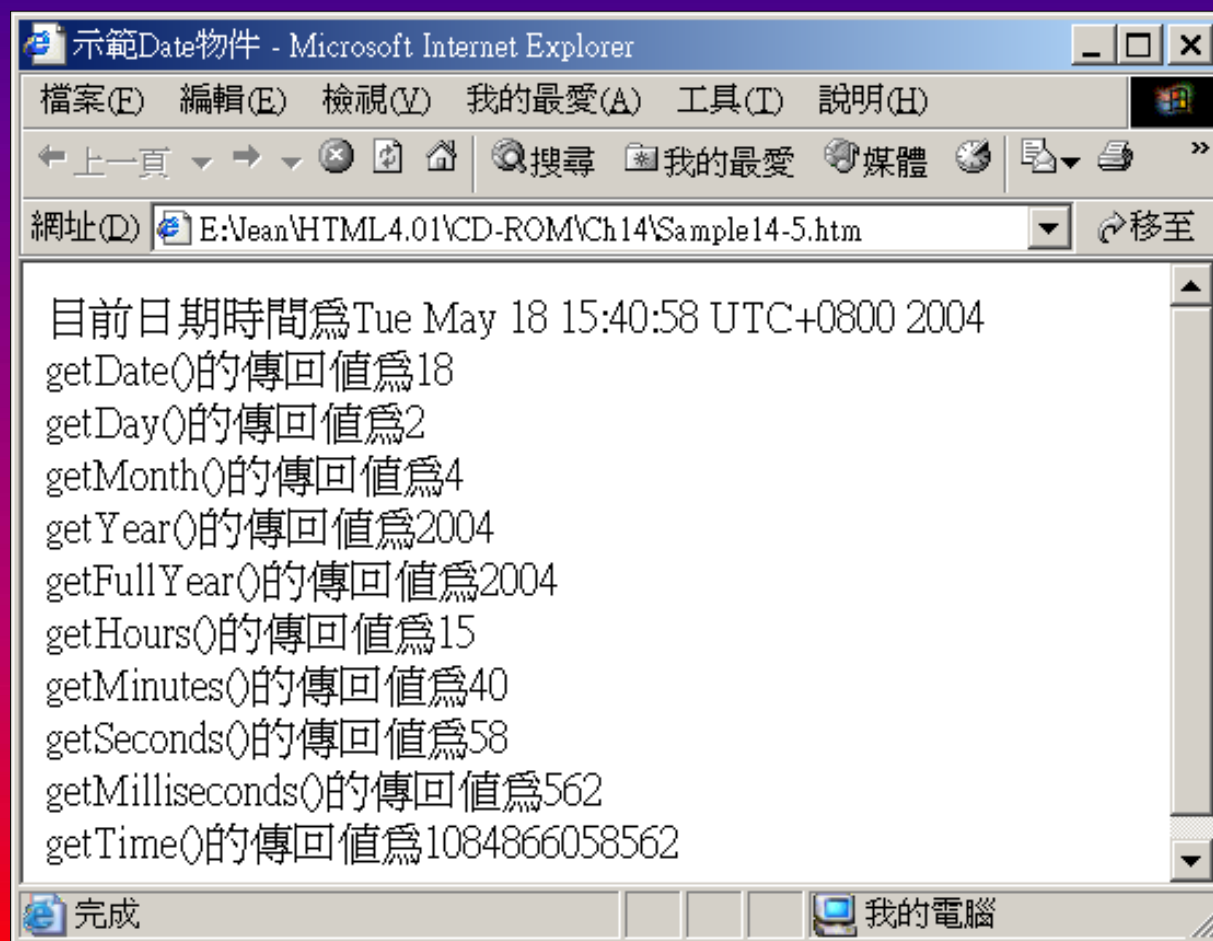
Date物件的方法如下：

- getDate()
- getDay()
- getMonth()
- getYear()
- getFullYear()
- getHours()
- getMinutes()
- getSeconds()
- getMilliseconds()
- getTime()

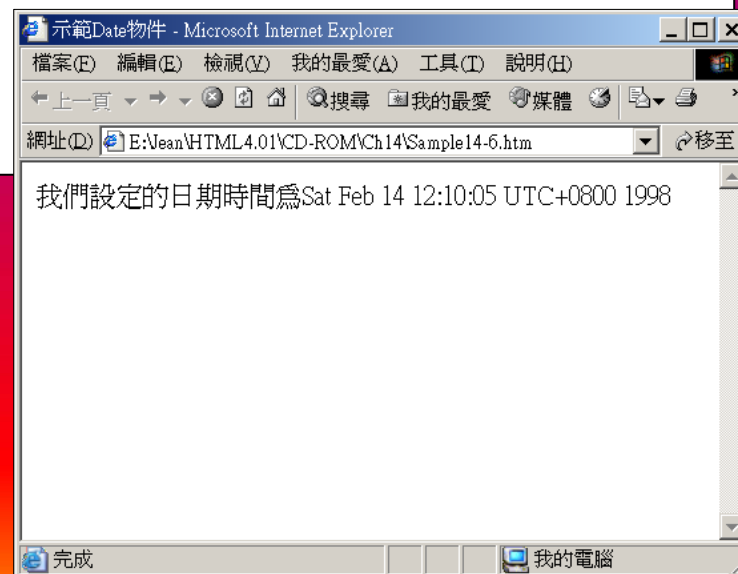
- `getUTCDate()`
- `getUTCDay()`
- `getUTCMonth()`
- `getUTCFullYear()`
- `getUTCHours()`
- `getUTCMinutes()`
- `getUTCSeconds()`
- `getUTCMilliseconds()`
- `getTimezoneOffset()`
- `setDate(x)`
- `setDay(x)`
- `setMonth(x)`
- `setYear(x)`
- `setFullYear(x)`
- `setHours(x)`
- `setMinutes(x)`

- `setSeconds(x)`
- `setMilliseconds(x)`
- `setTime(x)`
- `setUTCDate(x)`
- `setUTCDay(x)`
- `setUTCMonth(x)`
- `setUTCFullYear(x)`
- `setUTCHours(x)`
- `setUTCMinutes(x)`
- `setUTCSeconds(x)`
- `setUTCMilliseconds(x)`
- `toGMTString()`
- `toLocaleString()`
- `toString()`
- `toUTCString()`

```
var objDate = new Date();  
document.write("目前日期時間為" + objDate + "<BR>");  
document.write("getDate()的傳回值為" + objDate.getDate() + "<BR>");  
document.write("getDay()的傳回值為" + objDate.getDay() + "<BR>");  
document.write("getMonth()的傳回值為" + objDate.getMonth() + "<BR>");  
document.write("getFullYear()的傳回值為" + objDate.getFullYear() +  
    "<BR>");  
document.write("getHours()的傳回值為" + objDate.getHours() + "<BR>");  
document.write("getMinutes()的傳回值為" + objDate.getMinutes() +  
    "<BR>");  
document.write("getSeconds()的傳回值為" + objDate.getSeconds() +  
    "<BR>");  
document.write("getMilliseconds()的傳回值為" + objDate.getMilliseconds()  
    + "<BR>");  
document.write("getTime()的傳回值為" + objDate.getTime() + "<BR>");
```



```
var objDate = new Date();           //建立一個名稱為objDate的Date物件
objDate.setDate(14);               //將日期設定為14日
objDate.setMonth(1);               //將月份設定為二月
objDate.setYear(98);               //將年份設定為1998年
objDate.setHours(12);              //將小時設定為12點
objDate.setMinutes(10);            //將分鐘設定為10分
objDate.setSeconds(5);             //將秒數設定為5秒
document.write("我們設定的日期時間為" + objDate + "<BR>");
```



