

## Dynamic - Hyper Text Markup Language

- **D-HTML is the fusion of various web coding technologies to make a *dynamic* web page.**
  - D-HTML allows content presentation to change with user interaction or time
  - HTML alone will create static (unchangeable) pages.
  - D-HTML = HTML + JavaScript + CSS + EM + DOM
- **EM = Event Model**
  - **ONCLICK** = Click mouse on object event
  - **ONCHANGE** = Object state changes event
  - **ONKEYUP** = Key Up after entry event
- **DOM = Document Object Model**
  - `document.frmCalc.txtEntry.value`

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## DHTML - Event Model

- **Events can be used to trigger JavaScript**
  - Event driven programming model is the norm for windows programming and web sites
- **Scripts are triggered by events acting upon supported HTML elements**
  - Forms
  - Images
  - Links
  - Documents
  - Windows
  - Text Elements
- **Scripts can also be triggered by timer events**
- **Event descriptors are HTML and are therefore NOT case sensitive**

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## DHTML - Events

EVENT	WORKS WITH	WHEN
ONBLUR	A, AREA, BUTTON, INPUT, LABEL, SELECT, TEXTAREA	the visitor leaves an element that was previously in focus (see ONFOCUS below)
ONCHANGE	INPUT, SELECT, TEXTAREA	the visitor modifies the value or contents of the element
ONCLICK	All elements <i>except</i> APPLET, BASE, BASEFONT, BR, FONT, FRAME, FRAMESET, HEAD, HTML, IFRAME, META, PARAM, SCRIPT, STYLE, TITLE	the visitor clicks on the specified area
ONDBLCLICK	Same as ONCLICK	the visitor double clicks the specified area
ONFOCUS	A, AREA, BUTTON, INPUT, LABEL, SELECT, TEXTAREA	the visitor selects, clicks, or tabs to the specified element
ONKEYDOWN	INPUT (of type NAME or PASSWORD), TEXTAREA	the visitor types something in the specified element
ONKEYPRESS	INPUT (of type NAME or PASSWORD), TEXTAREA	the visitor types something in the specified element
ONKEYUP	INPUT (of type NAME or PASSWORD), TEXTAREA	the visitor lets go of the key after typing in the specified element
ONLOAD	BODY, FRAMESET	the page is loaded in the browser
ONMOUSEDOWN	Same as ONCLICK	the visitor presses the mouse button down over the element

## DHTML - Events (Cont'd)

EVENT	WORKS WITH	WHEN
ONMOUSEMOVE	Same as ONCLICK	the visitor moves the mouse over the specified element after having pointed at it
ONMOUSEOUT	Same as ONCLICK	the visitor moves the mouse away from the specified element after having been over it
ONMOUSEOVER	Same as ONCLICK	the visitor points the mouse at the element
ONMOUSEUP	Same as ONCLICK	the visitor lets the mouse button go after having clicked on the element
ONRESET	FORM ( <i>not</i> INPUT of type RESET)	the visitor clicks the form's reset button
ONSELECT	INPUT (of type NAME or PASSWORD), TEXTAREA	the visitor selects one or more characters or words in the element
ONSUBMIT	FORM ( <i>not</i> INPUT of type SUBMIT)	the visitor clicks the form's submit button
ONUNLOAD	BODY, FRAMESET	the browser loads a different page after the specified page had been loaded

## DHTML - Document Object Model

- Purpose of the Document Object Model (DOM) is to identify HTML elements in an HTML document
  - Elements are related using a hierarchical and/or indexed approach
  - HTML elements can be identified by using NAME or ID attributes for an HTML tag
  - HTML elements may also be identified by using an index
- DOM differs between browsers, OS, and version
- JavaScript can be used to alter CSS defined styles
  - Single word styles same as CSS definitions
  - Hyphenated CSS styles are changed as follows:
    - H1 {text-align: center;}      H1.style.textAlign="center";

