SY306 Web and Databases for Cyber Operations

SlideSet #4: Intro to JavaScript

http://www.w3schools.com/js/default.asp

JavaScript Intro – Outline

• What is it good for?
• What does it look like?
• JavaScript vs Python?
• Example Usage

```javascript
var a = 1, b = 2, c = 3;
var d = a + b * c;

window.alert("<h1>Begin</h1>" + d);

if( d < 20 )
  window.alert("d is okay: " + d);
else
  window.alert("d is too high!: " + d);

document.writeln("<h1>Done. Final d = " + d + "</h1>");
```
What’s JavaScript good for?

• Client-side computation?

• Server-side computation?
<!DOCTYPE html>

<!-- Fig. 6.5: welcome4.html -->
<!-- Alert dialog displaying multiple lines. -->
<html>
<head>
<meta charset = "utf-8"/>
<title>Printing Multiple Lines in a Dialog Box</title>
<script type = "text/javascript">
    /*
     * Welcome to JavaScript Programming!
     */
    window.alert( "Welcome to JavaScript Programming!" );
</script>
</head>
<body>
<p>Click Refresh (or Reload) to run this script again.</p>
</body>
</html>

Python vs. JavaScript

Object-oriented?

Add methods/properties to objects at run-time?

Variable typing?

If statements, loops, etc?

Adapted from © 2004 Prentice Hall, Inc. All rights reserved.
Addition / Strings Example – Part 1

The page at zee.academy.usna.edu says:

Enter first integer
43

OK  Cancel

The page at zee.academy.usna.edu says:

Enter second integer
72

OK  Cancel

The sum is 117
Click Refresh (or Reload) to run the script again

Addition / Strings Example – Part 2

<DOCTYPE html>
<html>
<head>
<meta charset = "utf-8" />    <title>An Addition Program</title>
<script type = "text/javascript">
var firstNumber, secondNumber, number1, number2, sum;

// read in first number from user as a string
firstNumber = window.prompt( "Enter first integer", "0" );

// read in second number from user as a string
secondNumber = window.prompt("Enter second integer", "0");

// convert numbers from strings to integers
number1 = parseInt(firstNumber);
number2 = parseInt(secondNumber);

// add the numbers
sum = number1 + number2;

// display the results
document.writeln("<h1>The sum is " + sum + "</h1> ");

</script>
</head>
<body>    <p>Click Refresh (or Reload) to run the script again</p>  </body> </html>
## Operators and Precedence

<table>
<thead>
<tr>
<th>Operators</th>
<th>Associativity</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>* / %</td>
<td>left to right</td>
<td>multiplicative</td>
</tr>
<tr>
<td>+ -</td>
<td>left to right</td>
<td>additive</td>
</tr>
<tr>
<td>&lt; &lt;= &gt; &gt;=</td>
<td>left to right</td>
<td>relational</td>
</tr>
<tr>
<td>== !=</td>
<td>left to right</td>
<td>equality</td>
</tr>
<tr>
<td>=</td>
<td>right to left</td>
<td>assignment</td>
</tr>
</tbody>
</table>

Fig. 7.17 Precedence and associativity of the operators discussed so far.

### Exercise #1  -- What’s the output?

```javascript
var x, y, z;

x = 7;
y = 9;
z = "abc";

window.alert(x+y+z);
window.alert(z+y+x);

if (x)
    window.alert("x true");
x = "seven";
window.alert(x+y+z);
```

Adapted from © 2004 Prentice Hall, Inc. All rights reserved.
Objects and Control Flow – Part 1

Good Morning, the date is: Fri Jan 20 2017 11:36:27 GMT-0500 (Eastern Standard Time)

Click Refresh (or Reload) to run the script again.

Objects and Control Flow – Part 2

```html
<!DOCTYPE html>
<html>
<head>  
<meta charset = "utf-8" />
<title>Using Relational Operators</title>
<script type = "text/javascript">
<!--
var now = new Date(); // current date and time
hour = now.getHours(); // current hour (0-23)
// determine whether it is morning
if ( hour < 12 )
   document.write( "<h1>Good Morning, " );
// determine whether the time is PM
if ( hour >= 12 )
   {
   // convert to a 12 hour clock
   hour = hour - 12;
   // determine whether it is before 6 PM
   if ( hour < 6 )
      document.write( "<h1>Good Afternoon, " );
   // determine whether it is after 6 PM
   if ( hour >= 6 )
      document.write( "<h1>Good Evening, " );
   }
   document.writeln( "the date is: " + now + "</h1>");
// -->
</script>
</head>  
<body><p>Click Refresh (or Reload) to run this script again.</p></body>  
</html>
```
Exercise #2  -- What’s the output?

```javascript
var a, b, c;

a = 1;
b = 2;
c = 3;
d = a + b * c;

window.alert("<h1>Begin</h1>");

if (d < 20)
    window.alert("d is okay: "+d);
else
    window.alert("d is too high!: "+ d);
    d = d - 3;

document.writeln("<h1>Done. Final d = "+d"</h1>");
```

Exercise #3

• Write a JavaScript snippet to read in a number from the user and output its absolute value.
Strings

• Empty string:
• Subscripting: `x = “hard”; x[0], x[1], …`
• `.length`
• character-to-ASCII-number:
  `string.charCodeAt(index)`
• ASCII-number-to-character:
  `String.fromCharCode(number)`
• `.substr`

Exercise #4

• **Look at this:**
  ```javascript
  /* Return an integer no larger than 'max' */
  var max = 25;
  var value;
  do {
      value = window.prompt(
          “Please enter an integer no larger than ”+max);
  } while (value > max);
  ```

• When does this work and why?

• When does it fail and how to fix?
Exercise #5

• Write a JavaScript snippet to read in three numbers x, y, z and output them in sorted order.