13-3-8 Array物件

- 一維陣列

```
var UserNames = new Array(5);
```

```
UserNames[0] = "小丸子";
```

```
UserNames[1] = "花輪";
```

```
UserNames[2] = "小玉";
```

```
UserNames[3] = "美環";
```

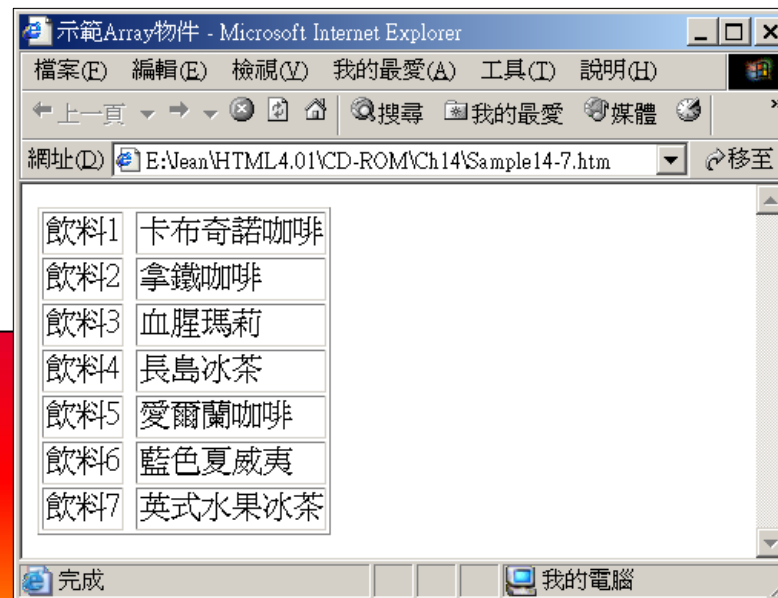
```
UserNames[4] = "丸尾";
```

```
var UserNames = new Array("小丸子", "花輪", "小玉", "美環", "丸尾");
```

```
var UserNames = ["小丸子", "花輪", "小玉", "美環", "丸尾"];
```

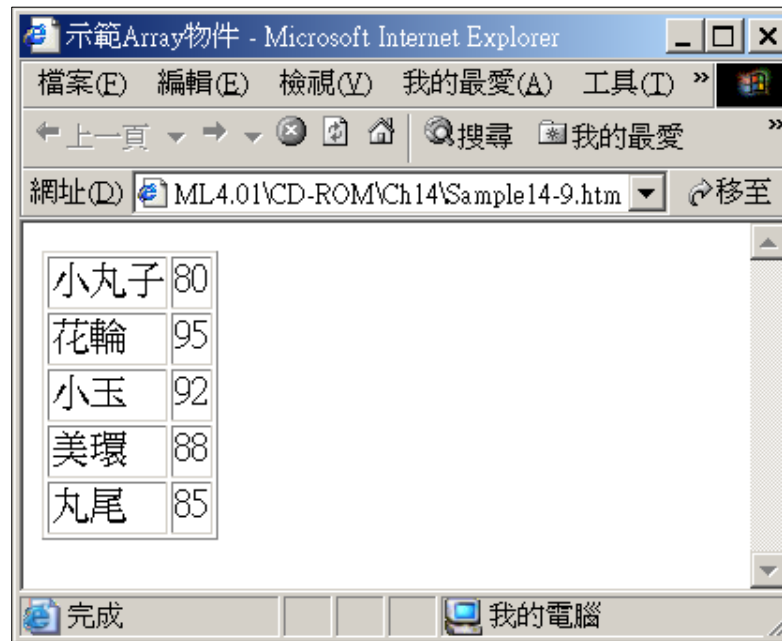


```
<BODY>
  <TABLE BORDER="1">
    <SCRIPT LANGUAGE="javascript">
      var DrinkNames = new Array("卡布奇諾咖啡", "拿鐵咖啡", "血腥瑪莉",
        "長島冰茶", "愛爾蘭咖啡", "藍色夏威夷", "英式水果冰茶");
      for(var i = 0; i < DrinkNames.length; i++)
      {
        document.write("<TR><TD>飲料" + (i+1) + "<TD>");
        document.write("<TD>" + DrinkNames[i] + "</TD></TR>");
      }
    </SCRIPT>
  </TABLE>
</BODY>
```



多維陣列

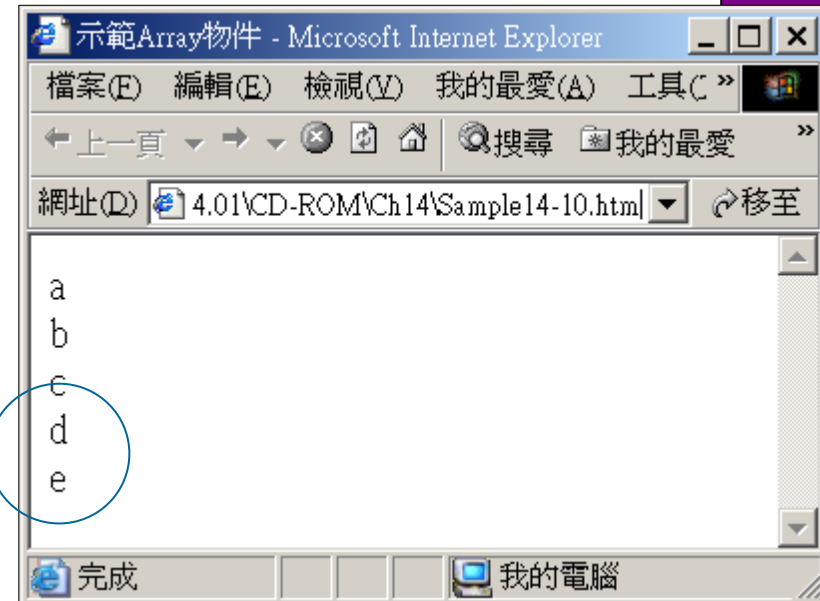
```
<SCRIPT LANGUAGE="javascript">
var Students = new Array(5);
for(var i = 0; i < Students.length; i++)
    Students[i] = new Array(2);
Students[0][0] = "小丸子";
Students[1][0] = "花輪";
Students[2][0] = "小玉";
Students[3][0] = "美環";
Students[4][0] = "丸尾";
Students[0][1] = 80;
Students[1][1] = 95;
Students[2][1] = 92;
Students[3][1] = 88;
Students[4][1] = 85;
for(var i = 0; i < Students.length; i++)
{
    document.write("<TR>");
    for(var j = 0; j < Students[i].length; j++)
        document.write("<TD>" + Students[i][j] + "</TD>");
    document.write("</TR>");
}
</SCRIPT>
```