Remove Hyphen and capitalize first letter

IE 4 Only

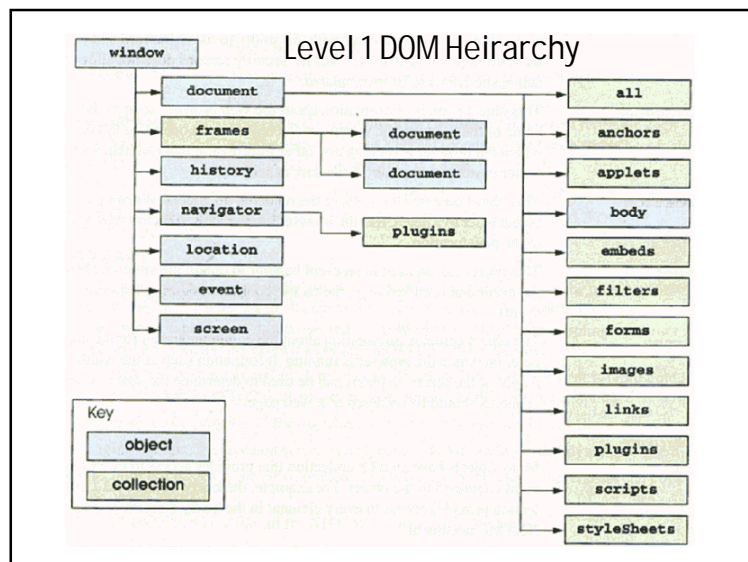
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## DOM Historical Development

- Level 0 DOM: Netscape ver2+ and IE ver3+
- Intermediate DOMs:
  - document.layers Model: Netscape ver4 only
    - Most complicated, hard to use, and buggy
  - document.all Model: IE ver4+, Opera ver6+
    - Poorly documented but easier to use
- Level 1 DOM:
  - Netscape ver6, IE ver5, Opera ver5+
  - A W3C standard
- Problem: *Code to work with most DOMs*

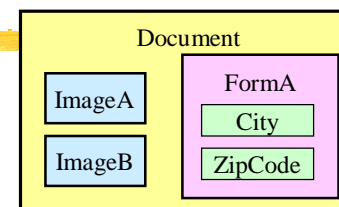
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## Level 0 DOM - Version 2 and 3 browsers

- Limited to very few HTML elements
  - Forms
  - Image Swapping (Rollover support)
- Use NAME attribute to identify HTML element
- Syntax:
  - document.forms[0].elements[1]
  - document.forms["FormA"].elements["ZipCode"]
  - document.FormA.ZipCode Works in Version 3+ browser
  - document.images[1] Works in Version 3+ browser
  - document.ImageB Works in Version 3+ browser



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## Intermediate DOMs - Version 4 Browsers

- DHTML becomes a reality but limited use
  - DOM incompatibility between browsers problem
  - JavaScript version and browser incompatibilities
- Access to HTML elements and their properties
  - Netscape 4: **document.layers**
    - No inline styles modifications after document loads
    - DIV (Layers) moved only if original position specified in HTML
  - IE 4: **document.all**
    - Will redraw elements if inline styles are changed even after page loads (Great)
    - Allows access to all elements in document (Much Better)
    - Style properties are specified with style identifier preceding the specific style property

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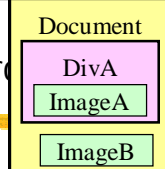
## Intermediate DOMs - Version 4 Browsers

- **document.layers Netscape v4 DOM**
  - Dynamic HTML elements must be contained in a layer
  - Recommend: Use <DIV> tag for container NOT <layer>
  - The DIV tag ID attribute is used to identify layer
 

```
<DIV ID="DivA"> <IMG NAME="ImageA" SRC="A.gif"> </DIV>
```
  - Syntax to access image:
    - `document.layers["DivA"].left=200;` // Proper Specification
    - `document.DivA.left=200;` // Moves DivA contents left 200 pixels
    - `document.DivA.ImageA.src="RollA.gif ";` // Swap ImageA file
- **document.layers IE v4 DOM**
  - Syntax to access image:
    - `document.all["DivA"].style.left=200;` // Proper Specification
    - `document.all.DivA.style.left=200;` // Moves DivA left 200 pixels
    - `document.all.DivA.ImageA.src="RollA.gif ";` // Swap ImageA file

