SlideSet #6: Intro to JavaScript

(from Chapters 6, 7, 8 of the “Web” textbook)

JavaScript Intro – Outline

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

• Client-side computation?

• Server-side computation?

```html
<!DOCTYPE html>

<!-- Fig. 6.4: welcome3.html  -->
<!-- Printing on multiple lines with a single statement. -->
<html>
<head>
<meta charset = "utf-8" />
<title>Printing Multiple Lines</title>
<script type = "text/javascript">
<!--
document.writeln( "<h1>Welcome to<br/>JavaScript" +
"<br/>Programming!</h1>");
// -->
</script>
</head>
<body>

Welcome to
JavaScript
Programming!
</body>
</html>
```
Python       vs.       JavaScript

Object-oriented?

Add methods/properties to objects at run-time?

Variable typing?

If statements, loops, etc?

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Addition / Strings Example – Part 1

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Addition / Strings Example – Part 2

```html
<!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);
```
Objects and Control Flow – Part 1

Good Morning, the date is: Mon Jan 25 2015 09:02:51 GMT-0500 (Eastern Standard Time)

Objects and Control Flow – Part 2

<!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>
<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: \( x = \text{“hard”}; x[0], x[1], \ldots \)
- .length
- character-to-ASCII-number:
  \( \text{string}.charCodeAt(index) \)
- ASCII-number-to-character:
  \( \text{String.fromCharCode(number)} \)
- .substr

Exercise #4

- Look at this:
  /* 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.