

## 1 DHTML

Tim Margush

Based on Programming the WWW by Robert Sebesta, 4<sup>th</sup> Edition

## 2 What is DHTML

- Dynamic (X)HTML
  - Techniques used to change the structure, content, and style of a document
- Changes to attributes
- Style changes
- Changing the content of a text node
- Adding or removing nodes

## 3 Positioning

- Standardized in CSS-P in 1997
- Supported by most current browsers
- Controlled by style properties
  - position
    - static, relative, absolute
  - left, top
    - Location of top-left corner of element
- You can also use bottom or top

## 4 Absolute

- Distances are measured from the top-left of the nearest non-static ancestor

## 5 Absolute

- If there is no positioned-ancestor
  - Top and left is measured from the top-left of document
  - Bottom and right are based on the size of the frame holding the document
- Once positioned and sized, the element will scroll with document
  - Resizing the frame may alter the position and size of the element within the document

## 6 Relative and Static

- The element is first positioned in the normal flow of the document, then top and left are applied to move it relative to the default position
  - Top and left default to 0
- Static is the default positioning mode
  - Not considered a positioned element
  - Top and left (bottom and right) have no meaning

## 7 Units

- Always specify units for top, bottom, etc
- Length (no spaces allowed)
  - + or – (optional)
    - indicates add or subtract from some reference value
  - number
  - unit
    - relative: em, ex, px
    - absolute: in, cm, mm, pt, pc
- Percentage (no spaces allowed)
  - + or – (optional)
  - number
  - %

## 8 Changing Position

- Obtain a reference to the style object
  - `ns = document.getElementById('eid').style`
- Extract the numeric part
  - `ns_n = parseInt(ns.top)` (strip off units)
- Assign a new value
  - `ns.top = (ns_n+1)+"px"`
    - This depends on the original units being pixels

## 9 Visibility

- visibility: hidden or visible
  - Hidden static or relative positioned elements still take up space in the flow of a document
  - Absolute positioned elements can appear over or below other elements without affecting the flow

## 10 Stacking: Z Index

- Z-Index applies only to positioned elements
  - Unpositioned elements are always behind positioned elements
    - Larger z-index is "closer" to the viewer
- Elements with the same z-index are rendered so that ancestors are behind children
- Descendents of z-indexed elements are stacked within the context of the parent container
- Style property is z-index, JavaScript property is `zIndex`
  - `div {...z-index:3;...}`
  - `n.style.zIndex = 3`
    - Allows any integer (signed)

## 11 Mouse Events

- Mouse Over
  - `onmouseover = "hover(this.style, true)"`
- Mouse Out
  - `onmouseout = "hover(this.style, false)"`
- **this** is a reference to the target element of the mouse event
- The second parameter allows one function to be used to handle two different but related events

## 12 Mouse Coordinates

- Event objects and properties are currently browser dependent
  - Firefox has a special syntax to pass the event property to any function
    - `onclick = "handler(event)"`
  - Internet Explorer makes the event object available as a global property
    - `onclick = "handler(event)"`
- Conclusion
  - The same syntax may be used for function calls

## 13 Mouse Event Object

- `.clientX`, `.clientY`
  - Coordinates of mouse relative to top-left of the browser window
- `.screenX`, `.screenY`
  - Coordinates relative to the top-left corner of the screen

## 14 Mouse Down and Up

- Mouse Down (unpressed to pressed)

- onmousedown = ...
- Mouse Up (pressed to unpressed)
  - onmouseup = ...
- Handlers typically access the coordinates of the mouse to implement some functionality

## 15 Mouse Movement

- Mouse move events occur every time the mouse coordinates change while the mouse is over the targeted element
- Coordinates are generally the important event property
- Dragging
  - Implemented using mouse down, mouse move, and mouse up

## 16 Timers

- Timeout – One time event
  - `tid = setTimeout("handler()", msec)`
  - `tid = setTimeout(handler, msec, param,...)`
    - Avoid this for now as IE does not support it
  - `clearTimeout(tid)`
- Interval – Repeating event
  - `tid = setInterval("handler()", msec)`
  - `tid = setInterval(handler, msec, param,...)`
  - `clearInterval(tid)`