Array物件的方法

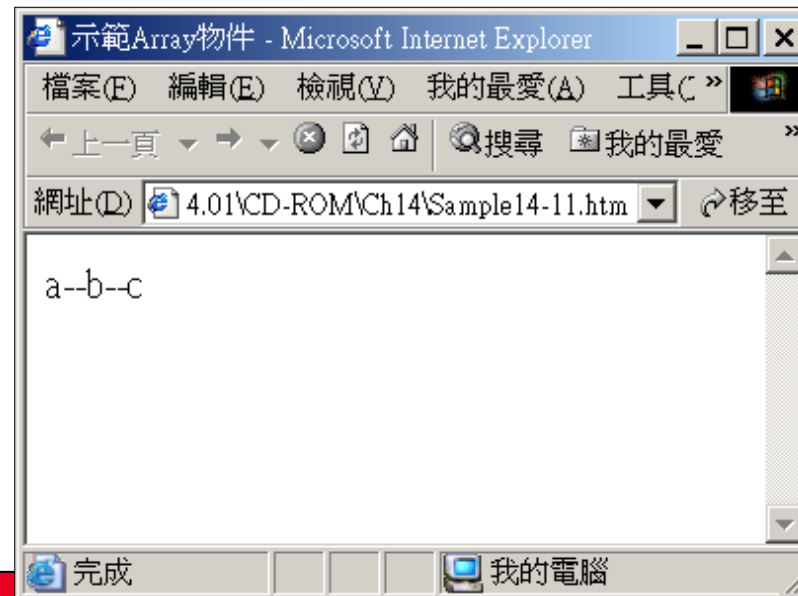
- `concat(arr)`

```
<SCRIPT LANGUAGE="javascript">
var Arr1 = new Array("a", "b", "c");
var Arr2 = new Array("d", "e");
var Arr3 = Arr1.concat(Arr2);
for(var i = 0; i < Arr3.length; i++)
    document.write(Arr3[i] + "<BR>");
</SCRIPT>
```



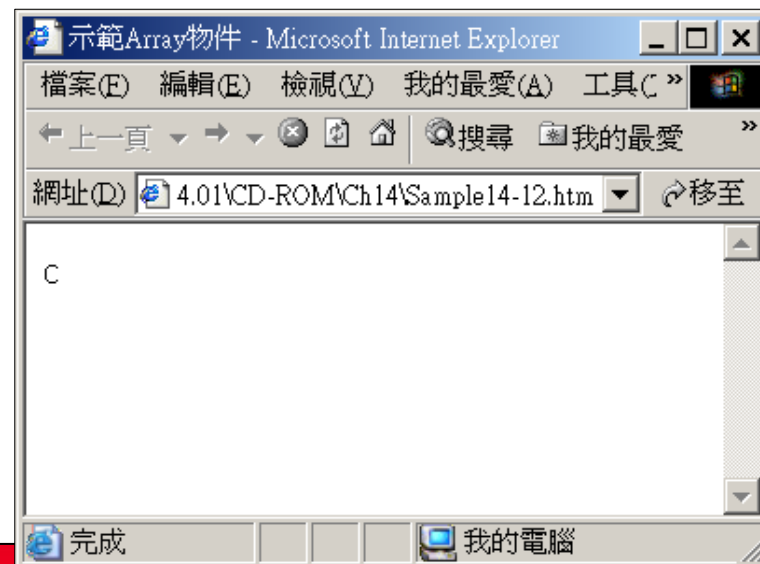
- `join(str)`

```
<SCRIPT LANGUAGE="javascript">  
  var Arr = new Array("a", "b", "c");  
  var Result = Arr.join("--");  
  document.write(Result);  
</SCRIPT>
```



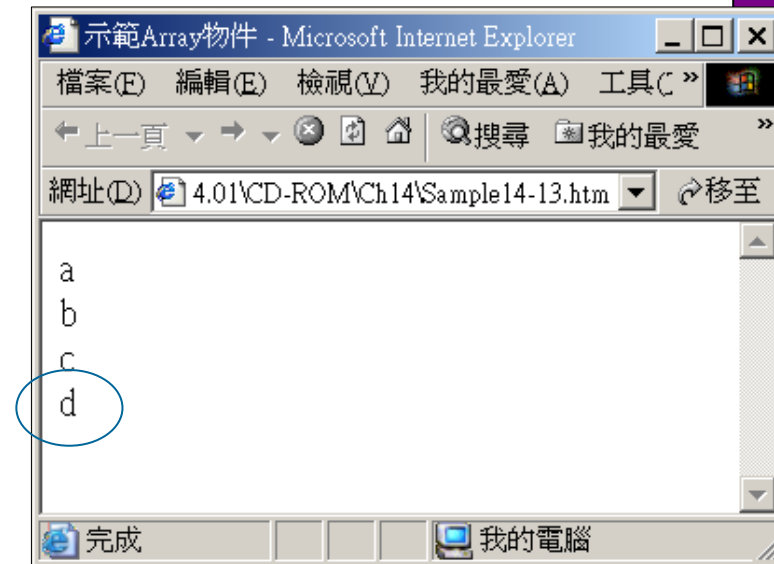
- pop()

```
<SCRIPT LANGUAGE="javascript">  
var Arr = new Array("a", "b", "c");  
var Result = Arr.pop();  
document.write(Result);  
</SCRIPT>
```



- `push(data)`

```
<SCRIPT LANGUAGE="javascript">  
var Arr = new Array("a", "b", "c");  
Arr.push("d");  
for(var i = 0; i < Arr.length; i++)  
    document.write(Arr[i] + "<BR>");  
</SCRIPT>
```



