

# JavaScript & the browser

## Lecture 18

CS 638 Web Programming



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## Lecture overview



- ❑ Browser context for JavaScript
- ❑ User interaction with JavaScript

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## Adding JavaScript to a page



- ❑ Using the `<script>` `</script>` tag
  - ❑ Text between tags is JavaScript program
  - ❑ Can specify external file using `src` attribute
  - ❑ Executed as the document is loading
- ❑ Value of an attribute such as `onclick`
  - ❑ This type of code is called event handler
  - ❑ Executed when event happens
- ❑ Body of a URL using the `javascript:` “protocol”
  - ❑ Executed when browser loads URL

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## The context for JavaScript



- ❑ All scripts on the same page share the same global variables, even if they are read using the `src` attribute
- ❑ All global variables are just properties of a “global object”
- ❑ The keyword `this` (unless inside object methods) and the variable `window` refer to the “global object”

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## Some properties of window



- ❑ `document` holds the internal representation of the document displayed in the window
- ❑ `location` holds the URL of the current page
  - ❑ Can instruct the browser to load a new page by assigning its URL to `location`
- ❑ `status` (a.k.a. `defaultStatus`) holds the current message in the status bar
  - ❑ Typically shows the URL pointed to by link under mouse
- ❑ `navigator` has details about the browser software (application name, version, platform, etc.)

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## Some methods of window



- ❑ For interacting with user through dialog boxes
  - ❑ `alert()` displays a message
  - ❑ `confirm()` asks user to confirm or cancel
  - ❑ `prompt()` asks user to enter string
- ❑ For manipulating timers
- ❑ For manipulating windows (opening a new one, closing, moving, resizing, printing, etc.)
- ❑ Browser configuration may disallow certain functions (or the writing of certain properties)

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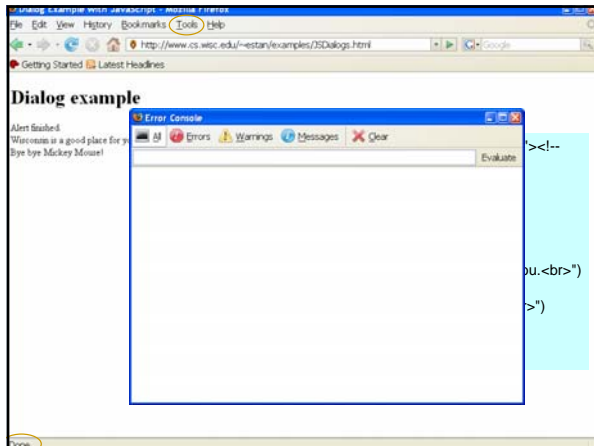
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## Debugging JavaScript

- ❑ Heed messages in the error console
- ❑ Use alerts to display debugging info
- ❑ Firefox add-ons can debug JavaScript
  - ❑ Firefly, Venkman
  - ❑ Unfortunately they don't always work

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## Accessing forms



- ❑ `document.forms` array of objects representing the forms on the page (usually just one form present)
- ❑ `document.forms[0].elements` holds array with objects representing the HTML controls in form
- ❑ Referring to controls
  - ❑ `document.forms[0].elements[2]` – third control
  - ❑ `document.forms[0].xyz` – control with name `xyz`
  - ❑ `document.forms[0].xyz[1]` – second control with name `xyz` (recall that radio buttons working as a group must have same name)

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## Form elements



- ❑ Properties of JavaScript objects for form elements
  - ❑ `type` – values such as `"button"`, `"text"`, `"checkbox"`
  - ❑ `form` – the form containing the element
  - ❑ `name` – name of element (defined by HTML attribute `name`)
  - ❑ `value` – the value of the element (exact interpretation depends on type of element)
    - ❑ By modifying this property you can for example change the text shown on a button or the text within a text input field
- ❑ Many event handlers associated with each element
  - ❑ May specify JavaScript function to be invoked in response
  - ❑ HTML elements other than

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## Some simple JavaScript events



Handler	Triggered when	Comments
<code>onclick</code>	Mouse click on element	Return <code>false</code> to cancel default action
<code>onchange</code>	The control's state changes	
<code>onfocus</code>	The control gets focus	
<code>onsubmit</code>	The form is submitted	Specific to forms
<code>onmouseover</code>	Mouse moves over el.	
<code>onmouseout</code>	Mouse moves off el.	
<code>onmousedown</code>	Mouse button pressed	
<code>onmouseup</code>	Mouse button released	
<code>onkeydown</code>	Key pressed down	Used for form elements and <code>&lt;body&gt;</code>
<code>onkeypress</code>	Key pressed and released	Return <code>false</code> to cancel
<code>onkeyup</code>	Key released	Used for form elements and <code>&lt;body&gt;</code>
<code>onload</code>	Document load complete	Used for <code>&lt;body&gt;</code> and <code>&lt;img&gt;</code>

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## Defining event handlers



- ❑ Can be defined as values of the HTML attribute with the name describing the event
  - ❑ Can use arbitrary JavaScript code, often just a call to a function is used
  - ❑ `<form onsubmit="return verify(this) ">`
- ❑ Can be defined inside program by assigning to properties of objects representing elements
  - ❑ `document.forms[0].onsubmit=function(){alert("submission");return false}`
- ❑ When event handling code is run, `this` points to the object representing the HTML element the event applies to

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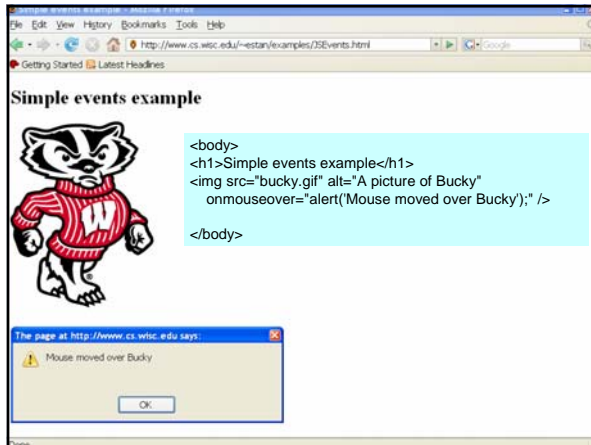
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