JavaScript Basics

What is JavaScript?

JavaScript is a programming
language designed for Web pages.

Why Use JavaScript?

- JavaScript enhances Web pages with dynamic and interactive features.

- JavaScript runs in client software.

- JavaScript 1.3 works with version 4.0 browsers.

What Can JavaScript Do?

- Common JavaScript tasks can replace server-side scripting.

- JavaScript enables shopping carts, form validation, calculations, special graphic and text effects, image swapping, image mapping, clocks, and more.

JavaScript Syntax.

- Unlike HTML, JavaScript is case sensitive.

- Dot Syntax is used to combine terms.
    - e.g., `document.write("Hello World")`

- Certain characters and terms are reserved.

- JavaScript is simple text (ASCII).

JavaScript Terminology.

- JavaScript programming uses specialized terminology.

- Understanding JavaScript terms is fundamental to understanding the script.
  - Objects, Properties, Methods, Events, Functions, Values, Variables, Expressions, Operators.

Objects

- Objects refers to windows, documents, images, tables, forms, buttons or links, etc.

- Objects should be named.

- Objects have properties that act as modifiers.

Properties

- Properties are object attributes.

- Object properties are defined by using the object's name, a period, and the property name.

  - e.g., background color is expressed by: `document.bgcolor` .

  - `document` is the object.

  - `bgcolor` is the property.

Methods

- Methods are actions applied to particular objects. Methods are what objects can do.

  - e.g., `document.write("Hello World")`

  - `document` is the object.

  - `write` is the method.

Events

- Events associate an object with an action.
  - e.g., the `OnMouseover` event handler action can change an image.
  - e.g., the `onSubmit` event handler sends a form.

- User actions trigger events.

Functions

- Functions are named statements that performs tasks.
    - e.g., `function doWhatever () {statement here}`
    - The curly braces contain the statements of the function.

- JavaScript has built-in functions, and you can write your own.

Values

- Values are bits of information.

- Values types and some examples include:
  - Number: 1, 2, 3, etc.
  - String: characters enclosed in quotes.
  - Boolean: true or false.
  - Object: image, form
  - Function: validate, doWhatever

Variables

- Variables contain values and use the equal sign to specify their value.

- Variables are created by declaration using the **var** command with or without an initial value state.

  - e.g. `var month;`

  - e.g. `var month = April;`

Expressions

- Expressions are commands that assign values to variables.

- Expressions always use an assignment operator, such as the equals sign.

  - e.g., `var month = May;` is an expression.

- Expressions end with a semicolon.

Operators

- Operators are used to handle variables.

- Types of operators with examples:
    - Arithmetic operators, such as plus.
    - Comparisons operators, such as equals.
    - Logical operators, such as and.
    - Control operators, such as if.
    - Assignment and String operators.

Methods of Using JavaScript.

1. JavaScripts can reside in a separate page.

2. JavaScript can be embedded in HTML documents -- in the `<head>`, in the `<body>`, or in both.

3. JavaScript object attributes can be placed in HTML element tags.

   e.g., `<body onLoad="alert('WELCOME')">`

1. Using Separate JavaScript Files.

- Linking can be advantageous if many pages use the same script.

- Use the source element to link to the script file.

```
<script src="myjavascript.js"
    language="JavaScript1.2"
    type="text/javascript">
</script>
```

2. Embedding JavaScript in HTML.

- When specifying a script only the tags **`<script>`** and **`</script>`** are essential, but complete specification is recommended:

```
<script language="javascript"
    type="text/javascript">
        <!-- Begin hiding
            window.location="index.html"
        // End hiding script-->
</script>
```

Using Comment Tags

- HTML comment tags should bracket any script.

- The `<!-- script here -->` tags hide scripts in HTML and prevent scripts from displaying in browsers that do not interpret JavaScript.

- Double slashes `//` are the signal characters for a JavaScript single-line comment.

3. Using JavaScript in HTML Tags.

- Event handlers like onMouseover are a perfect example of an easy to add tag script.

```
<a href="index.html"
    onMouseover="document.logo.src='js2.gif'"
     onMouseout="document.logo.src='js.gif'">
<img src="js.gif" name="logo">
</a>
```

Creating an Alert Message

- The following script in the `<body>` tag uses the `onLoad` event to display an Alert window

- The message is specified within parenthesis.

```
<body onLoad="alert('WELCOME.  Enjoy
your visit.  Your feedback can improve
cyberspace.  Please let me know if you
detect any problems.  Thank you.')">
```

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References and Recommended Readings

The Web Wizard's Guide to JavaScript by Steven Estrella

JavaScript for the World Wide Web by Tom Negrino and Dori Smith

CIS 233