- **shift()**

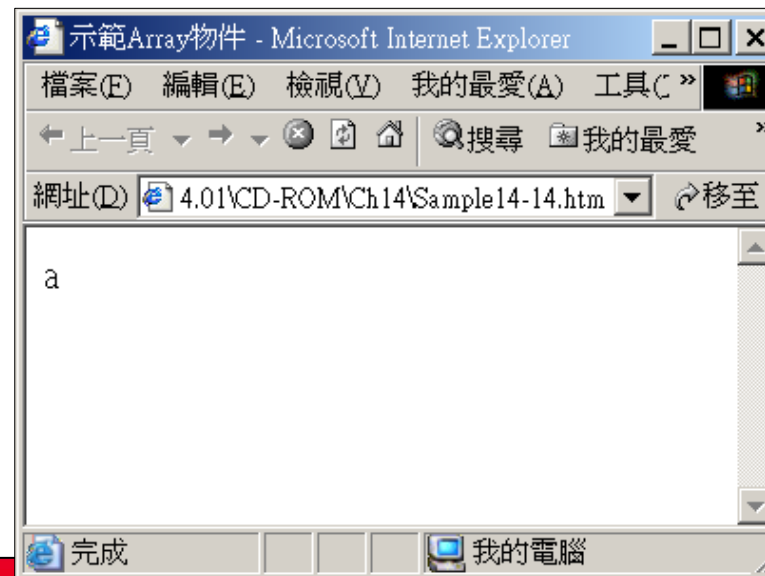
```
<SCRIPT LANGUAGE="javascript">
```

```
var Arr = new Array("a", "b", "c");
```

```
var Result = Arr.shift();
```

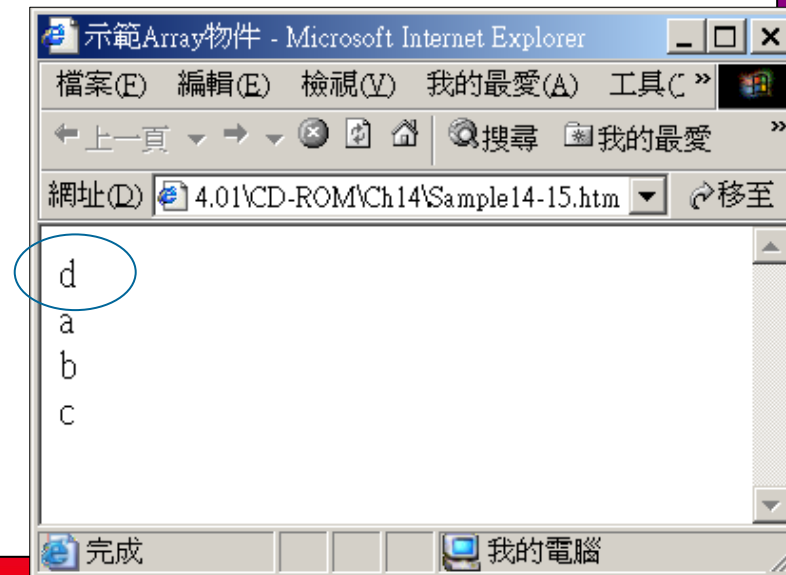
```
document.write(Result);
```

```
</SCRIPT>
```



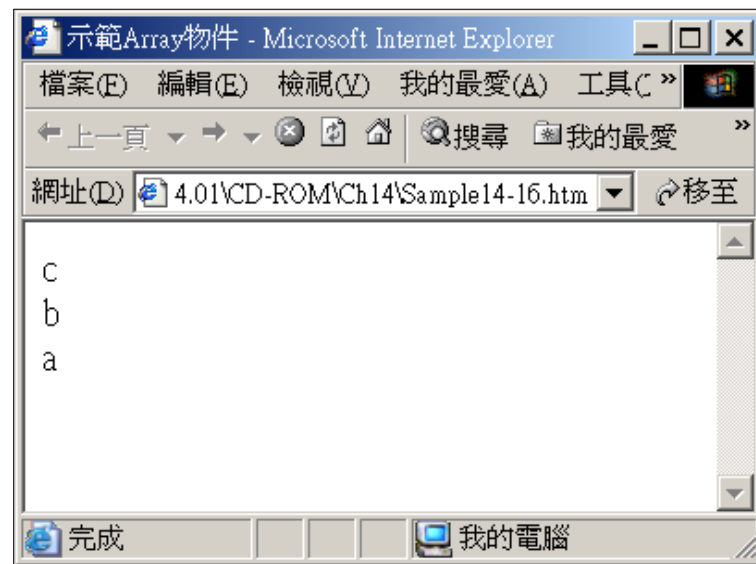
- `unshift(data)`

```
<SCRIPT LANGUAGE="javascript">  
var Arr = new Array("a", "b", "c");  
Arr.unshift("d");  
for(var i = 0; i < Arr.length; i++)  
    document.write(Arr[i] + "<BR>");  
</SCRIPT>
```



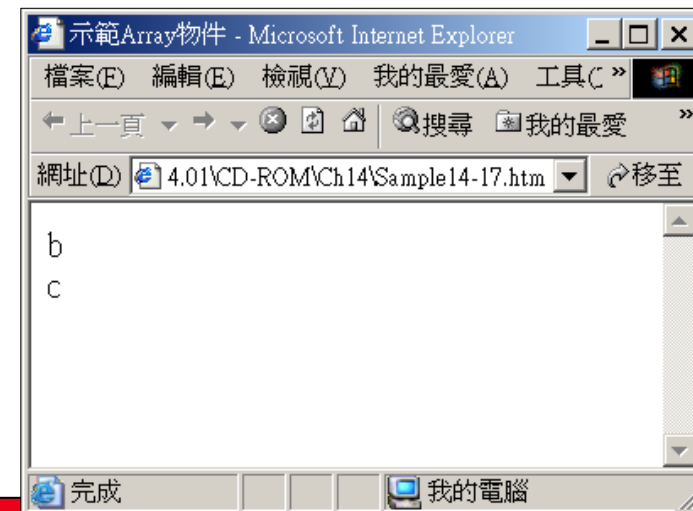
- `reverse()`

```
<SCRIPT LANGUAGE="javascript">  
var Arr = new Array("a", "b", "c");  
Arr.reverse();  
for(var i = 0; i < Arr.length; i++)  
    document.write(Arr[i] + "<BR>");  
</SCRIPT>
```



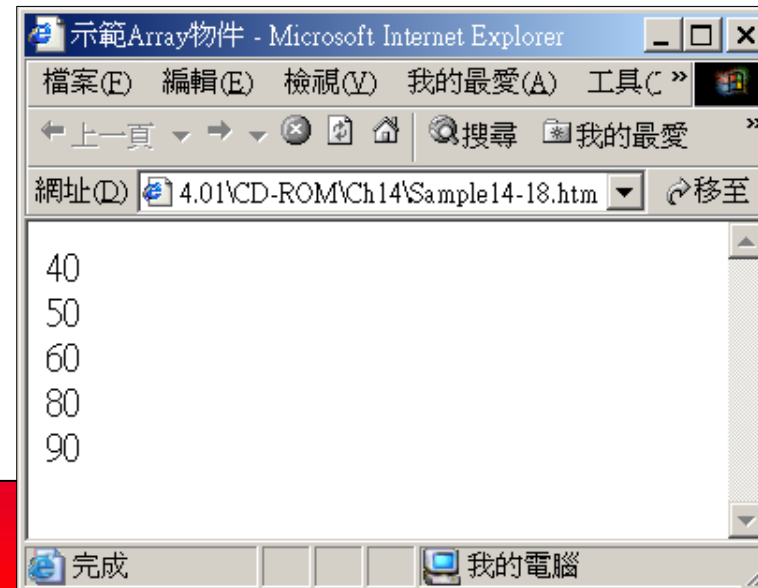
- `slice(start, end)`

```
<SCRIPT LANGUAGE="javascript">  
var Arr1 = new Array("a", "b", "c", "d", "e");  
var Arr2 = Arr1.slice(1, 3);  
for(var i = 0; i < Arr2.length; i++)  
    document.write(Arr2[i] + "<BR>");  
</SCRIPT>
```



