JavaScript and Form Enhancement

CS 4640
Programming Languages for Web Applications

[Robert W. Sebesta, “Programming the World Wide Web
Jon Duckett, Interactive Frontend Web Development]
Forms allow us to collect information from users. JavaScript helps us get the appropriate information from them.

Examples of form enhancement with JavaScript:

- Customizing web pages
- Making web pages more dynamic
- Change type of form input
- Validating forms
- Manipulating cookies
- Interacting with frames
- Calling Java programs
Techniques for Updating HTML Content

**document.write()**

**Advantage**
- Simple way to add content that was not in the original source code to the page

**Disadvantages**
- Work only when the page initially loads
- If it is used after the page is loaded, it can
  - Overwrite the whole page
  - Not add the content to the page
  - Create a new page

Rarely used by programmers
Techniques for Updating HTML Content

**element.innerHTML**

### Advantage
- Easy way to get/update the entire content of an element (including markup) as a string
- Less code and faster (execution time) than DOM manipulation when adding many new elements to a page
- Simply way to remove all of the content from one element (by assigning it an empty string)

### Disadvantages
- Can pose security risk (thus, should not be used to add content that come from a user)
- Difficult to isolate single elements to update within a large DOM fragment
- Event handlers may not work properly
Techniques for Updating HTML Content

DOM Manipulation

**Advantage**
- Easy way to change one element from a DOM fragment where there are many siblings
- Does not affect event handlers
- Easily allow a script to add elements incrementally

**Disadvantages**
- Slower (execution time) than `innerHTML` when making many changes to the content of a page
- More code to achieve the same thing compared with `innerHTML`
JavaScript Tips

• Build your script one piece at a time
• Store to files and load with HTML files
• Do not change variable types
• Do not use same names for global and local variables
• Remember, JavaScript is case sensitive
• Debugger
  • Firefox Javascript debugger – Venkman
  • Another Firefox debugger – Firebug
Advantages and Disadvantages

• **Advantages**:  
  • Can modify HTML on the client  
  • Fairly *easy* to write simple functions

• **Disadvantages**:  
  • Weak *typing*  
  • Poor development *tools*  
  • Many *scalability* problems (maintenance, reliability, readability, security, efficiency, portability, …)
Summary

Two common **purposes** of JavaScript uses:
- Build HTML **dynamically** when page is loaded
- Monitor **user events** and take action

- Learning HTML syntax is not hard
- Learning JS syntax is not hard
- Designing good dynamic web pages is **VERY** hard