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## Level 1 DOM - Version 5+ Browsers

- Features
  - Allows access of elements by ID so path not needed
  - Allows controlling both style and contents of element
  - Much better cross-browser version 5 compatibility
  - XML support
- **document.getElementById('DivA')**
  - Can Access any element on page by ID
  - Syntax to move image contained in DIV:
    - Style Properties
 

```
document.getElementById('DivA').style.left=200;
```

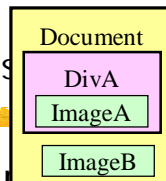
```
document.all.DivA.style.left=200; // Earlier DOM
```
    - Object Properties
 

```
document.getElementById('ImageA').src="RollA.gif ";
```

```
document.all.DivA.ImageA.src="RollA.gif " ; // Earlier DOM
```

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## Coding for Cross-Browser Compatibility

- Explanations and Examples can be found at:
  - <http://www.xs4all.nl/~ppk/introhd.html>
- Determine if feature is present not browser!
 

```

if (document.getElementById)
{
    // IE 5+ and Netscape 6 DOM manipulation
}
else if (document.layers)
{
    // Netscape 4 DOM manipulation
}
else if (document.all) {
    // IE 4 DOM manipulation
}
  
```

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## Rollovers

- Rollovers are an image swapping technique
  - Allows users to swap images when the mouse cursor "rolls over" the image
  - Rollovers work with the 3.0+ browsers
- Create two images, one for each mouse rollover state to implement
  - Best to do editing and save vectored graphic
  - Then convert each selectable image to gif or jpeg
- Rollovers use two mouse event handlers
  - ONMOUSEOVER = Mouse over object
  - ONMOUSEOUT = Mouse out of object
- DOM: Rollovers use IMG Tag NAME attribute

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## How to Image Create Rollovers

Step 1: Label the Image Object and set BORDER=0

```
<IMG SRC="btHomeN.gif" WIDTH="59" HEIGHT="29"
NAME="imgHome" BORDER="0" >
```

Step 2: Encapsulate Image in Link

```
<A HREF=" ../index.html" >
<IMG SRC="btHomeN.gif" WIDTH="59" HEIGHT="29"
NAME="imgHome" BORDER="0" > </A>
```



Step 3: Create Swap Image Event Handler

```
<A HREF=" ../index.html"
ONMOUSEOVER=document.imgHome.src="btHomeV.gif" >
<IMG SRC="btHomeN.gif" WIDTH="59" HEIGHT="29"
NAME="imgHome" BORDER="0" ></A>
```



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## How to Image Create Rollovers

**Do you want to revert back to original image when the mouse is not over?**

Step 4: Restore original image using ONMOUSEOUT event

```
<A HREF=" ../index.html"
ONMOUSEOVER="document.imgHome.src='btHomeV.gif'"
ONMOUSEOUT="document.imgHome.src='btHomeN.gif'" >
<IMG SRC="btHomeN.gif" WIDTH="59" HEIGHT="29"
NAME="imgHome" BORDER="0" >
</A>
```

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## A Better Rollover: Preloaded Images

```
<HTML><HEAD><TITLE>Rollover Demo</TITLE>
<SCRIPT LANGUAGE="JavaScript">
  butHomeNorm = new Image;
  butHomeOver = new Image;
  butHomeNorm.src = "btHomeN.gif";
  butHomeOver.src = "btHomeV.gif";
</SCRIPT>
</HEAD>
<BODY BGCOLOR="#CCFFCC" TEXT="#000000">
<A HREF=" ../index.html"
ONMOUSEOVER="document.imgHome.src=butHomeOver.src"
ONMOUSEOUT="document.imgHome.src=butHomeNorm.src">
<IMG SRC="btHomeN.gif" WIDTH="59" HEIGHT="29"
NAME="imgHome" BORDER="0" ></A></BODY></HTML>
```

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