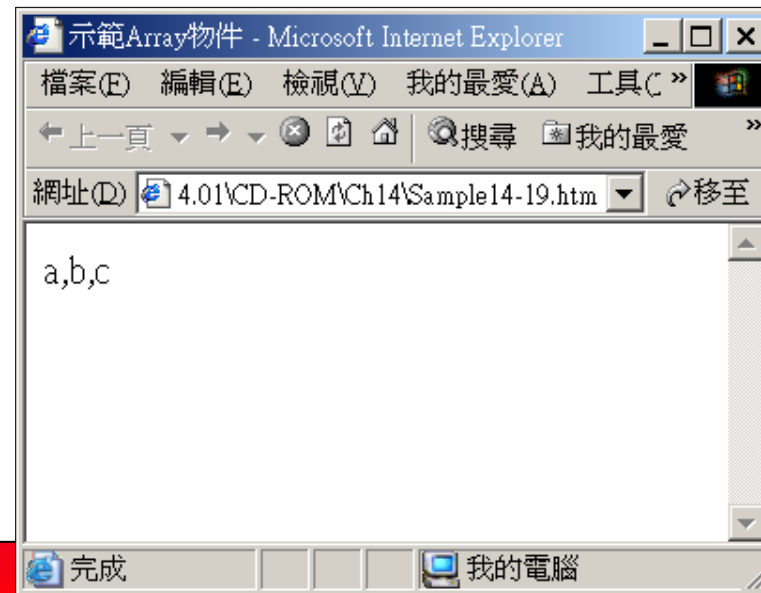
- **sort()**

```
<SCRIPT LANGUAGE="javascript">  
  var Arr = new Array(50, 40, 80, 90, 60);  
  Arr.sort();  
  for(var i = 0; i < Arr.length; i++)  
    document.write(Arr[i] + "<BR>");  
</SCRIPT>
```

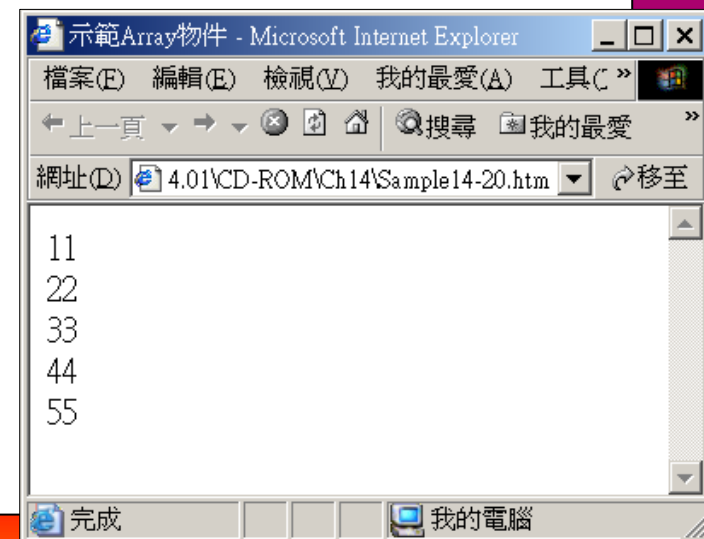


- toString()

```
<SCRIPT LANGUAGE="javascript">  
  var Arr = new Array("a", "b", "c");  
  var Result = Arr.toString();  
  document.write(Result);  
</SCRIPT>
```

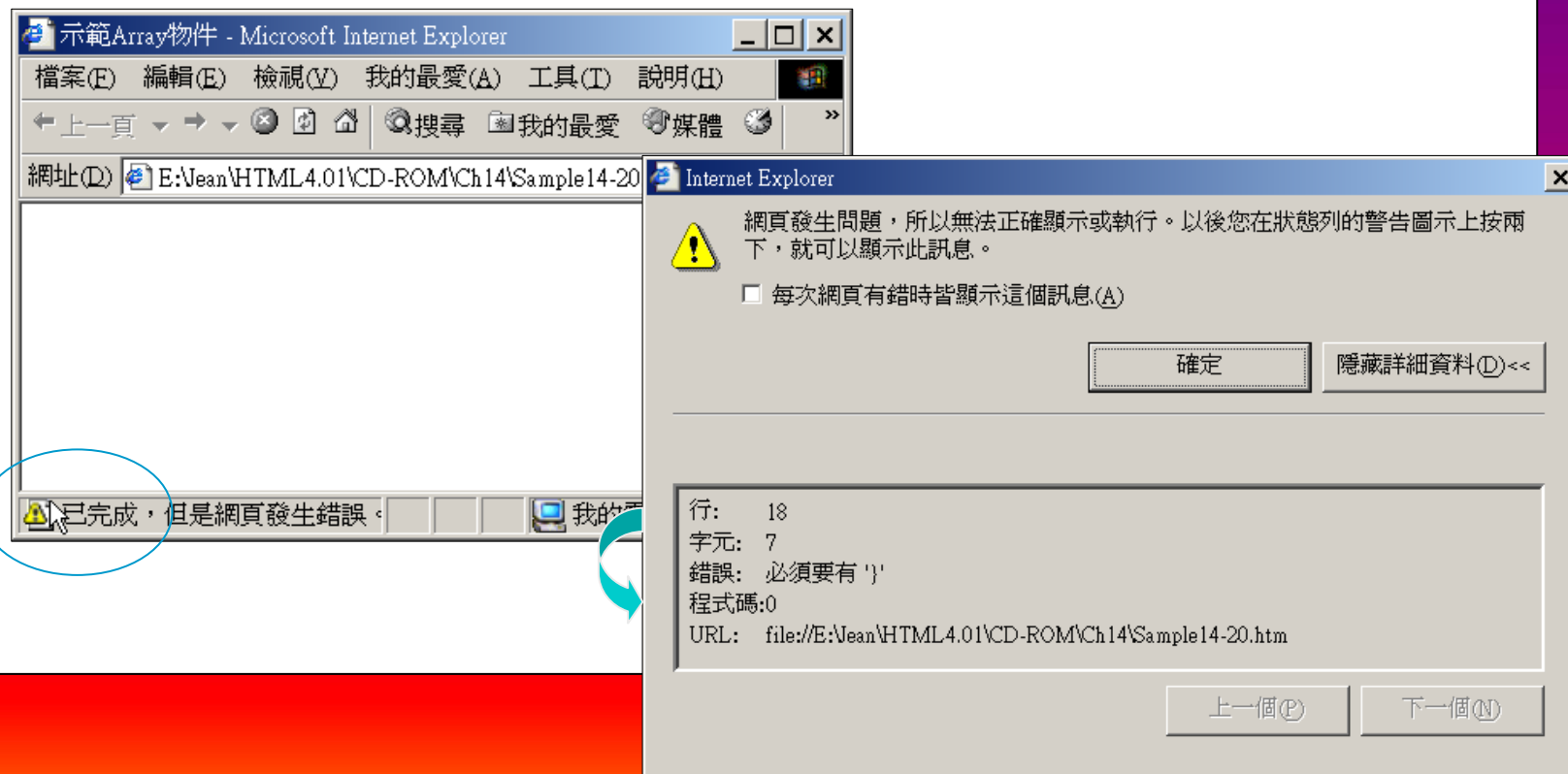


```
04: <SCRIPT LANGUAGE="javascript">
05:   var Data1 = new Array(1, 2, 3, 4, 5);
06:   var Data2 = new Array(10, 20, 30, 40, 50);
07:   var Data3 = ArrAdd(Data1, Data2);
08:   //在瀏覽器視窗中顯示陣列Data3的元素
09:   for(var i = 0; i < Data3.length; i++)
10:     document.write(Data3[i] + "<BR>");
11:   //宣告一個名稱為ArrAdd、有兩個陣列參數的函式
12:   function ArrAdd(Arr1, Arr2)
13:   {
14:     var Arr3 = new Array();
15:     for(var i = 0; i < Arr1.length; i++)
16:       Arr3[i] = Arr1[i] + Arr2[i];
17:     return Arr3;
18:   }
19: </SCRIPT>
```



13-3-9 Error物件

- 語法錯誤 (syntax error)

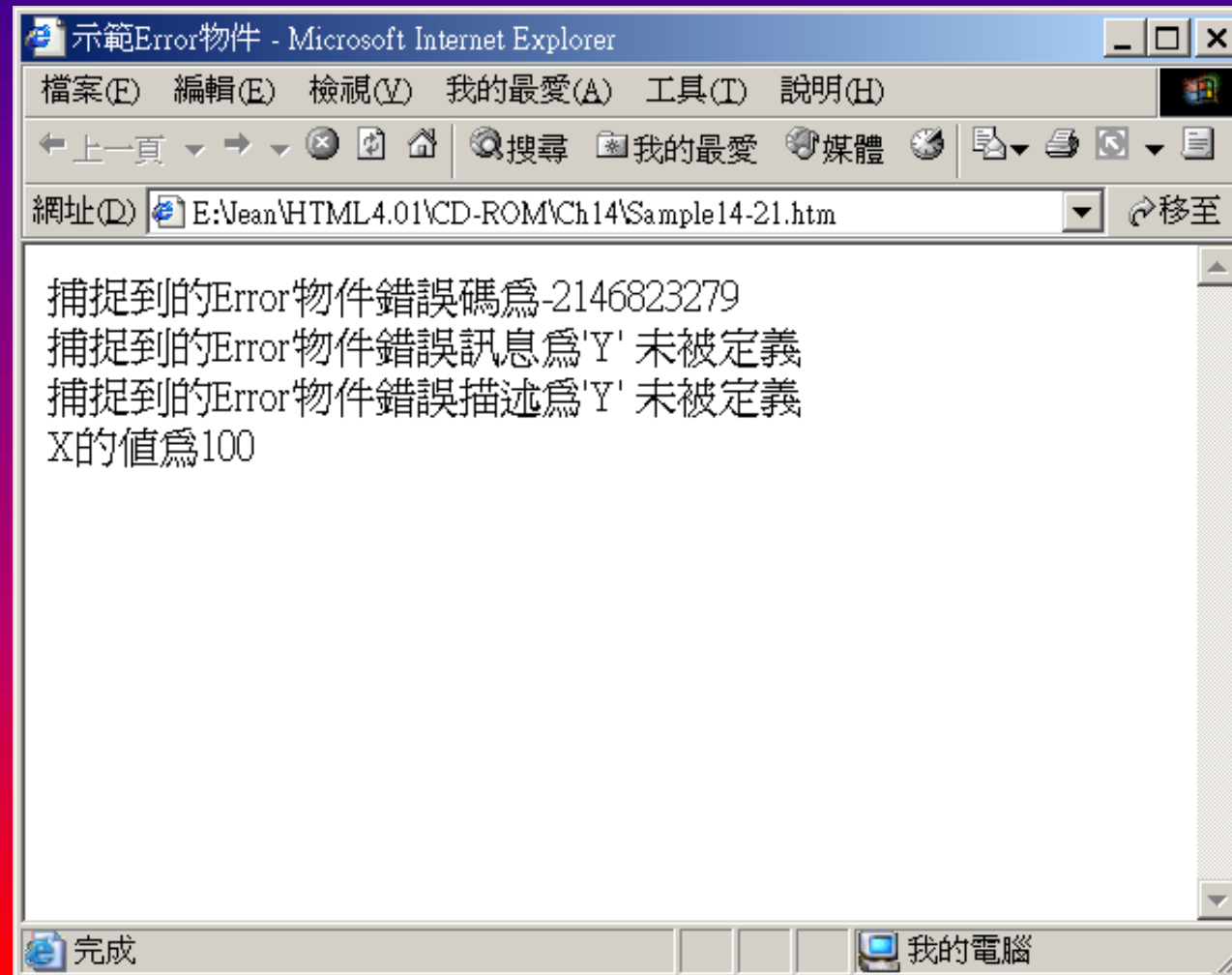


- 載入階段錯誤 (load time error)
- 邏輯錯誤 (logical error)

```
try
{
    try_statements
}
catch(error_name)
{
    catch_statements
}
finally
{
    finally_statements
}
```

Error物件的屬性如下：

- number
- message
- description



13-4 環境物件

13-4-1 location物件

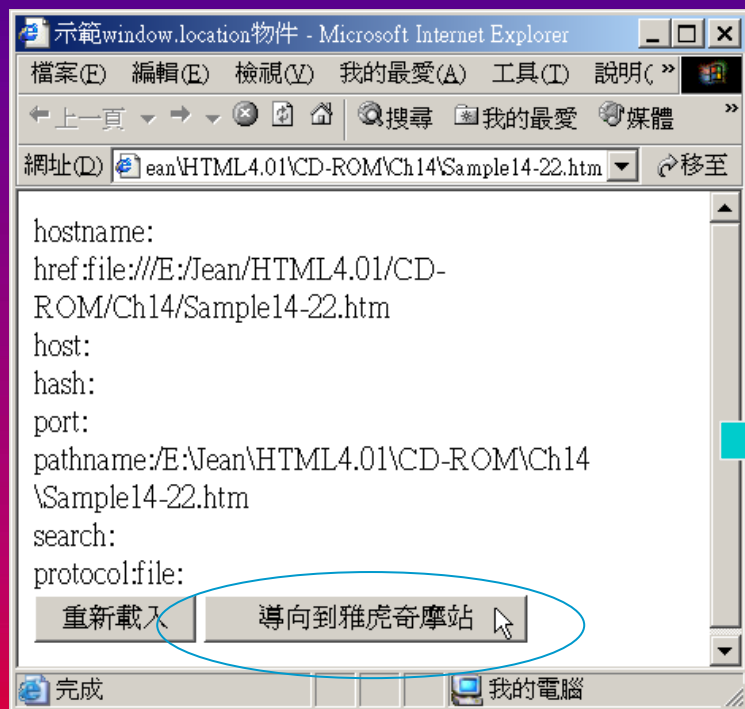
location物件的屬性如下：

- hash
- host
- hostname
- href
- pathname
- port
- protocol
- search

location物件的方法如下：

- reload()
- replace(*url*)

```
<HTML>
  <HEAD>
    <TITLE>示範window.location物件</TITLE>
    <SCRIPT LANGUAGE="javascript">
      for(var Property in window.location)
        window.document.write(Property + ":" + window.location[Property] +
          "<BR>");
    </SCRIPT>
  </HEAD>
  <BODY>
    <INPUT TYPE="BUTTON" VALUE="重新載入"
      onClick="javascript:window.location.reload();">
    <INPUT TYPE="BUTTON" VALUE="導向到雅虎奇摩站"
      onClick="javascript:window.location.replace('http://tw.yahoo.com');">
  </BODY>
</HTML>
```

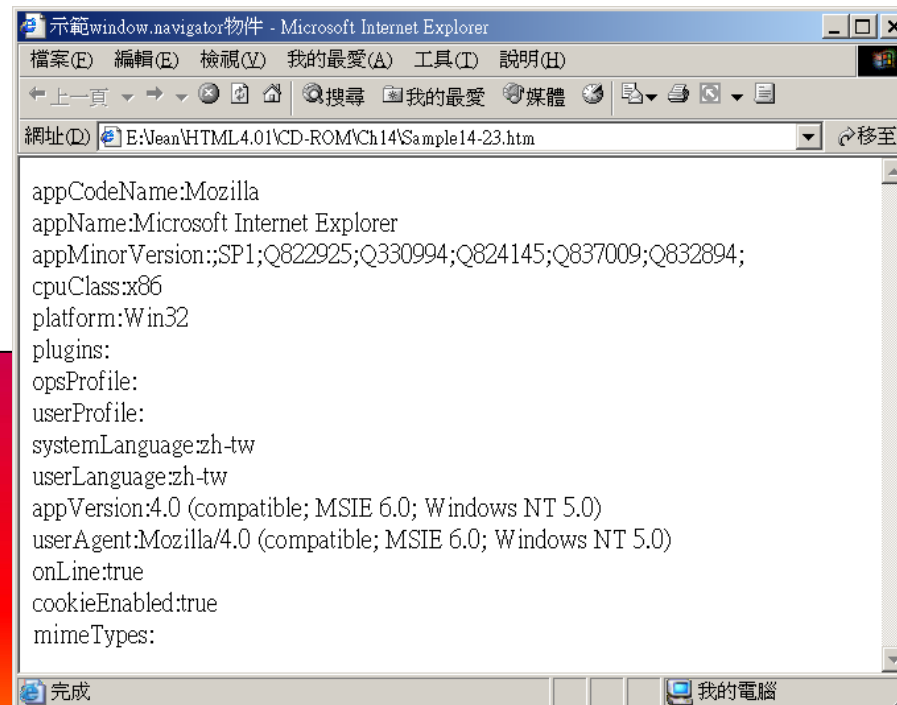


13-4-2 navigator物件

navigator物件的屬性如下：

- appCodeName
- appName
- appMinorVersion
- cpuClass
- platform
- plugins
- userProfile
- systemLanguage
- userLanguage
- appVersion
- userAgent
- onLine

```
<HTML>
  <HEAD>
    <TITLE>示範window.navigator物件</TITLE>
    <SCRIPT LANGUAGE="javascript">
      for(var Property in window.navigator)
        window.document.write(Property + ":" + window.navigator[Property] +
          "<BR>");
    </SCRIPT>
  </HEAD>
  <BODY>
  </BODY>
</HTML>
```

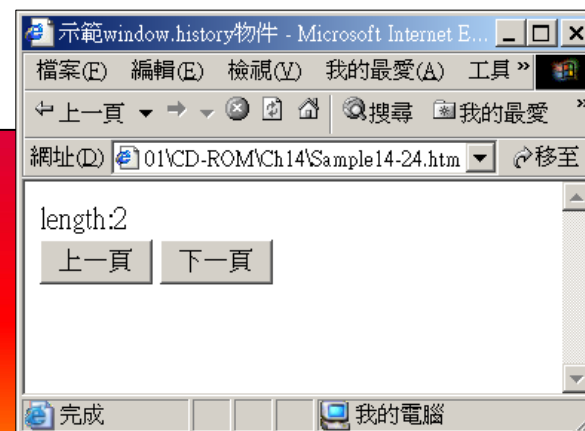


13-4-3 history物件

history物件的方法如下：

- `back()`
- `forward()`
- `go(num)`

```
<HTML>
  <HEAD>
    <TITLE>示範window.history物件</TITLE>
    <SCRIPT LANGUAGE="javascript">
      for(var Property in window.history)
        window.document.write(Property + ":" + window.history[Property] +
          "<BR>");
    </SCRIPT>
  </HEAD>
  <BODY>
    <INPUT TYPE="BUTTON" VALUE="上一頁"
      onClick="javascript:window.history.back();">
    <INPUT TYPE="BUTTON" VALUE="下一頁"
      onClick="javascript:window.history.forward();">
  </BODY>
</HTML>
```

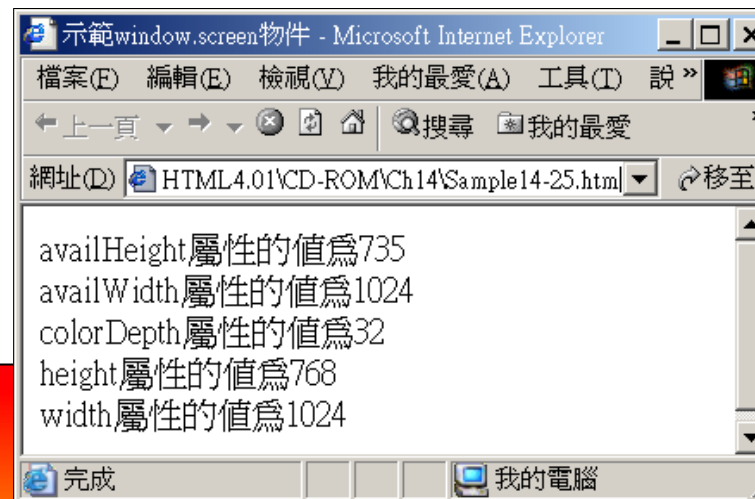


13-4-4 screen物件

screen物件的屬性如下：

- availHeight
- availWidth
- colorDepth
- height
- width

```
<HTML>
<HEAD>
  <TITLE>示範window.screen物件</TITLE>
  <SCRIPT LANGUAGE="javascript">
    window.document.write("availHeight屬性的值為" + window.screen.availHeight +
"<BR>");
    window.document.write("availWidth屬性的值為" + window.screen.availWidth +
"<BR>");
    window.document.write("colorDepth屬性的值為" + window.screen.colorDepth +
"<BR>");
    window.document.write("height屬性的值為" + window.screen.height + "<BR>");
    window.document.write("width屬性的值為" + window.screen.width +
"<BR>");
  </SCRIPT>
</HEAD>
</HTML>
```



13-5 document物件

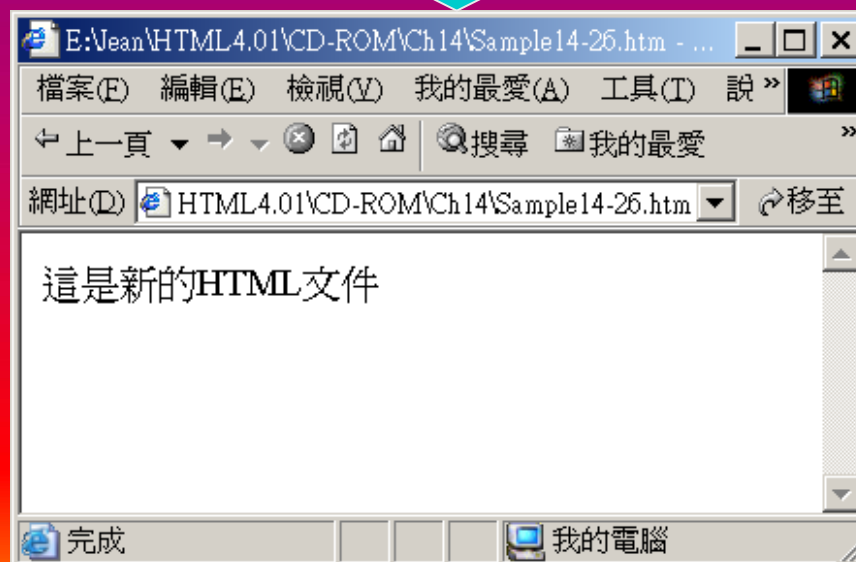
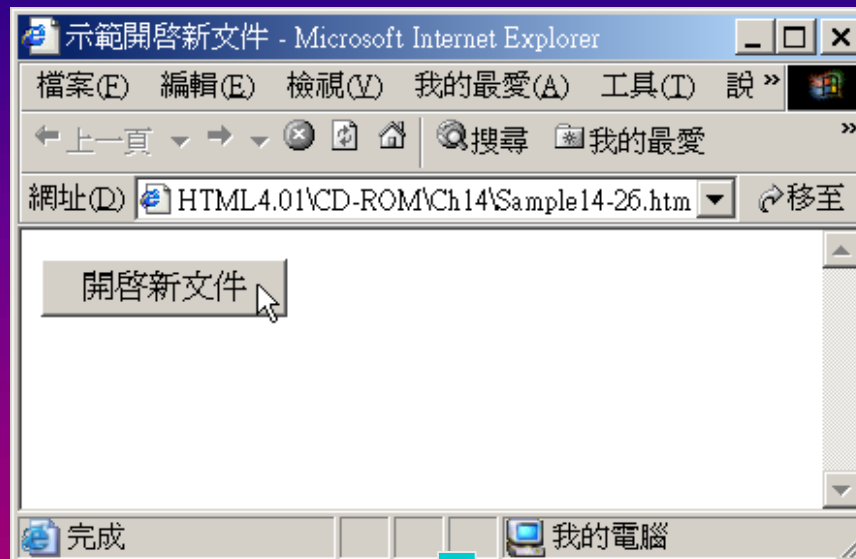
document物件的屬性如下：

- charset
- characterSet
- cookie
- domain
- height
- width
- lastModified
- referer
- url
- title

document物件的方法如下：

- close()
- open(*type*)
- getElementById(*i*)
- getElementsByName(*n*)
- getElementsByTagName(*t*)
- write(*data*)
- writeln(*data*)

```
<HTML>
  <HEAD>
    <TITLE>示範開啟新文件</TITLE>
    <SCRIPT LANGUAGE="javascript">
      function openDocument()
      {
        window.document.open("text/html");
        window.document.write("這是新的HTML文件");
        window.document.close();
      }
    </SCRIPT>
  </HEAD>
  <BODY>
    <INPUT TYPE="BUTTON" VALUE="開啟新文件"
      onClick="javascript:openDocument();">
  </BODY>
</HTML>
```




```
<INPUT TYPE="CHECKBOX" NAME="Phone" ID="CB1" VALUE="摩托羅拉"><BR>  
<INPUT TYPE="CHECKBOX" NAME="Phone" ID="CB2" VALUE="諾基亞"><BR>
```

```
var Element1 = document.getElementById("CB1");  
var Element2 = document.getElementsByName("Phone");  
var Element3 = document.getElementsByTagName("INPUT");
```

```
Element1.value  
Element1.id  
Element1.type  
Element1.tagName  
Element2.length  
Element2[0].value  
Element2[1].value  
Element2[0].id  
Element2[0].type  
Element2[0].tagName  
Element3.length  
Element3[0].value  
Element3[1].value
```

document物件只有一個子物件body，其屬性如下：

- link
- alink
- vlink
- background
- bgColor
- text

除了子物件body之外，document物件亦支援如下集合：

- all
- anchors
- links
- forms
- frames
- images
- styleSheets
- applets、embeds、plugins

```
<FORM NAME="MyForm1">
```

```
  <INPUT TYPE="BUTTON" ID="B1" VALUE="按鈕1">
```

```
  <INPUT TYPE="BUTTON" ID="B2" VALUE="按鈕2">
```

```
</FORM>
```

```
<FORM NAME="MyForm2">
```

```
  <INPUT TYPE="BUTTON" ID="B3" VALUE="按鈕3">
```

```
  <INPUT TYPE="BUTTON" ID="B4" VALUE="按鈕4">
```

```
</FORM>
```

```
document.forms[0].B1.value
```

```
document.forms.MyForm1.B1.value
```

```
document.forms[1].B3.value
```

```
document.forms.MyForm2.B3.value
```

```
<IMG NAME="MyGif1" SRC="maru1.gif">
```

```
<IMG NAME="MyGif2" SRC="maru2.gif">
```

```
document.images[0].src
```

```
document.images.MyGif1.src
```

```
document.images[0].border=10;
```

```
document.images[1].align="left";
```